APPROVED
April 02 2026
BOARD OF RECREATION
AND PARK COMMISSIONERS

BOARD REPORT **NO.** 26-067

DATE April 02,2026 C.D. 13

BOARD OF RECREATION AND PARK COMMISSIONERS

SUBJECT: LAS PALMAS SENIOR CENTER – SENIOR CENTER AND CHILD CARE CENTER RENOVATIONS (PRJ21175) (PRJ21176) (W.O. #E1908358) PROJECT – APPROVAL OF FINAL PLANS AND CALL FOR BIDS – COMMITMENT OF PARK FEES; CATEGORICAL EXEMPTION FROM THE PROVISIONS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) PURSUANT TO ARTICLE 19, SECTION 15301(a) [INTERIOR OR EXTERIOR ALTERATIONS INVOLVING SUCH THINGS AS INTERIOR PARTITIONS, PLUMBING, AND ELECTRICAL CONVEYANCES], 15301(d) [RESTORATION OR REHABILITATION OF DETERIORATED OR DAMAGED STRUCTURES, FACILITIES, OR MECHANICAL EQUIPMENT TO MEET CURRENT STANDARDS OF PUBLIC HEALTH AND SAFETY], 15303(e) [ACCESSORY (APPURTENANT) STRUCTURES INCLUDING GARAGES, CARPORTS, PATIOS, SWIMMING POOLS, AND FENCES], AND 15304(a) [GRADING ON LAND WITH A SLOPE OF LESS THAN 10 PERCENT] OF CALIFORNIA CEQA GUIDELINES AND ARTICLE III, SECTION 1, CLASS 1(1), CLASS 1(4), CLASS 3(6), AND CLASS 4(1) OF CITY CEQA GUIDELINES

B. Aguirre		M. Rudnick	
B. Jones	for *	C. Santo Domingo	DF
C. Stoneham		N. Williams	

General Manager

Approved X Disapproved Withdrawn

RECOMMENDATIONS

1. Approve the final plans (Attachment No. 1) and specifications (Attachment No. 2), substantially in the form on file with the Board of Recreation and Park Commissioners (Board) Office and attached to this Report, for the Las Palmas Senior Center – Senior Center and Child Care Center Renovations (PRJ21175) (PRJ21176) (W.O. #E1908358) Project (Project);

2. Approve the date to be advertised for receipt of bids as Tuesday, May 12, 2026 at 1:00 P.M. electronically to the Board Office;

3. Authorize RAP staff to commit from the following fund and work order numbers a maximum of $2,000,000.00 in Park Fees for the proposed Project;

FUNDING SOURCE	FUND/DEPT./ACCT. NO.	WORK ORDER NO.
Park Fees	302/89/89716H	QT067577

4. Find that the proposed Project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA), pursuant of Article 19, Sections 15301(a) [Interior or exterior alterations involving such things as interior partitions, plumbing, and electrical conveyance], 15301(d) [Restoration or rehabilitation of deteriorated or damaged structures, facilities, or mechanical equipment to meet current standards of public health and safety, unless it is determined that the damage was substantial and resulted from an environmental hazard such as earthquake, landslide, or flood], 15303(e) [Accessory (appurtenant) structures including garages, carports, patios, swimming pools, and fences], and 15304(a) [Grading on land with a slope of less than 10 percent] as well as pursuant of Article III, Section 1, Class 1(1), Class 1(4), Class 2(3), Class 3(6), and Class 4(1) of the City CEQA guidelines, and request that the Bureau of Engineering (BOE) staff file a Notice of Exemption within five working days of the Board approval; and,

5. Authorize RAP staff to make technical corrections as necessary to carry out the intent of this Report.

SUMMARY

Las Palmas Senior Citizens Center is located at 1820 North Las Palmas Avenue in the Hollywood community of the City. This 1.14-acre facility provides senior citizen and child care programs for the surrounding community. An estimated 9,543 City residents live within a one-half mile walking distance of Las Palmas Senior Citizens Center. Due to the facilities, features, programs, and services it provides, Las Palmas Senior Citizens Center meets the standard for a Community Park, as defined in the City's Public Recreation Plan.

BACKGROUND

The Board previously approved the scope of work for the Project on November 7, 2018 (Report No. 18-234). At that time, the Project scope included the demolition of the existing senior center and the construction of a new senior center and child care center. Due to the Project site being located in the Alquist-Priolo fault zone, RAP staff and the Department of Public Works, Bureau of Engineering (BOE) staff determined that construction of a new building was not feasible. Furthermore, it was determined that the scope should be modified to the renovation of the building instead of a complete demolition and reconstruction.

PROJECT SCOPE

The Project scope now consists of the renovation of the existing 5,500 square-foot one-story building senior citizens building, along with outdoor and site improvements of the facility. Interior program layouts will be reconfigured to support new restrooms, better accommodate the facility's recreational programs, and make the space more accessible. Exterior work will include renovating underutilized areas into more functional patios, landscaping, and fitness zones to encourage physical activity.

The existing footprint shall remain, and major building improvements to modernize the existing facility will include:

- Interior reconfiguration to support new restrooms
- New interior finishes
- Upgrading building systems (mechanical, electrical, roofing)
- ADA accessibility upgrades
- Envelope improvements to increase energy efficiency
- Exterior site work to include new outdoor patio area, a multi-fitness area with photo-voltaic shade structures, and new electrical vehicle charging stations

Community outreach was done through the Park Advisory Board and the Office of Council District 13. Plan reviews were conducted by RAP staff at various stages of design development.

PROJECT FUNDING

The City Engineer's estimate for construction costs includes a base estimate of $5,810,000 and contingency of $800,000, for a total construction commitment of $6,610,000. Upon approval of this Report, funds are currently available from the following funds and accounts:

Source	Fund/Dept/Acct	Amount
Quimby (BR 18-234)	302/89/89460K-LP	$301,983.00
RAP Park Fees (BR 21-064)	302/89/89716H	$1,763,787.75
RAP Park Fees (BR 21-064)	302/89/89718H	$102,822.94
MICLA (Council File 22-0842-S5)	298/50/50ALPS	$2,899,680.00
Sub Total:		***$5,068,273.69***
Park Fees to Be Approved:	*302/89/716H*	***$2,000,000.00***
Total		**$7,068,273.69**

The Park Fees were collected within five miles of Las Palmas Senior Citizen Center, which is the standard distance for the commitment of Park Fees for community recreational facilities pursuant to Los Angeles Municipal Code Section 12.33 E.3.

TREES AND SHADE

No existing trees are being removed as part of this Project. An approximate 1,600 square foot photovoltaic shade structure will be installed, providing shade for an exterior multi-use fitness area. The Project also includes the planting of six 24" box evergreen trees.

ENVIRONMENTAL IMPACT

The proposed Project consists of interior alterations involving such things as interior partitions, plumbing, and electrical conveyance; rehabilitation of deteriorated or damaged structures to meet current standards of public health and safety; and installation of accessory structures and grading on land with a slope of less than 10 percent.

Based on the parcel profile retrieved on January 8, 2026 through NavigateLA (https://navigatela.lacity.org/navigatela/), this site is not located within a coastal, methane, historical preservation, or flood zone. The site is situated within a liquefaction zone and is also located in the vicinity of the Alquist-Priolo fault zone. The Project does not pose any risk of compromising structural integrity since the improvements will take place at the surface level of the property and no new structures for human habitation will be constructed. As of January 10th, 2026, the State Department of Toxic Substances Control (DTSC) (Envirostor at https://www.envirostor.dtsc.ca.gov/) does not list any contaminated or cleanup program sites situated within 1000 feet of the Project site. As for the State Water Resources Control Board (SWRCB) (Geotracker at https://geotracker.waterboards.ca.gov/), the website lists two clean project sites that both have a current status of completed – cased closed: #SLT43624622, Hollywood Hills Cleaners, and #T0603700929, Mobil #11-H50 (Former). The proposed Project does not pose any risk of impact to local contaminant cleanup programs. When reviewing the Caltrans Scenic Highway Map, no scenic highways travel near the vicinity of the Project site. With regards to Historic-Cultural Monuments, the Project site sits within the vicinity of multiple monuments to include the Villa Bonita (National Register of Historic Resources, ID# 86001950), Woman's Club of Hollywood (National Register of Historic Resources, ID# 16000883), First United Methodist Church of Hollywood (City of Los Angeles Historic Cultural Monument #248), and the Magic Castle (City of Los Angeles Historic Cultural Monument #406), but the proposed Project does not pose any risk of impact to historical resources.

Based on this information, RAP staff recommends that the Board determines that this Project is categorically exempt from the California Environmental Quality Act (CEQA) pursuant to State CEQA Guidelines Article 19, Sections 15301(a), 15301(d), 15303(e) and 15304(a) as well as Class 1(1), Class 1(4), Class 3(6) and Class 4(1) of City CEQA Guidelines. Bureau of Engineering staff will file a Notice of Exemption with the Los Angeles County Clerk and the Governor's Office of Land Use and Climate Innovation upon Board's approval.

FISCAL IMPACT

The Project will be funded by a combination of the aforementioned funding sources. There is no immediate fiscal impact to RAP's General Fund. However, operations and maintenance costs will be evaluated and included in future RAP budget requests.

The City's liability under the contract resulting from this bid process shall only extend to the present City appropriation to fund the contract. However, if the City appropriates additional funds for any succeeding years, the City's liability shall be extended to the extent of such appropriation, subject to the terms and conditions of the contract.

This Report was prepared by Jenny Lim, Project Manager, reviewed by Ohaji Abdallah, Proposition K Program, BOE Architectural Division; and Darryl Ford, Superintendent, and Gary Lam, Principal Civil Engineer, Planning, Maintenance and Construction Branch.

LIST OF ATTACHMENTS

1) Attachment No. 1 – Las Palmas Senior Center, Final Plans
2) Attachment No. 2 – Las Palmas Senior Center, Final Specifications
3) Attachment No. 3 – Las Palmas Senior Center, Notice of Exemption

BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

LAS PALMAS SENIOR CENTER

1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028



DRAWING INDEX

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04	G004	GREEN BUILDING CODES AND FORMS
05	G101	TITLE 24- DISABLED ACCESS REQUIREMENTS
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29	A601	DOOR / STOREFRONT SCHEDULE, NOTES AND DIAGRAMS
30	A602	FINISH AND SIGNAGE SCHEDULES, NOTES AND LEGEND
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115	E502	E-MON D-MON WIRING DIAGRAM AND LIGHT WALL ELEVATIONS

Grand total: 115

PROJECT TEAM

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GENERAL NOTES

NOTE: AREAS OF RENOVATION, STRUCTURAL REPAIR, ALTERATION ARE TO MEET THE SAME ACCESSIBILITY STANDARDS AS FOR NEW CONSTRUCTION PROJECTS.
SHOW COMPLIANCE WITH THE FOLLOWING:
1. WHERE EXISTING ELEMENTS OR SPACES ARE ALTERED, EACH ALTERED ELEMENT OR SPACE SHALL FULLY COMPLY. 11B-202.3
2. WHEN ALTERATIONS OR ADDITIONS ARE MADE TO EXISTING BUILDINGS OR FACILITIES, AN ACCESSIBLE PATH OF TRAVEL TO THE SPECIFIC AREA OF ALTERATION OR ADDITION SHALL BE PROVIDED. THE PRIMARY ACCESSIBLE PATH OF TRAVEL SHALL INCLUDE: 11B-202.4
   A. A PRIMARY ENTRANCE TO THE BUILDING OR FACILITY,
   B. TOILET AND BATHING FACILITIES SERVING THE AREA,
   C. DRINKING FOUNTAINS SERVING THE AREA,
   D. PUBLIC TELEPHONES SERVING THE AREA, AND
   E. SIGNS.
3. REFER TO LANDSCAPE SITE PLAN ON L401 FOR SITE RELATED INFORMATIONS

I, JENNY LIM, CERTIFY THAT THE PRIMARY PATH OF TRAVEL TO THE AREA OF ALTERATION FROM THE PUBLIC WAY OR ACCESSIBLE PARKING SPACE AS INDICATED ON THE PLANS DOES NOT INCLUDE STEPS OR A SLOPE EXCEEDING 1:20 EXCEPT WHERE ACCESS IS PROVIDED BY A RAMP WITH 1:12 MAXIMUM SLOPE OR ACCESSIBLE ELEVATOR. I UNDERSTAND THAT IF THE PRIMARY PATH OF TRAVEL IS FOUND NOT TO BE AS INDICATED, SIGNIFICANT DELAYS MAY RESULT. REFER TO LANDSCAPE SITE PLAN L401.
SIGNATURE:
POSITION: ARCHITECT OF RECORD
DATE:
(AOR TO COMPLETE FORM AND SIGN)



(THOMAS GUIDE PAGE_, GRID_)
VICINITY MAP
NOT TO SCALE

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

WORK ACCEPTED: —
SERIAL NO. —
INDEX NO. **MF-300512**
CIP NO. G1163

REGISTERED PROFESSIONAL ENGINEER ★ ALFRED MATA ★ C 58105 ★ CIVIL ★ STATE OF CALIFORNIA

INTERIM CITY ENGINEER
ACCEPTED BY:
Deborah Weintraub 12/10/2025
DEPUTY CITY ENGINEER/ PROGRAM MANAGER — DATE
Alfred Mata 12/11/2025
INTERIM CITY ENGINEER — DATE
ALFRED MATA, PE

CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: COVER SHEET, DRAWING INDEX
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

•BID SET•

WORK ORDER NO.
E1908358
PLAN FILE NO.
DRAWING NO.
G001
SHEET 01 OF SHEETS 115

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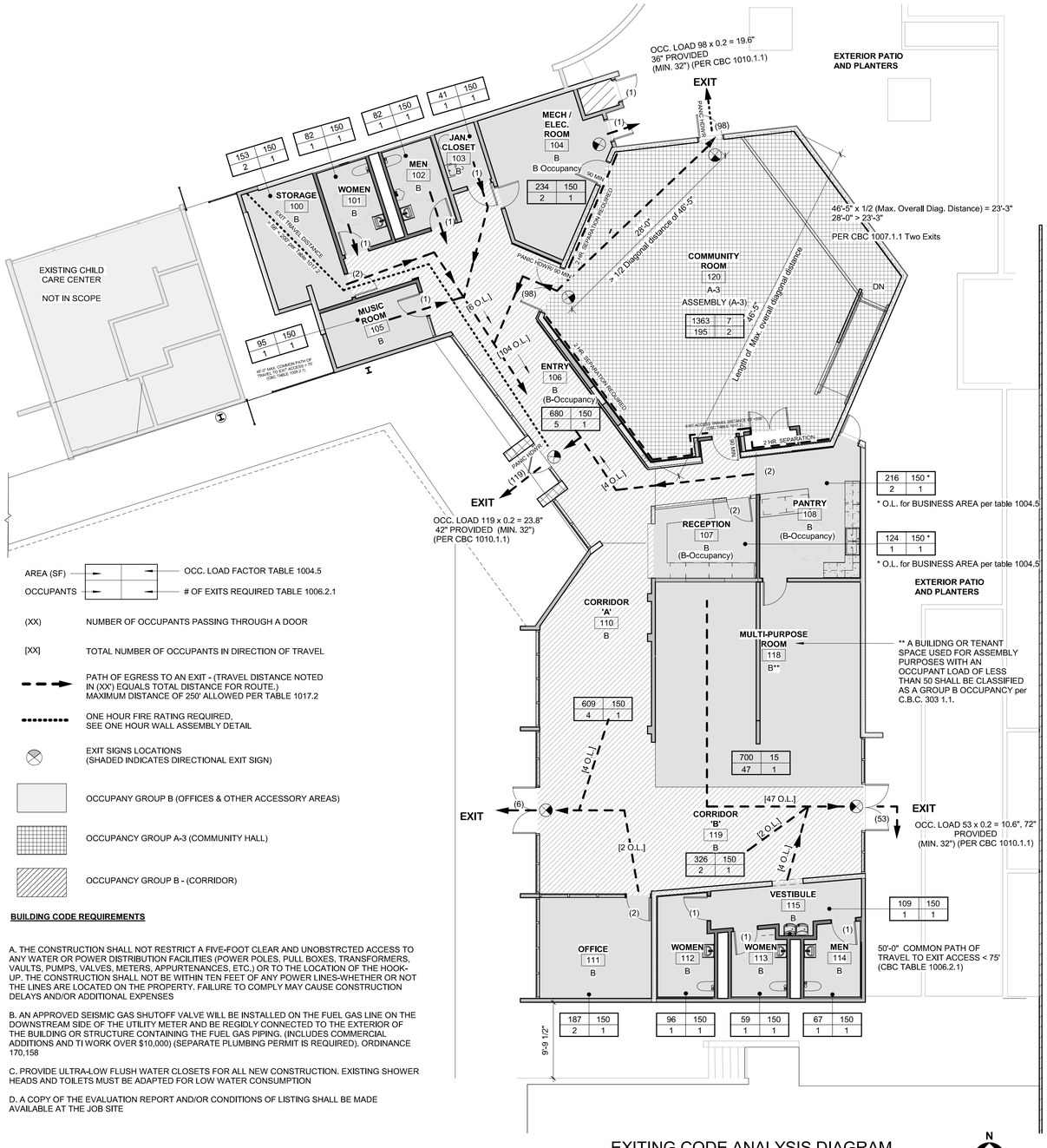
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 08/2014
SHEET ISSUE DATE: 02/09/10
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

REVISION DATES (DESIGN STAGE ONLY)



EXITING CODE ANALYSIS DIAGRAM

1/8" = 1'-0"

N

AREA (SF) — OCC. LOAD FACTOR TABLE 1004.5

OCCUPANTS — # OF EXITS REQUIRED TABLE 1006.2.1

(XX) NUMBER OF OCCUPANTS PASSING THROUGH A DOOR

[XX] TOTAL NUMBER OF OCCUPANTS IN DIRECTION OF TRAVEL

PATH OF EGRESS TO AN EXIT - (TRAVEL DISTANCE NOTED IN (XX') EQUALS TOTAL DISTANCE FOR ROUTE.) MAXIMUM DISTANCE OF 250' ALLOWED PER TABLE 1017.2

ONE HOUR FIRE RATING REQUIRED, SEE ONE HOUR WALL ASSEMBLY DETAIL

EXIT SIGNS LOCATIONS (SHADED INDICATES DIRECTIONAL EXIT SIGN)

OCCUPANCY GROUP B (OFFICES & OTHER ACCESSORY AREAS)

OCCUPANCY GROUP A-3 (COMMUNITY HALL)

OCCUPANCY GROUP B - (CORRIDOR)

BUILDING CODE REQUIREMENTS

A. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR AND UNOBSTRCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULL BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR TO THE LOCATION OF THE HOOK-UP. THE CONSTRUCTION SHALL NOT BE WITHIN TEN FEET OF ANY POWER LINES-WHETHER OR NOT THE LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS AND/OR ADDITIONAL EXPENSES

B. AN APPROVED SEISMIC GAS SHUTOFF VALVE WILL BE INSTALLED ON THE FUEL GAS LINE ON THE DOWNSTREAM SIDE OF THE UTILITY METER AND BE REGIDLY CONNECTED TO THE EXTERIOR OF THE BUILDING OR STRUCTURE CONTAINING THE FUEL GAS PIPING. (INCLUDES COMMERCIAL ADDITIONS AND TI WORK OVER $10,000) (SEPARATE PLUMBING PERMIT IS REQUIRED). ORDINANCE 170,158

C. PROVIDE ULTRA-LOW FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION

D. A COPY OF THE EVALUATION REPORT AND/OR CONDITIONS OF LISTING SHALL BE MADE AVAILABLE AT THE JOB SITE

FIRE RESISTANCE RATED CONSTRUCTION NOTES:

1. FIRE BLOCKING MUST BE PROVIDED IN ACCORDANCE WITH SECTION 718.2 AT FOLLOWING LOCATIONS:

a. IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AT THE CEILING AND FLOOR LEVELS.
b. IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AT 10-FOOT INTERVALS ALONG THE LENGTH OF THE WALL
c. AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP AND BOTTOM OF RUN AND BETWEEN STUDS ALONG AND IN LINE WITH THE RUN OF STAIRS IF THE WALL UNDER STAIR IS UNFINISHED.
d. IN OPENINGS AROUND VENTS, PIPES, DUCTS, CHIMNEYS, FIREPLACES AND SIMILAR OPENINGS AROUND VENTS, PIPES, DUCTS, CHIMNEYS, FIREPLACES AND SIMILAR OPENINGS WHICH AFFORD A PASSAGE FOR FIRE AT CEILING AND FLOOR LEVELS WITH NONCOMBUSTIBLE MATERIALS.

BUILDING CODE ANALYSIS

CURRENT TYPE VB (NON RATED - NO SPRINKLER)
PROPOSED TYPE VB (NON RATED - NO SPRINKLER) NO CHANGE IN CONSTRICTION TYPE

504.3 ALLOWABLE BUILDING HEIGHT IN FEET ABOVE GRADE PLANE
504.4 ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE [ ]

OCCUPANCY	MAX. ALLOW TYPE VB (NS) (WITHOUT AREA INCREASE)	EXISTING	PROPOSED
A-3	60' [1]	18' [1]	18' [1]
B	40' [1]	10' [1]	10' [1]

506.2 ALLOWABLE AREA DETERMINATION FOR TYPE VB NON-SPRINKLERED

OCCUPANCY	MAX. ALLOW TYPE VB (NS)	EXISTING	PROPOSED
A-3	6,000	1,363	1,363
B	9,000	3,853	3,853

508.4 SEPARATED OCCUPANCIES FOR TYPE VB NON-SPRINKLERED

BETWEEN A AND B - 2 HOURS

506.2 (TABLE) ALLOWABLE BUILDING AREA FOR TYPE VB NON-SPRINKLERED

In each story, the building area shall be such that the sum of the ratios of the actual building area of each separated occupancy divided by the allowable building area of each separated occupancy shall not exceed 1.

1,363 / 6,000 + 3,853 / 9,000 = 0.23 + 0.43 = 0.66 < 1
[RATIO OF A-3] [RATIO OF B] [COMBINED] is less than 1

TABLE 601 & 602 FIRE RESISTANCE RATING OF BUILDING ELEMENTS TYPE VB NON- SPRINKLERED

PRIMARY STRUCTURAL FRAME:	NO REQUIREMENT
BEARING WALLS - EXTERIOR:	NO REQUIREMENT
BEARING WALLS - INTERIOR:	NO REQUIREMENT
NONBEARING WALLS AND PARTITIONS - EXTERIOR:	NO REQUIREMENT
NONBEARING WALLS AND PARTITIONS - INTERIOR:	NO REQUIREMENT
FLOOR CONSTRUCTION AND ASSOCIATED SECONDARY MEMBERS:	NO REQUIREMENT
ROOF CONSTRUCTION AND ASSOCIATED SECONDARY MEMBERS:	NO REQUIREMENT
INTERIOR CORRIDOR WALLS 2022 CBC TABLE 1020.1	NO REQUIREMENT

REQUIRED PARKING TABULATION - REFER TO SHEET LANDSCAPE PLAN SHEET L401

EXITING ANALYSIS

ROOM #	NAME	AREA	OCCUPANCY	O.L.F.	OCCUPANT
100	STORAGE	153 SF	B	150	2
101	WOMEN	74 SF	B	150	1
102	MEN	73 SF	B	150	1
103	JAN. CLOSET	41 SF	B	150	1
104	MECH / ELEC. ROOM	234 SF	B	150	1
105	MUSIC ROOM	97 SF	B	150	1
106	ENTRY	603 SF	B	150	5
107	RECEPTION	126 SF	B	150	1
108	PANTRY	219 SF	B	150	2
110	CORRIDOR 'A'	945 SF	B	150	5
111	OFFICE	187 SF	B	150	2
112	WOMEN	92 SF	B	150	1
113	WOMEN	60 SF	B	150	1
114	MEN	66 SF	B	150	1
115	VESTIBULE	104 SF	B	150	1
118	MULTI-PURPOSE ROOM	694 SF	B**	15	47
120	COMMUNITY ROOM	1362 SF	A-3	7	195
122	SERVICE CORRIDOR	78 SF	B		
TOTAL OCCUPANT LOAD					270

EXITING CALCULATIONS BASED ON THE FOLLOWING TABLE
1. MAX. FLOOR AREA ALLOWANCE PER OCCUPANT (CBC TABLE 1004.5)
2. NUMBER OF EXITS REQUIRED (CBC TABLE 1006.2.1)

PLUMBING OCCUPANCY LOAD AND FIXTURE COUNTS BASED ON THE FOLLOWING TABLES:
1. LOS ANGELES CITY PLUMBING CODE 2023 (TABLE 4-1, OCCUPANT LOAD FACTOR)
2. LOS ANGELES CITY PLUMBING CODE 2023 (TABLE 422.1 MINIMUM PLUMBING FACILITIES)

NOTE:
1. GPI APPROVAL LETTER SEE L307

PROJECT DATA

APPLICABLE CODE

- 2023 CITY OF LOS ANGELES CODE AMENDMENTS ON THE 2022 CALIFORNIA BUILDING CODE (TITLE 24, PART 2, VOLUME 1 & 2), BASED ON 2018 INTERNATIONAL BUILDING CODE
- 2023 CITY OF LOS ANGELES GREEN BUILDING CODE AMENDMENTS ON THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CAL GREEN, TITLE 24, PART 11)
- 2023 CITY OF LOS ANGELES MECHANICAL CODE AMENDMENTS ON THE 2022 CALIFORNIA MECHANICAL CODE (TITLE 24, PART 4). BASED ON 2018 UNIFORM MECHANICAL CODE.
- 2023 CITY OF LOS ANGELES PLUMBING CODE AMENDMENTS ON THE 2022 CALIFORNIA PLUMBING CODE (TITLE 24, PART 5), BASED ON 2018 UNIFORM PLUMBING CODE.
- 2023 CITY OF LOS ANGELES ELECTRICAL CODE AMENDMENTS ON THE 2022 CALIFORNIA ELECTRICAL CODE (TITLE 24, PART 3), BASED ON 2017 NATIONAL ELECTRICAL CODE.

PROJECT DESCRIPTION

- RENOVATION OF EXISTING BUILDING (WITHIN THE SAME FOOTPRINT - NO ADDITION), OUTDOOR EXERCISE AREA & OUTDOOR PATIO
- BUILDING ENVELOPE (EXTERIOR) TO BE UPDATED WITH NEW BUILDING SYSTEMS TO MAKE IT MORE ENERGY- EFFICIENT AND COMFORTABLE FOR ITS USERS
- INTERIOR UPDATE - ADDITIONAL RESTROOMS, NEW FINISHES, AND REARRANGED TO MAXIMIZE FLEXIBLE ACTIVITY SPACE (WITHIN SAME FOOTPRINT. NO ADDITION TO EXISTING AREA)
- OUTDOOR SPACES WILL BE TRANSFORMED INTO USABLE PATIOS AND MULTI- FITNESS AREA

PROJECT ADDRESS

- 1820 NORTH LAS PALMAS AVENUE, LOS ANGELES, CA 90028

LEGAL DESCRIPTION

- TRACT: HOLLYWOOD OCEAN VIEW TRACT
- LOTS: FR10
- MAP REFERENCE: M B 1-62
- THOMAS BROTHERS GRID: PAGE 593 - GRID E4
- CASTRAL MAP SHEET: 150A185
- ASSESSORS PARCEL NUMBER (APN): 5547003900

PLANNING CODE ANALYSIS

- ZONE: OS-1XL
- COUNCIL DISTRICT CD13
- LOT SIZE: 49,863.6 (SF)
- EXISTING BUILDING: 6,128 (SF) (ZONING CODE FLOOR AREA SEC.03)

PROJECT SITE INFORMATION (FOR ZONING)

- LOT AREA (OVERALL) 49,863.6 SF USE OF BLDG. (OR PORTIONS OF)
- BUILDING (EXISTING) 6,128 SF NO CHANGE IN AREA & USE
- TRASH / RECYCLE ENCLOSURE (NEW) 173 SF STORAGE

TOTAL PROPOSED FLOOR AREA PER ZONING CODE 6,301 SF

PROPOSED FAR < ALLOWBALE FAR 0.13:1 FAR < 1.5:1 FAR LAMC 12.21.1.A.1

SEC. 12.03 OF ZONING CODE FLOOR AREA:
THAT AREA (in Square Fee) CONFINED WITHIN THE EXTERIOR WALLS OF A BUILDING, BUT NOT INCLUDING THE AREA OF THE FOLLOWING: EXTERIOR WALLS, STAIRWAYS, SHAFTS, ROOMS HOUSING BUILDING-OPERATING EQUIPMENT OR MACHINERY, PARKING AREAS WITH ASSOCIATED DRIVEWAYS AND RAMPS, SPACE FOR THE LANDING AND STORAGE OFHELICOPERS, AND BASEMENT STORAGE AREAS.

SEPARATE PERMIT / DEFERRED DESIGN SUBMITTAL

DEFERRED DESIGN SUBMITAL: THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR DETAILED DESIGN, ENGINEERING, INCLUDING CONNECTIONS BACK TO STRUCTURE, AND INSTALLATION. SUBMIT ALL ITEMS LISTED BELOW TO THE ARCHITECT OR ENGINEER OF RECORD FOR REVIEW AND APPROVAL AND BEFORE FORWARDING TO THE LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY (LADBS) WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY LADBS. SEE SPECS AND DRAWINGS FOR BASIS OF DESIGN.

SEPARATE PERMIT AS REQUIRED: GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS WITHIN THIRTY (30) CALENDAR DAY AFTER THE NOTICE TO PROCEED IS ISSUED.

FOR DEMOLITION: CONTRACTOR SHALL BE RESPONSIBLE FOR POSTING THIRTY (30) CALENDAR DAY PUBLIC NOTIFICATION BEFORE THE START OF ANY DEMOLITION.

1. DEMOLITION, (SEPARATE PERMIT)
2. FIRE ALARM SYSTEM, ((DEFERRED DESIGN)
3. ELECTRICAL, MECHANICAL (MECH UNIT), AND PLUMBING WORK, (SEPARATE PERMIT)
4. TRASH ENCLOSURE, (SEPARATE PERMIT)
5. GRADING WORK, (SEPARATE PERMIT)
6. STOREFRONT SYSTEMS (DEFERRED DESIGN)
7. ROOF PV SOLAR PANEL & MOUNTING SYSTEM & CONNECTION TO STRUCTURAL FRAMING (DEFERRED DESIGN).
8. MECHANICAL UNIT ROOFTOP CURB AND SUPPORT BEAM AND ATTACHMENT TO STRUCTURAL FRAMING, (DEFERRED DESIGN)
9. TRELLIS FRAMING AND ATTACHMENT TO STEEL STRUCTURE (DEFERRED DESIGN)
10. LIGHT POLES (DEFERRED DESIGN)
12. ADA RAMP RETAINING WALLS (SEPARATE PERMIT)

BUREAU OF ENGINEERING — OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: PROJECT DATA, EXITING CODE ANALYSIS DIAGRAM
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. G002
SHEET 02 OF SHEETS 115

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT — JENNY M LIM — LIC. NO. C36872 — REN. 08/31/2027 — STATE OF CALIFORNIA

ALFRED MATA, PE
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT
INTERIM CITY ENGINEER
DATE:

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/08/23
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REVISION DATES (DESIGN STAGE ONLY)

PLOTTED: 10/21/2025 2:53:11 PM

LA DBS DEPARTMENT OF BUILDING AND SAFETY

STORM WATER POLLUTION CONTROL
(2023 Los Angeles Green Building Code)

FORM GRN 1

Storm Water Pollution Control Requirements for Construction Activities
Minimum Water Quality Protection Requirements for All Construction Projects

The following notes shall be incorporated in the approved set of construction/grading plans and represents the minimum standards of good housekeeping which must be implemented on all construction projects.

Construction means constructing, clearing, grading or excavation that result in soil disturbance. Construction includes structure teardown (demolition). It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility; emergency construction activities required to immediately protect public health and safety; interior remodeling with no outside exposure of construction material or construction waste to storm water; mechanical permit work; or sign permit work. (Order No. 01-182, NPDES Permit No. CAS004001 – Part 5: Definitions)

1. Eroded sediments and pollutants shall be retained on site and shall not be transported from the site via sheet flow, swales, area drains, natural drainage or wind.
2. Stockpiles of earth and other construction-related materials shall be covered and/or protected from being transported from the site by wind or water.
3. Fuels, oils, solvents and other toxic materials must be stored in accordance with their listing and shall not contaminate the soil nor the surface waters. All approved toxic storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of properly and shall not be washed into the drainage system.
4. Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained on the project site.
5. Excess or waste concrete may not be washed into the public way or any drainage system. Provisions shall be made to retain concrete waste on-site until it can be appropriately disposed of or recycled.
6. Trash and construction –related solid wastes must be deposited into a covered receptacle to prevent contamination of storm water and dispersal by wind.
7. Sediments and other materials shall not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the street/public ways. Accidental depositions must be swept up immediately and may not be washed down by rain or by any other means.
8. Retention basins of sufficient size shall be provided to retain storm water runoff on-site and shall be properly located to collect all tributary site runoff.
9. Where retention of storm water runoff on-site is not feasible due to site constraints, runoff may be conveyed to the street and the storm drain system provided that an approved filtering system is installed and maintained on-site during the construction duration.

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

LA DBS DEPARTMENT OF BUILDING AND SAFETY

2023 Los Angeles Green Building Code

FORM GRN 10

MANDATORY REQUIREMENTS CHECKLIST
ADDITIONS AND ALTERATIONS TO NON-RESIDENTIAL BUILDINGS
(COMPLETE AND INCORPORATE THIS FORM INTO THE PLANS)

Permit # 23016 - 10000 - 17906 Date: 1/2/2024

ITEM #	CODE SECTION	REQUIREMENTS	REFERENCE SHEET (Sheet # or N/A)	COMMENTS (e.g. note #, detail # or reason for N/A)
		PLANNING AND DESIGN (Not a new building)		
1	5.106.1	Storm water drainage and retention during construction		FORM GRN 1
2	5.106.4.1.1	Short-term bicycle parking (≥ 10 vehicular parking spaces)	NA	No new parking added not a new building
3	5.106.4.1.2	Long-term bicycle parking (≥ 10 vehicular parking spaces)	NA	Not a new building
4	5.106.5.2	Designated parking (≥ 10 vehicular parking spaces)	NA	Not a new building
5	5.106.10	Grading and Paving	L 301/ L302	
6	5.106.13	Cool Roof (Additions ≥ 500 sq. ft. or ≥ 50%)	NA	No new additon
		ENERGY EFFICIENCY		
7	5.211.1	Solar ready (Additions ≥ 2,000 sq. ft.)	NA	No new additon
		WATER EFFICIENCY & CONSERVATION		
8	5.303.1.1	Additions in excess of 50,000 sq. ft.	NA	No new additon
9	5.303.1.2	Excess consumption	NA	
10	5.303.2	Water reduction	G003	FORM GRN 17
11	5.303.3	Water conserving plumbing fixtures and fittings	G003	FORM GRN 17
12	5.303.3.3	Showerheads	NA	
13	5.304.1	Outdoor water use in landscape areas	L701/ L702	MWELO Form-L702
14	5.304.3	Irrigation controller and sensor application	L601	Legend
15	5.304.4	Outdoor water use meters	L601	Legend
16	5.304.5	Exterior faucets	G004	GRN 18N #6
17	5.305.1	Graywater ready	G004	GRN 18N #8
18	5.305.2	Recycled water supply to fixtures	G004	GRN 18N #8
		MATERIAL CONSERVATION & RESOURCE EFFICIENCY		
19	5.407.1	Weather protection	G003	GRN 15 #7
20	5.407.2.1	Sprinklers	G003	GRN 15 #8
21	5.407.2.2.1	Nonabsorbent floor and wall finishes	A103	Note #133
22		Exterior door protection	A103	Note #127
23	5.407.2.2.2	Flashing	A503	SEE DETAILS
24	5.408.1	Construction waste reduction	G003	GRN 15 #12

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LA DBS DEPARTMENT OF BUILDING AND SAFETY

2023 Los Angeles Green Building Code

FORM GRN 10

ITEM #	CODE SECTION	REQUIREMENTS	REFERENCE SHEET (Sheet # or N/A)	COMMENTS (e.g. note #, detail # or reason for N/A)
25	5.408.2	Universal Waste	G004	UNIV. WASTE FACT SHEET
26	5.408.3	Excavated soil and land clearing debris	G003	GRN 15 #13
27	5.410.1	Recycling by occupants (additions that are > 30% of existing floor area)	NA	No new additon
28	5.410.4	Testing, adjusting and balancing	NA	No new additon
29	5.410.4.2	– Systems	NA	
30	5.410.4.3	– Procedures	NA	
31	5.410.4.4	– Reporting	G003	GRN 15 #14
32	5.410.4.5	– Operation and maintenance manual	G003	GRN 15 #15
33	5.410.4.5.1	– Inspections and reports	G003	GRN 15 #13
		ENVIRONMENTAL QUALITY		
34	5.503.1	Fireplace and Woodstoves	NA	NO FIREPLACE
35	5.504.1.3	Temporary ventilation	G003	GRN 15 #17
36	5.504.3	Covering of duct openings and protection of mechanical equipment during construction	G003	GRN 15 #18
37	5.504.4	Finish material pollutant control	G003	GRN 15 #19, 20
38	5.504.4.1	– Adhesives, sealants, and caulks		
39	5.504.4.3	– Paints and coatings		
40	5.504.4.3.1	– Aerosol paints and coatings		
41	5.504.4.3.2	– Verification	G003	GRN 15 #20
42	5.504.4.4	Carpet systems	G003	GRN 15 #21
43	5.504.4.4.1	Carpet cushion	G003	GRN 15 #22
44	5.504.4.5	Composite wood products	G003	GRN 15 #23, 24
45	5.504.4.6	Resilient flooring systems	G003	GRN 15 #25
46	5.504.5.3	Filters	G003	GRN 15 #26
47	5.504.7	Environmental tobacco smoke (ETS) control	G003	GRN 15 #27
48	5.505.1	Indoor moisture control	G003	GRN 15 #28
49	5.506.2	Carbon dioxide (CO_2) monitoring	G003	GRN 15 #29
50	5.507.4.1	Exterior noise transmission prescriptive method	G004	GREEN BUILDING NOTE
51		– Exterior noise transmission for roof	G004	GREEN BUILDING NOTE
52		– Exterior noise transmission for walls	G004	GREEN BUILDING NOTE
53		– Exterior noise transmission for windows	G004	GREEN BUILDING NOTE
54	5.507.4.2	Exterior noise transmission performance method	G004	GREEN BUILDING NOTE
55	5.507.4.3	Interior sound transmission	G004	GREEN BUILDING NOTE
56	5.508.1	Ozone depletion and greenhouse gas reductions	G003	GRN 15 #30
57	5.508.2	Supermarket refrigerant leak reduction	G003	GRN 15 #31

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LA DBS DEPARTMENT OF BUILDING AND SAFETY

VOC AND FORMALDEHYDE LIMITS
2023 Los Angeles Green Building Code
(Incorporate this form into the plans)

FORM GRN 11

2020 Los Angeles Green Building Code Tables 4.504.1, 4.504.2, 4.504.3, 4.504.5, 5.504.4.1, 5.504.4.2, 5.504.4.3, 5.504.4.5

VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS [2,3]
Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds

COATING CATEGORY [2,3]	CURRENT LIMIT
Flat coatings	50
Nonflat coatings	50
Nonflat-high gloss coatings	50
Specialty Coatings	
Aluminum roof coatings	100
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	100
Concrete curing compounds, Roadways & Bridges	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	50
Faux finishing coatings	
Clear Top Coat	100
Decorative Coatings	350
Glazes	350
Japan	350
Trowel Applied Coatings	50
Fire resistive coatings	150
Floor coatings	50
Form-release compounds	100
Graphic arts coatings (sign paints)	200
High temperature coatings	420
Industrial maintenance coatings	100
Low solids coatings[1]	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	150
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Roof coatings, aluminum	100
Rust preventative coatings	100
Shellacs	
Clear	730
Opaque	550
Specialty primers, sealers and undercoaters	100
Stains	100
Stains, Interior	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	100
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	100

[1] Grams of VOC per liter of coating, including water and including exempt compounds.
[2] The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
[3] Some values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 5, 2016. More information is available from the Air Resources Board.

FORMALDEHYDE LIMITS[1]
Maximum Formaldehyde Emissions in Parts per Million.

PRODUCT	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard[2]	0.13

[1] Values in this table are derived from those specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E 1333. For additional information, see *California Code of Regulations*, Title 17, Sections 93120 through 93120.12.
[2] Thin medium density fiberboard has a maximum thickness of $^5/_{16}$ inches (8 mm).

SEALANT VOC LIMIT
Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	CURRENT VOC LIMIT
Architectural	50
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420
SEALANT PRIMERS	
Architectural	
Nonporous	250
Porous	775
Modified bituminous 500	500
Marine deck	760
Other	750

Note: For additional information regarding methods to measure the VOC content specified in these tables, see South Coast Air Quality Management District Rule 1168.

ADHESIVE VOC LIMIT 1,2
Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesives not specifically listed	50
SPECIALTY APPLICATIONS	
PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	100
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140
Top and trim adhesive	250
SUBSTRATE SPECIFIC APPLICATIONS	
Metal to metal	30
Plastic foams	50
Porous material (except wood)	50
Wood	30
Fiberglass	80

[1] If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content shall be allowed.
[2] For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168, http://www.arb.ca.gov/DRDB/SC/CURHTML/R1168.PDF.

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LA DBS DEPARTMENT OF BUILDING AND SAFETY

2023 Los Angeles Green Building Code

FORM GRN 15

GREEN BUILDING CODE PLAN CHECK NOTES
NON-RESIDENTIAL BUILDINGS

1. State on plans that the outdoor lighting systems shall be designed and installed to comply with all of the following:
   a. The minimum requirements in California Energy Code for Lighting Zones 1-4
   b. Backlight, Uplight and Glare (BUG) ratings as defined in IESNA TM-15-11
   c. Allowable BUG ratings not exceeding those shown in on Table 5.106.8. (5.106.8)
2. Separate submeters shall be installed in any building or new space within a building that is projected to consume more than 1,000 gal/day. (5.303.1.2)
3. New plumbing fixtures and fittings shall not exceed the maximum allowable flow rate specified in Section 5.303.3. (5.303.3)
4. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 2.0 gallons per minute at 80psi, or the shower shall be designed to only allow one showerhead to be in operation at a time. (5.303.3.3)
5. For projects that include landscape work, the *Landscape Certification*, Form GRN 12, shall be completed prior to final inspection approval. (State Assembly Bill No. 1881)
6. Installed automatic irrigation system controllers are weather- or soil-based controllers. (WMELO, § 492.7)
7. Weather-resistant exterior wall and foundation envelope shall be detailed in conformance with Los Angeles Building Code Section 1403.2 and California Energy Code Section 150. (5.407.1)
8. Automatic landscape irrigators shall be installed such that it doesn't spray on the structure. (5.407.2.1)
9. New exterior entries and openings subject to foot traffic shall be protected against water intrusion using features such as overhangs, awnings and/or recesses for a combined depth over the entry of at least 4 feet. (5.407.2.2.1)
10. Nonabsorbent interior floor and wall finishes shall be used within at least two feet around and perpendicular to new exterior entries and/or opening subject to foot traffic. (5.407.2.2.1)
11. Exterior entries shall have flashing integrated with the drainage plane. (5.407.2.2.2)
12. Only a City of Los Angeles certified hauler will be used for hauling of construction waste. (5.408.1)
13. 100% of excavated soil and vegetation resulting from land clearing shall be reused or recycled. (5.408.3)
14. A final report for the testing and adjusting of all new systems shall be completed and provided to the field inspector prior to final approval. This report shall be signed by the individual responsible for performing these services. (5.410.4.4)
15. For all new equipment, an *Operation & Systems Manual* shall be provided to the owner and the field inspector at the time of final inspection. (5.410.4.5)
16. All new gas fireplaces must be direct-vent, sealed combustion type. Wood burning fireplaces are prohibited per AQMD Rule 445. (5.503.1, AQMD Rule 445)
17. If the new HVAC system is used during construction, use return air filters with a MERV of 8. Replace all filters immediately prior to occupancy. (5.504.1.3)
18. All new ducts and other new related air distribution components openings shall be covered with tape, plastic, or sheet metal until the final startup of the heating, cooling and ventilating equipment. (5.504.3)
19. Architectural paints and coatings, adhesives, caulks and sealants shall comply with the Volatile Organic Compound (VOC) limits listed in Tables 5.504.4.1-5.504.4.3. (5.504.4.1- 5.504.4.3)
20. The *VOC Content Verification Checklist*, Form GRN 2, shall be completed and verified prior to final inspection approval. The manufacturer's specifications showing VOC content for all applicable products shall be readily available at the job site and be provided to the field inspector for verification. (5.504.4.3.2)
21. All new carpet installed in the building interior meets the testing and product requirements of one of the following:
    a. Carpet and Rug Institute's Green Label Plus Program
    b. California Department of Public Health's Specification 01350
    c. NSF/ANSI 140 at the Gold level
    d. Scientific Certifications Systems Indoor Advantage™ Gold (5.504.4.4)
22. All new carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute Green Label program. (5.504.4.4.1)
23. New hardwood plywood, particle board, and medium density fiberboard composite wood products used in the interior or exterior of the building shall meet the formaldehyde limits. (5.504.4.5, 10.504.4.5)
24. The *Formaldehyde Emissions Verification Checklist*, Form GRN 3, shall be completed prior to final inspection approval. The manufacturer's specifications showing formaldehyde content for all applicable wood products shall be readily available at the job site and be provided to the field inspector for verification. (5.504.4.5)
25. 80% of the total area receiving new resilient flooring shall comply with one or more of the following:
    a. VOC emission limits defined in the CHPS High Performance Products Database
    b. Certified under UL GREENGUARD Gold
    c. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program
    d. Meet the California Department of Public Health's Specification 01350 (5.504.4.6)
26. Mechanically ventilated buildings shall have air filter with a Minimum Efficiency Reporting Value (MERV) of 13 or higher. Filters shall be installed prior to occupancy and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual. (5.504.5.3)
27. Designated outdoor smoking area shall be at least 25 feet from an outdoor air intake or operable windows. (5.504.7)
28. Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2 Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 (5.505.1)
29. Buildings that use Demand Control Ventilation shall have CO_2 sensors and ventilation controls installed in accordance with the requirements of the current edition of the California Energy Code, CCR, Title 24, Part 6, Section 121(c). (5.506.2)
30. The HVAC, refrigeration, and fire suppression equipment shall not contain CFC or Halons. (5.508.1.)
31. Retail food stores of 8,000 sq. ft. or more of conditioned area that have a commercial refrigeration system with a global warming potential (GWP) of 150 or greater shall have leak reduction measures in accordance with LAGBC Section 5.508.2. Separate mechanical plan check is required. (5.508.2)

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

LA DBS DEPARTMENT OF BUILDING AND SAFETY

PLUMBING FIXTURE FLOW RATES
Non-Residential Occupancies
2023 Los Angeles Green Building Code
(Incorporate this form into the plans)

FORM GRN 17

SECTION 5.303.2
WATER REDUCTION FIXTURE FLOW RATES

FIXTURE TYPE	MAXIMUM ALLOWABLE FLOW RATE
Showerheads	1.8 gpm @ 80 psi
Lavatory faucets, residential	1.2 gpm @ 60 psi[1,3]
Lavatory Faucets, nonresidential	0.4 gpm @ 60 psi[1,3]
Kitchen faucets	1.5 gpm @ 60 psi[2,4,5]
Wash fountains	1.8 gpm for every 20 in. of rim space @60 psi
Metering faucets	0.2 gallons/cycle
Metering faucets for wash fountains	0.2 gpm for every 20 in. of rim space @ 60 psi
Gravity tank type water closets	1.28 gallons/flush[6]
Flushometer tank water closets	1.28 gallons/flush[6]
Flushometer valve water closets	1.28 gallons/flush[6]
Urinals	0.125 gallons/flush
Clothes Washers	ENERGY-STAR certified
Dishwashers	ENERGY-STAR certified

[1] Lavatory faucets shall not have a flow rate less than 0.8 gpm at 20 psi.
[2] Kitchen faucets may temporarily increase flow above the maximum rate, but not above 2.2gpm @ 60psi and must default to a maximum flow rate of 1.8 gpm @ 60psi.
[3] Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.
[4] Kitchen faucets with a maximum 1.8 gpm flow rate may be installed in buildings that have water closets with a maximum flush rate of 1.06 gallons/flush installed throughout
[5] This requirement does not apply to faucets in commercial kitchens.
[6] Includes single and dual flush water closets with an effective flush of 1.28 gallons or less.
Single Flush Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is the average flush volume when tested in accordance with ASME A112.19.233.2.
Dual Flush Toilets - The effective flush volume shall not exceed 1.28 gallons (4.8 liters). The effective flush volume is defined as the composite, average flush volume of two reduced flushes and one full flush. Flush volumes will be tested in accordance with ASME A112.19.2 and ASME A112.19.14.

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BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT ★ CALIFORNIA ★ JENNY M LIM ★ STATE OF CALIFORNIA
LIC. NO. C36872
REN. 08/31/2027

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE	INTERIM CITY ENGINEER
	DATE:
ARCHITECTURAL DIVISION	
ARCHITECT:	JENNY M LIM
DESIGNED BY:	TROY YOUNGE
DRAWN BY:	NAM KIM
CHECKED BY:	CELSO DEL POSO
APPROVED BY:	STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: GREEN BUILDING CODES AND FORMS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. G003
SHEET 03 OF SHEETS 115

PLOTTED: 10/21/2025 2:53:13 PM

REVISION DATES (DESIGN STAGE ONLY)

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/08/23

FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/08/23
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Our mission is to provide the highest level of safety, and to protect public health and the environment from toxic harm.

Regulatory Standards for Universal Waste

The UWR has separate requirements for of each of the three types of regulated entities:

1. Universal waste handlers
2. Universal waste transporters
3. Destination Facilities

Universal Waste Handlers

A universal waste handler is a generator of universal waste or the owner or operator of a facility that receives universal waste from another universal waste handler, accumulates universal waste, and sends universal waste to another universal waste handler, a facility that accepts hazardous waste, or a foreign country.

A universal waste handler may be:

1. A person (e.g., a household or business) who generates universal waste but does not accept universal waste from others
2. A person who accepts and accumulates universal waste generated by others at his or her facility
3. A person who accepts universal waste generated by others and conducts certain treatment and recycling activities allowed by the universal waste handler regulations

Management Requirements for Universal Waste Handlers (Cal. Code Regs, tit. 22, sections 66273.30-66273.39; additional requirements for handlers who conduct authorized treatment, Cal. Code Regs, tit. 22, sections 66273.70-.77)

- Do not dispose of universal waste or treat universal waste except as provided for in the regulations
- Notify DTSC and/or obtain an EPA identification number
- Use proper containment—non-leaking, compatible containers
- Segregate universal waste in distinct areas
- Determine if materials generated when handling/recycling are hazardous wastes
- Comply with applicable requirements for hazardous waste
- If applicable, comply with zoning requirements when storing universal wastes
- Have spill kits readily available to deal with accidental spills (mercury-containing devices)
- Use proper labeling and markings
- Accumulate universal waste no longer than one year

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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Fact Sheet, January 2010

Universal Waste Fact Sheet

California's Universal Waste Rule allows individuals and businesses to transport, handle and recycle certain common hazardous wastes, termed universal wastes, in a manner that differs from the requirements for most hazardous wastes. The more relaxed requirements for managing universal wastes were adopted to ensure that they are managed safely and are not disposed of in the trash.

What are Universal Wastes?

Universal wastes are hazardous wastes that are widely produced by households and many different types of businesses. Universal wastes include televisions, computers and other electronic devices as well as batteries, fluorescent lamps, mercury thermostats, and other mercury containing equipment, among others.

The hazardous waste regulations (Cal. Code Regs, tit. 22, div. 4.5, ch. 11 section 66261.9) identify seven categories of hazardous wastes that can be managed as universal wastes. Any unwanted item that falls within one of these waste streams can be handled, transported and recycled following the simple requirements set forth in the universal waste regulations (UWR) (Cal. Code Regs, tit. 22, div. 4.5, ch. 23)

Universal wastes are:

1. Electronic devices: Includes any electronic device that is a hazardous waste (with or without a Cathode Ray Tube (CRT)), including televisions, computer monitors, cell phones, VCRs, computer CPUs and portable DVD players.
2. Batteries: Most household-type batteries, including rechargeable nickel-cadmium batteries, silver button batteries, mercury batteries, alkaline batteries and other batteries that exhibit a characteristic of a hazardous waste
3. Electric lamps: Fluorescent tubes and bulbs, high intensity discharge lamps, sodium vapor lamps and electric lamps that contain added mercury, as well as any other lamp that exhibits a characteristic of a hazardous waste. (e.g., lead).
4. Mercury-containing equipment: Thermostats, mercury switches, mercury thermometers, pressure or vacuum gauges, dilators and weighted tubing, mercury rubber flooring, mercury gas flow regulators, dental amalgams, counterweights, dampers and mercury added novelties such as jewelry, ornaments and footwear.
5. CRTs: The glass picture tubes removed from devices such as televisions and computer monitors.
6. CRT glass: A cathode ray tube that has been accidently broken or processed for recycling.
7. Non-empty aerosol cans

Universal Wastes may not be disposed of in the trash!

STATE OF CALIFORNIA

CITY LA DBS DEPARTMENT OF BUILDING AND SAFETY

2023 Los Angeles Green Building Code

FORM GRN 18N

WATER CONSERVATION ORDINANCE NOTES
NON-RESIDENTIAL BUILDINGS

1. For new buildings or additions exceeding 50,000 ft², install a separate water meter or sub-meter for the following areas:
   A. For each individual leased, rented, or other tenant space within the building projected to consume more than 100 gpd (380 L/day).
   B. Where potable water is used for industrial/process uses, for water supplied to the following subsystems:
      a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s).
      b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s).
      c. Steam and hot-water boilers with energy input more than 500,000 Btu/h (147 kW).
   C. For each building that uses more than 100 gpd on a parcel containing multiple buildings. (5.303.1.1)
2. Provide a 20% reduction in the overall potable water use for each building. The reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the Los Angeles Plumbing Code. New projects having a water supply of 2"or less and additions and alterations projects may use the prescriptive method outlined in this section. (5.303.2)
3. A water budget for landscape irrigation use that conforms to the California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO) is required for new landscape areas of 500 sqft or more. The following methods to reduce potable water use in landscape areas include, but are not limited to, use of captured rainwater, recycled water, graywater, or water treated for irrigation purposes and conveyed by a water district or public entity. (5.304.1, 5.304.2)
4. New buildings on a site with 1,000 square feet or more of cumulative landscape area shall have separate meters or submeters for outdoor water use. (5.304.4)
5. Additions and alterations on a site with 1,000 square feet of cumulative landscape area which require water service upgrade shall have separate meters or submeters for outdoor water use. (5.304.4)
6. Locks shall be installed on all publicly accessible exterior faucets and hose bibs. (5.304.5)
7. Except as provided in this section, for sites with over 500 square feet of landscape area, alternate waste piping shall be installed to permit discharge from the clothes washer, bathtub, showers, and bathroom/restrooms wash basins to be used for a future graywater irrigation system (5.305.1)
8. Except as provided in this section, where City-recycled water is available within 200 feet of the property line, water closets, urinals, floor drains, and process cooling and heating in the building shall be supplied from recycled water and shall be installed in accordance with the Los Angeles Plumbing Code. (5.305.2)
9. Cooling towers shall comply with one of the following:
   A. Shall have a minimum of 6 cycles of concentration (blowdown)
   B. A minimum of 50% of the makeup water supply to the cooling towers shall come from non-potable water sources, including treated backwash. (5.305.3)
10. Develop and construct a system for onsite reuse of the groundwater where groundwater is being extracted and discharged. Alternatively, the groundwater may be discharged to the sewer. (5.305.4)
11. Provide a hot water system complying with one of the following:
    A. The hot water system shall not allow more than 0.6 gallons of water to be delivered to any fixture before hot water arrives.
    B. Where a hot water recirculation or electric resistance heat trace wire system is installed, the branch from the recirculating loop or electric resistance heat trace wire to the fixture shall contain a maximum of 0.6 gallons. (Los Angeles Plumbing Code Section 610.4.1)

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

(Rev. 01/01/23) Page **1** of **1** www.ladbs.org

1. THIS BUILDING IS NOT EXPOSED TO A NOISE LEVELOF 65 DB LEQ - 1 HOUR DURING ANY HOUR OF OPERATION
2. FOR SITES WITH OVER 500 SQUARE FEET OF LANDSCAPE AREA, WASTE PIPE SHALL BE ARRANGED TO PERMIT DISCHARGE FROM THE CLOTHES WASHER, BATHTUB, SHOWEWRS, AND BATHROOM/RESTROOM WASH BASIN TO BE USED FOR A FUTURE GRAYWATER IRRIGATION SYSTEM (5.305.2)
3. AIR FILTERS WITH A MINIMUM EFFICIENCY REPORTING VALUE OF MERV 13 OR HIGHER SHALL BE INSTALLED IN MECHANICAL SYSTEM FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY.
4. CONSTRUCTION WASTE SHALL BE BE REDUCED IN ACCORDANCE WITH LAMC Section66.32 *et seq.* TO BE HANDLED BY CITY OF LOS ANGELES CERTIFIED HAULER.

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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1. Another handler (typically a business that specializes in collecting, storing, accumulating and shipping universal wastes). Examples:
   - A household hazardous waste facility
   - A "Take-it-Back Partner" such as a retailer or manufacturer
   - A collection event
2. A universal waste transporter. Examples:
   - A curbside HHW collection program
   - A package service (e.g., postal service, UPS)
   - A destination facility that offers a pick-up service
3. A universal waste destination facility (generally, a facility with a permit to treat, store, or dispose of hazardous waste).

Search engines available to find locations accepting universal waste in your area: E-Recycle.org; Earth911.org; CalRecycle database; DTSC map; HHW list;

For more information, see DTSC's Universal Waste Web page at:
http://www.dtsc.ca.gov/HazardousWaste/UniversalWaste/index.cfm

Contact your DTSC regulatory assistance officer at: (800) 728-6942

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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Households and Conditionally Exempt Small Quantity Universal Waste Generators (CESQUWG)

Two categories of universal waste handlers—households and CESQUWGs—are exempt from most of the requirements of the universal waste regulations provided they comply with certain conditions. Handlers who qualify for these exemptions are not required:

- To obtain an EPA ID number or otherwise notify DTSC;
- To keep records of shipments or provide annual reports to DTSC; or
- To label their universal waste.

A household is defined to include a single detached residence (e.g., a house) or a single unit of a multiple residence unit (e.g., an apartment or condominium). Households that generate hazardous wastes other than universal wastes (e.g., paints and motor oil) can visit DTSC's household hazardous waste Web page (http://www.dtsc.ca.gov/HazardousWaste/UniversalWaste/HHW.cfm) for information on how to properly dispose of them.

A Conditionally Exempt Small Quantity Universal Waste Generator (CESQUWG) is a universal waste generator who produces less than 100 kilograms (220 pounds) of RCRA hazardous waste, including universal waste that is RCRA universal waste and less than 1 kilogram of acutely hazardous waste in a calendar month. (RCRA hazardous waste is hazardous waste that is regulated under the hazardous waste regulations adopted by the U.S. Environmental Protections Agency.)

Pursuant to section 66273.8 of title 22 of the California Code of Regulations, a generator who meets the definition of a household or a CESQUWG is exempt from universal waste handler requirements provided he or she:

1) Does not dispose of universal waste;
2) Relinquishes universal waste only to another universal waste handler, a universal waste transporter, a destination facility, or a curbside household hazardous waste collection program; and
3) Does not conduct treatment of universal waste, except for limited activities enumerated in the regulations (e.g., removing batteries, light bulbs, or mercury switches). This exemption applies only to universal waste generated by the household (e.g. light bulbs, computers, televisions, thermostats, cell phones, etc.), not to universal waste accepted from other people.

Where can I send universal wastes?

A handler may not send universal waste to a municipal solid waste (garbage) landfill or a non-hazardous waste recycling center. All handlers of universal waste must relinquish their universal waste to one of the following:

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL

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- Provide personnel training to personnel who manage universal waste, or who supervise personnel who manage universal waste and keep training records
- Respond to releases of universal waste or its contents; determine if spill residuals are hazardous waste
- Track shipments by keeping records of what was received and shipped (name, address, quantities) for three years

Universal Waste Transporters

A universal waste transporter is a person engaged in the offsite transportation of universal waste by air, rail, highway or water. A universal waste transporter may be:

1. Universal waste handler carrying universal waste in his or her own vehicle
2. A package shipping service (e.g., US Postal Service; FedEx, UPS)
3. A commercial carrier (e.g., a trucking company, a hauler specializing in universal waste, or the operator of a destination facility that offers a universal waste pick-up service)
   - If you do not own or operate a facility that accepts, generates, accumulates, or stores universal waste, but you pick up and transport universal waste (e.g., electronic devices from office complexes) to a recycling or collection facility, you are a universal waste transporter. Universal waste transporters do not need to notify DTSC or submit annual reports for their transportation activities.
   - Universal waste transporters may store universal waste at a transfer facility for up to 10 days (depending on local zoning). A universal waste transporter who exceeds this limit is considered a universal waste handler and is subject to the handler requirements summarized above.

Destination Facilities

A destination facility is a fully-regulated hazardous waste facility that treats, disposes of, or recycles a specific type of universal waste. Examples of destination facilities are hazardous waste recycling facilities and hazardous waste landfills. A destination facility shall manage the universal waste in accordance with the requirements and conditions in its hazardous waste facility permit, unless authorized by section 66273.60 of title 22 of the California Code of Regulations to manage it pursuant to the reduced requirements applicable to universal waste handlers. A destination facility is required to follow certain rules for shipping universal wastes off-site and for rejecting shipments that contain universal waste and is required to keep records of all shipments received for three years. A facility that only accepts and accumulates universal waste is not a destination facility. Such a facility is regulated as a universal waste handler.

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BUREAU OF ENGINEERING
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BUREAU OF ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES

ALFRED MATA, PE — INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT
DATE:

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: GREEN BUILDING CODES AND FORMS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. G004
SHEET 04 OF SHEETS 115

PLOTTED: 10/21/2025 2:53:14 PM

REVISION DATES (DESIGN STAGE ONLY)

Purpose: The Los Angeles Department of Building and Safety is providing this typical Disabled Access Standard Details & Notes for Commercial Buildings ("Standard Details & Notes") as a supplement to construction drawings in order to assist the public, architect and/or engineer in preparing their construction documents for the building permit process. It covers general requirements and does not define which accessibility features are required. The approved set of plans will identify which accessibility features are required to be constructed and complied with the disabled access requirements. The use of this Standard Details & Notes does not waive the requirements of providing disabled access plans and details that are specific to the job. It is the responsibility of the owner, architect and/or engineer to show compliance to the current Los Angeles Building Code requirements. Any modification to the Standard Details & Notes shall be only done by the Department. If there are any discrepancy or conflict in the Standard Details & Notes with the current Los Angeles Building Code, the current Los Angeles Building Code shall prevail.

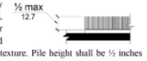
EXISTING BUILDINGS AND FACILITIES

For projects where the adjusted construction cost of alterations, structural repairs, or additions to the existing buildings or facilities within three years of the original alteration does not exceed a valuation threshold of $161,298.00, the cost of compliance with Section 11B-202.4 (Path of Travel Requirements) of the 2017 LABC shall be limited to 20% of the adjusted construction cost of alterations, structural repairs or additions. Refer to Information Bulletin P/BC 2017-076 for more details.

DIVISION 3 – BUILDING BLOCKS

A. [11B-302] FLOOR OR GROUND SURFACES

1. Floor and ground surfaces shall be stable, firm, and slip resistant. [11B-302.1]
2. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be ½ inches maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge. [11B-302.2]
3. Openings in floor or ground surfaces shall not allow passage of a sphere more than ½ inch diameter. Elongated openings shall be placed so that the long dimensions perpendicular to the dominant direction of travel. [11B-302.3]

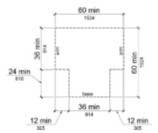


B. [11B-303] CHANGES IN LEVEL

1. Vertical changes in level of ½ inch high maximum shall be permitted without edge treatment. Beveled changed in level between ¼ inch high (minimum) to ½ inch high (maximum) with a slope not steeper than 1:2. [11B-303.2 and 11B-303.3]

C. [11B-304] TURNING SPACE

1. Floor or ground surfaces of a turning space shall be level with slopes not steeper than 1:48. [11B-304.2]
2. Circular turning space shall be a space of 60 inches diameter minimum with knee and toe clearance complying with Section 11B-306. [11B-304.3.1]
3. T-Shaped turning space shall be a space within 60 inch square minimum with arms and base 36 inches wide minimum. Each arm of the T shall be clear of obstructions 12 inches minimum in each direction and the base shall be clear of obstructions 24 inches minimum. [11B-304.3.2]



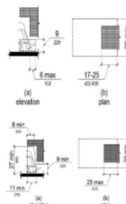


D. [11B-305] CLEAR FLOOR AND GROUND SPACE

1. Floor or ground surfaces of a clear floor or ground space shall be level with slopes not steeper than 1:48. [11B-305.2]
2. The clear floor or ground space shall be 30 inches minimum by 48 inches minimum, with the knee and toe

E. [11B-306] KNEE AND TOE CLEARANCE

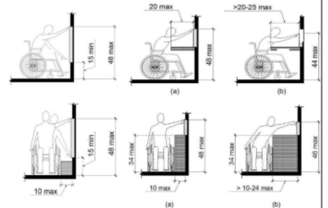
1. Toe clearance, the space under an element between the finish floor or ground and 9 inches above the finish floor or ground, shall extend 17 inches minimum deep and 25 inches maximum deep under an element and shall be 30 inches wide minimum. [11B-306.2]
2. Knee clearance, the space under an element between 9 inches and 27 inches above the finish floor or ground, shall extend 25 inches maximum in depth, and shall be 11 inches deep minimum at 9inches above the finish floor or ground and 8 inches deep minimum at 27 inches above the finish floor or ground; and shall be 30 inches wide minimum. [11B-306.3]



3. The knee clearance at lavatories shall be 27 inches high minimum above the finish floor or ground at a depth of 8 inches minimum increasing to 29 inches high minimum above the finish floor or ground at the front edge of a counter with a built-in lavatory or at the front edge of a wall-mounted lavatory fixture. [11B-306.3.3]
4. Knee space at dining and work surfaces shall extend 19 inches deep minimum at 27 inches above the finish floor or ground. [11B-306.3.3]

F. [11B-308] REACH RANGES

1. Where forward reach is unobstructed, the high forward reach shall be 48 inches maximum and the low forward reach shall be 15 inches minimum above the finish floor or ground. [11B-308.2.1]
2. Where forward reach is obstructed, the high forward reach shall be 48 inches maximum where the reach depth is 20 inches maximum; the high forward reach shall be 44 inches maximum where the reach depth exceeds 20 inches and 25 inches maximum. [11B-308.2.2]
3. Where side reach is unobstructed, the high side reach shall be 48 inches maximum and the low side reach shall be 15 inches minimum above the finish floor or ground. [11B-308.3.1



4. Where side reach is obstructed, the height of the obstruction shall be 34 inches maximum and the depth of the obstruction shall be 24 inches maximum. The high side reach shall be 48 inches maximum for a reach depth of 10 inches maximum. Where the reach depth exceeds 10 inches, the high side reach shall be 46 inches maximum for a reach depth of 24 inches maximum. [11B-308.3.2]

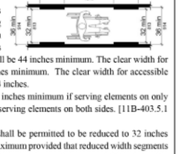
G. [11B-309] OPERABLE PARTS

1. Operable parts shall be placed within one or more of the reach ranges and the clear floor or ground space 30 inches by 48 inches minimum. [11B-309.2 and 11B-309.3]
2. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds maximum, except gas pump nozzles. [11B-309.4]

DIVISION 4 – ACCESSIBLE ROUTES

A. [11B-403] WALKING SURFACE

1. The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of walking surfaces shall not be steeper than 1:48. [11B-403.3]
2. Walking surfaces shall be 36 inches minimum clear width. Walking surfaces in corridors serving an occupant load of 10 or more, or routes to accessible toilet compartments shall be 44 inches minimum. The clear width for sidewalks and walks shall be 48 inches minimum. The clear width for accessible routes to accessible toilets shall be 44 inches.
3. The clear width for aisles shall be 36 inches minimum if serving elements on only one side, and 44 inches minimum if serving elements on both sides. [11B-403.5.1 Exception 4]
4. The clear width of walking surface shall be permitted to be reduced to 32 inches minimum for a length of 24 inches maximum provided that reduced width segments are separated by segments that are 48 inches long minimum and 36 inches wide minimum.



5. Where the accessible route makes a 180 degree turn around an element which is less than 48 inches wide, clear width shall be 42 inches minimum approaching the turn, 48 inches minimum at the turn and 42 inches minimum leaving the turn. [11B-403.5.2]

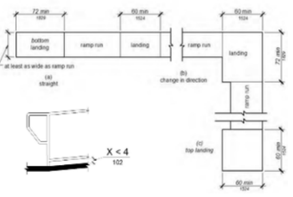
B. [11B-404] DOORS, DOORWAYS, AND GATES

1. Door openings shall provide a clear width of 32 inches minimum. Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees. [11B-404.2.3]
2. Changes in level of the doorway are not permitted. Changes in level at thresholds shall be ½ inches high maximum. [11B-404.2.4.4 and 11B-404.2.5]
3. Handles, pulls, latches, locks, and other operable parts on doors and gates shall be 34 inches minimum and 44 inches maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides. [11B-404.2.7]
4. Interior hinged door and gates and sliding or folding doors shall have maximum of 5 pounds for pushing or pulling force. Fire door and exterior door shall have maximum of 15 pounds for pushing or pulling force. [11B-404.2.9]
5. Swinging door and gate surfaces within 10 inches of the finish floor or ground, measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16 inch of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped.

Maneuvering Clearances at manual swinging doors and gates (Table 11B-404.2.4.1)			
Type of use		**Minimum maneuvering clearance**	
Approach Direction	Door/gate side	Perpendicular to doorway	Parallel to doorway
From front	Pull	60 inches	18 inches (+ 6 inches at exterior side of exterior doors)
From front	Push	48 inches	0 inches (+ 12 inches with closer and latch)
From hinge side	Pull	60 inches	36 inches
From hinge side	Push	44 inches (+ 4 inches with closer and latch)	22 inches (beyond hinge side)
From latch side	Pull	60 inches	24 inches
From latch side	Push	44 inches (+ 4 inches w/ closer)	24 inches

C. [11B-405] RAMPS

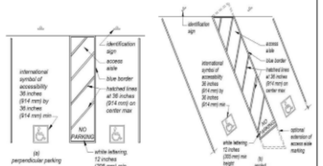
1. Ramp runs shall have a running slope not steeper than 1:12. Cross slope of ramp runs shall not be steeper than 1:48. [11B-405.1 and 11B-405.2]
2. Changes in level other than the running slope and cross slope are not permitted on ramp runs. [11B-405.4]
3. The clear width of a ramp run shall be 48 inches minimum, except employee work areas shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed. [11B-405.5]
4. Handrails may project into the required clear width of the ramp at each side 3½ inches maximum at the handrail height. [11B-405.5 Exception 2]
5. The rise for any ramp run shall be 30 inches maximum. [11B-405.6]
6. Ramps shall have landings at the top and bottom of each ramp run. Changes in level at landing are not permitted. [11B-405.7 and 11B-405.7.1]
7. The landing clear width shall be at least as wide as the widest ramp run leading to the landing. Top landings shall be 60 inches wide minimum. [11B-405.7.2]
8. The landing clear length shall be 60 inches long minimum. Bottom landings shall extend 72 inches minimum in the direction of ramp run. [11B-405.7.3]
9. Ramps that change direction between runs at landings shall have a clear landing 60 inches minimum by 72 inches minimum in the direction of downward travel from the upper ramp run. [11B-405.7.4]
10. Ramp runs shall have handrails complying with Section 11B-505.



DIVISION 5 – GENERAL SITE AND BUILDING ELEMENTS

A. [11B-502] PARKING SPACES

1. Car and van parking spaces shall be 216 inches long minimum. Car parking spaces shall be 108 inches wide minimum and van parking spaces shall be 144 inches wide minimum, shall be marked to define the width, and shall have an adjacent access aisle complying with Section 11B-502.3 [11B-502.2] Van parking spaces shall be permitted to be 108 inches wide minimum where the access aisle is 96 inches wide minimum. [11B-502.2 Exception]
2. Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common access aisle. [11B-502.3]
3. Access aisles serving car and van parking spaces shall be 60 inches wide minimum. [11B-502.3.1]
4. Access aisle shall extend the full required length of the parking spaces they serve. [11B-502.3.2]
5. Access aisles shall not overlap the vehicular way. Access aisles shall be permitted to be placed on either side of the parking space except for van parking spaces which shall have access aisles located on the passenger side of the parking spaces. [11B-502.3.4]
6. Parking spaces and access aisles serving them shall comply with Section 11B-302. Access aisles shall be at the same level as the parking spaces they serve. Changes in level are not permitted, except for slope not steeper than 1:48 shall be permitted. [11B-502.4]
7. Parking spaces, access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches minimum. [11B-502.5]
8. Parking space identification signs shall include the International Symbol of Accessibility complying with Section 11B-703.7.2.1. Signs identifying van parking spaces shall comply with 11B-502.6.
9. A parking space identification sign shall be visible from each parking space.
10. The parking space shall be marked with an International Symbol of Accessibility complying with Section 11B-703.7.2.1
11. The parking space shall be outlined or painted blue and shall be marked with an International Symbol of Accessibility complying with Section 11B-703.7.2.1.
12. Parking spaces and access aisles shall be designed so that cars and vans, when parked, cannot obstruct the required clear width of adjacent accessible routes. [11B-502.7]
13. Parking space and access aisles shall be designed so that persons using them are not required to travel behind parking spaces other than to pass behind the parking space in which they parked. [11B-502.7.1]
14. A curb or wheel stop shall be provided if required to prevent encroachment of vehicles over the required clear width of adjacent accessible routes. [11B-502.7.2]



B. [11B-504] STAIRWAYS

1. Open risers are not permitted. [11B-504.2 and 11B-504.3]
2. Changes in level of stair treads are not permitted, except slope is not steeper than 1:48. [11B-504.4]
3. Interior stairs shall have the upper approach and lower tread marked by a stripe providing clear visual contrast. Exterior stairs shall have the upper approach and all treads marked by a stripe providing clear visual contrast. The strip shall be a minimum of 2 inches wide to a maximum of 4 inches wide placed parallel to, and not more than 1 inch from, the nose of the step or upper approach. The strip shall extend the full width of the step or upper approach and shall be of material that at least as slip resistant as the other tread of the stair. [11B-504.4.1]
4. Stairs handrails shall comply with Section 11B-505. [11B-504.6]

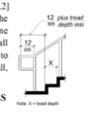
C. [11B-505] HANDRAILS

1. Handrails shall be provided on both sides of stairs and ramps. [11B-505.2]
2. Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights or runs.
3. Top of gripping surfaces of handrails shall be 34 inches minimum and 38 inches maximum vertically above walking surfaces, stair noising, and ramp surfaces. Handrails shall be at a consistent height above walking surfaces, stair noising, and ramp surfaces. [11B-505.4]



4. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1½ inches minimum. Handrails may be located in a recess if the recess is 3 inches maximum deep and 18 inches minimum clear above the top of the handrail. [11B-505.5]
5. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges. [11B-505-8]
6. Ramp handrails shall extend horizontally above the landing for 12 inches minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent ramp run. [11B-505.10.1]
7. At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches minimum beginning directly above the first riser nosing. Extensions shall return to a wall, guard, or the landing surface. [11B-505.10.2]
8. At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance equal to one tread depth beyond the last riser nosing. Such extension shall continue with a horizontal extension or shall be continuous to the handrail of an adjacent stair flight or shall return to a wall, guard, or the walking surface. [11B-505.10.3]

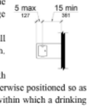




DIVISION 6 – PLUMBING ELEMENTS AND FACILITIES

A. [11B-602] DRINKING FOUNTAINS

1. When required, no fewer than two drinking fountains shall be provided. One shall have spout outlet at 36 inches maximum above the finished floor, and the other shall have spout outlet for standing persons at 38 inches minimum to 43 inches maximum above the floor. [11B-211.2, 11B-602.4, 11B-602.7
2. Units of the drinking fountains shall have a clear floor or found space positioned for a forward approach and centered on the unit. Knee and toe clearance complying with Section 11B-306 shall be provided. [11B-602.2]
3. The spout shall be located 15 inches minimum from the vertical support and 5 inches maximum from the front edge of the unit, including bumpers. [11B-602.5]
4. Wall- and post-mounted cantilevered drinking fountains shall be 18 inches minimum and 19 inches maximum in depth. [11B-602.8]
5. All drinking fountains shall either be located completely with alcoves, positioned completely between wing walls, or otherwise positioned so as not to encroach into pedestrian ways. The protected area within which a drinking fountain is located shall be 32 inches wide minimum and 18 inches deep minimum, and shall comply with Section 11B-305.7. [11B-602.9]

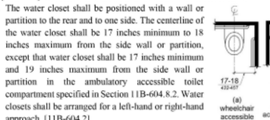


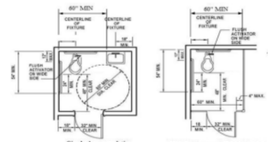
B. [11B-603] TOILET AND BATHING ROOMS

1. Turning space shall be provided with the room and shall comply with Section 11B-304. [11B-603.2.1]
2. Required clear floor spaces, clearance at fixtures, and turning space shall be permitted to overlap. [11B-603.2.2]
3. Doors shall not swing into the clear floor space or clearance required for any fixture. Other than the door to the accessible water closet compartment, a door in any position may encroach into the turning space by 12 inches maximum. [11B-603.2.3]
4. Where the toilet room or bathing room is for individual use and a clear floor space complying with Section 11B-305.3 is provided within the room beyond the arc of the door swing, doors shall be permitted to swing into the clear floor space or clearance required for any fixture. [11B-603.2.3]
5. Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches maximum above the finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches maximum above the finish floor or ground. [11B-603.3]
6. Coat hooks shall be located within one of the reach ranges specified in Section 11B-308. Shelves shall be located 40 inches minimum and 48 inches maximum above the finish floor. Medicine cabinets shall be located with a usable shelf no higher than 44 inches maximum above the finish floor. [11B-603.4]

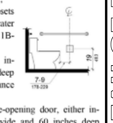
C. [11B-604] WATER CLOSETS AND TOILET COMPARTMENTS

1. The water closet shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 17 inches minimum to 18 inches maximum from the side wall or partition, except that water closet shall be 17 inches minimum and 19 inches maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in Section 11B-604.8.2. Water closets shall be arranged for a left-hand or right-hand approach. [11B-604.2]
2. Clearance around a water closet shall be 60 inches minimum measured perpendicular from the side wall and 56 inches minimum measured perpendicular from be rear wall. A minimum 60 inches wide and 48 inches deep maneuvering space shall be provided in front of the water closet. [11B-604.3.1]

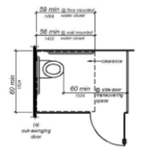




3. The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures, and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance. [11B-604.3.2]
4. The seat height of a water closet above the finish floor shall be 17 inches minimum and 19 inches maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position. Seats shall be 2 inches high maximum. [11B-604.4]
5. Grab bars shall be provided on the side wall closet to the water closet and on the rear wall. [11B-604.5]
6. The side wall grab bar shall be 42 inches long minimum, located 12 inches maximum from the rear wall and extending 54 inches minimum from the rear wall with the front end positioned 24 inches minimum in front of the water closet. [11B-604.5.1]
7. The rear wall grab bar shall be 36 inches long minimum and extend from the centerline of the water closet 112 inches minimum on one side and 24 inches minimum on the other side. [11B-604.5.2]
8. Toilet paper dispenser shall comply with Section 11B-309.4 and shall be 7 inches minimum and 9 inches maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be below the grab bar, 19 inches minimum above the finish floor and shall not be located behind grab bars.

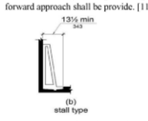


9. Wheelchair accessible compartments shall be 60 inches wide minimum measured perpendicular to the side wall, and 56 inches deep minimum for wall hung water closets and 59 inches deep minimum for floor mounted water closets measured perpendicular to the rear wall. [11B-604.8.1.1]
10. In a wheelchair accessible compartment with an in-swinging door, a minimum 60 inches wide by 36 inches deep maneuvering space shall be provided in front of the clearance required in Section 11B-604.8.1.1.
11. In a wheelchair accessible compartment with a side-opening door, either in-swinging or out-swinging, a minimum 60 inches wide and 60 inches deep maneuvering space shall be provided in front of the water closet. [11B-604.8.1.1.2]
12. In a wheelchair accessible compartment with an end-opening door, either in-swinging or out-swinging, a minimum 60 inches wide and 48 inches deep maneuvering space shall be provided in front of the water closet. [11B-604.8.1.1.3]
13. Doors shall be located in the front partition or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches maximum from the side wall or partition farthest from the water closet. Where located in the side wall or partition, the door opening shall be 4 inches maximum from the front partition. The door shall be self-closing. Doors shall not swing into the clear floor space or clearance required for any fixture.
14. When located at the side of a toilet compartment, the toilet compartment door opening shall provide a clear width of 34 inches minimum. [11B-604.8.1.2 Exception]



D. [11B-605] URINALS

1. Urinals shall be the stall-type or the wall-hung type with the rim 17 inches maximum above the finish floor or ground. Urinals shall be 13½ inches deep minimum measured from the outer-face of the urinal rim to the back of the fixture. [11B-605.2]
2. A clear floor or ground space complying with Section 11B-305 positioned for forward approach shall be provide. [11B-605.3]



E. [11B-606] LAVATORIES AND SINKS

1. A clear floor space complying with Section 11B-305, positioned for a forward approach, and knee and toe clearance complying with Section 11B-306 shall be provided. [11B-606.2]
2. A parallel approach complying with Section 11B-305 shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided and to wet bars. [11B-606.2 Exception 1]
3. Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches maximum above the finish floor or ground. [11B-606.3]
4. Controls of faucets shall comply with Section 11B-309.
5. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. [11B-606.5]
6. Lavatories, when located adjacent to a side wall or partition, shall be a minimum of 18 inches to the centerline of the fixture. [11B-606.6]
7. Sinks shall be 6½ inches deep maximum. [11B-606.7]
8. Where the toilet room or bathing room is for individual use and a clear floor space complying with Section 11B-305.3 is provided within the room beyond the arc of the door swing, doors shall be permitted to swing into the clear floor space or clearance required for any fixture. [11B-603.2.3]
9. Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches maximum above the finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches maximum above the finish floor or ground. [11B-603.3]
10. Coat hooks shall be located within one of the reach ranges specified in Section 11B-308. Shelves shall be located 40 inches minimum and 48 inches maximum above the finish floor. Medicine cabinets shall be located with a usable shelf no higher than 44 inches maximum above the finish floor. [11B-603.4]

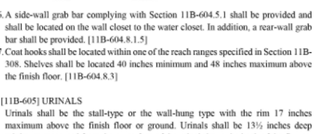
C. [11B-604] WATER CLOSETS AND TOILET COMPARTMENTS

1. The water closet shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 17 inches minimum to 18 inches maximum from the side wall or partition, except that water closet shall be 17 inches minimum and 19 inches maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in Section 11B-604.8.2. Water closets shall be arranged for a left-hand or right-hand approach. [11B-604.2]
2. Clearance around a water closet shall be 60 inches minimum measured perpendicular from the side wall and 56 inches minimum measured perpendicular from be rear wall. A minimum 60 inches wide and 48 inches deep maneuvering space shall be provided in front of the water closet. [11B-604.3.1]

3. The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures, and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance. [11B-604.3.2]
4. The seat height of a water closet above the finish floor shall be 17 inches minimum and 19 inches maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position. Seats shall be 2 inches high maximum. [11B-604.4]
5. Grab bars shall be provided on the side wall closet to the water closet and on the rear wall. [11B-604.5]
6. The side wall grab bar shall be 42 inches long minimum, located 12 inches maximum from the rear wall and extending 54 inches minimum from the rear wall with the front end positioned 24 inches minimum in front of the water closet. [11B-604.5.1]
7. The rear wall grab bar shall be 36 inches long minimum and extend from the centerline of the water closet 112 inches minimum on one side and 24 inches minimum on the other side. [11B-604.5.2]
8. Toilet paper dispenser shall comply with Section 11B-309.4 and shall be 7 inches minimum and 9 inches maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be below the grab bar, 19 inches minimum above the finish floor and shall not be located behind grab bars.

9. Wheelchair accessible compartments shall be 60 inches wide minimum measured perpendicular to the side wall, and 56 inches deep minimum for wall hung water closets and 59 inches deep minimum for floor mounted water closets measured perpendicular to the rear wall. [11B-604.8.1.1]
10. In a wheelchair accessible compartment with an in-swinging door, a minimum 60 inches wide by 36 inches deep maneuvering space shall be provided in front of the clearance required in Section 11B-604.8.1.1.
11. In a wheelchair accessible compartment with a side-opening door, either in-swinging or out-swinging, a minimum 60 inches wide and 60 inches deep maneuvering space shall be provided in front of the water closet. [11B-604.8.1.1.2]
12. In a wheelchair accessible compartment with an end-opening door, either in-swinging or out-swinging, a minimum 60 inches wide and 48 inches deep maneuvering space shall be provided in front of the water closet. [11B-604.8.1.1.3]
13. Doors shall be located in the front partition or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches maximum from the side wall or partition farthest from the water closet. Where located in the side wall or partition, the door opening shall be 4 inches maximum from the front partition. The door shall be self-closing. Doors shall not swing into the clear floor space or clearance required for any fixture.
14. When located at the side of a toilet compartment, the toilet compartment door opening shall provide a clear width of 34 inches minimum. [11B-604.8.1.2 Exception]

15. At least one side partition shall provide a toe clearance of 9 inches minimum above the finish floor and 6 inches deep minimum beyond the compartment-side face of the partition, exclusive of partition support members. Partition components at toe clearances shall be smooth without sharp edges or abrasive surfaces. [11B-604.8.1.4]



16. A side-wall grab bar complying with Section 11B-604.5.1 shall be provided and shall be located on the wall closet to the water closet. In addition, a rear-wall grab bar shall be provided. [11B-604.8.1.5]
17. Coat hooks shall be located within one of the reach ranges specified in Section 11B-308. Shelves shall be located 40 inches minimum and 48 inches maximum above the finish floor. [11B-604.8.3]

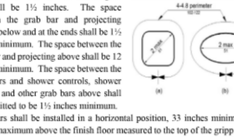
D. [11B-605] URINALS

1. Urinals shall be the stall-type or the wall-hung type with the rim 17 inches maximum above the finish floor or ground. Urinals shall be 13½ inches deep minimum measured from the outer-face of the urinal rim to the back of the fixture. [11B-605.2]
2. A clear floor or ground space complying with Section 11B-305 positioned for forward approach shall be provide. [11B-605.3]

E. [11B-606] LAVATORIES AND SINKS

1. A clear floor space complying with Section 11B-305, positioned for a forward approach, and knee and toe clearance complying with Section 11B-306 shall be provided. [11B-606.2]
2. A parallel approach complying with Section 11B-305 shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided and to wet bars. [11B-606.2 Exception 1]
3. Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches maximum above the finish floor or ground. [11B-606.3]
4. Controls of faucets shall comply with Section 11B-309.
5. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks. [11B-606.5]
6. Lavatories, when located adjacent to a side wall or partition, shall be a minimum of 18 inches to the centerline of the fixture. [11B-606.6]
7. Sinks shall be 6½ inches deep maximum. [11B-606.7]

Knee clearance at lavatories shall comply with 11B-306.3.



F. [11B-609] GRAB BARS

1. Grab bars with circular section shall have an outside diameter of 1¼ inches minimum and 2 inches maximum. Grab bars with non-circular cross section shall have a cross-section dimension of 2 inches maximum and a perimeter dimension of 4 inches minimum and 4.8 inches maximum. [11B-609.2]
2. The space between the wall and the grab bar shall be 1½ inches. The space between the grab bar and projecting objects below and at the ends shall be 1½ inches minimum. The space between the grab bar and projecting above shall be 12 inches minimum. The space between the grab bars and shower controls, shower fittings, and other grab bars above shall be permitted to be 1½ inches minimum.

3. Grab bars shall be installed in a horizontal position, 33 inches minimum and 36 inches maximum above the finish floor measured to the top of the gripping surface.
4. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges. [11B-609.5]
5. Grab bars shall not rotate within their fittings. [11B-609.6]
6. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds is applied at any point on the grab, fastener, mounting device, or supporting structure. [11B-609.8]

DIVISION 8 – SPECIAL ROOMS, SPACES, AND ELEMENTS

A. [11B-803] DRESSING, FITTING, AND LOCKER ROOMS

1. Turning space within a dressing, fitting and locker rooms shall be provided in accordance to 11B-304.
2. Doors shall not swing into the room unless a turning space complying with 11B-304.3 is provided beyond the arc of the door.
3. Benches shall be provided in accordance to section 11B-903.
4. Coat hooks provided within the room shall be located within one of the reach ranges specified in section 308 and coat hooks shall not be located above the bench or other seating in the room. Shelves shall be 40 inches minimum and 48 inches maximum above the finish floor or ground. [11B-803.5]
5. Mirrors shall be installed with the bottom edge of the reflecting surface 20 inches maximum above the finish floor or ground. Mirrors shall be full length with a reflective surface at 18 inches wide minimum by 54 inches high minimum and shall be mounted in a position affording a view to a person on the bench as well as the to a person in a standing position. [11B-803.6]

DIVISION 9 – BUILT- IN ELEMENTS

A. [11B-902] DINING SURFACES AND WORK SURFACES

1. All dining and work surface shall comply with this division.[11B-902]
2. All dining and work surface shall be provided with a clear floor space complying with section 11B305 positioned for a forward approach and a knee and toe clearance complying with section 11B-306 shall be provided. [11B-902.2]
3. The tops of dining and work surfaces shall be 28 inches minimum and 34 inches maximum above the finish floor or ground. [11B-902.3]

B. [11B-903] BENCHES

1. A clear floor or ground space shall be provided in accordance to section 11B-305.
2. Benches shall have seats that are 48 inches long and 20 inches deep minimum and 24 inches deep maximum. [11B-903.3]
3. The bench shall be provided with a back support or shall be

Further, any Department of Recreation and Parks project, including facilities leased to, or operated and/or managed by private operators and any accessory use or building, shall not be subject to any Department of City Planning entitlements for development, including but not limited to the following:

A. Project Permit Compliance
B. Zone Change (Changes to zones will continue to be reflected during the community plan update process.)
C. Conditional Use Permit (The sale of alcoholic beverages for on or off-site consumption requires approval by the RAP Board. Department of Recreation and Parks will be responsible for coordinating directly with the California Department of Alcoholic Beverage Control regarding license authorizations.)
D. Variance
E. Adjustment
F. Site Plan Review
G. Previously approved entitlements having a Sunset Clause

All other City regulations for development projects, not administered or regulated by Chapter I of the Los Angeles Municipal Code, shall continue to be enforced by each respective City department, unless otherwise stated by said department. All Department of Recreation and Parks projects that require building permits for construction, including tenant improvements, shall be subject to all current building code regulations as enforced by the Department of Building and Safety.

In addition, this memorandum does not supersede any State of California or Federal regulations, including but not limited to, the California Coastal Act (California Government Code Sections 30000-30900), the Subdivision Map Act (California Government Code Sections 66410-66499.58), or the Americans With Disabilities Act.

Finally, the Department of City Planning and the Department of Recreation and Parks will jointly write a Memorandum of Understanding for the purpose of maintaining communication regarding all proposed park projects. Department of Recreation and Parks staff has agreed to convene with Department of City Planning staff on a quarterly basis, as needed, to solicit urban design feedback for all proposed park projects to ensure consistency with applicable design guidelines and adopted plans.

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: July 7, 2025

TO: Department of Building and Safety

FROM: Darryl Ford, Superintendent
Planning, Maintenance and Construction Branch
Department of Recreation and Parks

SUBJECT: **LAS PALMAS SENIOR CENTER RENOVATION & DECARBONIZATION**

Pursuant to the letter, dated December 6, 2018, issued by Department of City Planning, it is agreed that the City of Los Angeles Charter exempts the Department of Recreation and Parks (RAP) projects from the regulations of Chapter 1 of the Los Angeles Municipal Code (CH 1 LAMC). City of Los Angeles, Department of Recreation and Parks manages the development of the following proposed project for RAP's property, with the support of its pre-qualified contractors.

Project name: Las Palmas Senior Center Renovation & Decarbonization

Project address: 1820 N Las Palmas Ave. Los Angeles, CA 90028

Scope of work: The project's scope includes the renovation of the existing Las Palmas Senior center within the existing building footprint. Work includes upgrading the building envelope, and mechanical & electrical systems. Exterior work includes renovation of exterior patios, and shuffleboard area into photovoltaic shaded exercise area. Work at the existing parking lot includes, (2) new EV chargers, restriping of parking spaces, and a new enclosed trash enclosure.

Since the proposed project is within RAP's property. It is exempt from the regulations of CH 1 LAMC. Please contact my staff, Jasmine Cheng, at (213) 202-2653 or jasmine.cheng@lacity.org, if you have any questions.

DF/JC:ar

Attachment: Dept of RAP Authority under City Charter

cc: Gary Lam, RAP
Jose Diaz, RAP
Jasmine Cheng, RAP

EPARTMENT OF
TY PLANNING
ANNING COMMISSION
MANTHIA MILLMAN
PRESIDENT
AHED KHORSAND
VICE-PRESIDENT
AVID H. J. AMBROZ
CAROLINE CHOE
NEE DAKE WILSON
KAREN MACK
MARC MITCHELL
ICA PACILLA CAMPOS
ANA M. PERLMAN
ROCKY WILES
ISSION OFFICE MANAGER
(213) 978-1300

CITY OF LOS ANGELES
CALIFORNIA

ERIC GARCETTI
MAYOR

EXECUTIVE OFFICES
200 N. SPRING STREET, ROOM 525
LOS ANGELES, CA 90012-4801
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EXECUTIVE OFFICER
(213) 978-1272
LISA M. WEBBER, AICP
DEPUTY DIRECTOR
(213) 978-1274
http://planning.lacity.org

Date: December 6, 2018

To: Michael Shull, General Manager, Department of Recreation and Parks
Frank M. Bush, General Manager, Department of Building and Safety
Ralph M. Terrazas, Fire Chief, Fire Department
Gary Lee Moore, City Engineer, Department of Public Works, Bureau of Engineering

From: Vincent P. Bertoni, AICP, Director of Planning

Subject: Department of Recreation and Parks Authority under City Charter

In response to recent discussions involving management and staff from Department of Recreation and Parks, Department of City Planning and the City Attorney's Office, all parties concur that the City of Los Angeles Charter establishes broad authorization for the Department of Recreation and Parks to pursue parks and recreational facilities located on property owned or controlled by the City for public recreation, including facilities leased to, or operated and/or managed by private operators and any accessory use or building, within the City of Los Angeles. This memorandum does not apply to privately owned and operated park projects. The following Charter Sections (only applicable language listed) provide the aforementioned authority:

Section 590. Powers and Duties of the Department.

The Department of Recreation and Parks shall have the power and duty:
(a) to establish, construct, maintain, operate and control, wherever located:
(1) all parks of the City of Los Angeles;
(2) all recreational facilities, museums, observatories, municipal auditoriums, sports centers and all lands, waters, facilities or equipment set aside or dedicated for recreational purposes and public enjoyment; and
(3) all property acquired by it or assigned to its jurisdiction for public recreation.
(b) to design, construct and operate, lease, rent or sell concessions or privileges to be exercised for the benefit, education, amusement, convenience or enjoyment of the public, in connection with any function, site or facility under the jurisdiction of the department;
(c) to establish schedules of charges for special services;
(d) to promote public recreation and cooperate with other public agencies and organizations for that purpose; and

(e) to establish, maintain and operate playgrounds or other recreational facilities upon portions of public streets, under terms and conditions provided by ordinance.

Section 591. Board of Recreation and Parks Commissioners.

The Board of Recreation and Park Commissioners shall have the power:
(a) to control all recreation and park sites;
(b) to control, appropriate and expend all money in the Recreation and Parks Fund and authorize the City Treasurer to invest any surplus funds under its control in accordance with Section 303(b); and
(c) to organize the work of the department into divisions and to appoint an administrative officer for each division or for any group of divisions.

Section 594. Control and Management of Recreation and Park Lands.

(a) Management and Control. The Department of Recreation and Parks shall operate, manage and control all property now or hereafter owned or controlled by the City for public recreation, including parks, and shall have power in the name of the City to acquire and take by purchase, lease, condemnation, gift, in trust or otherwise, any and all property necessary or convenient for recreation, including park purposes.
(b) Acquisition of Property. No real property shall be acquired by the City for recreation sites, including parks, unless first approved by the Board of Recreation and Park Commissioners.
(c) Restrictions on Transfer of Dedicated Parks. All lands heretofore or hereafter set apart or dedicated as a public park shall forever remain for the use of the public inviolate; but the board may authorize use of the lands for any park purpose, and for…….
(d) Transfer to Purposes other than Recreation and Park Purposes. No sites under the management and control of the department shall be devoted or transferred to any other purpose in whole or in part, except in compliance with……

As stated in Section 591 of the Los Angeles Charter, the Board of Recreation and Park Commissioners (Board) has the power to control all City-owned and operated parks and recreational facilities. In addition, all proposed park projects require approval by the Board, thus ensuring consistency with adopted City plans. The Board shall have the authority to determine appropriate locations for park projects, uses associated with park projects, accessory structures and buildings, and any off-street parking to satisfy park project needs. This authorization exempts Department of Recreation and Parks projects, including facilities leased to, or operated and/or managed by private operators and any accessory use or building, from the regulations of Chapter I of the Los Angeles Municipal Code and any General Provisions and Zoning chapters that may be adopted subsequent to this memorandum, including but not limited to the following:

A. Use for each zone (Parks and recreational facilities shall be permitted in all zones.)
B. Restriction for each zone (Parks and recreational facilities, including any accessory use or building, shall be permitted in all zones.)
C. Area for each zone (The area of each structure and/or building shall not be restricted in all zones.)
D. Specific Plans
E. Districts, including Overlays
F. Off-street parking
G. Height
H. Signs

Address of Building 1822 N. Las Palmas

CITY OF LOS ANGELES
CERTIFICATE OF OCCUPANCY

NOTE: Any change of use or occupancy must be approved by the Department of Building and Safety.
This certifies that, so far as ascertained by or made known to the undersigned, the building at the above address complies with the applicable requirements of the Municipal Code, as follows: Ch 1; as to permitted uses, Ch. 5, Arts 1,3, 4, and 5; and with applicable requirements of State Housing Law—for following occupancies:

Issued 7-3-80 Permit No and Year LA 65622/78

1 story, type V, 42'x44', club room entrance enclosure making it an integral part of the 114'x120' existing Sr. Citizen building. 12 parking spaces required, 29 provided. G-1/B-2 occupancy

0 4 0 0 1 1 0 0 5 0 3

Owner LA Dept of Rec & Parks
200 N. Main St
Owner's Address Los Angeles, CA 90012
5000419200500000316

Form B-85b BY W. McCLIVE:gs

Address of Buildings 1822 Las Palmas Ave.

CITY OF LOS ANGELES
Certificate of Occupancy

NOTE: Any change of use or occupancy must be approved by the Department of Building and Safety. This certificates that, so far as ascertained by or made known to the undersigned, the building at the above address complies with the applicable requirements of the Municipal Code, as follows: Ch. 1, as to permitted use; Ch. 9, Arts. 1, 3, 4, and 5; and with applicable requirements of State Homeowning Act.—for following occupancies:

Issued 3-26-63 Permit No. and Year LA 84632 - 61

1 story, type V, 33' x 82'8" & 28'4" x 72'6" senior citizens center. B-2, G-1 occupancy.

Owner City of Los Angeles
Owner's Address Dept. of Recreation & Parks
200 N. Spring St.
Los Angeles, Calif.

Form B-95b—2M Sets—3-62 (C-10) J. C. MONNING, Superintendent of Building—By O. SIEGEL myb

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO. | REVISION DESCRIPTION | DATE | BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT ★ CALIFORNIA ★ STATE OF CALIF
JENNY M LIM
LIC. NO. C36872
REN. 08/31/2027

INTERIM CITY ENGINEER
DATE:

ALFRED MATA, PE
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: DEPT. OF RECREATION AND PARKS AUTHORITY & CERTIFICATE OF OCCUPANCY
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

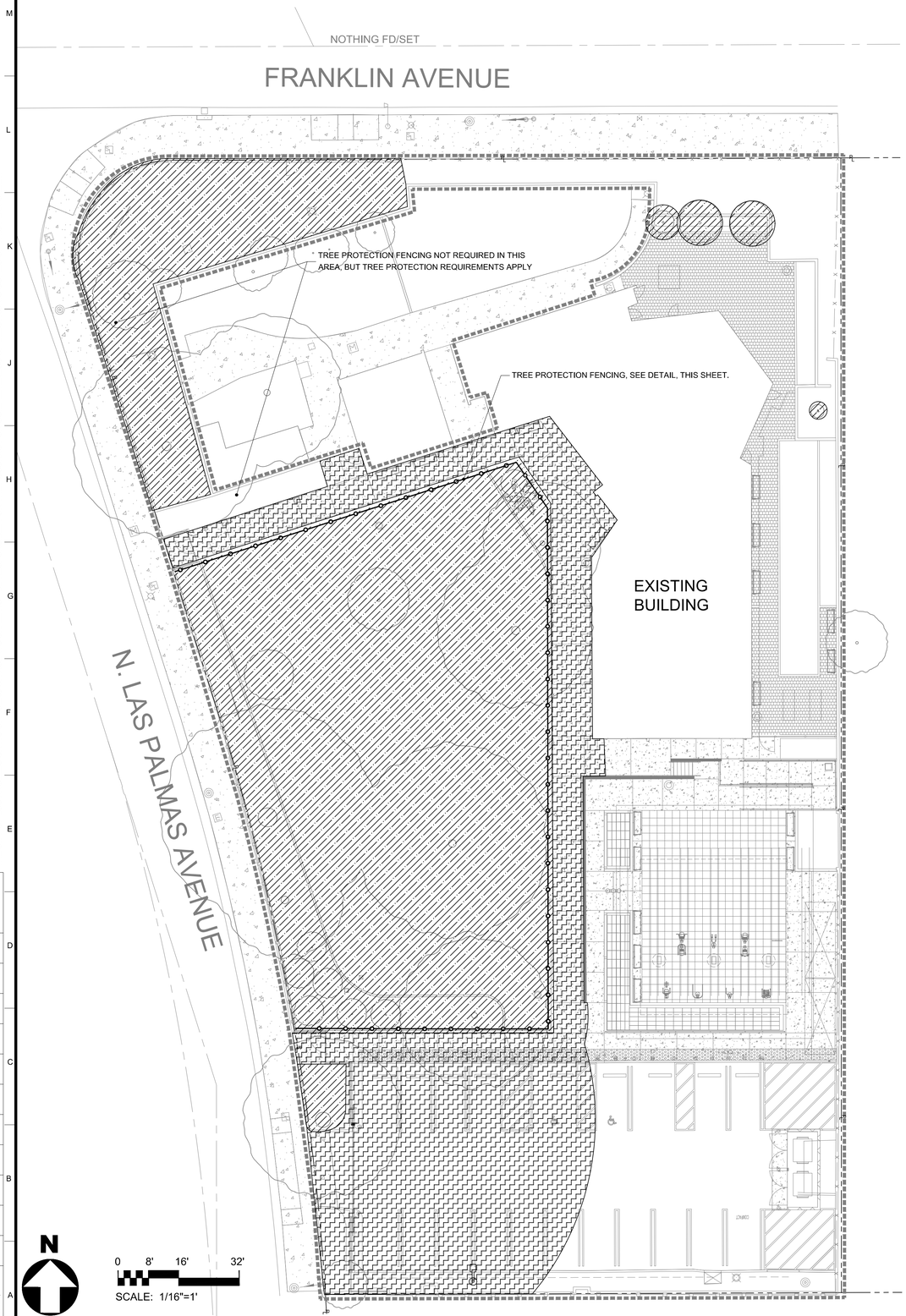
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. G102
SHEET 06 OF SHEETS 115

PLOTTED: 10/21/2025 2:53:28 PM

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REVISION DATES (DESIGN STAGE ONLY)

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 12/21/23
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt



TREE PROTECTION NOTES:

1.01 TREE PROTECTION

All trees that occur within the area of work (including dripline), as shown on the plans, and not specifically designated for removal, shall be protected by the following means:

A. Determining the Tree Protection Zone (TPZ) - The radius (not the diameter) of the TPZ, measured from the outside of the tree trunk, shall be calculated by Recreation and Parks (RAP) Forestry according to the following:

1. Single trunk trees - multiply the trunk diameter in inches, measured 4.5' above grade, by 1.5 feet.
2. Multi trunk trees - multiply the sum of the diameters of all trunks in inches, measured 4.5' above grade, by 1.5 feet.
3. Palm trees - 5' from the base of the trunk.

B. Once determined, the TPZ is to be clearly shown on all Construction plans, including concept plans submitted for project review purposes, including at the RAP Capital Improvements Meetings.

C. Beyond the TPZ, the contractor shall also be responsible for protecting all trees within the boundaries of the construction zone, including vehicular access areas leading to the construction zone, lay down areas, and any other areas impacted by construction activities. Any damage to trees in these areas shall also be subject to the same mitigations (as determined by RAP Forestry), monetary or replacement requirements specified in Section II below. Any necessary root cutting in this area must be confirmed in advance with either the RAP or other approved arborist. See also the General Conditions for any damage done by the contractor to landscaping or other park amenities that fall outside the boundaries of the construction zone.

D. Within the boundaries of the construction zone (including the TPZ), the contractor shall be responsible for mitigating construction-related dust accumulation on all trees by spraying the trunks, limbs, and foliage with water to a maximum height of 30 feet during the months of April through November, at monthly intervals.

E. Within the TPZ, the contractor shall adhere to the following requirements, including, but not limited to:

1. No stockpiling or storage of any material, debris, or soil.
2. No storage of any construction equipment.
3. No vehicular access or parking.
4. No cutting of roots.
5. No disturbance of soil or grade changes.
6. No objects of any kind to be attached to tree trunks.

F. The contractor shall install a 5' high temporary chain link fence with one pedestrian access gate along the boundary of the TPZ. See 5' HIGH TREE PROTECTION FENCE detail at the end of the document.

G. The contractor shall provide one sign per each 20 lineal ft. of fence bordering the TPZ indicating that fencing shall not be removed. See sign detail that is included as part of the temporary chain link detail.

H. No work is permitted within the TPZ without the approval of each of the following: 1) the project landscape architect, 2) the project manager, and 3) RAP Forestry staff. Any work authorized within the TPZ must be done in accordance with the recommendations of a RAP arborist and **under the supervision of a Monitoring Arborist**. A Monitoring Arborist must be: 1) an ISA Certified Arborist or a Registered Consulting Arborist, with verifiable experience in protecting trees during construction; 2) approved by RAP Forestry. The Monitoring Arborist shall be hired and paid by the contractor.

I. Irrigation to all trees not specifically designated for removal shall be kept in operation for the duration of the project. Contractor shall be responsible for hand watering all impacted trees if necessitated by temporary shutdowns to existing irrigation systems. Trees are to be irrigated deeply and infrequently so that soil moisture is detectable at a minimum depth of 18" using a soil probe.

J. Upon job completion, contractor shall remove all items installed to protect trees during the construction process.

K. Any of the following Southern California native tree species fall under Ordinance No. 177404 of the Los Angeles Municipal Code:

1. Oaks, including Valley Oak (*Quercus lobata*), Coast Live Oak (*Quercus agrifolia*), or any other tree of the oak genus indigenous to California but excluding Scrub Oak (*Quercus dumosa*);
2. Southern California Black Walnut (*Juglans californica var. californica*);
3. Western Sycamore (*Platanus racemosa*);
4. California Bay (*Umbellularia californica*).

Contractor shall comply with the requirements of the ordinance found at:
http://cityplanning.lacity.org/Code_Studies/Other/ProtectedTreeOrd.pdf.

1.02 CONSEQUENCES OF VIOLATING THE TREE PROTECTION SPECIFICATIONS:

A. ANY FAILURE BY THE CONTRACTOR TO ADHERE TO THE REQUIREMENTS SPECIFIED WITHIN THESE SPECIFICATIONS WILL RESULT IN THE SUSPENSION OF ALL CONSTRUCTION ACTIVITIES, TO BE DONE AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MITIGATION OF, PAYMENT FOR OR REPLACEMENT OF ANY TREES DAMAGED THROUGH NON-COMPLIANCE WITH THESE SPECIFICATIONS.

The choice of whether the damaged trees are replaced or paid for will be determined by RAP Forestry.

1. Monetary valuations for damaged trees will be determined by RAP Forestry.
2. How RAP determines the quantity, species, and location of replacement trees:
   a) Measuring the diameter of the tree(s) being replaced:
      1) For single trunk trees, the diameter (DBH) is measured 4.5' above the ground.
      2) For multi-trunk trees, the DBH of each of the multiple trunks is measured 4.5' above the ground, then all are summed to arrive at a single diameter value.
   b) The ratio of the sum of calipers (as defined by RAP Nursery Specifications) of new trees planted vs. the sum of the diameters of existing trees removed shall be at least 1:1. The specific number of replacement trees will be determined by RAP Forestry staff and the project landscape architect.
   c) If the replacement ratio cannot be achieved within the project boundaries, then one of the following shall apply:
      1) Deliver the trees to RAP Forestry.
      2) Deliver the trees to the nearest RAP service yard.
      3) Plant the trees beyond the project on an approved, area-wide basis.
   d) RAP Forestry staff and the project landscape architect shall determine the replacement tree species/planting location and shall also ensure the health/quality of the trees.

DIGALERT
Call Toll Free 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
Underground Service Alert of Southern California

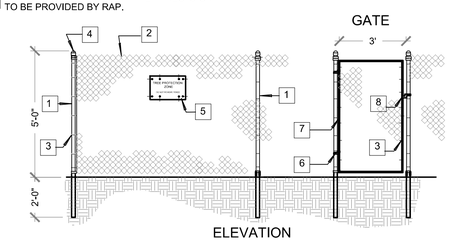
BUREAU OF ENGINEERING
OFFICIAL RECORD

CONSTRUCTION LEGEND:

- TREE PROTECTION ZONE (TPZ). SEE NOTES THIS SHEET.
- TREE PROTECTION ZONE (TPZ) @ EX. PAVED AREAS. CONSTRUCTION MACHINERY USE SHALL BE PERMITTED IN THIS AREA WHEN REQUIRED FOR DEMOLITION SHOWN ON L201 (OR ELSEWHERE ON THE PLANS). AFTER PAVING REMOVAL, ANY ADDITIONAL EXCAVATION/TRENCHING SHALL BE UNDER THE SUPERVISION OF THE MONITORING ARBORIST AND COMPLY WITH THE NOTES THIS SHEET.
- EX. TREE TO REMAIN. PROTECT IN PLACE.
- TREE PROTECTION FENCING. REFER TO DETAIL THIS SHEET.
- PROPERTY LINE

FENCING MATERIALS

1. POSTS: O.D., LINE POSTS 2-3/8 IN. O.D. POST SPACING TO BE 10'-0" MAX. POSTS TO BE DRIVEN 2' BELOW RELATIVE GRADE.
2. FABRIC: 9 GAUGE, 2 IN. MESH, KNUCKLE TOP AND BOTTOM, PLACE ON OUTER SIDE OF POST.
3. TIE WIRES: 11 GAUGE AT 12" O.C.
4. POST TOPS MALLEABLE IRON OR PRESSED STEEL.
5. 24"x18" SIGN. ATTACH WITH TIE WIRES. SIGN TO BE PROVIDED BY RAP.
6. HINGES: INDUSTRIAL BULLDOG HINGE (180 SWING) 2 HINGES PER GATE, ONE TOP AND ONE BOTTOM.
7. GATE FRAME: SIDES, 2-3/8" DIA
8. LOCKABLE CAST ALUMINUM FORK LATCH POST TOPS MALLEABLE IRON OR PRESSED STEEL.



NOTES:
1. THE BOTTOM OF THE FABRIC SHALL BE POSITIONED ONE INCH ABOVE FINISH GRADE.
2. PROVIDE FOR ONE 3' WIDE GATE PER ENCLOSURE.
3. ALL FENCING TO HAVE A STANDARD GALVANIZED FINISH.

A13 | 5' HIGH TREE PROTECTION FENCE
N.T.S. | RP DETAIL 500.1

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

ALFRED MATA, PE
ARCHITECTURAL DIVISION
INTERIM CITY ENGINEER

	DATE:
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT	9/22/25

LANDSCAPE ARCHITECT ★ ROBERT LASKER ★ STATE OF CALIFORNIA
LICENSED
No. 6280
Registered Landscape Architect
Robert Lasker
09-22-2025
Date

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: TREE PROTECTION PLAN/NOTES/DETAIL
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. G103
SHEET 07 OF SHEETS 115

PLOTTED: 9/22/2025

GENERAL NOTES

1. THESE DRAWINGS AND SPECIFICATIONS AND COPIES, OR ANY OTHER ACCESSORIES THEREOF, ARE LEGAL INSTRUMENTS OF SERVICE FOR USE BY THE CITY AND AUTHORIZED REPRESENTATIVES ON THE DESIGNATED PROPERTY ONLY.
2. ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE CURRENT EDITION OF CITY BUILDING CODE AND ALL OTHER GOVERNING AGENCIES' REQUIREMENT.
3. CONTRACTOR SHALL COMPLY WITH EH REGULATIONS OF THE OCCUPATION SAFETY AND HEALTH ACT.
4. ALL DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED ON THE JOB SITE BY EACH SUBCONTRACTOR BEFORE THAT SUBCONTRACTOR BEGINS WORK, ANY ERRORS, OMISSIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CITY ENGINEER AND GENERAL CONTRACTOR BEFORE CONSTRUCTION BEGINS.
5. ACCESSIBILITY AND USABILITY FOR THE PHYSICALLY HANDICAPPED SHALL CONFORM TO STATE OF CALIFORNIA HANDICAP ACCESS LAWS AS STIPULATED BY TITLE 24 AND SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT.
6. CONTRACTOR SHALL PROVIDE TEMPORARY TOILET WITH HAND WASHING AND OTHER TEMPORARY FACILITIES AS REQUIRED.
7. ANY DEVIATIONS FOR THE CONTRACT DOCUMENTS WHICH ARE NECESSITATED BY FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE CITY ENGINEER.
8. ALL DIMENSIONS TAKE PRECEDENCE OVER SCALE, NOTE THAT DIMENSIONS ARE TO FACE OF STUD, UNLESS OBVIOUSLY SHOWN OR MARKED CENTERLINE OF WALL OR COLUMN. CONTRACTOR SHALL NOT SCALE FROM THE DRAWINGS, DIMENSIONS TO EXISTING ITEMS ARE FOR REFERENCE ONLY, CONTRACTOR SHALL VERIFY IN FIELD.
9. TYPICAL DETAILS SHALL APPLY WHERE NO SPECIFIC DETAILS OR SECTIONS ARE PROVIDED.
10. PROVIDE PEDESTRIAN AND PROPERTY PROTECTION BARRICADES AND/OR CANOPIES AS REQUIRED BY THE LOCAL AUTHORITIES, OR AS NECESSARY FOR PEDESTRIAN SAFETY. A PERMIT IS REQUIRED FORM THE DEPARTMENT OF PUBLIC WORKS FOR A PROTECTION FENCE OR CANOPY ON OR OVER ANY STREET OF PUBLIC SPACE.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUS CLEANUP OF THE SITE AND OF ALL DEBRIS, WHETHER CREATED BY HIS WORK, OR BY THE FAILURE OF HIS SUBCONTRACTORS TO CLEAN UP AFTER THEIR WORK.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPERVISE ALL CUTTING AND PATCHING OF FINISHED WORK ALREADY INSTALLED, IF MADE NECESSARY BY ERRORS, CHANGES, OR OTHER REASONS, ALL REPLACEMENT WORK SHALL MATCH ORIGINAL SURFACES.
13. CONTRACTOR SHALL PROVIDE GALVANIC ISOLATION BETWEEN DISSIMILAR METALS.
14. ALL SURVEY DATA SHOWN ON DRAWINGS IS BASED ON A SURVEY MADE BY THE CITY OF LOS ANGELES, BUREAU OF ENGINEERING.
15. SOILS INVESTIGATION WAS PREFORMED BY GEOTECHNICAL ENGINEERING DIVISION, CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING, ATTACHMENT A.
16. THERE SHALL NOT BE EXPOSED PIPE, CONDUIT, DUCTS, VENTS, ETC. IN DESIGNATED FINISH SPACE OR AT BUILDING EXTERIOR, UNLESS NOTED AS EXPOSED CONSTRUCTION ON FINISH SCHEDULE OR SPECIFIED ON PLANS.
17. ALL ADDENDA, REQUESTS FOR INFORMATION, CHANGE ORDERS, BULLETINS, AND NOTICES, IF ANY ISSUED LATER SHALL BE CONSIDERED AS PART OF WORK.
18. IN THE EVENT THERE ARE FOUND DISCREPANCIES OR AMBIGUITIES IN OR OMISSIONS FROM THE DRAWINGS, OR SHOULD THERE BE DOUBT AS TO THEIR MEANING OR INTENT, THE CITY ENGINEER SHALL BE NOTIFIED, IN ORDER TO PROVIDE A WRITTEN CLARIFICATION.
19. WHERE FACTORY PRIMED ITEMS OCCUR, SUCH AS GRILLES, DIFFUSERS, METAL TRIM AND ACCESSORIES, ETC. PAINT TO MATCH THE ADJACENT SURFACE OF AS SPECIFIED AS DIRECTED BY THE CITY ENGINEER.
20. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN APPROVAL BY THE LOCAL BUILDING INSPECTOR FOR ALL CONCEALED WORK BEFORE CLOSING UP.
21. PROVIDE BACKING FOR ALL CABINETS OR WALL HUNG EQUIPMENT PER G5/S013, MANUFACTURERS SPECIFICATIONS OR AS DIRECTED BY THE CITY ENGINEER.
22. ALL LUMBER IN CONTACT WITH MASONRY OR CONCRETE, OR LESS THAN 6" ABOVE THE GROUND SHALL BE PRESSURE-TREATED WOOD.
23. ALL EXTERIOR OPENINGS EXPOSED TO THE WEATHER SHALL BE FLASHED IN SUCH A MANNER AS TO MAKE THEM WATERPROOF. ALL FLASHING, COUNTER FLASHING AND COPING WHEN OF METAL, SHALL MEET THE GAUGES SPECIFIED, BUT NO LESS THAN 24 GA. GALVANIZED.
24. GLASS IN HAZARDOUS LOCATIONS SHALL COMPLY WITH 2406.4. ALL GLASS TO BE TEMPERED.
25. NO TRENCHES OF EXCAVATIONS 5' OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND SHALL BE ALLOWED WITHOUT ENGINEERED SHORING PLANS, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PREPARE SUCH PLANS AND OBTAIN REQUIRED APPROVALS.
26. PROVIDE WATERPROOF MEMBRANE OVER ALL EXTERIOR BUILDING WALLS BELOW GRADE. CARRY WATERPROOF MEMBRANE 6" ABOVE FINISHED GRADE. INSTALL PROTECTION BOARD PRIOR TO BACKFILLING.
27. THE CONSTRUCTION OR DEMOLITION OF ANY BUILDING, STRUCTURE, SCAFFOLDING OR FALSEWORK MORE THAN THREE-STORIES OR 36 FEET IN HEIGHT, REQUIRES A PERMIT FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
28. CONTRACTOR IS RESPONSIBLE FOR PAYING AND ACQUIRING PERMITS FOR CONSTRUCTION SIGNS.
29. EXIT DOOR SHALL NOT BE LESS THAN 36" IN WIDTH AND NOT LESS THAN 6'-8" CLEAR IN HEIGHT. PROJECTIONS INCLUDING PANIC HARDWARE SHALL NOT REDUCE THE OPENING TO LESS THAN 32" IN WIDTH.
30. THE EXIT DOOR MUST OPEN OVER A LANDING NOT MORE THAN 1/2" BELOW THE THRESHOLD.
31. INTERIOR WALL AND CEILING FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH BUILDING CODE 803 AND TABLE 803.9. FIRE CODE SEC. 803. TABLE 803.3.
32. CURTAINS, DRAPES AND OTHER DECORATIVE MATERIALS SUSPENDED FROM THE WALLS OR CEILINGS SHALL MEET THE FLAME SPREAD PROPAGATION PERFORMANCE CRITERIA OF NFPA 701 IN ACCORDANCE WITH SECTION 806.2 OR BE NONCOMBUSTIBLE.. BUILDING CODE 806.1. FIRE CODE 807.
33. PROVIDE ILLUMINATED EXIT SIGNS AND DIRECTIONAL ILLUMINATED EXIT SIGNS WITH MINIMUM 6" HIGH X 3/4" STROKE BLOCK LETTERS IN CONTRASTING BACKGROUND LOCATIONS AS SHOWN ON PLANS AND AS REQUIRED BY FIRE DEPARTMENT INSPECTOR WHENEVER THE BUILDING IS OCCUPIED, EXIT SIGNS SHALL BE LIGHTED SO THEY ARE CLEARLY VISIBLE.

GENERAL NOTES - CONT.

35. EXIT PATH LIGHTING SHALL BE PROVIDED FOR HALLWAY, EXIT PASSAGE WAY AND EGRESS TO PUBLIC WAY ANYTIME THE BUILDING IS OCCUPIED.
36. PROVIDE ACCESS PANELS FOR MECHANICAL, ELECTRICAL, AND PLUMBING EQUIPMENT. REVIEW LOCATIONS WITH THE CITY ENGINEER PRIOR TO STARTING WORK. PANEL FINISHES SHALL BE SELECTED BY THE CITY ENGINEER FROM A STANDARD COLOR PALETTE U.N.O.
37. POST OCCUPANT LOAD SIGN IN GROUP A OCCUPANCY.
38. THE CONTRACTOR SHALL PAY FOR ALL SURCHARGES, CONNECTION FEES, METER FEES OR ANY MISCELLANEOUS FEES IMPOSED/REQUIRED BY UTILITY COMPANIES AS PART OF THEIR CONDITION OF SERVICES.
39. ALL EXPOSED EXTERIOR METAL FABRICATIONS, INCLUDING HARDWARE AND LOCKING MECHANISMS, SHALL BE SHOP HOT DIP GALVANIZED PER ASTM A153, AND A123 U.N.O. FOR REPAIR OF DAMAGED GALVANIZED SURFACES RESULTING FROM WELDING USE GALVALLOY METHOD IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
40. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE-FOOT CLEAR AND UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, FULL-BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC. OR TO THE LOCATION OF THE HOOK-UP. THE CONSTRUCTION SHALL NOT BE WITHIN TEN FEET OF ANY POWER LINES-WHETHER OR NOT THE LINES ARE LOCATED ON THE PROPERTY, FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS AND/OR ADDITIONAL EXPENSES.
41. AN APPROVED SEISMIC GAS SHUTOFF VALVE WILL BE INSTALLED ON THE FUEL GAS LINE ON THE DOWNSTREAM SIDE OF THE UTILITY METER AND BE RIGIDLY CONNECTED TO THE EXTERIOR OF THE BUILDING OR STURCTURE CONTAINING THE FUEL GAS PIPING. (INCLUDES COMMERCIAL ADDITIONS AND TI WORK OVER $10,000.) (SEPRATE PLUMBING PERMIT IS REQUIRED). LAMC 94.1217.0
42. PROVIDE ULTRA-LOW FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION.
43. A COPY OF EVALUATION REPORT, THE LOS ANGELES RESEARCH REPORT AND/OR CONDITIONS OF LISTING SHALL BE MADE AVAILABLE AT THE JOB SITE.
44. DOUBLE STRIPING OF STALLS SHALL BE PER P/ZC 2002-001 CITY OF LA DEPT. OF BUILDING AND SAFETY.
45. DETAIL ALL STAIRWAYS TO COMPLY WITH SECTION 1009.
    A. STAIR RISER HEIGHT SHALL BE 7" MAXIMUM, TREAD DEPTH (RUN) SHALL BE 11" MINIMUM.
    B. HANDRAIL HEIGHT SHALL BE 34"-38" TO TOP OF RAIL, 4" MAXIMUM OPENINGS (1012.2)

STORM WATER - BEST MANAGEMENT PRACTICE

CONTRACT MUST COMPLY WITH THE FOLLOWING STANDARDS:

1. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEETFLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSE OR WIND.
2. STOCKPILES OF EARTH AND OTHER CONSTRUCTION-RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY WIND OR WATER.
3. FUELS, SOILS, SOLVENTS AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL NOR THE SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM.
4. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON-SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.
5. TRASH AND CONSTRUCTION-RELATED SOLID WASTE MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DISPERSAL BY WIND.
6. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC WAYS. ACCIDENTAL DEPOSITIONS MUST BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR BY ANY OTHER MEANS.

ACCESSIBILITY

1. ALL ENTRANCES SHALL BE IDENTIFIED WITH AT LEAST ONE STANDARD I.S.O. ACCESSIBILITY SIGN AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQUIRED, VISIBLE FROM APPROACHING PEDESTRIAN WAYS.
2. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 LBS. FOR EXTERIOR DOORS, GATES, INTERIOR DOORS, SLIDING, AND FOLDING DOORS. SUCH PULL OR PUSH EFFORT BEING APPLIED AT RIGHT ANGLES TO HINGED DOORS AND ALL THE CENTER PLANE OF SLIDING OR FOLDING DOORS COMPENSATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED TO MEET THE ABOVE STANDARDS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED NOT TO EXCEED 15 LBS. DOORS SHALL COMPLY WITH 11B-404.2.9
3. THE BOTTOM OF RECEPTACLE OUTLETS SHALL BE NOT LESS THAN 15 INCHES ABOVE THE FLOOR OR WORKING PLATFORM.
4. THE CENTER OF THE GRIP OF THE OPERATING HANDLE OF SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES, OR COOLING, HEATING AND VENTILATING EQUIPMENT SHALL BE NOMORE THAN 4-FEET ABOVE THE FLOOR OR WORKING PLATFORM.
5. THE PULL LEVER OF FIRE ALARM INITIATING DEVICES (BOXES) SHALL BE LOCATED 48-INCHES ABOVE THE LEVEL OF THE FLOOR, WORKING PLATFORM, GROUND SURFACE OR SIDEWALK.
6. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE THE STANDARD USED TO IDENTIFY FACILITIES THAT ARE ACCESSIBLE TO AND USABLE BY PHYSICALLY DISABLED PERSONS AS SET FORTH IN THESE BUILDING STANDARDS. THE SYMBOL SPECIFIED ABOVE SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595b.
7. IF EMERGENCY WARNING SYSTEMS ARE REQUIRED, THEY SHALL ACTIVATE A MEANS OF WARNING TO THE HEARING IMPAIRED FLASHING VISUAL WARNING SHALL HAVE A FREQUENCY OF NOT MORE THAN 60 FLASHES PER MINUTE.
8. AT SINKS, FAUCET CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PUNCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5 LBF. LEVER OPERATED, PUSH TYPE AND ELECTRONICALLY CONTROLLED MECHANISMS ARE EXAMPLES OF ACCEPTABLE DESIGNS. SELF-CLOSING VALVES ARE ALLOWED IF THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS.
9. THE SURFACE OF RAMPS SHALL BE SLIP RESISTANT.

SOUND

1. SEPARATE ALL ELECTRICAL AND SIGNAL OUTLET BOXES IN ACOUSTICAL WALLS LOCATED ON OPPOSITE WALL SURFACES HORIZONTALLY BY 12" AND SEPARATED BY A STUD. BACK AND SIDES OF BOXES TO BE SEALED WITH 1/4" RESILIENT SEALANT AND BACKED BY OUTLET BOX PADS AND BY MINIMUM 2" THICK FIBER INSULATION.
2. ALL RIGID CONDUIT, DUCTS, PLUMBING PIPES AND APPLIANCE VENTS LOCATED IN ACOUSTICAL WALLS SHALL BE ISOLATED FROM THE STRUCTURE W/ RESILIENT SLEEVES, MOUNTS OR 1/4" RESILIENT MATERIAL OR AS DETAILED.
3. ALL VENTILATING AND CONDITIONED AIR DUCTS LOCATED IN SOUND ASSEMBLIES ARE TO BE LINED.
4. AN APPROVED PERMANENT, RESILIENT ACOUSTICAL SEALANT IS TO BE INSTALLED ALONG JOINT BETWEEN FLOOR AND ACOUSTICAL WALLS.
5. ALL PENETRATIONS INTO SOUND RATED PARTITIONS OR FLOOR CEILING ASSEMBLIES SHALL BE SEALED WITH AN APPROVED RESILIENT SEALANT AS SPECIFIED.
6. MINERAL FIBER INSULATION SHALL BE INSTALLED IN JOINT SPACES WHENEVER PLUMBING PIPING OR DUCTWORK PENETRATES A FLOOR/CEILING ASSEMBLY OR WHERE SUCH UNIT PASSES THROUGH THE PLANE OF THE FLOOR/CEILING ASSEMBLY FROM WITHIN A WALL. THE INSULATION SHALL EXTEND 12" BEYOND THE PIPE OR DUCT.
7. PROVIDE 3"(R11) SOUND ATTENUATION BATT INSULATION IN ALL WALLS OF REST ROOMS, MECHANICAL ROOMS, ELECTRICAL ROOMS, DUCT SHAFTS U.N.O.

MEANS OF EGRESS

1. EXIT SIGNS ILLUMINATED BY AN EXTERNAL SOURCE SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT CANDLES (54 lux).
2. INTERNALLY ILLUMINATED SIGNS SHALL BE LISTED AND LABELED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SECTION.
3. EXIT SIGNS SHALL BE ILLUMINATED AT ALL TIMES.
4. EXITS, EXIT ACCESS DOORS AND PATHS OF EGRESS TRAVEL THAT IS NOT IMMEDIATELY VISIBLE TO THE OCCUPANTS SHALL BE MARKED BY AN APPROVED EXIT LIGHT SIGN THAT IS READILY VISIBLE FROM ANY DIRECTION OF EGRESS TRAVEL. EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED, SHALL COMPLY WITH BUILDING CODE 1008
   - NOTE: ADDITIONAL EXIT SIGNS MAY BE REQUIRED AT TIME OF FIELD INSPECTION
5. EXIT SIGNS SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM THAT WILL PROVIDE AN ILLUMINATION OF NOT LESS THAN 90 MIN. IN CASE OF PRIMARY POWER LOSS, PER 1013.6.2
6. EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. SEE 1008.1.8.3 FOR EXCEPTIONS
7. DOOR HANDLES, LOCK AND OTHER OPERATING DEVICES SHALL BE INSTALLED AT A MIN. 34" AND A MAX. 48" ABOVE FINISHED FLOOR.
8. "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED" SHALL BE POSTED AT EXIT DOORS, PER 1010.9.1.4
9. ALL EGRESS DOOR OPERATION SHALL ALSO COMPLY WITH SECTIONS 1008.1 - 1008.3
10. THE MEANS OF EGRESS, INCLUDING THE EXIT DISCHARGE, SHALL BE ILLUMINATED AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCUPIED
11. THE MEANS OF EGRESS ILLUMINATION LEVEL SHALL NOT BE LESS THAN 1 FOOT-CANDLE AT THE WALKING SURFACE, SHALL COMPLY WITH BUILDING CODE 1008.1
12. THE POWER SUPPLY FOR MEANS OF EGRESS ILLUMINATION SHALL NORMALLY BE PROVIDED BY THE PREMISES' ELECTRICAL SYSTEM SHALL AUTOMATICALLY ILLUMINATE THE FOLLOWING AREAS:
    A. AISLES AND UNENCLOSED EGRESS STAIRWAYS IN ROOMS AND SPACES THAT REQUIRE TWO OR MORE MEANS OF EGRESS.
    B. CORRIDORS, EXIT ENCLOSURES AND EXIT PASSAGEWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    C. EXTERIOR EGRESS COMPONENTS AT OTHER THAN THE LEVEL OF EXIT DISCHARGE UNTIL EXIT DISCHARGE IS ACCOMPLISHED FOR BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    D. INTERIOR EXIT DISCHARGE ELEMENTS, AS PERMITTED IN SECTION 1024.1 IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    E. EXTERIOR LANDINGS, AS REQUIRED BY SECTION 1008.1.5. FOR EXIT DISCHARGE DOORWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
13. EMERGENCY LIGHTING FACILITIES SHALL BE ARRANGED TO PROVIDE INITIAL ILLUMINATION THAT IS AT LEAST AN AVERAGE OF 1 FOOT-CANDLE (11 lux) AND A MINIMUM AT ANY POINT OF 0.1 FOOT-CANDLE (11 lux) MEASURED ALONG THE PATH OF EGRESS AT FLOOR LEVEL ILLUMINATION LEVELS SHALL BE PERMITTED TO DECLINE TO 0.6 FOOT-CANDLE (6 lux) AVERAGE AND A MINIMUM AT ANY POINT OF 0.06 FOOT-CANDLE (0.6 lux) AT THE END OF THE EMERGENCY LIGHTING TIME DURATION. A MAXIMUM-TO-MINIMUM ILLUMINATION UNIFORMITY RATIO OF 40 TO 1 SHALL NOT BE EXCEEDED
14. EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED.
15. EXIT SIGNS ILLUMINATED BY AN EXTERNAL SOURCE SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT CANDLES (54 LUX).
16. INTERNALLY ILLUMINATED SIGNS SHALL BE LISTED AND LABELED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER INSTRUCTIONS AND SECTION 2702. 1013.5
17. EXIT SIGNS SHALL BE ILLUMINATED AT ALL TIMES. 1013.3
18. EXIT SIGNS SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM THAT WILL PROVIDE AN ILLUMINATION OF NOT LESS THAN 90 MIN. IN CASE OF PRIMARY POWER LOSS. 1013.6.3
19. EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. SEE 1010.1.9.3 FOR EXCEPTIONS.
20. DOOR HANDLES, LOCK AND OTHER OPERATING DEVICES SHALL BE INSTALLED AT A MIN. 34" AND A MAX. 48" ABOVE THE FINISHED FLOOR.
21. THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED.
22. ALL EGRESS DOOR OPERATION SHALL ALSO COMPLY WITH SECTION 1010.1.9 & 1010.1.9.12.
23. THE MEANS OF EGRESS, INCLUDING THE EXIT DISCHARGE, SHALL BE ILLUMINATED AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCUPIED.
24. THE MEANS OF EGRESS ILLUMINATION LEVEL SHALL NOT BE LESS THAN 1 FOOT-CANDLE AT THE WALKING SURFACE.

MEANS OF EGRESS - CONT.

25. THE POWER SUPPLY FOR MEANS OF EGRESS ILLUMINATION SHALL NORMALLY BE PROVIDED BY THE PREMISES ELECTRICAL SUPPLY, IN THE EVENT OF POWER SUPPLY FAILURE, AN EMERGENCY ELECTRICAL SYSTEM SHALL AUTOMATICALLY ILLUMINATE THE FOLLOWING AREAS:
    A. AISLES AND UNENCLOSED EGRESS STAIRWAYS IN ROOMS AND SPACES THAT REQUIRE TWO OR MORE MEANS OF EGRESS.
    B. CORRIDORS, EXIT ENCLOSURES AND EXIT PASSAGEWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    C. EXTERIOR EGRESS COMPONENTS AT OTHER THAN THE LEVEL OF EXIT DISCHARGE UNTIL EXIT DISCHARGE IS ACCOMPLISHED FOR BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    D. INTERIOR EXIT DISCHARGE ELEMENTS, AS PERMITTED IN SECTION 1028.1, IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    E. EXTERIOR LANDINGS, AS REQUIRED BY SECTION 1010.1.6, FOR EXIT DISCHARGE DOORWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.

FIRE

1. ALL EXIT DOORS AND EXIT GATES MUST BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. FLUSH OR SURFACE BOLTS ARE PROHIBITED.
2. PROVIDE AND MAINTAIN FIRE EXTINGUISHERS AS REQUIRED BY THE LOCAL FIRE DEPARTMENT FIELD INSPECTOR DURING CONSTRUCTION. PROVIDE PERMANENT FIRE EXTINGUISHERS IN NUMBER, SIZE AND LOCATION AS SPECIFIED BY THE FIRE DEPARTMENT WITH ARCHITECTS APPROVAL PRIOR TO INSTALLATION ALL SUCH PERMANENT EXTINGUISHERS SHALL BE IN RECESSED CABINETS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONSTRUCT ALL FIRE RATED SPACES TO THE REQUIREMENTS OF THE APPLICABLE CODES AND STANDARDS. PROVIDE COMBINATION FIRE DAMPERS PER UBC STANDARDS 43-7 AND ACCESS PANELS FOR DUCTS AND A.C. FIXTURES WHEN PASSING THROUGH THESE SPACES PROVIDE APPROPRIATE FIRE RATED ENCLOSURE BEHIND RECESSED LIGHT FIXTURES, WHERE REQUIRED.
4. CORRIDORS AND AISLES IN PUBLIC AREAS SHALL PROVIDE A MINIMUM 44" CLEAR WIDTH TO PUBLIC RIGHT-OF-WAY.
5. T.V. ANTENNA CROSS ARMS OR OTHER ROOF OBSERVATION SHALL BE LOCATED 7'-0" MINIMUM ABOVE FLAT ROOF AREAS.
6. STORAGE DISPENSING OR USE OF ANY FLAMMABLE OR COMBUSTIBLE LIQUIDS, FLAMMABLE GASES AND HAZARDOUS CHEMICALS SHALL COMPLY WITH UFC REGULATIONS.
7. ROOF OBSTRUCTIONS SUCH AS TELEVISION ANTENNA, GUY WIRE, SOLAR PANEL, RAZOR RIBBON FENCE, CABLE, OR OTHER OBSTRUCTIONS SHALL NOT PREVENT FIRE DEPARTMENT ACCESS IN THE EVENT OF FIRE.
8. MAINTAIN FIRE RESISTIVE INTEGRITY AROUND PENETRATIONS INTO RATED ASSEMBLIES AS FOLLOWS:
    A. FOR LARGE OPENINGS (I.E. RECESSED LIGHT FIXTURES), CONSTRUCT 5/8" TYP. GYP. BOARD ENCLOSURE AROUND OBJECT.
    B. FOR WIDE GAPS OR CRACKS, USE FIRE SAFING INSULATION (OPENINGS GREATER THAN ONE INCH).
    C. FOR PIPE/CONDUIT PENETRATIONS, USE FLAME-STOPPING CAULKING OF RATING NOT LESS THAN THAT OF THE ASSEMBLY BEING PENETRATED. MATERIAL SHALL MEET REQUIREMENTS OF UL-1479. SEE SPECS SECTION 07 84 13 PENETRATION FIRE STOPPING.

SECURITY

1. ALL SECURITY OPENINGS SHALL COMPLY WITH DIVISION 67 OF THE LOS ANGELES CURRENT BUILDING CODE INCLUDING THE FOLLOWING:
    A. ALL PIN TYPE HINGES WHICH ARE ACCESSIBLE FROM OUTSIDE THE SECURED AREA WHEN THE DOOR IS CLOSED SHALL HAVE NON-REMOVABLE HINGE PINS.
    B. DEADBOLTS SHALL CONTAIN HARDENED INSERTS.
    C. STRAIGHT DEADBOLTS SHALL HAVE A MINIMUM THROW OF 1" AND AN EMBEDMENT OF 1/4".
    D. A HOOK SHAPED OR AN EXPANDING LUG DEADBOLT SHALL HAVE A MINIMUM THROW OF 1/4".
    E. CYLINDER GUARDS SHALL BE INSTALLED IN ALL CYLINDER LOCKS WHENEVER THE CYLINDER PROJECTS BEYOND THE FACE OF THE DOOR OR IS OTHERWISE ACCESSIBLE TO GRIPPING TOOLS.
    F. ALL GLASS DOORS SHALL HAVE FULLY TEMPERED GLASS.
    G. PROVIDE DEADLOCKING LATCH KEY OPERATED LOCKS ON EXTERIOR.
    H. ALL GLAZING WITHIN 40" OF DOOR LOCK SHALL BE TEMPERED GLASS.
    I. DOOR STOPS OF IN-SWINGING EXTERIOR DOORS SHALL BE ONE PIECE CONSTRUCTION.
    J. SLIDING DOOR AND WINDOWS SHALL BE PROVIDED WITH A DEVICE IN THE UPPER CHANNEL OF THE MOVING PANEL TO PROHIBIT RAISING AND REMOVING OF THE MOVING PANEL IN THE CLOSED OR PARTIALLY OPEN POSITION.
    K. SLIDING GLASS DOOR SHALL BE EQUIPPED WITH LOCKING DEVICES AND SHALL BE SO CONSTRUCTED AND INSTALLED THAT THEY REMAIN INTACT AND ENGAGED WHEN SUBJECTED TO THE TEST SPECIFIED IN SECTION 6717.1 REQUIREMENTS OF UL-1479. SEE SPECS SECTION 07840 FIRE STOPPING.
2. SEE THE DRAWINGS FOR SECURITY REQUIREMENTS AT HOLDING AND HIGH SECURITY AREAS.

ENERGY

1. ALL OPENINGS IN INSULATED WALLS SHALL BE PROPERLY WEATHER-STRIPPED OR CASKETED TO LIMIT AIR INFILTRATION. ALL FENESTRATIONS SHALL COMPLY WITH AIR INFILTRATION STANDARDS OF ANSI/NFRC 400-2020
2. THE INSULATION CONTRACTOR SHALL PROVIDE A CERTIFICATE OF COMPLIANCE.
3. PROVIDE MOTORIZED DAMPERS IN ALL FAN SYSTEMS WHICH EXHAUST AIR FROM THE ENERGY ENVELOPE, EXCEPT WHERE BACK DRAFT DAMPERS ARE SPECIFIED.
4. CAULK AROUND ALL PENETRATIONS INTO THE BUILDING ENVELOPE.
5. RECIRCULATING HOT WATER PIPING TO BE INSULATED IN UNHEATED SPACES.

MISCELLANEOUS

1. APPLY CITY OF LOS ANGELES APPROVED GRAFFITI RESISTANT COATING SYSTEM AS SPECIFIED AT ALL CMU WALLS WITHIN MINIMUM 10-FEET 6-INCHES OF GRADE AND AT OTHER AREAS SPECIFIED.
2. WALLS, HALLS, CORRIDORS AND OTHER CIRCULATION SPACES SHALL HAVE MINIMUM HEAD ROOM OF 7'-0".
3. SIGNAGE DEPICTING ACCESSIBILITY TO THE BUILDING SHALL HAVE THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595.
4. ALL TOILET ROOMS SHALL BE VENTILATED TO PROVIDE A MINIMUM OF FIVE AIR CHANGES PER HOUR (MORE IF REQUIRED PER MECHANICAL DRAWINGS) AND CONNECTED DIRECTLY TO THE OUTSIDE.
5. WHERE CONFLICT OCCURS ON DRAWING THE ENTIRE SET OF MECHANICAL, ELECTRICAL, PLUMBING, STRUCTURAL AND ARCHITECTURAL PLANS MUST BE CONSIDERED FOR ITS RESOLUTION AND MAY NOT BE CONSIDERED AS AN EXTRA WORK FOR THE CONTRACTOR.

INTERIOR ENVIRONMENT:

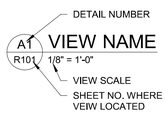
1. EVERY SPACE INTENDED FOR HUMAN OCCUPANCY SHALL BE PROVIDED WITH NATURAL LIGHT BY MEANS OF EXTERIOR GLAZED OPENINGS IN ACCORDANCE WITH CBC SECTION 1205.2 OR SHALL BE PROVIDED WITH ARTIFICIAL LIGHTING THAT IS ADEQUATE TO PROVIDE AN AVERAGE ILLUMINATION OF 10-FOOT CANDLES OVER THE AREA OF THE ROOM AT A HEIGHT OF 30 INCHES ABOVE THE FLOOR LEVEL (CBC 1205.1 AND 1205.3).
2. CEMENT, FIBER-CEMENT, OR GLASS MAT GYPSUM BACKERS IN COMPLIANCE WITH ASTM C1178, C1288, OR C 1325 SHALL BE USED AS A B

ABBREVIATIONS

A	ABOVE	ABV.
	ABOVE FINISH FLOOR	A.F.F.
	ACOUSTICAL CEILING TILE	A.C.T.
	ACCESS PANEL	ACP
	AGGREGATE	AGG.
	AIR CONDITION	A/C
	ALUMINUM	ALUM.
	ANODIZED	ANOD.
	AMERICAN CONCRETE INSTITUTE	A.C.I.
	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	AISC or A.I.S.C.
	AMERICAN NATIONAL STANDARDS INSTITUTE	ANSI
	AMERICAN SOCIETY OF CIVIL ENGINEERS	ASCE
	AMERICAN SOCIETY OF TESTING AND METERIAL	ASTM
	AMERICAN WELDING SOCIETY	AWS
	AMOUNT	AMT.
	AND	&
	ANCHOR BOLT	A.B.
	ANGLE	L
	APPROVED	APPD.
	APPROXIMATE	APPROX.
	ARCHITECT OR ARCHITECTURAL	ARCH
	ASBESTOS	ASB.
	ASPHALT	ASPH.
	ASPHALTIC CONCRETE	A.C.
	ASPHALT TILE	A.T.
	ASSOCIATE	ASSOC.
	ASSOCIATION	ASSN.
	AT	@
	AUTOMATIC	AUTO
	AVENUE	AVE.
B	BASEMENT	BSMT.
	BEAM	BM
	BETWEEN	BET.
	BLOCK	BLK.
	BLOCKING	BLKG.
	BOARD	BD.
	BOTH WAYS	B.W.
	BOTTOM	BOT.
	BOTTOM OF JOINT	BOJ
	BOTTOM OF MULLION	BOM
	BOULEVARD	BLVD.
	BRACKET	BRKT.
	BRONZE	BRZ.
	BRITISH THERMAL UNITS	BTU
	BUILT-UP	B/U
	BUILDING	BLDG.
C	CABINET	CAB.
	CAST IRON	C.I.
	CAST IRON PIPE	C.I.P.
	CATCH BASIN	C.B.
	CEILING	CLG.
	CEMENT	CEM.
	CENTER	CTR.
	CENTERLINE	CL or
	CENTER TO CENTER	C TO C
	CERAMIC TILE	C.T.
	CHALKBOARD	CK BD.
	CHANGE	CHG.
	CHANNEL	CHAN. or [
	CLEAN OUT	C.O.
	CLEAR	CLR.
	COLUMN	COL.
	COMMON	COM.
	COMMUNICATION	COMM.
	COMPANY	CO.
	COMPOSITION	COMPO.
	CONCRETE	CONC.
	CONCRETE BLOCK	CONC. BLK.
	CONCRETE MASONRY UNIT	C.M.U.
	CONNECTION	CONN.
	CONSTRUCT or CONSTRUCTION	CONST.
	CONTINUOUS or CONTINUE	CONT.
	CONTRACT or CONTRACTOR	CONTR.
	CONTROL JOINT	C.J.
	CORNER	COR.
	CORRIDOR	CORR.
	COUNTERSINK	CSK.
	CARPET	CP.
	CERAMIC TILE	CT.
	CUBIC	CU.
	CUBIC FOOT	CU. FT.
	CUBIC FEET PER MINUTE	CFM
	CUBIC INCH	CU. IN.
	CUBIC YARD	CU. YD.
	CURB FACE	C.F.
D	DEGREE	DEG. or °
	DEPARTMENT	DEPT.
	DETAIL	DET.
	DIAGONAL	DIAG.
	DIAMETER	DIA. or
	DIMENSION	DIM.
	DISPENSER	DISP.
	DISTANCE	DIST.
	DIVISION	DIV.
	DOOR	DR
	DOUBLE	DBL
	DOWEL	DWL.
	DOWN	DN
	DOWNSPOUT	D.S.
	DRAWING	DWG
	DRINKING FOUNTAIN	DF.
E	EACH	EA.
	EAST	E
	ELECTRIC or ELECTRICAL	ELEC.
	ELEVATION	EL.
	ELEVATOR	ELEV.
	ELASTOMERIC MEMBRANE	E.M.
	EMERGENCY	EMER.
	EXPOSED CONSTRUCTION	E.C.
	END VERTICAL CURVE	E.V.C.
	ENAMEL	EN.
	ENGINEER	ENGR., ENG.
	EQUIPMENT	EQUIP.
	EQUAL	EQ.
	ESTIMATE	EST.
	EXCAVATE	EXC.
	EXISTING	(E)
	EXPANSION BOLT	E.B.
	EXPANSION JOINT	E.J.
	EXTERIOR	EXT.
	EXTRUDED	EXTR.
	EXTERIOR GRADE	EXT. GR.
	EYE WASH	E.W.
F	FABRIC WALL COVERING	F.W.C.
	FABRIC WALL PANEL	F.W.P.
	FACE OF CONCRETE	F.O.C.
	FACE OF MASONRY	F.O.M.
	FACTORY	FAC.
	FLUOROCARBON RESINOUS COATED	FCRC
	FACE OF STUD	F.O.S.
	FEET / FOOT	FT.
	FIGURE	FIG.
	FINISH	FIN.
	FINISH FACE	F.F.
	FIRE ALARM PULL	F.P.
	FIRE EXTINGUISHER	F.E.
	FIRE HOES CABINET	F.H.C.
	FIRE HYDRANT	F.H.
	FIREMAN'S PHONE JACK	F.J.
	FLANGE	FLG.
	FLATHEAD WOOD SCREWS	F.H.W.S.
	FLOOR	FL.
	FLOOR DRAIN	F.D.
	FLOOR SINK	F.S.
	FLOW LINE	F.L. or
	FOOTING	FTG.
	FOUNDATION	FND.
G	GALLON	GAL.
	GALVANIZED	GALV.
	GALVANIZED IRON	GI.
	GAGE	GA.
	GLASS	GL.
	GOVERNMENT	GOVT.
	GRAB BAR	G.B.
	GRANITE	GRAN.
	GRADE	GR.
	GRATING	GRTG.
	GYPSUM BOARD	GYP. BD.
H	HANDICAP	HC/
	HANGER	HGR
	HARDBOARD	HBD
	HARDNER	HARD.
	HARDWARE	HDW.
	HARDWOOD	HWD.
	HEADER	HDR.
	HEXAGONAL	HEX.
	HEIGHT	HT.
	HIGH POINT	H.P.
	HOLLOW CORE	H.C.
	HOLLOW METAL	H.M.
	HORIZONTAL	HORIZ.
	HORIZONTAL HOOK	HK.
	HOSE BIBB	H.B.
	HOUR	HR.
	HIGH PRESSURE LAMINATE	HPL
I	I BEAM	I
	INCH	IN or "
	INFORMATION	INFO
	INSIDE DIAMETER	I.D.
	INSULATION	INSUL.
	INTERIOR	INT.
	INTERIOR GRADE	INT. GR.
	INTERMEDIATE	INTER.
	INVERT	INV.
J	JOINT	JT.
	JOIST	JST.
K	KIP	K
L	LABORATORY	LAB.
	LAMINATE	LAM.
	LANDING	LDG.
	LAVATORY	LAV.
	LEVEL	LEV.
	LIGHT	LT.
	LINOLEUM	LINO.
	LONG	LG.
	LUMBER	LUM.
M	MACHINE	MACH.
	MANHOLE	M.H.
	MANUFACTURER or MANUFACTURING	MFR.
	MINERAL FISSURED TILE	MFT.
	MARK	MK.
	MASONRY OPENING	MO
	MATERIAL	MAT.
	MAXIMUM	MAX.
	MECHANICAL	MECH.
	MEDICINE CABINET	MC
	MEMBRANE WATERPROOFING	MWP
	METAL	MTL.
	MEZZANINE	MEZZ.
	MINIMUM	MIN.
	MISCELLANEOUS	MISC.
	MOULDING	MLDG.
	MOUNTED	MTD.
N	NATIONAL	NATL.
	NATIONAL BOARD OF FIRE UNDERWRITERS	NBFU
	NATIONAL ELECTRICAL CODE	NEC
	MANUFACTURERS ASSOC.	NEMA
	NATURAL	NAT.
	NATURAL GRADE	NAT. GR.
	NOMINAL	NOM.
	NORTH	N
	NOT IN CONTRACT	N.I.C.
	NOT TO SCALE	N.T.S.
	NUMBER	NO. or #
O	OCCUPATIONAL SAFETY AND HEALTH ADMINIST	O.S.H.A.
	OFFICE	OFF.
	OVER FLOW DRAIN	OFD
	ON CENTER	O.C.
	OPENING	OPNG.
	OPPOSITE	OPP.
	OUTSIDE DIAMETER	O.D.
	OUTSIDE FACE CONCRETE	O.F.C.
	OUTSIDE FACE MASONRY	O.F.M.
	OUTSIDE FACE STUDS	O.F.S.
	OUT TO OUT	O TO O
P	PAIR	PR.
	PAINTED	PTD.
	PARTITION	PART.
	PEDESTAL	PED.
	PENNY	d
	PERFORATED	PERF
	PERPENDICULAR	PERP.
	PICKET FENCE	PF
	PIECE	PC.
	PIPE BOLLARD	P.B.
	PLASTER	PLAS.
	PLASTIC LAMINATE	P-LAM.
	PLATE	PL.
	PANEL	PNL.
	POINT	PT.
	PORTLAND CEMENT CONCRETE	P.C.C.
	POUND	LB. or #
	POWER POLE	P.P.
	PRECAST	PRCST.
	PREFABRICATED	PREFAB.
	PROPERTY	PROP.
	PROPERTY LINE	
	PULL CHAIN	P.C.
	POLYVINYL CHLORIDE	PVC
	POLYURETHANE ENAMEL	PVE
	PLYWOOD	PLYWD.
Q	QUARRY TILE	QT
R	RADIUS	RAD.
	RISER	R.
	RUBBER BASE	R.B.
	RECTANGLE	RECT.
	REDWOOD	REWD.
	REFER TO	RE
	REFLECTED CEILING PLAN	R.C.P.
	REFRIGERATOR	REF.
	REINFORCE or REINFORCING	REINF.
	REQUIRED	REQD.
	REVISION	REV.
	RIGHT-OF-WAY	R.O.W.
	ROOF	RF.
	ROOF DRAIN	R.D.
	ROOFING	RFG.
	ROOM	RM.
	ROUGH OPENING	RO.
	ROUND	RD.
	RESTROOM	R.R
S	SNITARY SEWER	SANT.SEW.
	SCHEDULE	SCH
	SECTION	SE.
	SHEATHING	SHTHG.
	SHEET	SHT.
	SIMILAR	SIM.
	SINGLE	SGL.
	SOLID CORE	S.C.
	SOUTH	S.
	SPECIFICATION	SPEC.
	SPEAKER	SPK
	SQUARE	SQ.
	STAGGERED	STAGG.
	STAINLESS STEEL	SS
	STANDARD	STD.
	STEEL	STL.
	STIFFENER	STIFF.
	STIRRUP	STIR.
	SMOKE DETECTOR	S.D.
	STONE	STN.
	STRAIGHT GRADE	S.G.
	STREET	ST.
	STRUCTURAL	STRUCTL.
	SUPPORT	SUPT.
	SURFACED 4 SIDES	S4S
	SUSPEND	SUSP.
	SYMBOL	SYM.
	SYMMETRICAL	SYMM.
T	TEMPERATURE	TEMP.
	TERAZZO	TERR.
	THICK or THICKNESS	THK.
	TELEPHONE	TEL.
	THRESHOLD	THLD
	TONGUE AND GROOVE	T&G
	TO OF	T.O.
	TOP OF BANK	T.O.B.
	TOP OF CURB	T.O.C.
	TOP OF FINISH	T.O.F.
	TOP OF GRATE	T.G.
	TOP OF JOINT	T.O.J.
	TOP OF MASONRY	T.O.M.
	TOP OF DECK	T.M.D.
	TOP OF PARAPET	T.O.P.
	TOP OF STEEL	TOS / T.O.S.
	TOP OF STRUCTURAL SLAB	T.S.S.
	TOP OF WALL	T.O.W.
	TREAD	T.
	TURNBUCKLE	TRNBKL.
	TYPICAL	TYP.
U	UNIFORM BUILDING CODE	U.B.C.
	UNDER CUT	UC
	UNLESS NOTED OTHERWISE	U.N.O.
V	VINYL COMPOSITION TILE	VCT
	VENTILATOR	VENT.
	VERTICAL	VERT.
	VESTIBULE	VEST.
	VEE JOINT	V JT.
	VOLUME	VOL.
	VERIFY IN FIELD	VIF
	VINYL WALL COVERING	VWC
	VINYL	VYN
W	WAREHOUSE	WHSE
	WATER CLOSET	WC
	WATER HEATER	W.H.
	WATERPROOF or WATERPROOFING	WP
	WATER RESISTANT	WR
	WEIGHT	WT.
	WELDED WIRE FABRIC	WWF
	WIDE FLANGE (STEEL)	W
	WEST	W.
	WITH	W/
	WOOD	WD.
Y	YARD	YD.

SYMBOL KEY:

VIEW TITLE MARK



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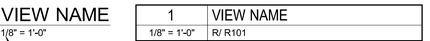
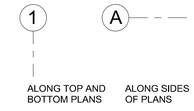


COLUMN GRID LINES



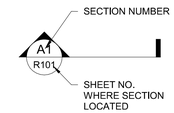
EXTERIOR ELEVATION



INTERIOR ELEVATION



SECTION FLAG



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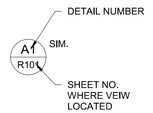
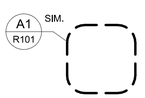


VERTICAL ELEVATION



BLOW-UP DETAIL REFERENCE



SPOT ELEVATIONS



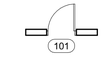
CONTROL POINT



ROLL-UP DOOR SYM.



DOOR IDENTIFICATION



WINDOW IDENTIFICATION



ROOM IDENTIFICATION



CEILING HEIGHT

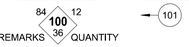


VIEW REFERENCE

WALL TAG



CASEWORK TAG

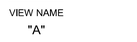


KEYNOTE

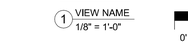
REVISION TAG



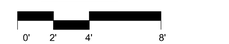
DOOR TYPE



WINDOW TYPE



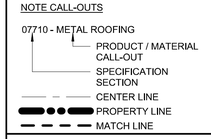
GRAPHIC SCALE



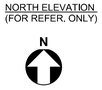
EXIT SIGN



NOTE CALL-OUTS



NORTH ELEVATION (FOR REFER. ONLY)



FIRE ALARM PULL



FIRE EXTINGUISHER CABINET



MATERIALS KEY:

EARTH/COMPACT FILL

POROUS FILL/GRAVEL

EARTHWORKS

CAST-IN-PLACE/ PRECAST

SAND/MORTAR/ PLASTER/CUT STONE

CONCRETE

CONCRETE BLOCK

COMMON/FACE

MASONRY

ALUMINUM

BRASS/BRONZE

STEEL/ OTHER METALS

METAL

FINISH

ROUGH

BLOCKING

HARDBOARD

PLYWOOD - LARGE SCALE

WOOD

BATT/LOOSE FILL

RIGID

INSULATION

ACOUSTICAL TILE

CERAMIC TILE - LARGE SCALE

CERAMIC TILE - SMALL SCALE

RESILIENT FLOORING/ PLASTIC LAMINATE

GYPSUM WALLBOARD

METAL LATH AND PLASTER

FINISHES

PLAN AND SECTION INDICATIONS

CONCRETE MASONRY BLOCK

METAL/WOOD STUD

BRICK

PARTITION INDICATIONS

BRICK

CERAMIC TILE

CONCRETE/PLASTER

GLASS

SHEET METAL

ELEVATION INDICATIONS

DIMENSION TYPES:

F.O.S. / F.O.C. DIMENSION
DESIGNATED BY DIAGONAL TICK

CENTERLINE DIMENSION
DESIGNATED BY FILLED DOT

APROXIMATE DIMENSIONS
TILDE PRECEDES DIMENSION

F.O.F. DIMENSION (CLEAR)
DESIGNLATED BY ARROW

NOT TO SCALE DIMENSIONS
DESIGNLATED BY STROKE OR ARROW "NTS" AFTER DIMENSION

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

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FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 03/03/10

REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
BUREAU OF ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT ★ STATE OF CALIFORNIA ★ JENNY M LIM LIC. NO. C36872 REN. 08/31/2027

INTERIM CITY ENGINEER	
DATE:	
ALFRED MATA, PE	
ARCHITECTURAL DIVISION	
ARCHITECT:	JENNY M LIM
DESIGNED BY:	TROY YOUNGE
DRAWN BY:	NAM KIM
CHECKED BY:	CELSO DEL POSO
APPROVED BY:	STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

BID SET
PROJECT ISSUE DATE 9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: ABBREVIATIONS, MATERIALS KEY, SYMBOL KEY

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

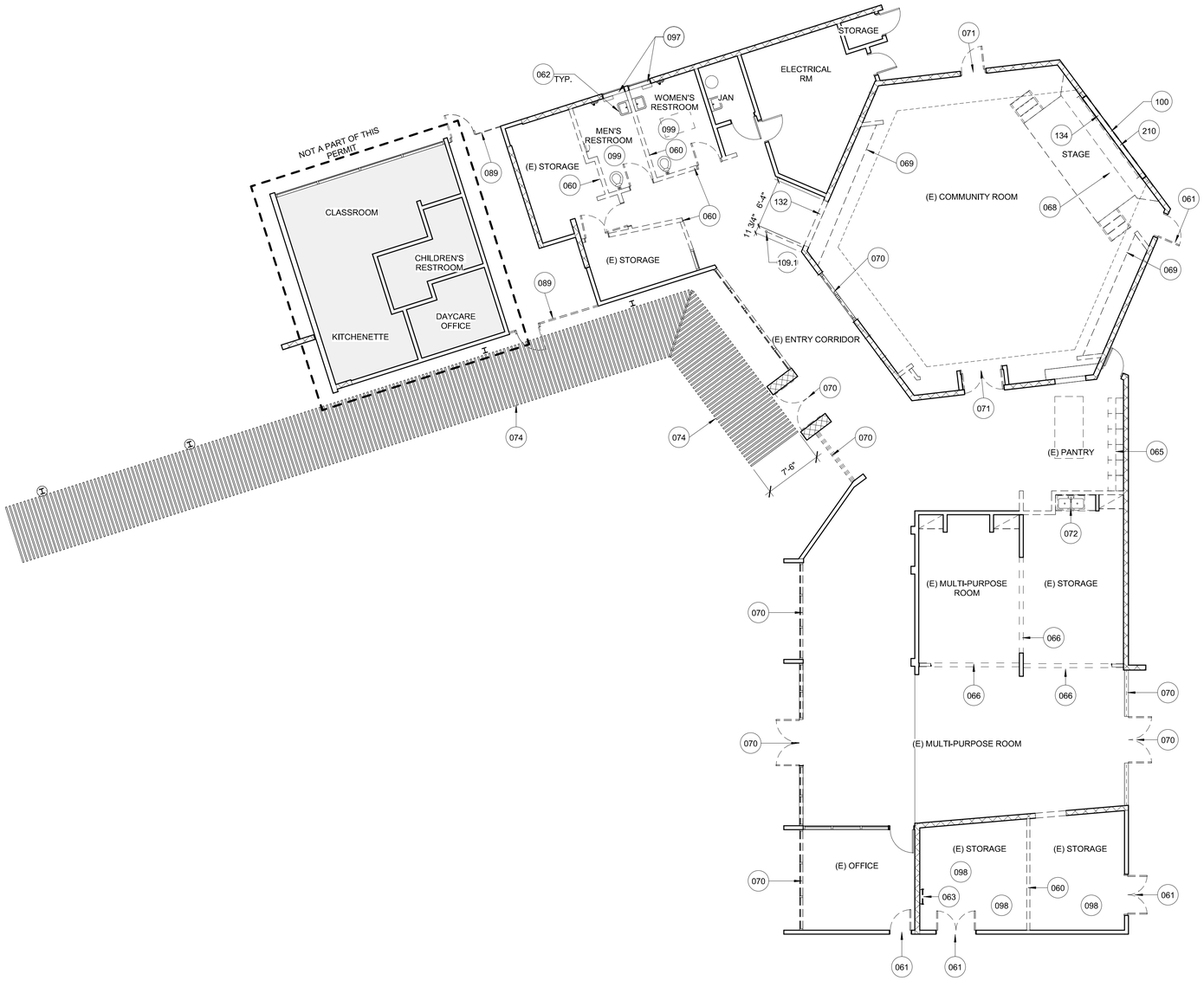
WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. A002

SHEET 09 OF SHEETS 115

PLOTTED: 10/21/2025 2:53:29 PM



EXISTING / DEMO PLAN

1/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
060	-REMOVE (E) GYP. BD. AND (E) FRAMING. REMOVE ALL (E) ELECTRICAL WIRING, REMOVE (E) PLUMBING PIPES.
061	-REMOVE (E) DOOR, FRAME, AND EXTERIOR WOOD EYEBROW. FILL DOOR OPENING WITH CONCRETE, SEE STRUCTURAL DETAIL G13/S201. SCORE CONCRETE TO MATCH SURROUND CMU BLOCK'S TEXTURE AND MODULE PATTERN.
062	-REMOVE (E) PLUMBING FIXTURE(S) IN THE RESTROOM. CAP ALL PLUMBING LINE(S).
063	-REMOVE (E) ROOF ACCESS LADDER AND HATCH. COVER (E) OPENING TO ROOF.
065	-REMOVE (E) CABINETS AND MILLWORK.
066	-REMOVE (E) POCKET/ACCORDION TYPE DOORS.
068	-REMOVE (E) NON-CONFORMING STAGE, STAIRS AND RAILING.
069	-REMOVE (E) BENCH SEATING.
070	-REMOVE (E) STOREFRONT/DOOR SYSTEM.
071	-REMOVE (E) DOOR TO REPLACE WITH (N) DOOR.
072	-REMOVE (E) SINK & CAP ALL PLUMBING LINE.
074	REMOVE (E) 920 SF EXTERIOR WOOD SCREEN TRELLIS. (E) STEEL SUPPORT AND POSTS TO REMAIN, SEE STRUCT. DWG.
089	-REMOVE (E) CHAIN LINK FENCE AND GATE.
097	-REMOVE (E) WINDOW AND SCREEN, FILL IN WITH CONCRETE. SCORE CONCRETE TO MATCH SURROUNDING MASONRY BLOCK'S TEXTURE AND MODULE PATTERN.
098	-GRIND (E) CONC. SLAB FOR DRAINAGE & TILE FOR NEW RESTROOMS. SEE A402 FOR INFO.
099	-REMOVE ALL (E) WALL TILE, (E) FLOOR TILE, (E) ELECTRICAL FIXTURES IN THIS (E) RESTROOM.
100	-REMOVE (E) LOUVER LOCATED 13' A.F.F. AND FILL IN WITH CONCRETE. SCORE CONCRETE TO MATCH SURROUNDING CMU BLOCK'S TEXTURE AND MODULE PATTERN.
109.1	-DEMO (E) SCREEN AND PIPE
132	-REMOVE THIS PORTION OF (E) CMU WALL TO MAKE OPENING (6'-4" WIDE X 7'-3" HIGH) FOR NEW ACCESS. SEE STRUCTURAL DWG (S201) FOR DETAILS.
134	-REMOVE (E) BOARDS AND ACOUSTICAL PANEL.
210	-(E) CMU WALL TO REMAIN.

DEMOLITION PLAN NOTES

1. CONTRACTOR TO REFER TO HAZARD REPORT FOR HAZARDOUS MATERIAL ABATEMENT.
2. CONFORM TO APPLICABLE REGULATORY PROCEDURES WHEN DISCOVERING HAZARDOUS OR CONTAMINATED MATERIALS.
3. CONTRACTOR TO NOTIFY ARCHITECT OF ANY DISCREPANCIES OR IRREGULARITIES DISCOVERED DURING CONSTRUCTION.

- VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO DEMOLITION OR CONSTRUCTION.
- REMOVE (E) TILE, BASEBOARD, MASTIC, IN THEIR ENTIRETY. PREPARE (E) CONCRETE SLAB FOR NEW FLOORING PER FINISH SCHEDULE.
- REMOVE ALL ACOUSTICAL CEILING PANELS IN THEIR ENTIRETY.
- REMOVE ALL (E) PLUMBING FIXTURES, TOILET ROOM ACCESORIES AND CAPP ALL (E) PLUMBING LINES IN (E) TOILET FACILITIES. REMOVE ALL CERAMIC FLOOR & WALL TILES, MORTAR, ETC. IN THEIR ENTIRETY; PREPARE FLOOR SLAB AND WALL SURFACES TO RECEIVE NEW CERAMIC FLOOR TILES, COVED BASE AND WALL TILE. PREPARE SLAB FOR POSITIVE DRAINAGE TO FLOOR DRAIN,
- REMOVE (E) INTERIOR STUD WALL TO EXTENT REQUIRED FOR NEW WALL.
- REMOVE (E) STAGE FROM COMMUNITY ROOM.
- REMOVE (E) MECH. CEILING SUPPLY, RETURNS & EXHAUST DIFFUSERS TO EXTENT REQUIRED TO REMOVE (E) CEILING AND INSTALL NEW CEILING, FOR NEW SUPPLY, RETURN & EXHAUST DIFFUSERS - SEE MECHANICAL / PLUMBING PLANS.
- REMOVE (E) LIGHT FIXTURES, OCCUPANCY SENSORS, SMOKE DETECTORS, CONDUITS & WIRING, ETC. IN THEIR ENTIRETY. REFER TO ELECTRICAL PLANS.
- REMOVE (E) DOOR, FRAME & HARDWARE, WHERE SHOWN IN THIS PLAN. PREPARE OPEINGS FOR NEW DOOR, FRAME & HARDWARE AS INDICATED IN SCHEDULE.
- REMOVE (E) BI-FOLD DOOR, OVERHEAD TRACK, TRIM, HARDWARE, ETC IN THEIR ENTIRETY.

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 EXP. 08/31/2027 STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: EXISTING / DEMO PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

ALFRED MATA, PE
ARCHITECTURAL DIVISION

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

INTERIM CITY ENGINEER
DATE:

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. AD102

SHEET 10 OF SHEETS 115

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REVISION DATES (DESIGN STAGE ONLY)

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 12/07/23
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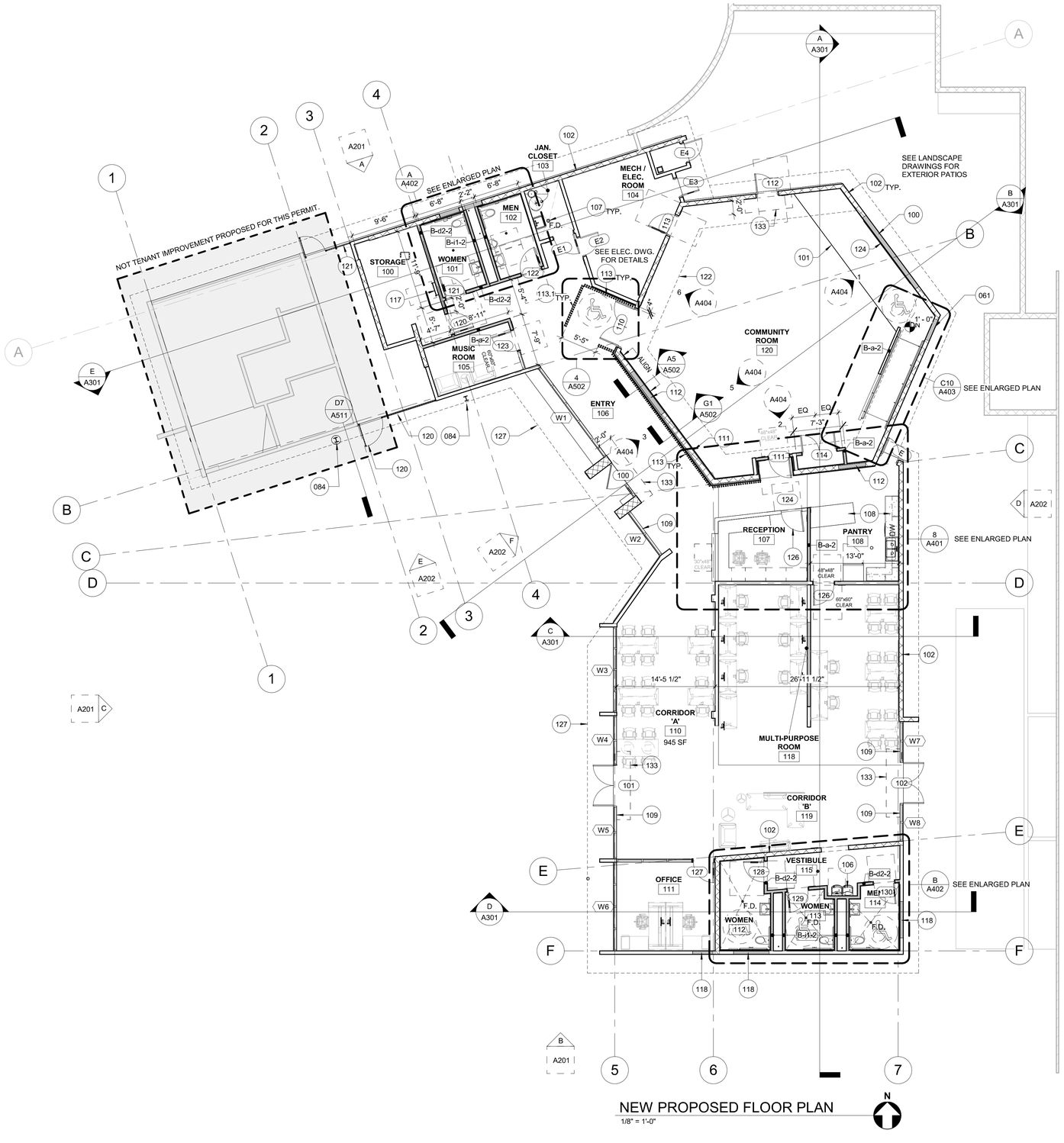

KEY NOTES

KEY	DESCRIPTION
061	-REMOVE (E) DOOR, FRAME, AND EXTERIOR WOOD EYEBROW. FILL DOOR OPENING WITH CONCRETE. SEE STRUCTURAL DETAIL G13/S201. SCORE CONCRETE TO MATCH SURROUND CMU BLOCK'S TEXTURE AND MODULE PATTERN.
084	-(E) STEEL TRELLIS STRUCTURE TO REMAIN, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7, SEE STRUCTRURAL DRAWINGS.
100	-REMOVE (E) LOUVER LOCATED 13' A.F.F. AND FILL IN WITH CONCRETE. SCORE CONCRETE TO MATCH SURROUNDING CMU BLOCK'S TEXTURE AND MODULE PATTERN.
101	-(N) 12" RAISED WOOD PLATFORM. FRAME WITH 2X @ 16" O.C. AND 1" FINISHED GRADE "A" PLYWD SHEATHING. FINISH VERTICAL EDGE WITH HARDWOOD, WITH NO PLYWOOD EDGES EXPOSED. FINISHED STAIN COLOR TO BE APPROVED BY ARCHITECT.
102	-(E) CMU WALL TO REMAIN.
106	-(N) ADA COMPLIANT DRINKING FOUNTAIN AND WATER BOTTLE FILLING STATION.
107	-(N) FLOOR DRAIN. SEE PLUMBING DRAWINGS.
108	-(N) COUNTER AND CABINETS. SEE ENLARGED PLAN.
109	-(E) CONC. CURB TO REMAIN. (N) STOREFRONT SYSTEM TO BE INSTALLED ABOVE THE (E) CONC. CURB. VERIFY HEIGHT OF (E) CONC. CURB AT JOB.
111	-(N) 5/8" GYP. BG O/ RESILLIENT CHANNEL. BOTH SIDES OF THIS (E) CMU WALL.
112	-FILL (E) OPENING WITH CONCRETE, SEE STRUCTURAL DWGS. ALIGN FILL WITH (E) CMU. MAINTAIN REQUIRED 2 HOUR ASSEMBLY PER CBC TABLE 721.1(2). 4-1.1 BETWEEN A-OCCUPANCY & B. PROVIDE 5/8" TYPE 'X' GYP. OVER RESILIENT CHANNELS ON BOTH SIDES.
113	-(N) ALUMINUM VERTICAL BATTENS, WALL MOUNTED, SEE FINISH SCHEDULE.
113.1	-(N) ALUMINUM VERTICAL BATTEN SCREEN, FLOOR AND CEILING MOUNTED, SEE FINISH SCHEDULE
117	-(N) 36"X30" ROOF HATCH & NEW LADDER. SEE DETAIL AND SPECIFICATIONS.
118	-FRAME THIS (E) OPENING AND APPLY EXTERIOR PLASTER (EXTERIOR SIDE) & 5/8" TYPE 'X' GYP. BD. OR 5/8" TILE BACKING PANEL WHERE TILE OCCURES (INTERIOR SIDE).
120	-(N) 6' HIGH W.I. FENCE & GATE. PROVIDE LOCKING MECHANISM AND PANIC HDWR. SEE LANDSCAPE PLAN L410 FOR DETAILS.
121	-(N) 6' HIGH FENCE AND GATE.
122	-DASHED LINE DENOTES LINE OF MECHANICAL SOFFIT ABOVE.
124	-(N) ACOUSTICAL WALL PANEL - APPLY WALL TO WALL & PLATFORM TO 12" ABOVE SUSPENDED CEILING SYSTEM. SEE FINISH SCHEDULE.
126	-36" HIGH WOOD GATE WITH LATCH.
127	-DASHED LINE DENOTES BUILDING / SOFFIT ABOVE. REPAIR / PATCH (E) STUCCO @ UNDERSIDE OF SOFFIT. PROVIDES GREEN BUILDING CODE 5.407.2.2.1 EXTERIOR DOOR PROTECTION.
133	-NONABSORBENT INTERIOR FLOOR AND WALL FINISHES WITHIN AT LEAST 2' AROUND AND PERPENDICULAR TO EXTERIOR ENTRIES AND OPENINGS SUBJECT TO FOOT TRAFFIC.

FLOOR PLAN NOTES

1. VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO DEMOLITION OR CONSTRUCTION.
2. MATERIALS WHICH ARE IN SIMILAR LOCATIONS ARE NOT NOTED AT EVERY OCCURRENCE SEE FINISH PLANS, REFLECTED CEILING PLANS, INTERIOR ELEVATIONS, AND FINISH LEGEND FOR ADDITIONAL FINISH INFORMATION.
3. SEE DOOR AND FRAME TYPES FOR ADDITIONAL INFORMATION AND REFERENCES TO DETAILS.
4. MECHANICAL GRILLES AND ACCESS PANELS IN WALLS SHALL MATCH THE COLOR OF ADJACENT WALL WHERE LOCATED, UNLESS NOTED OTHERWISE.
5. DIMENSIONS SHOWN ARE TO FACE OF STUD, FACE OF MASONRY OR CENTERLINE OF COLUMN OR GRID LINE UNLESS NOTED OTHERWISE.
6. DOORS NOT LOCATED BY DIMENSION ARE TO BE CENTERED IN WALLS AS SHOWN OR LOCATED 4 1/2" FROM FACE OF STUD TO FACE OF JAMB.
7. MASONRY DIMENSIONS ARE NOMINAL. COORDINATE ACTUAL ROUGH OPENING MASONRY DIMENSIONS.
8. NO DOOR SHALL SWING INTO ANY REQUIRED CLEAR FLOOR AREA.
9. FLOOR SURFACES SHALL NOT SLOPE IN EXCESS OF 2% WHERE SLOPES ARE INDICATED.
10. PROVIDE BACKING AT WALL MOUNTED ITEMS.
11. DAYLIGHT OF THE ROOF DRAIN TO BE AT 6" ABOVE GROUND LEVEL.
12. REFER TO STRUCTURAL DRAWING FOR TYPICAL FRAMING DETAILS.
13. ALL FURNITURE SHOWN IN THIS PLAN ARE NON-FIXED FURNITURES.

WALL LEGEND

- EXISTING WALL
- EXISTING CMU WALL
- NEW STUD WALL FULL HEIGHT TO UNDERSIDE OF NEW CEILING
- NEW BACKLIT ACCENT WALL
- ALUMINUM STOREFRONT SEE DETAIL E13/A504, SHEET A602

BUREAU OF ENGINEERING OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 REN. 08/31/2027 ★ STATE OF CALIFORNIA

VERTICAL CONTROL:	
HORIZONTAL CONTROL:	
SHEET TITLE:	FLOOR PLAN - NEW DESIGN
PROJECT:	LAS PALMAS SENIOR CENTER
ADDRESS:	1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

ALFRED MATA, PE
ARCHITECTURAL DIVISION

ARCHITECT:	JENNY M LIM
DESIGNED BY:	TROY YOUNGE
DRAWN BY:	NAM KIM
CHECKED BY:	CELSO DEL POSO
APPROVED BY:	STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

INTERIM CITY ENGINEER
DATE:

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A103
SHEET 11 OF SHEETS 115

PLOTTED: 10/21/2025 2:53:31 PM

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 03/02/10
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

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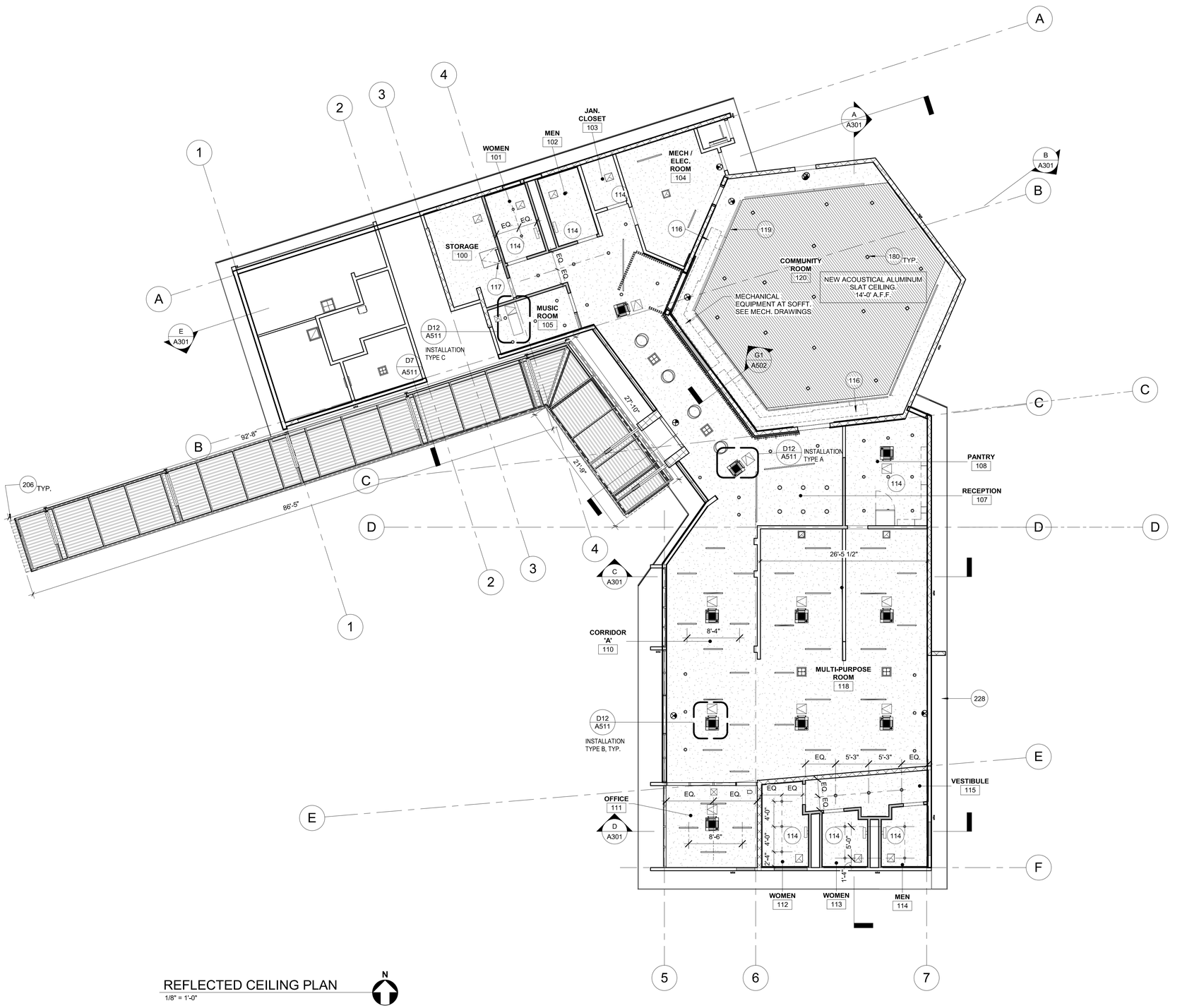

REFLECTED CEILING PLAN

1/8" = 1'-0"

N

KEY NOTES

KEY	DESCRIPTION
114	-(N) MOLD & MOISTURE RESISTANT GYP. BOARD. CEILING.
116	-(N) SOFFIT MOUNT FAN COIL UNIT PER MECH. DWG. REFER TO MECH. DWG. & STRUCTURAL DWG. FOR INFORMATION. REFER TO G002 'DEFERRED DESIGN SUBMITTAL #8 FOR DEFERRED DESIGN.
117	-(N) 36"X30" ROOF HATCH & NEW LADDER. SEE DETAIL AND SPECIFICATIONS.
119	-MECH. SOFFIT SEE A5/A502 FOR FRAMING DETAIL.
180	-PROVIDE 6"X6" CLEARANCE AROUND LIGHT FIXTURES AT SUSPENDED CEILING
206	-(N) 2"x4" ALUM. BATTEN TRELLIS MEMEBERS ICC ESR 4183 ATTACHED TO STEEL STRUCTURE, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATURAL WALNUT, SEE STRUCTURAL DWG. FOR DETAILS. 1000SF
228	-(E) STUCCO @ UNDERSIDE OF SOFFIT. PATCH & REPAIR AND DAMAGED PORTION OF (E) STUCCO. APPLY NEW COAT OF PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DEC761 COCHISE LRV 58. THROUGHOUT TYPICAL.

REFLECTED CEILING PLAN NOTES

1. REFLECTED CEILING PLANS ARE INTENDED FOR COORDINATION PURPOSES FOR MECHANICAL, ELECTRICAL, AND ARCHITECTURAL ELEMENTS. REFER TO RESPECTIVE DRAWINGS FOR SPECIFIC REQUIREMENTS. CONTRACTOR IS RESPONSIBLE TO COMPARE THIS RCP WITH ELECTRICAL LIGHTING AND DEVICES, MECHANICAL SUPPLY, RETURN & EXHAUST PLANS. CONTRACTOR SHALL VERIFY AND COORDINATE IN FIELD LOCATION OF NEW RECESSED LIGHT FIXTURES AND MECHANICAL UNITS WITHIN THE EXISTING CEILING CAVITIES BETWEEN EXISTING CEILING JOISTS. CONTRACTOR SHALL REPORT ANY OMISSIONS OR DISCREPANCIES TO ARCHITECT.
2. SEE ELECTRICAL PLANS FOR LOCATIONS OF CEILING MOUNTED SMOKE DETECTORS, SPEAKERS, EXIT SIGNS AND FIRE ALARM DEVICES ETC.
3. ALL FINISH CEILING HEIGHTS EXCEPT COMMUNITY ROOM ARE 8'-2" U.N.O.

CEILING FINISH LEGEND

GYP. BD. CEILING - 5/8" TYPE 'X' GYP. BD. ATTACHED TO RESILIENT CHANNEL 8'-2" A.F.F.

2"x4", 4" O.C., ALUM. BAFFLE CEILING SUSPENSION SYSTEM AT COMMUNITY ROOM

LEGEND - FOR REFERENCE ONLY. SEE ELECTRICAL & MECHANICAL DRAWINGS

- TRIMLESS ACOUSTICAL DOWNLIGHT 6"
- SKY OCULUS- GAZE CIRCLE RECESSED LIGHT 24"
- BIONIC PRO 1X4 RECESSED LIGHT
- BIONICPRO3 - 3" SLOT
- DCC CYLINDER 4" PENDANT
- MINX WS-62021 WALL MOUNTED FIXTURE BY MODERN FORMS @ +6'-10" A.F.F.
- MECHANICAL SUPPLY DIFFUSERS
- EXHAUST FANS
- MECHANICAL CEILING CASSETTES
- LED EXIT SIGN

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LADBS STAMP

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CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE
INTERIM CITY ENGINEER
DATE:

ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: REFLECTED CEILING PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. A104

SHEET 12 OF SHEETS 115

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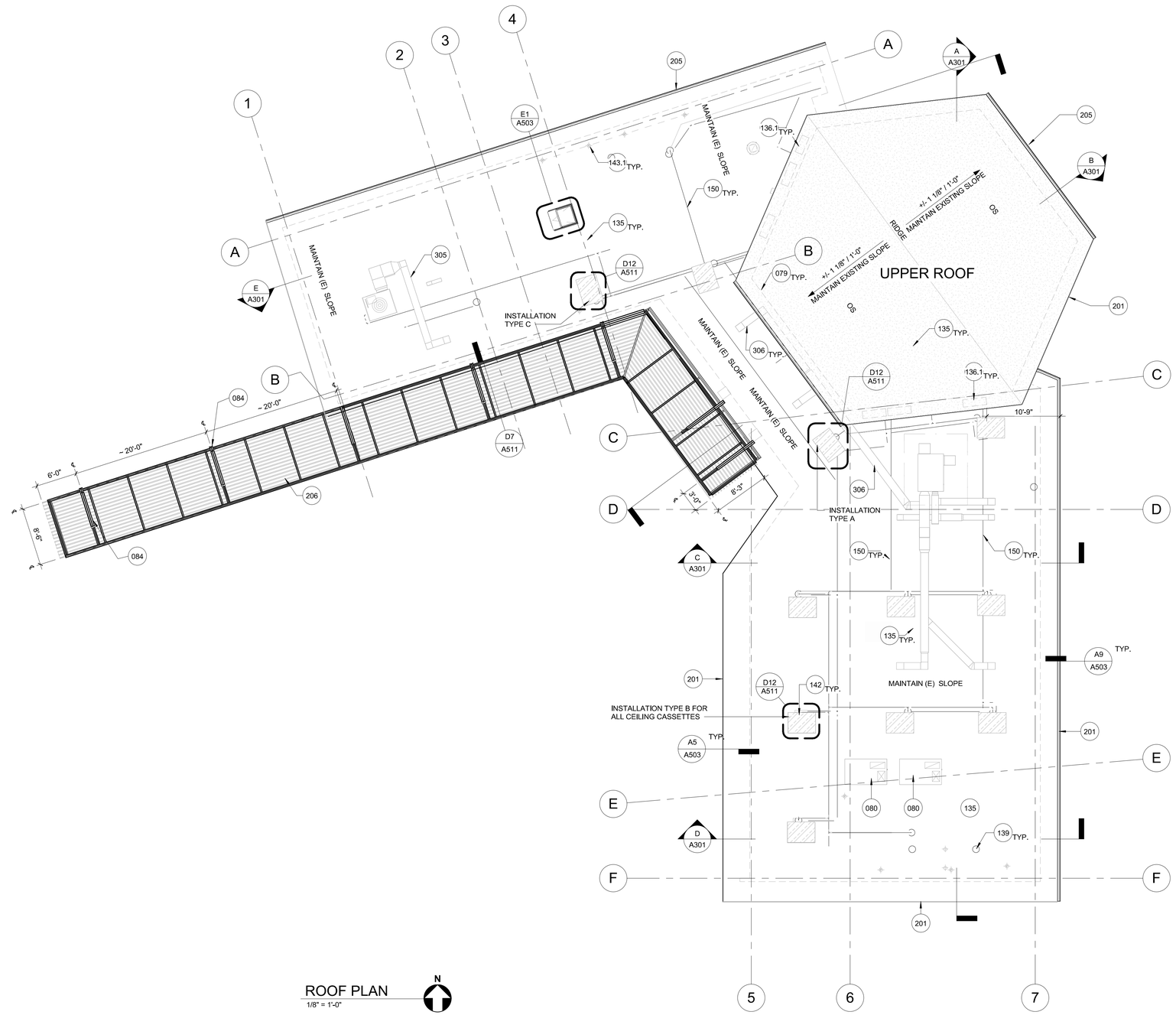

ROOF PLAN
1/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
079	LINE OF EXISTING WALL BELOW.
080	-(E) LOCATION OF ROOF MOUNTED MECH. EQUIPMENT TO BE DEMOLISHED. REPAIR DAMAGED ROOFING. SEE MECHANICAL DRAWINGS FOR DEMOLITION PLAN OF EXISTING ROOF EQUIPEMENT.
084	-(E) STEEL TRELLIS STRUCTURE TO REMAIN, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7, SEE STRUCTRURAL DRAWINGS.
135	-(N) ROOFING SYSTEM PER SPEC. MAINTAIN (E) ROOF SLOPE. CLASS A UL ER9516-01.
136.1	(N) WALL MOUNTED MECHANICAL EQUIPMENT UNDER UPPER ROOF EAVES. SEE MECHANICAL DRAWINGS.
139	PLUMBING VENT PIPE. PROVIDE ROOFING BOOTS AS REQUIRED. SEE ROOFING DETAILS AND PLUMBING DRAWINGS.
142	ROOFTOP BUILT UP MECH. PLATFORM AT CEILING CASSETTE LOCATIONS SEE RCP AND MECHANICAL.
143.1	MECHANICAL EXHAUST ROOF CAP, PROVIDE ROOFING BOOTS AS REQUIRED. SEE ROOFING DETAILS AND MECH. DRAWINGS.
150	ROOF MOUNTED PLUMBING LINES, SEE PLUMBING DRAWINGS.
201	-(N) 2x FASCIA BOARD, REPLACE (E) OLD FASCIA BOARD, PREP FOR PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7. TYP. FOR ALL.
205	-(N) 20 ga. GALVANIZED IRON GUTTER AND DOWNSPOUT. PAINT TO MATCH BLDG.
206	-(N) 2"x4" ALUM. BATTEN TRELLIS MEMEBERS ICC ESR 4183 ATTACHED TO STEEL STRUCTURE, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATURAL WALNUT, SEE STRUCTURAL DWG. FOR DETAILS. 1000SF
305	ROOF MOUNTED MECHANICAL EQUIPMENT, SEE MECHANICAL DRAWING.
306	MECHANICAL DUCTS AND EQUIPMENT, SEE MECHANICAL DRAWING.

ROOF PLAN NOTES:

1. VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO DEMOLITION OR CONSTRUCTION.
2. REMOVE (E) ROOFING MATERIAL IN THEIR ENTIRETY. REPAIR / REPLACE (E) DAMAGED PLYWOOD SHEATHING.
3. REFER TO MECH. / PLUMBING PLANS FOR INFORMATION RELATED TO (E) MECH./ PLUMB. EQUIPMENT.
4. FIELD VERIFY SIZE AND LOCATIONS OF ALL EXISTING MECHANICAL UNITS, ROOF CURBS, ROOF DRAINS, SCUPPERS AS WELL AS ANY OTHER PENETRATIONS OR ROOF ACCESSORIES AND INSTALL NEW ROOF AS REQUIRED TO ACCOMODATE ACCESSORIES AND CREATE WATER TIGHT SEAL OVER ENTIRE ROOF.
5. LOCATIONS OF NEW ROOFING & SLOPE ARE SHOWN FOR DESIGN INTENT ONLY. CONTRACTOR IS REPONSIBLE FOR VERIFYING PRECISE LOCATION AND PROVIDE THESE ELEMENTS AS REQUIRED TO PROVIDE A PROPERLY SLOPED AND WATER TIGHT SYSTEM IN WHICH WATER IS NOT RETAINED ON ROOF.
6. COORDINATION OF EXISTING BUILDING UTILITIES IS RESPONSIBILITY OF CONTRACTOR PRIOR TO COMMENCEMENT OF ROOFING REPLACEMENT.

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PROJECT ISSUE DATE 9/22/2025

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DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 ★ REN. 08/31/2027 ★ STATE OF CALIFORNIA

ALFRED MATA, PE
INTERIM CITY ENGINEER
DATE:
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: ROOF PLAN
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A105
SHEET 13 OF SHEETS 115

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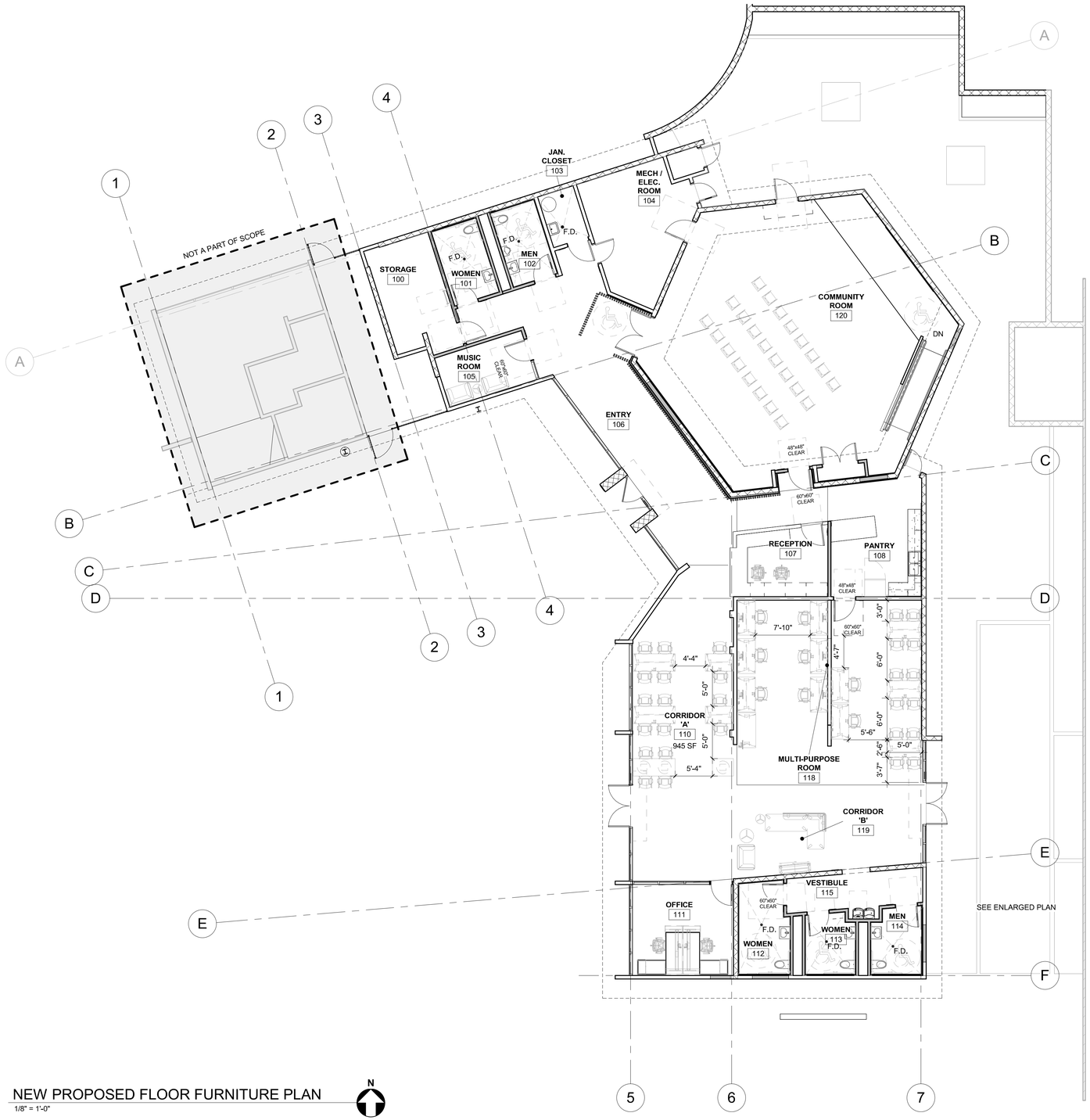
REVISION DATES (DESIGN STAGE ONLY)



NEW PROPOSED FLOOR FURNITURE PLAN

1/8" = 1'-0"

N

KEY NOTES

KEY	DESCRIPTION

FLOOR PLAN NOTES

1. VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO DEMOLITION OR CONSTRUCTION.
2. MATERIALS WHICH ARE IN SIMILAR LOCATIONS ARE NOT NOTED AT EVERY OCCURRENCE SEE FINISH PLANS, REFLECTED CEILING PLANS, INTERIOR ELEVATIONS, AND FINISH LEGEND FOR ADDITIONAL FINISH INFORMATION.
3. SEE DOOR AND FRAME TYPES FOR ADDITIONAL INFORMATION AND REFERENCES TO DETAILS.
4. MECHANICAL GRILLES AND ACCESS PANELS IN WALLS SHALL MATCH THE COLOR OF ADJACENT WALL WHERE LOCATED, UNLESS NOTED OTHERWISE.
5. DIMENSIONS SHOWN ARE TO FACE OF STUD, FACE OF MASONRY OR CENTERLINE OF COLUMN OR GRID LINE UNLESS NOTED OTHERWISE.
6. DOORS NOT LOCATED BY DIMENSION ARE TO BE CENTERED IN WALLS AS SHOWN OR LOCATED 4 1/2" FROM FACE OF STUD TO FACE OF JAMB.
7. MASONRY DIMENSIONS ARE NOMINAL. COORDINATE ACTUAL ROUGH OPENING MASONRY DIMENSIONS.
8. NO DOOR SHALL SWING INTO ANY REQUIRED CLEAR FLOOR AREA.
9. FLOOR SURFACES SHALL NOT SLOPE IN EXCESS OF 2% WHERE SLOPES ARE INDICATED.
10. PROVIDE BACKING AT WALL MOUNTED ITEMS.
11. DAYLIGHT OF THE ROOF DRAIN TO BE AT 6" ABOVE GROUND LEVEL.
12. REFER TO STRUCTURAL DRAWING FOR TYPICAL FRAMING DETAILS.
13. ALL FURNITURE SHOWN IN THIS PLAN ARE NON-FIXED FURNITURES.

WALL LEGEND

- EXISTING WALL
- EXISTING CMU WALL
- NEW STUD WALL, FULL HEIGHT TO UNDERSIDE OF NEW CEILING
- NEW BACKLIT ACCENT WALL
- ALUMINUM STOREFRONT SEE DETAIL E13/A504, SHEET A602

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PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 ★ REN. 08/31/2027 ★ STATE OF CALIFORNIA

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: FLOOR PLAN - FURNITURE LAYOUT

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. A106

SHEET 14 OF SHEETS 115

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REVISION DATES (DESIGN STAGE ONLY)

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 03/02/10
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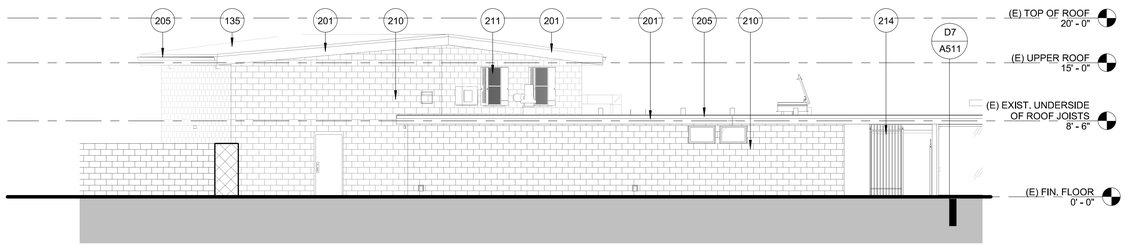
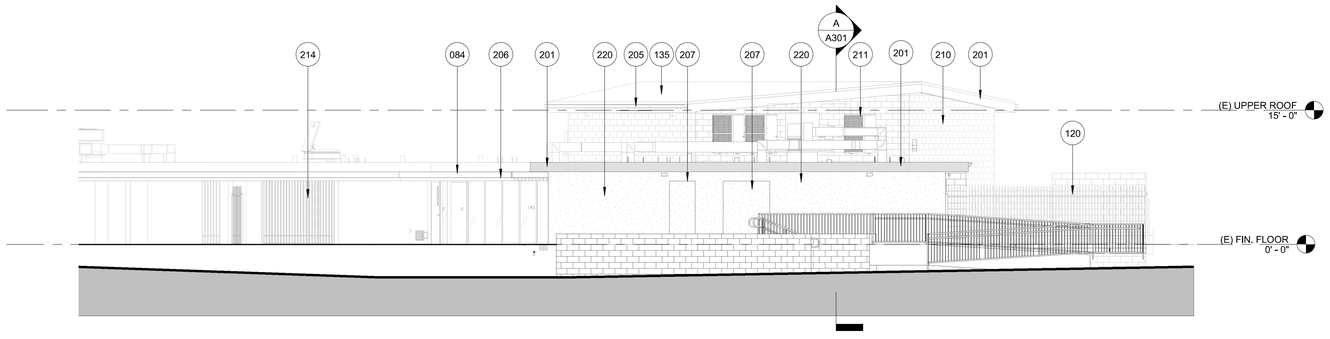
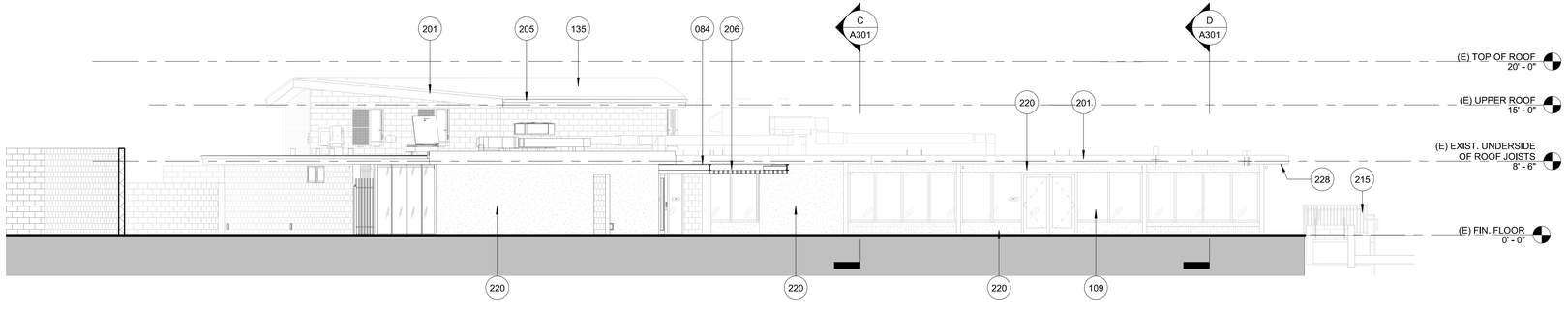


A A103 NORTH ELEVATION
1/8" = 1'-0"



B A103 SOUTH ELEVATION
1/8" = 1'-0"



C A103 WEST ELEVATION
1/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
084	-(E) STEEL TRELLIS STRUCTURE TO REMAIN, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7, SEE STRUCTRURAL DRAWINGS.
109	-(E) CONC. CURB TO REMAIN. (N) STOREFRONT SYSTEM TO BE INSTALLED ABOVE THE (E) CONC. CURB. VERIFY HEIGHT OF (E) CONC. CURB AT JOB.
120	-(N) 6' HIGH W.I. FENCE & GATE. PROVIDE LOCKING MECHANISM AND PANIC HDWR. SEE LANDSCAPE PLAN L410 FOR DETAILS.
135	-(N) ROOFING SYSTEM PER SPEC. MAINTAIN (E) ROOF SLOPE. CLASS A UL ER9516-01.
201	-(N) 2x FASCIA BOARD. REPLACE (E) OLD FASCIA BOARD, PREP FOR PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7, TYP. FOR ALL.
205	-(N) 20 ga. GALVANIZED IRON GUTTER AND DOWNSPOUT, PAINT TO MATCH BLDG.
206	-(N) 2"x4" ALUM. BATTEN TRELLIS MEMEBERS ICC ESR 4183 ATTACHED TO STEEL STRUCTURE, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATURAL WALNUT, SEE STRUCTURAL DWG. FOR DETAILS. 1000SF
207	-CLOSE THIS PORTION OF OPENING, STUCCO TO MATCH BLDG.
210	-(E) CMU WALL TO REMAIN.
211	-(N) WALL MOUNTED MECHANICAL EQUIPMENT. SEE MECHANICAL DRAWINGS.
214	(N) 8'-0" FENCE AND GATE PER LANDSCAPE DWG. SEE LANDSCAPE PLAN L408 FOR DETAILS.
215	(N) FENCE PER LANDSCAPE DWG, SEE LANDSCAPE PLAN L410 FRO DETAILS.
220	(E) EXTERIOR PLASTER WALL. PATCH/REPAIR ANY DAMAGED PORTION OF STUCCO AND PREP FOR NEW PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DEC761 COCHISE LRV 58.
228	-(E) STUCCO @ UNDERSIDE OF SOFFIT. PATCH & REPAIR AND DAMAGED PORTION OF (E) STUCCO. APPLY NEW COAT OF PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DEC761 COCHISE LRV 58, THROUGHOUT TYPICAL.

ELEVATION NOTES

1. EXISTING ELEVATION MARKERS ARE FOR REFERENCE ONLY.

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

ALFRED MATA, PE
ARCHITECTURAL DIVISION

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 REN. 08/31/2027 ★ STATE OF CALIFORNIA

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT
INTERIM CITY ENGINEER
DATE:

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: NEW PROPOSED ELEVATIONS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028

BUREAU OF ENGINEERING
OFFICIAL RECORD

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
A201

SHEET 15 OF SHEETS 115

PLOTTED: 10/21/2025 2:53:50 PM

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REVISION DATES
(DESIGN STAGE ONLY)

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 10/30/23
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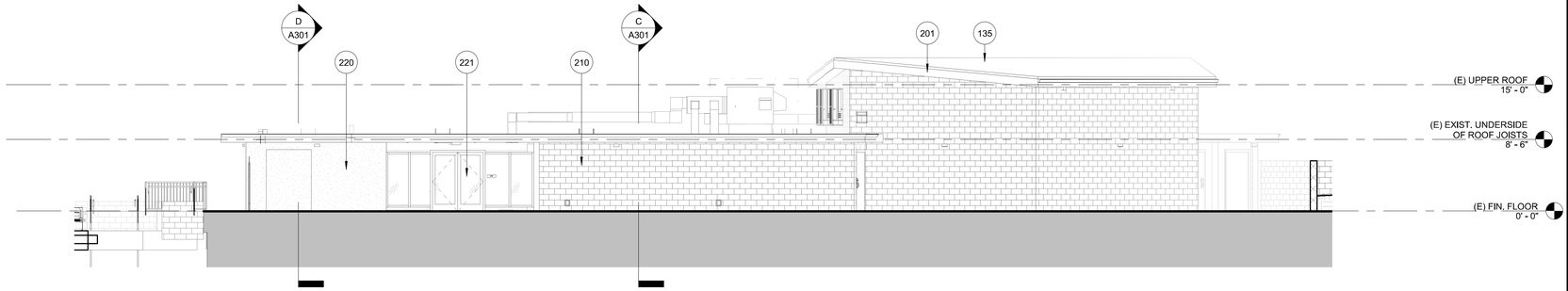
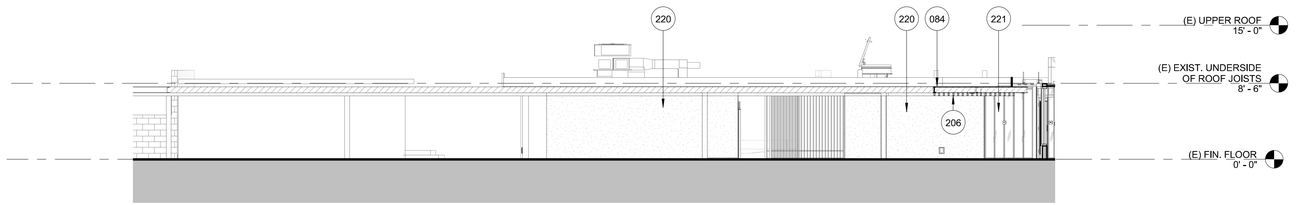
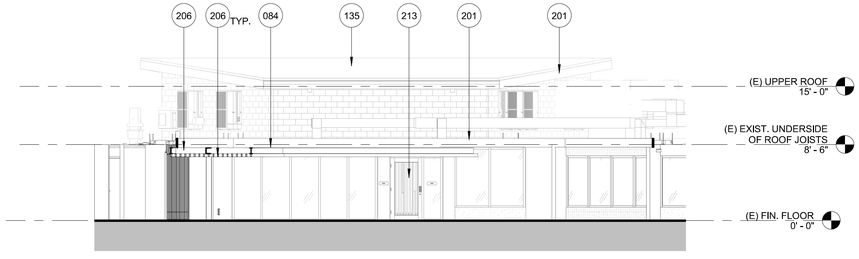


D A103 EAST ELEVATION_
1/8" = 1'-0"



E A103 PARTIAL SOUTH ELEVATION SHOWING TRELLIS
1/8" = 1'-0"



F A103 PARTIAL ELEVATION AT ENTRY
1/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
084	-(E) STEEL TRELLIS STRUCTURE TO REMAIN, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7, SEE STRUCTRURAL DRAWINGS.
135	-(N) ROOFING SYSTEM PER SPEC. MAINTAIN (E) ROOF SLOPE. CLASS A UL ER9516-01.
201	-(N) 2x FASCIA BOARD. REPLACE (E) OLD FASCIA BOARD, PREP FOR PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7. TYP. FOR ALL.
206	-(N) 2"x4" ALUM. BATTEN TRELLIS MEMEBERS ICC ESR 4183 ATTACHED TO STEEL STRUCTURE, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATURAL WALNUT, SEE STRUCTURAL DWG. FOR DETAILS. 1000SF
210	-(E) CMU WALL TO REMAIN.
213	-(N) STOREFRONT ENTRY DOOR, SEE DOOR SCHEDULE & DETAILS.
220	(E) EXTERIOR PLASTER WALL. PATCH/REPAIR ANY DAMAGED PORTION OF STUCCO AND PREP FOR NEW PAINT, BASIS OF DESIGN DUNN EDWARDS, COLOR: DEC761 COCHISE LRV 58.
221	(N) STOREFRONT SYSTEM. SEE DOOR SCHEDULE.

ELEVATION NOTES

1. EXISTING ELEVATION MARKERS ARE FOR REFERENCE ONLY.

BUREAU OF ENGINEERING
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BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 ★ REN. 08/31/2027 ★ STATE OF CALIF.

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: NEW PROPOSED ELEVATIONS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028

ALFRED MATA, PE	INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION	DATE:
ARCHITECT: JENNY M LIM	
DESIGNED BY: TROY YOUNGE	
DRAWN BY: NAM KIM	
CHECKED BY: CELSO DEL POSO	PRINCIPAL ARCHITECT
APPROVED BY: STEVEN FIERCE, A.I.A.,	

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A202
SHEET 16 OF SHEETS 115

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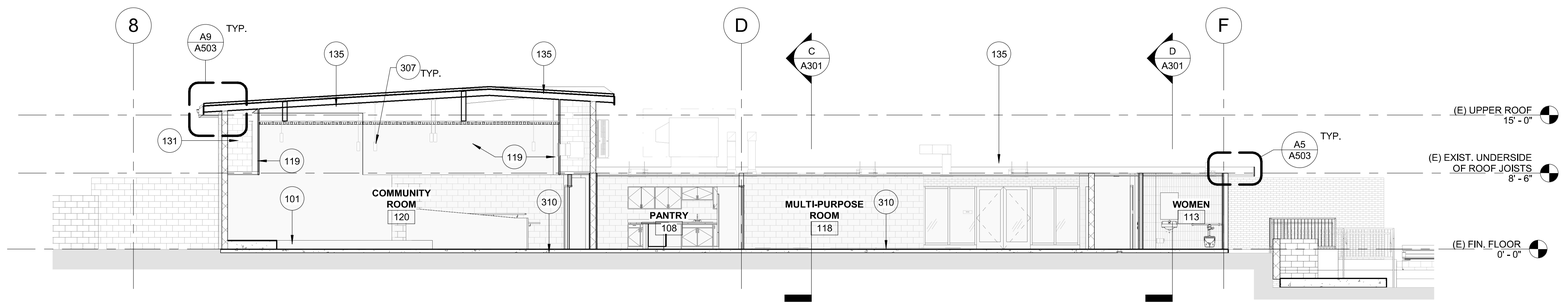
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

REVISION DATES (DESIGN STAGE ONLY)



A A103 SECTION 'A'
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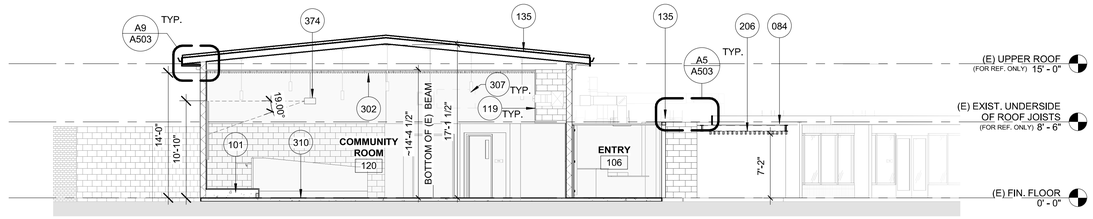

B A103 SECTION 'B'
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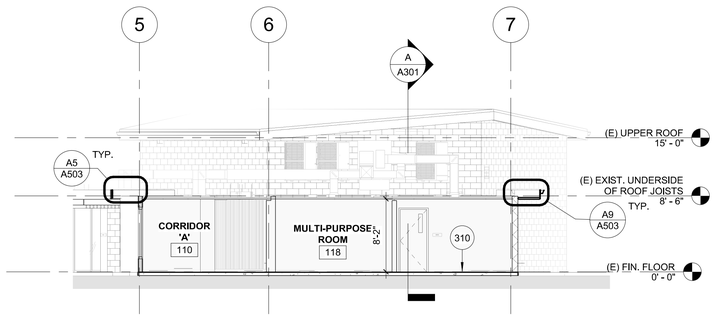

C A103 SECTION 'C'
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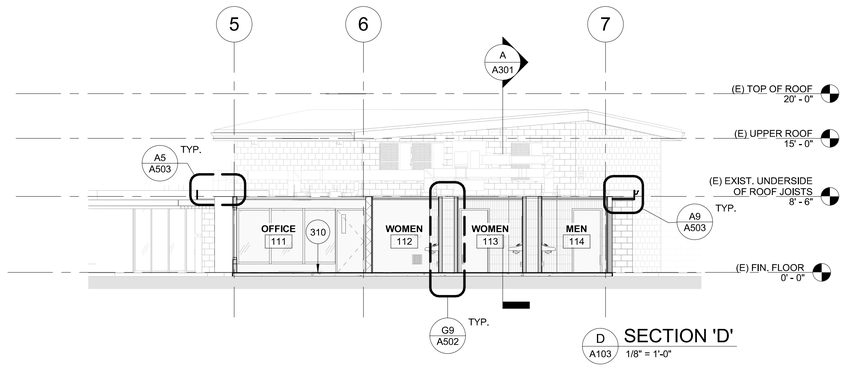
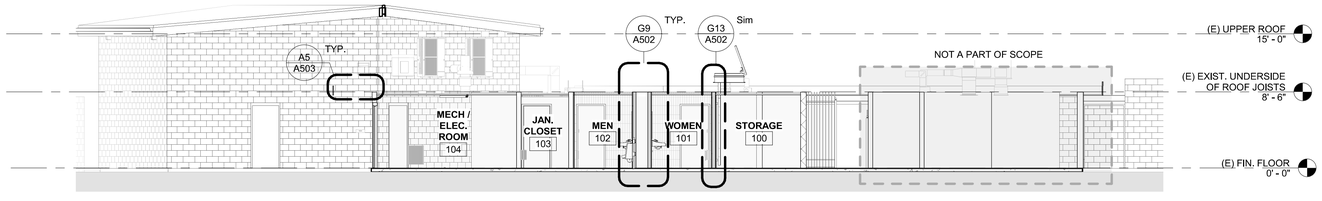


D A103 SECTION 'D'
1/8" = 1'-0"



E A103 SECTION 'E'
1/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
084	-(E) STEEL TRELLIS STRUCTURE TO REMAIN, BASIS OF DESIGN DUNN EDWARDS, COLOR: DET680 ESPRESSO MACCHIATO LRV 7, SEE STRUCTRURAL DRAWINGS.
101	-(N) 12" RAISED WOOD PLATFORM. FRAME WITH 2X @ 16" O.C. AND 1" FINISHED GRADE "A" PLYWD SHEATHING. FINISH VERTICAL EDGE WITH HARDWOOD, WITH NO PLYWOOD EDGES EXPOSED. FINISHED STAIN COLOR TO BE APPROVED BY ARCHITECT.
119	-MECH. SOFFIT SEE A5/A502 FOR FRAMING DETAIL.
131	LINE OF SOFFIT.
135	-(N) ROOFING SYSTEM PER SPEC. MAINTAIN (E) ROOF SLOPE. CLASS A UL ER9516-01.
206	-(N) 2"x4" ALUM. BATTEN TRELLIS MEMEBERS ICC ESR 4183 ATTACHED TO STEEL STRUCTURE, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATURAL WALNUT, SEE STRUCTURAL DWG. FOR DETAILS. 1000SF
302	(N) 2"x4", 4" O.C., ALUM. BAFFLE SUSPENDED CEILING PANEL SYSTEM, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATIONAL WALNUT. SEE SPEC.
307	(N) PENDANT LIGHT FIXTURES, SEE ELECTRICAL DRAWING.
310	(E) CONC. SLAB.
374	(N) PROJECTOR HUNG FROM ROOF, COORDINATE WITH ITA AND ELECTRICAL ON OPTIMAL LOCATION ADJACENT TO LIGHTING BAR.

SECTION NOTES

1. EXISTING ELEVATION MARKERS ARE FOR REFERENCE ONLY.

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT
JENNY M LIM
LIC. NO. C36872
REN. 08/31/2027
STATE OF CALIFORNIA

ALFRED MATA, PE
ARCHITECTURAL DIVISION
INTERIM CITY ENGINEER
DATE:

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: BUILDING SECTIONS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028

BUREAU OF ENGINEERING
OFFICIAL RECORD

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
A301

SHEET 17 OF SHEETS 115

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REVISION DATES
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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 02/16/10
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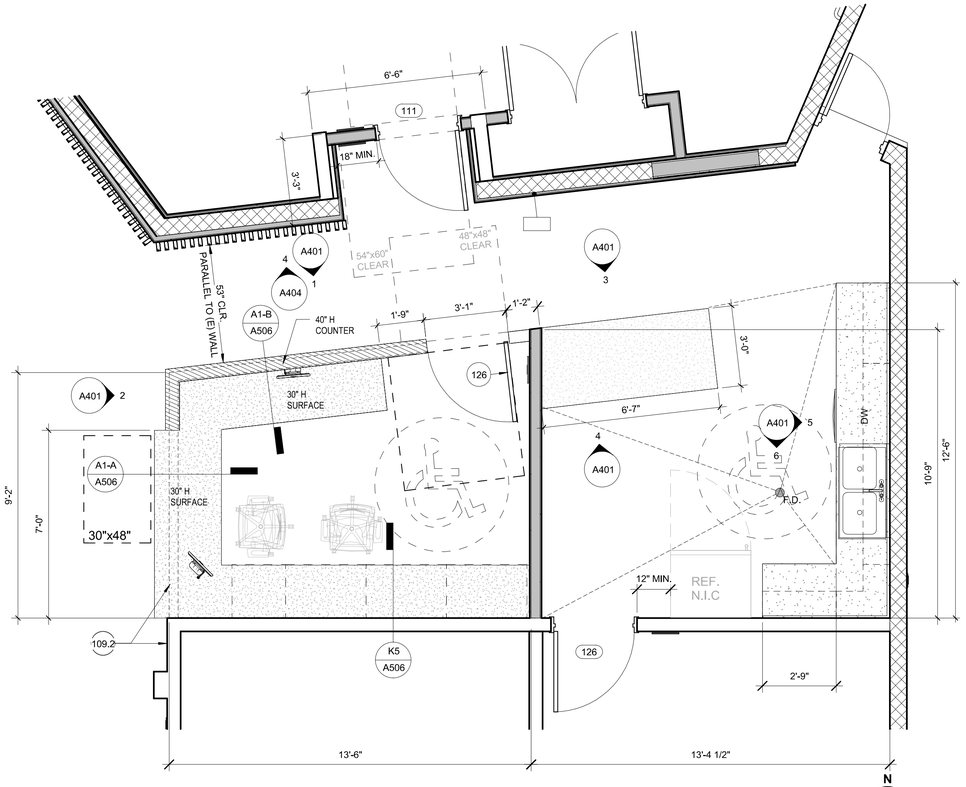
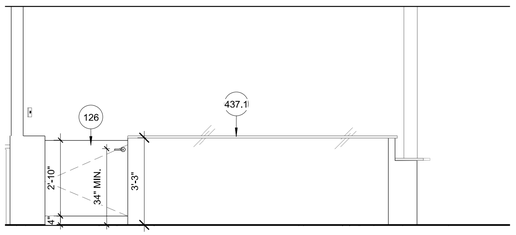
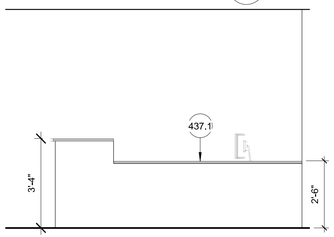
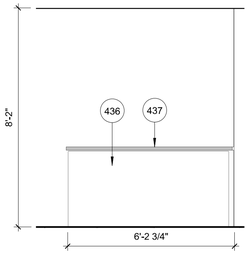


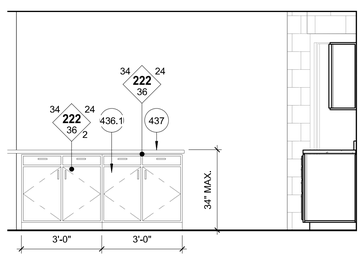
8 A103 RECEPTION / PANTRY ENLARGED PLAN
3/8" = 1'-0"



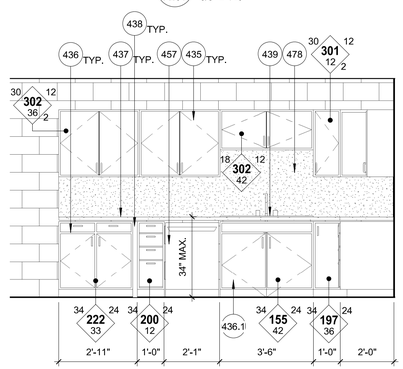




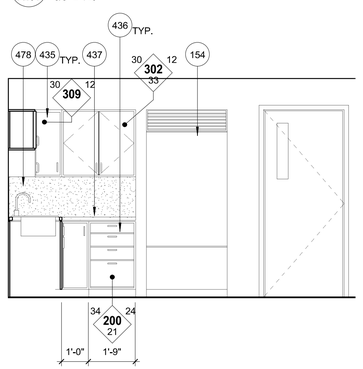
1 A401 RECEPTION ELEVATION SOUTH
3/8" = 1'-0"



2 A401 RECEPTION ELEVATION EAST
3/8" = 1'-0"



3 A401 PANTRY MILLWORK ELEVATION SOUTH 1
3/8" = 1'-0"



4 A401 PANTRY MILLWORK ELEVATION NORTH
3/8" = 1'-0"

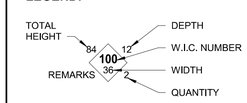
5 A401 PANTRY MILLWORK ELEVATION EAST
3/8" = 1'-0"

6 A401 PANTRY MILLWORK ELEVATION SOUTH 2
3/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
109.2	- ALIGN NEW WALL FINISH WITH EXISTING
126	-36" HIGH WOOD GATE WITH LATCH.
154	REFRIGERATOR (N.I.C)
435	UPPER BUILT-IN P-LAM FINISH CABINET, BASIS OF DESIGN WILSONART STANDARD LAMINATE, COLOR: SLATE GREY D91-50 MATTE FINISH, SEE CABINET DETAILS SHEET A506.
436	BASE BUILT-IN P-LAM FINISH CABINET, BASIS OF DESIGN WILSONART STANDARD LAMINATE, COLOR: SLATE GREY D91-50 MATTE FINISH, SEE CABINET DETAILS SHEET A506.
436.1	REMOVABLE BASE CABINET, CLEARANCES MEETING CBC 11B-306.2 AT SINK AND CBC 11B-804.3.1 AT WORK SURFACE
437	COUNTERTOP, BASIS OF DESIGN CORIAN SOLID SURFACE, COLOR: PEPPERED TERRAZZO.
437.1	COUNTERTOP, BASIS OF DESIGN WILSONART STANDARD LAMINATE, COLOR: SLATE GREY D91-50 MATTE FINISH.
438	MATCHING INFILL PANELS / TRIM AS NECESSARY
439	SINK W/ FAUCET, SEE PLUMBING DRAWING.
457	DISHWASHER, MODEL: OR APPROVED EQUAL.
478	FULL HEIGHT BACKSPLASH, BASIS OF DESIGN CORIAN SOLID SURFACE, COLOR: PEPPERED TERRAZZO, SEE FINISH SCHEDULE.

LEGEND:



CASEWORK TAG
SEE A506 CABINET DETAILS

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REVISION DATES (DESIGN STAGE ONLY)

CITY OF LOS ANGELES
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NO.	REVISION DESCRIPTION	DATE	BY

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	ARCHITECTURAL DIVISION
	DATE:
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CHECKED BY:	CELSO DEL POSO
APPROVED BY:	STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: ENLARGED PLANS AND ELEVATIONS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A401
SHEET 18 OF SHEETS 115

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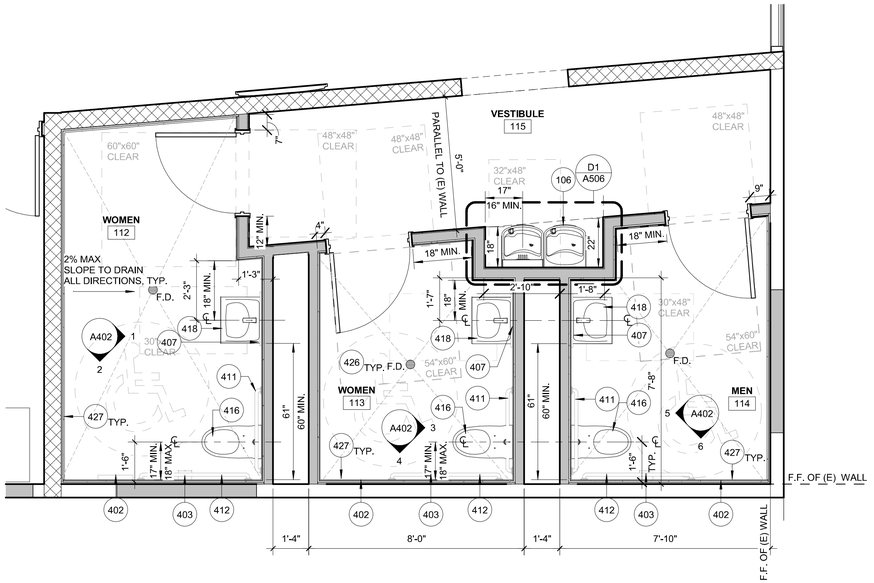
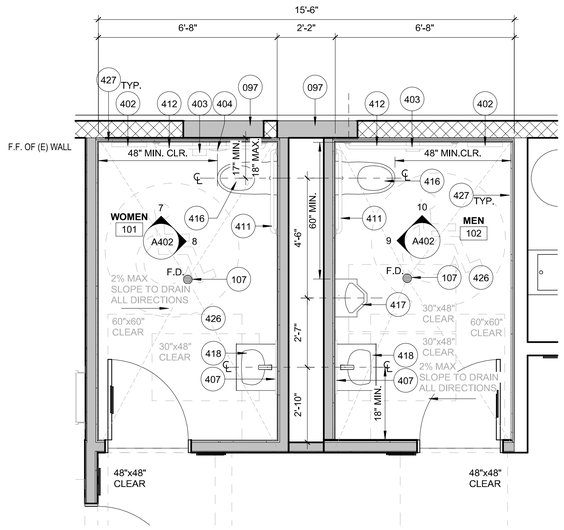


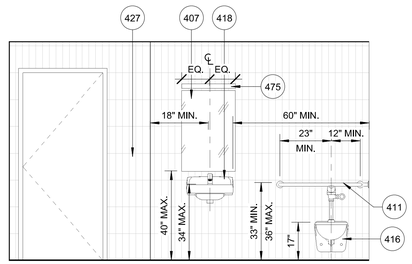
B A103 RESTROOMS - 112, 113, 114

3/8" = 1'-0"



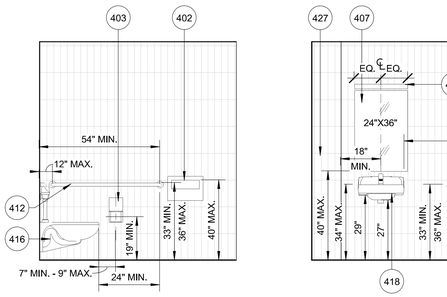
A A103 RESTROOMS - 101, 102

3/8" = 1'-0"



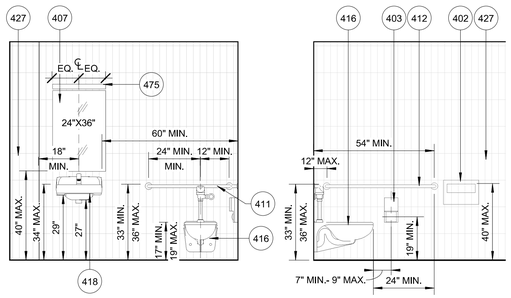
1 A402 R.R. 112 EAST ELEV.

3/8" = 1'-0"



2 A402 R.R. 112 SOUTH ELEV.

3/8" = 1'-0"

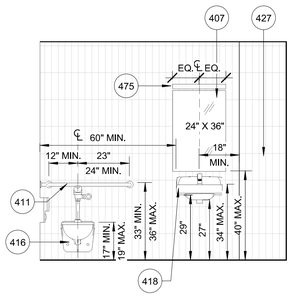


3 A402 R.R. 113 EAST ELEV.

3/8" = 1'-0"

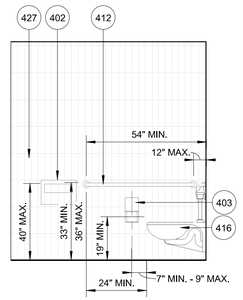
4 A402 R.R. 113 SOUTH ELEV.

3/8" = 1'-0"



5 A402 R.R. 114 WEST ELEV.

3/8" = 1'-0"



6 A402 R.R. 114 SOUTH ELEV.

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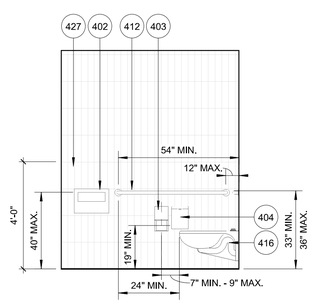

7 A402 R.R. 101 NORTH ELEV.

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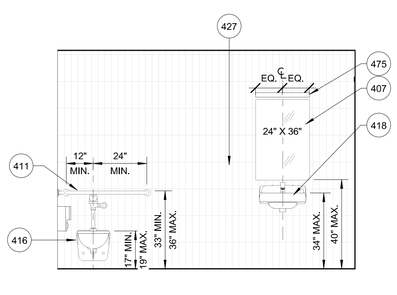
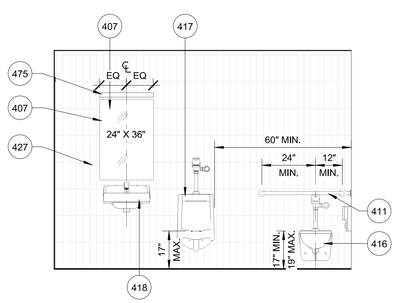


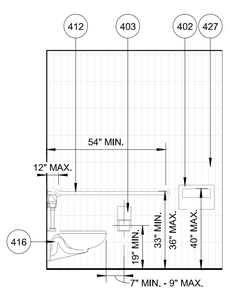
8 A402 R.R. 101 EAST ELEV.

3/8" = 1'-0"



9 A402 R.R. 102 WEST ELEV.

3/8" = 1'-0"



10 A402 R.R. 102 NORTH ELEV.

3/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
097	-REMOVE (E) WINDOW AND SCREEN, FILL IN WITH CONCRETE. SCORE CONCRETE TO MATCH SURROUNDING MASONRY BLOCK'S TEXTURE AND MODULE PATTERN.
106	-(N) ADA COMPLIANT DRINKING FOUNTAIN AND WATER BOTTLE FILLING STATION.
107	-(N) FLOOR DRAIN, SEE PLUMBING DRAWINGS.
402	SURFACE-MOUNTED TOILET SEAT COVER DISPENSER, SATIN FINISH (BOBRICK B-221 OR APPROVED EQUAL).
403	SURFACE-MOUNTED MULTI-ROLL TOILET TISSUE DISPENSER, SATIN FINISH (BOBRICK B-6851 OR APPROVED EQUAL)
404	SURFACE-MOUNTED SANITARY NAPKIN DISPOSAL (BOBRICK B-270 OR APPROVED EQUAL).
407	MIRROR W/STAINLESS STEEL ANGLE FRAME, 24"x36".
411	1 1/2"DIA.X36" STAINLESS STEEL GRAB BAR W/CONCEALED MOUNTING AND PEENED NONSLIP GRIPPING SURFACE FINISH,SATIN FINISH (BOBRICK B-6806 OR APPROVED EQUAL).
412	1 1/2"DIA.X42" STAINLESS STEEL GRAB BAR W/CONCEALED MOUNTING AND PEENED NONSLIP GRIPPING SURFACE FINISH,SATIN FINISH (BOBRICK B-6806 OR APPROVED EQUAL).
416	WALL-HUNG WATER CLOSET, SEE PLUMBING DWG.
417	WALL-HUNG URINAL, SEE PLUMBING DWG.
418	WALL-HUNG LAVATORY, SEE PLUMBING DWG.
426	NON-SLIP MOSAIC FLOOR TILE.
427	FULL HEIGHT WALL TILE OVER 5/8" TILE BACKING PANEL THROUGHOUT, SEE FINISH SCHEDULE.
475	LIGHT FIXTURES, SEE ELECTRICAL DRAWING.

WALL LEGEND

- EXISTING WALL
- EXISTING CMU WALL
- NEW STUD WALL FULL HEIGHT TO UNDERSIDE OF NEW CEILING
- NEW BACKLIT ACCENT WALL
- ALUMINUM STOREFRONT SEE DETAIL E13/A504, SHEET A602

NOTES:

1. KNEE AND TOE CLEARANCE COMPLYING WITH SECTION 11B-306 SHALL BE PROVIDED. SEE LAVATORIES AND SINKS 11B-606 ON SHEET G104. SEE DETAIL D13/A505.

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
DATE:

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: ENLARGED FLOOR PLAN - RESTROOMS AND INTERIOR ELEVATIONS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. A402

SHEET 19 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:13 PM

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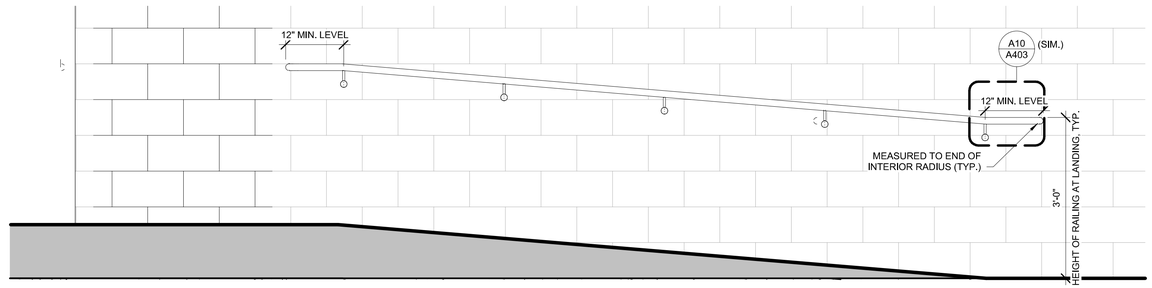
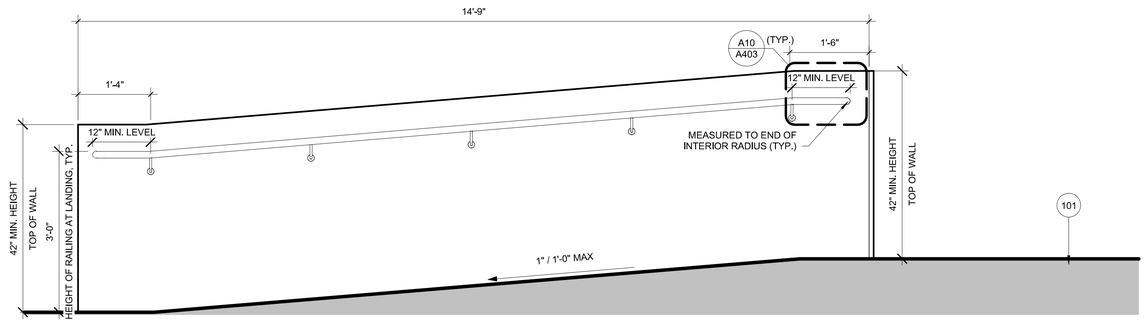
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 03/02/10
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

REVISION DATES (DESIGN STAGE ONLY)



K1 HANDRAIL AT STAGE RAMP ALONG CMU WALL (NOT USED)

3/4" = 1'-0" | 8/ A401

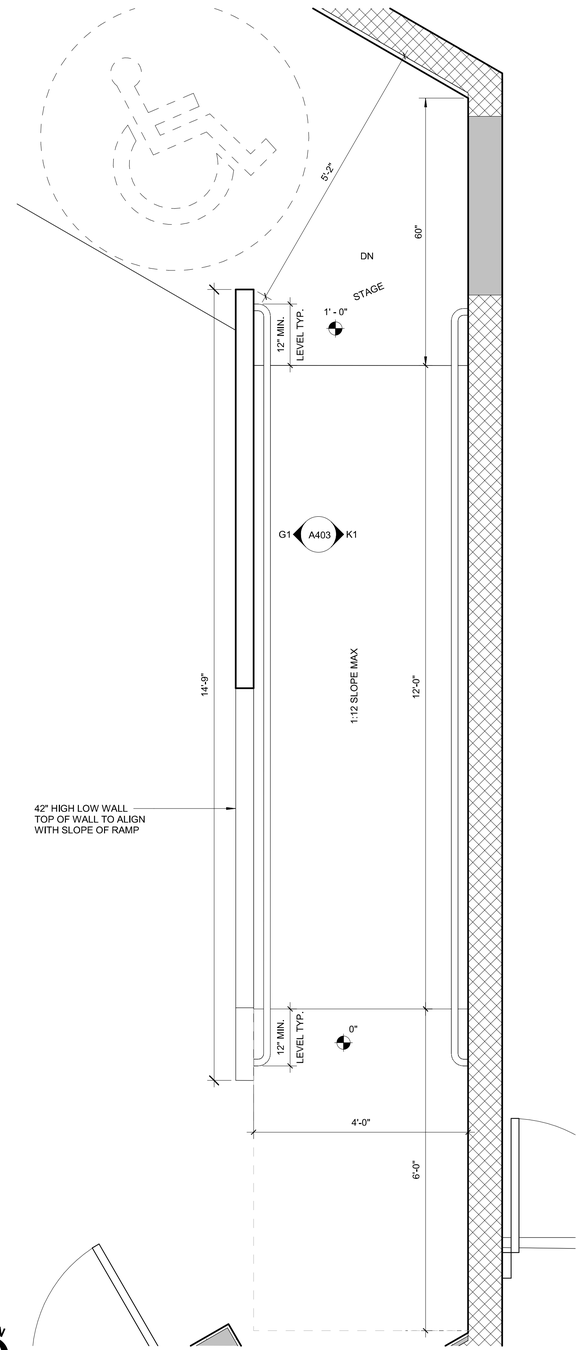


G1 HANDRAIL AT STAGE RAMP ALONG STUD WALL (NOT USED)

3/4" = 1'-0" | 8/ A401

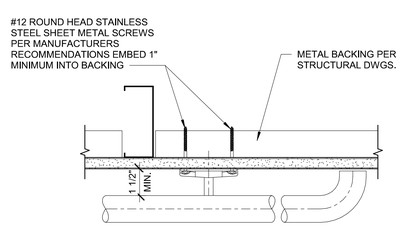
KEY NOTES

KEY	DESCRIPTION
101	-(N) 12" RAISED WOOD PLATFORM. FRAME WITH 2X @ 16" O.C. AND 1" FINISHED GRADE "A" PLYWD SHEATHING. FINISH VERTICAL EDGE WITH HARDWOOD, WITH NO PLYWOOD EDGES EXPOSED. FINISHED STAIN COLOR TO BE APPROVED BY ARCHITECT.



C10 / A103 ENLARGED PLAN AT RAMP

3/4" = 1'-0"



A10 HANDRAIL MOUNTING METAL BACKING

3" = 1'-0" | G1/ A403

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REVISION DATES (DESIGN STAGE ONLY)

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SHEET ISSUE DATE: 03/24/09
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CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 REN. 08/31/2027 ★ STATE OF CALIFORNIA

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
DATE:

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: ENLARGED PLAN - RAMP AT PLATFORM

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

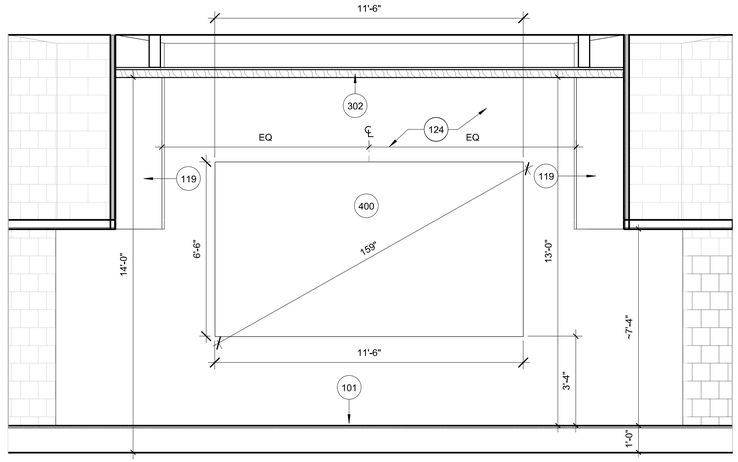
WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. A403

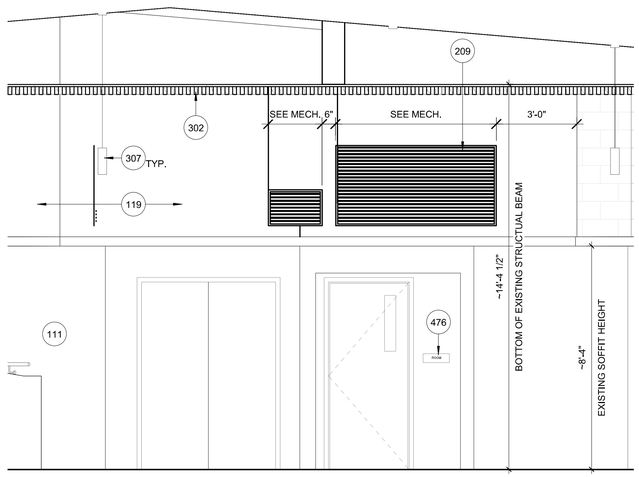
SHEET 20 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:14 PM



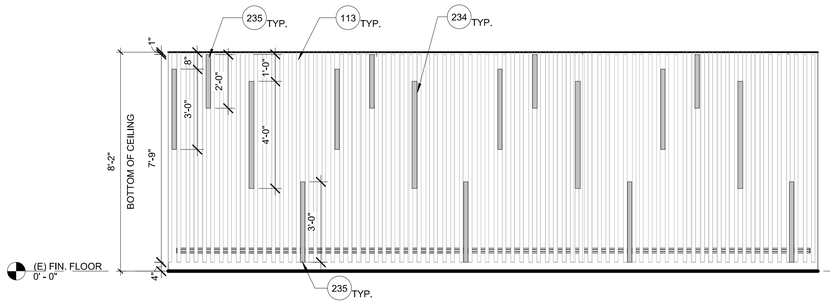
1 A103 COMMUNITY ROOM - NORTH EAST ELEVATION

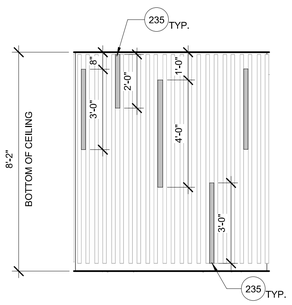
3/8" = 1'-0"



2 A103 COMMUNITY ROOM - SOUTH ELEVATION - A

3/8" = 1'-0"



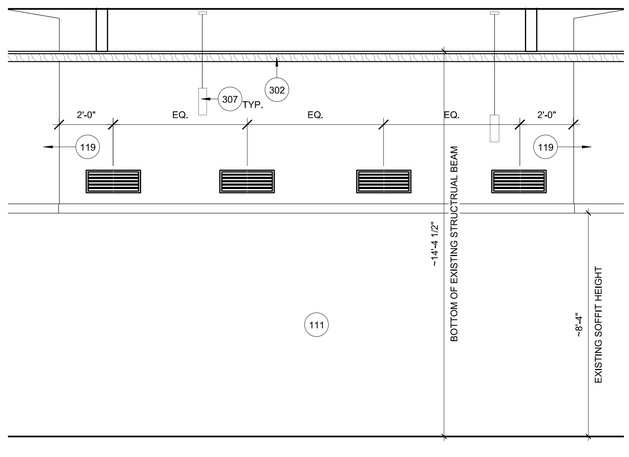


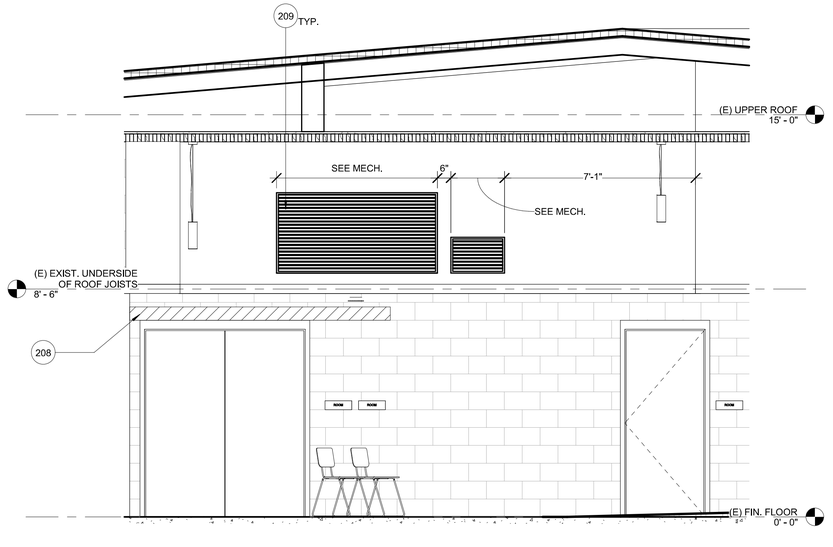
3 A103 ENTRY ACCENT WALL - A

3/8" = 1'-0"

4 A401 ENTRY ACCENT WALL - B

3/8" = 1'-0"





5 A103 COMMUNITY ROOM - SOUTH WEST ELEVATION - A

3/8" = 1'-0"

6 A103 COMMUNITY ROOM - SOUTH EAST ELEVATION

3/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
101	-(N) 12" RAISED WOOD PLATFORM. FRAME WITH 2X @ 16" O.C. AND 1" FINISHED GRADE "A" PLYWD SHEATHING. FINISH VERTICAL EDGE WITH HARDWOOD, WITH NO PLYWOOD EDGES EXPOSED. FINISHED STAIN COLOR TO BE APPROVED BY ARCHITECT.
111	-(N) 5/8" GYP. BG O/ RESILLIENT CHANNEL. BOTH SIDES OF THIS (E) CMU WALL.
113	-(N) ALUMINUM VERTICAL BATTENS, WALL MOUNTED, SEE FINISH SCHEDULE.
119	-MECH. SOFFIT SEE A5/A502 FOR FRAMING DETAIL.
124	-(N) ACOUSTICAL WALL PANEL - APPLY WALL TO WALL & PLATFORM TO 12" ABOVE SUSPENDED CEILING SYSTEM. SEE FINISH SCHEDULE.
208	-PAINT EXPOSED STRUCTURAL STEEL HEADER & JAMB AT NEW DOOR OPENING TO MATCH WALL COLOR
209	-CUSTOM LOUVER ACCESS PANEL FOR MECH. UNIT, PROVIDE FRAMED BACKING FOR LOUVER SCREWS, ALLOWING FREQUENCE REMOVAL OF ACCESS PANEL. GLUE SOUND BLANKET TO INTERIOR
234	(N) LINEAR LIGHT FIXTURES RECESSED INTO ALUMINUM WALL BATTEN SYSTEM, SEE ELECTRICAL DRAWINGS.
235	(N) LINEAR LIGHT FIXTURES RECESSED AND ALIGN WITH TOP OR BOTTOM OF ALUMINUM WALL BATTEN SYSTEM. SEE ELECTRICAL. DRAWINGS
302	(N) 2"x4", 4" O.C., ALUM. BAFFLE SUSPENDED CEILING PANEL SYSTEM, BASIS OF DESIGN LONGBOARD WOODGRAINS #3, COLOR: LIGHT NATIONAL WALNUT. SEE SPEC.
307	(N) PENDANT LIGHT FIXTURES, SEE ELECTRICAL DRAWING.
400	(N) MOTORIZED PROJECTOR SCREEN, COORDINATE WITH ITA DEPARTMENT.
476	SIGNAGE, SEE SIGNAGE PLANS AND DETAILS.

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BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT ★ JENNY M LIM ★ LIC. NO. C36872 REN. 08/31/2027 ★ STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: INTERIOR ELEVATIONS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

ALFRED MATA, PE — INTERIM CITY ENGINEER — DATE:
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A404
SHEET 21 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:16 PM

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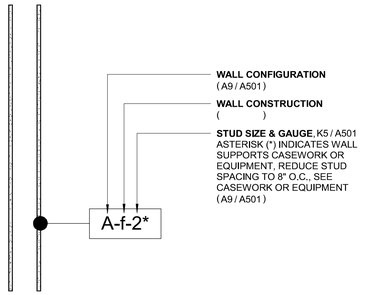
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 06/12/23
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

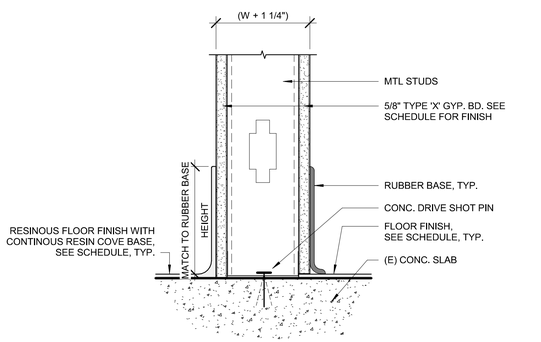
REVISION DATES (DESIGN STAGE ONLY)

LEGEND DESIGNATION	STUD MEMBER	SPACING
1	3-5/8" / 18 GA.	16" OC
2	4" / 18 GA.	16" OC
3	6" / 18 GA.	16" OC
4	8" / 18 GA.	16" OC

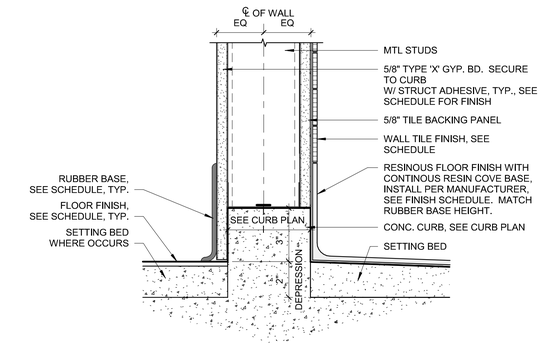
K5 METAL STUD CHART
12" = 1'-0"



G5 WALL TYPE LEGEND
1" = 1'-0"



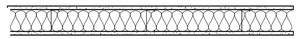
D5 INTERIOR WALL BASE 2
3" = 1'-0"



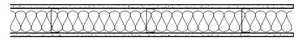
A5 INTERIOR WALL BASE W/ FLOOR DEPRESSION
3" = 1'-0"

G9 WALL CONSTRUCTION
1" = 1'-0"

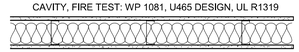
INT. CONSTRUCTION



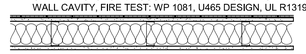
'a' 1 HOUR / 45 ~ 49 STC
1 LAYER 5/8" TYPE X GYP BD EACH SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY, FIRE TEST: WP 1081, U465 DESIGN, UL R1319



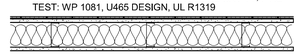
'b' 1 HOUR / 45 ~ 49 STC
1 LAYER 5/8" TYPE X GYP BD ONE SIDE, 1 LAYER 5/8" TYPE X IMPACT-RESISTANT GYP BD STORAGE SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY, FIRE TEST: WP 1081, U465 DESIGN, UL R1319



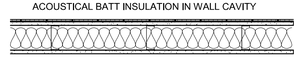
'c' 1 HOUR / 45 ~ 49 STC
1 LAYER 5/8" TYPE X IMPACT-RESISTANT GYP BD EACH SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY, FIRE TEST: WP 1081, U465 DESIGN, UL R1319



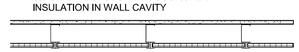
'd' 1 LAYER 5/8" TYPE X IMPACT-RESISTANT GYP BD ONE SIDE, CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL OPPOSITE SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY, FIRE TEST: WP 1081, U465 DESIGN, UL R1319



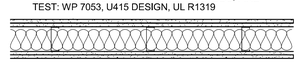
'd1' 1 LAYER 5/8" TYPE X IMPACT-RESISTANT GYP BD ONE SIDE, CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL OPPOSITE SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY



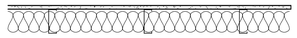
'd2' 1 LAYER 5/8" TYPE X GYP BD ONE SIDE, CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL OPPOSITE SIDE METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY



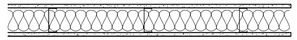
'e' 1 LAYER 5/8" TYPE X GYP BD ONE SIDE , 1" SHAFT LINER ON OPPOSITE OF C-H METAL STUDS, FIRE TEST: WP 7053, U415 DESIGN, UL R1319



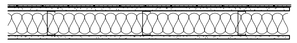
'f' 2 HOUR / 60 ~ 64 STC
2 LAYERS 5/8" GYPSUM WALLBOARD EACH SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY WP 1451 UL R3501



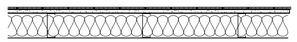
'f1' 1 LAYER 5/8" GYPSUM WALLBOARD ONE SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY



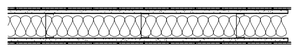
'g' 1 LAYER 5/8" GYP BD EACH SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY



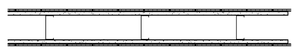
'i' 1 LAYER 5/8" GYP BD ONE SIDE, CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL OPPOSITE SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY



'i1' CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL ONE SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY

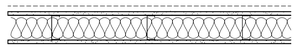


'j' CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL EACH SIDE OF METAL STUDS W/ ACOUSTICAL BATT INSULATION IN WALL CAVITY

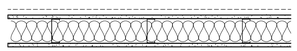


'j1' CERAMIC WALL TILE O/ BOND COAT, CURED MORTAR BED, SCRATCH COAT, METAL LATH, CLEAVAGE MEMBRANE O/ MTL. STUD

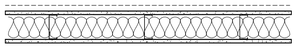
EXT. CONSTRUCTION



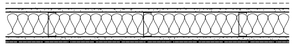
'k' 8MM FIBER CEMENT PANEL W/ 1" GIRTS O/ 2" STRUCTURAL INSULATED SHEATHING W/ WRB AND ARB COATING. O/ METAL STUDS W/BATT INSULATION IN WALL CAVITY. 1 LAYER 5/8" GYP. BD, INT. SIDE



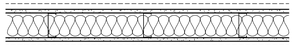
'k1' 1 LAYER 5/8" TYPE X IMPACT-RESISTANT GYP BD INT. SIDE, 5/8" CONCRETE PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY



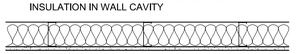
'm' 1 LAYER 5/8" GYP BD INT. SIDE, 1 1/2" METAL PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. TYPE X SHTG. EXT. SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY, FIRE TEST: WP 1081, U425 DESIGN



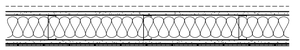
'n' CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL INT. SIDE, 5/8" CONCRETE PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUD S W/ BATT INSULATION IN WALL CAVITY



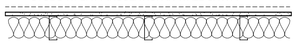
'o' 1 1/2" METAL PANEL O/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. ON ONE SIDE, 1 1/2" METAL PANEL O/ 1 1/2" SUBGIRT O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY



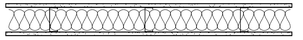
'p' 5/8" CONCRETE PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUDS



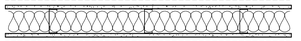
'q' CERAMIC WALL TILE O/ 5/8" TILE BACKING PANEL INT. SIDE, METAL PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY



'r' 1 1/2" METAL PANEL O/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. ON ONE SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY

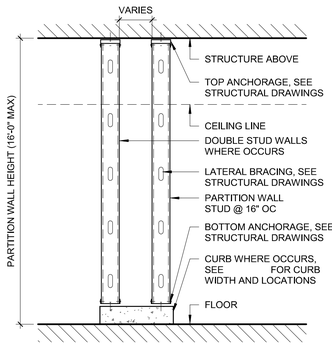


's' 1 LAYER 5/8" GYP BD INT. SIDE, 5/8" CONCRETE PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY, FIRE TEST: U425 DESIGN

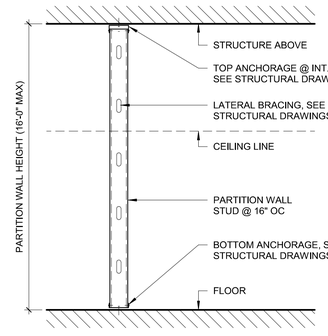


'h' 5/8" CONCRETE PANEL O/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. ON ONE SIDE, 1 1/2" METAL PANEL O/ 1" RIGID INSULATION W/ 1 1/2" SUBGIRT O/ 1/2" EXT. SHTG. EXT. SIDE OF METAL STUDS W/ BATT INSULATION IN WALL CAVITY

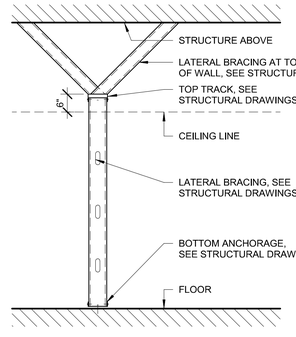
G9 WALL CONSTRUCTION
1" = 1'-0"



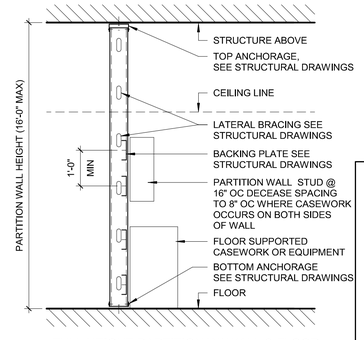
"A" FULL HEIGHT PARTITION AND EXTERIOR WALLS



"B" FULL HEIGHT PARTITION



"C" PARTIAL HEIGHT PARTITION



FULL HEIGHT PARTITION W/ WALL & FLOOR MOUNTED CASEWORK OR EQUIPMENT

GENERAL NOTES:

1. PROVIDE FULL HEIGHT GYP. BOARD AT FULL HEIGHT PARTITIONS.
2. PROVIDE 5/8" THICK CEMENTITOUS BACKING BOARD ON ROOM SIDE OF WALL IN ALL WET LOCATIONS TO RECEIVE TILE, TYPICAL.
3. REFER TO SPECIFICATIONS FOR INSTALLATION CRITERIA GOVERNING WALL CUTOUTS, PENETRATIONS OF CONDUIT / PIPING / DUCTS AND ALL OTHER BREACHING OF ACOUSTIC PARTITIONS OR PROVIDE AS OTHERWISE SHOWN.
4. AT FULL HEIGHT PARTITIONS, EXTEND METAL STUDS TO BOTTOM OF STRUCTURE OR PROVIDE DIAGONAL BRACING BOTH WAYS AT 48" O.C.
5. EACH OF THE FIRE-RATED SLOTTED TRACK PARTITION HEAD SYSTEMS ILLUSTRATED BY DETAIL ON THIS SHEET UTILIZES ONE PROPRIETARY PRODUCT AS INDICATED ON THE DETAILS. THE TEST REPORTS, THE FIRE ASSEMBLY LISTINGS, AND/OR THE AGENCY APPROVALS FOR EACH OF THESE SYSTEMS ARE PRODUCT-SPECIFIC. SUBSTITUTIONS WILL BE REVIEWED AND ACCEPTED ONLY IF THEY HAVE BEEN TESTED AND LISTED BY AN APPROVED TESTING LABORATORY, AND ARE ACCEPTED BY THE ARCHITECT AND LOS ANGELES BUILDING AND SAFETY.
6. FOR EXTERIOR WALL FINISHES, SEE EXTERIOR ELEVATION, DETAIL, AND FINISH SCHEDULE.
7. PROVIDE TYPE X MOISTURE RESISTANT GYP BD IN ALL SPACES SUBJECT TO HUMIDITY, SUCH AS LOCKER ROOM, JANITOR CLOSET, RESTROOMS, SINK AREAS AND KITCHEN

A9 WALL CONFIGURATIONS
1/2" = 1'-0"

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

INDEX NO. MF-300512
CIP NO. G1163

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

INTERIM CITY ENGINEER
DATE:

ALFRED MATA, PE
ARCHITECTURAL DIVISION

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: WALL TYPES AND CURB DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
A501

SHEET 22 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:17 PM

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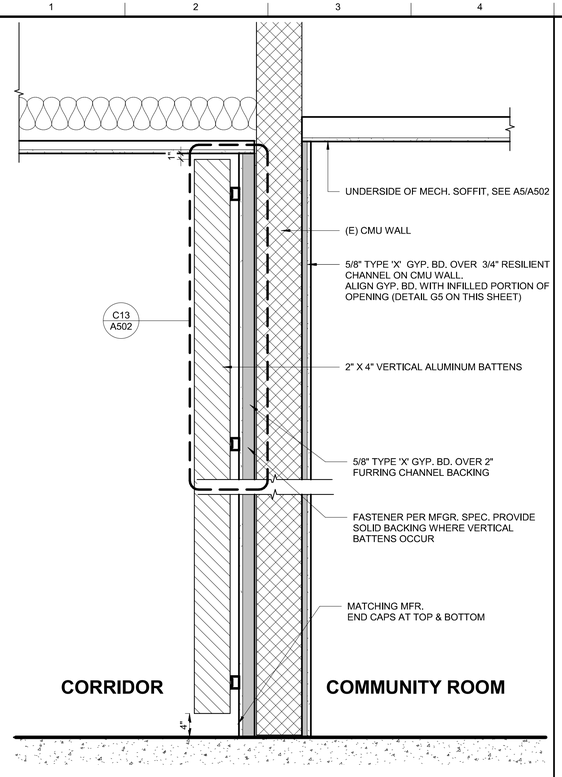
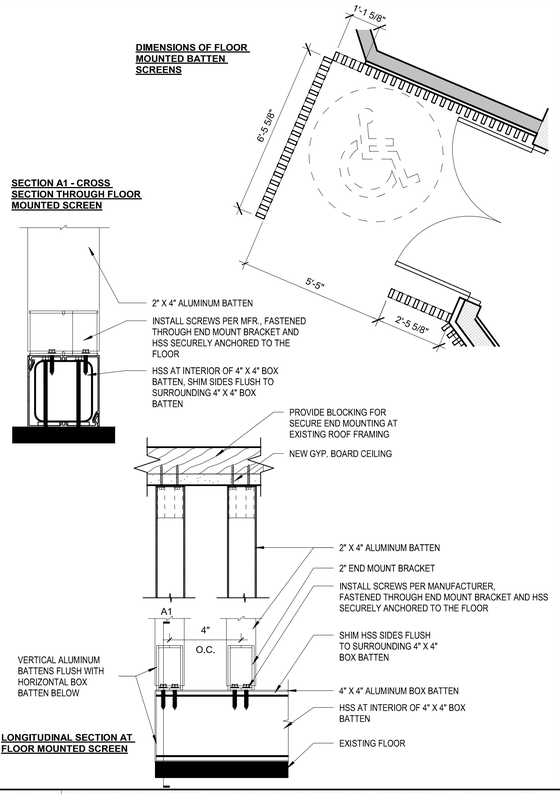
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 04/26/15

REVISION DATES (DESIGN STAGE ONLY)



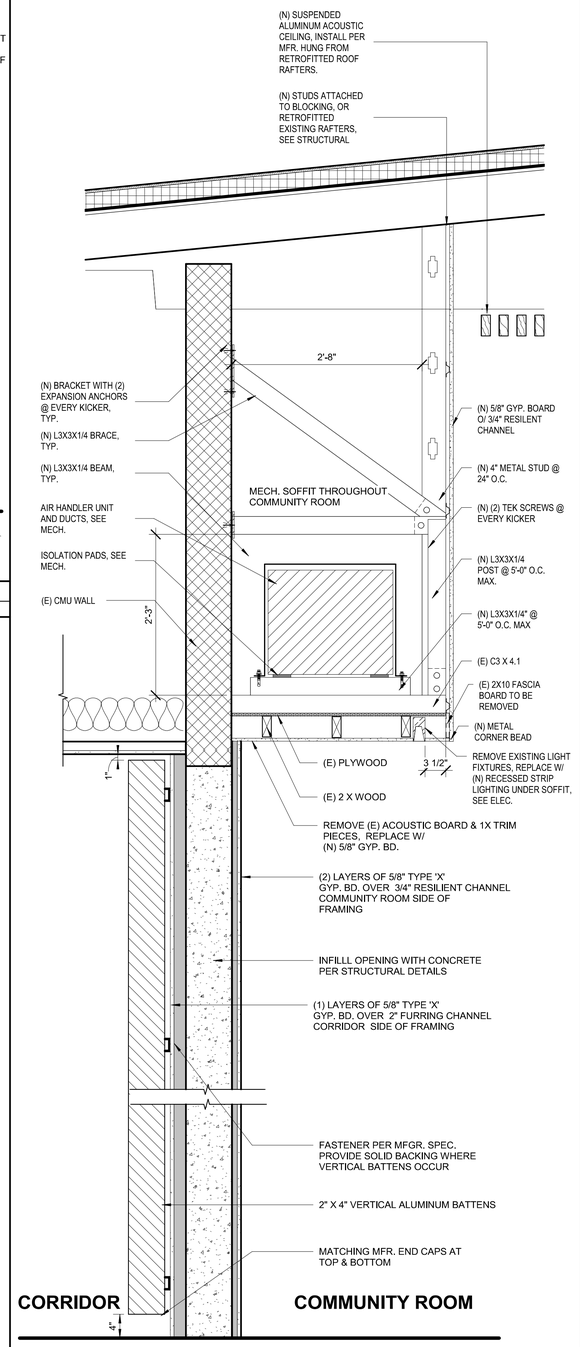
G1 WALL ASSEMBLY DETAIL AT COMMUNITY ROOM 2

1" = 1'-0" F/ A103



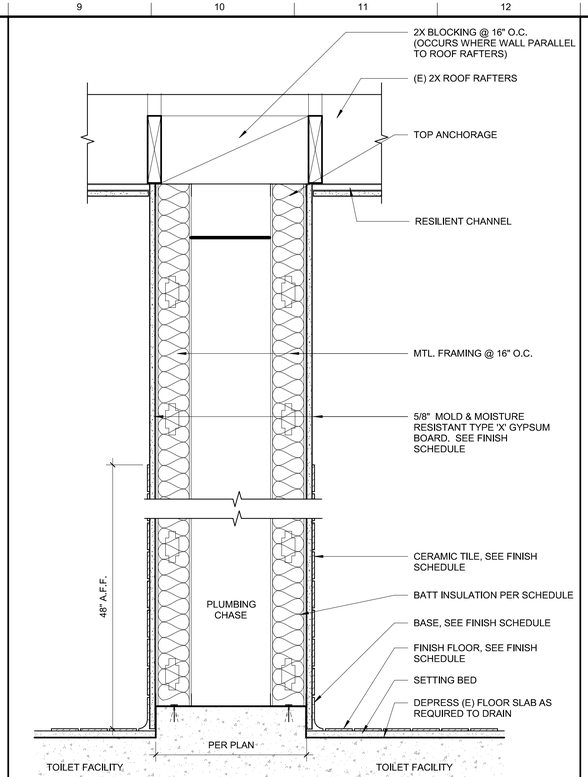
A1 FLOOR MOUNTED ALUMINUM BATTENS - SECTION - CALLOUT

3" = 1'-0"



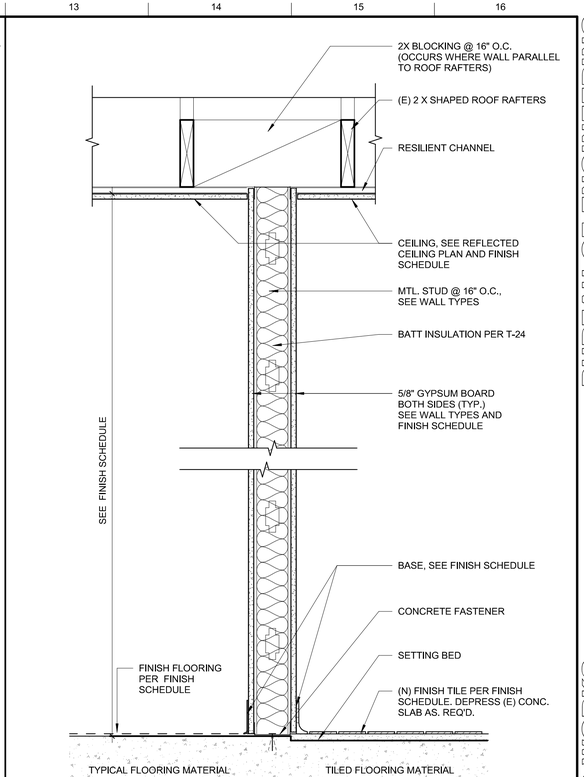
A5 WALL ASSEMBLY DETAIL AT COMMUNITY ROOM

1" = 1'-0" F/ A103



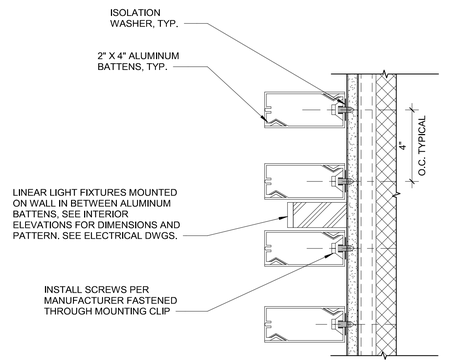
G9 PLUMBING CHASE WALL DETAIL

1 1/2" = 1'-0" D/ A301



G13 WALL SECTION

1 1/2" = 1'-0" E/ A301



NOTE: CONTRACTOR TO PROVIDE SHOP DRAWINGS PRIOR TO INSTALLATION

ENLARGED PLAN VIEW

C13 WALL MOUNTED ALUMINUM BATTENS - PLAN - CALLOUT

3" = 1'-0" G1/ A502

BUREAU OF ENGINEERING
OFFICIAL RECORD

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SHEET ISSUE DATE: 03/24/09
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REVISION DATES (DESIGN STAGE ONLY)

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
PUBLIC WORKS
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

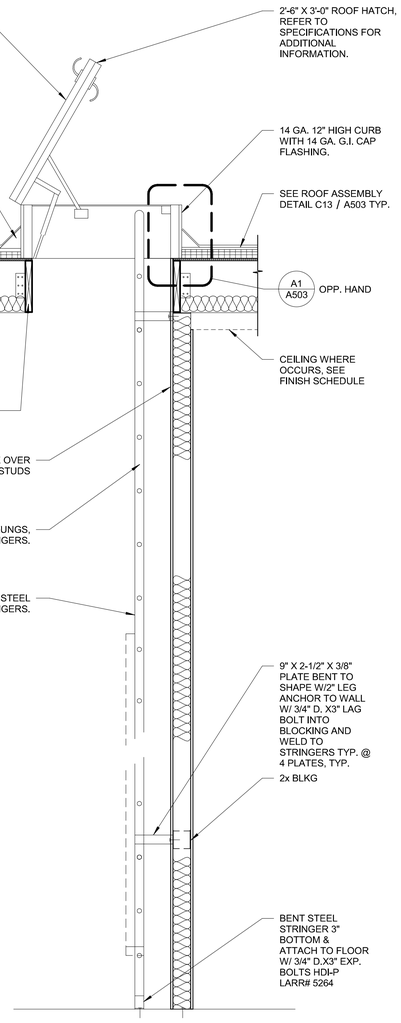
ALFRED MATA, PE
LICENSED ARCHITECT
LIC. NO. C36872
REN. 08/31/2027
STATE OF CALIFORNIA

INTERIM CITY ENGINEER
DATE:
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: WALL DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

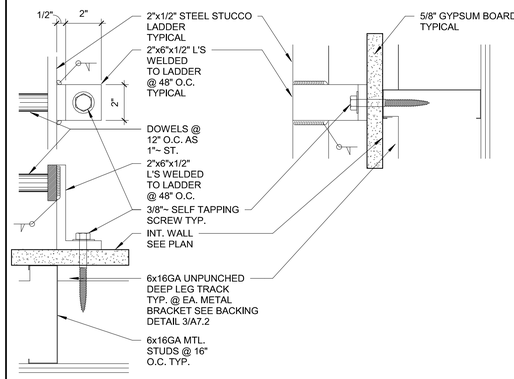
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A502
SHEET 23 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:18 PM



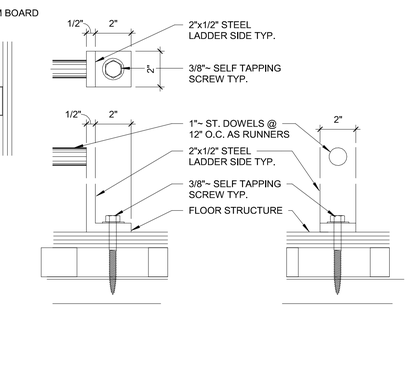
E1 ROOF HATCH DETAIL

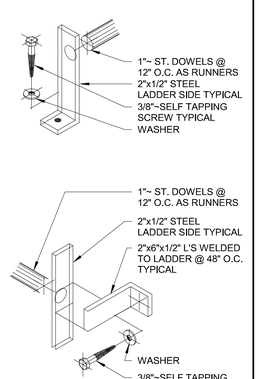
3/4" = 1'-0" | 1/ A105

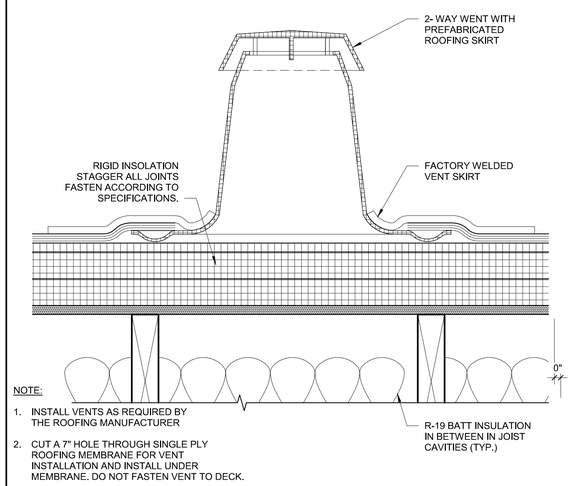


J5 LADDER ATTACHMENT DETAIL

3" = 1'-0"





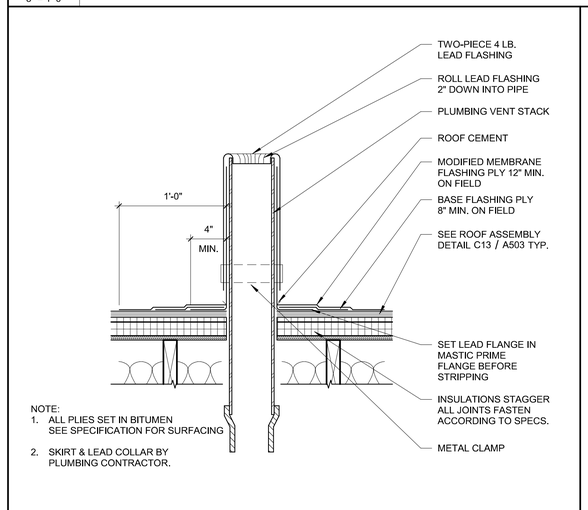


NOTE:

1. INSTALL VENTS AS REQUIRED BY THE ROOFING MANUFACTURER
2. CUT A 7" HOLE THROUGH SINGLE PLY ROOFING MEMBRANE FOR VENT INSTALLATION AND INSTALL UNDER MEMBRANE. DO NOT FASTEN VENT TO DECK.

J13 ROOF VENT

3" = 1'-0"

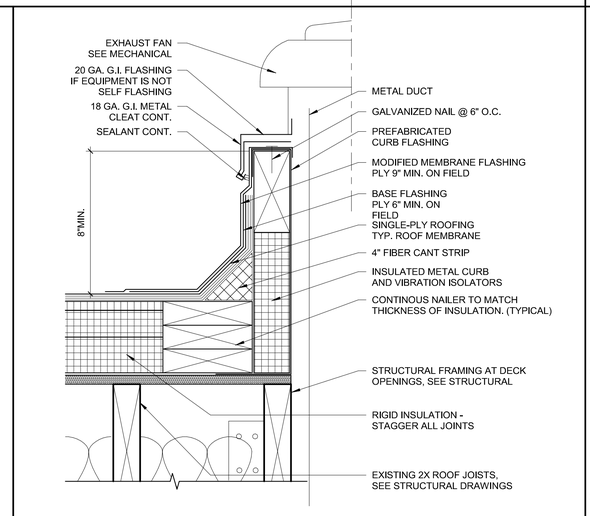


NOTE:

1. ALL PLIES SET IN BITUMEN SEE SPECIFICATION FOR SURFACING
2. SKIRT & LEAD COLLAR BY PLUMBING CONTRACTOR.

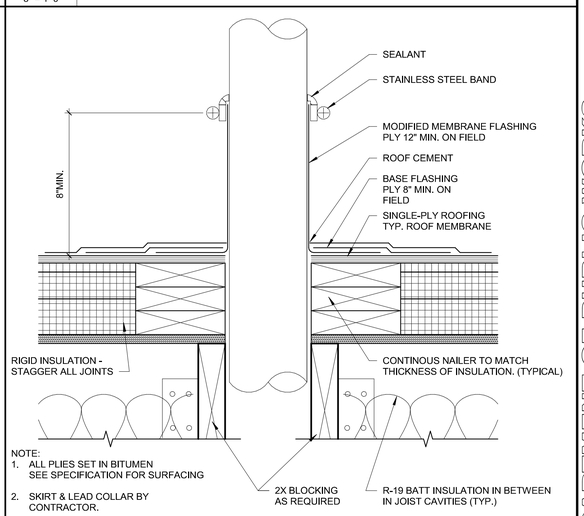
E5 PLUMBING STACK

1 1/2" = 1'-0" | 1/ A105



E9 EXHAUST FAN CURB DETAIL

3" = 1'-0"

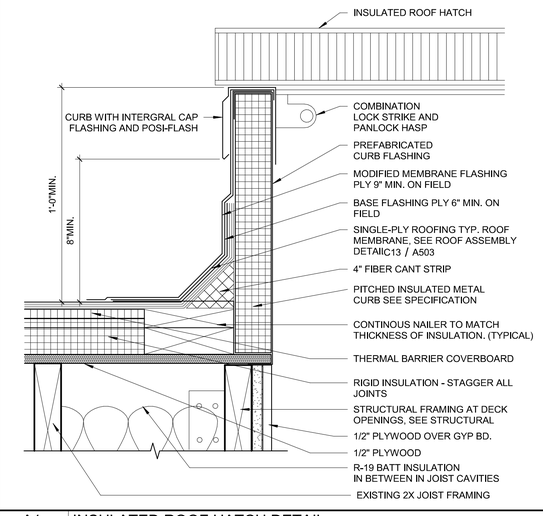


NOTE:

1. ALL PLIES SET IN BITUMEN SEE SPECIFICATION FOR SURFACING
2. SKIRT & LEAD COLLAR BY CONTRACTOR.

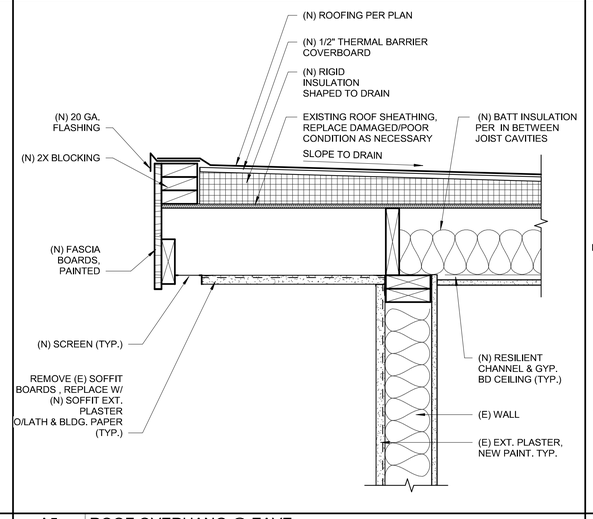
E13 ROOF PENETRATION DETAIL

3" = 1'-0"



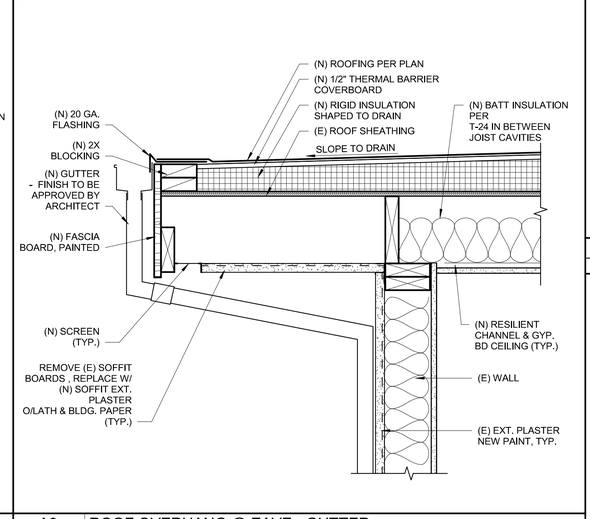
A1 INSULATED ROOF HATCH DETAIL

3" = 1'-0" | E1/ A503



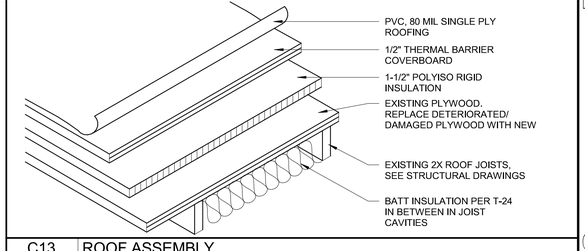
A5 ROOF OVERHANG @ EAVE

1 1/2" = 1'-0" | 1/ A105



A9 ROOF OVERHANG @ EAVE - GUTTER

1 1/2" = 1'-0" | 1/ A105



C13 ROOF ASSEMBLY

3" = 1'-0"

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT ★ CALIFORNIA ★ STATE OF CALIFORNIA
JENNY M LIM
LIC. NO. C36872
REN. 08/31/2027

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ALFRED MATA, PE
ARCHITECTURAL DIVISION
INTERIM CITY ENGINEER
DATE:

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: ROOF DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BUREAU OF ENGINEERING
OFFICIAL RECORD

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
A503

SHEET 24 OF SHEETS 115

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SHEET ISSUE DATE: 10/06/09
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REVISION DATES: (DESIGN STAGE ONLY)

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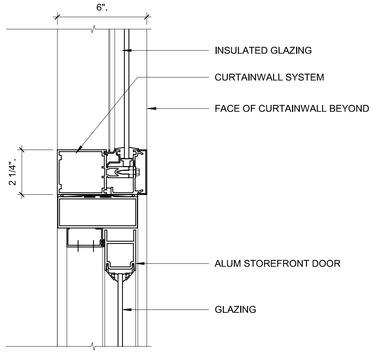
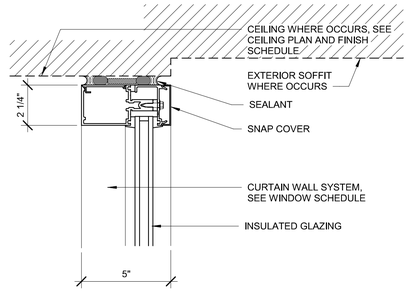
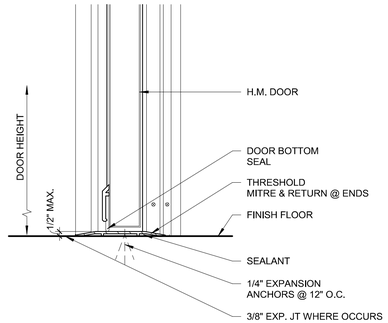
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 02/20/09
REVISION DATES (DESIGN STAGE ONLY)



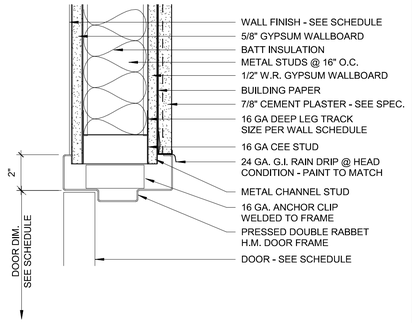
K1 CURTAIN WALL DOOR HEAD / JAMB
3" = 1'-0" 6/ A601



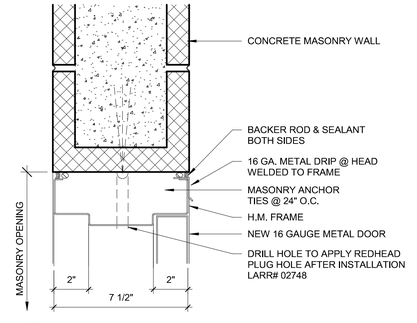
K5 HEAD / JAMB @ CURTAINWALL
3" = 1'-0" 6/ A601



K8 EXTERIOR DOOR THRESHOLD
3" = 1'-0"

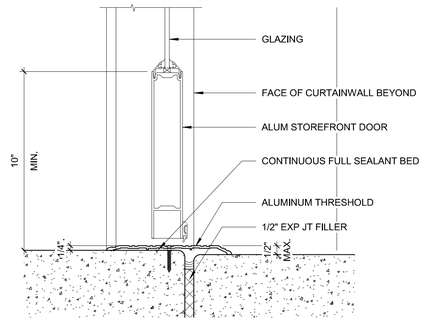


K11 EXTERIOR DOOR HEAD DETAIL - STUD WALL
3" = 1'-0"

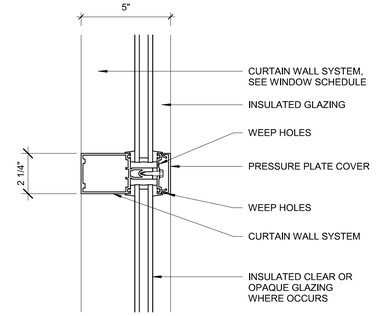


NOTE:
1. CENTER H.M. FRAME ON CMU BLOCK OPENING

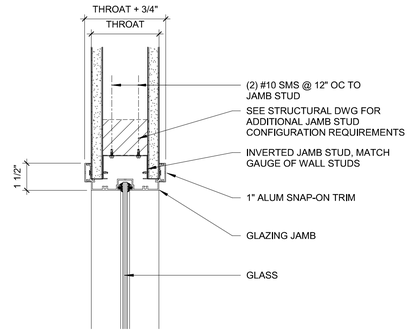
K14 DOOR HEAD DETAIL - CMU WALL
3" = 1'-0"



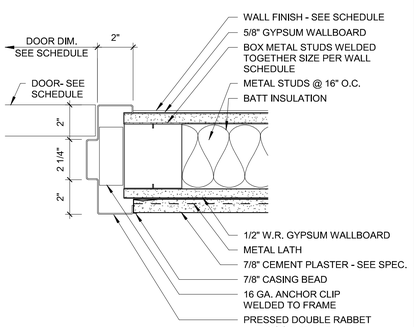
G1 EXT. CURTAIN WALL DOOR THRESHOLD
3" = 1'-0" 6/ A601



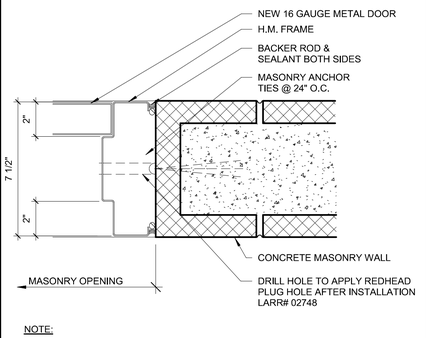
G5 CURTAINWALL MULLION
3" = 1'-0" 6/ A601



G8 INT. WINDOW JAMB
3" = 1'-0"

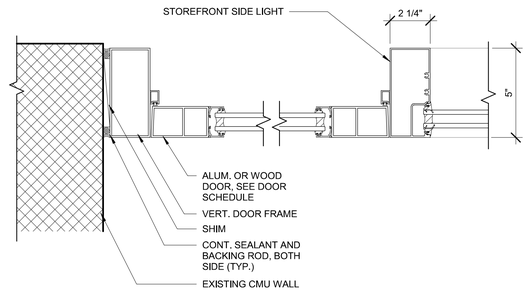


G11 EXTERIOR DOOR JAMB DETAIL - STUD WALL
3" = 1'-0"

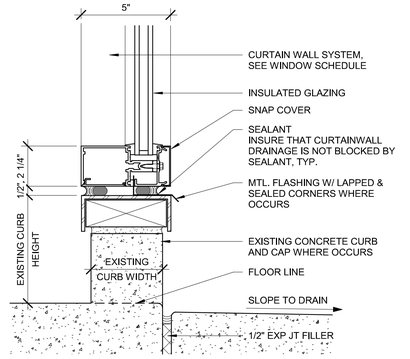


NOTE:
1. CENTER H.M. FRAME ON CMU BLOCK OPENING

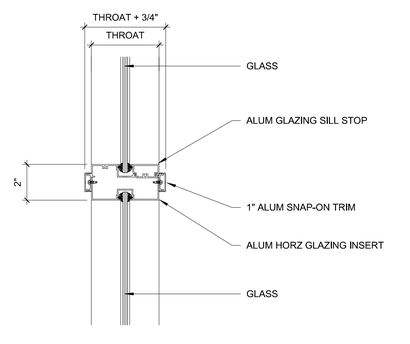
G14 DOOR JAMB DETAIL - CMU WALL
3" = 1'-0"



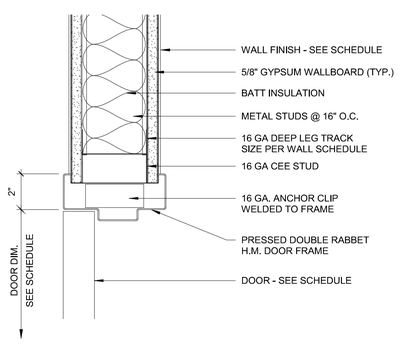
D1 STOREFRONT DOOR JAMB @ WALL
3" = 1'-0" 7/ A601



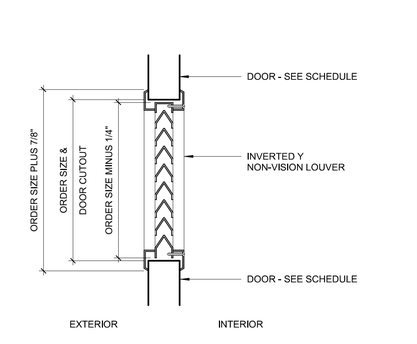
D5 SILL @ CURTAINWALL
3" = 1'-0" 6/ A601



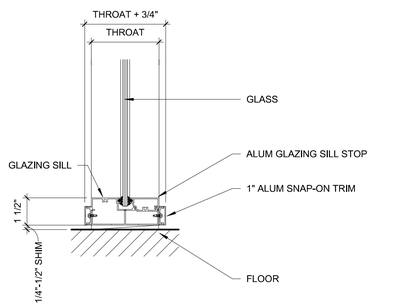
D8 INT. WINDOW MULLION
3" = 1'-0"



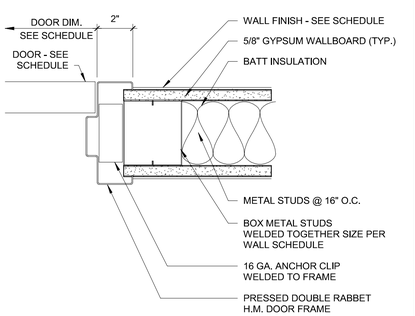
D11 DOOR HEAD DETAIL - STUD WALL
3" = 1'-0"



D14 INVERTED Y NON-VISION LOUVER
3" = 1'-0"



A8 INT. WINDOW SILL
3" = 1'-0"



A11 DOOR JAMB DETAIL - STUD WALL
3" = 1'-0"

BUREAU OF ENGINEERING
OFFICIAL RECORD

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BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
PUBLIC WORKS
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

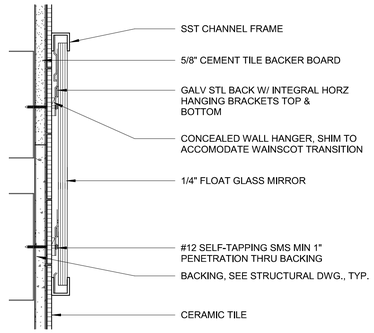
LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
DATE:
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: DOOR AND CURTAINWALL DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

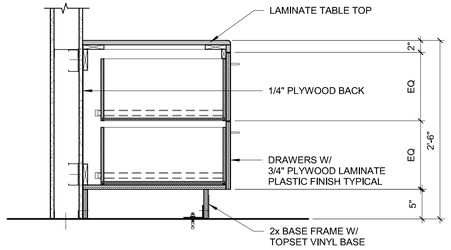
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A504
SHEET 25 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:20 PM



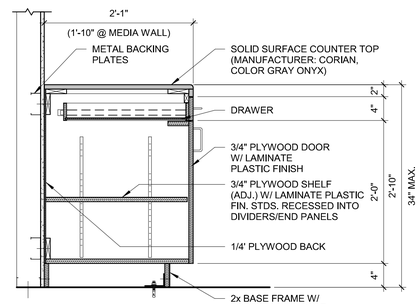
K1 MIRROR ANCHORAGE

3" = 1'-0"



K5 RECEPTION COUNTER W/ DRAWERS

1" = 1'-0" 8/ A401



K9 BASE CABINET - SHELF UNIT

1" = 1'-0"

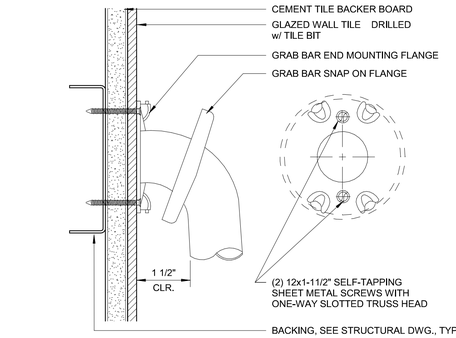
		CABINET WIDTHS ("W")						
	W=	12"	18"	24"	30"	36"	42"	48"
BASE CABINET 36" H x 24" D	METAL	2	3	3	4	4	5	5
STORAGE CABINET 96" H x 12" D	METAL	2	3	3	4	4	5	5
STORAGE CABINET 96" H x 24" D	METAL	2	3	3	5	5	6	6
UPPER CABINET 48" H x 12" D	METAL	2	3	3	4	4	5	5
UPPER CABINET 48" H x 18" D	METAL	2	3	3	4	4	5	5

SCHEDULE NOTES:

1. CABINENT DIMENSIONS SHOWN ARE MAXIMUM SIZES, FOR CABINETS OF OTHER SIZES, USE FASTENER QUANTITIES FOR NEXT LARGER CABINET.
2. MATERIAL SHOWN AS: WOOD, METAL, CMU, CONCRETE, IS THE WALL CONSTRUCTION TO WHICH FASTENERS WILL BE ATTACHED.
3. FASTENERS TO BE SPACED EQUALLY IN EACH ROW (OR LINE), WHERE SCREW FASTENERS ARE USED SPACING SHALL NOT EXCEED 12" OC.
4. FASTENER QUANITY SHOWN IS TO BE PLACED IN 2 LINES IN EACH ROW, NUMBER OF FASTENERS SHOWN ABOVE IN SCHEDULE IS THE NUMBER TO BE PROVIDED IN EACH LINE (IE, 5 IN EACH LINE = 10 TOTAL AT THE ROW)
5. FOR TYPICAL FASTENER TYPES SEE STANDARD CASE WORK NOTES ABOVE.

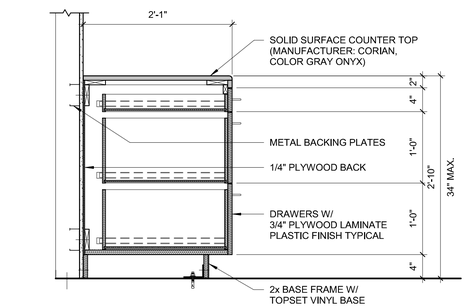
K13 FASTENER SCHEDULE

N.T.S.



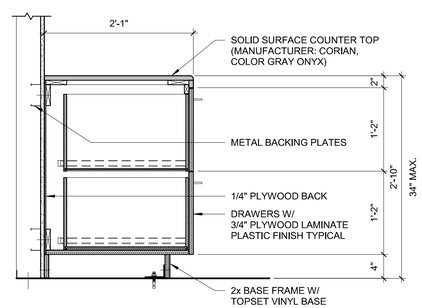
G1 GRAB BAR CONN. DET.

6" = 1'-0"



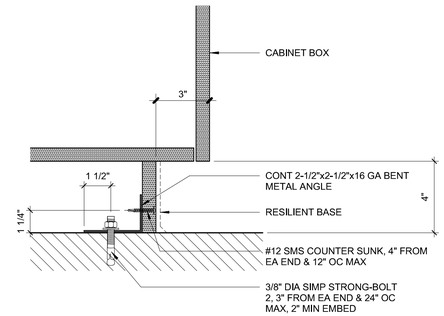
G5 BASE CABINET - THREE DRAWER UNIT

1" = 1'-0"



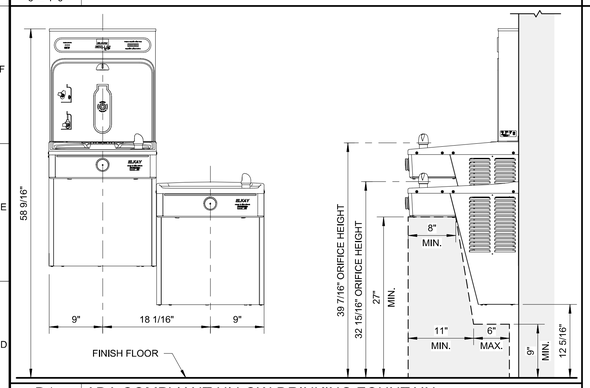
G9 BASE CABINET - TWO DRAWER UNIT

1" = 1'-0"



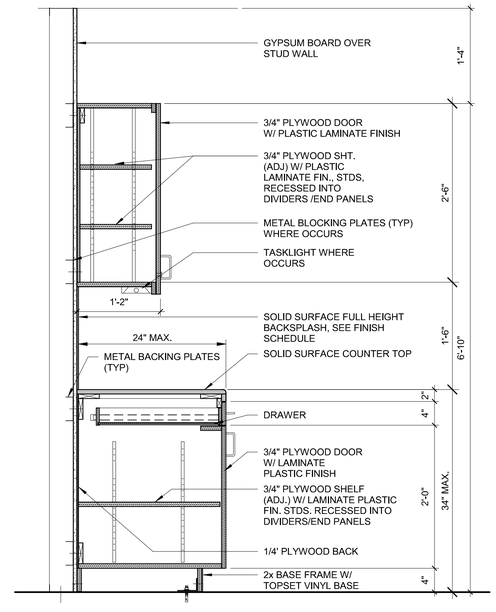
G13 PENINSULA / ISLAND CABINET ANCHOR DETAIL

3" = 1'-0"



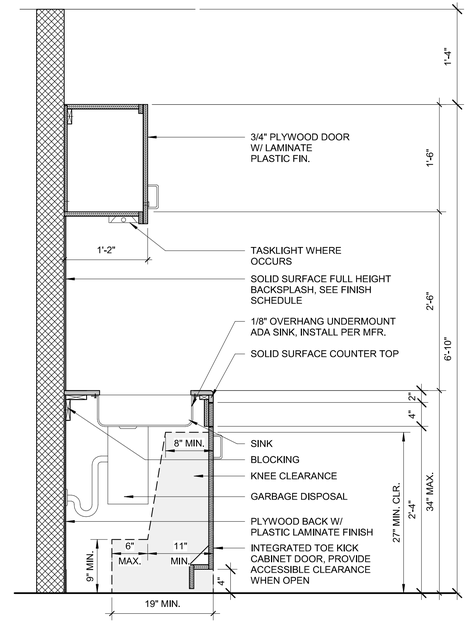
D1 ADA COMPLIANT HI LOW DRINKING FOUNTAIN

1" = 1'-0" B/ A402



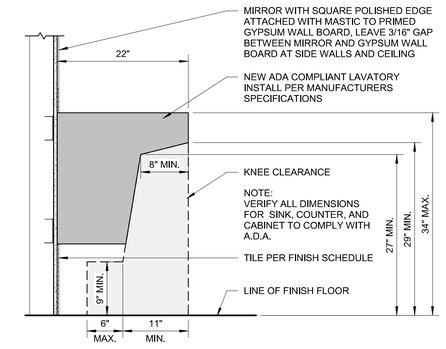
A5 CABINET DETAIL - BASE AND WALL UNIT

1" = 1'-0"



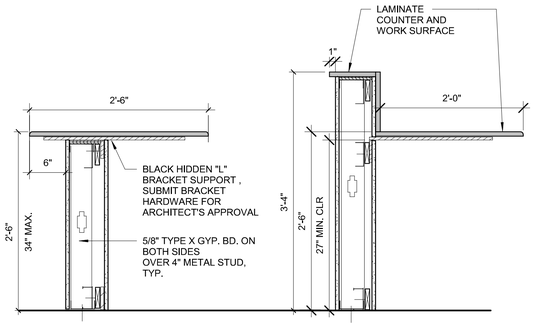
A9 CABINET DETAIL - BASE AND WALL UNIT AT SINK

1" = 1'-0" KNEE AND TOE CLEARANCE COMPLYING WITH SECTION 11B-306 SHALL BE PROVIDED



D13 SINK CABINET AND RESTROOM SINK CLEARANCE

1" = 1'-0" KNEE AND TOE CLEARANCE COMPLYING WITH SECTION 11B-306 SHALL BE PROVIDED



A1-A RECEPTION COUNTER

1" = 1'-0" 8/ A401

A1-B HIGH RECEPTION COUNTER

1" = 1'-0" 8/ A401

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 05/19/09

REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

ALFRED MATA, PE INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

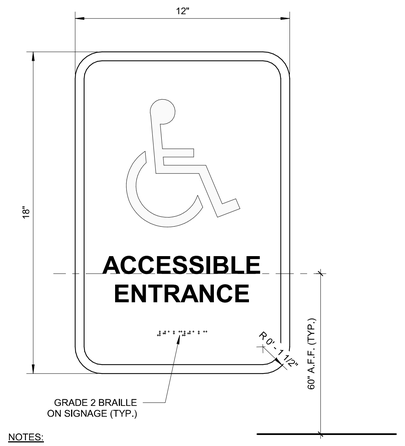
LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: CABINET AND MISCELLANEOUS DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A506
SHEET 26 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:22 PM

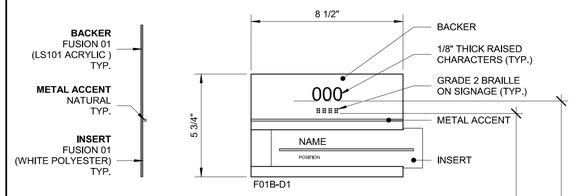


NOTES:

1. FINISH CONTRAST - THE CHARACTERS AND BACK GROUND OF SIGNS SHALL BE EGGSHELL, MATTE, OR OTHER NON-GLARE FINISH.
2. SIGNAGE BACKGROUND COLOR SHALL CONTRAST WITH DOOR COLOR

J5 ACCESSIBLE ENTRANCE SIGNAGE (TYP)

3" = 1'-0"

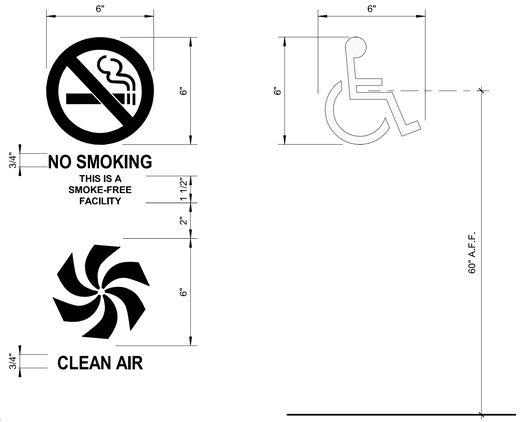


NOTES:

1. SIGNS BY TAKEFORM (FUSION 01 COLLECTION MODEL# F01B-D1) OR APPROVED EQUAL.
2. COLORS: BACKER FINISH (TAKEFORM COLOR: FROSTED ACRYLIC), METAL ACCENT BAR (NATURAL), FACE FINISH (MEDIA: WHITE POLYESTER)
3. TEXT IS U.S. 101 (ADA), GRAPHICS/COPY COLOR: BLACK.
4. EXTERIOR SIGNAGE: .25" ACRYLIC CLEAR/CLEAR; FIRST SURFACE PAINTED WHITE.
5. SIGNS ARE TO BE MOUNTED 5" FROM LATCH SIDE OF DOOR AND 60" UP FROM FLOOR TO MIDDLE OF SIGN.
6. THESE SIGNS ARE TO BE MOUNTED AS CALLED OUT IN BUILDING SIGNAGE PLAN ON A605.

J9 ROOM IDENTIFICATION SIGNAGE WITH INSERT (TYP.)

3" = 1'-0"

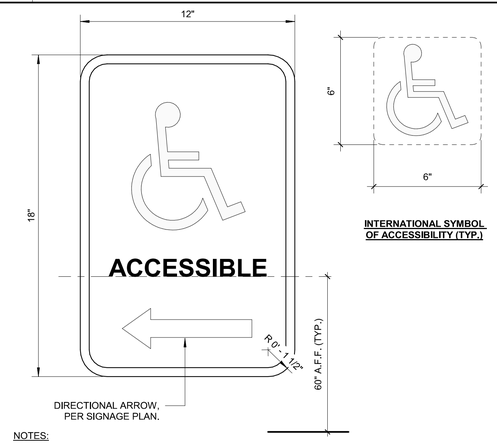


NOTES:

1. VINYL SIGNS TO BE MOUNTED ON THE INSIDE OF GLASS STOREFRONT AND TO BE READABLE FROM OUTSIDE.
2. FOR FINAL COLOR AND MOUNTING LOCATION COORDINATE WITH PROJECT ENGINEER.

J13 NO SMOKING, CLEAN AIR & ACCESSABLILITY VINYL SIGNAGE

3" = 1'-0"

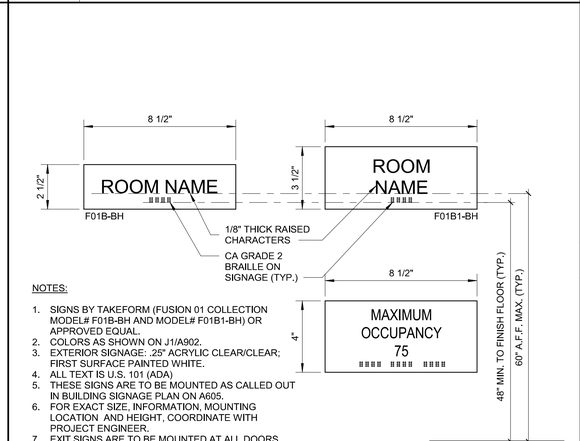


NOTES:

1. FINISH CONTRAST - THE CHARACTERS AND BACK GROUND OF SIGNS SHALL BE EGGSHELL, MATTE, OR OTHER NON-GLARE FINISH.
2. SIGNAGE BACKGROUND COLOR SHALL CONTRAST WITH DOOR COLOR

E5 ACCESSIBLE DIRECTIONAL SIGNAGE

3" = 1'-0"

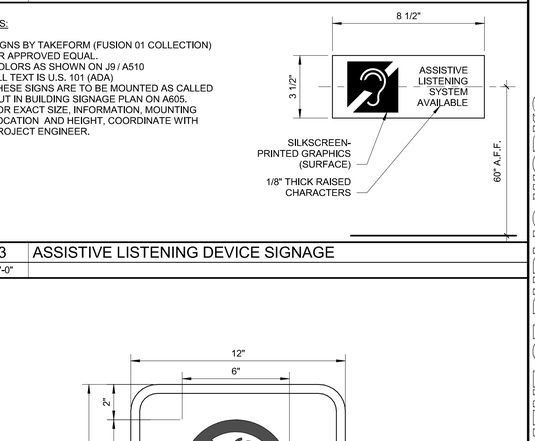


NOTES:

1. SIGNS BY TAKEFORM (FUSION 01 COLLECTION MODEL# F01B-BH AND MODEL# F01B1-BH) OR APPROVED EQUAL.
2. COLORS AS SHOWN ON J1/A902.
3. EXTERIOR SIGNAGE: .25" ACRYLIC CLEAR/CLEAR; FIRST SURFACE PAINTED WHITE.
4. ALL TEXT IS U.S. 101 (ADA)
5. THESE SIGNS ARE TO BE MOUNTED AS CALLED OUT IN BUILDING SIGNAGE PLAN ON A605.
6. FOR EXACT SIZE, INFORMATION, MOUNTING LOCATION AND HEIGHT, COORDINATE WITH PROJECT ENGINEER.
7. EXIT SIGNS ARE TO BE MOUNTED AT ALL DOORS LEADING TO EXTERIOR AS SHOWN ON G003 & A605.

E9 ROOM, EXIT, AND OCCUPANCY SIGNAGE

3" = 1'-0"

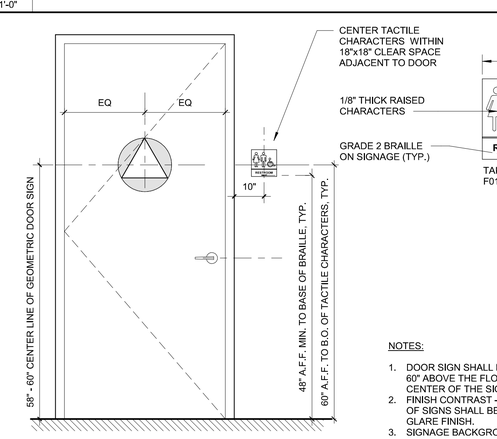


NOTES:

1. SIGNS BY TAKEFORM (FUSION 01 COLLECTION) OR APPROVED EQUAL.
2. COLORS AS SHOWN ON J9 / A510
3. ALL TEXT IS U.S. 101 (ADA)
4. THESE SIGNS ARE TO BE MOUNTED AS CALLED OUT IN BUILDING SIGNAGE PLAN ON A605.
5. FOR EXACT SIZE, INFORMATION, MOUNTING LOCATION AND HEIGHT, COORDINATE WITH PROJECT ENGINEER.

G13 ASSISTIVE LISTENING DEVICE SIGNAGE

3" = 1'-0"



NOTES:

1. DOOR SIGN SHALL BE CENTERED ON DOOR AND MOUNTED 60" ABOVE THE FLOOR (WITH ADHESIVE ONLY) AT THE CENTER OF THE SIGN.
2. FINISH CONTRAST - THE CHARACTERS AND BACK GROUND OF SIGNS SHALL BE EGGSHELL, MATTE, OR OTHER NON-GLARE FINISH.
3. SIGNAGE BACKGROUND COLOR SHALL CONTRAST WITH DOOR COLOR3. SIGNAGE BACKGROUND COLOR SHALL CONTRAST WITH DOOR COLOR4. SIGNS BY TAKEFORM (FUSION 59 COLLECTION) OR EQUAL APPROVED.
4. COLORS AS SHOWN ON J9 / A510 .
5. ALL TEXT IS U.S. 101 (ADA).
6. THESE SIGNS ARE TO BE MOUNTED AS CALLED OUT IN BUILDING SIGNAGE PLAN ON A605.

A5 RESTROOM ROOM - DOOR AND WALL MOUNTED SIGNAGE

N.T.S.



C13 NO SMOKING SIGN

3" = 1'-0"

BUREAU OF ENGINEERING
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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 09/08/15
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

REVISION DATES
(DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED ARCHITECT ★ CALIFORNIA ★ STATE OF CALIF
JENNY M LIM
LIC. NO. C36872
REN. 08/31/2027

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
DATE:

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: SIGNAGE DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA. 90028

BID SET
PROJECT ISSUE DATE 9/22/2025
CITY OF LOS ANGELES

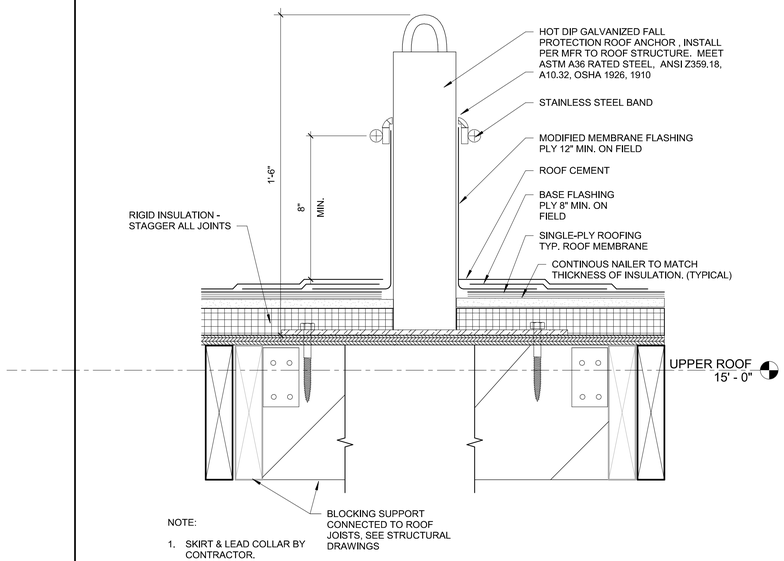
WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
A510

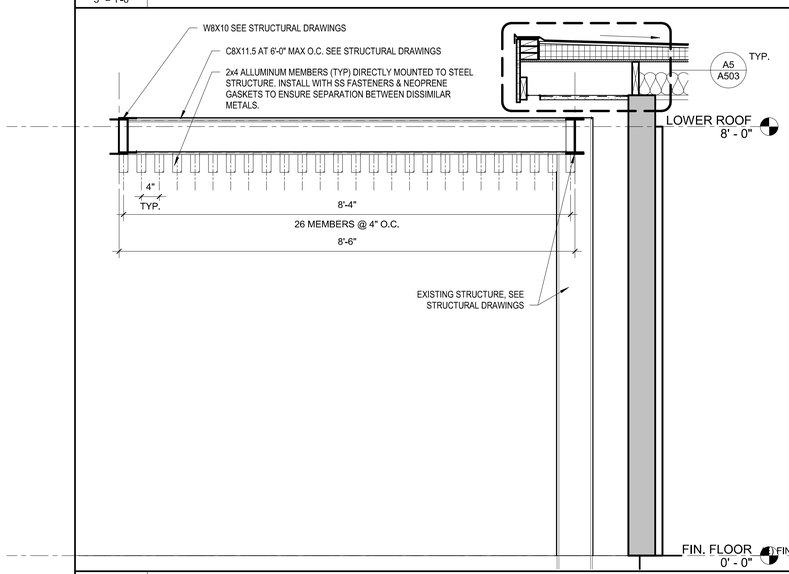
SHEET 27 OF SHEETS 115

PLOTTED: 10/21/2025 2:54:22 PM



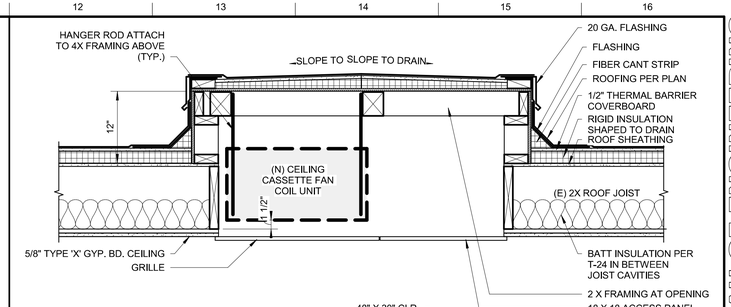
H7 FALL PROTECTION TIE ANCHOR

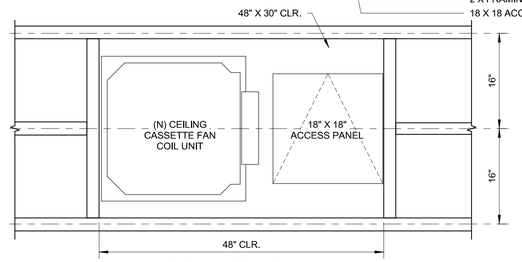
3" = 1'-0"



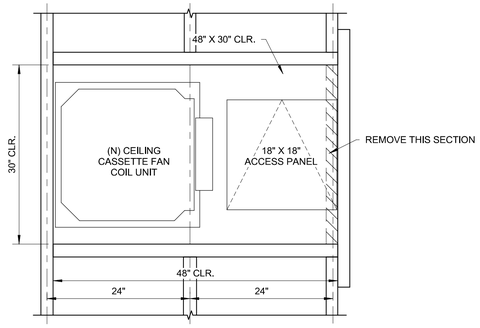
D7 TRELLIS SECTION DETAIL

3/4" = 1'-0" F/ A103

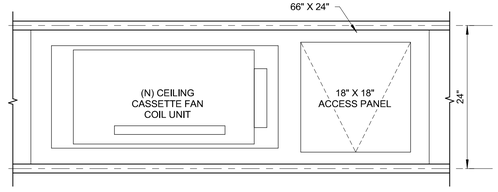




INSTALLATION TYPE A
FC-11



INSTALLATION TYPE B
FC-3 THRU 10 AND FC-12



INSTALLATION TYPE C
FC-13

D12 BUILT UP MECH. PLATFORM

1" = 1'-0" 1/ A104

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TTLB TEMPLATE REVISION DATE: 02/2013
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FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 REN. 08/31/2027 STATE OF CALIFORNIA

ALFRED MATA, PE
INTERIM CITY ENGINEER
DATE:

ARCHITECTURAL DIVISION
ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: ROOF DETAIL

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

BUREAU OF ENGINEERING OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A511
SHEET 28 OF SHEETS 115

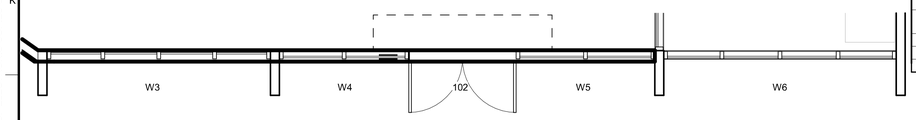
PLOTTED: 10/21/2025 2:54:23 PM

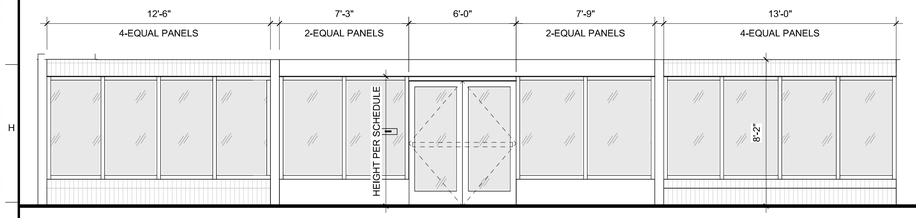
WINDOW SCHEDULE

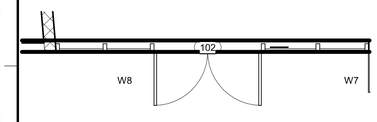
WINDOW NO.	TYPE	ROUGH OPENING DIMENSIONS WIDTH	ROUGH OPENING DIMENSIONS HEIGHT	GLAZING TYPE	GLAZING COLOR	GLAZING TEMPERED	FRAME MATERIAL	FRAME FINISH	DETAILS HEAD	DETAILS JAMB	DETAILS MULLION	DETAILS SILL	REMARKS
W1	A	12'-6"	8'-0"	GL	CL	T	FF	AA					STOREFRONT
W2	B	7'-3"	8'-0"	GL	CL	T	FF	AA					STOREFRONT
W3	C	7'-9"	8'-0"	GL	CL	T	FF	AA					STOREFRONT
W4	D	13'-0"	8'-0"	GL	CL	T	FF	AA					STOREFRONT
W5	E	15'-11"	8'-0"	GL	CL	T	FF	AA					STOREFRONT
W6	F	5'-9"	8'-0"	GL	CL	T	FF	AA					STOREFRONT
W7	G	6'-5"	8'-0"	GL	CL	T	FF	AA					STOREFRONT

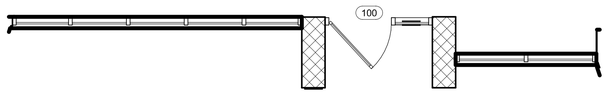
DOOR SCHEDULE

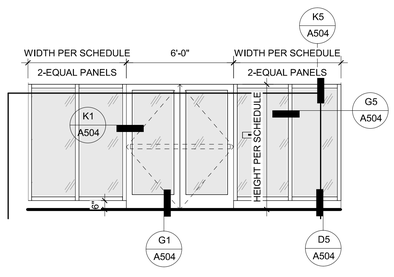
NO.	TYPE	DOOR DIMENSIONS WIDTH	DOOR DIMENSIONS HEIGHT	DOOR DIMENSIONS THICKNESS	DOOR MATERIAL	DOOR FINISH	DOOR CORE	FRAME MATERIAL	FRAME FINISH	1/4" TEMP. GL	DETAILS SHEET NO. HEAD	DETAILS SHEET NO. JAMB	HARDWARE	Fire Rating	THRESHOLD	LOUVER	KICK PLATE	REMARKS	To Room: Name
100	F	3' - 6"	7' - 0"	0' - 3"	AA	FF	HC	AA		Yes	K1/A504	D1/A504	PH	NR	Yes			2'-0" SIDELIGHT	
101	E	6' - 0"	7' - 0"	0' - 1 3/4"	AA	FF	HC	AA		Yes	K1/A504	D1/A504	PH	NR	Yes		Yes		
102	E	6' - 0"	7' - 0"	0' - 1 3/4"	AA	FF	HC	AA	FF	Yes	K1/A504	D1/A504	PH	NR	Yes		Yes	STOREFRONT @ CORRIDOR 'B' 119	
110	B	6' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM		Yes	K14/A504	G14/A504	PH	90				EGRESS FROM COMMUNITY ROOM 120. PANIC HDWR 90 MIN,SELF-CLOSING, PAINT EXPOSED STEEL CHANNEL AT HEAD AND JAMBS	ENTRY
111	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR					SERVICE CORRIDOR
112	D	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM		No	D11/A504	A11/A504	PH	NR				EGRESS FROM COMMUNITY ROOM 120. PANIC HDWR. GLASS INSERT, SELF-CLOSING	
113	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	PH	NR		Yes		LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	MECH / ELEC. ROOM
114	B	5' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR				NO PANIC HARDWARE REQUIRED	COMMUNITY ROOM
120	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR	No	Yes		LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	STORAGE
121	C	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes	Yes	LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	ENTRY
122	C	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes	Yes	LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	ENTRY
123	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM		Yes	D11/A504	A11/A504	LEVEL	NR		Yes		MUSIC ROOM 105 LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	MUSIC ROOM
124	A	3' - 0"	2' - 10"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR				4" ABOVE FLOOR FINISH, LATCH & LOCK	RECEPTION
126	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	FF	HC	HM		Yes	D11/A504	A11/A504	LEVEL	NR			Yes	GLASS INSERT, SELF-CLOSING	MULTI-PURPOSE ROOM
127	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes		GLASS INSERT, LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	OFFICE
128	C	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes	Yes	LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	WOMEN
129	C	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes	Yes	LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	WOMEN
130	C	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes	Yes	LOUVER REQUIRED PER MECH. SEE MECH. DWG. / SELF- CLOSING	MEN
E	C	2' - 6"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			K14/A504	G14/A504	LEVEL	NR				EXISTING DOOR TO REMAIN. PAINTED TO MATCH WITH NEW	
E1	A	3' - 0"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR		Yes		EXISTING DOOR TO REMAIN. PAINTED TO MATCH WITH NEW, LOUVER REQUIRED PER MECH. SEE MECH. DWG.	JAN. CLOSET
E2	A	2' - 8"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR				EXISTING DOOR TO REMAIN. PAINTED TO MATCH WITH NEW	MECH / ELEC. ROOM
E3	D	2' - 8"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR				EXISTING DOOR TO REMAIN. PAINTED TO MATCH WITH NEW	
E4	A	2' - 8"	7' - 0"	0' - 1 3/4"	HM	PF	HC	HM			D11/A504	A11/A504	LEVEL	NR				EXISTING DOOR TO REMAIN. PAINTED TO MATCH WITH NEW	

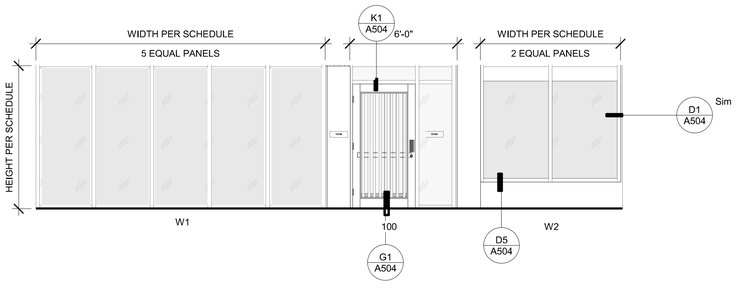


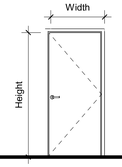




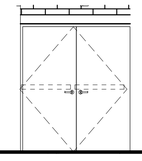






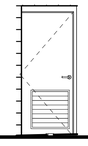


HM DOOR - SINGLE
(A)



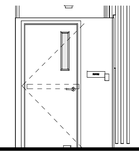
HM DOOR - PAIR
(B)

PANIC HARDWARE WHERE REQUIRED. SEE DOOR SCHEDULE ABOVE



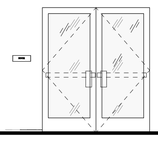
HM DOOR
(C)

LOUVER DOOR. SEE DOOR SCHEDULE ABOVE



HM DOOR
(D)

PANIC HARDWARE REQUIRED. SEE DOOR SCHEDULE ABOVE



STOREFRONT DOOR
(E)

PANIC HARDWARE REQUIRED. SEE DOOR SCHEDULE ABOVE



STOREFRONT DOOR
(F)

PANIC HARDWARE REQUIRED. SEE DOOR SCHEDULE ABOVE

LEGEND

AA	ANODIZED ALUMINUM	HC	HOLLOW CORE	PH	PANIC HARDWARE	STF	STOREFRONT
AF	ALUMINUM FRAME	HM	HOLLOW METAL	PS	PRESSED STEEL	T	TEMPERED GLASS
CD	CLOSER DEVICE	KP	KICK PLATE	SC	SOLID CORE	WD	WOOD
CC	CONCRETE CURB	LV	LEVER TYPE	SF	STAIN FINISH	WS	WEATHER STRIP
DP	DOUBLE PANE	M	METAL	SP	SINGLE PANE		
FF	FICTORY FINISH	PF	PAINT FINSH	ST	STEEL TUBE		
GL	GLASS						
H	HANDLE						

NOTES

1. ALL SECURITY OPENINGS SHALL COMPLY WITH DIVISION 67 OF THE LOS ANGELES CURRENT BUILDING CODE INCLUDING THE FOLLOWING:
   - A. ALL PIN TYPE HINGES WHICH ARE ACCESSIBLE FROM OUTSIDE THE SECURED AREA WHEN THE DOOR IS CLOSED SHALL HAVE NON-REMOVABLE HINGE PINS.
   - B. DEADBOLTS SHALL CONTAIN HARDENED INSERTS.
   - C. STRAIGHT DEADBOLTS SHALL HAVE A MINUMUM THROW OF 1" AND AN EMBEDMENT OF 1/4".
   - D. A HOOK SHAPED OR AN EXPANDING LUG DEADBOLT SHALL HAVE A MINUMUM THROW OF 1/4".
   - E. CYLINDER GUARDS SHALL BE INSTALLED IN ALL CYLINDER LOCKS WHENEVER THE CYLINDER PROJECTS BEYOND THE FACE OF THE DOOR OR IS OTHERWISE ACCESSIBLE TO GRIPPING TOOLS.
   - F. ALL GLASS DOORS SHALL HAVE FULLY TEMPERED GLASS.
   - G. PROVIDE DEADLOCKING LATCH KEY OPERATED LOCKS ON EXTERIOR.
   - H. ALL GLAZING WITHIN 40" OF DOOR LOCK SHALL BE TEMPERED GLASS.
   - J. DOOR STOPS OF IN-SWINGING EXTERIOR DOORS SHALL BE ONE PIECE CONSTRUCTION.
2. VERIFY ALL DIMENSIONS AT FIELD BEFORE MANUFACTURING.
3. PROVIDE SNAP-ON MULLION EXTENSION TO WIDTH OF WALL, TYP.
4. EACH PANE OF SAFETY GLAZING INSTALLED IN HAZARDOUS LOCATIONS SHALL BE IDENTIFIED BY A MANUFACTURER'S DESIGNATION SPECIFYING WHO APPLIED THE DESIGNATION, THE MANUFACTURER OR INSTALLER AND THE SAFETY GLAZING STANDARD. THE FOLLOWING SHALL BE CONSIDERED SPECIFIC HAZARDOUS LOCATIONS FOR THE PURPOSED OF SAFETY GLAZING, GLAZING IN: SECTION 2406.
   - A. SWING DOORS.
   - B. FIXED AND SLIDING PANELS OF SLIDING FOOR ASSEMBLIES AND PANELS IN SLIDING AND BI-FOLD CLOSET DOOR ASSEMBLIES.
   - C. STORM DOORS.
   - D. UNFRAMED SWINGING DOORS.
   - E. DOORS AND ENCLOSURES FOR HOT TUBS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS, AND SHOWERS.
   - F. FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLAZING IS WITHIN 24 INCHES ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE. READ CODE FOR EXCEPTIONS.
   - G. FIXED OR OPERABLE PANEL, OTHER THAN DESCRIBED IN ITEMS "e" AND "f", WHICH MEETS ALL OF THE FOLLOWING CONDITIONS (READ CODE FOR EXCEPTION WITH SPECIAL INSTALLATION).
     - a. EXPOSED AREA OF AN INDIVIDUAL PANE GREATER THAN 9 SQUARE FEET.
     - b. EXPOSED BOTTOM EDGE LESS THAN 18 INCHES ABOVE THE FLOOR.
     - c. EXPOSED TOP EDGE GREATER THAN 36 INCHES ABOVE THE FLOOR.
     - d. ONE OR MORE WALKING SURFACES WITHIN 36 INCES HORIZONTALLY OF THE PLANE OF THE GLAZING.
   - H. GUARD AND RAILING REGARDLESS OF AREA OR HEIGHT ABOVE A WALKING SURFACE. INCLUDED ARE STRUCTURAL BALUSTER PANELS AND NONSTRUCTURAL IN-FILL PANELS.
   - I. WALLS AND FENCES ENCLOSING INDOOR AND OUTDOOR SWIMMING POOLS AND SPAS WHERE ALL OF THE FOLLOWING CONDITIONS ARE PRESENT:
     - a. THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE A WALKING SURFACE ON THE POOL OR SPA SIDE OF THE GLAZING.
     - b. THE GLAZING IS WITHIN 60 INCHES OF A SWIMMING POOL OR SPA WATER'S EDGE.
   - J. ADJACENT TO STAIR WAYS, LANDINGS AND RAMPS WITHIN 36 INCHES HORIZONTALLY OF A WALKING SURFACE, WHEN THE EXPOSED SURFACE OF THE GLASS IS LESS THAN 60 INCHES ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE (READ CODE FOR EXCEPTION WITH SPECIAL INSTALLATION).
   - K. ADJACENT TO STAIRWAYS WITHIN 60 INCHES HORIZONTALLY OF THE BOTTOM TREAD OF A STAIRWAY IN ANY DIRECTION WHEN THE EXPOSED SURFACE OF THE GLASS IS LESS THAN 60 INCHES ABOVE THE NOSE OF THE TREAD (READ CODE FOR EXCEPTION WITH SPECIAL INSTALLATION). INCHES ABOVE PAVED AREAS. WEEP SCREEDS SHALL BE OF A TYPE WHICH WILL ALLOW TRAPPED WATER TO DRAIN TO THE EXTERIOR OF THE BUILDING. (SHOW THESE DIMENSIONS ON A FOUNDATION DETAIL DRAWING) (SECTION 2512.1.2)
5. CURTAIN WALL MANUFACTURER TO PROVIDE INTERNAL STEEL REINFORCING AS REQUIRED TO ACCOMODATE SPECIFIED DESIGN PRESSURE.

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: DOOR / STOREFRONT SCHEDULE, NOTES AND DIAGRAMS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. A601

SHEET 29 OF SHEETS 115

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE
ARCHITECTURAL DIVISION

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

INTERIM CITY ENGINEER
DATE:

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

ENGINEERING
CITY OF LOS ANGELES

LICENSED ARCHITECT ★ JENNIFER M LIM ★ LIC. NO. C36872 REN. 08/31/2027 ★ STATE OF CALIFORNIA

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ARCH_LP Senior_RV25_LIVE.rvt

TTLB TEMPLATE REVISION DATE: (02/2013
SHEET ISSUE DATE: (02/10/10

REVISION DATES (DESIGN STAGE ONLY)

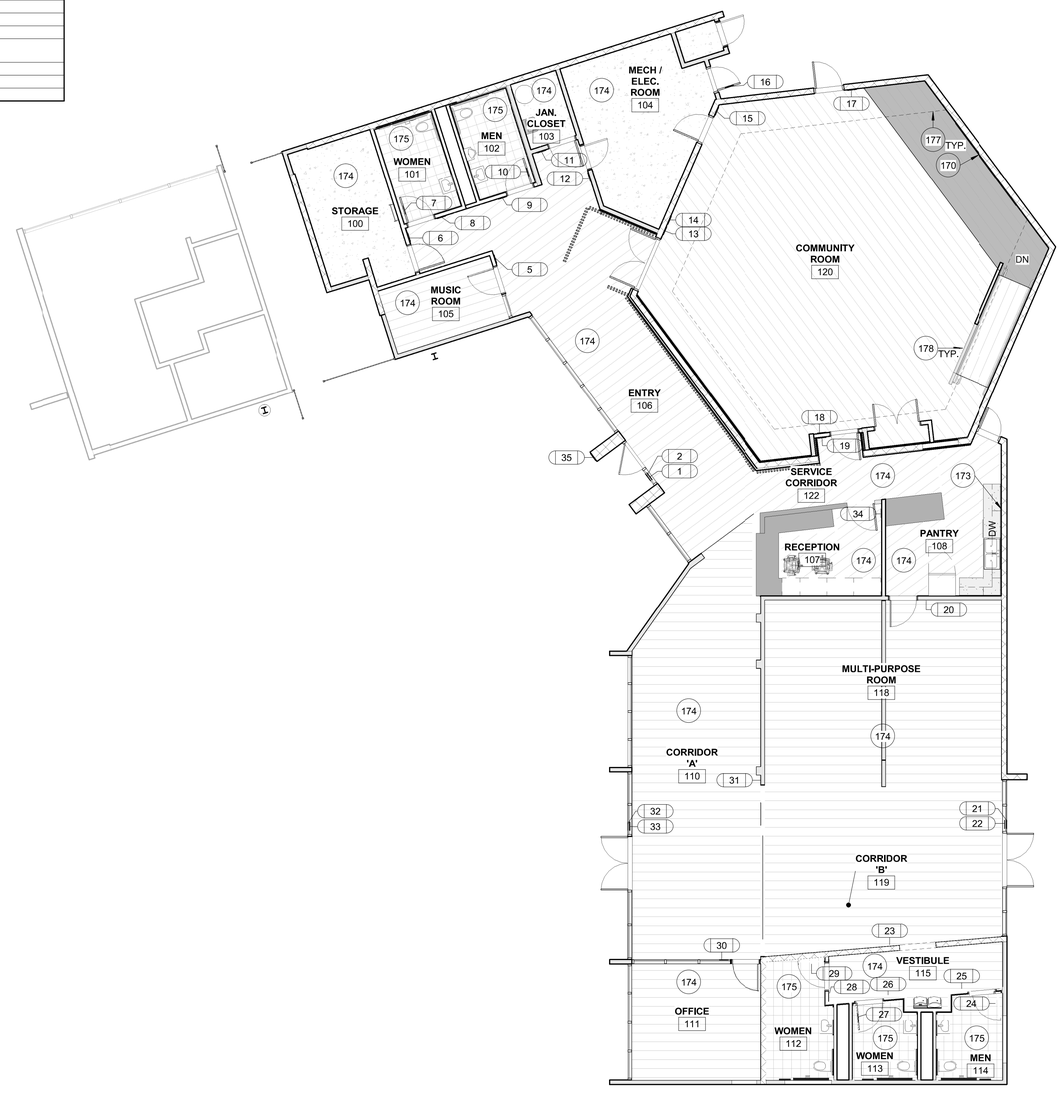
PLOTTED: 10/21/2025 2:54:27 PM

SIGNAGE SCHEDULE

SIGN NUMBER	ROOM	NAME / TEXT	SIGN TYPE / DETAIL	TYPE DESCRIPTION	FONT NAME	FONT CASE	BRAILLE/ TACTILE	MOUNTING LOCATION	COMMENTS
	<varies>	<varies>	<varies>	<varies>	<varies>	<varies>		<varies>	
1	106	NO SMOKING, CLEAN AIR & ACCESSABLILITY SIGNAGE	J13/A510	WINDOW VINYL SIGN	HELVETICA	UPPER CASE		WINDOW MOUNTED	
2	106	EXIT	E9/A510	EXIT SIGN	HELVETICA	UPPER CASE	YES	WINDOW MOUNTED	
5	105	MUSIC ROOM	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
6	100	STORAGE	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
7	101	WOMENS RESTROOM	A5/A510	RESTOOM DOOR SIGN				DOOR MOUNTED	
8	101	WOMENS RESTROOM	A5/A510	RESTROOM WALL SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
9	102	MENS RESTROOM	A5/A510	RESTROOM WALL SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
10	102	MENS RESTROOM	A5/A510	RESTOOM DOOR SIGN				DOOR MOUNTED	
11	103	JANITOR CLOSET	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
12	104	MECH / ELEC. ROOM	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
13	120	EXIT	E9/A510	EXIT SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
14	120	MAXIMUM OCCUPANCY	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
15	120	EXIT	E9/A510	EXIT SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
16	104	MECH / ELEC. ROOM	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	EXTERIOR SIGNAGE
17	120	EXIT	E9/A510	EXIT SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
18	120	EXIT	E9/A510	EXIT SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
19	120	COMMUNITY ROOM	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
20	108	PANTRY	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
21	119	NO SMOKING, CLEAN AIR & ACCESSABLILITY SIGNAGE	J13/A510	WINDOW VINYL SIGN	HELVETICA	UPPER CASE		WINDOW MOUNTED	
22	119	EXIT	E9/A510	EXIT SIGN	HELVETICA	UPPER CASE	YES	WINDOW MOUNTED	
23	115	RESTROOMS	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
24	114	MENS RESTROOM	A5/A510	RESTOOM DOOR SIGN				DOOR MOUNTED	
25	114	MENS RESTROOM	A5/A510	RESTROOM WALL SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
26	113	WOMENS RESTROOM	A5/A510	RESTROOM WALL SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
27	113	WOMENS RESTROOM	A5/A510	RESTOOM DOOR SIGN				DOOR MOUNTED	
28	112	WOMENS RESTROOM	A5/A510	RESTROOM WALL SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
29	112	WOMENS RESTROOM	A5/A510	RESTOOM DOOR SIGN				DOOR MOUNTED	
30	111	OFFICE	J9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WINDOW MOUNTED	
31	118	MULTI-PURPOSE ROOM	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	
32	110	NO SMOKING, CLEAN AIR & ACCESSABLILITY SIGNAGE	J13/A510	WINDOW VINYL SIGN	HELVETICA	UPPER CASE		WINDOW MOUNTED	
33	110	EXIT	E9/A510	EXIT SIGN	HELVETICA		YES	WINDOW MOUNTED	
34	106	RECEPTION	E9/A510	ROOM SIGN	HELVETICA	UPPER CASE	YES	WINDOW MOUNTED	
35	106	ACCESSIBLE ENTRANCE	J5/A510	WALL SIGN	HELVETICA	UPPER CASE	YES	WALL MOUNTED	EXTERIOR SIGNAGE

ROOM FINISH SCHEDULE

NO.	ROOM NAME	PERIMETER	AREA	FLOOR	BASE	WALLS NORTH	WALLS EAST	WALLS SOUTH	WALLS WEST	CEILING TYPE	CEILING HEIGHT	FINISH	REMARKS
100	STORAGE	57'-4"	153 SF	EC	RB	F1	F1	F1	F1	SGB	8'-2"		
101	WOMEN	35'-6"	74 SF	FTL	CB	WTL	WTL	WTL	WTL	WRGB	8'-2"		
102	MEN	35'-3"	73 SF	FTL	CB	WTL	WTL	WTL	WTL	WRGB	8'-2"		
103	JAN. CLOSET	25'-11"	41 SF	EC	RB	F5	F5	F5	F5	WRGB	8'-2"		
104	MECH / ELEC. ROOM	62'-10"	234 SF	EC	RB	F1	F1	F1	F1	SGB	8'-2"		
105	MUSIC ROOM	41'-2"	97 SF	LVT	RB	F2	F2	F2	F2	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
106	ENTRY	150'-6"	603 SF	LVT	RB	F1 / ABAW	F1 / ABAW	F2	F2 / GL	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
107	RECEPTION	45'-10"	126 SF	LVT	RB	F3	F3	F3	F3	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
108	PANTRY	61'-1"	219 SF	LVT	RB	F1	F6	F6	F3	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
110	CORRIDOR 'A'	168'-11"	945 SF	LVT	RB	F2	F1	F2 / GL	F2 / GL	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
111	OFFICE	54'-10"	187 SF	LVT	RB	F2 / GL	F2	F2	F2 / GL	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
112	WOMEN	41'-3"	92 SF	FTL	CB	WTL	WTL	WTL	WTL	WRGB	8'-2"		
113	WOMEN	31'-9"	60 SF	FTL	CB	WTL	WTL	WTL	WTL	WRGB	8'-2"		
114	MEN	33'-10"	66 SF	FTL	CB	WTL	WTL	WTL	WTL	WRGB	8'-2"		
115	VESTIBULE	52'-4"	104 SF	LVT	RB	F1	F1	F1	F1	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
118	MULTI-PURPOSE ROOM	131'-10"	694 SF	LVT	RB	F3	F1	F3	F1	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
120	COMMUNITY ROOM	182'-8"	1362 SF	LVT	RB	F4	F1 / AWP	F4	F4	ABSC	15'-0"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION
122	SERVICE CORRIDOR	42'-0"	78 SF	LVT	RB	F1 / ABAW	F1	F1	F2	SGB	8'-2"		REFER TO FINISH DIAGRAM BELOW FOR FLOORING ORIENTATION



NEW PROPOSED FLOOR FINISH PLAN

1/8" = 1'-0"

KEY NOTES

KEY	DESCRIPTION
170	-MOUNTED AWP ON NORTHEAST WALL COATED WITH F1 PAINT.
173	-LATEXT PAINT.
174	-GYPSUM BOARD CEILING.
175	-5/8" WATER RESISTANT GYPSUM BOARD CEILING.
177	-SOFFITS COATED WITH F1 PAINT.
178	-PONY WALL COATED WITH F1 PAINT.

ROOM FINISH NOTES

1. THE CONTRACTOR SHALL SUBMIT ALL FINISH COLOR SAMPLE FOR REVIEW AND APPROVAL BY THE ARCHITECT PRIOR TO INSTALLATION.
2. ALL INTERIOR FINISH MATERIALS APPLIED TO WALLS AND CEILINGS SHALL BE TESTED AS SPECIFIED IN SECTION 802 OF THE LOS ANGELES BUILDING CODE. FOR EXITWAYS, HALLWAYS AND CORRIDORS MUST HAVE MAXIMUM FLAME SPREAD OF CLASS-II. ALL OTHER ROOMS MUST HAVE MAXIMUM FLAME SPREAD OF CLASS-III.
3. EXTEND PLYWOOD SHEETING TO THE ENTIRE WALL WHERE SHEAR WALL PLYWOOD EXISTS IN ORDER TO HAVE AN EVEN WALL SURFACE.
4. REFERENCE POINT FOR WALL AND FLOOR TILE INSTALLATION SHALL START FROM THE CENTER OF THE FLOOR OR WALL SURFACE.
5. PROVIDE RECESSED VALVE OUTLETS FOR REFRIGERATOR AND UTILITY LINES.
6. ALL SIGNAGE SHALL COMPLY WITH 11B-703.2.

ROOM FINISH LEGEND

(MANUFACTURE NAME FOR REFERENCE ONLY)

ABAW: 2"X4" ALUMINUM BATTEN ACCENT WALL - MANUFACTURER: LONGBOARD - COLOR: WOODGRAINS #3 LIGHT NATIONAL WALNUT

ABSC: 2"X4" ALUMINUM BAFFLE SUSPENDED CEILING - MANUFACTURER: LONGBOARD - COLOR: WOODGRAINS #3 LIGHT NATIONAL WALNUT

AWP: 23.5" X 47" ACOUSTICAL WALL PANEL - MANUFACTURER: FRASCH! - TYPE: BRIK - COLOR: 52 LATTE

CB: 6" COVE BASE COLOR TO MATCH FLOOR FIELD TILE

EC: (E) EXPOSED CONCRETE - TO BE SEALED

F1: PAINT - MANUFACTURER: DUNN EDWARDS - COLOR: DEC761 COCHISE LRV 58

F2: PAINT - MANUFACTURER: DUNN EDWARDS - COLOR: DE5648 VINEYARD LRV 29

F3: PAINT - MANUFACTURER: DUNN EDWARDS - COLOR: DE5795 SPIRIT MOUNTAIN LRV 22

F4: PAINT - MANUFACTURER: DUNN EDWARDS - COLOR: DE5747 STONE BRIDGE LRV 14

F5: LATEX PAINT - MANUFATURER: DUNN EDWARDS - COLOR: DEC761 COCHISE LRV 58

F6: LATEX PAINT - MANUFATURER: DUNN EDWARDS - COLOR: DE5795 SPIRIT MOUNTAIN LRV 22

FTL: 4" X 4" CERAMIC FLOOR TILE - COLOR: MAGNETITE - COLLECTION: ORIGIONAL CERAMIC - VARIATION: V1-V4 - FINISH: MATTE

GB: 5/8" TYPE 'X' GYPSUM BOARD

GL: GLASS - SEE DOOR AND WINDOW SCHEDULE

LVT: 6" X 36" LUXURY VINYL TILE - MANFACTURER: ARMSTRONG FLOORING - TYPE: EXCHANGE - COLOR: ST960 STATIC BAKELITE

RB: 6" RUBBER COVE BASE - MANUFACTURER: ROPPE - TYPE: 700 SERIES TP 1/8" - COLOR: 193 BLACK BROWN

SGB: SUSPENDED GYPSUM BOARD CEILING

WRGB: 5/8" WATER RESISTANT GYPSUM BOARD

WTL: WALL TILE FULL HIGHT MANUFACTURED BY "FIRECLAY" OR APPROVED EQUAL, SEE CERAMIC TILE KEYNOTES ON INTERIOR ELVATIONS - 4" X 8" GLAZED CERAMIC WALL TILE - COLOR: DRIFTWOOD - COLLECTION: ORIGIONAL CERAMIC - VARIATION: V1-V4 - FINISH: GLOSS

BUREAU OF ENGINEERING
OFFICIAL RECORD

LADBS STAMP

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES

ALFRED MATA, PE
ARCHITECTURAL DIVISION

NO.	REVISION DESCRIPTION	DATE	BY
	INTERIM CITY ENGINEER		

ARCHITECT: JENNY M LIM
DESIGNED BY: TROY YOUNGE
DRAWN BY: NAM KIM
CHECKED BY: CELSO DEL POSO
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

CIP NO. G1163
INDEX NO. MF-300512

LICENSED ARCHITECT JENNY M LIM LIC. NO. C36872 EXP. 08/31/2027 STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: FINISH AND SIGNAGE SCHEDULES, NOTES AND LEGEND
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA. 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. A602
SHEET 30 OF SHEETS 115

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REVISION DATES (DESIGN STAGE ONLY)

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF 2023 CITY OF LOS ANGELES BUILDING CODE.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO STARTING ANY WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES BEFORE PROCEEDING OF ANY ITEM.

3. THE ENGINEER DOES NOT WARRANT THE ACCURACY OF SCALED DIMENSIONS ON ANY PLAN. ALL DIMENSIONS SHALL BE AS DESIGNATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND FIELD CONDITIONS AT THE SITE PRIOR TO COMMENCING WORK AND/OR FABRICATION AND PROCUREMENT OF ANY ITEM.

4. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NOTES AND DETAILS ON DRAWINGS AND GENERAL NOTES AND TYPICAL DETAILS ARE IN CONFLICT WITH THE CONTRACT SPECIFICATIONS, THE MOST STRINGENT SHALL APPLY. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.

5. A STAMPED SET OF PLANS AND SPECIFICATIONS SHALL BE KEPT AT THE JOBSITE AT ALL TIMES. THE CONTRACTOR SHALL ALSO MAINTAIN A SEPARATE FULL SIZE SET AND UPDATE WITH RECORD (I.E. AS-BUILT) INFORMATION. BOTH SETS SHALL BE MADE AVAILABLE TO THE INSPECTOR, BUILDING OFFICIAL OR CITY ENGINEER AT ALL TIMES.

6. MANUFACTURED MATERIALS SHALL BE APROVED BY THE CITY ENGINEER PRIOR TO THEIR USE. ALL REQUIREMENTS OF THOSE APPROVALS SHALL BE FOLLOWED.

7. SEE ARCHITECTURAL DRAWINGS FOR THE FOLLOWING:
   A. SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS.
   B. SIZE AND LOCATION OF ALL NON-BEARING PARTITIONS.
   C. SIZE AND LOCATION OF ALL CONCRETE CURBS, FLOOR DRAINS, SLOPES, DEPRESSED AREAS, CHANGES IN LEVEL, CHAMFERS, GROOVES, INSERTS, ETC.
   D. SIZE AND LOCATIONS OF ALL FLOOR AND ROOF OPENINGS.
   E. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS.

8. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR THE FOLOWING:

   A. PIPE RUNS, SLEEVES, HANGERS, TRENCHES, WALL, ROOF AND FLOOR OPENINGS, ETC.
   B. ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS, IN WALLS AND SLABS.
   C. ANCHORAGE AND BRACING FOR ELECTRICAL, MECHANICAL OR EQUIPMENT.
   D. ANCHOR BOLTS FOR MOTOR MOUNTS.
   E. SIZE AND LOCATION OF MACHINE AND EQUIPMENT BASES.

9. PIPE SLEEVES, CONDUITS, DUCTS, INSERTS, AND OTHER SIMILAR EMBEDDED ITEMS SHALL BE IN PLACE PRIOR TO PLACEMENT OF CONCRETE.

10. NO PIPES, DUCTS, SLEEVES, OR OTHER MECHANICAL, PLUMBING, AND ELECTRICAL TRADE ITEMS SHALL PASS THROUGH STRUCTURAL MEMBERS UNLESS SHOWN ON THE THE STRUCTURAL PLANS OR APPROVED BY THE CITY ENGINEER OF RECORD.

11. SEWER AND UTILITY LINES ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO PLUMBING, ELECTRICAL AND CIVIL DRAWINGS FOR LOCATION. THE CONTRACTOR SHALL COORDINATE ALL SEWER AND UTILITY LINES WITH THE FOUNDATION DRAWINGS. THE CITY ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES BEFORE PROCEEDING FURTHER WITH THE WORK.

12. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED WORK. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL THE MEASURES NECESSARY TO PROTECT THE SAFETY OF THE STRUCTURE, EMPLOYEES, AND THE PUBLIC DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE BUT NOT BE LIMITED TO THE BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION LOADING AND EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE CITY ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS AND DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM HIS/HER RESPONSIBLITIES FOR THE ABOVE ITEMS.

13. THE CONTRACTOR SHALL NOT STACK CONSTRUCTION MATERIAL ON ANY ELEVATED ROOF OR FLOOR. THE MATERIAL SHALL BE SPREAD OUT AND THE LOAD SHALL NOT BE ALLOWED TO EXCEED 80% OF THE DESIGN LIVE LOAD. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH OR WHERE OVERLOAD IS ANTICIPATED.

14. REVIEW OF SUBMITTAL WILL BE FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. NOTED MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS OR DEPARTURES THEREFROM. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND ACCURACY FOR CONFIRMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS FOR SELECTING FABRICATION PROCESSES, FOR TECHNIQUES OF ASSEMBLY FOR PERFORMING WORK IN A SAFE AND SATISFACTORY MANNER.

15. THE CONTRACTOR SHALL PROVIDE PROTECTION FOR PEDESTRIANS AND VEHICLES ADJACENT TO THE PROJECT SITE DURING CONSTRUCTION.

16. THE CONTRACTOR SHALL OBTAIN AND ARRANGE FOR ALL REQUIRED PERMITS AND INSPECTIONS.

EARTHWORK & FOUNDATION NOTES

1. THE GEOTECHNICAL REPORT W.O. #E1908358, GED FILE # 21-159 DATED APRIL 18 2022, ENTITLED GEOTECHNICAL ENGINEERING REPORT LAS PALMAS SENIOR CENTER FACILITY REDEVELOPMENT PROJECT ADDRESS 1820 N LAS PALMAS AVE, LOS ANGELES, CA 90028, DEPARTMENT OF BUILDING AND SAFETY SOILS APPROVAL LETTER LOG #121834 DATED JUNE 23, 2022 SHALL BE PART OF THIS PLAN SET.

2. THE CONTRACTOR SHALL CONFORM WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEERS' GEOTECHNICAL REPORT AND THE CONDITIONS OF THE APPROVAL LETTER FROM THE DEPARTMENT OF BUILDING AND SAFETY.

3. THE CONTRACTOR SHALL NOTIFY THE PROJECT GEOTECHNICAL ENGINEER, OR THEIR DESIGNEE, TO MONITOR, INSPECT, AND APPROVE ANY EXCAVATIONS, SHORING INSTALLATION. FOUNDATIONS, AND THE PLACEMENT OF COMPACTED FILL. THE PROJECT GEOTECHNICAL ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF INSPECTION.

4. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION BY THE CITY OF LOS ANGELES, DEPARTMENT OF BUILDING AND SAFETY, AT LEAST 48 HOURS IN ADVANCE.

5. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL FURNISH THE CITY ENGINEER A WRITTEN DESCRIPTION OF THE PROPOSED PROCEDURES AND CALCULATIONS PREPARED, SIGNED, AND SEALED BY A CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER FOR INFORMATION ONLY. NEVERTHELESS, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SHORING WORK AND SUBMITTAL TO THE CITY ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF HIS/HER OBLIGATIONS.

EARTHWORK & FOUNDATION NOTES (CONTINUED)

6. ALL EXCAVATIONS OF FOOTINGS SHALL FIRST BE APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER AND THE DEPARTMENT OF BUIDLING AND SAFETY PRIOR TO PLACEMENT OF THE REINFORCEMENT STEEL AND CONCRETE.

7. ALL SOIL TO BE IMPORTED FOR FILL SHALL BE APPROVED AT THE BORROW SITE BY THE GEOTECHINCAL ENGINEER PRIOR TO IMPORT. THREE WORKING DAYS NOTIFICATION TO THE PROJECT GEOTECHNICAL ENGINEER IS REQUIRED PRIOR TO IMPORTING SOIL.

8. STRUCTURAL BACKFILL SHALL CONFORM TO THE REQUIRMENTS OF THE GEOTECHNICAL REPORT. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND HAULED AWAY FROM THE SITE.

9. NO BACKFILL SHALL BE PLACED BEHIND RETAINING WALLS PRIOR TO THE CONCRETE REACHING ITS FULL DESIGN STRENGTH. THE CONTRACTOR SHALL PROTECT AND BRACE ALL BUILDING WALLS AND PITS BELOW GRADE AGAINST LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE REACHED THEIR FULL DESIGN STRENGTH. CONTRACTOR SHALL PROVIDE DESIGN, PERMIT, BRACING, AND INSTALLATION OF SUCH BRACING, AT NO ADDED COST TO THE CITY.

10. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL THE NECESSARY PERMITS FOR ALL TRENCHES AND EXCAVATIONS FIVE FEET OR MORE IN DEPTH, FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, PRIOR TO ISSUANCE OF A BUILDING OR GRADING PERMIT BY THE CITY OF LOS ANGELES, DEPARTMENT OF BUILDING AND SAFETY.

11. OVER EXCAVATE AND RECOMPACT SOILS AS REQUIRED PER THE SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.

12. NO FILL SHALL BE PLACED UNTIL THE GEOTECHNICAL ENGINEER AND BUILDING AND SAFETY GRADING INSPECTOR HAVE INSPECTED AND APPROVED THE BOTTOM EXCAVATION.

13. FROM THE TIME THAT GEOTECHNICAL APPROVES THE FOOTING EXCAVATIONS TO THE TIME THAT THE CONCRETE IS PLACED, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE FOOTINGS PROPERLY MOIST AND FREE OF LOOSE SOIL AND DEBRIS. IF EXCESSIVE SLOUGHING OR CAVING OCCURS OR IF MOISTURE IS ALLOWED INTO THE FOOTINGS PRIOR TO CONCRETE PLACEMENT, ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE FOOTINGS AND GEOTECHNICAL SHALL RE-INSPECT THE FOOTINGS PRIOR TO CONCRETE PLACEMENT.

14. IF ADVERSE SOIL CONDITIONS ARE ENCOUNTERED, A SOILS INVESTIGATION REPORT MAY BE REQUIRED.

CONCRETE NOTES

1. CONCRETE SHALL CONFORM TO EXPOSURE CLASS W1 PER THE REQUIREMENTS OF CHAPTER 19 OF ACI 318-19, UNO.

2. UNLESS NOTED OTHERWISE, STRUCTURAL CONCRETE SHALL BE HARD ROCK - 145 LBS/ CU. FT. CONCRETE STRENGTH SHALL BE 4,000 PSI (MINIMUM)

3. SUBMITTALS OF MIX DESIGN SHALL BE AS PER THE BUILDING CODE AND SHALL BE PREPARED BY A CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER, AND BE PROVIDED BY AN APPROVED LABORATORY. COPIES OF THE SUBMITTALS SHALL BE IN THE OFFICE OF THE BUILDING INSPECTOR, AT THE BATCH PLANT PRIOR TO BATCHING OF CONCRETE, AND AT THE JOB SITE PRIOR TO PLACING OF CONCRETE. MIX DESIGN SHALL BE SUBMITTED FOR REVIEW AND APPROVAL OF THE PROJECT STRUCTURAL ENGINEER PRIOR TO PLACING OF CONCRETE.

4. CONTINUOUS INSPECTION OF CONCRETE BY A DEPUTY INSPECTOR IS REQUIRED FOR CONCRETE STRENGTHS OVER 2,500 PSI, TO BE PROVIDED BY THE CITY. (SEE SHEAT S004)

5. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE 2023 EDITION OF THE LOS ANGELES CITY BUILDING CODE AND THE LATEST EDITION OF A.C.I. 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, INCLUDING BAR BENDS AND HOOKS, UNLESS SPECIFICALY SHOWN ON THE DRAWINGS.

6. ANCHOR BOLTS, DOWELS, REINFORCING STEEL, INSERTS, ETC. SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE. CONCRETE BLOCKS SHALL ONLY BE USED TO SUPPORT REINFORCING OFF GROUND.

7. THE LOCATION OF CONSTRUCTION JOINTS OR POUR JOINTS SHALL BE AS SHOWN ON PLANS OR AS APPROVED BY THE CITY ENGINEER PRIOR TO POURING CONCRETE.

8. NOTIFY THE CITY ENGINEER 48 HOURS PRIOR TO ALL POURS.

9. ALL EXISTING CONCRETE SURFACES IN CONTACT WITH NEW CONCRETE AND ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED TO 1/4" AMPLITUDE MINIMUM.

10. ALL FOUNDATIONS AND PILES SHALL BE POURED AGAINST UNDISTURBED NATURAL SOIL, OR COMPACTED FILL. THE PROJECT GEOTECHNICAL ENGINEER SHALL INSPECT ALL FOUNDATIONS, PILES AND SOIL PRIOR TO PLACING REINFORCING STEEL. THE PROJECT GEOTECHNICAL ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE OF INSPECTION.

11. ALL EXPOSED EDGES AND CORNERS SHALL BE CHAMFERED 3/4", OR RADIUSED TO 1/2" R.

12. BEFORE CONCRETE IS POURED, CHECK ALL TRADES TO INSURE PROPER PLACEMENT OF ALL OPENINGS, SLEEVES, CURBS, CONDUITS, EMBEDDED MATERIALS, ETC. RELATING TO THE WORK.

13. THE CONTRACTOR SHALL COORDINATE FOR CONTINUOUS INSPECTION FOR ANCHOR BOLTS OR HEADED STUDS EMBEDDED IN CONCRETE PRIOR TO AND DURING THE PLACEMENT OF CONCRETE TO BE PROVIDED BY THE CITY.

14. ALL SLEEVES NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL BE LOCATED BY THE TRADES INVOLVED AND SHALL BE APPROVED BY THE CITY ENGINEER.

15. NO STAKE, STEEL OR WOOD WILL BE PERMITTED IN ANY CONCRETE POUR, UNLESS OTHERWISE SHOWN ON THE PLANS TO REMAIN. SUSPEND FORMS FROM ABOVE THE POUR.

16. FINAL SLABS SHALL BE LEVEL TO WITHIN 1/8" WHEN MEASURED WITH A 10 FEET STRAIGHT EDGE AND WITHIN 1/2" IN ANY 30 FEET BAY.

17. CONCRETE USED FOR TOPPING SLAB AT 2ND LEVEL DECK SHALL CONFORM TO THE REQUIREMENTS OF THE VERCO STEEL DECKS - EVALUATION REPORT 217.

18. NO FOUNDATIONS OR SLABS-ON-GRADE SUPPORTED IN NEW COMPACTED FILL SHALL BE POURED UNTIL THE COMPACTION REPORT IS SUBMITTED AND APPROVED BY THE GRADING DIVISION OF THE DEPARTMENT.

19. NON-SHRINK GROUT SHALL HAVE A MINIMUM 28 DAYS STRENGTH OF 4,000 PSI. CONTRACTOR TO SUBMIT MIX DESIGN FOR APPROVAL TO THE CITY ENGINEER, PRIOR TO PLACEMENT.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACOORDANCE WITH THE LATEST EDITION OF THE AISC SPECIFICATIONS. FABRICATOR SHALL BE LICENSED AND APPROVED BY THE DEPT OF BUILDING AND SAFETY CITY OF LOS ANGELES FOR THE WORK INDICATED.

2. ALL STRUCTURAL STEEL W-SHAPES SHALL CONFORM TO ASTM A-992. PIPE SECTIONS SHALL CONFORM TO ASTM A-53 GRADE B; STRUCTURAL HSS SECTIONS SHALL CONFORM TO ASTM A-500 GRADE C. ALL OTHER SHAPES SHALL CONFORM TO ASTM A36.

3. CONNECTIONS NOT DETAILED ON DRAWINGS SHALL BE DETAILED BY THE FABRICATOR AND SHALL BE SUBMITTED IN THE SHOP DRAWINGS FOR REVIEW BY THE STRUCTURAL ENGINEER.

4. FABRICATOR SHALL ENSURE THAT ALL REQUIRED ENTERING AND TIGHTENING CLEARANCES ARE MET TO ENSURE PROPER ERECTION PER THE AISC MANUAL. FABRICATOR SHALL ALSO ENSURE THAT THE MINIMUM REQUIRED BOLT SPACING AND EDGE DISTANCES ARE MET FOR CONNECTIONS PER THE AISC MANUAL. IN THE EVENT THAT ANY OF THE ABOVE REQUIREMENTS CANNOT BE MET, FABRICATOR SHALL BRING SUCH DETAILS TO THE ATTENTION OF THE STRUCTURAL ENGINEER.

5. FABRICATOR SHALL VERIFY ALL DIMENSIONS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

6. ALL HIGH STRENTH (H.S.) BOLTS, NUTS AND WASHERS SHALL COMPLY WITH ASTM A325 OR BETTER. ANCHOR BOLTS INTO CONCRETE OR MASONRY SHALL CONFORM TO ASTM F1554 GR. 36 OR BETTER. MACHINE BOLTS (M.B.) WHEREVER SPECIFIED SHALL CONFORM TO ASTM A307 OR BETTER.

7. UNLESS NOTED OTHERWISE: ALL GUSSET PLATES, STIFFENERS, WING PLATES AND BASE PLATES SHALL BE A MINIMUM OF 3/8" THICK; ALL STRUCTURAL BOLTS SHALL BE A MINIMUM 3/4" DIAMETER; ALL FILLET WELDS SHALL HAVE A MINIMUM SIZE OF 3/16".

8. ALL HIGH STRENGTH BOLTS SHALL BE BEARING TYPE WITH THREADS INCLUDED IN SHEAR PLANE (A325-N), UNLESS OTHERWISE NOTED. PROVIDE PRETENSIONED HIGH STRENGTH BOLTS (WITH CLASS A FAYING SURFACE) FOR ALL BOLTED CONNECTIONS PART OF THE SEISMIC LOAD RESISTING SYSTEM (SLRS) UNLESS NOTED OTHERWISE.

9. TIGHTEN A325-N BOLTS TO A SNUG TIGHT CONDITION. WHERE SPECIFIED, TIGHTEN A325 PRETENSIONED BOLTS PER THE "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS" USING ONE OF THE FOLLOWING METHODS: TURN-OF-NUT PRETENSIONING, TWIST OFF-TYPE TENSION CONTROL PRETENSIONING, CALIBRATED WRENCH PRETENSIONING OR DIRECT TENSION INDICATOR PRETENSIONING.

10. BASE PLATES BEARING ON CONCRETE OR MASONRY SHALL BEAR ON MINIMUM 1" THICK SOLID NON-SHRINK GROUT OR DRYPACK.

11. WELDING SHALL CONFORM TO THE LATEST EDITION OF AWS D1.1 SPECIFICATIONS. WELDING ELECTRODES SHALL HAVE A MINIMUM TENSILE STRENGTH OF 70 KSI OR HIGHER.

12. ALL COMPLETE PENETRATION SHOP WELDING, ALL FIELD WELDING AND HIGH STRENGTH BOLTING, EXCEPT MINOR OR TACK WELDING SHALL BE CONTINUOUSLY INSPECTED BY AN INSPECTOR APPROVED BY THE CITY OF LOS ANGELES, DEPARTMENT OF BUILDING AND SAFETY.

13. ALL STRUCTURAL STEEL TO BE EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED SURFACES, AND CUT SURFACES OF GALVANIZED STEEL SHALL BE THOROUGHLY CLEANED AND COATED IN ACCORDANCE WITH SECTION 210-3.5 OF THE SSPWC.

14. ALL STRUCTURAL STEEL NOT EXPOSED TO WEATHER SHALL HAVE A COAT OF SHOP PRIMER EXCEPT WHERE STEEL IS TO BE FIREPROOFED, ENCASED IN CONCRETE OR AREA IN CONTACT WITH HIGH STRENGTH BOLTS.

15. CONTRACTOR SHALL PROVIDE ALL REQUIRED SHIMS TO FACILITATE CONSTRUCTION AT NO ADDITIONAL EXPENSE TO THE CITY.

16. FIELD WELDING TO BE DONE BY WELDERS CERTIFIED BY THE LADBS FOR STRUCTURAL STEEL, REINFORCING STEEL AND LIGHT GAGE STEEL. CONTINUOUS INSPECTION BY A DEPUTY INPSECTOR IS REQUIRED.

17. SHOP WELDS MUST BE PERFORMED IN A LADBS LICENSED FABRICATOR'S SHOP.

18. LADBS LICENSED FABRICATOR IS REQUIRED FOR STRUCTURAL STEEL.

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ M.MANAV ★ S 6573 ★ STATE OF CALIFORNIA

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

TED ALLEN, PE
DESIGN GROUP

ENGINEER:	MANAN BHALJA, S.E.	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGHAS, S.E.	MOURAD AZIZ, P.E.	06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.		06/26/2025

CITY ENGINEER:

CLIENT:
GENERAL:

SHEET TITLE: GENERAL NOTES

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S001

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REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE INTERMEDIATE GRADE, DEFORMED BARS, CONFORMING TO ASTM A615-60. WELDED REBARS SHALL CONFORM TO A-706.
2. WELDED WIRE REINFORCEMENT SHALL CONFORM TO ASTM A-1064. MESH SHALL BE LAPPED (9" MINIMUM).
3. ALL BARS SHALL BE CLEAN OF LOOSE FLAKY RUST, GREASE OR OTHER MATERIALS LIKELY TO IMPAIR BOND.
4. ALL BENDS SHALL BE MADE COLD.
5. REINFORCING BARS SHALL BE SPLICED AND BENT IN STRICT ACCORDANCE WITH THE C.R.S.I. PUBLICATION AND DETAIL DRAWINGS. NO KINKS SHALL BE PERMITTED.
6. FOR BARS #7 THROUGH #11, THE CITY ENGINEER SHALL APPROVE LAP SPLICE LENGTH NOT SHOWN. BARS SHOWN SPLICED SHALL BE CONTINUOUS AT ALL OTHER LOCATIONS. SPLICES IN ADJACENT BARS SHALL BE STAGGERED AT LEAST ONE SPLICE LENGTH. ALL DOWELS SHALL HAVE THE SAME SIZE AND SPACING AS THAT OF THE REINFORCING STEEL TO WHICH THEY ARE SPLICED.
7. NO WELDING OF REINFORCING BARS SHALL BE PERMITTED UNLESS APPROVED BY THE ENGINEER. IF WELDING OF REINFORCING IS APPROVED, IT SHALL CONFORM TO THE STRUCTURAL WELDING CODE-REINFORCING STEEL AWS D1.4 (LATEST EDITION) ALL SHOP WELDING SHALL BE DONE IN A SHOP CERTIFIED BY THE CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY. FIELD WELDING SHALL BE DONE BY WELDERS CERTIFIED BY THE DEPARTMENT OF BUILDING AND SAFETY FOR REINFORCING STEEL. CONTINUOUS INSPECTION BY A DEPUTY INSPECTOR IS REQUIRED.
8. MECHANICAL COUPLERS FOR REINFORCING BARS SHALL HAVE AND CONFORM TO A CURRENTLY APPROVED CITY OF LOS ANGELES RESERACH REPORT AND SHALL REQUIRE CONTINUOUS INSPECTION BY A DEPUTY INSPECTOR PROVIDED BY THE CITY.
9. PROVIDE DOWELS OF SAME SIZE AND NUMBER FROM ADJACENT POUR, BOTH VERTICALLY AND HORIZONTALLY TO MATCH TYPICAL REINFORCING SHOWN. LAPS SHALL BE IN ACCORDANCE WITH THE DRAWINGS AND DETAILS.
10. ALL DOWELS TO BE CLEANED AFTER POUR AND CARE SHALL BE TAKEN SO AS NOT TO BEND DOWELS EXTENDING FROM CONCRETE PREVIOUSLY POURED.
11. ALL HOOKS SHALL BE STANDARD HOOKS, UNLESS NOTED OTHERWISE.
12. ALL REINFORCING BARS SHALL BE ACCURATELY AND SECURELY PLACED BEFORE POURING CONCRETE OR APPLYING MORTAR OR GROUT.
13. SHOP DRAWINGS FOR REINFORCING STEEL SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL PRIOR TO FABRICATION.
14. ALL REINFORCING SHALL BE ACCURATELY PLACED AND FIRMLY SUPPORTED AS RQUIRED BY THE ACI STANDARDS. REINFORCING SHALL HAVE THE FOLLOWING MINIMUM COVERAGE AND SHALL BE PLACED AS NEAR TO THE CONCRETE SURFACE AS THESE MINIMUMS WILL PERMIT UNLESS NOTED OR DETAILED OTHERWISE.
    - CONCRETE POURING AGAINST EARTH.....3"
    - FORMED CONCRETE IN CONTACT WITH EARTH OR WEATHER.....1-1/2"
    - SLABS, WALLS, JOISTS.....1-1/2"
    - BEAMS.....1-1/2"
    - COLUMNS (TO MAIN STEEL).....2"
15. BARS INTERRUPTED BY STRUCTURAL STEEL SHALL EXTEND TO WITHIN 1" OF THE STRUCTURAL STEEL FLANGE OR WEB AND HAVE A 90-DEGREE HOOK UNLESS NOTED OTHERWISE.

MASONRY

1. CONCRETE MASONRY (CMU) SHALL BE MEDIUM-WEIGHT UNITS FOR BUILDING AND NORMAL WEIGHT UNIT FOR RETAINING WALLS, USE OPEN END BLOCKS AT VERTICAL REINFORCING BARS AND BOND BEAM BLOCKS AT HORIZONTAL BARS.
2. COMPRESSIVE STRENGTH OF MASONRY (f'm) AT 28 DAYS SHALL BE 1500 PSI (U.N.O. ON DRAWINGS), AND TESTED IN ACCORDANCE WITH LABC SECTION 2105.3 (CONT. INSPECTION REQ'D).
3. UNITS SHALL BE LAID IN RUNNING BOND U.N.O.
4. ALL CELLS AND SPACES SHALL BE GROUTED SOLID U.N.O. COMPLY WITH THE REQUIREMENTS OF LABC SECTION 2104.
5. ALL BARS SHALL HAVE A MINIMUM DISTANCE CLEAR TO THE MASONRY SURFACE OF ONE BAR DIAMETER OR ONE-HALF INCH, WHICHEVER IS GREATER. BOLTS AND EMBEDS SHALL HAVE A MINIMUM OF 1 INCH GROUT COVER ALL AROUND.
6. VERTICAL AND HORIZONTAL REINFORCING IN WALLS SHALL BE ON THE WALL CENTER LINE U.N.O.
7. GROUT SHALL BE PER LABC SECTION 2103 AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
8. MORTAR SHALL BE TYPE "S" PER SECTION 2103 OF LABC.
9. REFER TO GENERAL NOTES UNDER "REINFORCING STEEL".
10. CONSTRUCTION SHALL COMPLY WITH SECTION 3 OF TMS 602-16.
    A. REINFORCEMENT SHALL BE SUPPORTED TO PREVENT DISPLACEMENTS BEYOND THE TOLERANCES ALLOWED BY 3.4B OF TMS 602-16 PRIOR TO GROUTING;
    B. CLEANOUTS SHALL BE PROVIDED IN THE BOTTOM COURSE OF MASONRY FOR ALL GROUT POUR HEIGHT EXCEEDING 5'-4"; (3.2F OF TMS 602-16)
    C. HIGH LIFT GROUTING IS SUBJECT TO THE FOLLOWING: 1. APPROVAL BY THE ENGINEER 2. GROUT LIFT HEIGHT SHALL NOT EXCEED 12.67 FT WHEN THE MASONRY HAS CURED FOR 4- HOURS., 3. THE GROUT SLUMP IS MAINTAINED BETWEEN 10 AND 11 IN., AND 4. NO INTERMEDIATE REINFORCED BOND BEAMS ARE PLACED BETWEEN THE TOP AN BOTTOM OF THE POUR HEIGHT. OTHERWISE GROUT LIFT HEIGHT SHALL NOT EXCEED 5'-4". (3.5D OF TMS 602-16)
11. QUALITY ASSURANCE MEASURES SHALL COMPLY WITH SECTION 2105 OF 2023 LOS ANGELES BUILDING CODE, TMS 402-16 CHAPTER 3, AND TMS 602-16 TABLES 3 & 4 FOR THE REQUIRED LEVEL. IT SHALL BE INCLUDED IN THE STATEMENT OF SPECIAL INSPECTIONS REQUIRED BY 1705 OF 2023 LABC.
12. THREE MASONRY PRISM TESTS SHALL BE BUILT AND TESTED PRIOR TO CONSTRUCTION.
13. THREE MASONRY PRISM TESTS (PER 5000 SQ. FT. AREA, 3 MIN.) SHALL BE BUILT AND TESTED DURING CONSTRUCTION WHEN STRESSES ARE USED IN DESIGN.
14. CONTINUOUS INSPECTION SHALL BE PROVIDED FOR ALL MASONRY CONSTRUCTION BY A DEPUTY INSPECTOR CERTIFIED BY THE LOS ANGELES CITY DEPARTMENT OF BUILDING AND SAFETY.
15. JOINT REINFORCEMENT USED IN EXTERIOR WALLS AND CONSIDERED IN THE DETERMINATION OF SHEAR STRENGTH, SHALL BE HOT DIPPED GALVANIZED.
16. THE TOP OF UNFINISHED MASONRY WORK SHALL BE COVERED TO PROTECT THE MASONRY FROM THE WEATHER.

METAL DECK

1. ALL METAL DECK AND ACCESSORIES SHALL BE FORMED FROM STEEL SHEETS CONFORMING TO ASTM A1008 GRADE A OR HIGHER SPECIFICATIONS WITH A MINIMUM YIELD STRENGTH OF 33,000 PSI. GALVANIZED PER ASTM A653, GRADE G90.
2. MINIMUM BEARING OF DECKING ON SUPPORTS SHALL BE TWO (2) INCHES. SHEETS SHALL BE ATTACHED TO ALL SUPPORTING STEEL MEMBER BY WELDING AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDED COMPLETION OF ERECTION. ALL WELDS IN EXPOSED DECK AREAS SHALL HAVE TOUCH UP. DE-SLAG, CLEAN AND PRIME WITH A ZINC RICH PRIMER.
3. ALL DECKS AND LIGHT GAUGE STEEL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS CERTIFIED FOR LIGHT GAGE WELDING BY THE LOS ANGELES CITY DEPARTMENT OF BUILDING & SAFETY.
4. SPECIAL INSPECTION SHALL BE PROVIDED FOR ALL FIELD WELDING BY A DEPUTY INSPECTOR CERTIFIED BY THE LOS ANGELES CITY DEPARTMENT OF BUILDING AND SAFETY.
5. WELDING PROCEDURE SHALL BE SUBMITTED TO ENGINEER PRIOR TO START OF CONSTRUCTION.
6. SEE STRUCTURAL DRAWINGS FOR DETAILS OF DECK OPENINGS. SEE THE REST OF PROJECT'S DRAWINGS (ARCHITECTURAL, MECHANICAL, ELECTRICAL, ETC) FOR SIZE AND LOCATION OF REQUIRED OPENINGS.

WOOD NOTES

1. ALL NEW LUMBER SHALL BE DOUGLAS FIR LACH NO.1 OR EQUAL. ALL NEW SHEATHING SHALL BE STRUCTURAL 1 OR EQUAL. GRADE AND SPECIES OF ALL LUMBER MUST BE GRADE MARKED.
2. ALL WOOD IN CONTACT WITH CONCRETE OR BEARING ON CONCRETE SHALL BE PRESSURE TREATED DOUGLAS FIR NO.1.
3. ALL PRESSURE TREATED DOUGLAS FIR SHALL BEAR THE QUALITY MARK OF INSPECTION AGENCY THAT MAINTAINS CONTINUING SUPERVISION, TESTING AND INSPECTION OVER THE QUALITY OF THE PRESERVATIVE-TREATED WOOD. INSPECTION AGENCIES FOR PRESERVATIVE-TREATED WOOD SHALL BE LISTED BY AN ACCREDITATION BODY THATCOMPLIES WITH THE REQUIREMENTS OF THE AMERICAN LUMBER TREATED WOOD PROGRAM, OR EQUIVALENT. THE QUALITY MAKR SHALL BE BE ON A STAMP OR LABELAFFIXED TO THE PRESERVATIVE-TREATED WOODM AND SHALL INCLUDE THE FOLLOWING INFORMATION:
    A. IDENTIFICATION OF TREATING MANUFACTURER.
    B. TYPE OF PRESERVATIVE USED.
    C. MINIMUM PRESERVATIVE RETENTION (PCF).
    D. END USE FOR WHICH THE PRODUCT IS TREATED.
    E. AWPA STANDARD TO WHICH THE PRODUCT WAS TREATED.
    F. IDENTITY OF THE ACCREDITED INSPECTION AGENCY.
4. ALL BLOCKING SHALL BE SOLID ONE PIECE, AND SHALL BE FULL DEPTH OF THE RAFTER OR JOIST.
5. PROVIDE 2X FULL DEPTH SOLID BLOCKING AT ALL SUPPORTS, UNLESS NOTED OTHERWISE.
6. DO NOT NOT NOTCH OF CUT ANY STRUCTURAL TIMBER UNLESS SPECIFICALLY SHOWN OR NOTES ON PLANS OR APPROVED BY STRUCTURAL ENGINEER.
7. PROVIDE NAILABLE CROSS BLOCKING AT 8'-0" O.C. MAXIMUM FOR ALL JOISTS AND RAFTERS MORE THAN 8" DEEP, UNLESS NOTED OTHERWISE.
8. BOLT HOLE DIAMETER SHALL BE 1/32" TO 1/16" LARGER THAN NOMINAL BOLT DIAMETER. ALL BOLTS SHALL HAVE STANDARD CUT WASHER UNDER HEAD AND NUT UNLESS NOTED OTHERWISE. BOLTS SHALL BE RE-TIGHTENED PRIOR TO APPLICATION OF SHEATHING, PLASTER, ETC.
9. BORED HOLES SHALL BE LOCATED AT THE CENTER OF STUDS. NO EXCEPTIONS. BORED HOLES SHALL NOT BE LOCATED AT THE SAME SECTION OF A STUD AS A CUT OR A NOTCH.
10. ALL WOOD AND METAL FRAMING CONNECTORS SHALL HAVE EVALUATION SERVICE REPORT (ESR) AND APPROVED BY ICC SUCH AS SIMPSON OR APPROVED EQUIVALENT. ALL HOLES SHALL BE FILLED WITH NAILS PER MANUFACTURER'S INSTRUCTIONS, UNLESS NOTED OTHERWISE.
11. AT THE TIME OF INSTALLATION, THE WOOD MOISTURE CONTENT SHALL NOT EXCEED 19%.
12. EACH STREET OF PLYWOOD SHALL BE IDENTIFIED BY A REGISTERED STAMP OR BRAND OF THE DOUGLAS FIR PLYWOOD ASSOCIATION.
13. USE NAILING PER LABC TABLE 2304.10.2 AS MINIMUM. OTHER CONNECTIONS SPECIFICALLY DETAILED ON PLANS ARE ADDITIONAL. ALL NAILS SHALL BE COMMON WIRE.
14. PROVIDE DOUBLE JOIST AND DOUBLE RAFTERS UNDER ALL PARTITIONS AND UNDER ALL MECHANICAL EQUIPMENT, UNLESS NOTED OTHERWISE.
15. THE CONTRACTOR SHALL PROVIDE OVERSIZE WASHERS UNDER ALL BOLTS AND LAG SCREW CONNECTIONS TO TIMBER MEMBERS. WASHERS ARE NOT REQUIRED AT WOOD SCREWS.
16. LAG SCREWS SHALL BE PREDRILLED. THE DIAMETER OF PREDRILLED HOLES SHALL BE 40%-70% OF THE SHANK DIAMETER. THE THREADED PORTION OF THE SCREW SHALL BE INSERTED BY TURNING WITH A WRENCH, NOT BY DRIVING WITH A HAMMER. MINIMUM PENETRATION OF THE THREADED END INTO THE HOLDING PIECE SHALL BE SEVEN (7x) TIMES THE SHANK DIAMETER.
17. ALL FASTENERS AND ANCHOR BOLTS, INCLUDING NUTS AND WASHERS, IN CONTACT WITH PRESERVATIVE TREATED WOOD, SHALL BE HOT-DIPPED GALVANIZED STELL IN ACCORDANCE WITH ASTM A153.

DESIGN DATA

MATERIAL DATA:

W-SHAPE STEEL BEAMS A992	Fy=50 KSI
HSS COLUMNS AND BEAMS ASTM A500 GR.C	Fy=50 KSI
CHANNEL JOIST A36	Fy=36 KSI
TYPICAL REBAR	Fy=60 KSI
MASONRY BLOCKS	f'm=1500 PSI
CMU GROUT	f'g=2000 PSI
CONCRETE STRENGTH	f'c=4000 PSI

LOAD DATA:

ROOF DEAD LOAD (MAIN BUILDING)	18.0 PSF
ROOF DEAD LOAD (TRELLIS)	4.0 PSF
ROOF DEAD LOAD (TRASH ENCLOSURE)	6.5 PSF
ROOF LIVE LOAD (REDUCIBLE)	20.0 PSF

SOIL DESIGN PARAMETERS:

ALLOWABLE BEARNING PRESSURE	1,200 PSF
COEFFICIENT OF FRICTION	0.35
PSSIVE RESISTANCE	100 PSF/FT, MAX. 1,500 PSF/FT

SEISMIC DESIGN DATA:

1. SEISMIC IMPORTANCE FACTOR	1.0
2. OCCUPANCY CATEGORY	II
3. MAPPED SPECTRAL RESPONSE ACCELERATION	S_S = 2.116, S_1 = 0.760
4. SITE CLASS	D
5. SPECTRAL RESPONSE COEFICIENTS	S_{DS} = 1.692, S_{D1} = 0.861
6. SEISMIC DESIGN CATEGORY	D
7. LATERAL FORCE RESISTING SYSTEM	ORDINARY REINFORCED MASONRY SHEAR WALL STEEL ORDINARY CANTILEVER COLUMN SYSTEM MECHANICAL COMPONENT: AIR-SIDE HVAC
8. RESPONSE MODIFICATION FACTOR	R = 2.0 (ORDINARY REINFORCED MASONRY SHEAR WALL) R = 1.25 (STEEL ORDINARY CANTILEVER COLUMN SYSTEM)
9. ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE PROCEDURE
10. REDUNDANCY FACTOR	1.0
11. SEISMIC RESPONSE COEFICIENT	Cs = 0.846 (ORDINARY REINFORCED MASONRY SHEAR WALL) Cs = 1.354 (STEEL ORDINARY CANTILEVER COLUMN SYSTEM)

WIND DESIGN DATA:

1. BASIC WIND SPEED	94 MPH
2. WIND EXPOSURE	B
3. RISK CATEGORY	II
4. DESIGN WIND PRESSURE	p = 18.0 PSF (PRESSURE LOAD ON TRELLIS) p = -16.0 PSF (SUCTION LOAD ON TRELLIS)
5. DESIGN WIND FORCE	F_h = 21.0 PSF (MECHANICAL UNITS)

DEFERRED ITEMS

1. THE CONTRACTOR SHALL SUBMIT ALL ITEMS LISTED BELOW TO THE ARCHITECT OR ENGINEER OF RECORD FOR REVIEW AND APPROVAL AND BEFORE FORWARDING THEM TO THE LOS ANGELES DEPARTMENT OF BUIDLING AND SAFETY (LADBS) WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING.
2. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY LADBS.
3. ITEMS TO BE DEFERRED (DESIGN-BUILD):
    A. SHADE STRUCTURE
    B. LIGHT POLES
    C. ROOF MECHANICAL EQUIPMENT CURBS AND CURB ATTACHMENT TO FRAMING (PER PROJECT SPECIFICATION SECTION 230529 SUPPORTS FOR HVAC EQUIPMENT ITEM 1.5)
    D. TRELLIS FRAMING AND ATTACHMENT TO STEEL STRUCTURE.

BUREAU OF ENGINEERING
OFFICIAL RECORD

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TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING

ENGINEERING CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER J. BHALJA S 6573 CIVIL STATE OF CALIFORNIA

TED ALLEN, PE
CITY ENGINEER

			DATE:
DESIGN GROUP			
ENGINEER:	MANAN BHALJA, S.E.	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGAS, S.E.		06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.		06/26/2025

CLIENT: GENERAL:

SHEET TITLE: GENERAL NOTES

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S002

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GENERAL NOTES FOR STRUCTURAL OBSERVATION

1. STRUCTURAL OBSERVATION IS REQUIRED FOR THE STRUCTURAL SYSTEM IN ACCORDANCE WITH THE INFORMATION BULLETIN NO. P/BC 2017-024. STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION AT THE CONSTRUCTION SITE OF THE ELEMENTS AND CONNECTIONS OF THE STRUCTURAL SYSTEM AT SIGNIFICANT CONSTRUCTION STAGES AND THE COMPLETE STRUCTURE FOR GENERAL CONFORMANCE TO THE APPROVED PLANS AND SPECIFICATIONS. STRUCTURAL OBSERVATION DOES NOT WAIVE THE RESPONSIBILITY FOR THE INSEPCTIONS REQUIRED OF THE BUILDING INSPECTOR OR THE DEPUTY INSPECTOR.

2. THE OWNER SHALL EMPLOY A STATE OF CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER OR LICENSED ARCHITECT TO PERFORM THE STRUCTURAL OBSERVATION. THE DEPARTMENT OF BUILDING AND SAFETY (LADBS) RECOMMENDS THE USE OF THE ENGINEER OR ARCHITECT RESPONSIBLE FOR THE STRUCTURAL DESIGN WHO ARE INDEPENDENT OF THE CONTRACTOR.

3. THE STRUCTURAL OBSERVER SHALL PROVIDE EVIDENCE OF EMPLOYMENT BY THE OWNER OR THE OWNER'S REPRESENTATIVE. A LETTER FROM THE OWNER, THE OWNER'S REPRESENTATIVE, OR A COPY OF THE AGREEMENT FOR SERVICE SHALL BE SENT TO THE BUILDING INSPECTOR BEFORE THE FIRST SITE VISIT.

4. THE OWNER OR OWNER'S REPRESENTATIVE SHALL COORDINATE AND CALL FOR A MEETING BETWEEN THE ENGINEER OR ARCHITECT RESPONSIBLE FOR THE STRUCTURAL DESIGN, STRUCTURAL OBSERVER, CONTRACTOR, AFFECTED SUBCONTRACTORS AND DEPUTY INSPECTORS. THE PURPOSE OF THE MEETING SHALL BE TO IDENTIFY THE MAJOR STRUCTURAL ELEMENTS AND CONNECTIONS THAT AFFECT THE VERTICAL AND LATERAL LOADS SYSTEMS OF THE STRUCTURE AND TO REVIEW SCHEDULING OF THE REQUIRED OBSERVATIONS. A RECORD OF THE MEETING SHALL BE INCLUDED IN THE FIRST OBSERVATION REPORT SUBMITTED TO THE BUILDING INSPECTOR.

5. THE STRUCTURAL OBSERVER SHALL PERFORM SITE VISITS AT THOSE STEPS IN THE PROGRESS OF THE WORK THAT ALLOW FOR CORRECTION OF DEFICIENCIES WITHOUT SUBSTANTIAL EFFORT OR UNCOVERING OF THE WORK INVOLVED. AT A MINIMUM, THE LISTED SIGNIFICANT CONSTRUCTION STAGES ON THE FOLLOWING STRUCTURAL OBSERVATION/SIGNIFICANT CONSTRUCTION STAGES TABLE REQUIRE A SITE VISIT AND AN OBSERVATION REPORT FROM THE STRUCTURAL OBSERVER.

6. THE STRUCTURAL OBSERVER SHALL PREPARE A REPORT OF THE STRUCTURAL OBSERVATION REPORT FORM IN/FORM.08 (PART 1) FOR EACH SIGNIFICANT STAGE OF CONSTRUCTION OBSERVED. THE ORIGINAL OF THE STRUCTURAL OBSERVATION REPORT SHALL BE SENT TO THE BUILDING INSPECTOR'S OFFICE AND SHALL BE SIGNED AND SEALED (WET STAMP) BY THE RESPONSIBLE STRUCTURAL OBSERVER. ONE COPY OF THE OBSERVATION REPORT SHALL BE ATTACHED TO THE APPROVED PLANS. THE COPY ATTACHED TO THE PLANS SHALL BE SIGNED AND SEALED (WET STAMP) BY THE RESPONSIBLE STRUCTURAL OBSERVER OR THEIR DESIGNEE. COPIES OF THE REPORT SHALL ALSO BE GIVEN TO THE OWNER, CONTRACTOR, AND DEUPTY INSPECTOR, ANY DEFICIENCY NOTED ON THE OBSERVATION REPORT WILL BECOME THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD TO VERIFY ITS COMPLETION BY HIM/HER OR BY A REGISTERED DEUPTY INSPECTOR AT THE DISCRETION OF THE STRUCTURAL OBSERVER.

7. A FINAL OBSERVATION REPORT AND THAT OF THE REGISTERED DEPUTY INSPECTOR MUST BE SUBMITTED WHICH SHOWS THAT ALL OBSERVED DEFICIENCIES WERE RESOLVED AND STRUCTURAL SYSTEM GENERALLY CONFORMS WITH THE APPROVED PLANS AND SPECIFICATIONS. THE DEPARTMENT OF BUILDING AND SAFETY (LADBS) WILL NOT ACCEPT THE STRUCTURAL WORK WITHOUT THIS FINAL OBSERVATION REPORT AND THAT OF THE REGISTERED DEPUTY INSPECTOR (WHEN PROVIDED) AND THE CORRECTION OF SPECIFIC DEFIECIENCIES NOTED DURING NORMAL BUILDING INSPECTION.

8. THE STRUCTURAL OBSERVER SHALL PROVIDE THE ORIGINAL STAMPED AND SIGNED STRUCTURAL OBSERVATION REPORT TO THE CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY BUILDING INSPECTOR.

9. WHEN THE OWNER ELECTS TO CHANGE THE STRUCTURAL OBSERVER OF RECORD, THE OWNER SHALL:

   A) NOTIFY THE BUILDING INSPECTOR IN WRITING BEFORE THE NEXT INSPECTION BY SUBMITTING COMPLETED "STRUCTURAL OBSERVATION PROGRAM AND DESIGNATION OF THE STRUCTURAL OBSERVER FORM IN/FORM.08 (PART 2).
   B) CALL AN ADDITIONAL PRECONSTRUCTION MEETING, AND
   C) FURNISH THE REPLACEMENT STRUCTURAL OBSERVER WITH A COPY OF ALL PREVIOUS OBSERVATION REPORTS.

10. THE REPLACEMENT STRUCTURAL OBSERVER SHALL APPROVE THE CORRECTION OF THE ORIGINAL OBSERVED DEFICIENCIES UNLESS OTHERWISE APPROVED BY PLAN CHECK SUPERVISION. THE POLICY OF THE DEPARTMENT SHALL BE TO CORRECT ANY PROPERLY NOTED DEFICIENCIES WITHOUT CONSIDERATION OF THEIR SOURCE.

11. THE ENGINEER OR ARCHITECT OF RECORD SHALL DEVELOP ALL CHANGES RELATING TO THE STRUCTURAL SYSTEM. THE BUILDING DEPARTMENT SHALL REVIEW AND APPROVE ALL CHANGES TO THE APPROVED PLANS AND SPECIFICATIONS.

STRUCTURAL OBSERVATION/ SIGNIFICANT CONSTRUCTION STAGES
(ONLY CHECKED ITEMS ARE REQUIRED)

FIRM OR INDIVIDUAL TO BE RESPONSIBLE FOR THE " STRUCTURAL OBSERVATION "
NAME: MANAN BHALJA, S.E. ☐ LICENSED ARCHITECT ☒ REGISTERED ENGINEER
PHONE: (213) 485-5363 CALIFORNIA REGISTRATION NUMBER: S-6573

CONSTRUCTION STAGE	CONSTRUCTION TYPE	ELEMENTS/ CONNECTIONS TO BE OBSERVED
FOUNDATION	☐ FOOTING UNDER COLUMN ☒ SLAB ON GRADE ☒ GRADE BEAMS ☐ STEPPING/ RETAINING FOUNDATION, HILLSIDE SPECIAL ANCHORS ☒ OTHERS: CONCRETE CAISSONS	LOCATION, DIAMETER, DEPTH REBAR SIZE, TIE SIZE, AND SPACING ANCHOR BOLT LENGTH AND SPACIING COLUMN EMBEDMENT
WALL	☒ CONCRETE ☒ MASONRY ☐ WOOD ☐ OTHERS:	LOCATION, DIAMETER, DEPTH, REBAR SIZE, AND SPACING
ROOF FRAMING	☐ STEEL MOMENT FRAME ☐ STEEL BRACED FRAME ☐ CONCRETE MOMENT FRAME ☐ MASONRY MOMENT FRAME ☐ STEEL TRUSS CONNECTION ☒ OTHERS:	BEAM TO ROOF CONNECTION AT CLUB ROOM & TRELLIS ROOF JOIST REINFORCEMENT
DIAPHRAGM	☐ CONCRETE ☒ STEEL DECK ☐ WOOD ☐ OTHERS:	STEEL DECK TO BEAM CONNECTION STRAP PLACEMENT AT DIAPHRAGM OPENINGS
OTHERS	STEEL FRAME CONNECTION	WELDED/BOLTED CONNECTIONS

DECLARATION BY OWNER OR OWNER'S REPRESENTATIVE

I, ☐ THE OWNER OF THE PROJECT ☐ THE OWNER'S REPRESENTATIVE, DECLARE THAT THE ABOVE LISTED FIRM OR INDIVIDUAL IS HIRED BY ME TO BE THE STRUCTURAL OBSERVER.

SIGNATURE DATE

DECLARATION BY ARCHITECT OR ENGINEER OF RECORD (REQUIRED IF THE STRUCTURAL OBSERVER IS DIFFERENT FROM THE ARCHITECT OR ENGINEER OF RECORD)

I, THE ARCHITECT OR ENGINEER OF RECORD FOR THE PROJECT, DECLARE THAT THE ABOVE LISTED FIRM OR INDIVIDUAL IS DESIGNATED BY ME TO BE RESPONSIBLE FOR THE " STRUCTURAL OBSERVATION ".

SIGNATURE LICENSE NO. DATE

STRUCTURAL OBSERVATION PROGRAM
AND DESIGNATION OF THE
STRUCTURAL OBSERVER

PROJECT ADDRESS: 1820 N LAS PALMAS AVE, LOS ANGELES, CA 90028 PERMIT APPL NO:
DESCRIPTION OF WORK: SENIOR CENTER
OWNER: CITY OF L.A. ARCHITECT: JENNY LIM ENGINEER: MANAN BHALJA

STRUCTURAL OBSERVATION
(ONLY CHECKED ITEMS ARE REQUIRED)

FIRM OR INDIVIDUAL TO BE RESPONSIBLE FOR THE STRUCTURAL OBSERVATION:
NAME: MANAN BHALJA PHONE: (213) 485-5363 CALIF REGISTRATION: S-6573

FOUNDATION	WALL	FRAME	DIAPHRAGM
☐ FOOTINGS	☒ CONCRETE	☐ STEEL MOMENT FRAME	☐ CONCRETE
☒ SLAB ON GRADE	☒ MASONRY	☐ STEEL BRACED FRAME	☒ STEEL DECK
☒ GRADE BEAMS	☐ WOOD	☐ CONCRETE MOMENT FRAME	☒ WOOD
☒ CAISSONS	☐ OTHERS:	☐ MASONRY WALL FRAME	☒ OTHERS: ROOF JOIST REINFORCEMENT
☐ OTHERS:		☒ OTHERS: STEEL FRAMING	

DECLARATION BY OWNER

I, THE OWNER OF THE PROJECT, DECLARE THAT THE ABOVE LISTED FIRM OR INDIVIDUAL IS HIRED BY ME TO BE THE STRUCTURAL OBSERVER.

SIGNATURE DATE

DECLARATION BY ARCHITECT OR ENGINEER OF RECORD (REQUIRED IF THE STRUCTURAL OBSERVER IS DIFFERENT FROM THE ARCHITECT OR ENGINEER OF RECORD)

I, THE ARCHITECT OR ENGINEER OF RECORD FOR THE PROJECT, DECLARE THAT THE ABOVE LISTED FIRM OR INDIVIDUAL IS DESIGNATED BY ME TO BE RESPONSIBLE FOR THE STRUCTURAL OBSERVATION.

SIGNATURE LICENSE NO. DATE

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REVISION DATES
(DESIGN STAGE ONLY)

TTLB TEMPLATE REVISION DATE: 4/2016

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING

ENGINEERING CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ MANAN J. BHALJA ★ S 6573 ★ CIVIL ★ STATE OF CALIFORNIA

CITY ENGINEER: TED ALLEN, PE — DATE: 06/26/2025

DESIGN GROUP	ENGINEER:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
LIC. NO.: S-6573	MANAN BHALJA, S.E. MB	JIN CHAE, P.E.	JIN CHAE, P.E.	MELVIN AGAGAS, S.E.	SHAILESH "SUNNY" PATEL, S.E.
	06/26/2025	06/26/2025		06/26/2025	06/26/2025
				MOURAD AZIZ, P.E.	
				06/26/2025	

CLIENT: GENERAL:
SHEET TITLE: GENERAL NOTES
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. S003
SHEET 33 OF SHEETS 115

PLOTTED:9/23/2024 2:52:15 PM

DEPUTY INPSECTION - CITY OF LOS ANGELES

1. STRUCTURAL OBSERVATION IS REQUIRED FOR THE STRUCTURAL SYSTEM IN ACCORDANCE WITH THE INFORMATION BULLETIN NO. P/BC 2017-024. STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION AT THE CONSTRUCTION SITE OF THE ELEMENTS AND CONNECTIONS OF THE STRUCTURAL SYSTEM AT SIGNIFICANT CONSTRUCTION STAGES AND THE COMPLETE STRUCTURE FOR GENERAL CONFORMANCE TO THE APPROVED PLANS AND SPECIFICATIONS. STRUCTURAL OBSERVATION DOES NOT WAIVE THE RESPONSIBILITY FOR THE INSEPCTIONS REQUIRED OF THE BUILDING INSPECTOR OR THE DEPUTY INSPECTOR.

2. THE OWNER SHALL EMPLOY A STATE OF CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER OR LICENSED ARCHITECT TO PERFORM THE STRUCTURAL OBSERVATION. THE DEPARTMENT OF BUILDING AND SAFETY (LADBS) RECOMMENDS THE USE OF THE ENGINEER OR ARCHITECT RESPONSIBLE FOR THE STRUCTURAL DESIGN WHO ARE INDEPENDENT OF THE CONTRACTOR.

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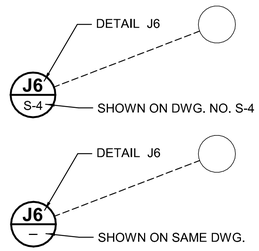
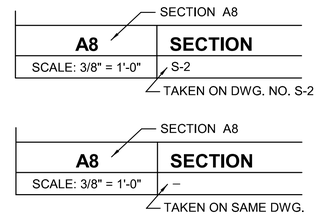
WORK REQUIRING SPECIAL INSPECTION AND STRUCTURAL OBSERVATION:		SPECIAL * INSPECTION	
		CONT.	PERIODIC
CONCRETE	A. CONCRETE PLACEMENT. 1. FOUNDATION / FOOTINGS. 2. SLAB-ON-GRADE. 3. ALL OTHER STRUCTURAL CONCRETE.	✓	
	B. MOLDING OF COMPRESSION TEST SAMPLES.	✓	
	C. PLACEMENT OF HIGH STRENGTH NON SHRINK GROUT AND TAKING SAMPLES.	✓	
	D. PLACEMENT OF REINFORCING PRIOR TO CLOSING THE FORM.		✓
REINFORCING STEEL	A. PLACEMENT OF REINFORCING BARS.		✓
	B. SAMPLING FOR TESTING.		✓
	C. MILL REPORT VERIFICATION AND MATERIAL IDENTIFICATION.	✓	
	D. POST-INSTALLED EPOXY REBARS	✓	
WELDING	A. STRUCTURAL FIELD WELDING - OTHER	✓	
	B. STRUCTURAL LIGHT GAUGE FRAMING OR DECKING & SINGLE PASS FILLET WELD.	NA	
	C. REINFORCING STEEL WELDING FOR REBARS LARGER THAN #4.	NA	
STRUCTURAL STEEL	A. VERIFICATION OF MILL REPORTS AND IDENTIFICATION OF STEEL OR PHYSICAL TESTING.		✓
	B. ERECTION AND INSPECTION OF SURFACES - OTHER		✓
	C. STRUCTURAL STEEL ERECTION.		✓
BOLTING	A. HIGH STRENGTH BOLTING.	✓	
ANCHOR	A. POST-INSTALLED ANCHORS		✓
EXT. PLYWOOD SHEATHING	A. PLACEMENT AND CONNECTION OF SHEATHING TO ROOF FRAMING	NA	
MASONRY	A. PROPORTIONS OF SITE-PREPARED MORTAR		✓
	B. GRADE, TYPE AND SIZE OF REINFORCEMENT CONNECTIORS, ANCHOR BOLTS AND ANCHORAGES.		✓
	C. GROUT SPACE.		✓
	D. PLACEMENT OF REINFORMCEMENT CONNECTORS, AND ANCHOR BOLTS.		✓
	E. MATERIALS AND PROCEDURES WITH APPROVED SUBMITTALS.		✓
	F. PLACEMENT OF MASONRY UNITS AND MORTAR JOINT CONSTRUCTION.		✓
	G. SIZE AND LOCATION OF STRUCTURAL MEMBERS.		✓
	H. TYPE, SIZE, AND LCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION.		✓
	I. WELDING OF REINFORCEMENT.	✓	
	J. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISM.		✓

* FOR QUALIFICATION OF SPECIAL INSPECTOR, REFERENCE SPECIFICATIONS.



DETAIL CALLOUT



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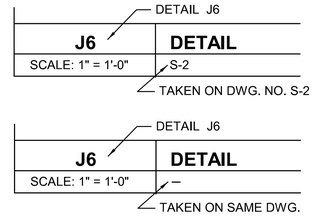

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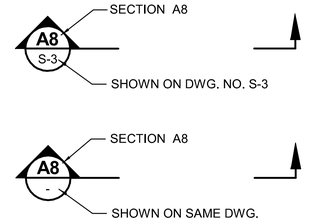


SECTION CALLOUT

ABBREVIATIONS

AB	ANCHOR BOLTS
ADDL	ADDITIONAL
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BP	BASE PLATE
C	CHANNEL
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CLR	CLEARANCE
COLA	CITY OF LOS ANGELES
CONT	CONTINUOUS
CTR	CENTER
DEMO	DEMOLISH OR DEMOLITION
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DIST	DISTANCE
E	EXISTING
EL	ELEVATION
EMBED	EMBEDMENT
EQ	EQUAL
EW	EACH WAY
FF	FINISH FLOOR
FS	FAR SIDE
FT	FEET OR FOOT
GL	GRID LINE
HS	HEADED STUD
HSB	HEADED STUD BOLT
HSS	HOLLOW STRUCTURAL STEEL
HT	HEIGHT
IN	INCH
K	KIPS
LADBS	LOS ANGELES DEPARTMENT OF BUILDING & SAFETY
LARR	LOS ANGELES RESEARCH REPORT
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LWT	LIGHT WEIGHT
MC	MISCELLANEOUS CHANNEL
MIN	MINIMUM
MB	MACHINE BOLTS
N	NORTH OR NEW
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER
PCF	POUNDS PER CUBIC FOOT
PAF	POWDER ACTUATED FASTENERS
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PJP	PARTIAL JOINT PENETRATION
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FOOT
PT	PRESSURE TREATED
QA	QUALITY ASSURANCE
QC	QUALITY CONTROL
QTY	QUANTITY
RECT	RECTANGULAR
REQD	REQUIRED
REV	REVISION
SE	STRUCTURAL ENGINEER
SHT	SHEET
SIM	SIMILAR
SMS	SHEET METAL SCREWS
SOG	SLAB ON GRADE
SQ	SQUARE
STL	STEEL
SYMM	SYMMETRICAL
t	THICKNESS
THK	THICKNESS
T&B	TOP & BOTTOM
TOF	TOP OF FOOTING
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
WP	WORKING POINT
WT	WEIGHT
YD	YARD

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES: (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ MANAN J. BHALIA ★ S 6573 ★ CIVIL ★ STATE OF CALIFORNIA

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

CITY ENGINEER:	TED ALLEN, PE	DATE:	06/26/2025
DESIGN GROUP			06/26/2025
ENGINEER:	MANAN BHALIA, S.E.	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		
CHECKED BY:	MELVIN AGAGAS, S.E. / MOURAD AZIZ, P.E.		
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.		

CLIENT: GENERAL:

SHEET TITLE: GENERAL NOTES

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S004

SHEET 34 OF SHEETS 115

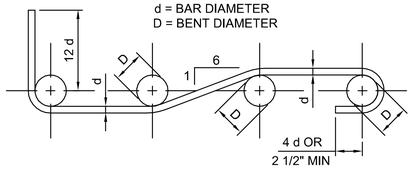
PLOTTED:9/23/2024 2:52:16 PM

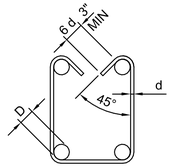
NOTES:
1. ALL BENDS SHALL BE MADE COLD.
2. #14 & #18 BARS SHALL BE BEND-TESTED AT LAB AND APPROVED PRIOR TO BENDING.
3. FOR SIZE AND SPACING OF ALL TIES AND STIRRUPS, REFER TO SCHEDULE AND/OR DETAILS, TYP.

D = 4 db FOR #3 - #5
D = 6 db FOR #6 - #8
D = 8 db FOR #9 - #11

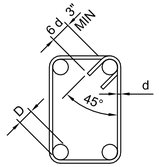
BAR DIAMETER DISTANCES IN INCHES									
BAR NO.	#3	#4	#5	#6	#7	#8	#9	#10	#11
BAR DIA. (IN)	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8
3db	1 1/8	1 1/2	1 7/8	2 1/4	2 5/8	3	3 3/8	3 3/4	4 1/4
4db	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2
6db	2 1/4	3	3 3/4	4 1/2	5 1/4	6	6 3/4	7 5/8	8 1/2
8db	3	4	5	6	7	8	9	10 1/8	11 1/4
12db	4 1/2	6	7 1/2	9	10 1/2	12	13 1/2	15 1/4	16 7/8

HOOPS AND TIE BEND DETAIL TABLE									
BAR NO.	#3	#4	#5	#6	#7	#8	#9	#10	#11
BAR DIA. (IN)	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8
90° BEND	6	6	8	10	12	12	14	16	18
135° BEND	4	4	4	6	6	6	8	8	10
180° BEND	4	4	4	4	4	4	6	6	6

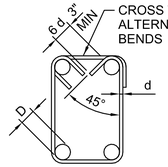




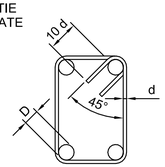
STD. BEAM STIRRUP



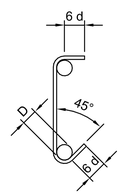
BEAM HOOP STIRRUP BENDS (WHERE OCCURS)



BEAM HOOP - ALTERNATE (WHERE OCCURS)



COLUMN TIE



CROSS TIE

G1 TYP STIRRUP, HOOP AND TIE BENDS DETAILS

NOT TO SCALE

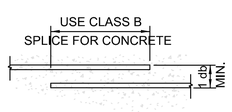
REINFORCEMENT LAP SPLICE IN INCHES									
BAR SIZE		3		4		5	6	7	8	
	f ' c PSI	GR 40	GR 60	GR 40	GR 60	GR 60	GR 60	GR 60	GR 60	
CLASS A	2000	24 20	36 28	32 24	48 36	60 48	72 56	104 80	120 92	TOP BARS BOTTOM BARS
	3000	20 16	32 24	28 20	40 32	48 40	60 44	84 64	96 76	TOP BARS BOTTOM BARS
	4000	20 16	28 20	24 20	36 28	44 32	52 40	72 56	84 64	TOP BARS BOTTOM BARS
	5000	16 12	24 20	20 16	32 24	40 32	48 36	68 52	76 60	TOP BARS BOTTOM BARS
	6000	16 12	24 16	20 16	28 24	36 28	44 32	60 48	68 52	TOP BARS BOTTOM BARS
CLASS B	2000	32 24	48 36	44 32	64 48	76 60	92 72	136 104	152 120	TOP BARS BOTTOM BARS
	3000	28 20	40 32	36 28	52 40	64 48	76 60	108 84	124 96	TOP BARS BOTTOM BARS
	4000	24 20	36 28	32 24	44 36	56 44	68 52	96 72	108 84	TOP BARS BOTTOM BARS
	5000	20 16	32 24	28 20	40 32	48 40	60 48	84 68	96 76	TOP BARS BOTTOM BARS
	6000	20 16	28 24	24 20	36 28	44 36	56 44	80 60	88 68	TOP BARS BOTTOM BARS

LIGHT WEIGHT CONCRETE

REINFORCEMENT LAP SPLICE IN INCHES									
BAR SIZE		3		4		5	6	7	8	
	f ' c PSI	GR 40	GR 60	GR 40	GR 60	GR 60	GR 60	GR 60	GR 60	
CLASS A	2000	20 16	28 24	24 20	36 28	44 36	56 44	80 60	88 68	TOP BARS BOTTOM BARS
	3000	16 12	24 20	20 16	32 24	36 28	44 36	64 48	72 56	TOP BARS BOTTOM BARS
	4000	16 12	20 16	20 16	28 20	32 24	40 32	56 44	64 48	TOP BARS BOTTOM BARS
	5000	12 12	20 16	16 12	24 20	28 24	36 28	52 40	56 44	TOP BARS BOTTOM BARS
	6000	12 12	16 12	16 12	24 16	28 20	32 24	48 36	52 40	TOP BARS BOTTOM BARS
CLASS B	2000	24 20	36 28	32 24	48 36	60 44	72 56	100 80	116 88	TOP BARS BOTTOM BARS
	3000	20 16	28 24	28 20	40 32	48 36	56 44	84 64	96 72	TOP BARS BOTTOM BARS
	4000	20 16	28 20	24 20	36 28	44 32	52 40	72 56	84 64	TOP BARS BOTTOM BARS
	5000	16 12	24 20	20 16	32 24	36 28	44 36	64 52	72 56	TOP BARS BOTTOM BARS
	6000	16 12	20 16	20 16	28 24	36 28	40 32	60 48	68 52	TOP BARS BOTTOM BARS

NORMAL WEIGHT CONCRETE

NOTES :
1. TOP BAR IS A HORIZONTAL BAR WHERE THE DEPTH OF THE CONCRETE CAST IN ONE LIFT BENEATH THE BAR EXCEEDS 12 INCHES. ALL OTHER BARS SHELL BE CONSIDERED BOTTOM BARS.
2. VERTICAL WALL REINFORCING SHALL BE SPLICED AS TOP BARS.
3. HORIZONTAL WALL REINFORCING SHALL BE SPLICED AS BOTTOM BARS, BUT NOT LESS THAN 30 BAR DIAMETER.
4. IF CONCRETE COVER IS LESS THAN ONE BAR DIAMETER AND / OR IF CENTER TO CENTER SPACING IS LESS THAN THREE BAR DIAMETERS, THEN INCREASE THE LAP SPLICE LENGTHS IN THE TABLE BY 50%.



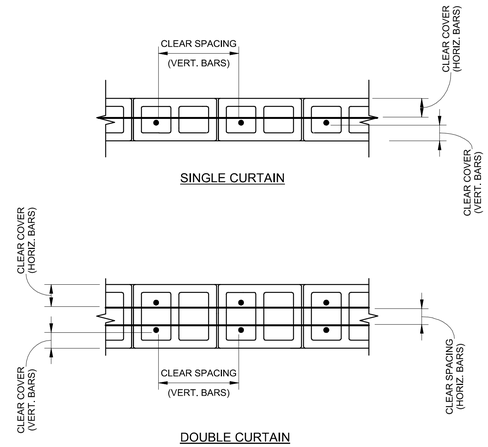
A1 TYPICAL REINFORCEMENT BAR LAP SPLICE LENGTH CONCRETE

NOT TO SCALE

STRAIGHT DEVELOPMENT / LAP SPLICE LENGTH SCHEDULE (IN INCHES)					
MASONRY COMPRESSIVE STRENGTH, f'm= 1,500 PSI REINF. BAR f'y = 60,000 PSI					
BAR SIZE	BAR CLEAR COVER OR BAR CLEAR SPACING = 1.5" MIN.	REINF. BAR LOCATED AT CENTERLINE OF WALL			
		6" CMU WALL	8" CMU WALL	10" CMU WALL	12" CMU WALL
#3	19	15	12	12	12
#4	34	26	18	13	12
#5	45	42	28	21	17
#6	54	54	43	34	28
#7	63	NP	60	46	38
#8	72	NP	72	71	57

NOTE:

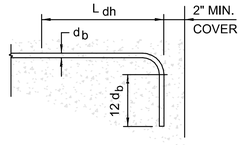
1. NP DENOTES "NOT PERMITTED". BAR IS TOO LARGE FOR THIS WALL.
2. FOR EPOXY BARS, MULTIPLE TABLE BY 1.5.
3. BASED ON TMS 402/602-16.



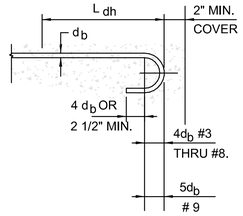
J9 MASONRY STRAIGHT DEVELOPMENT / LAP SPLICE LENGTH SCHEDULE

NOT TO SCALE

BAR SIZE	GENERAL USE				SPECIAL CONFINEMENT HOOK IS WITHIN TIES OR STIRRUPS SPACED < 3 db			
	f'c = 2500	f'c = 3000	f'c = 3250	f'c = 4000	f'c = 2500	f'c = 3000	f'c = 3250	f'c = 4000
	GR 60	GR 60	GR 60	GR 60	GR 60	GR 60	GR 60	GR 60
#3	6	6	6	6	7	6	6	6
#4	6	6	6	6	10	10	9	9
#5	10	10	10	9	17	16	16	15
#6	14	13	13	12	22	21	21	20
#7	17	16	16	15	28	27	26	25
#8	21	20	20	19	34	32	32	30
#9	25	24	23	22	41	39	38	36



STANDARD 90° HOOK



STANDARD 180° HOOK

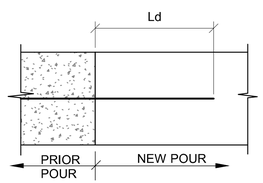
NOTES :
1. SIDE COVER SHALL BE 2 1/2" MINIMUM.
2. L dh SHALL BE INCREASED 33% (L dh X 1.33) FOR DOWELS EMBEDED IN LIGHT WEIGHT CONCRETE.

E9 MIN EMBEDMENT LENGTH Ldh FOR STANDARD HOOKS

NOT TO SCALE

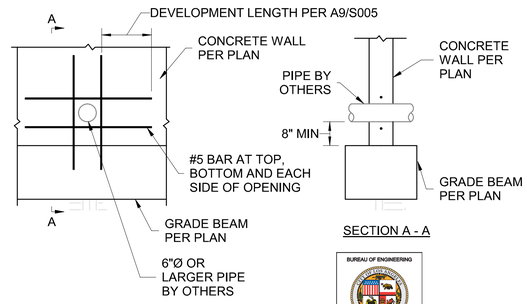
BAR SIZE	DEVELOPMENT LENGTH ld (in)		
	f'c = 4500	f'c = 3250	f'c = 3250
	NWC	NWC	LWC
#3	16	20	24
#4	20	24	32
#5	24	28	40
#6	28	36	44
#7	44	48	64
#8	48	56	72

REINFORCED CONCRETE



A9 DEVELOPMENT LENGTH

NOT TO SCALE



A13 TYPICAL PIPE PEN. DETAIL

NOT TO SCALE

BUREAU OF ENGINEERING
OFFICIAL RECORD

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ MANAV J. BHALJA ★ S 6573 ★ CIVIL ★ STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

TED ALLEN, PE
CITY ENGINEER

	DESIGN GROUP	LIC. NO.	DATE
ENGINEER:	MANAN BHALIA, S.E.	S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGAS, S.E.		06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.		06/26/2025

CITY ENGINEER: MOURAD AZIZ, P.E.

CLIENT: GENERAL:

SHEET TITLE: TYPICAL DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S005

SHEET 35 OF SHEETS 115

BID SET
PROJECT ISSUE DATE 9/22/2025

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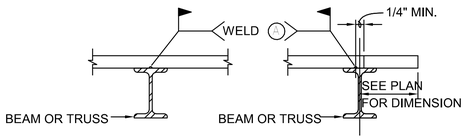
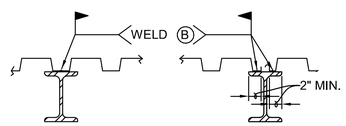
REVISION DATES: (DESIGN STAGE ONLY)

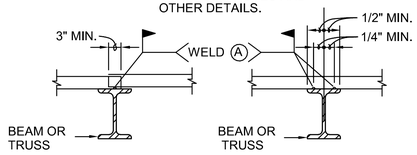


INTERMEDIATE BEARING **END BEARING**

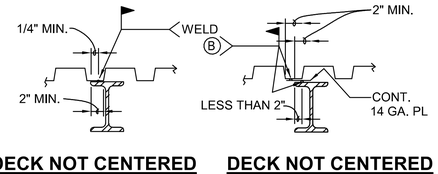


DECK CENTERED (PREFERRED) **DECK SPLIT**

WELDS AT DECK PARALLEL TO BEAMS
NOTE: SEE STEEL DECK WELDING SCHEDULE, NOTES AND OTHER DETAILS.



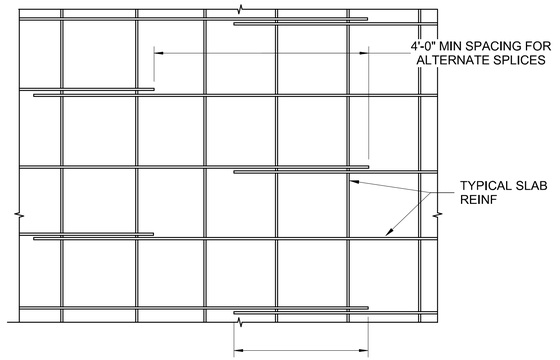
LAP JOINT **BUTT JOINT**



DECK NOT CENTERED **DECK NOT CENTERED**

J1 METAL DECK PERPENDICULAR & PARALLEL TO BEAM DETAIL

NOT TO SCALE

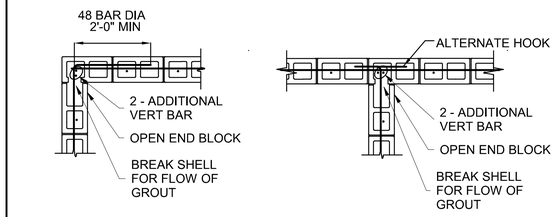


NOTE: LAP SPLICE CLEAR SPACING OCCUR BOTH DIRECTIONS.

PLAN

J8 TYP LAP SPLICE SLAB REINF

NOT TO SCALE



WALL CORNER **WALL INTERSECTION**

J13 MASONRY WALL DETAILS

NOT TO SCALE

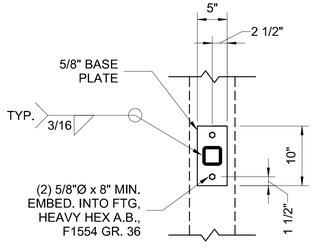
ROOF DECK

DECK SCHEDULE														
LEVEL	MARK	DECK	DECK MINIMUM SECTION PROPERTIES				DECK WELD						CONCRETE FILL		
							WELD "A"		WELD "B"		WELD "C"				
			D (IN)	I (IN^4)	+S (IN^3/FT)	-S (IN^3/FT)	SIZE & TYPE	# PER SHEET	SIZE & TYPE	SPACING	SIZE & TYPE	SPACING	THK (IN)	f'c (PSI)	TYPE
TRASH ENCLOSURE ROOF	D1	1-1/2"x 18/18 GA PLB-CD CELLULAR DECK ER-2018	1-1/2"	0.587	0.428	0.552	1/2" Ø PUDDLE WELD	7	1/2"Ø PUDDLE WELD	24 " O.C.	VERCO PUNCHLOK II SYSTEM VSC2	24" OC	N/A	N/A	N/A
		VERCO PLB-CD, OR APPROVED EQUAL					DETAIL J1		DETAIL J1		DETAIL A8				

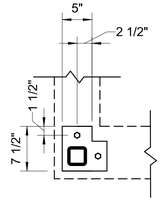
NOTES:
1. PROVIDE SHORING AS REQUIRED (SEE DECK MANUFACTURER'S RECOMMENDATIONS).
2. WELD DECK TO SUPPORTS WITH 1/2" Ø PUDDLE WELDS AT 12" O.C., TYP. PUDDLE WELDS MAY BE OMITTED WHERE STUD ANCHORS ATTACH DECK TO SUPPORT.
3. SEE GENERAL NOTES FOR METAL DECK INFORMATION.

F1 TYPICAL METAL DECK

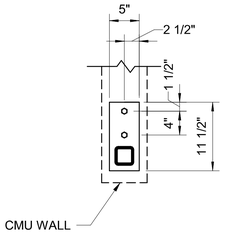
NOT TO SCALE



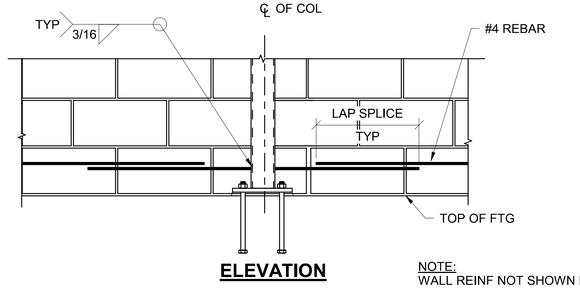
BASE PLATE DETAIL AT MIDDLE OF WALL



BASE PLATE DETAIL AT CORNER OF WALL



BASE PLATE DETAIL NEAR DOOR OPENING

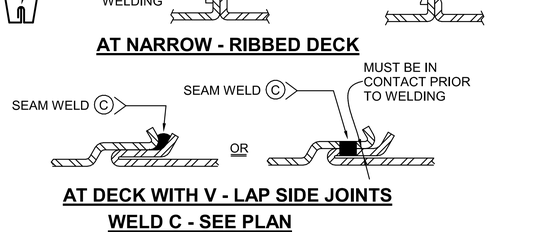


ELEVATION

NOTE:
WALL REINF NOT SHOWN FOR CLARITY.

A1 TYP EXT COL IN CMU WALL FOOTING

NOT TO SCALE A13/ S103



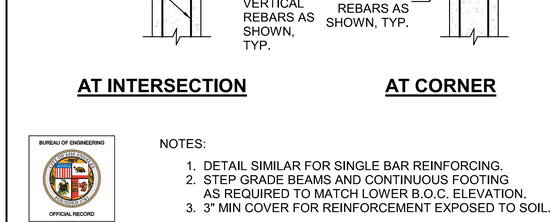
NOTE:
DOWELS SHALL BE SAME SIZE AND SPACING AS HORZ. WALL REINF

ELEVATION

PLAN A **PLAN B** **PLAN C**

E8 HORIZONTAL DOWEL AT STEEL COL

NOT TO SCALE A13/ S103



E13 SLAB DOWEL

NOT TO SCALE G1/ S104

AT WIDE - RIBBED DECK

AT NARROW - RIBBED DECK

AT DECK WITH V - LAP SIDE JOINTS WELD C - SEE PLAN

A8 TYP METAL DECK SIDE SEAM

NOT TO SCALE

AT INTERSECTION **AT CORNER**

NOTES:
1. DETAIL SIMILAR FOR SINGLE BAR REINFORCING.
2. STEP GRADE BEAMS AND CONTINUOUS FOOTING AS REQUIRED TO MATCH LOWER B.O.C. ELEVATION.
3. 3" MIN COVER FOR REINFORCEMENT EXPOSED TO SOIL.

BUREAU OF ENGINEERING OFFICIAL RECORD

A13 TYPICAL CONTINUOUS FOOTING

NOT TO SCALE

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ M.MANAV ★ S 6573 ★ CIVIL ★ STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

CITY ENGINEER:	DATE:
TED ALLEN, PE	06/26/2025
DESIGN GROUP	06/26/2025
ENGINEER: MANAN BHALJA, S.E. MB LIC. NO.: S-6573	06/26/2025
DESIGNED BY: JIN CHAE, P.E.	06/26/2025
DRAWN BY: JIN CHAE, P.E.	06/26/2025
CHECKED BY: MELVIN AGAGAS, S.E. MA	06/26/2025
APPROVED BY: SHAILESH "SUNNY" PATEL, S.E.	06/26/2025

CLIENT:
GENERAL:

SHEET TITLE: TYPICAL DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S006

SHEET 36 OF SHEETS 115

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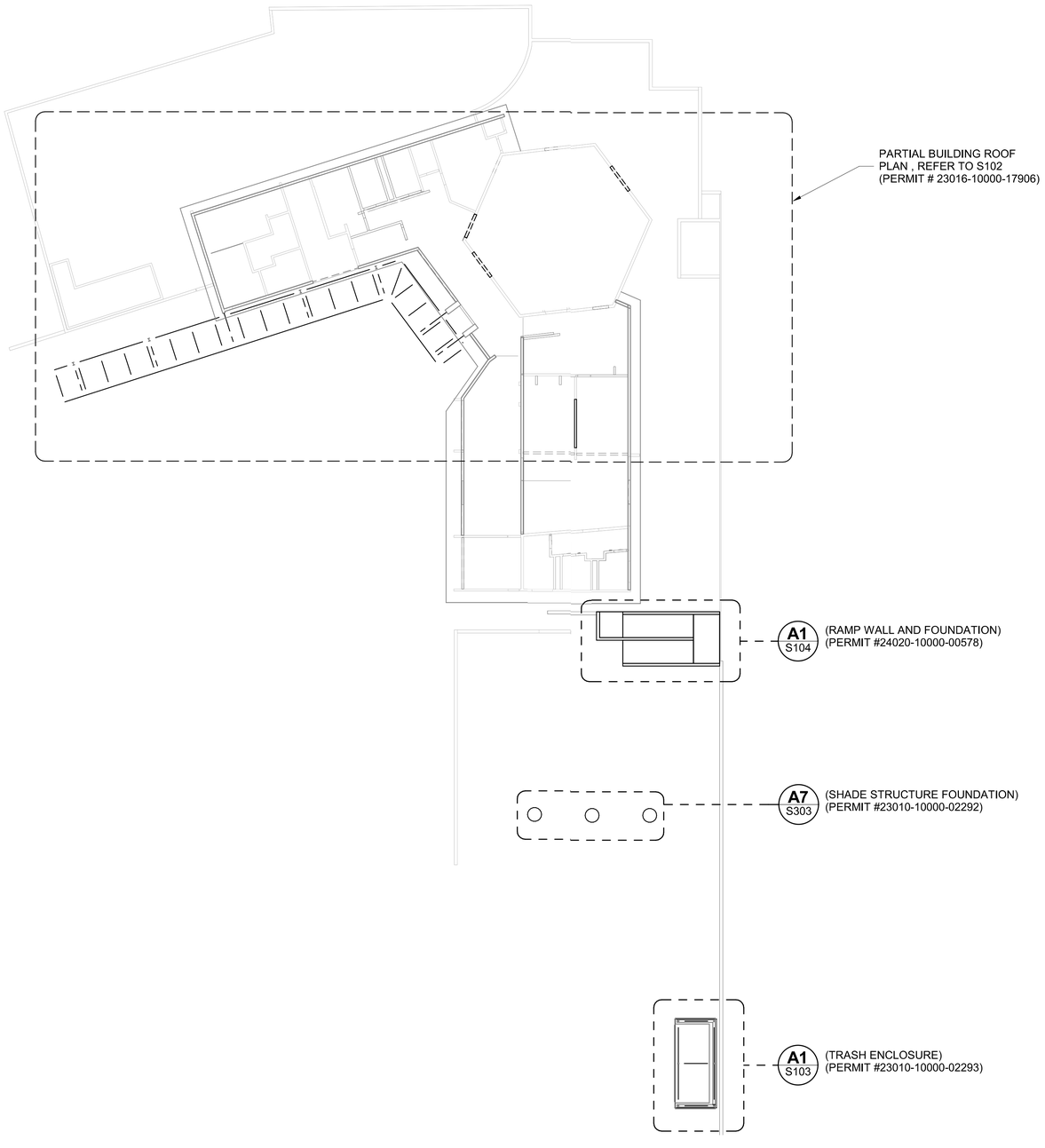

SITE PLAN

1/16" = 1'-0"

NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND INFORMATION NOT SHOWN HEREIN.

BUREAU OF ENGINEERING

CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

BID SET
PROJECT ISSUE DATE 9/22/2025

NO.	REVISION DESCRIPTION	DATE	BY

INDEX NO. MF-300512

BUILDING NO. -

REGISTERED PROFESSIONAL ENGINEER MANAN J. BHALJA S 6573 STRUCTURAL STATE OF CALIFORNIA

TED ALLEN, PE
CITY ENGINEER

	DESIGN GROUP		DATE:
ENGINEER:	MANAN BHALJA, S.E.	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGAS, S.E.	MOURAD AZIZ, P.E.	06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.		06/26/2025

CLIENT:
GENERAL:

SHEET TITLE: SITE PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S101

SHEET 37 OF SHEETS 115

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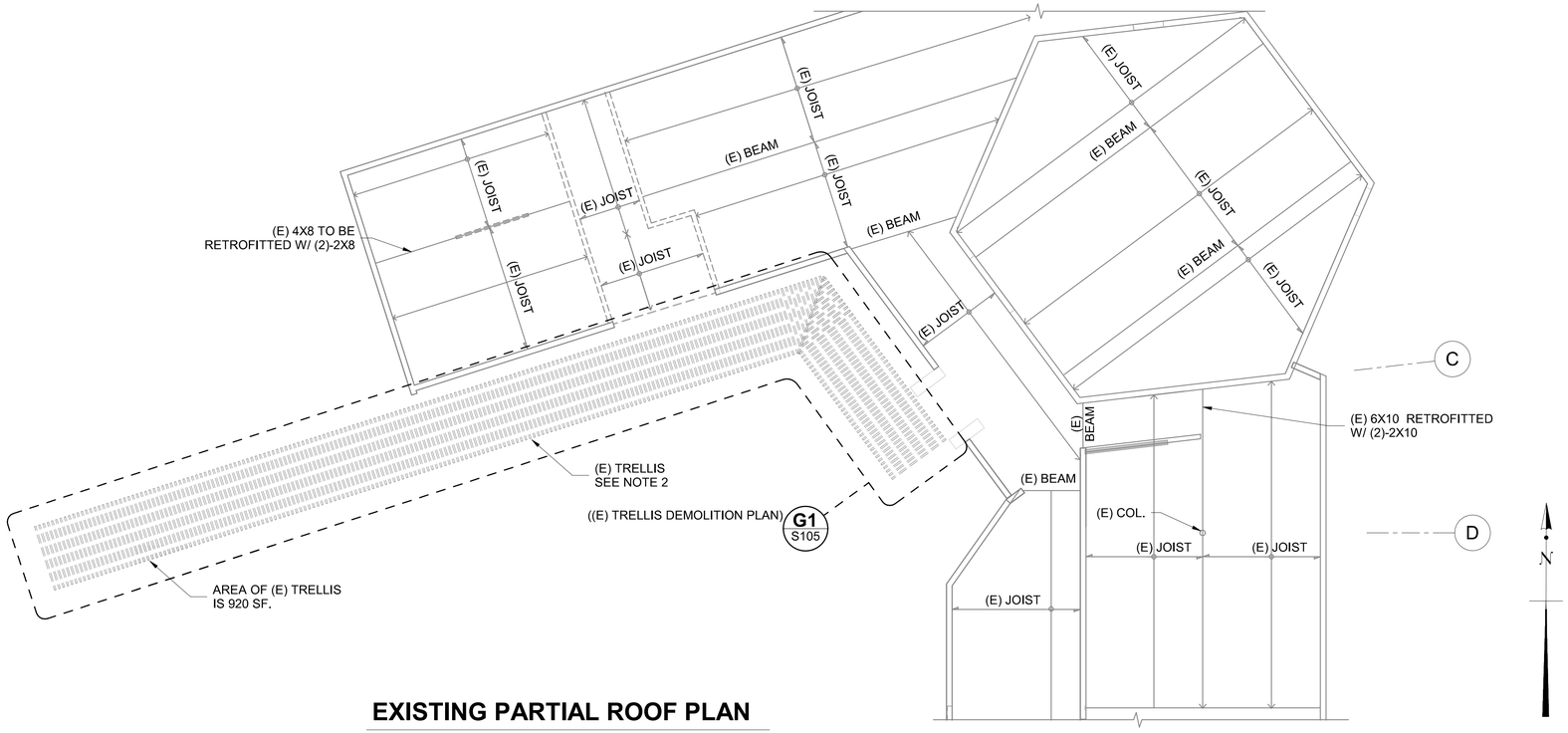
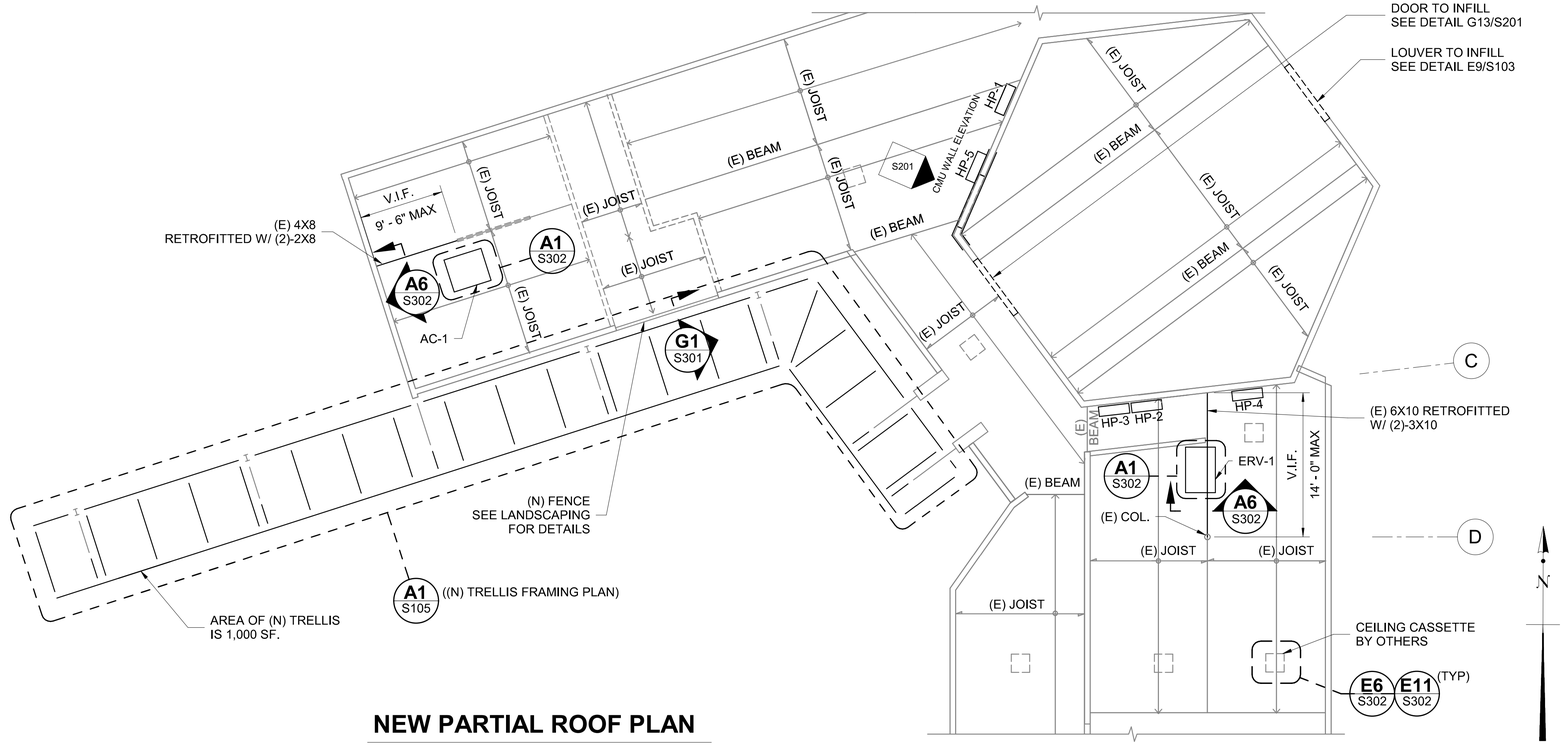
TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)



EXISTING PARTIAL ROOF PLAN

1/8" = 1'-0"



NEW PARTIAL ROOF PLAN

1/8" = 1'-0"

NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN HEREIN.
2. REMAINDER OF EXISTING ROOF AND TRELLIS FRAMING NOT SHOWN FOR CLARITY. REFER TO EXISTING AS-BUILT DRAWING BY CARL B. TROEDSSON ARCHITECT DATED ON 05/04/1961 FOR FURTHER INFORMATION.
3. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR EXACT LOCATION OF MECHANICAL UNITS. REFER TO SHEET S302 FOR CONNECTION DETAILS.
4. FOR ROOF OPENING REPAIRS, SEE DETAIL J1/S302.
5. SEE K13/S301 FOR HP UNIT CONNECTION DETAIL.

LEGEND:

- INDICATES EXTENT OF (E)JOIST PLACEMENT
- INDICATES SPAN OF JOIST / TRUSS
- (E) EXTERIOR CMU WALLS
- (E) INTERIOR STUD WALLS
- NEW/PROPOSED MECHANICAL UNITS

MECHANICAL UNIT INFORMATION:

UNIT	OPERATING WEIGHT	WIDTH	DEPTH	HEIGHT	C.G.
AC-1	595 LBS	52 IN	45 IN	59 IN	59 IN
ERV-1	1,022 LBS	61 IN	40 IN	67 IN	67 IN
HP-1	271 LBS	41 IN	13 IN	53 IN	27 IN
HP-2	271 LBS	41 IN	13 IN	53 IN	27 IN
HP-3	302 LBS	41 IN	13 IN	53 IN	27 IN
HP-4	302 LBS	41 IN	13 IN	53 IN	27 IN
HP-5	271 LBS	41 IN	13 IN	53 IN	27 IN

BUREAU OF ENGINEERING

ENGINEERING CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ MANAV J. BHALJA ★ S 6573 ★ STATE OF CALIFORNIA

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS

CITY ENGINEER: TED ALLEN, PE — DATE: 06/26/2025

DESIGN GROUP

ENGINEER: MANAV BHALJA, S.E. — LIC. NO.: S-6573 — MB — 06/26/2025

DESIGNED BY: JIN CHAE, P.E. — 06/26/2025

DRAWN BY: JIN CHAE, P.E. — 06/26/2025

CHECKED BY: MELVIN AGAGAS, S.E. — MOURAD AZIZ, P.E. — 06/26/2025

APPROVED BY: SHAILESH "SUNNY" PATEL, S.E. — 06/26/2025

CLIENT: GENERAL:

SHEET TITLE: PARTIAL ROOF PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BUREAU OF ENGINEERING OFFICIAL RECORD

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S102

SHEET 38 OF SHEETS 115

BID SET
PROJECT ISSUE DATE 9/22/2025

PLOTTED:9/23/2024 2:52:21 PM

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TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)

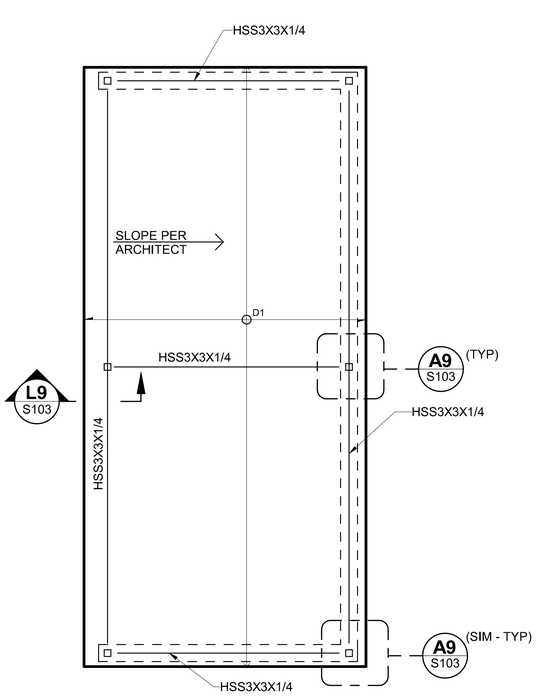
FRAMING NOTES:

1. SEE ARCHITECTURAL & LANDSCAPE DRAWINGS FOR DIMENSIONS AND THE LOCATION OF TRASH ENCLOSURE.
2. SEE STEEL, CONCRETE, AND MASONRY NOTES ON S001 AND S002 FOR MORE INFORMATION.
3. FOR METAL DECK INFORMATION NOT SHOWN, REFER TO S002 & S006.
4. STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE PAINTED/COATED PER ARCHITECT. SEE ARCHITECTURAL DRAWINGS FOR FURTHER INFORMATION.

LEGEND

INDICATES DECK SPAN

INDICATES EXTENT OF DECK PLACEMENT

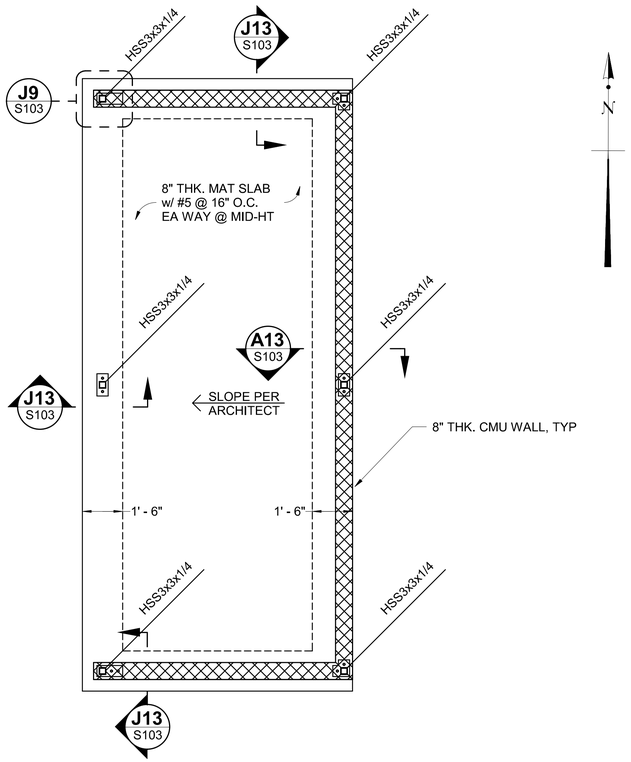


G1 TRASH ENCLOSURE ROOF PLAN

NOT TO SCALE | A9/ S201

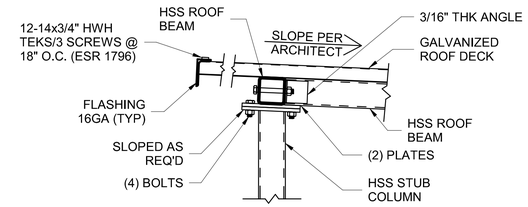
FOUNDATION NOTES:

1. SITE WORK SHALL COMPLY WITH ALL REQUIREMENTS AND RECOMMENDATIONS OF GEOTECHNICAL REPORT # 21-159 DATED APRIL 18, 2022 AND THE CONDITIONS OF APPROVAL FROM THE LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY.
2. FOR INFORMATION NOT SHOWN AND FOR LOCATION, SEE ARCHITECTURAL & LANDSCAPE DRAWINGS.
3. SLAB ON GRADE REINFORCEMENT LAP SPLICE SHALL BE STAGGERED WITH A CLEAR SPACING OF MINIMUM 32" O.C. SEE DETAIL J8/S006



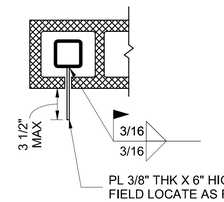
A1 TRASH ENCLOSURE FOUNDATION PLAN

NOT TO SCALE | A1/ S101



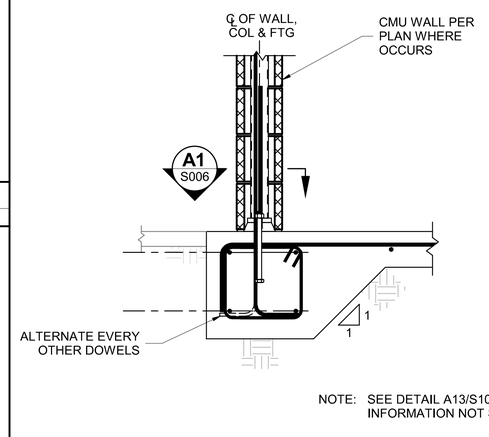
L9 FLASHING ATTACHMENT

NOT TO SCALE | A13/ S103



J9 HSS TO PLATE CONNECTION

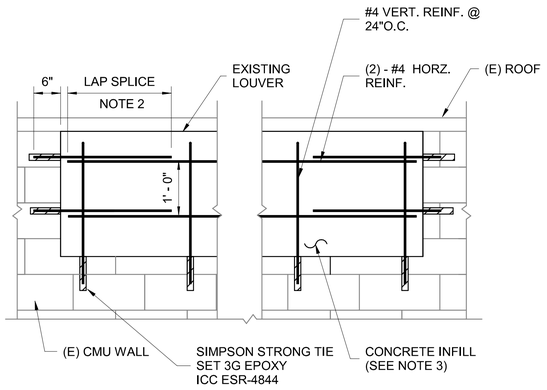
NOT TO SCALE | A1/ S103



NOTE: SEE DETAIL A13/S103 FOR INFORMATION NOT SHOWN.

J13 FOUNDATION SECTION

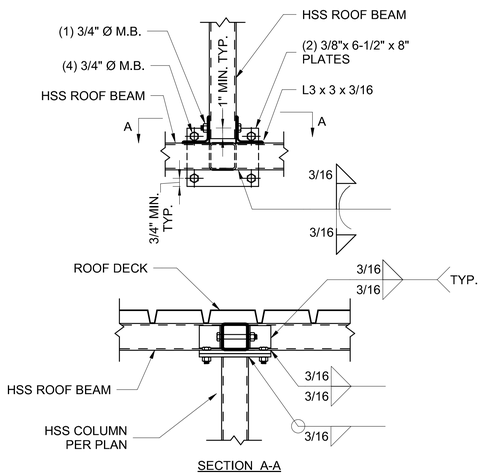
NOT TO SCALE | A1/ S103



NOTE:
1. CONTRACTOR TO VERIFY DIMENSION OF EXISTING LOUVER OPENING.
2. LAP SPLICE PER DETAIL A1/S005.
3. CONCRETE STRENGTH SHALL BE 2,000 PSI.
4. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND DIMENSIONS OF THE EXISTING OPENING.

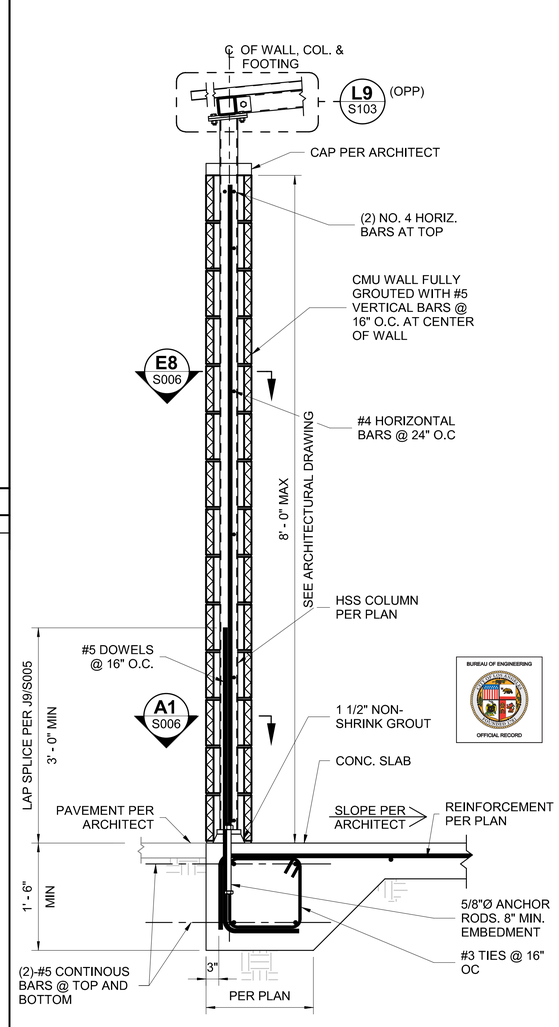
E9 CMU WALL INFILL @ LOUVER

NOT TO SCALE



A9 CONNECTION DETAIL

NOT TO SCALE | G1/ S103



A13 WALL SECTION

NOT TO SCALE | A1/ S103

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ S 6573 ★ CIVIL ★ STATE OF CALIFORNIA

CITY ENGINEER:

DESIGN GROUP	ENGINEER:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:
TED ALLEN, PE	MANAN BHALJA, S.E.	JIN CHAE, P.E.	JIN CHAE, P.E.	MELVIN AGAGAS, S.E.	MOURAD AZIZ, P.E., S.E.
	LIC. NO.: S-6573				SHAILESH "SUNNY" PATEL, S.E.
	DATE: 06/26/2025	06/26/2025	06/26/2025	06/26/2025	06/26/2025

CLIENT: GENERAL:

SHEET TITLE: TRASH ENCLOSURE PLAN & DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S103

SHEET 39 OF SHEETS 115

PLOTTED:9/23/2024 2:52:22 PM

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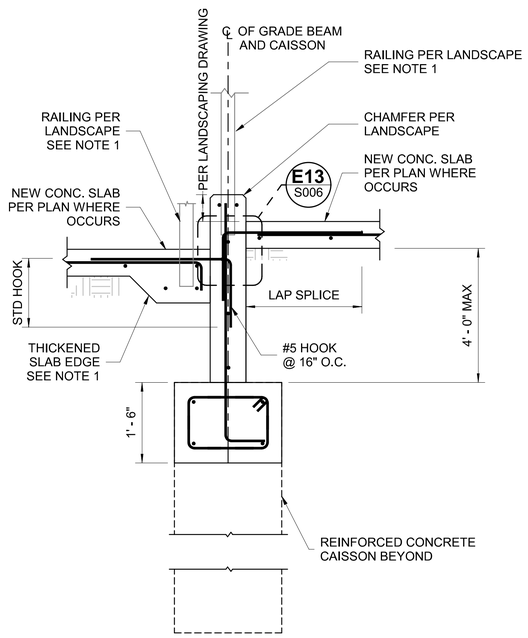
TTLB TEMPLATE REVISION DATE: 4/2016

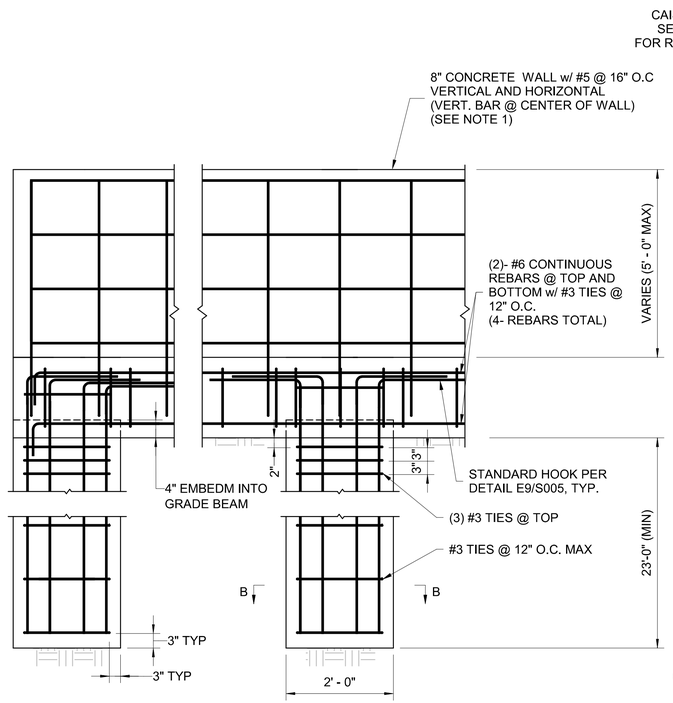
REVISION DATES (DESIGN STAGE ONLY)



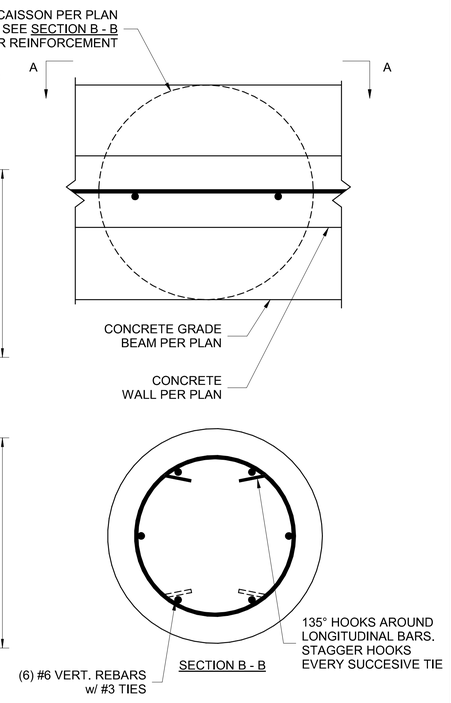
NOTE: 1. SEE DETAIL A13 FOR THICKENED SLAB EDGE DETAIL AND RAILING EMBEDMENT.

G1 RAMP SLAB TO WALL CONN.

NOT TO SCALE | A1/ S104



SECTION A - A

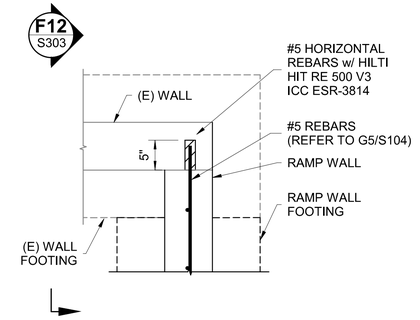


SECTION B - B

NOTE: 1. SEE DETAIL A13/S005 FOR PIPE PENETRATIONS.

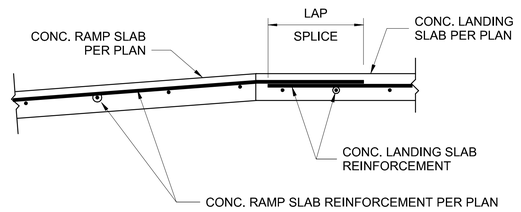
G5 RAMP WALL FOOTING

NOT TO SCALE | A1/ S104



K13 (N) WALL TO (E) WALL CONN. 1

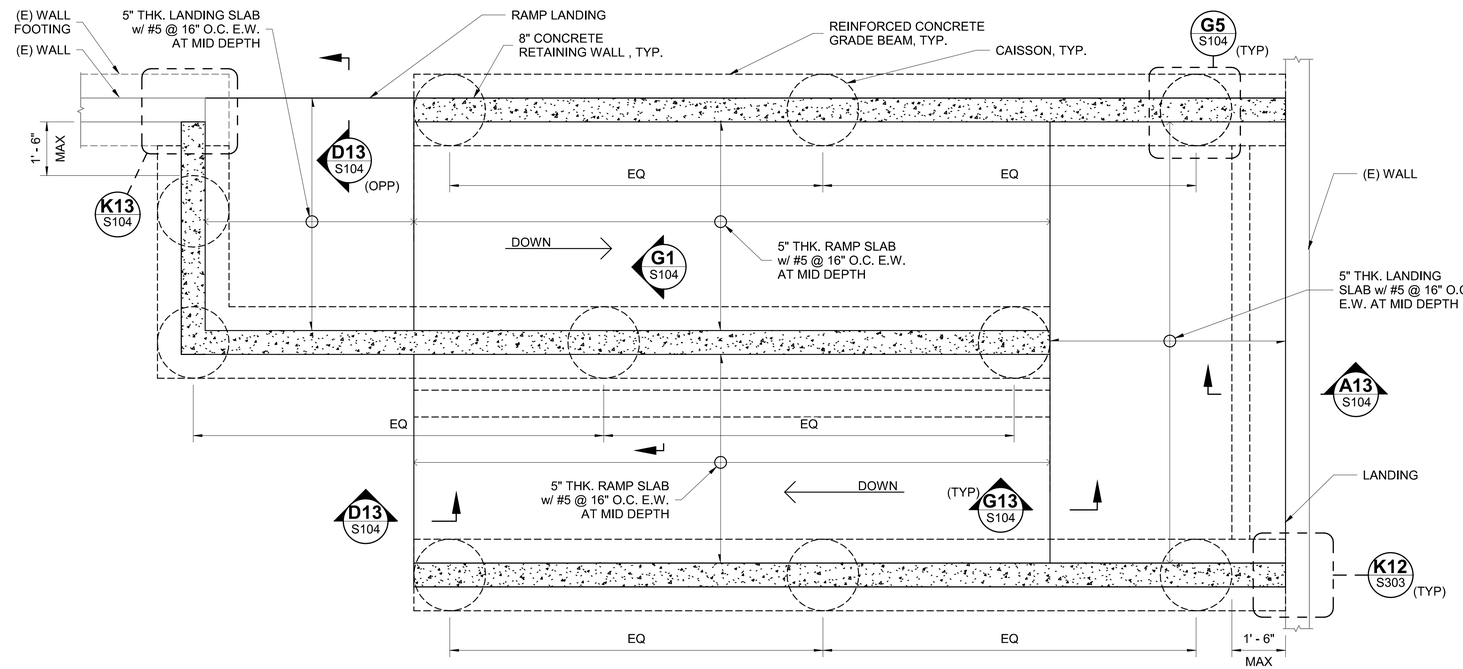
NOT TO SCALE | A1/ S104



NOTE: SEE LANDSCAPE DRAWING FOR RAMP SLOPE INFORMATION.

G13 RAMP TO LANDING CONNECTION

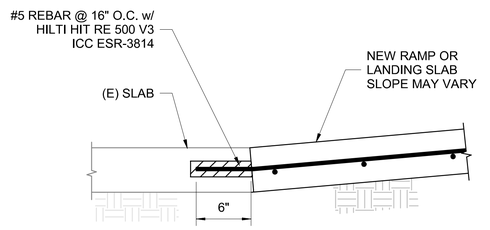
NOT TO SCALE | A1/ S104



NOTE: 1. REFER TO LANDSCAPE DRAWINGS FOR LOCATION OF RAILING.
2. ADA RAMP RETAINING WALL WILL BE UNDER A SEPARATE PERMIT.
3. RETAITING WALLS LOCATED CLOSER TO PROPERTY LINE THAN HEIGHT OF WALL SHALL BE BACK FILLED NO LATER THAN 10 DAYS AFTER CONSTRUCTION OF WALL AND NECESSARY STRUCTURAL SUPPORTING MEEMBERS.

A1 RAMP, WALL, AND FOUNDATION PLAN

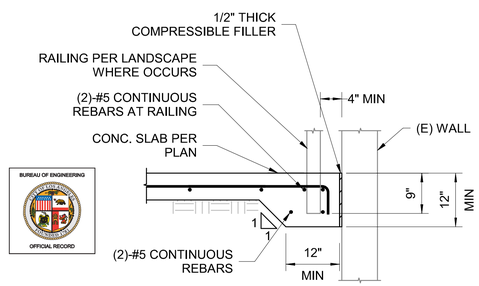
NOT TO SCALE | A1/ S101



NOTE: PRIOR TO DRILLING HOLES FOR EPOXY REBARS, SCAN FOR (E) REBARS IN (E) SLAB TO AVOID DAMAGING THEM.

D13 EDGE OF SLAB DETAIL

NOT TO SCALE | A1/ S104



A13 THICKENED SLAB EDGE

NOT TO SCALE | A1/ S104

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TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES: (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALLA ★ M.ANAND ★ S 6573 ★ CIVIL ★ STRUCTURAL ★ STATE OF CALIFORNIA

CITY ENGINEER:

DATE:	LIC. NO. S-6573
06/26/2025	
06/26/2025	
06/26/2025	
06/26/2025	
06/26/2025	

DESIGN GROUP

ENGINEER:	MANAN BHALLA, S.E. MB
DESIGNED BY:	JIN CHAE, P.E.
DRAWN BY:	JIN CHAE, P.E.
CHECKED BY:	MELVIN AGAGAS, S.E.
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.

TED ALLEN, PE

MOURAD AZIZ, P.E.

CLIENT: GENERAL:

SHEET TITLE: RAMP AND RETAINING WALL PLAN & DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S104

SHEET 40 OF SHEETS 115

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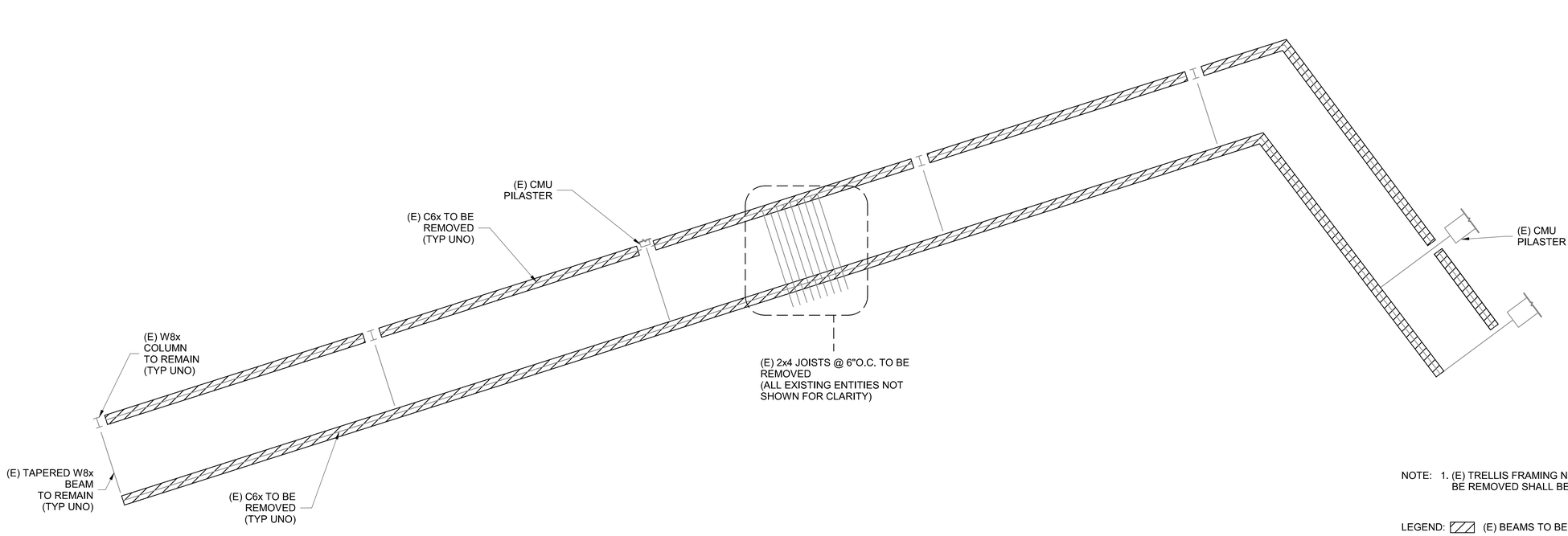
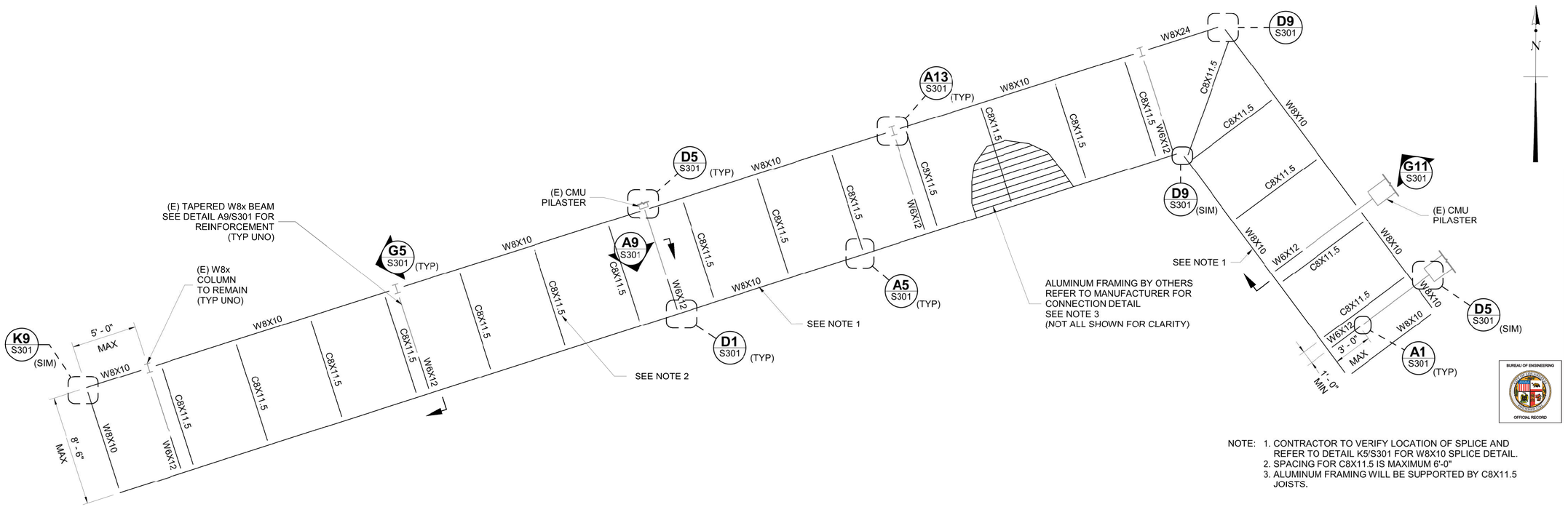
CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS



NOTE: 1. (E) TRELLIS FRAMING NOT INDICATED TO BE REMOVED SHALL BE PROTECTED IN PLACE.

LEGEND: (E) BEAMS TO BE REMOVED

G1	EXISTING TRELLIS PLAN
NOT TO SCALE	1/ S102



NOTE: 1. CONTRACTOR TO VERIFY LOCATION OF SPLICE AND REFER TO DETAIL K5/S301 FOR W8X10 SPLICE DETAIL.
2. SPACING FOR C8X11.5 IS MAXIMUM 6'-0"
3. ALUMINUM FRAMING WILL BE SUPPORTED BY C8X11.5 JOISTS.

A1	NEW TRELLIS PLAN
NOT TO SCALE	2/ S102

BUREAU OF ENGINEERING

ENGINEERING CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER MANAN J. BHALJA S 6573 STRUCTURAL STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

TED ALLEN, PE

CITY ENGINEER

	DESIGN GROUP		DATE:
ENGINEER:	MANAN BHALJA, S.E. MB	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGAS, S.E.	MOURAD AZIZ, P.E.	06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.		06/26/2025

CLIENT:
GENERAL:

SHEET TITLE: TRELLIS PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S105

SHEET 41 OF SHEETS 115

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PROJECT ISSUE DATE 9/22/2025

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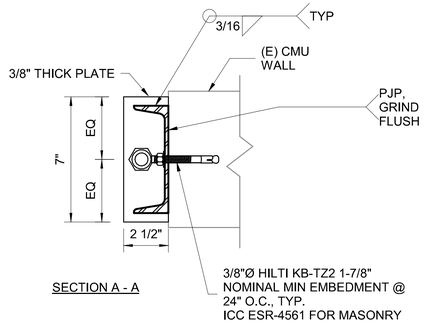
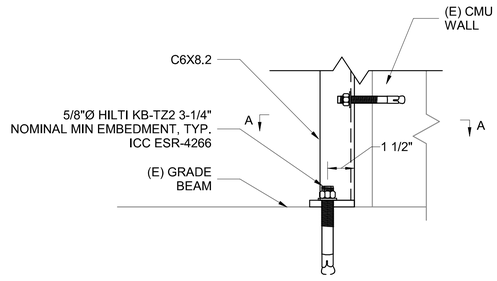
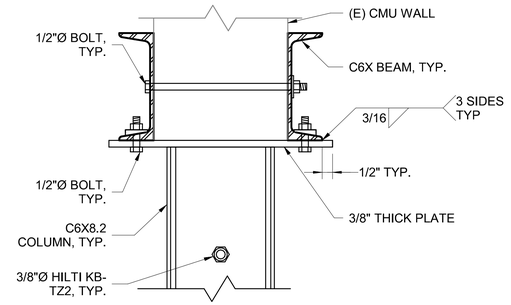


SECTION A - A



G1 POST BASE CONNECTION

NOT TO SCALE | A1/ S201



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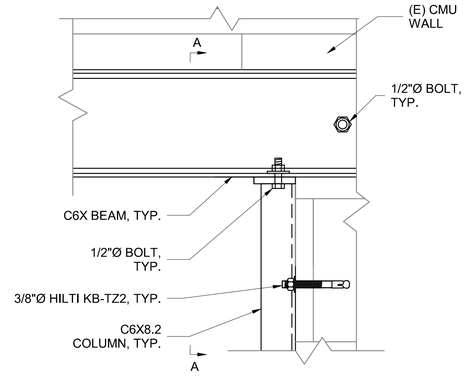
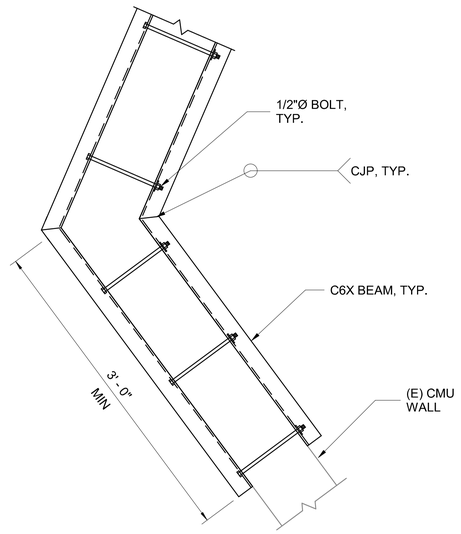


NOTE: SEE G1/S201 FOR INFORMATION NOT SHOWN.

G5 POST TOP CONNECTION

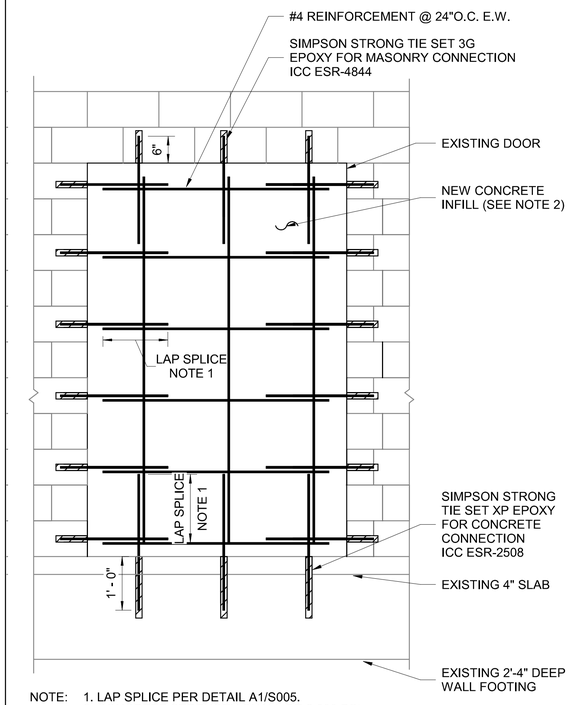
NOT TO SCALE | A1/ S201



PLAN

G8 WALL CORNER CONNECTION

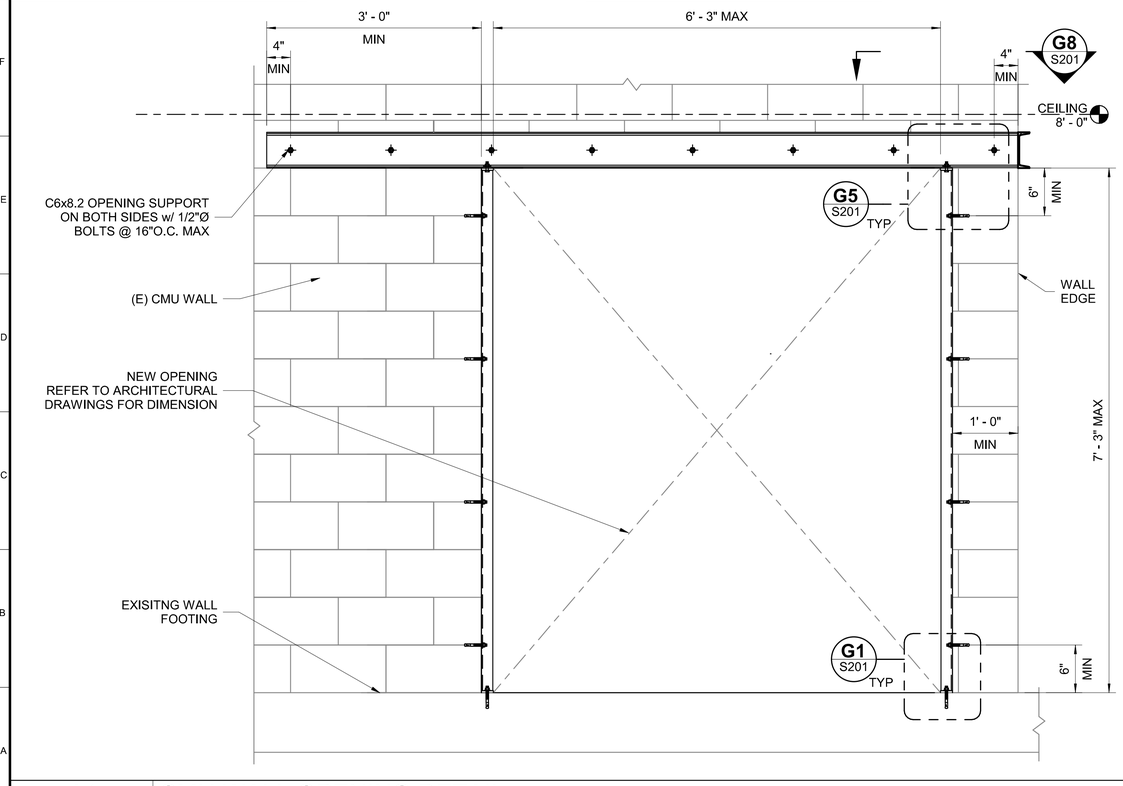
NOT TO SCALE | A1/ S201



NOTE:
1. LAP SPLICE PER DETAIL A1/S005.
2. CONCRETE STRENGTH SHALL BE 2,000 PSI
3. CONTRACTOR TO VERIFY DIMENSION OF EXISTING DOOR OPENING.
4. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION AND DIMENSIONS OF THE EXISTING OPENING

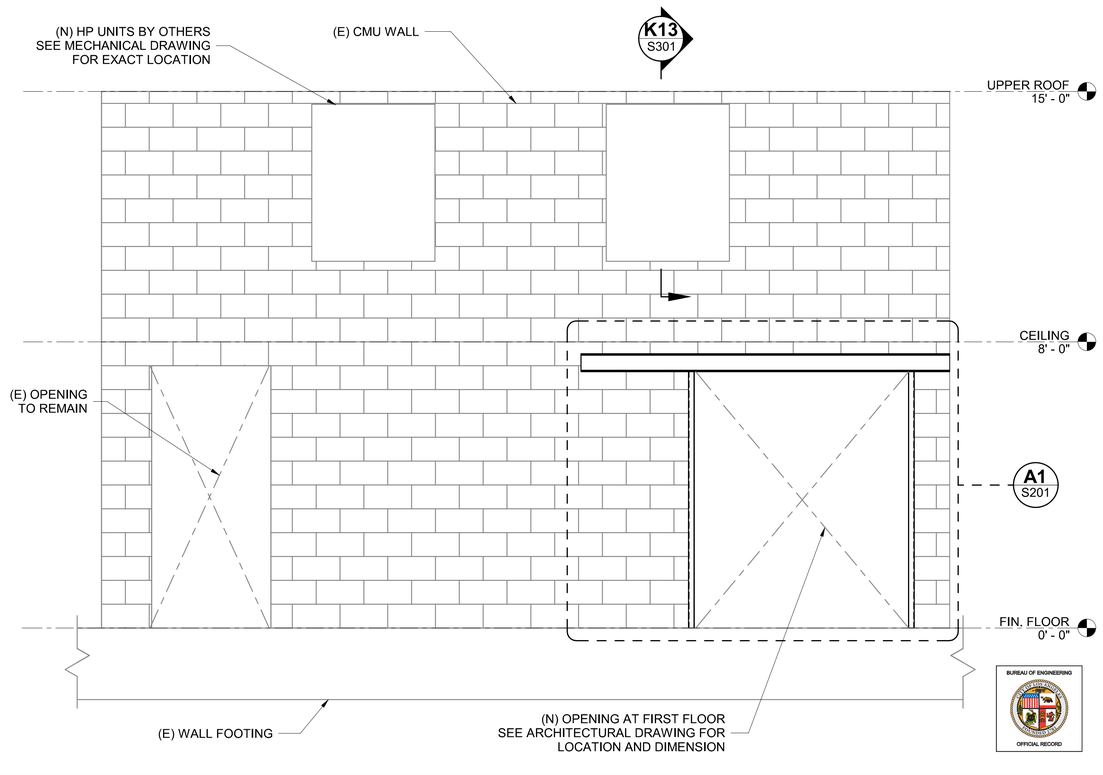
G13 CMU WALL INFILL @ DOOR

NOT TO SCALE



A1 CMU WALL OPENING DETAIL

NOT TO SCALE | A9/ S201



A9 CMU WALL ELEVATION

NOT TO SCALE | 2/ S102

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PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
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REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ S 6573 ★ STATE OF CALIFORNIA

CITY ENGINEER: TED ALLEN, PE
DATE: 06/26/2025
LIC. NO.: S-6573
DESIGN GROUP
ENGINEER: MANAN BHALJA, S.E. MB 06/26/2025
DESIGNED BY: JIN CHAE, P.E. 06/26/2025
DRAWN BY: JIN CHAE, P.E. 06/26/2025
CHECKED BY: MELVIN AGAGAS, S.E., MOURAD AZIZ, P.E. 06/26/2025
APPROVED BY: SHAILESH "SUNNY" PATEL, S.E. 06/26/2025

CLIENT: GENERAL:
SHEET TITLE: WALL OPENING - ELEVATION, SECTIONS, AND DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. S201
SHEET 42 OF SHEETS 115

PLOTTED:9/23/2024 2:52:25 PM

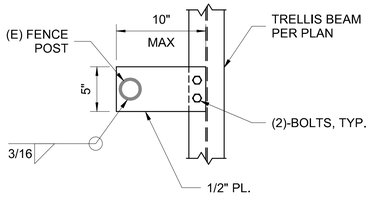
TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)

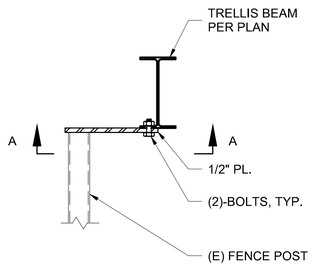
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)

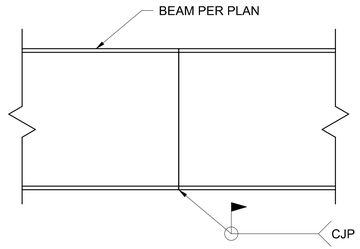


SECION A - A



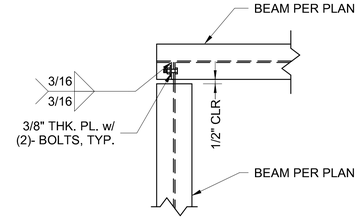
ELEVATION

G1	(E) FENCE POST CONNECTION
NOT TO SCALE	2/ S102



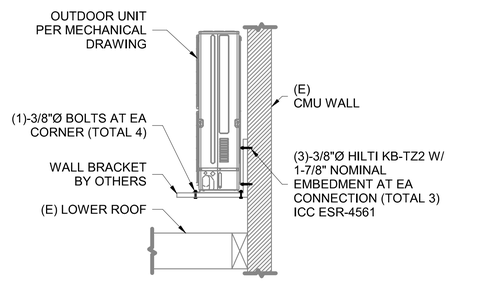
NOTE: CONTRACTOR TO DETERMINE SPLICE LOCATIONS. SPLICE LOCATIONS SHALL NOT OCCUR AT CONNECTIONS AND SHALL BE ATLEAST 2' - 0" AWAY FROM CONNECTIONS.

K5	TYP. BEAM SPLICE
NOT TO SCALE	



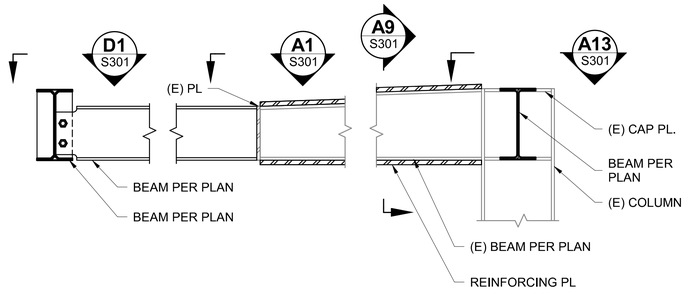
PLAN

K9	BEAM TO BEAM CONN.
NOT TO SCALE	A1/ S105

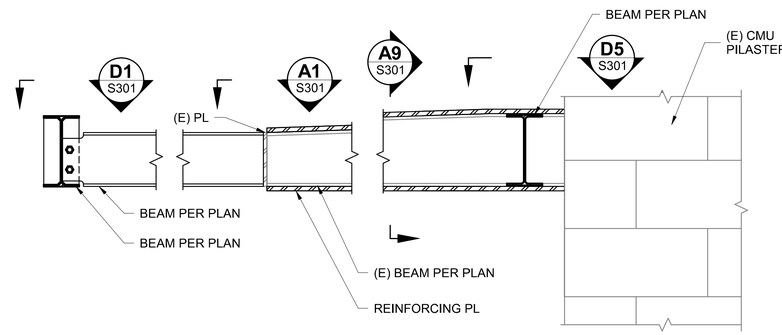


NOTE: CONTRACTOR TO VERIFY THAT CMU WALL IS FULLY GROUTED. CONTACT EOR IF NOT.

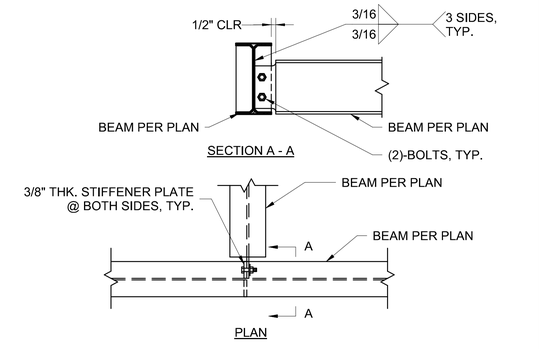
K13	OUTDOOR UNIT ATTACHMENT
NOT TO SCALE	A9/ S201



G5	(E) COL TO (E) BEAM CONN. DETAIL
NOT TO SCALE	A1/ S105

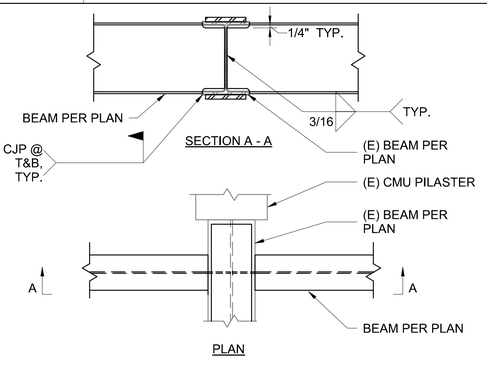


G11	(E) BEAM TO (E) BEAM CONN. DETAIL
NOT TO SCALE	A1/ S105



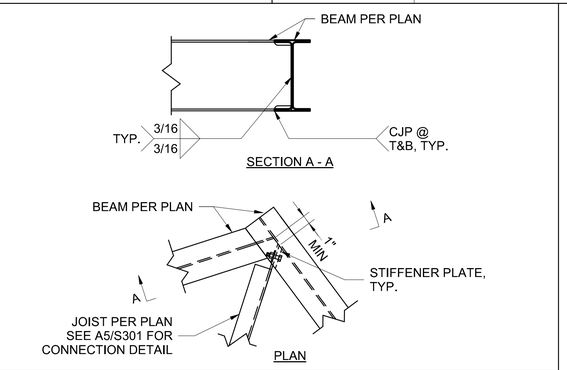
PLAN

D1	BEAM TO BEAM CONN. DETAIL 1
NOT TO SCALE	A1/ S105



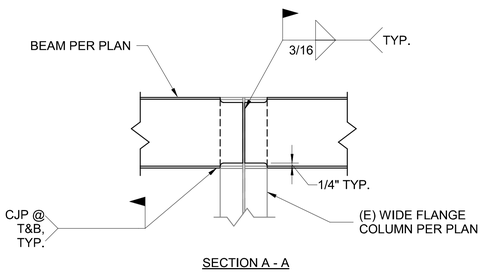
PLAN

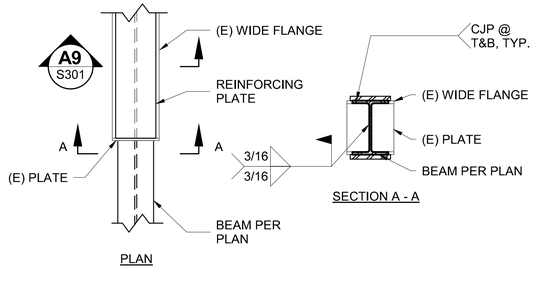
D5	BEAM TO BEAM CONN. DETAIL 2
NOT TO SCALE	A1/ S105



PLAN

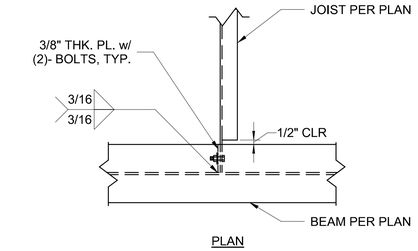
D9	BEAM TO BEAM CONN. DETAIL 3
NOT TO SCALE	A1/ S105





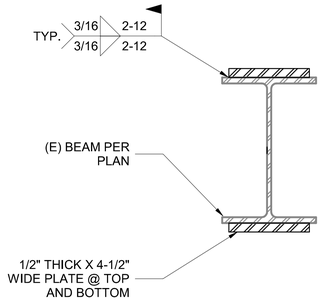
PLAN

A1	(E) BEAM TO (N) BEAM CONN.
NOT TO SCALE	A1/ S105

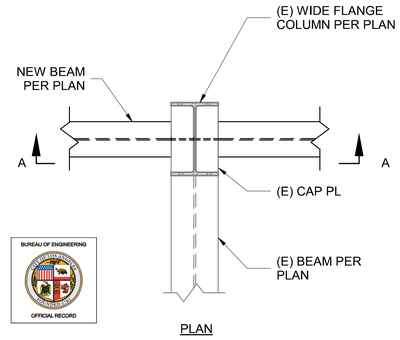


PLAN

A5	JOIST TO BEAM CONN.
NOT TO SCALE	A1/ S105



A9	(E) STEEL BEAM REINFORCEMENT
NOT TO SCALE	A1/ S105



PLAN

A13	(N) BEAM TO (E) COL CONN.
NOT TO SCALE	A1/ S105

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ M.ANAV ★ S 6573 ★ CIVIL ★ STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

CITY OF LOS ANGELES

TED ALLEN, PE

CITY ENGINEER:		DATE:	06/26/2025
ENGINEER:	DESIGN GROUP MB	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	MANAN BHALJA, S.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	JIN CHAE, P.E.		06/26/2025
APPROVED BY:	MELVIN AGAGAS, S.E. / MOURAD AZIZ, P.E. / SHAILESH "SUNNY" PATEL, S.E.		06/26/2025

CLIENT: GENERAL:

SHEET TITLE: DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

BUREAU OF ENGINEERING OFFICIAL RECORD

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S301

SHEET 43 OF SHEETS 115

PLOTTED:9/23/2024 2:52:27 PM

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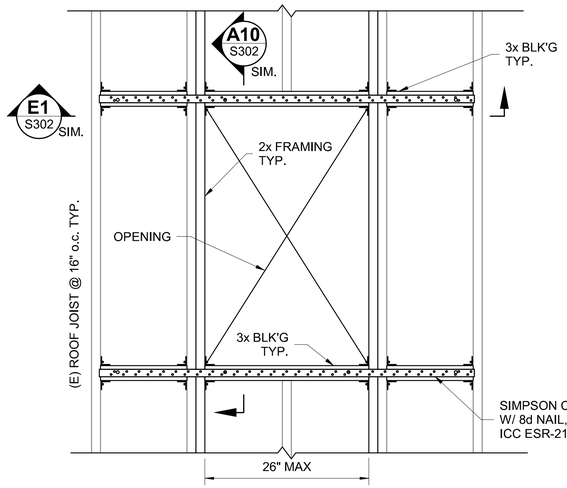
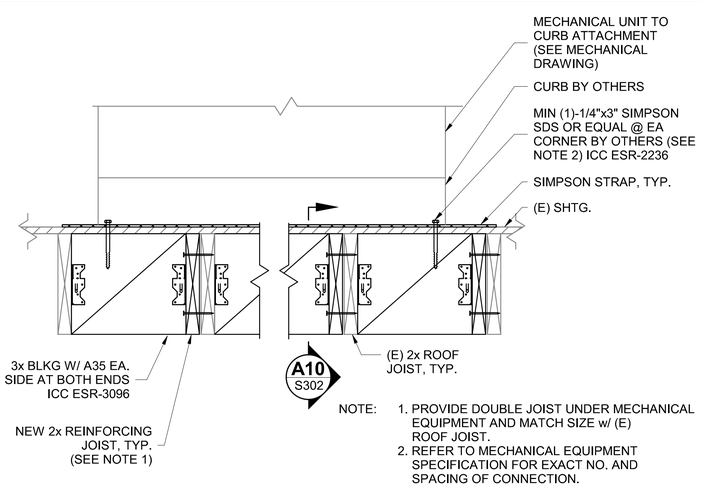


J1 DIAPHRAGM OPENING

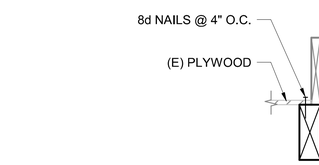
NOT TO SCALE | A1/ S302



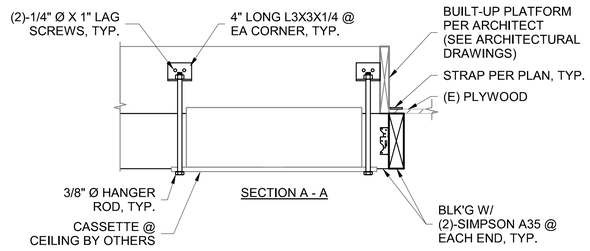
NOTE:
1. PROVIDE DOUBLE JOIST UNDER MECHANICAL EQUIPMENT AND MATCH SIZE w/ (E) ROOF JOIST.
2. REFER TO MECHANICAL EQUIPMENT SPECIFICATION FOR EXACT NO. AND SPACING OF CONNECTION.

E1 AC UNIT ATTACHMENT

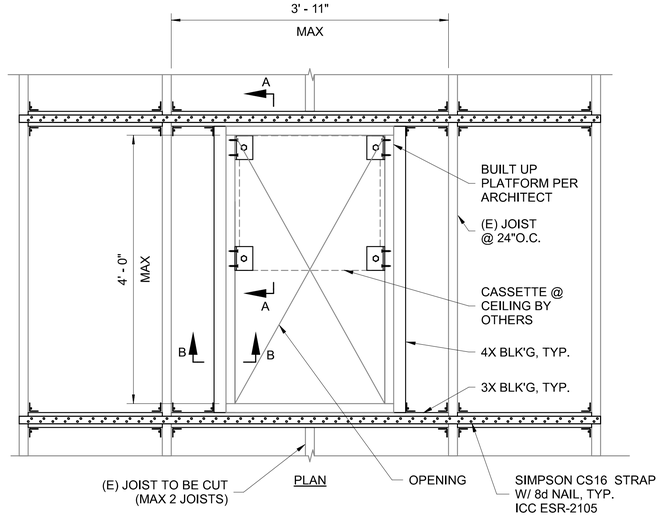
NOT TO SCALE | A1/ S302



SECTION B - B



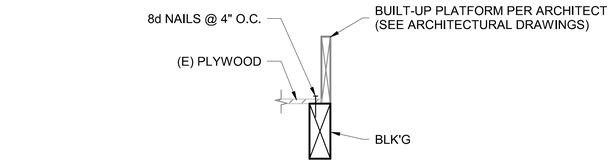
SECTION A - A



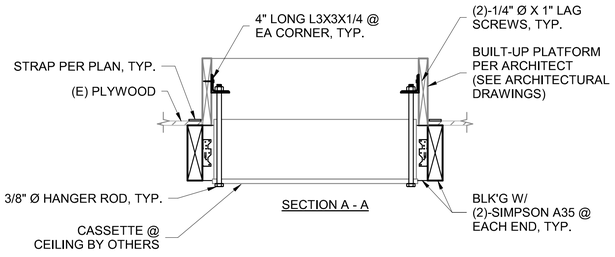
NOTE: 1. SEE MECHANICAL DRAWINGS FOR LOCATION OF CASSETTE

E6 CASSETTE CONNECTION TYPE 1

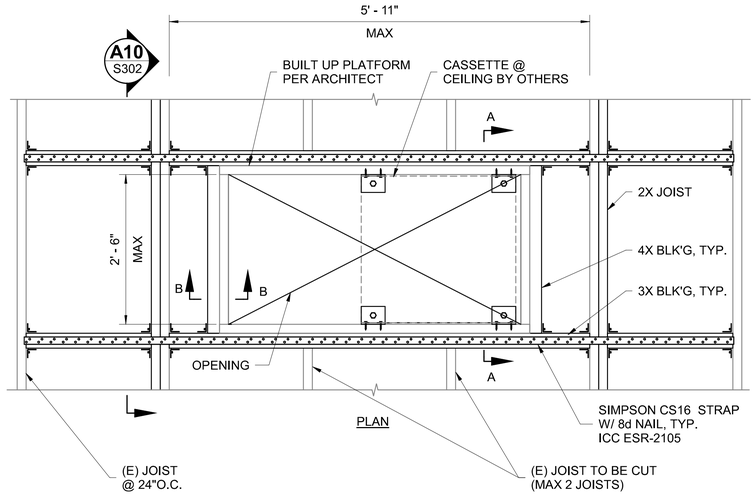
NOT TO SCALE | 2/ S102



SECTION B - B



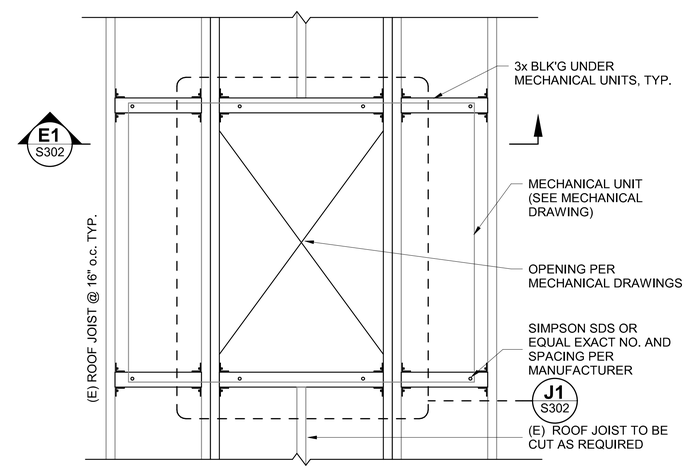
SECTION A - A



NOTE: 1. SEE MECHANICAL DRAWINGS FOR LOCATION OF CASSETTE

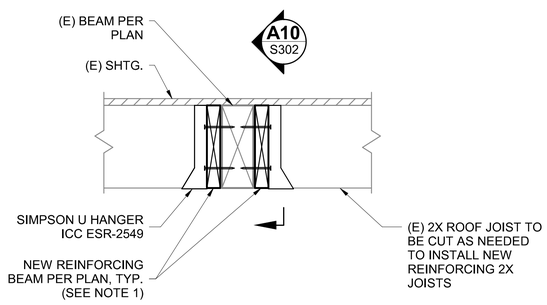
E11 CASSETTE CONNECTION TYPE 2

NOT TO SCALE | 2/ S102



A1 AC UNIT ATTACHMENT PLAN

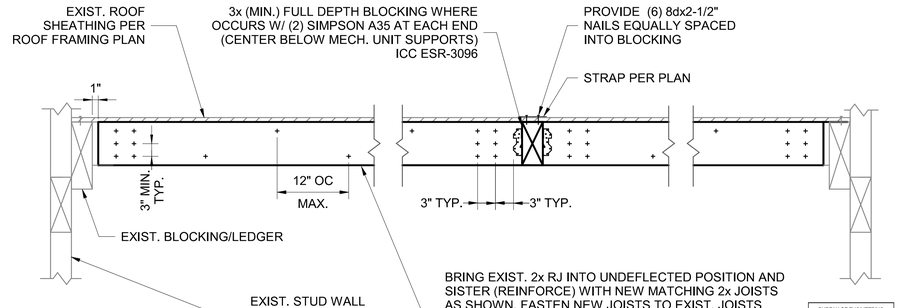
NOT TO SCALE | 2/ S102



NOTE: 1. MATCH DEPTH TO (E) BEAM.

A6 BEAM RETROFIT

NOT TO SCALE | 2/ S102



A10 EXIST. RJ & BEAM REINFORCEMENT DETAIL

NOT TO SCALE | A6/ S302

BID SET
PROJECT ISSUE DATE 9/22/2025

TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES
(DESIGN STAGE ONLY)

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALLA ★ M.MAAV S 6573 ★ STATE OF CALIFORNIA

TED ALLEN, PE

	DESIGN GROUP	LIC. NO.: S-6573	DATE:
CITY ENGINEER:			06/26/2025
ENGINEER:	MANAN BHALLA, S.E.	MB	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGAS, S.E.		06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.	MOURAD AZIZ, P.E.	

CLIENT:
GENERAL:

SHEET TITLE: DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE
LOS ANGELES, CA 90028

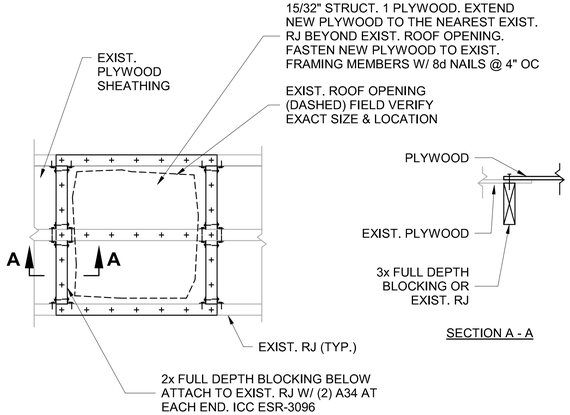
WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S302

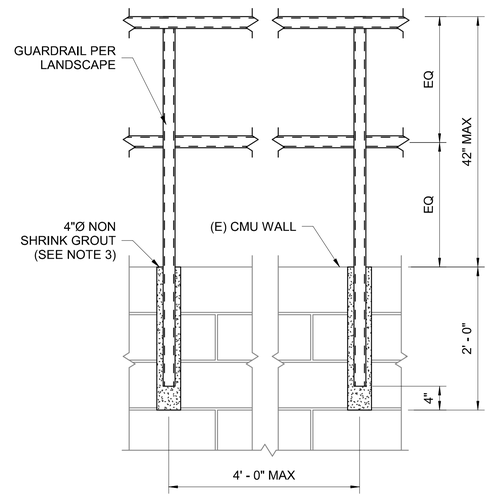
SHEET 44 OF SHEETS 115

PLOTTED:9/23/2024 2:52:28 PM



J1 ROOF OPENING REPAIR

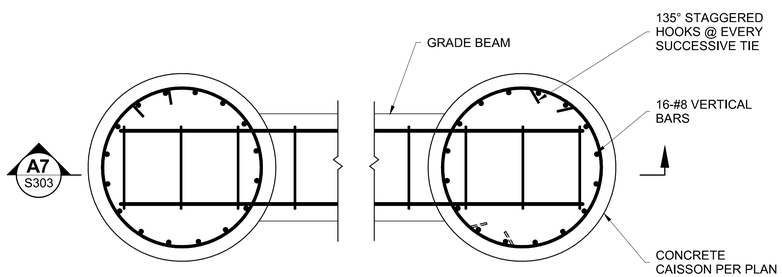
NOT TO SCALE



NOTE:
1. FOR PAINTING REFER TO ARCHITECTURAL DRAWINGS.
2. REFER TO ARCHITECTURAL & LANDSCAPING DRAWINGS FOR LOCATION OF GUARDRAIL.
3. CORE DRILL INTO (E) CMU WALL. PROPERLY CLEAN HOLE PRIOR TO INSTALLATION OF GROUT AND POST.

D1 GUARDRAIL AT (E) CMU WALL

NOT TO SCALE



NOTE: SEE LANDSCAPE DRAWING FOR LOCATION OF CAISSONS.

A1 SHADE STRUCTURE CAISSON PLAN

NOT TO SCALE

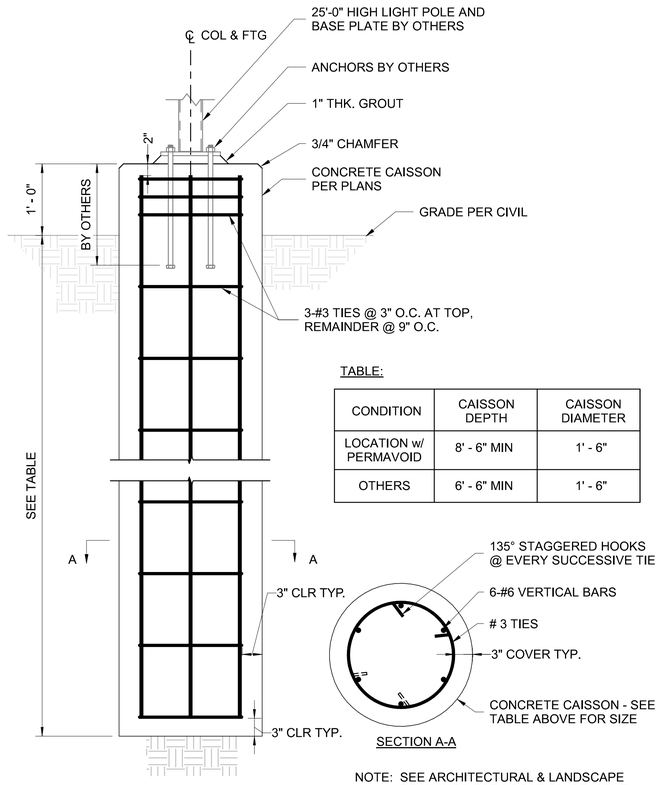


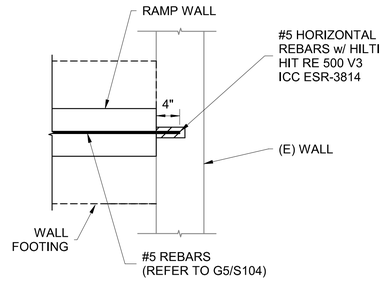
TABLE:

CONDITION	CAISSON DEPTH	CAISSON DIAMETER
LOCATION w/ PERMAVOID	8' - 6" MIN	1' - 6"
OTHERS	6' - 6" MIN	1' - 6"

NOTE: SEE ARCHITECTURAL & LANDSCAPE DRAWINGS FOR LOCATION OF LIGHT POLES

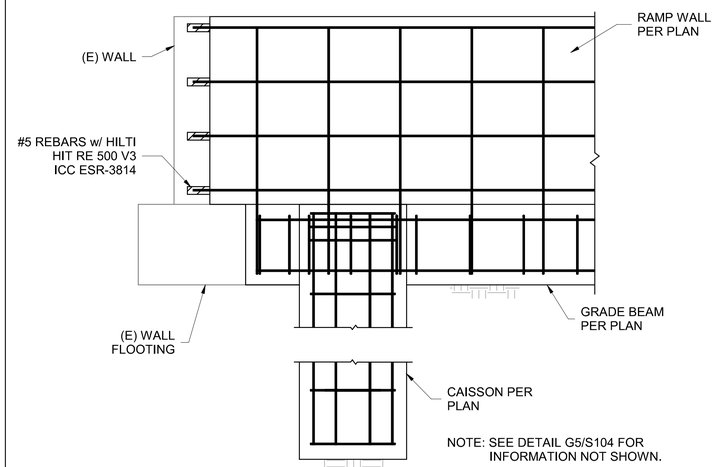
F1 LIGHT POLE FOOTING

NOT TO SCALE



K12 (N) WALL TO (E) WALL CONN. 2

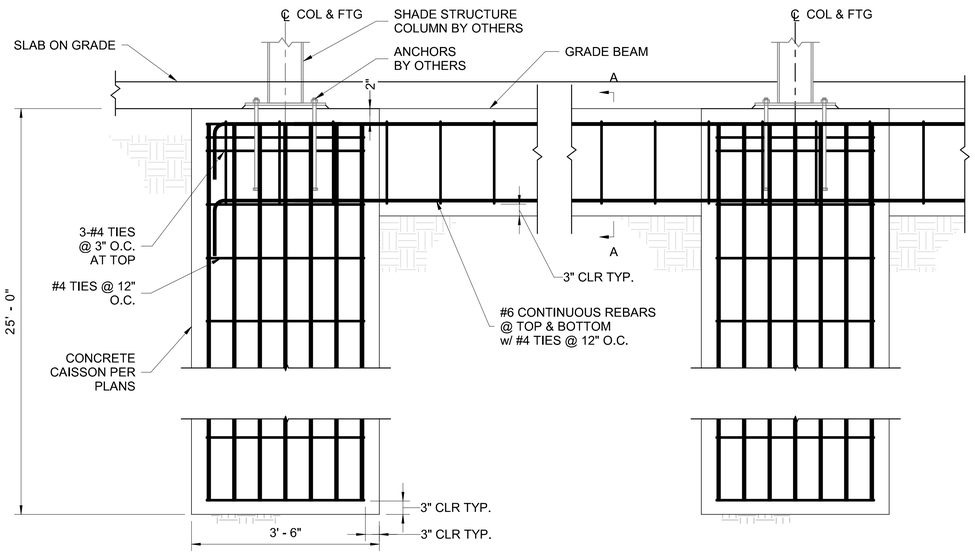
NOT TO SCALE — A1/ S104



NOTE: SEE DETAIL G5/S104 FOR INFORMATION NOT SHOWN.

F12 RAMP WALL FOOTING TO (E) FOOTING CONN.

NOT TO SCALE — K13/ S104



NOTE: SHADE STRUCTURE AND FOUNDATION WILL BE UNDER A SEPARATE PERMIT.

A7 SHADE STRUCTURE CAISSON SECTION

NOT TO SCALE — A1/ S101

BUREAU OF ENGINEERING

OFFICIAL RECORD

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ M.MAAV ★ S 6573 ★ STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

CITY ENGINEER: TED ALLEN, PE — DATE: 06/26/2025

DESIGN GROUP

ENGINEER:	MANAN BHALJA, S.E.	LIC. NO.: S-6573	06/26/2025
DESIGNED BY:	JIN CHAE, P.E.		06/26/2025
DRAWN BY:	JIN CHAE, P.E.		06/26/2025
CHECKED BY:	MELVIN AGAGAS, S.E.		06/26/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.	MOURAD AZIZ, P.E.	06/26/2025

CLIENT: GENERAL:

SHEET TITLE: DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S303

SHEET 45 OF SHEETS 115

PLOTTED:9/23/2024 2:52:29 PM

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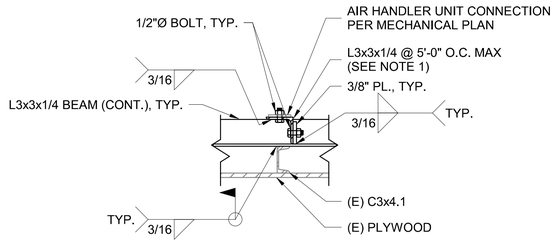
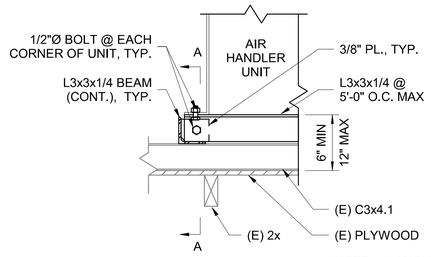
TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)

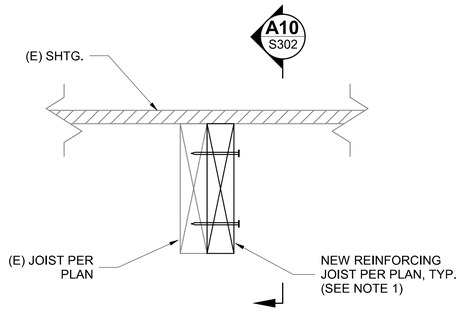




NOTE: 1. ANGLE SUPPORT LOCATION/PLACEMENT FOR AIR HANDLER UNIT OR DUCT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S CONNECTION DETAILS.

H1 AIR HANDLER UNIT CONNECTION

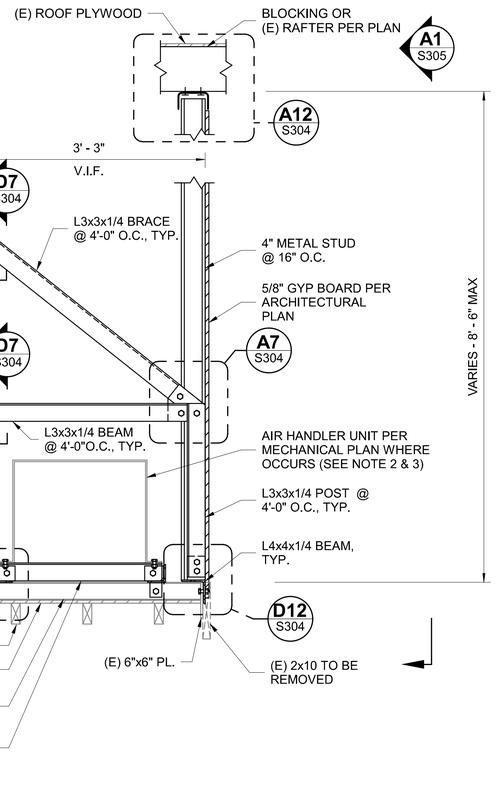
NOT TO SCALE | A1/ S304



NOTE: 1. MATCH DEPTH TO (E) BEAM.
2. REMOVE (E) BLOCKING AND REINSTALL BLOCKING AFTER ADDING REINFORCING JOISTS.

H7 ROOF JOIST RETROFIT

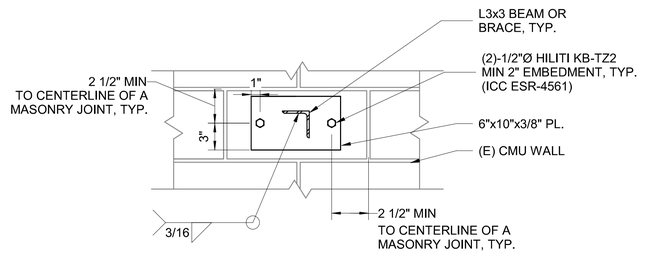
NOT TO SCALE | 2/ S102



NOTE: 1. NOT ALL EXISTING WOOD MEMBERS ON LEDGE ARE SHOWN FOR CLARITY.
2. REFER TO MANUFACTURER'S DETAILS FOR CONNECTIONS.
3. REFER TO ARCHITECTURAL AND MECHANICAL PLANS FOR LAYOUT AND LOCATION OF AIR HANDLER UNIT AND DUCT.

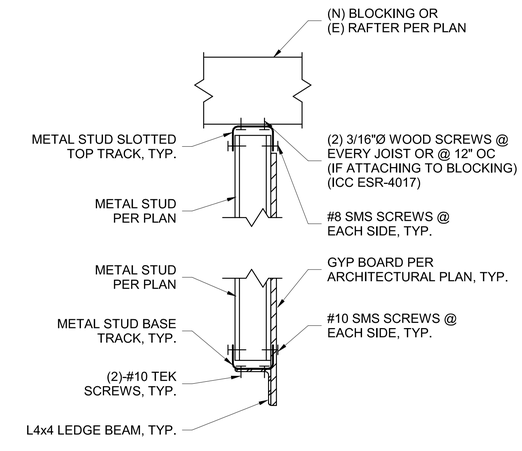
A1 NEW LEDGE SUPPORT FRAMING

NOT TO SCALE | 2/ S102



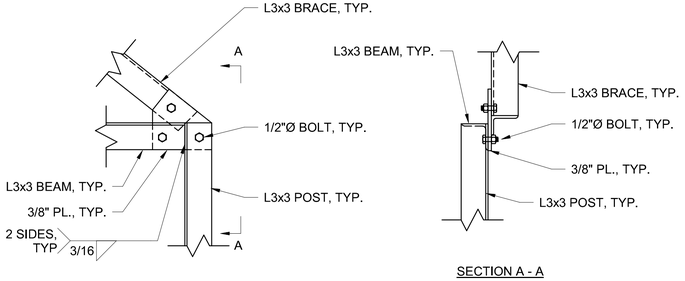
D7 FRAMING TO (E) CMU WALL CONNECTION

NOT TO SCALE | A1/ S304



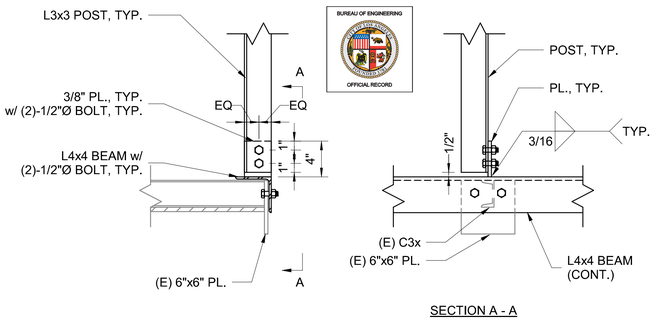
A12 METAL STUD CONNECTION

NOT TO SCALE | A1/ S304



A7 FRAMING CONNECTION

NOT TO SCALE | A1/ S304



D12 (E) CHANNEL TO FRAMING CONNECTION

NOT TO SCALE | A1/ S304

BID SET
PROJECT ISSUE DATE: 09/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ J. BHALJA ★ MANAV ★ S 6573 ★ STATE OF CALIFORNIA ★ STRUCTURAL

ALFRED MATA, PE
INTERIM CITY ENGINEER
DATE: 09/22/2025
DESIGN GROUP
LIC. NO. S-6573

ENGINEER:	MANAN BHALJA, S.E.	09/22/2025
DESIGNED BY:	JIN CHAE, P.E.	09/22/2025
DRAWN BY:	JIN CHAE, P.E.	09/22/2025
CHECKED BY:	MELVIN AGAGAS, S.E.	09/22/2025
APPROVED BY:	MOURAD AZIZ, P.E.	09/22/2025
	SHAILESH "SUNNY" PATEL, S.E.	09/22/2025

CLIENT: GENERAL:
SHEET TITLE: DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 N LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. S304
SHEET 46 OF SHEETS 115

PLOTTED:10/24/2025 10:05:19 AM

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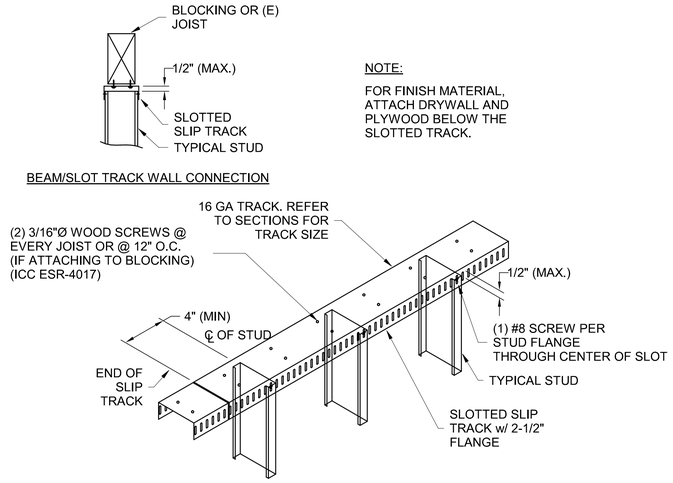
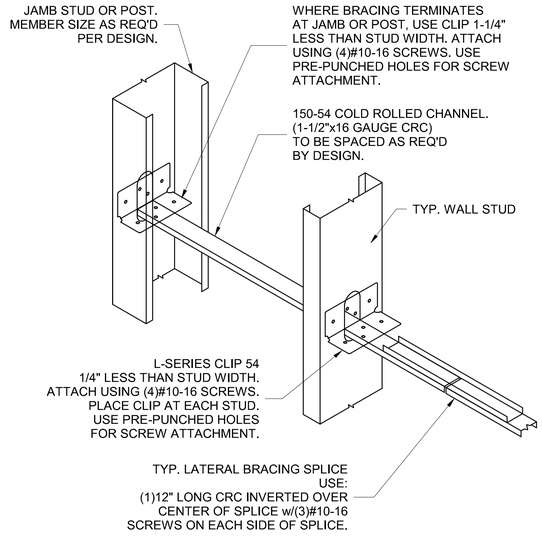
TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES: (DESIGN STAGE ONLY)



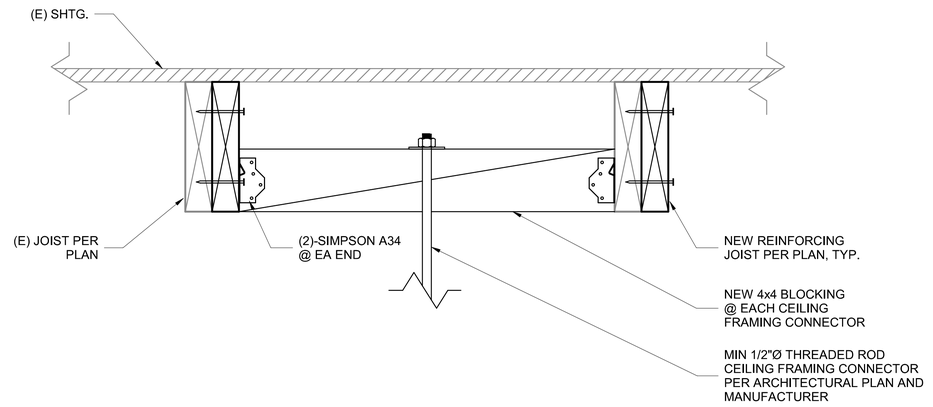
H1 SLOTTED TRACK

NOT TO SCALE



H6 LATERAL BRIDGING DETAIL

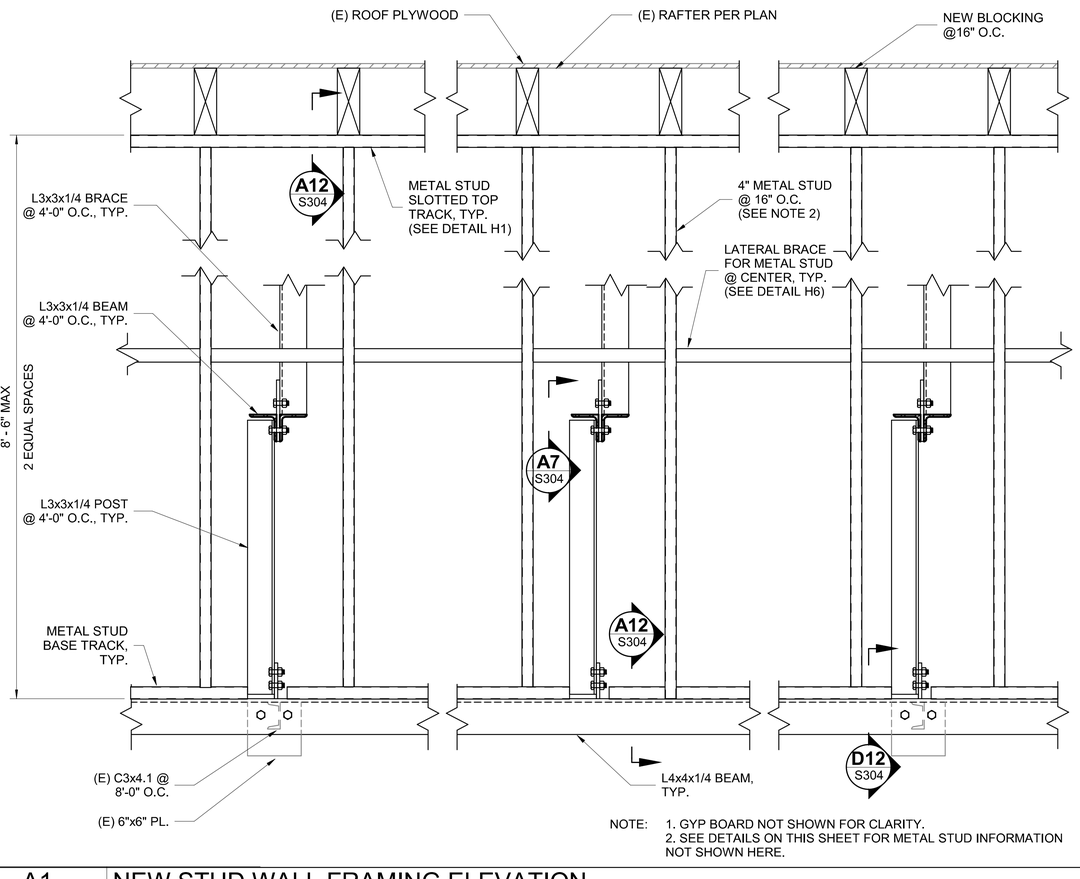
NOT TO SCALE



NOTE: 1. SEE ARCHITECTURAL PLANS FOR CEILING FRAMING CONNECTOR LOCATIONS AND INFORMATION NOT SHOWN.

H10 CEILING FRAMING CONENCTION

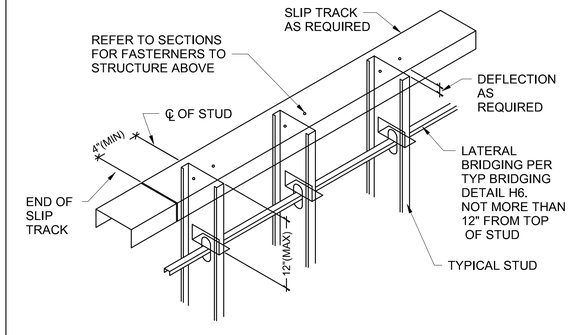
NOT TO SCALE



NOTE: 1. GYP BOARD NOT SHOWN FOR CLARITY.
2. SEE DETAILS ON THIS SHEET FOR METAL STUD INFORMATION NOT SHOWN HERE.

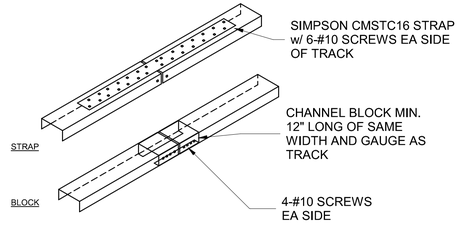
A1 NEW STUD WALL FRAMING ELEVATION

NOT TO SCALE — A1/ S304



D9 SLIP TRACK DETAIL

NOT TO SCALE



A9 SPLICE TOP TRACK

NOT TO SCALE

BUREAU OF ENGINEERING
OFFICIAL RECORD

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ★ MANAV J. BHALLA ★ S 6573 ★ STRUCTURAL ★ STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

	INTERIM CITY ENGINEER	DATE:
ALFRED MATA, PE		
	DESIGN GROUP	LIC. NO.: S-6573
ENGINEER:	MANAN BHALJA, S.E.	09/22/2025
DESIGNED BY:	JIN CHAE, P.E.	09/22/2025
DRAWN BY:	JIN CHAE, P.E.	09/22/2025
CHECKED BY:	MELVIN AGAGAS, S.E.	MOURAD AZIZ, P.E. 09/22/2025
APPROVED BY:	SHAILESH "SUNNY" PATEL, S.E.	09/22/2025

CLIENT:
GENERAL:

SHEET TITLE: DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 N LAS PALMAS AVE
LOS ANGELES, CA 90028

CITY OF LOS ANGELES

BID SET
PROJECT ISSUE DATE: 09/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. S305

SHEET 47 OF SHEETS 115

PLOTTED:10/24/2025 10:05:19 AM

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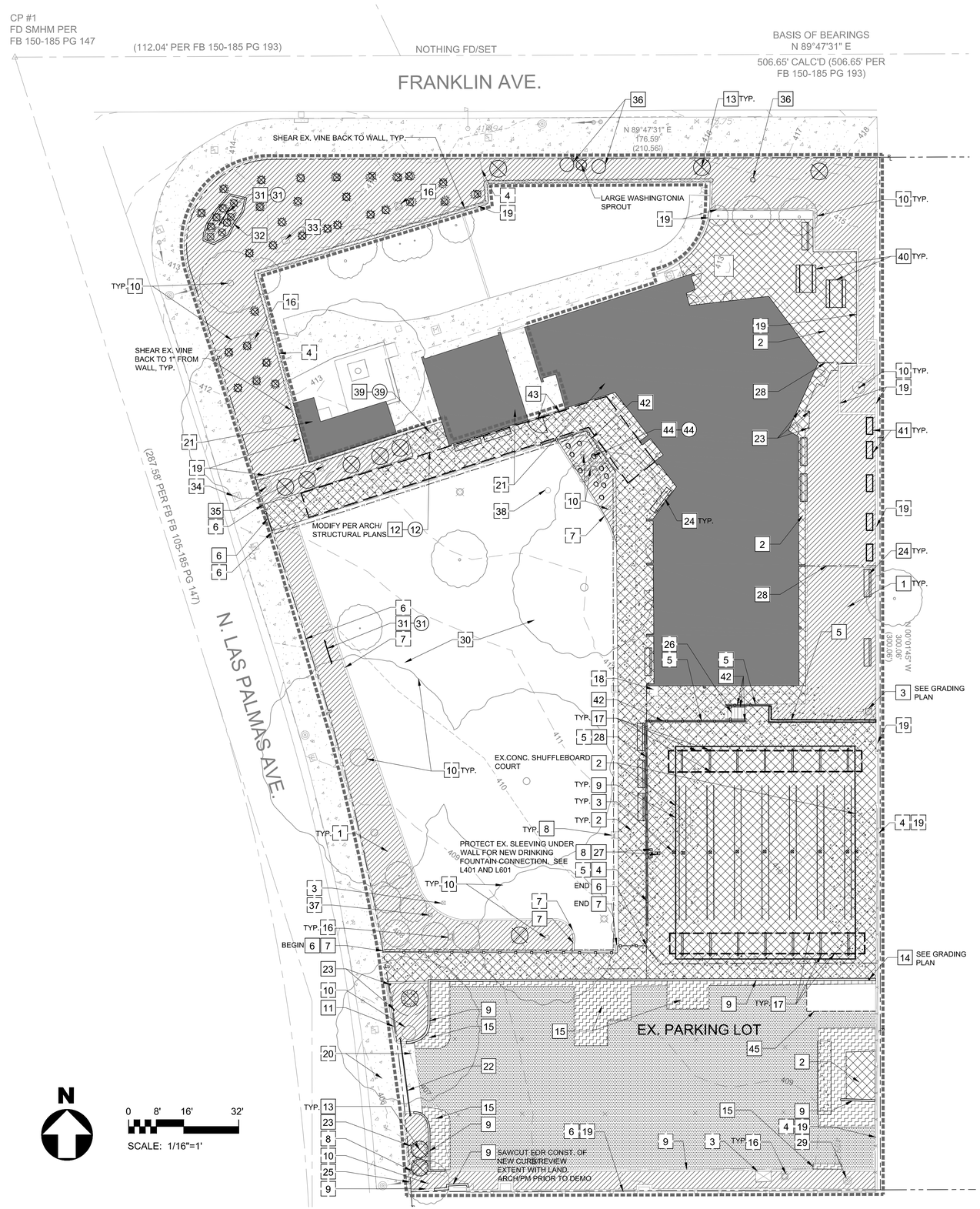
TTLB TEMPLATE REVISION DATE: 4/2016

REVISION DATES (DESIGN STAGE ONLY)



DEMOLITION NOTES:

1. CONTRACTOR SHALL MEET WITH CONSTRUCTION MANAGER/LANDSCAPE ARCHITECT, & BCA INSPECTOR TO REVIEW EXISTING ELEMENTS TO BE DEMOLISHED/PROTECTED PRIOR TO COMMENCEMENT OF WORK.
2. ALL REMOVED MATERIAL SHALL BE PROPERLY DISPOSED OF AT AN APPROPRIATE LOCATION OFF-SITE. ALL DISPOSAL SHALL BE IN ACCORDANCE WITH CODES AND ORDINANCES GOVERNING LOCATIONS AND METHODS OF DISPOSAL.
3. LOCATIONS OF EXISTING EQUIPMENT ARE SHOWN FOR THE LEGIBILITY OF THE DRAWING. THE CONTRACTOR SHALL VERIFY EXACT LOCATION FROM SITE SURVEY OR IN THE FIELD. CONTRACTOR SHALL IMMEDIATELY BRING ANY CONFLICTS TO THE ATTENTION OF THE CONSTRUCTION MANAGER.
4. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT 48 HOURS IN ADVANCE BEFORE START OF CONSTRUCTION (DIAL 811) AND OBTAIN AN UNDERGROUND SERVICE ALERT INQUIRY I.D. NUMBER BY CALLING 1-800-422-4133.
5. EXISTING UNDERGROUND UTILITIES SHALL BE PROTECTED IN PLACE UNLESS OTHERWISE SPECIFIED PER PLAN. THE LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF ANY UNDERGROUND UTILITIES PRIOR TO EXCAVATION AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ANY NECESSARY ADJUSTMENTS TO ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENTS REQUIRED TO AVOID EXISTING UTILITIES AS PART OF THE CONTRACT WORK.
6. THE CONTRACTOR SHALL NOT WILLFULLY PROCEED WITH DEMOLITION AS SHOWN ON PLANS WHEN IT IS OBVIOUS THAT CONDITIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
7. ALL EXISTING SITE ELEMENTS (INCLUDING BUT NOT LIMITED TO LIGHTING STANDARDS, TRAFFIC SIGNS, ELECTRICAL PULLBOX, CATCH BASIN, WATER METER, DWP WATER VALVES, POWER POLE & GUY WIRE, IRRIGATION CONTROL BOX, CONCRETE CURBS) NOT INDICATED ON PLAN FOR REMOVAL SHALL BE PROTECTED IN PLACE.
8. EXISTING STRUCTURES AND SUBSTRUCTURES WHICH ARE INDICATED TO BE REMOVED IN THIS CONSTRUCTION DOCUMENT SHALL BE TOTALLY REMOVED AND DISPOSED OF OFFSITE, UNLESS OTHERWISE INDICATED. UNDOCUMENTED EXISTING FACILITIES WHICH ARE DISCOVERED DURING CONSTRUCTION (INCLUDING WALLS, FOOTINGS AND FOUNDATIONS) SHALL BE REPORTED TO PROJECT MANAGER AND COORDINATED IN ADVANCE AS TO THEIR REMOVAL. CONTRACTOR WILL NOTIFY THE CITY IN WRITING PRIOR TO COMMENCING THE WORK.
9. ALL COMPONENTS OF ADJACENT IRRIGATION SYSTEMS WHEN PRESENT (VALVES, HEADS, LATERALS, CONTROL WIRING, ETC.) SHALL BE PRESERVED AND RETAINED. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ADJACENT IRRIGATION SYSTEMS AND SHALL REPAIR AT NO COST TO THE CITY.
10. ALL ADJACENT IRRIGATION SYSTEMS, WHEN PRESENT, SHALL REMAIN OPERABLE DURING ALL PHASES OF CONSTRUCTION, INCLUDING DEMOLITION. IF IT CANNOT BE KEPT IN OPERATION, CONTRACTOR SHALL BE RESPONSIBLE FOR MANUALLY OPERATION IRRIGATION SYSTEM OF HAND WATERING AS NEEDED TO MAINTAIN ALL EXISTING PLANTING IN NORMAL CONDITION.
11. SEE IRRIGATION PLAN FOR DISPOSAL OF EXISTING IRRIGATION HEADS AND VALVE BOXES, ETC. PROTECT IN PLACE ALL IRRIGATION SYSTEM COMPONENTS TO REMAIN, TYP.
12. TREES TO BE REMOVED SHALL BE TAGGED BY CONTRACTOR PRIOR TO DEMOLITION. CONTRACTOR SHALL REMOVE TREES AFTER REVIEW AND APPROVAL BY THE PROJECT MANAGER.
13. ALL EXISTING TREES TO REMAIN SHALL BE PROTECTED IN PLACE PER TREE PROTECTION SECTION ON G104. PROVIDE TREE PROTECTION FENCING PER DETAILS WHERE SHOWN ON PLANS.
14. EXISTING TURF AND SHRUBS DESIGNATED TO REMAIN SHALL BE PROTECTED IN PLACE. REPAIR ANY DAMAGE OR REPLACE AS REQUIRED PER SPECIFICATIONS.
15. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH PROJECT MANGER TO LOCATE AND DELINEATE THE CONSTRUCTION STAGING AREA, AFTER COMPLETION OF WORK, THE STAGING AREA SHALL BE RESTORED, BY THE CONTRACTOR, TO ITS ORIGINAL CONDITION AT CONTRACTOR'S EXPENSE.

DEMOLITION LEGEND:

- EXISTING CONCRETE TO REMAIN. PROTECT IN PLACE.
- REMOVE EXISTING CONCRETE AND DISPOSE OFF-SITE. BASE MAY BE RE-USED ON SITE WITH APPROVAL OF GEOTECHNICAL ENGINEER.
- CLEAR AND GRUB ALL SURFACE PLANTING, WEEDS, DEBRIS, ETC. IN THEIR ENTIRETY (UNLESS OTHERWISE NOTED) PER SPECIFICATIONS.
- SAWCUT AND REMOVE AC CONCRETE PAVEMENT.
- EX. AC PAVING TO REMAIN. REFER TO CONSTRUCTION PLAN.
- LIMIT OF WORK (OFFSET FOR CLARITY)
- EX. CHAINLINK FENCING TO REMAIN. PROTECT IN PLACE.
- EX. TUBULAR STEEL FENCING TO REMAIN, PROTECT IN PLACE.
- EX. CHAINLINK FENCE TO BE REMOVED AND DISPOSED OFF-SITE.
- EX. TUBULAR STEEL FENCE TO BE REMOVED AND DISPOSED OFF-SITE.
- TREE PROTECTION FENCING. SEE G104.
- EX. TUBULAR STEEL GUARDRAIL/HANDRAIL TO BE REMOVED AND DISPOSED OFF-SITE.
- PROPERTY LINE
- EX. SHRUB/PLANTING TO BE REMOVED AND PROPERLY DISPOSED OFF-SITE. NOT ALL SHRUBS SHOWN. SEE CLEAR AND GRUBBING NOTES IN LANDSCAPE CONSTRUCTION NOTES.
- # REMOVE AND PROPERLY DISPOSE OFF-SITE
- # EXISTING-PROTECT IN PLACE
- # (#) REMOVE AND RECONSTRUCT

KEYNOTES

1. CLEAR AND GRUB ALL SURFACE PLANTING, WEEDS, DEBRIS, ETC. IN THEIR ENTIRETY PER LANDSCAPE CONSTRUCTION NOTES.
2. CONCRETE PAVING
3. CATCH BASIN.
4. 8' HIGH CHAINLINK FENCE/GATE.
5. +/- 4' HIGH CMU BLOCK RETAINING WALL.
6. TUBULAR STEEL FENCE.
7. CONCRETE HEADER.
8. VALVE BOX. SEE IRRIGATION PLAN
9. CONCRETE CURB.
10. TREE.
11. WOOD HEADER.
12. TRELLIS STRUCTURE. MODIFY PER ARCHITECTURAL/STRUCTURAL PLANS.
13. LANDSCAPING/SHRUBS. FIELD VERIFY WITH LANDSCAPE ARCHITECT.
14. STORM DRAIN CLEANOUT.
15. AC PAVING.
16. LIGHT POLE WITH CONCRETE BASE.
17. SHADE STRUCTURE WITH STEEL POSTS.
18. IRRIGATION CONTROLLER ENCLOSURE. SEE IRRIGATION PLAN.
19. WALL.
20. DRIVEWAY
21. BUILDING. SEE ARCHITECTURAL PLANS.
22. RINO GATE.
23. BOLLARD.
24. BENCHES. (4) CONCRETE/WOOD, (8) STEEL TO BE REMOVED OR DISPOSED OFF-SITE PER RAP DIRECTION.
25. GUY WIRE.
26. CONCRETE STAIRS WITH PAVERS.
27. DRINKING FOUNTAIN.
28. 6' HIGH CHAINLINK FENCE/GATE.
29. UTILITY POLE.
30. TURF AREA.
31. WOOD FACILITY SIGN.
32. WOOD POST PLANTER EDGING.
33. ELECTRICAL BOX ON CONCRETE BASE.
34. WATER METER.
35. BACKFLOW. SEE IRRIGATION AND MECHANICAL PLANS.
36. TREE STUMP.
37. MONUMENT SIGN.
38. FLAG POLE.
39. WATER VALVE BOX. FIELD VERIFY VALVE FUNCTIONALITY/BOX DIMENSIONS. SEE CONSTRUCTION PLAN.
40. (2) STEEL PICNIC TABLE. TO BE REMOVED OR DISPOSED OFF-SITE PER RAP DIRECTION.
41. (5) WOODEN PLANTERS 5' X 2' X 2' (LXWXH).
42. TUBULAR STEEL GUARDRAIL/HANDRAIL.
43. 7' HIGH TUBULAR STEEL GATE WITH 7' HIGH CHAINLINK FENCE.
44. (10) 12"-24" BOULDERS. REMOVE AND REINSTALL PER CONSTRUCTION PLAN.
45. SAWCUT EDGE OF TOP LAYER OF AC PAVING TO PROVIDE CLEAN EDGE FOR NEW AC OVERLAY (ASSUME +/- 6" WIDE STRIP OF AC PAVING REMOVED), SEE CONSTRUCTION PLAN

BUREAU OF ENGINEERING OFFICIAL RECORD

DIGALERT Call Toll Free 1-800-227-2600 TWO WORKING DAYS BEFORE YOU DIG Underground Service Alert of Southern California

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

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DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT ROBERT LESSER No. 6380 Signature Renewal Date 08/31/2026 LICENSED LANDSCAPE ARCHITECT STATE OF CALIFORNIA

ALFRED MATA, PE
ARCHITECTURAL DIVISION

	INTERIM CITY ENGINEER	DATE:
LANDSCAPE ARCHITECT:	GREG MOESER	9/22/25
DESIGNED BY:	GREG MOESER	9/22/25
DRAWN BY:	GREG MOESER	9/22/25
CHECKED BY:	RICHARD FISHER	9/22/25
APPROVED BY:	STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	

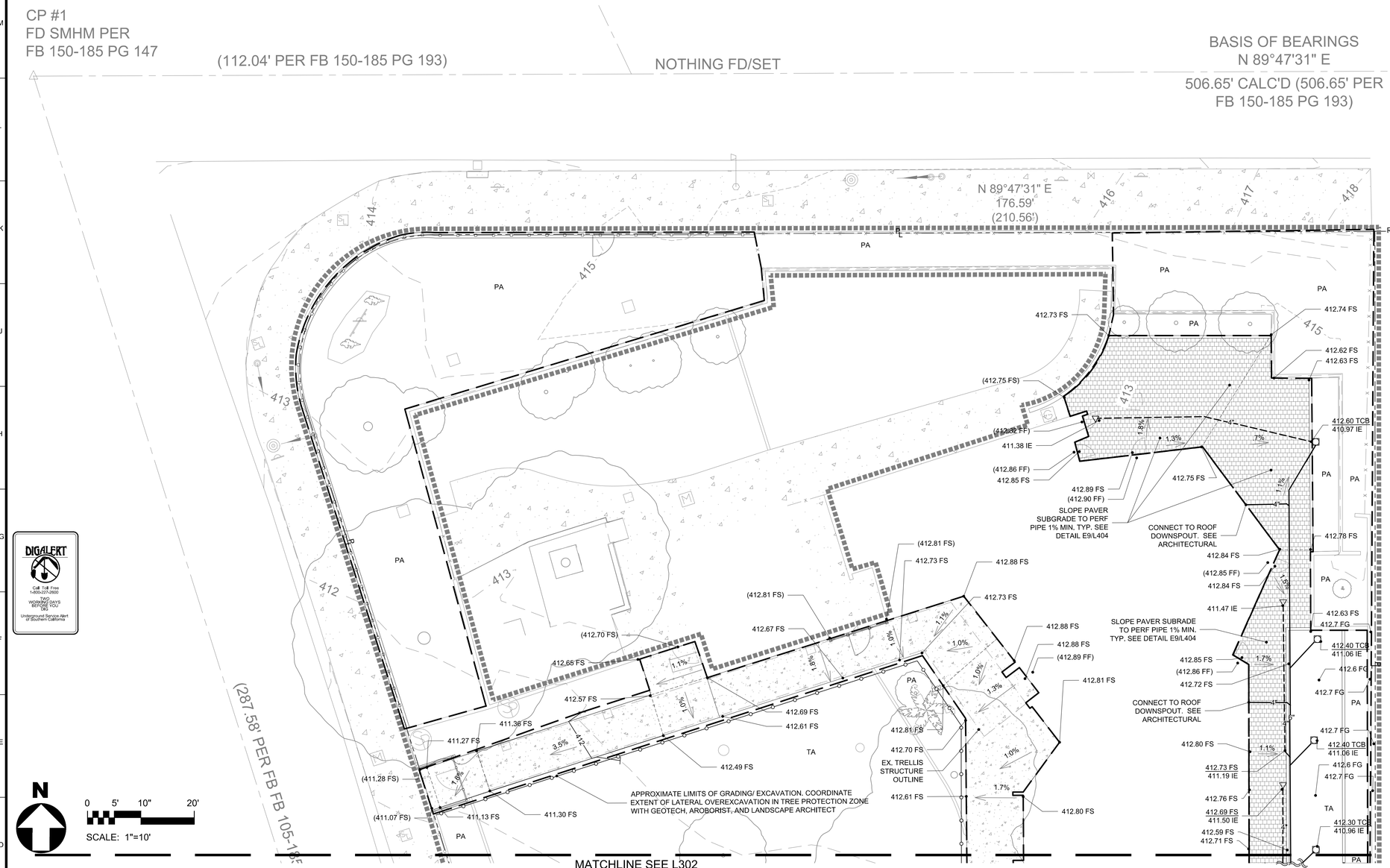
VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: SITE DEMOLITION PLAN
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L201
SHEET 48 OF SHEETS 115

PLOTTED: 9/22/2025



GRADING NOTES:

1) ALL GRADING SHALL BE PERFORMED UNDER THE SUPERVISION OF THE BCA INSPECTOR. THE CONTRACTOR MUST NOTIFY THE BCA INSPECTOR AT LEAST THREE (3) WORKING DAYS PRIOR TO COMMENCEMENT OF ANY GRADING/CONSTRUCTION OPERATIONS.
2) THE PROJECT GEOTECHNICAL REPORT SHALL BE MADE AS PART OF THIS PLAN. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND GRADING OPERATIONS SHALL BE PERFORMED UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OF RECORD OR HIS DESIGNEE AS OUTLINED IN THE REPORT.
3) SURVEYING REQUIRED FOR VERTICAL AND HORIZONTAL ALIGNMENT MUST BE PROVIDED BY THE CONTRACTOR AT HIS OWN EXPENSE AND PERFORMED PER THE GENERAL REQUIREMENTS. CONTRACTOR WILL BE PROVIDED WITH A DIGITAL SITE LAYOUT/GRADING PLAN IN AUTOCAD FORMAT. NO ADDITIONAL HORIZONTAL CONTROL PLAN WILL BE PROVIDED.
4) CONTRACTOR SHALL REMOVE ALL DEBRIS FROM EXISTING CATCH BASINS/DRAIN PIPES WITHIN THE PROJECT LIMIT OF WORK.
5) A COPY OF THE MOST RECENT VERSION OF THE APPROVED GRADING PLANS MUST BE IN THE POSSESSION OF A RESPONSIBLE PERSON AND AVAILABLE AT THE JOB SITE AT ALL TIMES.
6) WHEN REQUIRED BY CODE, SHORING FOR TRENCH EXCAVATIONS SHALL BE PROVIDED TO SATISFY STATE OF CALIFORNIA SAFETY REQUIREMENTS AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING AND OBTAINING ALL REQUIRED SHORING PERMITS.
7) THE CONTRACTOR SHALL NOT BEGIN ANY CONSTRUCTION OPERATION UNTIL THE SUBGRADE HAS BEEN APPROVED BY THE GRADING INSPECTOR AND GEOTECHNICAL ENGINEER WHERE REQUIRED.
8) CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE ON SURFACE FLOW AREAS AT 1% (MIN.) ON HARDSCAPE AND 2% (MIN.) ON SOIL GRADE UNLESS OTHERWISE INDICATED.
9) CONTRACTOR SHALL ASSUME STRAIGHT GRADE BETWEEN ELEVATION POINTS LISTED FOR FINISH GRADE OF NEW CONSTRUCTION UNLESS INSTRUCTED OTHERWISE.
10) FINISH GRADE OF PLANTING AREAS SHALL BE WITHIN A TOLERANCE OF .04 FEET (1/2") OF GRADING PLAN AS SHOWN. FINISH GRADE IN MULCHED PLANTING AREAS SHALL BE 1" BELOW TOP OF ADJACENT PAVING. ALL SOIL SURFACES SHALL BE BROUGHT TO A CONSISTENT GRADE, HAVING NO IRREGULARITIES, DEPRESSIONS, OR RIDGES TO THE SATISFACTION OF THE CITY ENGINEER. FINE GRADE ALL AREAS TO PROVIDE POSITIVE DRAINAGE AND SMOOTH, CONSISTENT GRADE TRANSITIONS.
11) CONTRACTOR SHALL REMOVE FROM THE SITE AND LEGALLY DISPOSE OF ALL DEBRIS AND EXCAVATED MATERIAL NOT REQUIRED FOR FILL. NO RUBBISH OR DEBRIS SHALL BE BURIED ON THE SITE.
12) ESTIMATED EARTHWORK QUANTITIES PROVIDED HEREIN TO BE USED FOR JURISDICTIONAL PLAN CHECKING AND PERMITTING ONLY. THE CONTRACTOR SHALL CALCULATE HIS OWN EARTHWORK QUANTITIES AS REQUIRED FOR BIDDING AND EXECUTION OF WORK. THE CITY IS NOT RESPONSIBLE FOR THE CONTRACTOR'S EARTHWORK CALCULATION.
13) THE ESTIMATED EARTHWORK DOES NOT CONSIDER THE REMOVAL OF ANY UNSUITABLE MATERIAL, AND THE REMOVAL OF EXISTING TOP SOIL OR VEGETATION. THE ESTIMATED EARTHWORK QUANTITIES DOES NOT INCLUDE SWELL/SHRINKAGE FACTORS. THE ESTIMATED EARTHWORK QUANTITIES ASSUME THAT ALL ON-SITE MATERIALS ARE SUITABLE FOR BACKFILLING. HOWEVER, ACTUAL ON-SITE MATERIALS AND IMPORTED MATERIALS MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO INSTALLATION.
14) RETAINING WALLS LOCATED CLOSER TO THE PROPERTY LINE THAN THE HEIGHT OF THE WALL SHALL BE BACKFILLED NOT LATER THAN 10 DAYS AFTER CONSTRUCTION OF THE WALL AND NECESSARY STRUCTURAL SUPPORTING MEMBERS UNLESS RECOMMENDED OTHERWISE BY GEOTECHNICAL OR STRUCTURAL ENGINEER.
15) THE SOILS ENGINEER IS TO APPROVE THE KEY OR BOTTOM AND LEAVE A CERTIFICATE ON THE SITE FOR THE GRADING INSPECTOR. THE GRADING INSPECTOR IS TO BE NOTIFIED BEFORE ANY GRADING BEGINS AND, FOR BOTTOM INSPECTION, BEFORE FILL IS PLACED. FILL MAY NOT BE PLACED WITHOUT APPROVAL OF THE GRADING INSPECTOR.

DRAINAGE SYSTEM NOTES

1. ALL NYOPLAST BASINS/INLINE DRAINS SHALL HAVE LOCKABLE GRATES WITH "NO DUMPING - DRAINS TO OCEAN" GRATE MARKER, AND FLEXSTORM INLET FILTERS (OR APPROVED EQUAL).
2. ALL NYOPLAST DRAIN BASINS SHALL BE INSTALLED WITH A SUMP INSERT OR BOTTOM FILLED WITH CONCRETE PER MANUFACTURER'S INSTRICTIONS. IN LIEU OF NYOPLAST DRAIN BASIN AND SUMP INSERT, CONTRACTOR MAY INSTALL A NYOPLAST INLINE DRAIN WITH ELBOW/TEE WHERE APPLICABLE PER MANUFACTURER'S INSTRUCTIONS.
3. THE DRAINAGE SYSTEM SHALL BE INSTALLED COMPLETE AND INCLUDE ALL FITTINGS/MATERIALS AS REQUIRED TO ENSURE WATER TIGHT JOINTS, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND THE SPECIFICATIONS.
4. SUBGRADE AND BACKFILL FOR ALL NYOPLAST BASINS/DRAINS SHALL BE IN PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND LANDSCAPE CONSTRUCTION NOTES AND BE APPROVED BY THE GEOTECHNICAL ENGINEER.

LEGEND

- LIMIT OF WORK (OFFSET FOR CLARITY)
- EXCAVATION LIMITS
- PROPOSED CONTOUR
- EXISTING CONTOUR
- DIRECTION OF SURFACE FLOW
- PVC SDR 35 STORM DRAIN PIPE. SIZED PER PLAN.
- 4" SDR 35 PERFORATED PVC STORM DRAIN PIPE
- EX. STORMDRAIN PIPE TO REMAIN
- WD — WALL DRAIN PER DETAIL J1/L404.
- GRADE BREAK
- TREE PROTECTION ZONE FENCING. SEE G104 FOR TREE PROTECTION REQUIREMENTS.
- P/L — PROPERTY LINE

(#) CONSTRUCT [#] EXISTING-PROTECT IN PLACE

KEYNOTES

1. EX. 4' WIDE CURB INLET CATCH BASIN.
2. CURB CUT. INSTALL PER DETAIL A1/L405.
3. EX. 12" SQUARE CATCH BASIN.
4. CONNECT PIPE TO PERMAVOID PER L306 AND MANUFACTURER'S INSTRUCTIONS.
5. RESILIENT SURFACING TILE DRAINAGE. INSTALL PER A9/L405.

- CATCH BASIN @ TURF/LANDSCAPE AREA: 12" NYOPLAST DRAIN BASIN WITH 12" ROUND LOCKABLE PEDESTRIAN GRATE IN TURF AREAS OR DOME GRATE IN SHRUB AREAS. INSTALL PER MANUFACTURER'S INSTRUCTIONS FOR TURF INSTALLATION.
- CATCH BASIN @ PEDESTRIAN PAVING: 8" NYOPLAST DRAIN BASIN WITH 8" ADA DROP-IN GRATE WITH VANDAL PROOF LID OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- STORM DRAIN CLEANOUT. INSTALL PER E1/L405.
- PERMAVOID PIPE CLEANOUT, 4" SDR 35 PVC PIPE INSTALLED VERTICALLY AT PERMAVOID PER J9/L305. TOP OF PIPE TO BE 3" ABOVE FINISH GRADE.
- PERMAVOID CLEANOUT/INSPECTION PORT. 4" SDR 35 PVC PIPE WITH A SOLID COVER INSTALLED 3" ABOVE FINISH GRADE PER J9/L305.

LINED PERMAVOID CAPTURE AND RE-USE SYSTEM OR APPROVED EQUAL. SEE L304-L306.

LADBS NOTES

1. ALL GRADING SLOPES SHALL BE PLANTED AND SPRINKLERED. (7012.1).
2. STANDARD 12 INCH HIGH BERN IS REQUIRED AT TOP OF ALL GRADED SLOPES (7013.3).
3. NO FILL TO BE PLACED, UNTIL THE CITY GRADING INSPECTOR HAS INSPECTED AND APPROVED THE BOTTOM EXCAVATION.
4. MAN-MADE FILL SHALL BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 90% MAX. DRY DENSITY WITHIN 40 FEET BELOW FINISH GRADE AND 93% MAX. DRY DENSITY DEEPER THAN 40 FEET BELOW FINISH GRADE, UNLESS A LOWER RELATIVE COMPACTION (NOT LESS THAN 90% OF MAX. DRY DENSITY) IS JUSTIFIED BY THE SOILS ENGINEER.
5. TEMPORARY EROSION CONTROL TO BE INSTALLED BETWEEN OCTOBER 1 AND APRIL 15. OBTAIN GRADING INSPECTOR'S AND DEPARTMENT OF PUBLIC WORKS APPROVAL OF PROPOSED PROCEDURES. (>200 CY).
6. A GRADING BOND IS REQUIRED FOR ALL GRADING WORK OF 250 CUBIC YARDS OR MORE WHEN CONDUCTED IN A DESIGNATED HILLSIDE AREA. (SECTION 91.7006.5) 1. DOWNLOAD GRADING BOND FORMS FROM LADBS WEBSITE AT WWW.LADBS.ORG.
7. CONTINUOUS INSPECTIONS WILL BE REQUIRED FOR:
   - CONCRETE OVER 2500 PSI
   - FIELD WELDING
   - EXCAVATION (BY SOILS ENGINEER)

ESTIMATED EARTHWORK*

ESTIMATED CUT = 380 CY	IMPORT=0 CY
ESTIMATED FILL = 21 CY	EXPORT=359 CY

*REFER TO GRADING NOTES 12 AND 13.

ABBREVIATIONS

(173.2)	EXISTING GRADE
BC	BOTTOM OF CURB
BP	BOTTOM OF PERMAVOID
EX	EXISTING
FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FL	FLOW LINE
FS	FINISH SURFACE
IE	INVERT ELEVATION
PA	PLANTING AREA
P/L	PROPERTY LINE
RS	TOP CONCRETE SUBBASE OF RESILIENT SURFACING
TA	TURF AREA
TC	TOP OF CURB
TCB	TOP OF CATCH BASIN
TF	TOP OF FOOTING
TP	TOP OF CONCRETE EQUIPMENT PAD

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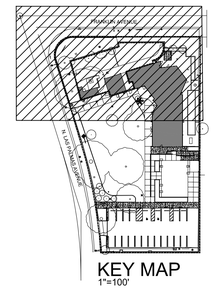

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

ALFRED MATA, PE
INTERIM CITY ENGINEER

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT: GREG MOESER
DESIGNED BY: GREG MOESER
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT

DATE: 9/22/25 9/22/25 9/22/25 9/22/25 9/22/25

LICENSED LANDSCAPE ARCHITECT ROBERT MASEK No. 6360 Signature Date Renewal Date 08/31/2026 STATE OF CALIFORNIA

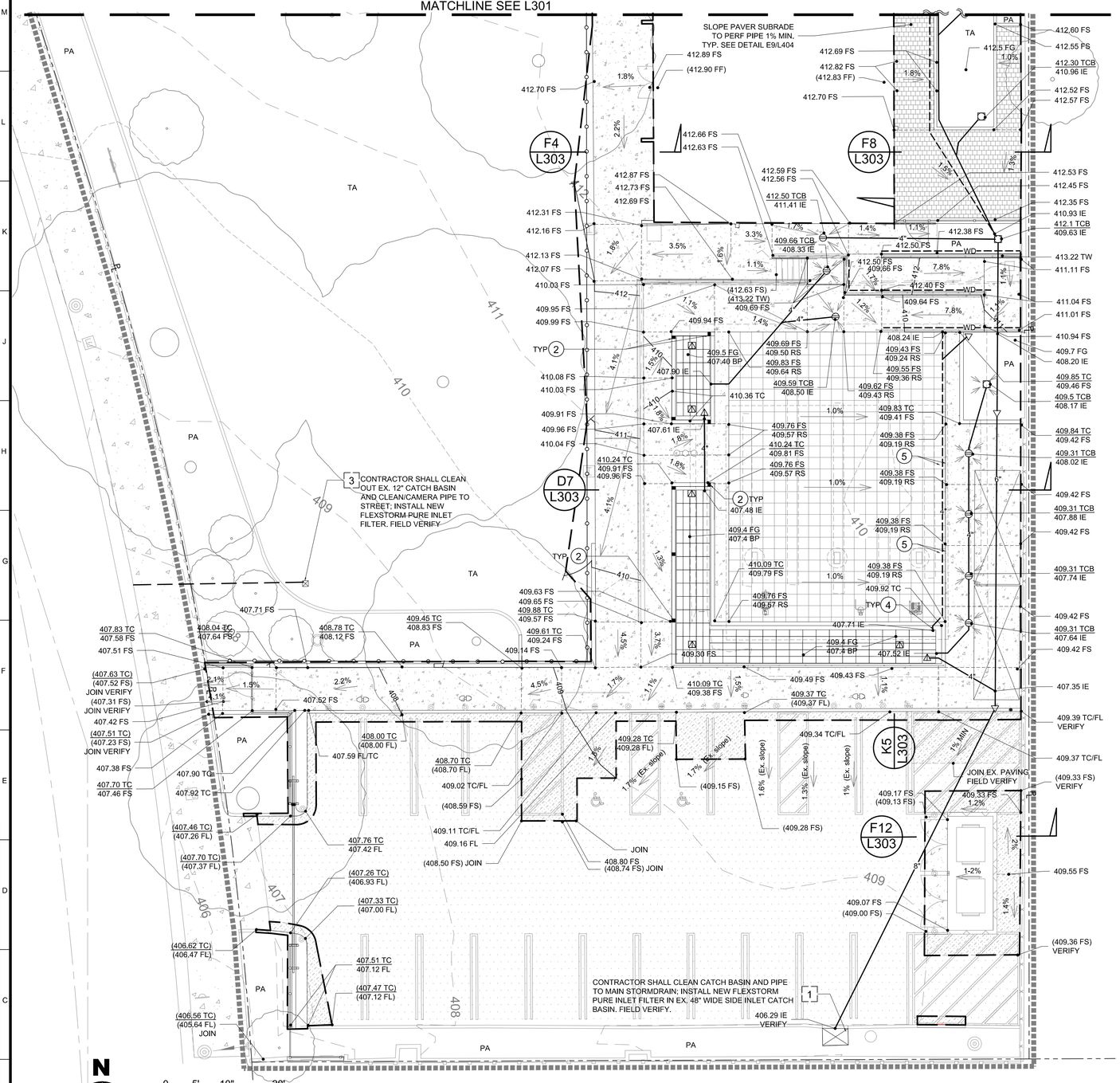
RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: GRADING AND DRAINAGE PLAN SHEET 1
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L301
SHEET 49 OF SHEETS 115

PLOTTED: 9/22/2025



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TA	TURF AREA
TC	TOP OF CURB
TCB	TOP OF CATCH BASIN
TF	TOP OF FOOTING
TP	TOP OF CONCRETE EQUIPMENT PAD

LEGEND

- EXCAVATION LIMITS
- LIMIT OF WORK (OFFSET FOR CLARITY)
- PROPOSED CONTOUR
- EXISTING CONTOUR
- DIRECTION OF SURFACE FLOW
- PVC SDR 35 STORM DRAIN PIPE. SIZED PER PLAN.
- 4" SDR 35 PERFORATED PVC STORM DRAIN PIPE
- EX. STORM DRAIN PIPE TO REMAIN.
- WD WALL DRAIN PER DETAIL J1/L404.
- GRADE BREAK
- TREE PROTECTION ZONE FENCING. SEE G104 FOR TREE PROTECTION REQUIREMENTS.
- PL PROPERTY LINE
- CATCH BASIN @ TURF/LANDSCAPE AREA: 12" NYOPLAST DRAIN BASIN WITH 12" ROUND LOCKABLE PEDESTRIAN GRATE IN TURF AREAS OR DOME GRATE IN SHRUB AREAS. INSTALL PER MANUFACTURER'S INSTRUCTIONS FOR TURF INSTALLATION.
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- LINED PERMAVOID CAPTURE AND RE-USE SYSTEM OR APPROVED EQUAL. SEE L304-L306.

DRAINAGE SYSTEM NOTES

1. ALL NYOPLAST BASINS/INLINE DRAINS SHALL HAVE LOCKABLE GRATES WITH "NO DUMPING - DRAINS TO OCEAN" GRATE MARKER, AND FLEXSTORM INLET FILTERS (OR APPROVED EQUAL).
2. ALL NYOPLAST DRAIN BASINS SHALL BE INSTALLED WITH A SUMP INSERT OR BOTTOM FILLED WITH CONCRETE PER MANUFACTURER'S INSTRICTIONS. IN LIEU OF NYOPLAST DRAIN BASIN AND SUMP INSERT, CONTRACTOR MAY INSTALL A NYOPLAST INLINE DRAIN WITH ELBOW/TEE WHERE APPLICABLE PER MANUFACTURER'S INSTRUCTIONS.
3. THE DRAINAGE SYSTEM SHALL BE INSTALLED COMPLETE AND INCLUDE ALL FITTINGS/MATERIALS AS REQUIRED TO ENSURE WATER TIGHT JOINTS, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS AND THE LANDSCAPE CONSTRUCTION NOTES.
4. SUBGRADE AND BACKFILL FOR ALL NYOPLAST BASINS/DRAINS SHALL BE IN PREPARED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND SPECIFICATIONS AND BE APPROVED BY THE GEOTECHNICAL ENGINEER.

ESTIMATED EARTHWORK*

ESTIMATED CUT = 380 CY IMPORT=0 CY

ESTIMATED FILL = 21 CY EXPORT=359 CY

*REFER TO GRADING NOTES 12 AND 13.

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   - FIELD WELDING
   - EXCAVATION (BY SOILS ENGINEER)

(#) CONSTRUCT [#] EXISTING-PROTECT IN PLACE

KEYNOTES

1. EX. 4' WIDE CURB INLET CATCH BASIN.
2. CURB CUT. INSTALL PER DETAIL A1/L405.
3. EX. 12" SQUARE CATCH BASIN.
4. CONNECT PIPE TO PERMAVOID PER L306 AND MANUFACTURER'S INSTRUCTIONS.
5. RESILIENT SURFACING TILE DRAINAGE. INSTALL PER A9/L405.

GRADING NOTES:

1) ALL GRADING SHALL BE PERFORMED UNDER THE SUPERVISION OF THE BCA INSPECTOR. THE CONTRACTOR MUST NOTIFY THE BCA INSPECTOR AT LEAST THREE (3) WORKING DAYS PRIOR TO COMMENCEMENT OF ANY GRADING/CONSTRUCTION OPERATIONS.
2) THE PROJECT GEOTECHNICAL REPORT SHALL BE MADE AS PART OF THIS PLAN. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND GRADING OPERATIONS SHALL BE PERFORMED UNDER THE SUPERVISION OF THE GEOTECHNICAL ENGINEER OF RECORD OR HIS DESIGNEE AS OUTLINED IN THE REPORT.
3) SURVEYING REQUIRED FOR VERTICAL AND HORIZONTAL ALIGNMENT MUST BE PROVIDED BY THE CONTRACTOR AT HIS OWN EXPENSE AND PERFORMED PER THE GENERAL REQUIREMENTS. CONTRACTOR WILL BE PROVIDED WITH A DIGITAL SITE LAYOUT/GRADING PLAN IN AUTOCAD FORMAT. NO ADDITIONAL HORIZONTAL CONTROL PLAN WILL BE PROVIDED.
4) CONTRACTOR SHALL REMOVE ALL DEBRIS FROM EXISTING CATCH BASINS/DRAIN PIPES WITHIN THE PROJECT LIMIT OF WORK.
5) A COPY OF THE MOST RECENT VERSION OF THE APPROVED GRADING PLANS MUST BE IN THE POSSESSION OF A RESPONSIBLE PERSON AND AVAILABLE AT THE JOB SITE AT ALL TIMES.
6) WHEN REQUIRED BY CODE, SHORING FOR TRENCH EXCAVATIONS SHALL BE PROVIDED TO SATISFY STATE OF CALIFORNIA SAFETY REQUIREMENTS AT THE CONTRACTOR'S EXPENSE. CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING AND OBTAINING ALL REQUIRED SHORING PERMITS.
7) THE CONTRACTOR SHALL NOT BEGIN ANY CONSTRUCTION OPERATION UNTIL THE SUBGRADE HAS BEEN APPROVED BY THE GRADING INSPECTOR AND GEOTECHNICAL ENGINEER WHERE REQUIRED.
8) CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE ON SURFACE FLOW AREAS AT 1% (MIN.) ON HARDSCAPE AND 2% (MIN.) ON SOIL GRADE UNLESS OTHERWISE INDICATED.
9) CONTRACTOR SHALL ASSUME STRAIGHT GRADE BETWEEN ELEVATION POINTS LISTED FOR FINISH GRADE OF NEW CONSTRUCTION UNLESS INSTRUCTED OTHERWISE.
10) FINISH GRADE OF PLANTING AREAS SHALL BE WITHIN A TOLERANCE OF .04 FEET (1/2") OF GRADING PLAN AS SHOWN. FINISH GRADE IN MULCHED PLANTING AREAS SHALL BE 1" BELOW TOP OF ADJACENT PAVING. ALL SOIL SURFACES SHALL BE BROUGHT TO A CONSISTENT GRADE, HAVING NO IRREGULARITIES, DEPRESSIONS, OR RIDGES TO THE SATISFACTION OF THE CITY ENGINEER. FINE GRADE ALL AREAS TO PROVIDE POSITIVE DRAINAGE AND SMOOTH, CONSISTENT GRADE TRANSITIONS.
11) CONTRACTOR SHALL REMOVE FROM THE SITE AND LEGALLY DISPOSE OF ALL DEBRIS AND EXCAVATED MATERIAL NOT REQUIRED FOR FILL. NO RUBBISH OR DEBRIS SHALL BE BURIED ON THE SITE.
12) ESTIMATED EARTHWORK QUANTITIES PROVIDED HEREIN TO BE USED FOR JURISDICTIONAL PLAN CHECKING AND PERMITTING ONLY. THE CONTRACTOR SHALL CALCULATE HIS OWN EARTHWORK QUANTITIES AS REQUIRED FOR BIDDING AND EXECUTION OF WORK. THE CITY IS NOT RESPONSIBLE FOR THE CONTRACTOR'S EARTHWORK CALCULATION.
13) THE ESTIMATED EARTHWORK DOES NOT CONSIDER THE REMOVAL OF ANY UNSUITABLE MATERIAL, AND THE REMOVAL OF EXISTING TOP SOIL OR VEGETATION. THE ESTIMATED EARTHWORK QUANTITIES DOES NOT INCLUDE SWELL/SHRINKAGE FACTORS. THE ESTIMATED EARTHWORK QUANTITIES ASSUME THAT ALL ON-SITE MATERIALS ARE SUIITABLE FOR BACKFILLING. HOWEVER, ACTUAL ON-SITE MATERIALS AND IMPORTED MATERIALS MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO INSTALLATION.
14) RETAINING WALLS LOCATED CLOSER TO THE PROPERTY LINE THAN THE HEIGHT OF THE WALL SHALL BE BACKFILLED NOT LATER THAN 10 DAYS AFTER CONSTRUCTION OF THE WALL AND NECESSARY STRUCTURAL SUPPORTING MEMBERS UNLESS RECOMMENDED OTHERWISE BY GEOTECHNICAL OR STRUCTURAL ENGINEER.
15) THE SOILS ENGINEER IS TO APPROVE THE KEY OR BOTTOM AND LEAVE A CERTIFICATE ON THE SITE FOR THE GRADING INSPECTOR. THE GRADING INSPECTOR IS TO BE NOTIFIED BEFORE ANY GRADING BEGINS AND, FOR BOTTOM INSPECTION, BEFORE FILL IS PLACED. FILL MAY NOT BE PLACED WITHOUT APPROVAL OF THE GRADING INSPECTOR.



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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

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ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT
ROBERT WALKER
No. 6290
Renewal: 2026
Date: 08-31-2024
STATE OF CALIFORNIA

INTERIM CITY ENGINEER — DATE: 9/22/25

ALFRED MATA, PE	9/22/25
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT	9/22/25

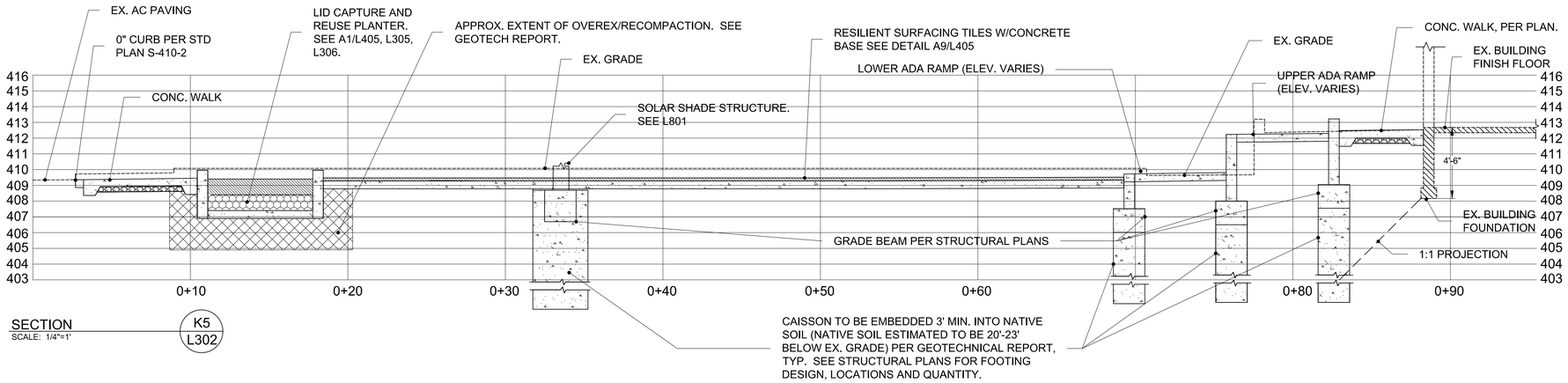
RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 70/A
HORIZONTAL CONTROL: FB #41110 PGS 70/A

SHEET TITLE: GRADING AND DRAINAGE PLAN SHEET 2
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

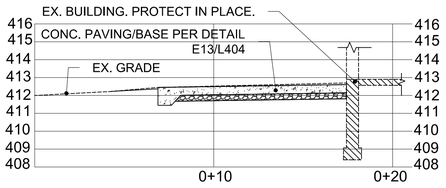
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L302
SHEET 50 OF SHEETS 115

PLOTTED: 9/22/2025



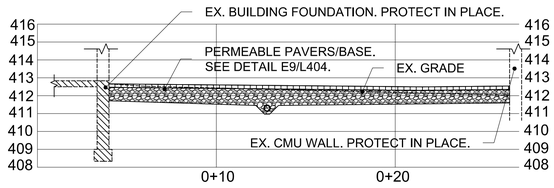
SECTION
SCALE: 1/4"=1'

K5
L302



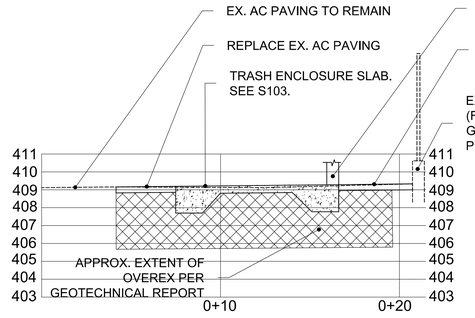
SECTION
SCALE: 1/4"=1'

F4
L302



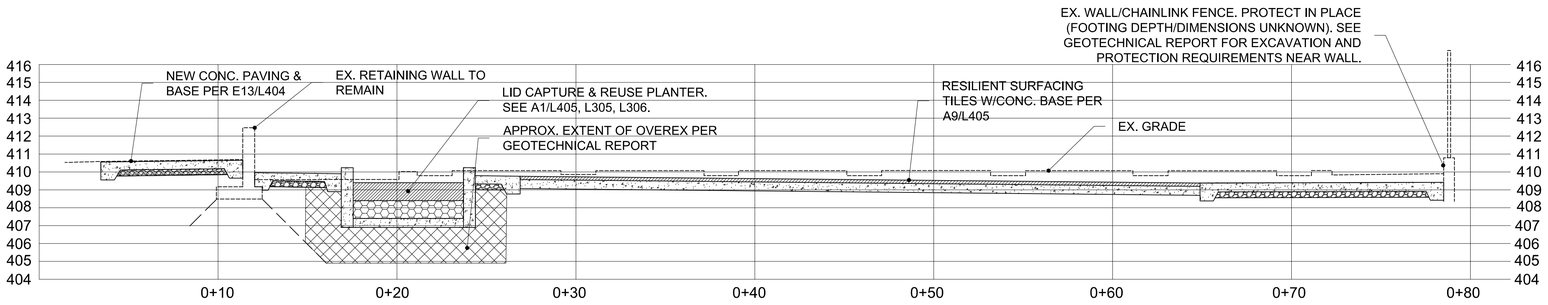
SECTION
SCALE: 1/4"=1'

F8
L302



SECTION
SCALE: 1/4"=1'

F12
L302



SECTION
SCALE: 1/4"=1'

D7
L302

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ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT ★ ROBERT WALKER ★ LICENSED ★ STATE OF CALIFORNIA
No. 6380
Signature
Robert Walker
Print Name
09-22-2025
Date

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE
INTERIM CITY ENGINEER

ARCHITECTURAL DIVISION

		DATE:
LANDSCAPE ARCHITECT:	GREG MOESER	9/22/25
DESIGNED BY:	GREG MOESER	9/22/25
DRAWN BY:	GREG MOESER	9/22/25
CHECKED BY:	RICHARD FISHER	9/22/25
APPROVED BY:	STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	

CITY OF LOS ANGELES

VERTICAL CONTROL: FB #4110 PGS 701A
HORIZONTAL CONTROL: FB #4110 PGS 701A

SHEET TITLE: GRADING SECTIONS

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025

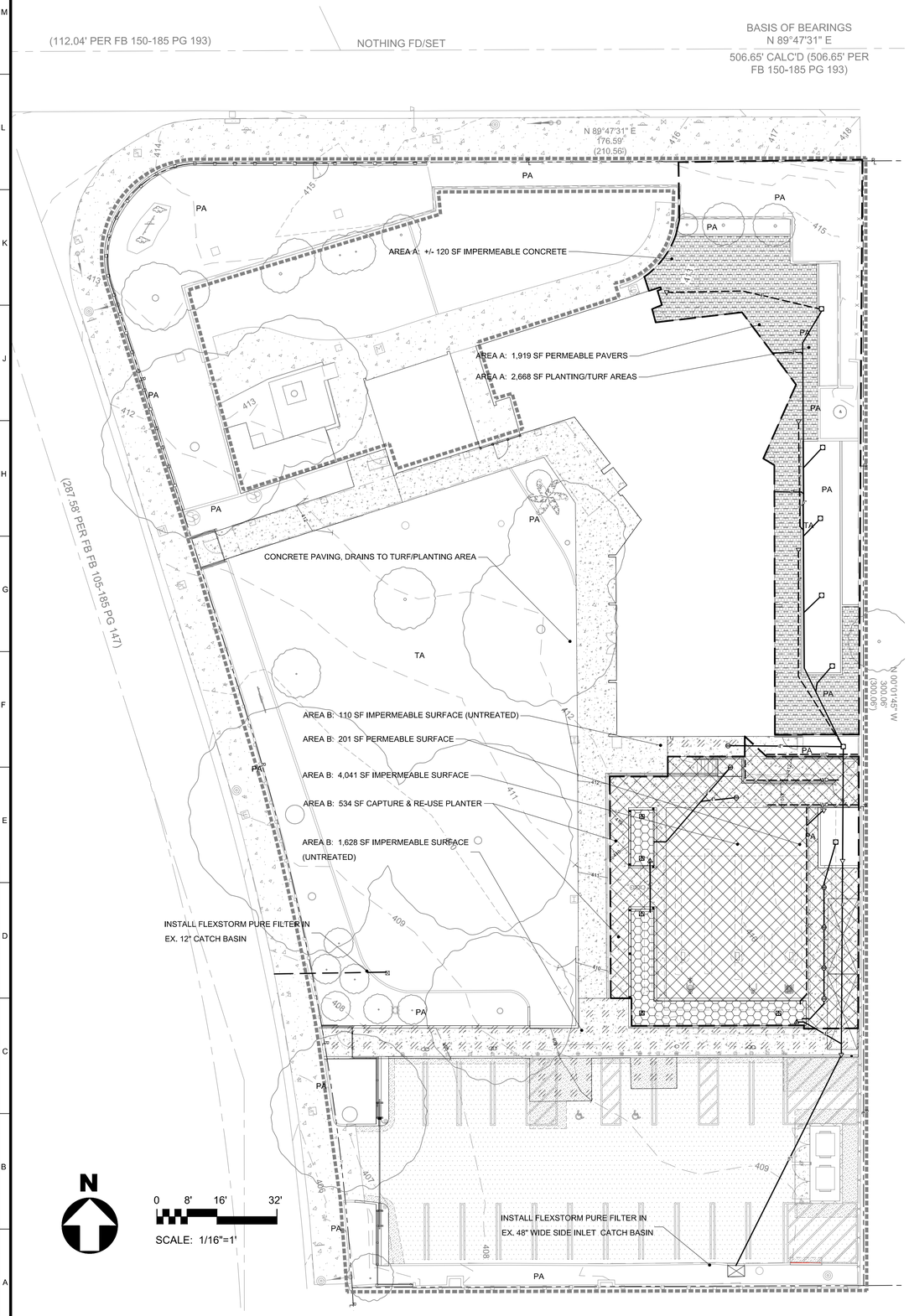
WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L303

SHEET 51 OF SHEETS 115

PLOTTED: 9/22/2025



ABT, INC.
WWW.ABTDRAINS.COM
PH: (800) 438 - 6057

permavoid

Los Angeles Low Impact Development
Capture & Use Planter Design Calculations



Project Name: 1820 N Las Palmas Ave (Senior Center) City of LA **Date:** 5/9/2023
Project Number: PV322309

Planter ID Number:	CU	1	
Catchment Area:	Acat	5,275	ft²
85th Percentile Storm Depth:	D85	0.0833	ft
Soil Depth:	*Dsoil*	12.0	in.
Soil Available Water:	Wa	0%	%
Ponding Depth:	*Dpond*	0.0	Allowed
Soil Saturated Infiltration Rate:	Ksat	N/A	
Safety Factor:	SF	N/A	
Time To Fill:	Tf	N/A	
Permavoid System Depth:	150x2	11.8	in.
Permavoid Voids:	Vpv	95	%
7-Month Reference Evapotranspiration:	ETo7	21.7	in.
Permavoid Irrigation Efficiency:	IE	0.85	

Design Summary		REQUIRED	TO BE INSTALLED
Planter Area:	Ap	469.9 ft²	484.6 ft²
Capture & Use Volume:	Vcu	439.4 ft³	453.1 ft³
Biofiltration Volume:	Vbf	N/A	
Plant Factor (min.):	PF	0.44	
Internal Planter Depth:	D*ip*	24 in.	

Material Requirements**		REQUIRED	TO BE INSTALLED
Permavoid Units:	PV-150	348 Units	360 Units
Capillary Cones:	23/160 T	348 Pairs	360 Pairs
Wicking Geotextile Length:	Cap. Tex.	57 - 79 ft	84+ LF (ROLL)**
Planting Media:	By Others	19.1 CY	20.0 CY

*NOTES: Quantities are for estimation only. Fluctuations in material quantities will occur based on the precise configuration. Contact ABT-Permavoid for planting media recommendations based on soil depth.

Calculate the Design Capture Volume (Vcap):
Vcap = D85 · Acat
Vcap = 0.0833ft · 5274.6ft²
Vcap = 439.4 ft³

Calculate the Permavoid Capture & Use Depth (Dcu):
Dcu = (150x2 · Vpv) + (Dsoil · Wa)
Dcu = (11.8in. · 95%) + (12in. · 0%)
Dcu = 11.22 in. = 0.935 ft

Calculate the Planter Area (Ap):
Ap = 469.9 ft²

Calculate the Capture & Use Volume (Vcu):
Vcu = Ap · Dcu
Vcu = 469.9 ft² · 0.935ft
Vcu = 439.4 ft³

*CONTRACTOR SHALL INSTALL # OF UNITS AS NOTED PER PLAN.

**CONTRACTOR SHALL CONFIRM MATERIAL REQUIREMENTS WITH MANUFACTURER BASED ON PERMAVOID PLAN LAYOUT.

Calculate the Minimum Required Plant Factor (PF):
PF = (Vcu · IE) / (ETo7 · Ap)
PF = (439.4 ft³ · 0.85) / [(21.7in. / 12in/f) · 469.9 ft²]
PF = 0.44

Calculate the 7-Month Estimated Total Water Use (ETWU-7):
ETWU-7 = (ETo7 · PF · Ap) / IE
ETWU-7 = [(21.7in. / 12**in/f**) · 0.44 · 469.9 ft²] / 0.85
ETWU-7 = 439.4 ft³

Check the Capture & Use Volume (Vcu) vs. the 7-Month Estimated Total Water Usage (ETWU-7):
Vcu vs. ETWU-7
439.4 ft³ vs. 439.4 ft³
439.4 ft³ = 439.4 ft³
Vcu = ETWU-7 ✓ - CHECKED

ABT, INC.
WWW.ABTDRAINS.COM
PH: (800) 438 - 6057

permavoid

Los Angeles Low Impact Development
BMP Design & Material Summary

Project Number: PV322309
Street Address: 1820 N Las Palmas Ave (Senior Center) City of LA
85th Rainfall Depth: 1.00 inches

Design Summary											
LID BMP ID - #	Drainage Area At (ft²)	Impervious Area Ai (%)	Catchment Area Acat (ft²)	Design Capture Vol. Vcap (ft³)	Required Planter Area Ap (ft²)	Capture & Use Volume Vcu (ft³)	Biofiltration Volume Vbf (ft³)	Minimum Plant Factor PF ---	Soil Depth D*soil* (in.)	Ponding Depth D*pond* (in.)	Planter Depth (Interior) D*ip* (in.)
CU-1	6,514	88.7%	5,275	439	470	439	0	0.44	12.0	N/A	24.0
Total	6,514	---	5,275	439	470	439	0	---	---	---	---

Permavoid Los Angeles LID Table 1.1 1.

Permavoid Planter Soil Requirements (non-traffic loading): REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- 75% (+/- 5%) by weight shall consist of sand meeting the following:
  - For soil depths of 6 to 12 inches, average particle size shall be 500μm (0.020 in.)
  - For soil depths of 12 to 24 inches, average particle size shall be 300μm (0.012 in.)
- Soils shall have a uniformity coefficient of 4.0 or less.
- Soils shall have less than 10% fines (passing 200 sieve) by weight.
- Soils used for biofiltration shall meet "*Attachment H. Biofiltration / Biofiltration Design Criteria* " as provided by the California Regional Water Quality Control Board.

LEGEND

- LIMIT OF WORK (OFFSET FOR CLARITY)
- 100 — PROPOSED CONTOUR
- 100 — EXISTING CONTOUR
- PERMEABLE PAVERS. INSTALL PER E9/L404.
- LINED PERMAVOID CAPTURE AND RE-USE SYSTEM. SEE A1/L404, L305 AND L306.
- IMPERMEABLE SURFACE - DRAINS TO CAPTURE AND RE-USE SYSTEM. SEE DETAILS L305 and L306.
- IMPERMEABLE SURFACE - UNTREATED (SF INCLUDED IN CALCULATIONS)
- PA PLANTING AREA
- TA TURF AREA
- PVC SDR 35 STORM DRAIN PIPE. SIZED PER PLAN.
- 4" SDR 35 PERFORATED PVC STORM DRAIN PIPE
- EX. 4" VCP PIPE TO REMAIN.
- P/L PROPERTY LINE
- CATCH BASIN @ TURF/LANDSCAPE AREA: 12" NYOPLAST DRAIN BASIN WITH 12" ROUND LOCKABLE PEDESTRIAN GRATE IN TURF AREAS OR DOME GRATE IN SHRUB AREAS. INSTALL PER MANUFACTURER'S INSTRUCTIONS FOR TURF INSTALLATION.
- CATCH BASIN @ PEDESTRIAN PAVING: 8" NYOPLAST DRAIN BASIN WITH 8" ADA DROP-IN GRATE WITH VANDAL PROOF LID OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
- STORM DRAIN CLEANOUT. INSTALL PER E1/L405.
- PERMAVOID PIPE CLEANOUT. 4" SDR 35 PVC PIPE INSTALLED VERTICALLY AT PERMAVOID PER J9/L305. TOP OF PIPE TO BE 3" ABOVE FINISH GRADE.
- PERMAVOID CLEANOUT/INSPECTION PORT. 4" SDR 35 PVC PIPE WITH A SOLID COVER INSTALLED 3" ABOVE FINISH GRADE PER J9/L305.

NOTES:

1. ANY CHANGES (TYPE, SIZE, LOCATION) TO APPROVED STORMWATER BEST MANAGEMENT PRACTICE(S) (BMPS) MUST OBTAIN WRITTEN APPROVAL FROM LOS ANGELES DEPARTMENT OF PUBLIC WORKS, BUREAU OF SANITATION PRIOR TO CONSTRUCTION OF BMP(S).
2. FINAL LAYOUT/CONTOURS OF STORMWATER BEST MANAGEMENT PRACTICE(S) (BMPS) MUST BE APPROVED PRIOR TO INSTALLATION OF LINER. ALL STAGES OF CONSTRUCTION OF BMPS SHALL BE OBSERVED AND PHOTOGRAPHED BY LANDSCAPE ARCHITECT. CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT 48 HOURS PRIOR TO CONSTRUCTION.
3. SEE L305 FOR LID FORMS.
4. VOIDS BETWEEN CAPTURE AND USE PLANTER WALLS AND PERMAVOID UNITS SHALL BE FILLED WITH 3/4" WASHED DRAINAGE STONE AND COVERED IN WICKING GEOTEXTILE FOR STONE SEPARATION PER MANUFACTURER'S INSTRUCTIONS.
5. PERMAVOID CAPTURE AND USE SYSTEM SHALL INCLUDE ALL SYSTEM COMPONENTS INSTALLED COMPLETE INCLUDING BUT NOT LIMITED TO PERMAVOID UNITS, TIE AND SHEAR CONNECTORS, PIPE CONNECTIONS, IMPERMEABLE LINER AND WICKING GEOTEXTILE IN WITH MANUFACTURER'S RECOMMENDATIONS/INSTRUCTIONS.
6. CONTRACTOR SHALL COORDINATE ON-SITE MEETING WITH MANUFACTURER, LANDSCAPE ARCHITECT, AND BCA INSPECTOR TO REVIEW INSTALLATION INSTRUCTIONS.
7. COORDINATE IRRIGATION PIPING/CONDUIT WITH PERMAVOID WALL CONSTRUCTION. SEE IRRIGATION PLAN.

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TWO WORKING DAYS BEFORE YOU DIG
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ENGINEERING
CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

NO.	DATE	REVISION DESCRIPTION	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT ★ ROBERT WALKER ★ LICENSED ★ STATE OF CALIFORNIA ★ No. 6380 ★ Exp. 12-31-2025

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION

LANDSCAPE ARCHITECT:	GREG MOESER
DESIGNED BY:	GREG MOESER
DRAWN BY:	GREG MOESER
CHECKED BY:	RICHARD FISHER
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT
DATE:	9/22/25

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: LID PLAN
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L304
SHEET 52 OF SHEETS 115

PLOTTED: 9/22/2025

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)

STORMWATER OBSERVATION REPORT FORM
(Residential ≥ 5 units & All other Development)

LOW IMPACT DEVELOPMENT

IN THE EVENT THAT THE APPROVED STORMWATER BMP CANNOT BE BUILT PER PLANS (OR ANY MODIFICATION), CONSULT WITH BUREAU OF SANITATION STAFF PRIOR TO ANY PLAN MODIFICATIONS. FAILURE TO DO SO MAY DELAY OBTAINING A FINAL APPROVAL AND CERTIFICATE OF OCCUPANCY (C OF O).

STORMWATER OBSERVATION *means the visual observation of the stormwater related Best Management Practices (BMPs) for conformance with the approved LID Plan at significant construction stages and at completion of the project. Stormwater observation does not include or waive the responsibility for the inspections required by Section 108 or other sections of the City of Los Angeles Building Code.*

STORMWATER OBSERVATION *must be performed by the engineer or architect responsible for the approved LID Plan or designated staff in their employment.* ***As part of the observation, provide photos of the BMPs taken during various construction phases.***

STORMWATER OBSERVATION REPORT *must be signed and stamped (see below) by the engineer or architect responsible for the approved LID Plan and submitted to the city prior to the issuance to the certificate of occupancy.* ***PRIOR TO CERTIFICATE OF OCCUPANCY (C of O), SOR FORM, PRINTED PHOTOS OF THE BMPS TAKEN DURING VARIOUS CONSTRUCTION PHASES AND APPROVED STAMPED PLANS BY THE BUREAU OF SANITATION MUST BE SUBMITTED TO THE PUBLIC COUNTER FOR STAFF APPROVAL.***

Project Address:	Building Permit No.:
1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028	23030-10000-03462 23010-10000-02292 23010-10000-02293
Name of Engineer/Architect responsible for the approved LID Plan: GREG MOESER	Phone Number: 323 365-1050/213 485-4299

List all BMPs installed as part of the project: Coordinates of the most significant (or typical) BMPs:

BMP Type: CAPTURE/USE-PERMAVOID # of units: 360 Lat: 34.10450 ; Long: -118.33578 ***Ex: Lat: 34.04152; Long: -118.25962 (5 sig digits)***	BMP Type: CATCH BASIN FILTERS # of units: 15 Lat: 34.10466 ; Long: -118.33565
BMP Type: PERMABLE PAVERS # of units: 1,958 SF Lat: 34.10502 ; Long: -118.33570	BMP Type: _____ # of units: ____ Lat: _____ ; Long: _____

I DECLARE THAT THE FOLLOWING STATEMENTS ARE TRUE TO THE BEST OF MY KNOWLEDGE:

1. I am the engineer or architect responsible for the approved LID Plan, and;
2. I, or designated staff under my responsible charge, has preformed the required site visits at each significant construction stage and at the completion to verify that the Best Management Practices (BMPs) as shown on approved plans have been constructed and installed in accordance with the approved LID Plan.

Wet Stamp of Engineer or Architect

Signature Date

Low Impact Development (LID)
Post Construction Stormwater Mitigation
Best Management Practices (BMPs)

STORMWATER BMP(s) VERIFICATION

Upon LADBS Inspector Verification that approved stormwater BMPs are in place, a Stormwater Observation Report (SOR) Form shall be submitted to Department of Public Works, Bureau of Sanitation. 201 N. Figueroa, 3rd floor, station 18.

1820 N. LAS PALMAS AVENUE
Project Address: LOS ANGELES, CA 90028

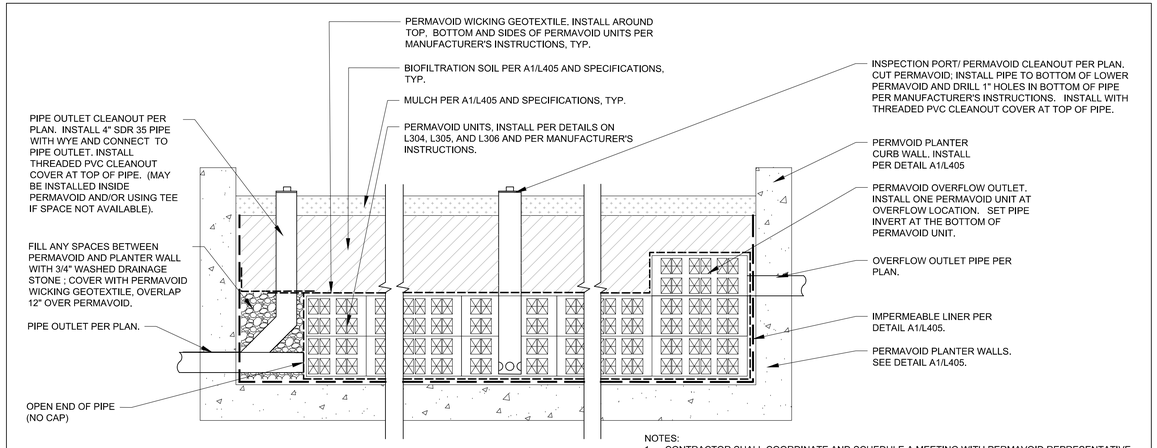
RESIDENTIAL (4 UNITS OR LESS, <10,000 SF, <2,500 SF within a ESA)

Item #	Stormwater BMP	Description (Units, total)	Reference Sheet(s)* (Sheet #)
1	Rain Tank(s) – 50 to 129 gal each		
2	Rain Tank(s) – > 130 gal min		
3	Shade Tree - min 15 gal		
4	Flow thru Planter(s)		
5	Permeable pavers / Porous concrete (min 10% open space)	☐ Incidental; _____ total SF ☐ Infiltration; _____ total SF	
6	Rain Garden	☐ #____ - Lined; _____ total SF ☐ #____ - Unlined; _____ total SF	
7	Dry Well		
8	SUMP Pump (modification was not required)		

ALL OTHER DEVELOPMENT
(Residential: 5 ≥ units, 10,000 ≥ SF, within a ESA and ≥2,500SF)

	Item #	Stormwater BMP	Description (Units, total)	Reference Sheet(s)* (Sheet #)
Infiltration	1	Infiltration Basin / Trench		
	2	Dry Well		
	3	Permeable pavers / Porous concrete (min 10% open space)	☒ Incidental; 1,958 total SF ☐ Infiltration; _____ total SF	
Capture & Use	4	Rain Tank(s) – 530 gal min		
	5	PERMAVOID CAPTURE/REUSE Cistern	☐ Above Grade ☒ Below Grade 360 UNITS	L302, L304, L305, L306, A1/L405
Treat & Discharge	6	Flow thru Planter(s)		
	7	Biofiltration	☐ #____ - Lined; _____ total SF ☐ #____ - Unlined; _____ total SF	
	8	Vegetative Swale / Filter Strip		
	9	Catch Basin Filter(s)	15 UNITS	L301/L302
	10	Trench Drain Filter(s)		
	11	Down Spout Filter(s)		
	12	SUMP Pump (modification was not required)		

* At a minimum: Site Plan, Architectural Elevations, Roof Plan, Civil Sheets and Detail

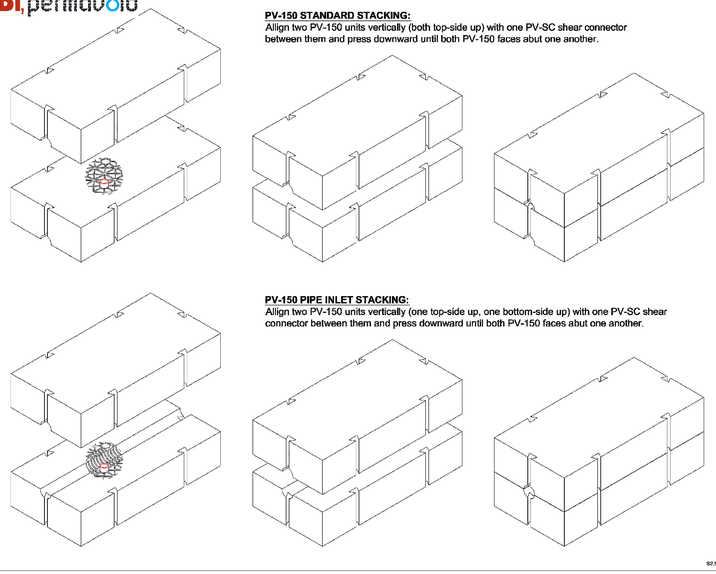


NOTES:
1. CONTRACTOR SHALL COORDINATE AND SCHEDULE A MEETING WITH PERMAVOID REPRESENTATIVE PRIOR TO INSTALLATION OF PERMAVOID.
2. REFER TO SHEETS L304/L305/L306 FOR ADDITIONAL PERMAVOID INFORMATION.
3. PROVIDE WATER TIGHT PIPE CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS AND DETAILS ON L304, L305, L306 AND SPECIFICATIONS.

J9	PERMAVOID/PIPING DETAIL
N.T.S.	

ABT permavoid

PV-150 STANDARD STACKING:
Allign two PV-150 units vertically (both top-side up) with one PV-SC shear connector between them and press downward until both PV-150 faces abut one another.

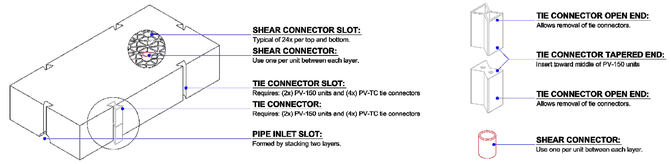


PV-150 PIPE INLET STACKING:
Allign two PV-150 units vertically (one top-side up, one bottom-side up) with one PV-SC shear connector between them and press downward until both PV-150 faces abut one another.

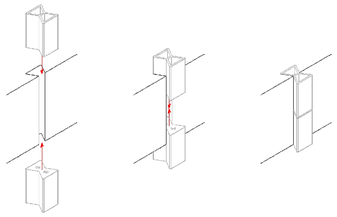
S2.5-09W16

ABT permavoid

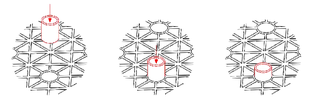
PERMAVOID 150:
Parts and accessories



TIE CONNECTOR INSERTION:
Use two for PV-150 sides, one (two optional) for PV-150 ends
Insert tapered end into slot until open end is flush with PV-150 unit



SHEAR CONNECTOR INSERTION:
Use one per unit between each layer
Insert into slot 1/2 depth of connector



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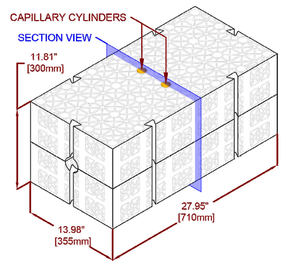

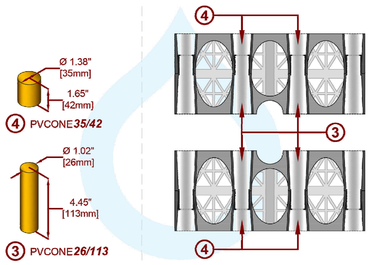

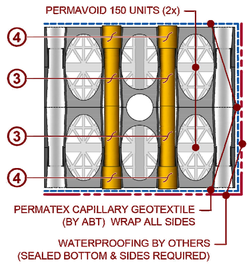

PERMAVOID (PV150x2) CAPILLARY IRRIGATION
PV-CI-04 [PV150x2]

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PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

ALFRED MATA, PE
ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESER
DESIGNED BY: GREG MOESER
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT

NO.	REVISION DESCRIPTION	DATE	BY
	INTERIM CITY ENGINEER	9/22/25	
		9/22/25	
		9/22/25	
		9/22/25	
		9/22/25	

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT ROBERT WALKER No. 6240 Signature My License Renewal Date: 08-31-2026 LICENSED LANDSCAPE ARCHITECT STATE OF CALIFORNIA

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: LID DETAILS
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L305
SHEET 53 OF SHEETS 115

PLOTTED: 9/22/2025

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)

City of Los Angeles
Department of Building and Safety

Version 1

Grading Pre-Inspection Report

Address: **1820 N LAS PALMAS AVE**
Council District: **13** Permit Application: **23030-10000-05253**

Work Description:
GPI for: 1) PROPOSED BUILDING RENOVATION (APPROX. 6,630SF) WITHIN EXISTING BUILDING FOOTPRINT. UPGRADE ROOF AND WINDOWS. REDESIGN INTERIOR SPACES/ADDITTIONAL RESTROOMS. 2) PROPOSED PATIO COVER OVER RENOVATED EXERCISE AREA. 3) PROPOSED TRASH ENCLOSURE. 4) GRADING RENOVATE SURROUNDING EXTERIOR SITE WLKWAYS AND PATIOS.

Inspector/Telephone: **ALEXANDER HELFER, (213) 482-0404**
Inspection District: **LA**
Inspection Date: **08/30/2023**

Property Posted: **Yes** Posting Date: **8/30/23** Posting Fees Paid? **Yes**
Tract: **HOLLYWOOD OCEAN VIEW TRACT**
Block: **2** Lot(s): **10** ARB: County Ref No: **M B 1-62**

Approved Graded Lot: **No**
Fill Over 100 Feet: **No**
Slope of Surface: **Ascending**
Fill: degrees Height: ft in
Natural: degrees Height: **Flat-5**ft in
Sewer Available: **Yes**
Site is **Above** Street
Condition of Street for Drainage Purposes **A/C**
Driveway Grade: **% -**
Bearing Value: **per code**
Buttress Fill: **No**
Natural Soil Classification 1804.2: **per code**
Cut: degrees Height: ft in
Slide Area: **No**
PSDS Sized Per Code:
Roof Gutters: **Yes**
Recommended Termination of Drainage **S**
Maximum Rough Grade Allowed: **%**

GRADING APPROVAL TO ISSUE PERMIT(S)
X OK TO ISSUE. SEE BELOW FOR COMMENTS.
DO NOT ISSUE UNTIL BELOW REQUIREMENTS HAVE BEEN SATISFIED.

** Additional requirements: **Property is located on flat graded lot. Approved soils report on file approved on 8/26/23 under grading Log # 121834-1 for the proposed scope of work. If new retaining walls are proposed then # 2 shall apply.**

Construction of new occupied buildings or major additions to buildings on sites located in any of the Seismic Hazard Zones (liquefaction, Landslide or Alquist-Priolo Fault Zone) will require a geology and/or soil engineering report. For questions call (213) 482-0480.

X 1. A grading permit is required for **excavation and backfill .**

2. A retaining wall permit is required. **.**

3. OSHA permit required for **vertical cuts 5 feet or over.**

4. All footings shall be founded in undisturbed natural soil per Code.

5. Design for expansive soil or submit a soils report to the grading division per information bulletin P/BC 2008-116 and 91.1805.8.

6. In the event excavations reveal unfavorable conditions, the services of a soils engineer and/or geologist may be required.

X 7. **Soils** report(s) are required. Submit three copies (1 original and 2 copies), with appropriate fees, to the Grading Section for review and approval.

X 8. Incorporate all recommendations of the approved Soils report(s) and Department letters dated 8/26/23 Log # 121834-1 into the plans. **Soils Engineer** to sign plans.

9. Site is subject to mudflow. Comply with provisions of Section 91.7014.3. Geological and soils report required.

10. Buildings shall be located clear of the toe of all slopes which exceed a gradient of 3 horizontal to 1 vertical as per Section 91.1805.3.1.

11. Footings shall be set back from the descending slope surface exceeding 3 horizontal to 1 vertical as per Section 91.1805.3.7.

12. Swimming pools and spas shall be set back from descending and ascending slopes as per Section 91.1805.3.3.

13. Department approval is required for construction of . on or over slopes steeper than 2 horizontal to 1 vertical.

14. Provide complete details of engineered temporary shoring or slot cutting procedures on plans. Call for inspection before excavation begins.

X 15. All concentrated drainage, including roof water, shall be conducted, via gravity, to the street or an approved location at a 2% minimum. Drainage to be shown on the plans.

16. A Registered Deputy Inspector is required.

X 17. All fill or backfill shall be compacted by mechanical means to a minimum 90% relative compaction as determined by ASTM method D-1557. Subdrains shall be provided where required by Code.

X 18. Specify on the plans: "The soils engineer is to approve the key or bottom and leave a certificate on the site for the grading inspector. The grading inspector is to be notified before any grading begins and, for bottom inspection, before fill is placed. Fill may not be placed without approval of the grading inspector."

19. Existing non-conforming slopes shall be cut back at 2:1 (26 degrees) or retained. All concentrated drainage, including roof water, shall be conducted, via gravity, to the street or an approved location at a 2% minimum. Drainage to be shown on the plans.

20. All cut or fill slopes shall be no steeper the 2:1 (26 degrees).

X 21. Stake and flag the property lines in accordance with a licensed survey map. **.**

22. Approval required by the Department for **.**

23. Approval required by the Department of Public Works, Urban Forestry Division, for native tree protected ORD. 177,040. Phone # (213) 847-3077

X 24. This is a preliminary pre-inspection only - base on limited information. When complete plans (and possibly calculations and/or required reports) are submitted for a permit, a new pre-inspection and fee will be required.

ABT permavoid

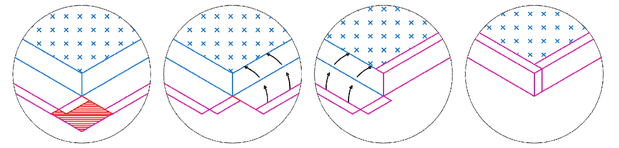
EXTERIOR CORNER DETAIL

STEP 1: Cut liner along red lines and set aside excess material.

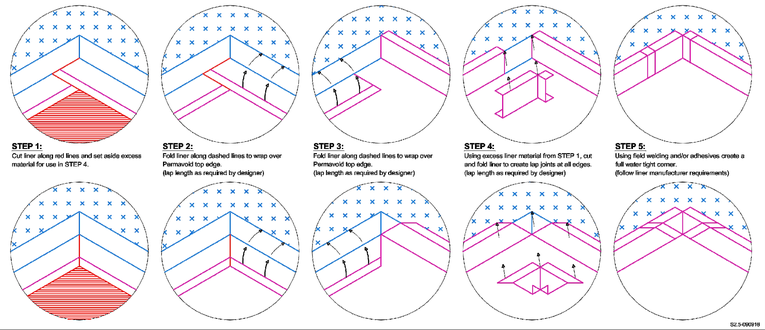
STEP 2: Fold liner along dashed lines to wrap over Permavoid top edge. (lap length as required by designer)

STEP 3: Fold liner along dashed lines to wrap over Permavoid top edge. (lap length as required by designer)

STEP 4: Using field welding and/or adhesives create a full water tight corner. (follow liner manufacturer requirements)



INTERIOR CORNER DETAIL



STEP 1: Cut liner along red lines and set aside excess material for use in STEP 4.

STEP 2: Fold liner along dashed lines to wrap over Permavoid top edge. (lap length as required by designer)

STEP 3: Fold liner along dashed lines to wrap over Permavoid top edge. (lap length as required by designer)

STEP 4: Using excess liner material from STEP 1, cut and fold liner to create lap joints at all edges. (lap length as required by designer)

STEP 5: Using field welding and/or adhesives create a full water tight corner. (follow liner manufacturer requirements)

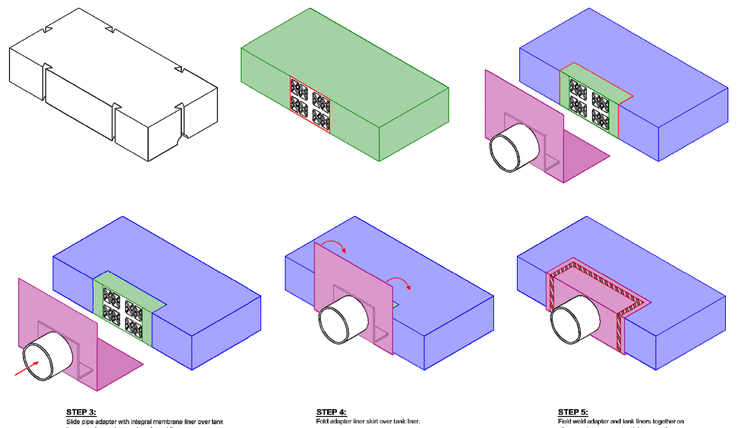
SI2.5-090919

ABT permavoid

PV-150 WELDED PIPE CONNECTION (EXTERNAL ADAPTER):
Requires: (1x) PV-150 unit; (1x) Pipe Adapter (1x) Protection Geotextile
(1x) HDPE or LLDPE Membrane Liner (1x) Welding Gun

STEP 1: Wrap Permavoid units in geotextile per engineer's requirements and cut rectangular hole approximately matching the adaptor's rigid plate.

STEP 2: Wrap Permavoid units in membrane liner per engineer's requirements and cut rectangular hole leaving 3 inch overlap with adaptor's liner skirt.



STEP 3: Slide pipe adapter with integral membrane liner over tank liner, evenly spacing overlaps for welding.

STEP 4: Fold adapter liner skirt over tank liner.

STEP 5: Post weld adapter and tank liners together as all seams to assure water tight connection.

S2.5.072817

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RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: LID DETAILS, SHEET 2/
GRADING PREINSPECTION FORM

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
L306

SHEET 54 OF SHEETS 115

PLOTTED: 9/22/2025

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

ALFRED MATA, PE
INTERIM CITY ENGINEER

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

	DATE:
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT	

LANDSCAPE ARCHITECT ROBERT WALKER No. 6290 LICENSED STATE OF CALIFORNIA

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

REVISION DATES (DESIGN STAGE ONLY)

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CITY OF LOS ANGELES
CALIFORNIA

BOARD OF BUILDING AND SAFETY COMMISSIONERS
JAVIER NUNEZ, PRESIDENT
ELVIN W. MOON, VICE PRESIDENT
JOSELYN GEAGA-ROSENTHAL
LAUREL GILLETTE
GEORGE HOVAGUIMIAN

ERIC GARCETTI, MAYOR

DEPARTMENT OF BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012
OSAMA YOUNAN, P.E., GENERAL MANAGER, SUPERINTENDENT OF BUILDING
JOHN WEIGHT, EXECUTIVE OFFICER

SOILS REPORT REVIEW LETTER

June 23, 2022

LOG # 121834
SOILS/GEOLOGY FILE - 2
AP-Exempt

LA City
1820 N. Las Palmas Avenue
Los Angeles, CA. 90028

TRACT: HOLLYWOOD OCEAN VIEW TRACT (M P 1-62)
BLOCK: 2
LOT(S): FR 10
LOCATION: 1820 N. Las Palmas Avenue

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Soils Report	GED 21-159	04/18/2022	Geotechnical Engineering Div.
Geotechnical Data Report	ciLA 22-04G	03/31/2022	Tetra Tech

The Grading Division of the Department of Building and Safety has reviewed the referenced reports that provides recommendations for the proposed pedestrian ramp, retaining wall, shade structure, outdoor seating, lighting, hardscape and trash enclosure. The site is currently a senior center building. The project does not include any additions or new foundation with the exiting building. Subsurface exploration performed by Tetra Tech consisted of 4 hollow stem auger borings to a maximum depth of 26.5 feet. The earth materials at the subsurface exploration locations consist of up to 20 feet of uncertified fill underlain by native.

The consultants recommend to support the proposed structure(s) on mat-type or drilled-pile foundations.

Engineering analyses provided by Geotechnical Engineering Division is based on field and laboratory testing performed by Tetra Tech. Geotechnical Engineering Division is accepting responsibility for use of the data in accordance to Code section 91.7008.5 of LABC.

The project is located within a Fault Zone identified by the State of California Alquist-Priolo Act. However, the proposed construction is currently exempt (P/BC 2020-044).

The review of the subject report(s) cannot be completed at this time and will be continued upon submittal of an addendum to the report which shall include, but not be limited to, the following:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2020 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. Revise foundation recommendations such that new foundations are supported on undisturbed native soils or certified compacted fill. Where the existing fill is to be used for support of new fill, slabs, and/or foundations, the consultant shall provide a copy of the fill certification. (1809.2)

The soils engineer shall prepare a report containing an itemized response to the review items indicated in this letter. If clarification concerning the review letter is necessary, the report review engineer may be contacted. Two copies of the response report, including one unbound wet-signed original for archiving purposes, a pdf-copy of the complete report in flash drive, and the appropriate fees will be required for submittal.

DAN RYAN EVANGELISTA
Structural Engineering Associate IV

DRE/dre
Log No. 121834
213-482-0480

cc: Geotechnical Engineering Division, Project Consultant
Tetra Tech, Project Consultant
LA District Office

13. Where any excavation, not addressed in the approved reports, would remove lateral support (as defined in 3307.3.1) from a public way, adjacent property or structures, a supplemental report shall be submitted to the Grading Division of the Department containing recommendations for shoring, underpinning, and sequence of construction. Report shall include a plot plan and cross-section(s) showing the construction type, number of stories, and location of adjacent structures, and analysis incorporating all surcharge loads that demonstrate an acceptable factor of safety against failure. (7006.2 & 3307.3.2)

14. The soils engineer shall review and approve the shoring and/or underpinning plans prior to issuance of the permit (3307.3.2).

15. Prior to the issuance of the permits, the soils engineer and/or the structural designer shall evaluate the surcharge loads used in the report calculations for the design of the retaining walls and shoring. If the surcharge loads used in the calculations do not conform to the actual surcharge loads, the soil engineer shall submit a supplementary report with revised recommendations to the Department for approval.

16. Unsurcharged temporary excavation may be cut vertical up to 5 feet, as recommended.

17. Surcharged ABC slot-cut method may be used for temporary excavations with each slot-cut not exceeding 5.5 feet in height and not exceeding 7 feet in width, as recommended. The surcharge load shall not exceed the value given in the report. The soils engineer shall determine the clearance between the excavation and the existing foundation. The soils engineer shall verify in the field if the existing earth materials are stable in the slot-cut excavation. Each slot shall be inspected by the soils engineer and approved in writing prior to any worker access.

18. Shoring shall be designed for the lateral earth pressures specified in the section titled "Temporary Shoring" starting on page 9 of the 04/18/2022 report; all surcharge loads shall be included into the design.

19. Shoring shall be designed for a maximum lateral deflection of 1 inch, provided there are no structures within a 1:1 plane projected up from the base of the excavation. Where a structure is within a 1:1 plane projected up from the base of the excavation, shoring shall be designed for a maximum lateral deflection of ½ inch, or to a lower deflection determined by the consultant that does not present any potential hazard to the adjacent structure.

20. A shoring monitoring program shall be implemented to the satisfaction of the soils engineer.

21. All foundations shall derive entire support from native undisturbed soils, as recommended (and approved by the geologist and soils engineer by inspection).

22. Pile caisson and/or isolated foundation ties are required by LAMC Sections 91.1809.13 and/or 91.1810.3.13. Exceptions and modification to this requirement are provided in Information Bulletin P/BC 2020-030.

23. When water is present in drilled pile holes, the concrete shall be tremied from the bottom up to ensure minimum segregation of the mix and negligible turbulence of the water (1808.8.3).

24. Existing uncertified fill shall not be used for lateral support of deep foundations (1810.2.1).

25. The seismic design shall be based on a Site Class D, as recommended. All other seismic design parameters shall be reviewed by LADBS building plan check. According to ASCE 7-16 Section 11.4.8, the long period coefficient (Fv) may be selected per Table 11.4-2 in ASCE 7-16, provided that the value of the Seismic Response Coefficient (Cs) is determined by Equation 12.8-2 for values of the fundamental period of the building (T) less than or equal to 1.5Ts, and taken as 1.5 times the

value computed in accordance with either Equation 12.8-3 for T greater than 1.5Ts and less than or equal to TL or Equation 12.8-4 for T greater than TL. Alternatively, a supplemental report containing a site-specific ground motion hazard analysis in accordance with ASCE 7-16 Section 21.2 shall be submitted for review and approval.

26. Retaining walls up to 4 feet shall be designed for the lateral earth pressures specified in the section titled "Lateral Earth Pressures For Retaining Walls" starting on page 14 of the 04/18/2022 report. Note: All surcharge loads shall be included into the design.

27. All retaining walls shall be provided with a standard surface backdrain system and all drainage shall be conducted in a non-erosive device to the street in an acceptable manner (7013.11).

28. With the exception of retaining walls designed for hydrostatic pressure, all retaining walls shall be provided with a subdrain system to prevent possible hydrostatic pressure behind the wall. Prior to issuance of any permit, the retaining wall subdrain system recommended in the soils report shall be incorporated into the foundation plan which shall be reviewed and approved by the soils engineer of record (1805.4).

29. Installation of the subdrain system shall be inspected and approved by the soils engineer of record and the City grading/building inspector (108.9).

30. Basement walls and floors shall be waterproofed/damp-proofed with an LA City approved "Below-grade" waterproofing/damp-proofing material with a research report number (104.2.6).

31. Prefabricated drainage composites (Miradrain, Geotextiles) may be only used in addition to traditionally accepted methods of draining retained earth.

32. All roof, pad and deck drainage shall be conducted to the street in an acceptable manner in non-erosive devices or other approved location in a manner that is acceptable to the LADBS and the Department of Public Works (7013.10).

33. All concentrated drainage shall be conducted in an approved device and disposed of in a manner approved by the LADBS (7013.10).

34. The soils engineer shall inspect all excavations to determine that conditions anticipated in the report have been encountered and to provide recommendations for the correction of hazards found during grading (7008, 1705.6 & 1705.8).

35. All friction pile or caisson drilling and excavations shall be performed under the inspection and approval of the geologist and soils engineer. The geologist shall indicate the distance that friction piles or caissons penetrate into competent material in a written field memorandum. (1803.5.5, 1705.1.2)

36. Prior to pouring concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. The representative shall post a notice on the job site for the LADBS Inspector and the Contractor stating that the work inspected meets the conditions of the report. No concrete shall be poured until the LADBS Inspector has also inspected and approved the footing excavations. A written certification to this effect shall be filed with the Grading Division of the Department upon completion of the work. (108.9 & 7008.2)

37. Prior to excavation an initial inspection shall be called with the LADBS Inspector. During the initial inspection, the sequence of construction; shoring; pile installation; protection fences; and, dust and traffic control will be scheduled (108.9.1).

CITY OF LOS ANGELES
CALIFORNIA

BOARD OF BUILDING AND SAFETY COMMISSIONERS
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DEPARTMENT OF BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012
OSAMA YOUNAN, P.E., GENERAL MANAGER, SUPERINTENDENT OF BUILDING
JOHN WEIGHT, EXECUTIVE OFFICER

SOILS REPORT APPROVAL LETTER

August 26, 2023

LOG # 121834-01
SOILS/GEOLOGY FILE - 2
AP-Exempt

LA City
1820 N. Las Palmas Avenue
Los Angeles, CA. 90028

TRACT: HOLLYWOOD OCEAN VIEW TRACT (M P 1-62)
BLOCK: 2
LOT(S): FR 10
LOCATION: 1820 N. Las Palmas Avenue

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Soils Report	GED 21-159	07/24/2023	Geotechnical Engineering Div.

PREVIOUS REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Grading Dept. Review Letter	121834	06/23/2022	LADBS
Soils Report	GED 21-159	04/18/2022	Geotechnical Engineering Div.
Geotechnical Data Report	ciLA 22-04G	03/31/2022	Tetra Tech

The Grading Division of the Department of Building and Safety has reviewed the referenced repors that provides recommendations for the proposed pedestrian ramp, retaining wall, shade structure, outdoor seating, lighting, hardscape and trash enclosure. The site is currently a senior center building. The project does not include any additions or new foundation with the exiting building. Subsurface exploration performed by Tetra Tech consisted of 4 hollow stem auger borings to a maximum depth of 26.5 feet. The earth materials at the subsurface exploration locations consist of up to 20 feet of uncertified fill underlain by native.

The consultants recommend to support the proposed structure(s) on mat-type or drilled-pile foundations bearing on native undisturbed soils.

A "Request for Modification of Building Ordinances" (RFM) had been reviewed by the Department and approved to allow the proposed trash enclosure to be supported compacted fill placed over uncertified fill.

Engineering analyses provided by Geotechnical Engineering Division is based on field and laboratory testing performed by Tetra Tech. Geotechnical Engineering Division is accepting responsibility for use of the data in accordance to Code section 91.7008.5 of LABC.

The project is located within a Fault Zone identified by the State of California Alquist-Priolo Act. However, the proposed construction is currently exempt (P/BC 2020-044).

The referenced reports are acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2020 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. The soils engineer shall review and approve the detailed plans prior to issuance of any permit. This approval shall be by signature on the plans that clearly indicates the soils engineer has reviewed the plans prepared by the design engineer; and, that the plans included the recommendations contained in their reports (7006.1).

2. An on-site storm water infiltration system at the subject site shall not be implemented, as recommended.

3. All recommendations of the report(s) that are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

4. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans (7006.1). Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit.

5. A grading permit shall be obtained for all structural fill and retaining wall backfill (106.1.2).

6. All man-made fill shall be compacted to a minimum 90 percent of the maximum dry density of the fill material per the latest version of ASTM D 1557. Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density. Placement of gravel in lieu of compacted fill is only allowed if complying with LAMC Section 91.7011.3.

7. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill (1809.2, 7011.3).

8. Drainage in conformance with the provisions of the Code shall be maintained during and subsequent to construction (7013.12).

9. Grading shall be scheduled for completion prior to the start of the rainy season, or detailed temporary erosion control plans shall be filed in a manner satisfactory to the Grading Division of the Department and the Department of Public Works, Bureau of Engineering, B-Permit Section, for any grading work in excess of 200 cubic yards (7007.1).

201 N. Figueroa Street 3rd Floor, LA (213) 482-7045

10. All loose foundation excavation material shall be removed prior to commencement of framing. Slopes disturbed by construction activities shall be restored (7005.3).

11. The applicant is advised that the approval of this report does not waive the requirements for excavations contained in the General Safety Orders of the California Department of Industrial Relations (3301.1).

12. Temporary excavations that remove lateral support to the public way, adjacent property, or adjacent structures shall be supported by shoring or constructed using ABC slot cuts. Note: Lateral support shall be considered to be removed when the excavation extends below a plane projected downward at an angle of 45 degrees from the bottom of a footing of an existing structure, from the edge of the public way or an adjacent property. (3307.3.1)

38. Installation of shoring, underpinning, slot cutting and/or pile excavations shall be performed under the inspection and approval of the soils engineer and deputy grading inspector (1705.6, 1705.8).

39. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. The representative shall post a notice on the job site for the LADBS Inspector and the Contractor stating that the soil inspected meets the conditions of the report. No fill shall be placed until the LADBS Inspector has also inspected and approved the bottom excavations. A written certification to this effect shall be included in the final compaction report filed with the Grading Division of the Department. All fill shall be placed under the inspection and approval of the soils engineer. A compaction report together with the approved soil report and Department approval letter shall be submitted to the Grading Division of the Department upon completion of the compaction. In addition, an Engineer's Certificate of Compliance with the legal description as indicated in the grading permit and the permit number shall be included (7011.3).

DAN RYAN EVANGELISTA
Structural Engineering Associate III

DRE/dre
Log No. 121834-01
213-482-0480

cc: Geotechnical Engineering Division, Project Consultant
Tetra Tech, Project Consultant
LA District Office

BUREAU OF ENGINEERING
OFFICIAL RECORD

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
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REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

BLIC WORKS
DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION

	DATE:
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	9/22/25

LANDSCAPE ARCHITECT ★ ROBERT MOESER ★ LICENSED ★ No. 6290 ★ STATE OF CALIFORNIA
Signature
Renewal Date: 08/31/2026
Date: 9/22/2025

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: SOIL REPORT APPROVAL LETTERS

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

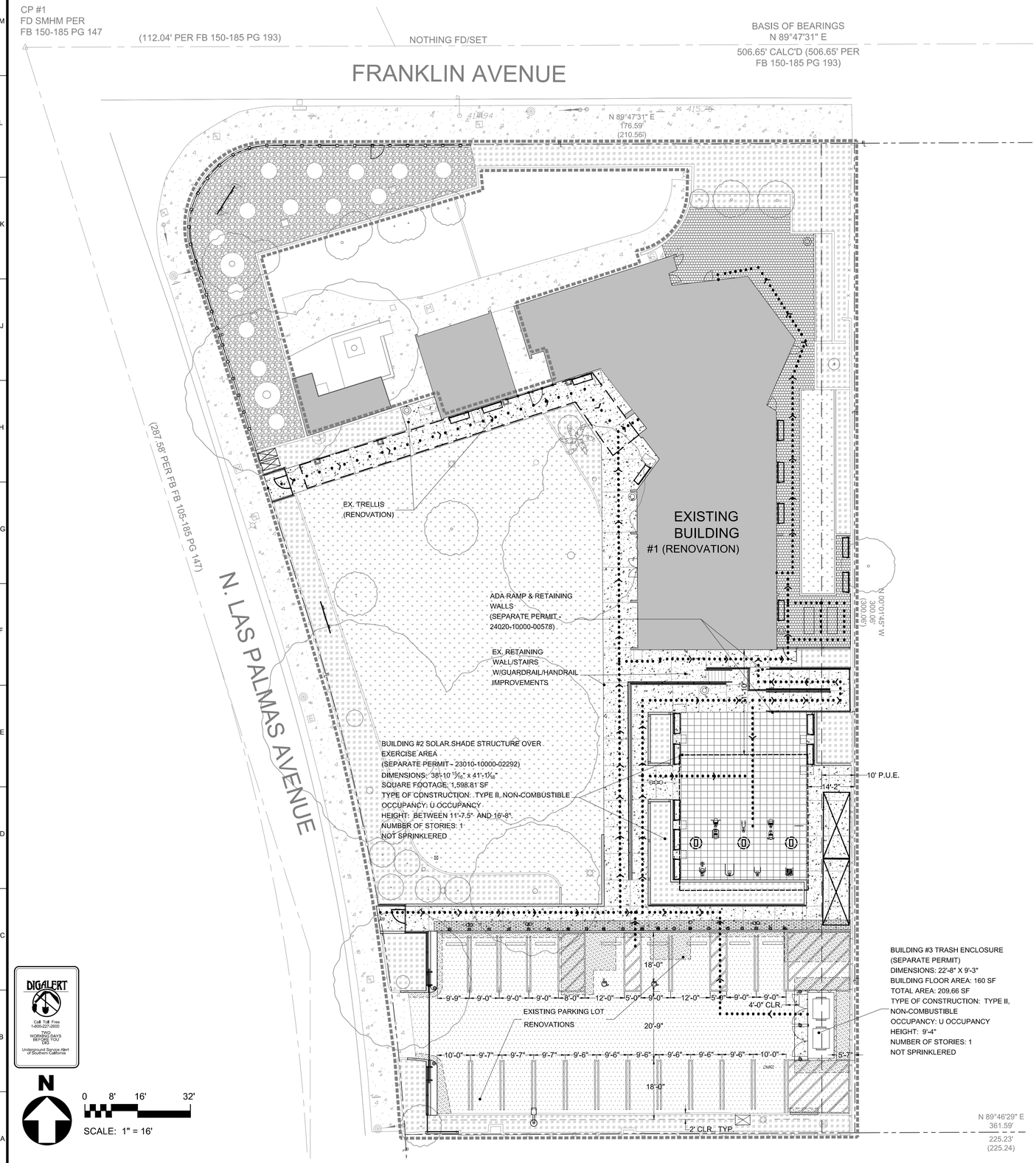
ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

DIGALERT
Call Toll Free 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
Underground Service Alert of Southern California

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L307
SHEET 55 OF SHEETS 115

PLOTTED: 9/22/2025



CONSTRUCTION LEGEND:

- CONSTRUCT CONCRETE PAVING. COLOR: NATURAL GRAY. MED. BROOM FINISH. SEE DETAIL E13/L404.
- EX. CONCRETE PAVING. PROTECT IN PLACE.
- PERMEABLE PAVERS. SEE E9/L404.
- RESILIENT SURFACING. SEE DETAIL A9/L405.
- BOULDERS. INSTALL PER DETAIL A5/L407.
- AC PAVING. INSTALL PER E1/L404. SEALCOAT PER LANDSCAPE SPECIFICATIONS.
- SEALCOAT EX. AC. PAVING PER LANDSCAPE SPECIFICATIONS.
- DETECTABLE WARNING SURFACE OVER CONCRETE PAVING. INSTALL PER DETAILS J5/L406 AND E13/L406 AND CITY STANDARD DETAILS S-442-6 AND S-601.
- PLANTING/MULCH AREA. SEE L701.
- TURF AREA. SEE L701.
- EX. TREE TO REMAIN. PROTECT IN PLACE.
- LIMIT OF WORK (OFFSET FOR CLARITY)
- EX. CHAINLINK FENCING TO REMAIN PROTECT IN PLACE.
- EX. TUBULAR STEEL FENCING TO REMAIN. PROTECT IN PLACE.
- NEW TUBULAR STEEL FENCE. SEE L402/L403.
- ADA PATH OF TRAVEL. SEE GRADING PLAN L301/L302 FOR SLOPE % OF WALKING SURFACES/ADA RAMP
- PROPERTY LINE

PARKING SUMMARY*	
EXISTING LAYOUT	
STANDARD	22
ADA (NOT TO CODE)	2
TOTAL SPACES EX. LAYOUT	24
NEW LAYOUT	
STANDARD	10
COMPACT	1
ADA	2 (1 STD, 1 VAN)
EV	3 INSTALLED NOW (1 ADA VAN; 1 STD ADA; 1 STD SPACE) 4 FUTURE STD EV SPACES (INSTALL CONDUIT/PULLBOXES FOR FUTURE EV CHARGER INSTALL. SEE ELECTRICAL)
TOTAL SPACES NEW LAYOUT	20

***NOTE DEPARTMENT OF RECREATION AND PARKS NOT SUBJECT TO PLANNING REQUIREMENTS OF CHAPTER 1 OF THE LOS ANGELES MUNICIPAL CODE RELATED TO PARKING. SEE MEMORANDUM ON RECREATION AND PARKS AUTHORITY UNDER THE CITY CHARTER ON G103.**

NOTES

1. **REFER TO GRADING PLAN FOR GRADES/CROSS SLOPES OF ADA PATH OF TRAVEL.**

BUREAU OF ENGINEERING
OFFICIAL RECORD

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TTLB TEMPLATE REVISION DATE: 02/2013
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REVISION DATES (DESIGN STAGE ONLY)

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DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT
ROBERT WEISER
No. 6380
Registration Expires:
12-31-2026
LICENSED
LANDSCAPE ARCHITECT
STATE OF CALIFORNIA

ALFRED MATA, PE	INTERIM CITY ENGINEER	9/22/25
	ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT:	GREG MOESER	9/22/25
DESIGNED BY:	GREG MOESER	9/22/25
DRAWN BY:	GREG MOESER	9/22/25
CHECKED BY:	RICHARD FISHER	9/22/25
APPROVED BY:	STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	9/22/25

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: SITE PLAN/ADA PATH OF TRAVEL

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

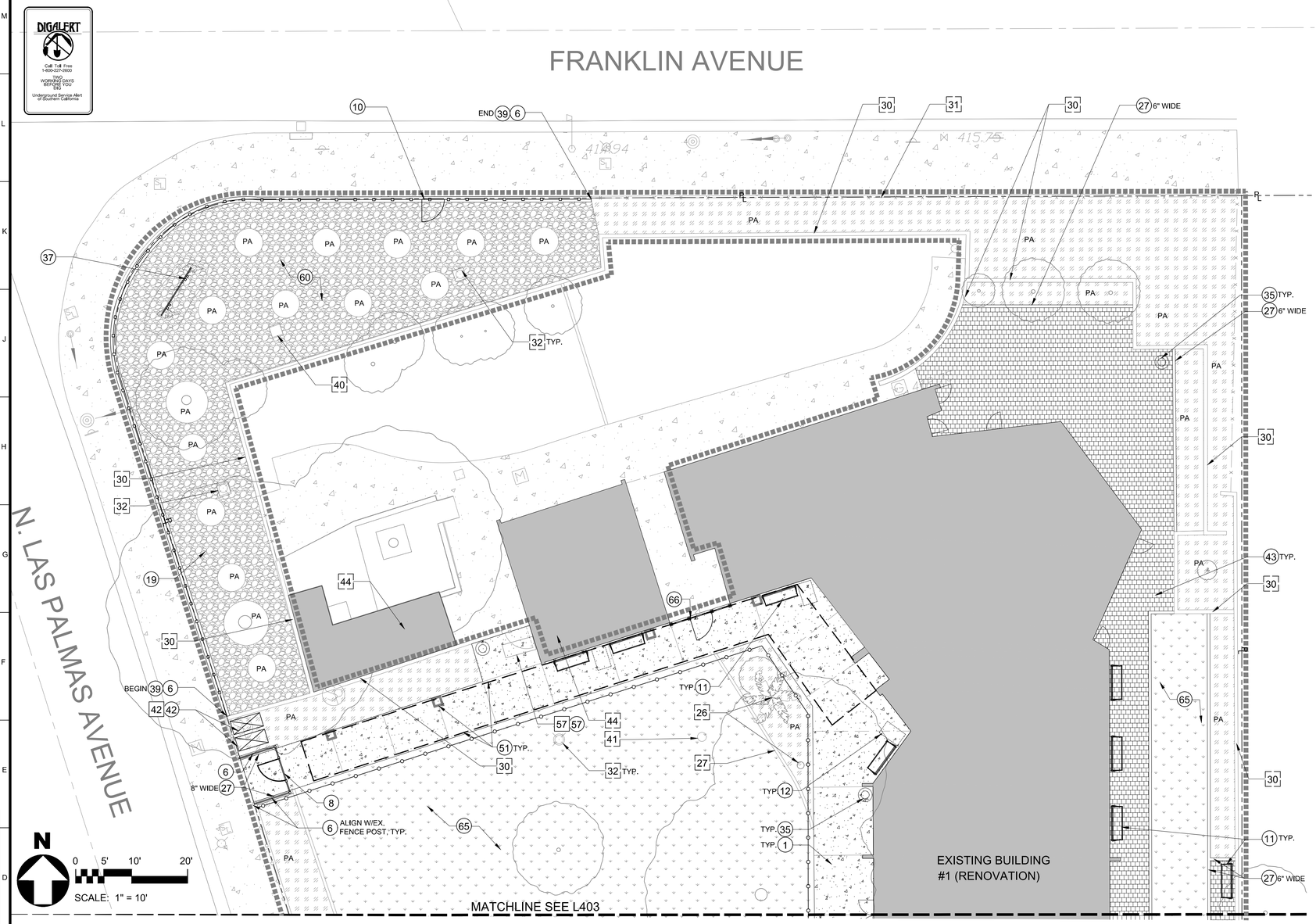
WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L401

SHEET 56 OF SHEETS 115

PLOTTED: 9/22/2025



DIGALERT
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Underground Service Alert of Southern California

CONSTRUCTION LEGEND:

- CONSTRUCT CONCRETE PAVING. COLOR: NATURAL GRAY. MED. BROOM FINISH. SEE DETAIL E13/L404.
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- EX. TUBULAR STEEL FENCING TO REMAIN. PROTECT IN PLACE.
- TREE PROTECTION FENCING. REFER TO G104 FOR TREE PROTECTION REQUIREMENTS.
- PROPERTY LINE

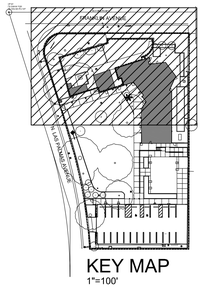
(#) EXISTING-PROTECT IN PLACE (#) CONSTRUCT (#) (#) REMOVE/REPLACE

KEYNOTES

1. CONCRETE PAVING. NATURAL GRAY; MED. BROOM FINISH. INSTALL PER E13/L404.
2. ADA RAMP WITH GUARDRAIL/HANDRAILS. INSTALL PER L410. RETAINING WALLS UNDER SEPARATE PERMIT.
3. GUARDRAIL. INSTALL PER L410.
4. SOLAR SHADE STRUCTURE. REFER TO L801.
5. DRINKING FOUNTAIN. INSTALL PER E5/L407.
6. 5' HIGH TUBULAR STEEL FENCE. INSTALL PER J9/L408.
7. 5' TUBULAR STEEL DOUBLE-LEAF VEHICULAR GATE. INSTALL PER J5/L409.
8. 5' HIGH TUBULAR STEEL PEDESTRIAN GATE. INSTALL PER A1/L408.
9. 8' TUBULAR STEEL FENCE. INSTALL PER J13/L408.
10. 5' HIGH TUBULAR STEEL MAINTENANCE GATE. INSTALL PER J1/L408.
11. 6' BENCH (17). INSTALL PER A1/L406.
12. 2.5' X 4' ADA CLEAR FLOOR SPACE.
13. RESILIENT SURFACING TILES. INSTALL PER A9/L405.
14. EXERCISE EQUIPMENT (9) AND ANNOUNCEMENT SIGN (1). INSTALL PER MANUFACTURER'S INSTRUCTIONS AND L802/L803.
15. CURB. INSTALL PER A1/L404. WIDTH PER PLAN.
16. CURBING AT DRIVEWAY GATE. INSTALL PER J1/L406.
17. ASPHALT CONCRETE PAVING. INSTALL PER E1/L404.
18. ASPHALT SEAL COAT. INSTALL PER LANDSCAPE SPECIFICATIONS.
19. CONSTRUCTION SIGN. INSTALL PER J5/L404. FINAL LOCATION TO BE APPROVED BY PROJECT MANAGER.
20. ADA DETECTABLE WARNING SURFACE. INSTALL PER LA CITY STD DETAILS S-442-6 AND S-601. INSTALL OVER NEW CONCRETE PAVING PER E13/L404.
21. ADA PARKING SPACE. INSTALL PER E13/L406.
22. PARKING SPACE. INSTALL PER J13/L406.
23. EX. CONCRETE STAIRS. PROTECT IN PLACE.
24. IRRIGATION CONTROLLER ENCLOSURE. REFER TO IRRIGATION PLAN, L601.
25. EX. CATCH BASIN. PROTECT IN PLACE.
26. EX. TREE. PROTECT IN PLACE.
27. CONCRETE MOW STRIP/HEADER. INSTALL PER A9/L404. WIDTH PER PLAN NOTES.
28. STORAGE CONTAINER (2) (20' L X 8' W X 8.5' H) BY CONTAINER ALLIANCE OR APPROVED EQUAL (866) 713-9348. SHALL BE "ONE TRIP" LIKE NEW CONDITION. REMOVE ALL STICKERS/MARKINGS AND PAINT PER SPECIFICATIONS. COLOR: TO MATCH BUILDING.
29. TRASH ENCLOSURE. INSTALL PER E5/L405.
30. EX. FREESTANDING WALL. PROTECT IN PLACE.
31. EX. CHAINLINK FENCE. PROTECT IN PLACE.
32. 25' TALL LIGHT POLE WITH CONCRETE BASE. SEE ELECTRICAL PLANS.
33. EX. UTILITY POLE. PROTECT IN PLACE.
34. EX. GUY WIRE. PROTECT IN PLACE
35. TRASH CAN (5). INSTALL PER J1/L405.
36. EX. DRIVEWAY. PROTECT IN PLACE.
37. WOOD FACILITY SIGN. INSTALL PER E1/L406.
38. COMPACT PARKING SPACE. INSTALL PER J13/L406 AND E1/L407.
39. 12" CONCRETE HEADER AT FENCE. INSTALL PER E5/L404.
40. EX. ELECTRICAL UTILITY BOX ON CONCRETE BASE. PROTECT IN PLACE.
41. EX. FLAG POLE. PROTECT IN PLACE.
42. BACKFLOW. REFER TO IRRIGATION/PLUMBING PLANS.
43. PERMEABLE PAVERS. INSTALL PER E9/L404.
44. BUILDING. REFER TO ARCHITECTURAL PLANS.
45. EX. MONUMENT SIGN. PROTECT IN PLACE.
46. (2) WISHBONE RUTHERFORD 4 SPACE WHEELCHAIR ACCESSIBLE PLANTER. MODEL RPLWC-96-36. CONTACT WISHBONE SITE FURNISHINGS (866) 626-0476. SEE DETAIL A9/L407.
47. 0" HIGH FLUSH CURB. INSTALL PER A1/L404.
48. ELECTRIC VEHICLE CHARGING STATION/PARKING SPACE. INSTALL PER DETAIL J5/L406. SEE ELECTRICAL PLANS.
49. FUTURE ELECTRIC VEHICLE CHARGING STATION. SEE ELECTRICAL PLANS.
50. STAFF/NO PARKING AREA. INSTALL STRIPING AND "NO PARKING" PER DETAIL E13/L406, WIDTH PER PLAN, AND J9/L406. COLOR: WHITE
51. MODIFIED TRELLIS STRUCTURE. SEE ARCHITECTURAL DRAWINGS.
52. (19) FIXED BOLLARD. INSTALL PER A1/L407.
53. HANDRAIL. INSTALL PER CITY STD DETAIL S-463-3, TYPE A1 AND L410. EMBED POSTS 9" MIN. PAINT FINISH PER SPECIFICATIONS, COLOR: DARK BRONZE/BROWN.
54. CONCRETE WHEEL STOP. INSTALL PER DETAILS A9/L406, J5/L406, J13/L406, AND E13/L406.
55. (2) REMOVABLE BOLLARD. INSTALL PER A1/L407.
56. EX. CMU RETAINING WALL. PROTECT IN PLACE.
57. WATER VALVE VAULT BOX. REPLACE EX. WITH CONCRETE VALVE BOX. FIELD VERIFY DIMENSIONS.
58. OMITTED.
59. CURB CUT @ PERMAVOID CURB WALL. INSTALL PER A1/L405.
60. BOULDERS. INSTALL PER A5/L407.
61. PERMAVOID PLANTER CURB WALLS. INSTALL PER A1/L405.
62. 8' HIGH TUBULAR STEEL PEDESTRIAN GATE. INSTALL PER A1/L408.
63. GUARDRAIL. INSTALL PER CITY STD DETAIL S-463-3, TYPE B-1 WITH SQUARE POSTS, RAILS, AND PICKETS, EMBED POSTS IN CURB WALL 9" MIN. PAINT FINISH PER SPECIFICATIONS, COLOR: DARK BRONZE/BROWN.
64. (4) FIXED BOLLARD W/SIGN. INSTALL PER A1/L407.
65. TURF AREA. SEE PLANTING PLAN.
66. 7' TUBULAR STEEL GATE/FENCE AT TRELLIS. INSTALL PER DETAIL A5/L409.
67. CURB WALL. INSTALL PER E1/L409.

CONSTRUCTION NOTES:

1. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH PROJECT MANAGER TO LOCATE AND DELINEATE THE CONSTRUCTION STAGING AREA. SEE GENERAL CONDITIONS AND GENERAL REQUIREMENTS.
2. CONSTRUCTION SIGN SHALL BE INSTALLED WITHIN TWO WEEKS OF THE START OF CONSTRUCTION. OBTAIN PROJECT MANAGER'S APPROVAL FOR SIGN LOCATION AND FINAL TEXT PRIOR TO FABRICATION AND INSTALLATION. SEE LANDSCAPE SPECIFICATIONS AND CONSTRUCTION SIGN DETAIL.
3. LIMIT OF WORK IS AT PROPERTY LINE UNLESS OTHERWISE NOTED HEREIN.
4. ALL EXISTING R.O.W. CONCRETE SIDEWALK, STREET TREES, LIGHT FIXTURES/WIRING AND DRAINAGE FIXTURES, ETC. ARE TO BE PROTECTED IN PLACE PER LANDSCAPE SPECIFICATIONS UNLESS OTHERWISE NOTED.
5. ALL EXISTING SITE FEATURES SHOWN TO REMAIN OR LOCATED OUTSIDE THE LIMIT OF WORK SHALL BE PROTECTED IN PLACE.
6. ADJACENT FENCING AND C.M.U. WALLS OUTSIDE OF PROPERTY LINE SHALL BE PROTECTED IN PLACE AND NOT DISTURBED WITHOUT PROPERTY OWNERS WRITTEN PERMISSION.
7. ANY NEW CONSTRUCTION LOCATED WITHIN THE PROTECTED ROOT AREA OF AN EXISTING TREE IS SUBJECT TO THE REQUIREMENTS LISTED IN THE SECTION "TREE PROTECTION GUIDELINES" ON G104, PRIOR TO ANY CONSTRUCTION, CONTRACTOR SHALL HAVE ALL REQUIRED TREE PROTECTION ZONE FENCING IN PLACE.
8. ALL MATERIAL AND WORK SHOWN ON THIS PLAN SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
9. LAYOUT AND STAKING OF ALL PROJECT ELEMENTS SHALL BE DONE A LICENSED SURVEYOR PROVIDED BY THE CONTRACTOR AT HIS OWN EXPENSE. DIGITAL PLAN FILES SHALL BE PROVIDED BY CITY TO FACILITATE LAYOUT. FINAL LAYOUT AND LOCATION OF ALL PROJECT ELEMENTS SHALL BE REVIEWED AND APPROVED BY THE PROJECT MANAGER PRIOR TO INSTALLATION. CONTRACTOR SHALL REQUEST REVIEW AND APPROVAL OF LAYOUT FOR ANY PROJECT ELEMENTS 48 HOURS MINIMUM IN ADVANCE. SEE LANDSCAPE SPECIFICATIONS.
10. PAVING, MASONRY AND CONCRETE INSTALLERS ARE TO COORDINATE WITH THE ELECTRICAL, DRAINAGE AND IRRIGATION INSTALLER/SUBCONTRACTORS FOR SLEEVING, PIPING AND/OR CONDUIT INSTALLATION UNDER OR THROUGH HARDSCAPE ELEMENTS PRIOR TO INSTALLATION OF HARDSCAPE ELEMENTS.
11. AN ABANDONED 48" WIDE X 52" HIGH CONCRETE STORMDRAIN PIPE IS LOCATED UNDERNEATH THE EX. SHUFFLEBOARD COURT (SEE EX. AS-BUILT PLANS); SHOULD THE CONTRACTOR MAKE CONTACT WITH THE STORMDRAIN PIPE WHILE INSTALLING THE SHADE STRUCTURE, CONTRACTOR WILL NOTIFY THE GEOTECHNICAL ENGINEER TO PROVIDE MITIGATION PROCEDURES TO ENSURE PIPE IS PROTECTED IN PLACE AND NO VOIDS ARE CREATED.



BUREAU OF ENGINEERING
OFFICIAL RECORD

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT ★ ROBERT WALKER ★ LICENSED ★ STATE OF CALIFORNIA
No. 6380 Renewal: 08/31/2026

INTERIM CITY ENGINEER	DATE:
ALFRED MATA, PE	9/22/25
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	
CHECKED BY: RICHARD FISHER	
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: CONSTRUCTION PLAN SHEET 1
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

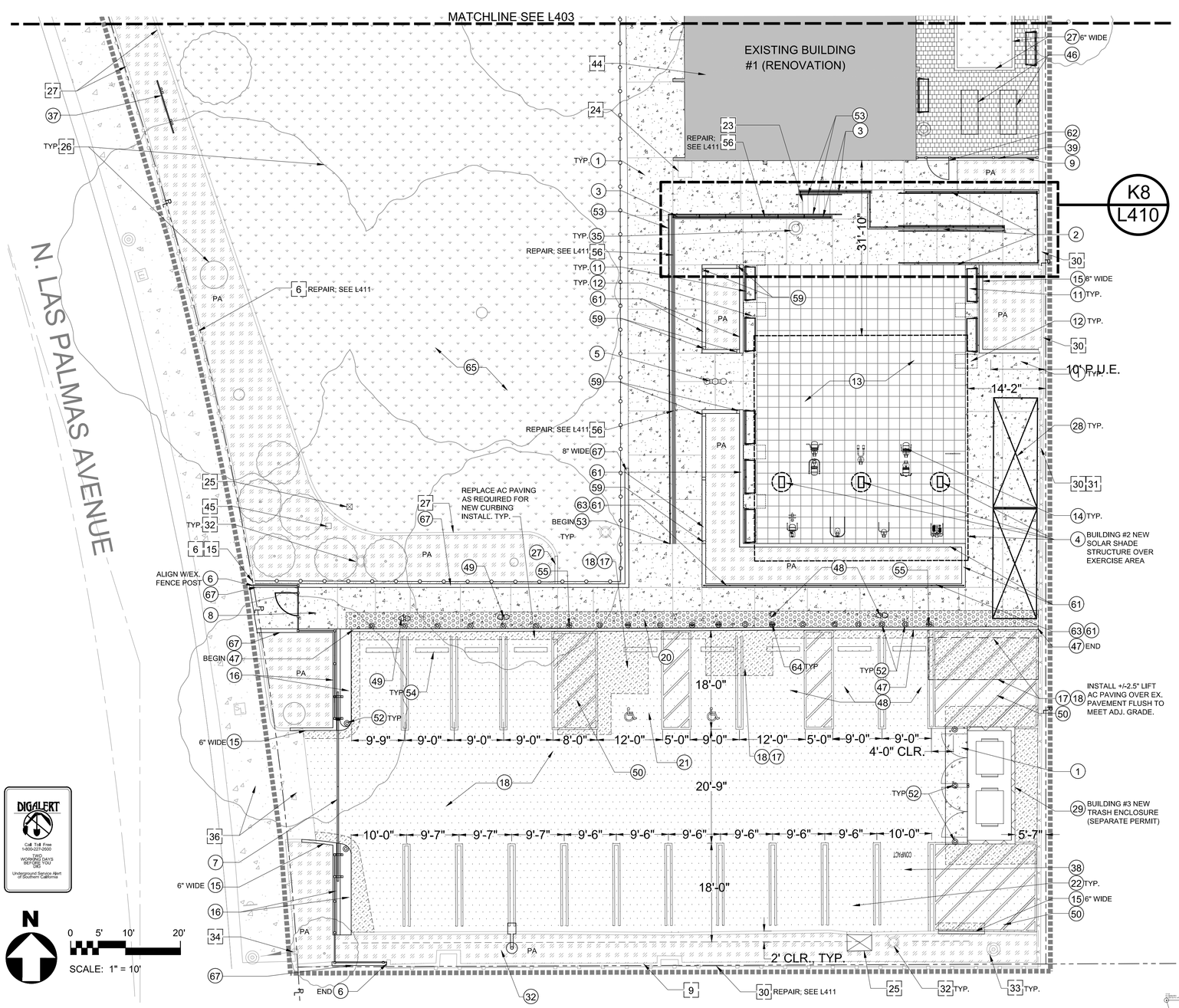
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L402
SHEET 57 OF SHEETS 115

PLOTTED: 9/22/2025

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

REVISION DATES (DESIGN STAGE ONLY)



CONSTRUCTION LEGEND:

- CONSTRUCT CONCRETE PAVING. COLOR: NATURAL GRAY. MED. BROOM FINISH. SEE DETAIL E13/L404.
- EX. CONCRETE PAVING. PROTECT IN PLACE.
- PERMEABLE PAVERS. SEE E9/L404.
- RESILIENT SURFACING TILES. SEE DETAIL A9/L405.
- BOULDERS. INSTALL PER DETAIL A5/L407.
- AC PAVING. INSTALL PER E1/L404. SEALCOAT PER LANDSCAPE SPECIFICATIONS.
- SEALCOAT EX. AC. PAVING PER LANDSCAPE SPECIFICATIONS.
- DETECTABLE WARNING SURFACE OVER CONCRETE PAVING. INSTALL PER DETAILS J5/L406 AND E13/L406 AND CITY STANDARD DETAILS S-442-6 AND S-601.
- PLANTING/MULCH AREA. SEE L701.
- TURF AREA. SEE L701.
- EX. TREE TO REMAIN. PROTECT IN PLACE.
- LIMIT OF WORK (OFFSET FOR CLARITY)
- EX. CHAINLINK FENCING TO REMAIN PROTECT IN PLACE.
- EX. TUBULAR STEEL FENCING TO REMAIN. PROTECT IN PLACE.
- TREE PROTECTION FENCING. REFER TO G104 FOR TREE PROTECTION REQUIREMENTS.
- PROPERTY LINE

(#) EXISTING-PROTECT IN PLACE (#) CONSTRUCT (#)(#) REMOVE/REPLACE

KEYNOTES

1. CONCRETE PAVING. NATURAL GRAY; MED. BROOM FINISH. INSTALL PER E13/L404.
2. ADA RAMP WITH GUARDRAIL/HANDRAILS. INSTALL PER L410. RETAINING WALLS UNDER SEPARATE PERMIT.
3. GUARDRAIL. INSTALL PER L410.
4. SOLAR SHADE STRUCTURE. REFER TO L801. (SEPARATE PERMIT).
5. DRINKING FOUNTAIN. INSTALL PER E5/L407.
6. 5' HIGH TUBULAR STEEL FENCE. INSTALL PER J9/L408.
7. 5' TUBULAR STEEL DOUBLE-LEAF VEHICULAR GATE. INSTALL PER J5/L409.
8. 5' HIGH TUBULAR STEEL PEDESTRIAN GATE. INSTALL PER A1/L408.
9. 8' TUBULAR STEEL FENCE. INSTALL PER J13/L408.
10. 3'-6" TUBULAR STEEL FENCE. INSTALL PER J1/L408.
11. 6' BENCH (17). INSTALL PER A1/L406.
12. 2.5' X 4' ADA CLEAR FLOOR SPACE.
13. RESILIENT SURFACING TILES. INSTALL PER A9/L405.
14. EXERCISE EQUIPMENT (9) AND ANNOUNCEMENT SIGN (1). INSTALL PER MANUFACTURER'S INSTRUCTIONS AND L802/L803.
15. CURB. INSTALL PER A1/L404. WIDTH PER PLAN.
16. CURBING AT DRIVEWAY GATE. INSTALL PER J1/L406.
17. ASPHALT CONCRETE PAVING. INSTALL PER E1/L404.
18. ASPHALT SEAL COAT. INSTALL PER LANDSCAPE SPECIFICATIONS.
19. CONSTRUCTION SIGN. INSTALL PER J5/L404. FINAL LOCATION TO BE APPROVED BY PROJECT MANAGER.
20. ADA DETECTABLE WARNING SURFACE. INSTALL PER LA CITY STD DETAILS S-442-6 AND S-601. INSTALL OVER NEW CONCRETE PAVING PER E13/L404.
21. ADA PARKING SPACE. INSTALL PER E13/L406.
22. PARKING SPACE. INSTALL PER J13/L406.
23. EX. CONCRETE STAIRS. PROTECT IN PLACE.
24. IRRIGATION CONTROLLER ENCLOSURE. REFER TO IRRIGATION PLAN, L601.
25. EX. CATCH BASIN. PROTECT IN PLACE.
26. EX. TREE. PROTECT IN PLACE.
27. CONCRETE MOW STRIP/HEADER. INSTALL PER A9/L404. WIDTH PER PLAN NOTES.
28. STORAGE CONTAINER (2) (20' L X 8' W X 8.5' H) BY CONTAINER ALLIANCE OR APPROVED EQUAL (866) 713-9348. SHALL BE "ONE TRIP" LIKE NEW CONDITION. REMOVE ALL STICKERS/MARKINGS AND PAINT PER SPECIFICATIONS. COLOR: TO MATCH BUILDING.
29. TRASH ENCLOSURE. (SEPARATE PERMIT) INSTALL PER E5/L405.
30. EX. FREESTANDING WALL. PROTECT IN PLACE.
31. EX. CHAINLINK FENCE. PROTECT IN PLACE.
32. 25' TALL LIGHT POLE WITH CONCRETE BASE. SEE ELECTRICAL PLANS.
33. EX. UTILITY POLE. PROTECT IN PLACE.
34. EX. GUY WIRE. PROTECT IN PLACE
35. TRASH CAN (5). INSTALL PER J1/L405.
36. EX. DRIVEWAY. PROTECT IN PLACE.
37. WOOD FACILITY SIGN. INSTALL PER E1/L406.
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56. EX. CMU RETAINING WALL. PROTECT IN PLACE.
57. WATER VALVE VAULT BOX. REPLACE EX. WITH CONCRETE VALVE BOX. FIELD VERIFY DIMENSIONS.
58. ELECTRICAL EQUIPMENT PAD. INSTALL PAVING PER E13/L404. INSTALL CHAINLINK FENCING CAGE AROUND EQUIPMENT TO BE INSTALLED PER J1/L407. FINAL DIMENSIONS OF PAD/FENCING TO BE DETERMINED BY CONTRACTOR BASED ON EQUIPMENT SIZE.
59. CURB CUT @ PERMAVOID CURB WALL. INSTALL PER A1/L405.
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67. CURB WALL. INSTALL PER E1/L409.

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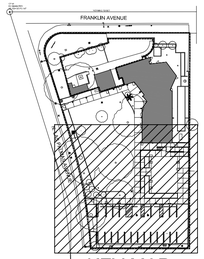
11. AN ABANDONED 48" WIDE X 52" HIGH CONCRETE STORMDRAIN PIPE IS LOCATED UNDERNEATH THE EX. SHUFFLEBOARD COURT (CONTRACTOR WILL BE PROVIDED WITH AVAILABLE EXISTING AS-BUILT PLANS); SHOULD THE CONTRACTOR MAKE CONTACT WITH THE STORMDRAIN PIPE WHILE INSTALLING THE SHADE STRUCTURE, CONTRACTOR WILL NOTIFY THE GEOTECHNICAL ENGINEER TO PROVIDE MITIGATION PROCEDURES TO ENSURE PIPE IS PROTECTED IN PLACE AND NO VOIDS ARE CREATED.



KEY MAP
1"=100'

BUREAU OF ENGINEERING
OFFICIAL RECORD

DIG ALERT
Call Toll Free 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
Underground Service Alert of Southern California

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES: (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESER
DESIGNED BY: GREG MOESER
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT

	DATE:
VERTICAL CONTROL: FB #4111 PGS 701A	9/22/25
HORIZONTAL CONTROL: FB #4111 PGS 701A	9/22/25
	9/22/25
	9/22/25

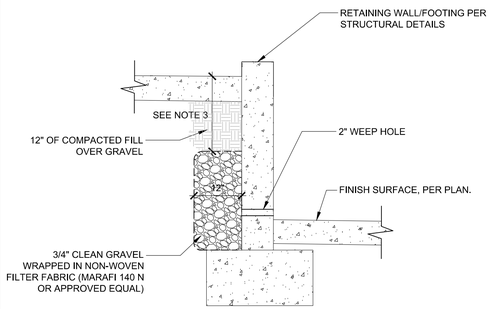
LANDSCAPE ARCHITECT
ROBERT WALKER
No. 6380
Expiration Date: 08-31-2026
LICENSED
STATE OF CALIFORNIA

SHEET TITLE: CONSTRUCTION PLAN SHEET 2
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L403
SHEET 58 OF SHEETS 115

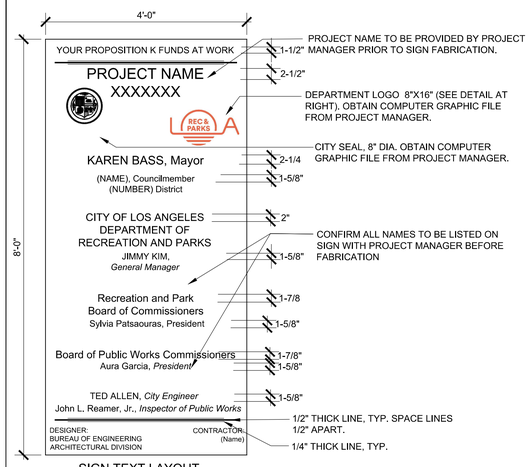
PLOTTED: 9/22/2025



NOTES:
1. REFER TO GRADING PLAN FOR WALL HEIGHTS AND OUTLET INFORMATION.
2. SEE STRUCTURAL PLANS FOR WALL/FOOTING DETAILS.
3. GRAVEL/FABRIC SHALL EXTEND UP THE WALL TO BE NO MORE THAN 18" FROM THE FINISH SURFACE/FINISH GRADE BEHIND THE WALL. SEE GEOTECH REPORT.

J1 RETAINING WALL DRAINAGE

N.T.S.



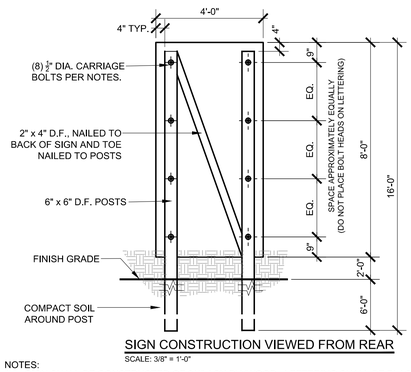
SIGN TEXT LAYOUT

SCALE: 3/4" = 1'-0"

J5 PARK CONSTRUCTION SIGN

AS NOTED

L6030



SIGN CONSTRUCTION VIEWED FROM REAR

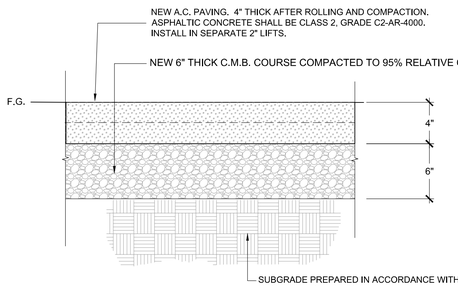
SCALE: 3/8" = 1'-0"

NOTES:
1. SIGN SHALL BE CONSTRUCTED OF 3/4" ACX PLYWOOD. LETTERING SHALL BE PLACED ON FRONT SIDE. PAINT ALL EXPOSED WOOD SURFACES WITH ONE COAT PRIMER AND TWO COATS ENAMEL, PER DUNN-EDWARDS PRINTED SPECIFICATIONS, OR APPROVED EQUAL. COLORS: SIGN, TRIM, POSTS, AND DIAGONAL BRACING-SNOWCAP (WHITE) Q9-36P; ALL LETTERING (EXCLUDING CITY SEAL) AND TREE SILHOUETTE DESIGN SHALL BE BLACK.
2. SECURE SIGN TO 6" X 6" POSTS WITH 1/2" DIAMETER CARRIAGE BOLTS OF SUFFICIENT LENGTH TO SECURE SIGN TO POSTS. FOUR BOLTS PER POST. PROVIDE GALVANIZED WASHERS UNDER NUTS. DO NOT PLACE BOLTS THROUGH LETTERING.
3. ☐ ALTERNATE SIGN MOUNTING: UPON APPROVAL FROM PROJECT MANAGER, CONTRACTOR MAY OPT TO MOUNT SIGN ON A MOVEABLE BASE TO ACCOMMODATE CONSTRUCTION ACTIVITIES.
4. IF BOX TO LEFT IS CHECKED, ENTIRE FACE OF SIGN SHALL BE COVERED WITH 4' X 8' X 3/16" SHEET OF CLEAR PLEXIGLAS TO PROTECT FROM GRAFFITI. SECURE TO FACE OF SIGN WITH 1" X 2" EDGE TRIM. SECURE EDGE TRIM WITH NUMBER 12 X 1-1/4" STAINLESS STEEL FLAT HEAD WOOD SCREWS, SPACE AT 18" ON CENTER, AROUND PERIMETER OF SIGN.
5. SEE NOTICE TO CONTRACTORS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. SIGN SHALL BE INSTALLED WITHIN TWO WEEKS OF THE START OF CONSTRUCTION.

OBTAIN FULL SCALE COLOR GRAPHIC FILE OF DEPARTMENT LOGO FROM PROJECT MANAGER

DETAIL OF DEPARTMENT LOGO

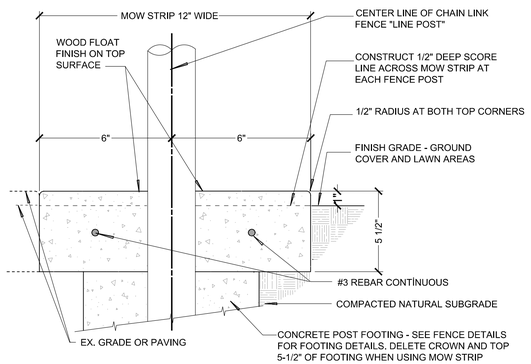
NOT TO SCALE



NOTES:
1.) FOR NEW PAVING, USE THE FOLLOWING SEALER APPLICATION: 2 COATS 'GUARDTOP' PAVEMENT SEALER OR EQUAL, APPLIED AFTER 24 HOURS OF THE INSTALLATION OF ASPHALT CONCRETE.

E1 ASPHALT CONCRETE PAVEMENT

N.T.S. — RP DETAIL L3150

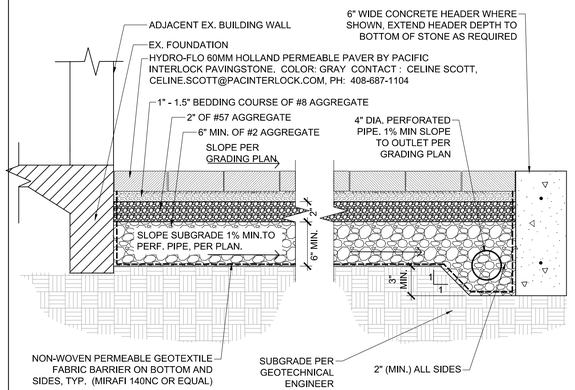


NOTES:
1. PLACE PLASTIC CONTROL JOINTS AT ALL CHANGES IN DIRECTION.
2. WHEN MOW STRIP IS INSTALLED ADJACENT TO EXISTING A.C. PAVÍNG,THE EXISTING A.C. PAVING SHALL BE SAW CUT 12" FROM THE EDGE OF THE MOW STRIP AND NEW ASPHALT CONCRETE PLACED AFTER MOW STRIP IS IN PLACE.

RP VERSION 12-09-04, SLG

E5 12" CONCRETE MOW STRIP AT TUBULAR STEEL FENCE

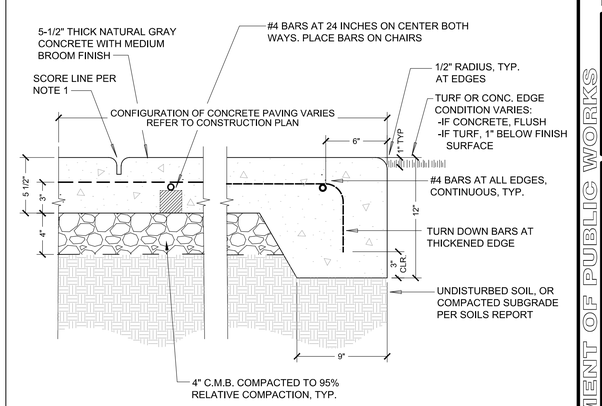
N.T.S. — RP DETAIL 321



NOTES:
1. ALL STONE MATERIALS SHALL BE WASHED WITH LESS THAN 1% PASSING THE NO. 200 SIEVE.
2. REFER TO LANDSCAPE CONSTRUCTION NOTES FOR JOINT FILLER.
3. ANY GAPS AT THE EDGE OF PAVING SHALL BE FILLED WITH PAVERS CUT TO FIT AS NEEDED.
4. REFER TO LANDSCAPE CONSTRUCTION NOTES FOR ADDITIONAL INFORMATION.
5. INSTALL PAVERS IN A RUNNING BOND PATTERN.

E9 PERMEABLE PAVER INSTALLATION

N.T.S. — BOE VERSION Oct/08 - SHD, RWF — RP DETAIL L3650

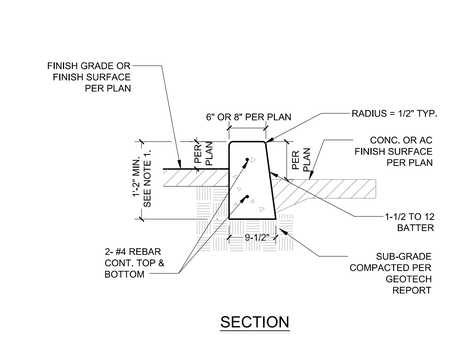


NOTES:
1. PROVIDE TOOLED SCORE LINES, 1" DEEP, AT LOCATIONS SHOWN ON CONSTRUCTION PLAN.
2. EXPANSION JOINTS SHALL BE CONSTRUCTED PER DETAIL AT LOCATIONS SHOWN ON PLAN.
3. PROVIDE ISOLATION JOINT PER DETAIL AGAINST PREVIOUSLY CONSTRUCTED FIXED ELEMENTS.
4. END OF POUR JOINTS - SEE LANDSCAPE SPECIFICATIONS.

RWF 1-23-18

E13 CONCRETE PAVING, THICKENED EDGE

NTS — RP DETAIL 3010

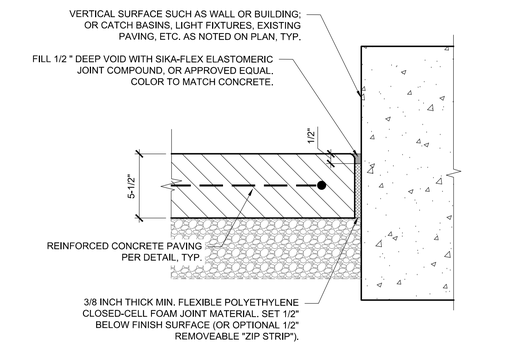


SECTION

NOTES:
1. INCREASE DEPTH OF CURB AS NECESSARY TO KEEP CURB AT LEAST 6" BELOW FINISH GRADE OR 2X CURB FACE HEIGHT WHICHEVER IS DEEPER.
2. PROVIDE TOOLED SCORE LINES EVENLY SPACED THROUGHOUT CURB NOT TO EXCEED 20' O.C.
3. PROVIDE TOOLED SCORE LINES AT THE BEGINNING AND END OF ALL CURVED SECTIONS.
4. OMIT BATTER/WIDENED BASE ON 0" FLUSH CURB WHERE NOTED ON PLAN.

A1 CONCRETE CURB

N.T.S



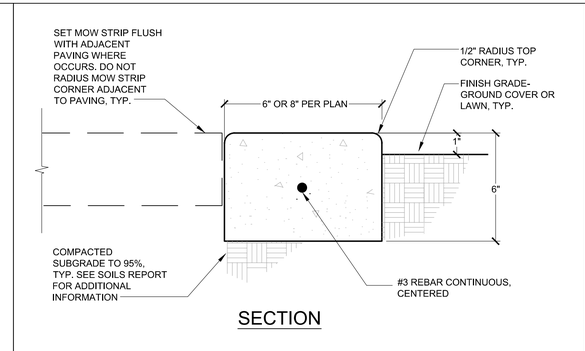
SECTION

NOTES:
1. PROVIDE ISOLATION JOINTS AT ALL CONCRETE POURS ADJACENT TO FIXED VERTICAL ELEMENTS, TYP.
2. MAINTAIN LINE AND GRADE AT ALL ISOLATION JOINTS, TYP.
3. SEE LANDSCAPE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.

BOE 2/13/18 RWF

A5 CONCRETE ISOLATION JOINT

N.T.S. — RP DETAIL L3071

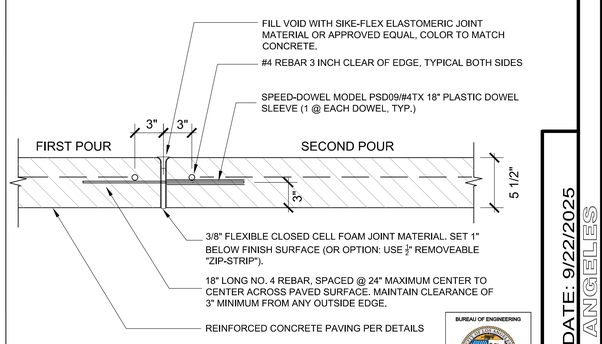


SECTION

NOTES:
1. SCORE MOW STRIP AT 10' O.C. MAX, AND AT ALL CHANGES IN DIRECTION SIMILAR TO CONCRETE PAVING DETAIL.
2. WHEN MOW STRIP IS INSTALLED ADJACENT TO EXISTING A.C. PAVING, THE EXISTING A.C. PAVING SHALL BE SAW-CUT 12" FROM THE EDGE OF THE MOW STRIP AND NEW ASPHALT CONCRETE PLACED AFTER MOW STRIP IS IN PLACE.

A9 CONCRETE MOW STRIP

N.T.S. — BOE VERSION Feb/08 - RF,SD — RP DETAIL L3200



SECTION

NOTE:
1. MAINTAIN LINE AND GRADE AT EXPANSION JOINTS.
2. EXPANSION JOINT SHALL BE PLACE AT MAX. SPACING OF EVERY 20' UNLESS OTHERWISE SPECIFIED ON THE CONSTRUCTION PLAN.

BUREAU OF ENGINEERING — OFFICIAL RECORD

A13 DOWELED EXPANSION JOINT

N.T.S. — RP DETAIL L3070

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

REVISION DATES (DESIGN STAGE ONLY)

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT
ROBERT WALKER
No. 6280
Signature
Renewal: 08/31/2025
Date: 9/22/2025
LANDSCAPE ARCHITECT

ALFRED MATA, PE
ARCHITECTURAL DIVISION
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS

INTERIM CITY ENGINEER	DATE:
ALFRED MATA, PE	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 1

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

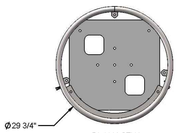
WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L404

SHEET 59 OF SHEETS 115

PLOTTED: 9/22/2025



PLAN VIEW



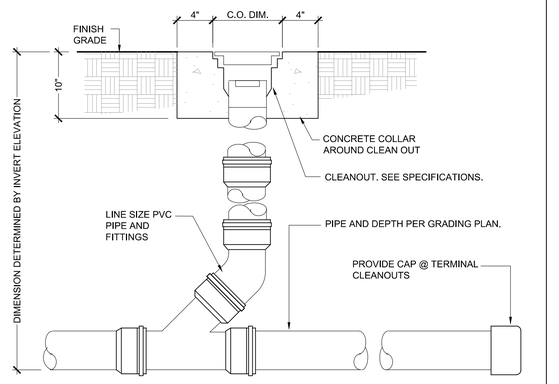
ISOMETRIC



ELEVATION

NOTES:
TRASH CAN: ULTRA SITE MODEL AUGUSTA 55 GALLON RECEPTACLE WITH DOOR. SURFACE MOUNT PER MANUFACTURER'S INSTRUCTIONS, COLOR: BROWN. CONTACT NATE YOUNKER AT GREAT WESTERN RECREATION 435-245-5055.

J1	TRASH CAN
N.T.S.	

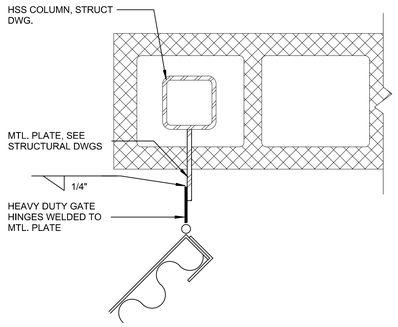


DRAINLINE CLEANOUT SECTION

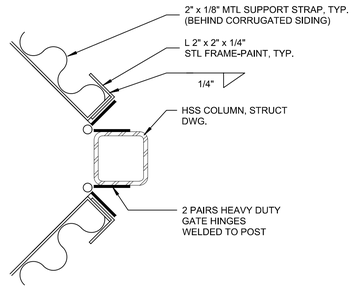
NOTE: INSTALL PER PLAN. OMIT CONCRETE COLLAR IN PAVER AREAS.

RP VERSION 12-12-92 RDF

E1	DRAIN LINE CLEAN OUT	RP DETAIL 3320
N.T.S.		



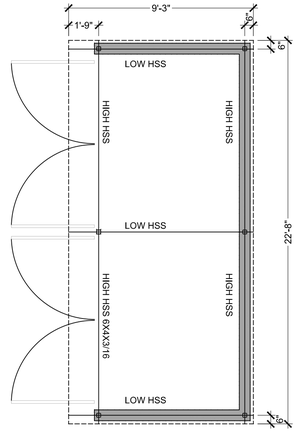
GATE HINGE DETAIL



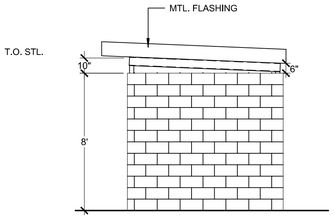
CENTER JAMB DETAIL

NOTES:
1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO THE PROJECT MANAGER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR INSTALLATION.
2. ALL METAL WORK SHALL COMPLY WITH THE S.S.P.W.C. "GREENBOOK". ALL PAINTING AND WELDING SHALL FOLLOW REQUIREMENTS OF BCA FOR SHOP AND FIELD INSPECTION.
3. ALL CONNECTIONS SHALL BE FULLY WELDED. ALL WELDS SHALL BE A MINIMUM OF 1/8" THICK W/ COMPLETE PENETRATION AND TENSILE STRENGTH IN CONFORMANCE WITH SSPWC SECTION 304-1.9
4. GRIND ALL WELDS SMOOTH. REMOVE ALL LOOSE MILL, SCALE, RUST, OIL & GREASE PRIOR TO PAINTING.
5. ALL METAL COMPONENTS SHALL BE SHOP PRIMED WITH ONE 2 MIL. COAT ALKYD CORROSION INHIBITING PRIMER AND TWO 1.5 MIL. COATS OF SEMI-GLOSS ACRYLIC LATEX ENAMEL. COLOR: DARK BRONZE/BROWN.
6. ANY PAINTED SURFACE DAMAGED DURING DELIVERY OR INSTALLATION SHALL BE SANDED SMOOTH, PRIMED AND REPAINTED WITH TWO COATS OF THE SPECIFIED ACRYLIC LATEX ENAMEL.
7. SEE STRUCTURE DRAWINGS FOR WALL/SLAB REINFORCEMENT/FOOTING AND METAL ROOF CONSTRUCTION.
8. CMU BLOCK COLOR TO BE NATURAL. PAINT INTERIOR BLOCK WALL WITH EPOXY PAINT TO MATCH COLOR.
9. MORTAR COLOR TO MATCH BLOCK COLOR.
10. PORTIONS OF METAL EMBEDDED IN MORTAR SHALL NOT BE PRIMED/PAINTED.

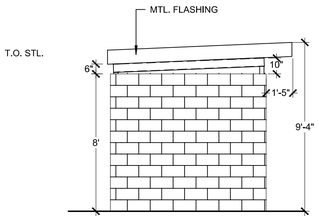
E5	TRASH ENCLOSURE
N.T.S.	



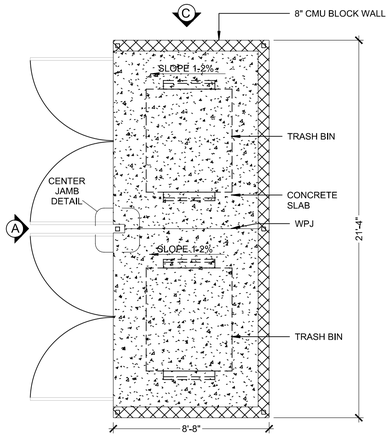
ROOF PLAN



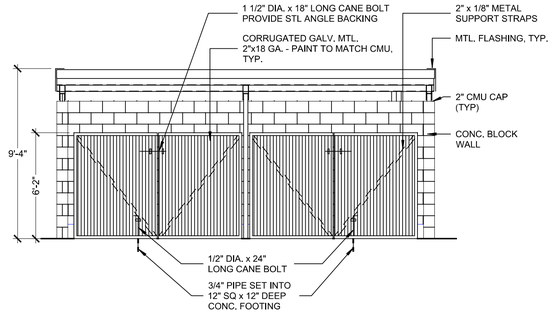
ELEVATION B - SIDE



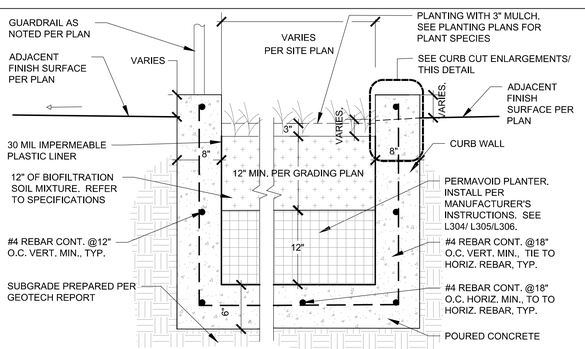
ELEVATION C - SIDE



PLAN VIEW



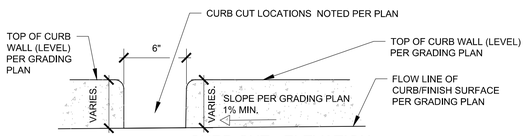
ELEVATION A - FRONT



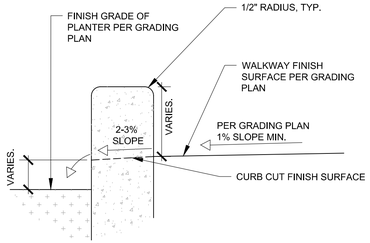
SECTION

NOTES:
1. FINISH GRADE OF PLANTER SOIL TO BE LEVEL. REFER TO SPECIFICATIONS FOR SOIL MIXTURE . ALSO REFER TO GRADING PLAN FOR BIOFILTRATION CURB/WALL OPENING LOCATION.
2. COORDINATE WITH DRAIN PIPING AND IRRIGATION PIPING/CONDUIT. SEE GRADING AND IRRIGATION PLANS.
3. PROVIDE 1/2" RADIUS ON ALL EXPOSED CORNERS.
4. ATTACH PVC LINER TO CONCRETE WITH LIQUID NAILS FUZE IT ADHESIVE OR APPROVED EQUAL. EXTEND LINER TO 2"-3" BELOW TOP OF FINISH GRADE OF PLANTER SOIL.

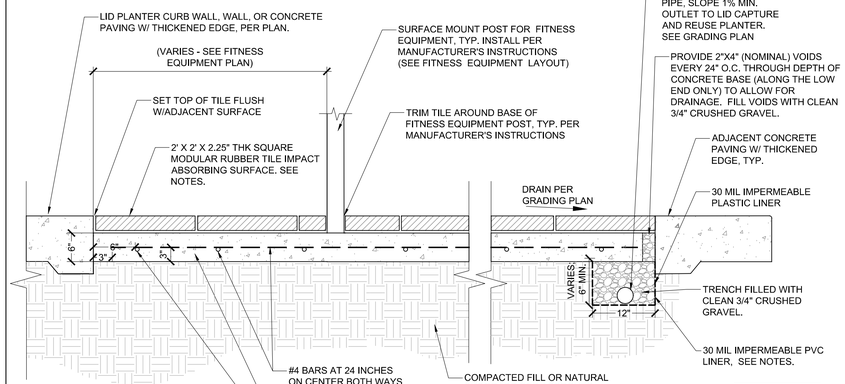
A1	PERMAVOID PLANTER CURB WALLS
N.T.S.	



CURB CUT - ELEVATION



CURB CUT - SECTION



A9	RESILIENT SURFACING TILES - SURFACE MOUNT
N.T.S.	

NOTES:
1. INSTALL FITNESS EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL PROVIDE SUBMITTAL FOR FITNESS EQUIPMENT MODELS AND INSTALLATION METHOD FOR APPROVAL PRIOR TO PURCHASE AND INSTALLATION.
2. RECYCLED RUBBER RESILIENT INTERLOCKING TILES TO BE 2.25" GT IMPAX WITH GEZOFLEX EPDM GRANILES OR APPROVED EQUAL. CONTACT NATE YOUNKER AT GAMETIME (858) 344-0445. TILE THICKNESS SHALL BE 2.25". TILES SHALL HAVE A CRITICAL FALL HEIGHT RATING OF 4' WHEN EVALUATED IN ACCORDANCE WITH ASTM PROCEDURE F1292. RUBBER TILE COLOR TO BE **BLUE**.
3. CONTRACTOR SHALL PROVIDE SUBMITTAL FOR IMPACT ABSORBING SURFACE MATERIAL AND INSTALLATION METHOD PRIOR TO PURCHASE AND INSTALLATION, INCLUDING PHYSICAL SAMPLE WITH PROPOSED COLOR.
4. INSTALL GT IMPAX INTERLOCKING TILES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AT LOCATIONS INDICATED.
5. LAYOUT TILE SURFACE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
6. APPLY WITH ADHESIVE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR TILE-TO-TILE AND PERIMETER TILE-TO-BASE INSTALLATION.
7. IMPERMEABLE LINER: 30 MIL PVC LINER BY ACCUGEO OR APPROVED EQUAL. IMPERMEABLE PLASTIC LINER SHALL CONFORM TO SECTION 210-2 PLASTIC LINER (SUBSECTIONS 210-2.1 TO 210-2.3.6) OF SSPWC.IMPERMEABLE LINER: ALL JOINTS AND PIPE PENETRATIONS TO BE WATER-TIGHT AND WELDED BY A QUALIFIED CONTRACTOR.
8. CONTRACTOR TO VERIFY FITNESS EQUIPMENT POST LOCATIONS PRIOR TO TILE INSTALLATION AND SHALL REPAIR AS NEEDED/TRIM AROUND ALL TILES IMPACTED BY FITNESS EQUIPMENT POST INSTALLATIONS.
9. SLAB THICKENS OVER SHADE STRUCTURE CAISSONS/GRADE BEAM. SEE DETAIL J1/L409 FOR RESILIENT SURFACING TILE AT SHADE STRUCTURE POSTS.

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT
ROBERT WALKER
No. 6380
Professional Engineer
Landscape Architect
Civil
Structural
Mechanical
Electrical
No. 6380
LICENSED
STATE OF CALIFORNIA

BUREAU OF PUBLIC WORKS
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE
BOARD PRESIDENT

INTERIM CITY ENGINEER	DATE:
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	9/22/25

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 2

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L405

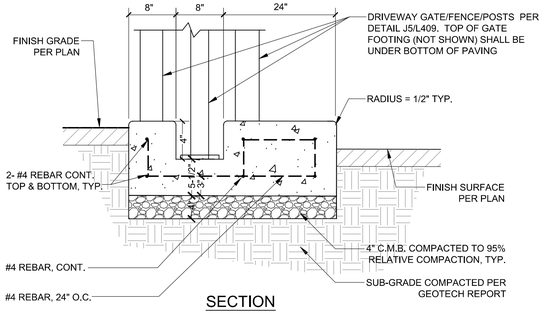
SHEET 60 OF SHEETS 115

PLOTTED: 9/22/2025

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

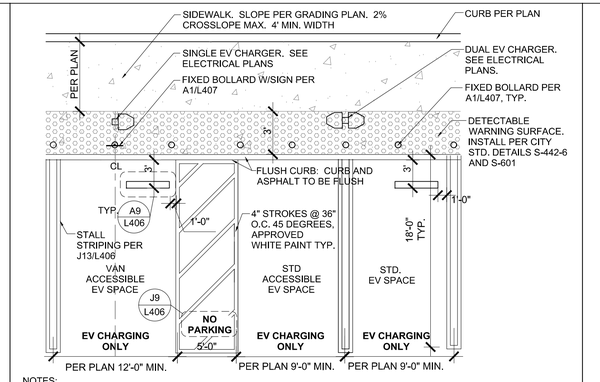
REVISION DATES (DESIGN STAGE ONLY)



SECTION

NOTES:
1. CONTRACTOR SHALL CONFIRM DIMENSIONS W/GATE SHOP DRAWING PRIOR TO FORMING.
2. COORDINATE CONSTRUCTION WITH INSTALLATION OF GATE/FENCE POSTS.
3. PROVIDE TOOLED SCORE LINES EVENLY SPACED THROUGHOUT CURB NOT TO EXCEED 20' O.C.

J1	CURB @ DRIVEWAY GATE
N.T.S.	



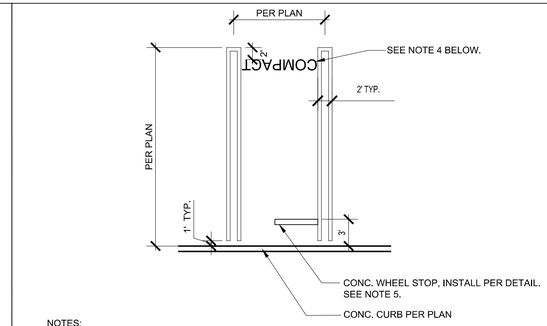
NOTES:
1. CONTRACTOR SHALL PROVIDE VAN ACCESSIBLE CHARGING STATION SIGNAGE IN COMPLIANCE WITH CALIFORNIA BUILDING CODE SECTION 11B-812.8.
2. "EV CHARGING ONLY" SHALL BE IN LETTERS 12 INCHES HIGH MINIMUM. THE CENTERLINE OF THE TEXT SHALL BE A MAXIMUM OF 6 INCHES FROM THE CENTERLINE OF THE VEHICLE SPACE AND ITS LOWER CORNER AT, OR LOWER SIDE ALIGNED WITH, THE END OF THE PARKING SPACE LENGTH.
3. STRIPING SHALL BE PAINTED WITH TWO COATS OF FAST DRY TRAFFIC PAINT.
4. CONFIRM PARKING SIGN TEXT/GRAPHICS WITH PROJECT MANAGER PRIOR TO ORDERING.
5. INTERNATIONAL SYMBOL OF ACCESSIBILITY NOT REQUIRED ON PARKING SPACE.

J5	ELECTRIC VEHICLE (EV) PARKING SPACE LAYOUT	
N.T.S.		RP DETAIL 500.1



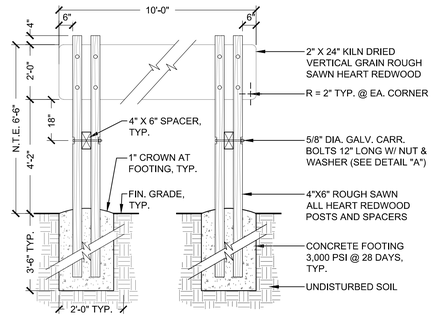
NOTES:
1. THE WORDS "NO PARKING" SHALL BE PAINTED IN WHITE LETTERS NO LESS THAN 1'-0" HIGH ON A CONTRASTING BACKGROUND AND LOCATED SO THAT IS VISIBLE TO TRAFFIC ENFORECMENT OFFICIALS.
2. SHALL BE PAINTED WITH TWO COATS OF FAST DRY TRAFFIC PAINT.

J9	NO PARKING DETAIL
N.T.S.	

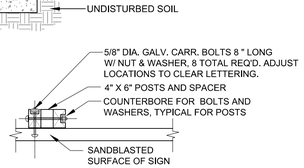


NOTES:
1. PARKING STALL LINES SHOWN ON STRIPING PLANS ARE DIAGRAMATIC. LINES SHALL BE PAINTED WHITE WITH 4" STROKES IN ACCORDACE WITH THIS DETAIL. ALL STRIPING SHALL BE PAINTED FAST DRY TRAFFIC PAINT PER MANUFACTURER'S INSTRUCTIONS. TOTAL THICKNESS OF PAINT SHALL BE 15 MIL.
2. SEE LANDSCAPE CONSTRUCTION PLAN FOR ACTUAL STALL DIMENSIONS.
3. STRIPING PER LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY DOC. NO. P/ZC 2002-001.
4. FOR COMPACT SPACES, INSTALL "COMPACT" LETTERING PER DETAIL E1/L407.
5. INSTALL WHEEL STOPS WHERE INDICATED ON PLANS. FOR STALLS WITH A 2' CURB OVERHANG, ELIMINATE WHEEL STOP.

J13	PARKING STALL STRIPING	
N.T.S.		DETAIL 3--

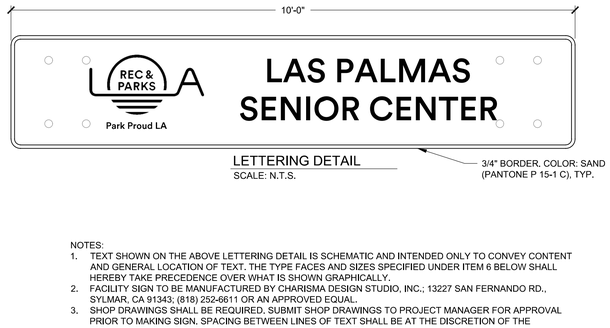


SECTION
SCALE: N.T.S.

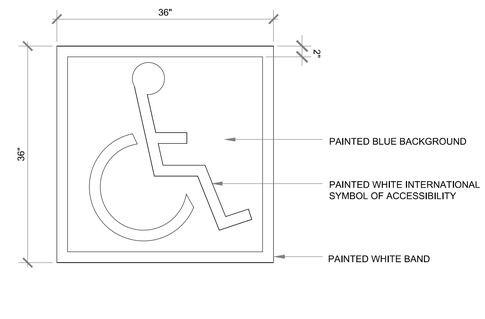


A PLAN VIEW -- SIGN TO POST ATTACHMENT (N.T.S.)

E1	WOOD FACILITY SIGN	
N.T.S.		RP DETAIL L6000

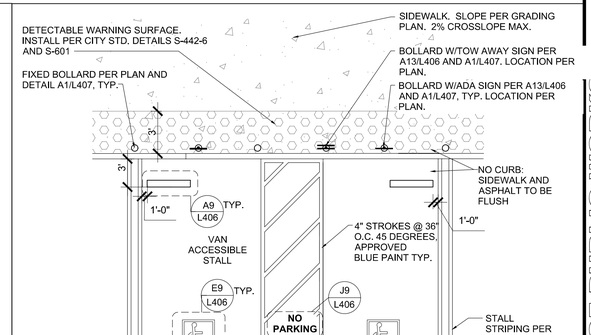


NOTES:
1. TEXT SHOWN ON THE ABOVE LETTERING DETAIL IS SCHEMATIC AND INTENDED ONLY TO CONVEY CONTENT AND GENERAL LOCATION OF TEXT. THE TYPE FACES AND SIZES SPECIFIED UNDER ITEM 6 BELOW SHALL HEREBY TAKE PRECEDENCE OVER WHAT IS SHOWN GRAPHICALLY.
2. FACILITY SIGN TO BE MANUFACTURED BY CHARISMA DESIGN STUDIO, INC.; 13227 SAN FERNANDO RD., SYLMAR, CA 91343; (818) 252-6611 OR AN APPROVED EQUAL.
3. SHOP DRAWINGS SHALL BE REQUIRED. SUBMIT SHOP DRAWINGS TO PROJECT MANAGER FOR APPROVAL PRIOR TO MAKING SIGN. SPACING BETWEEN LINES OF TEXT SHALL BE AT THE DISCRETION OF THE SIGN-MAKER, SUBJECT TO APPROVAL OF PROJECT MANAGER.
4. SIGN BACKGROUND TO BE SAND BLASTED TO EXPOSE WOOD GRAIN TO A DEPTH OF 1/4 INCH.
5. COLORS ON SIGN SHALL BE AS FOLLOWS:
   - ALL SAND BLASTED SURFACES, POSTS, AND BACK OF SIGN SHALL RECEIVE 2 COATS OF ACRIHUE
   - ACRYLIC STAIN BY DUNN EDWARDS IN WEATHERED BROWN W-703-26.
   - BORDERS SHALL BE 3/4 INCH WIDE TYPICAL; COLOR SHALL BE SAND (PANTONE P 15-1 C).
6. TEXT SIZE, TYPE FACE, AND COLOR SHALL BE AS FOLLOWS:
   "FACILITY NAME" 5 INCHES HIGH; CIRCULAR STD MEDIUM; SAND (PANTONE: P 15-1 C).
   "REC & PARKS" LOGO 12 1⅛"H X 24 ⅜"W; SALMON (PANTONE 7416).
   "PARK PROUD LA" 1 ⅜" HIGH; CIRCULAR STD MEDIUM; SAND (PANTONE: P 15-1 C).



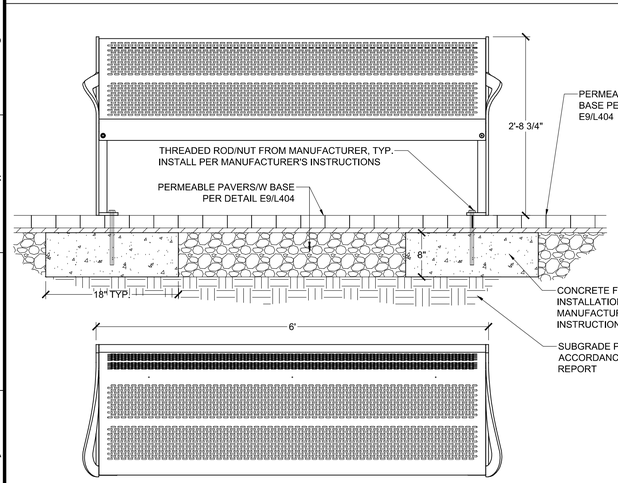
NOTES:
1. THE SYMBOL SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE COLOR NO. 15090 IN FEDERAL STANDARD 595B.
2. ALL WORK SHALL COMPLY WITH "THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990".
3. THE SYMBOL SHALL COMPLY WITH SHALL COMPLY WITH 11B-703.7.2.1.
4. THE CENTERLINE OF THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE A MAXIMUM OF 6" FROM THE CENTERLINE OF THE PARKING SPACE, ITS SIDES PARALLELL TO THE LENGTH OF THE PARKING SPACE AND ITS LOWER CORNER AT OR LOWER SIDE ALIGNED WITH THE END OF THE PARKING SPACE.
5. SHALL BE PAINTED WITH FAST DRY TRAFFIC PAINT.

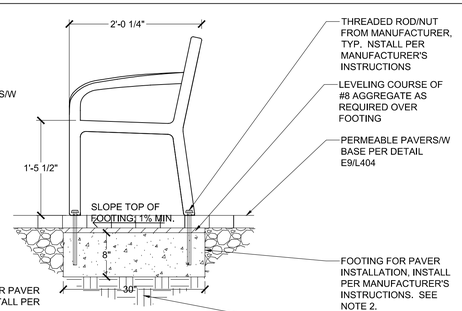
E9	INTERNATIONAL SYMBOL OF ACCESSIBILITY	
N.T.S.		DETAIL 3--



NOTES:
1. SHALL COMPLY WITH LADBS DOC. P/BC 2017-084.
2. THE CENTERLINE OF THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE A MAXIMUM OF 6" FROM THE CENTERLINE OF THE PARKING SPACE, ITS SIDES PARALLEL TO THE LENGTH OF THE PARKING SPACE AND ITS LOWER CORNER AT, OR LOWER CORNER ALIGNED WITH, THE END OF THE PARKING SPACE.
3. STRIPING SHALL BE PAINTED FAST DRY TRAFFIC PAINT PER MANUFACTURER'S INSTRUCTIONS

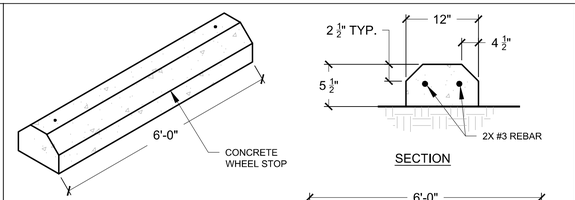
E13	ADA PARKING SPACE LAYOUT	
N.T.S.		RP DETAIL 500.1





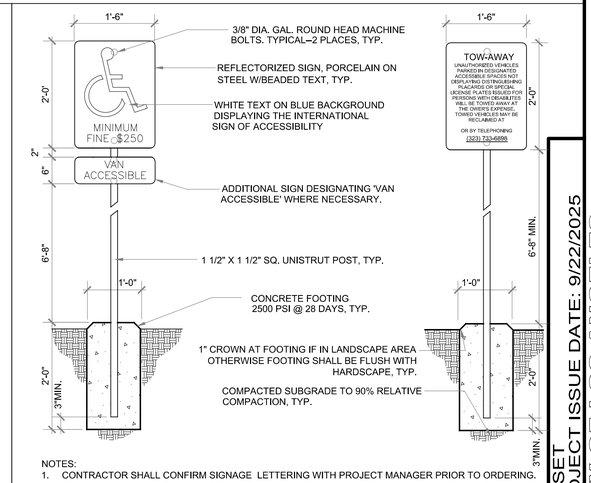
NOTES:
1. BENCH MODEL: RATIO BENCH, FORMS + SURFACES, CONTACT: CHRIS KELLEY (800) 451-0410, chris.kelley@forms-surfaces.com. COLOR: DARK CORTEN TEXTURE.
2. WHEN INSTALLING IN CONCRETEPAVING AREAS, OMIT FOOTING AND INSTALL WITH SURFACE MOUNT PER MANUFACTURER'S INSTRUCTIONS.

A1	BENCH	
N.T.S		



NOTES
1. WHEEL STOP SHALL BE PREFABRICATED P.C. CONCRETE - 3500 PSI

A9	CONCRETE WHEEL STOP	
N.T.S.		



NOTES:
1. CONTRACTOR SHALL CONFIRM SIGNAGE LETTERING WITH PROJECT MANAGER PRIOR TO ORDERING.

A13	ACCESSIBLE PARKING SIGNS	
N.T.S.		

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

REVISION DATES (DESIGN STAGE ONLY)

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT
ROBERT WALKER
No. 6380
Professional Landscape Architect
Richard Dodd
Robert Walker
Steven Fierce
Greg Moesser
LICENSED
STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE
INTERIM CITY ENGINEER

DATE:	9/22/25	9/22/25	9/22/25	9/22/25

ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESSER
DESIGNED BY: GREG MOESSER
DRAWN BY: GREG MOESSER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, ASLA., PRINCIPAL ARCHITECT

CITY OF LOS ANGELES
RTI SET
PROJECT ISSUE DATE: 9/22/2025

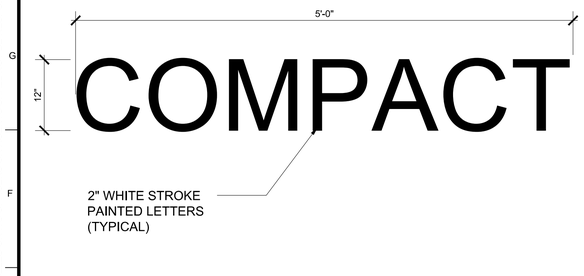
VERTICAL CONTROL: FB #4110 PGS 701A
HORIZONTAL CONTROL: FB #4110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 3
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

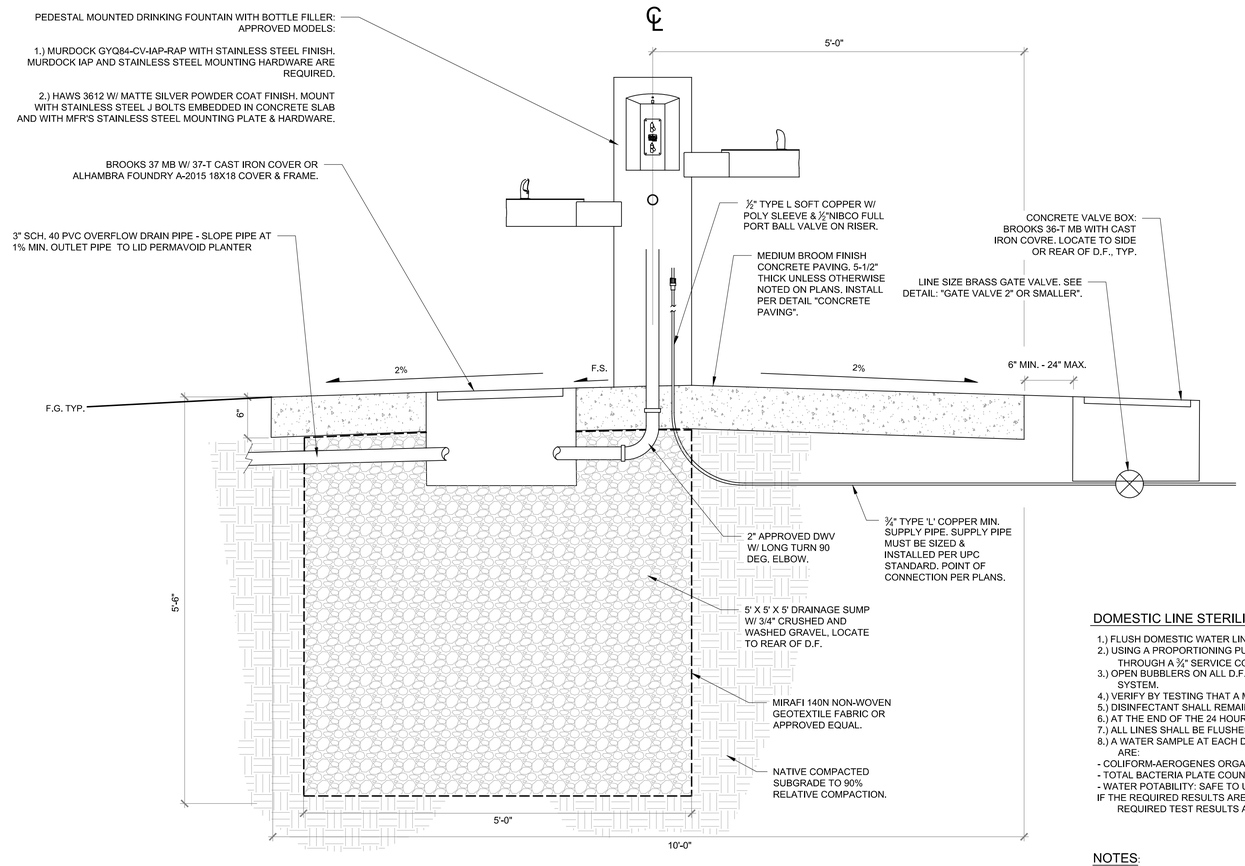
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L406
SHEET 61 OF SHEETS 115

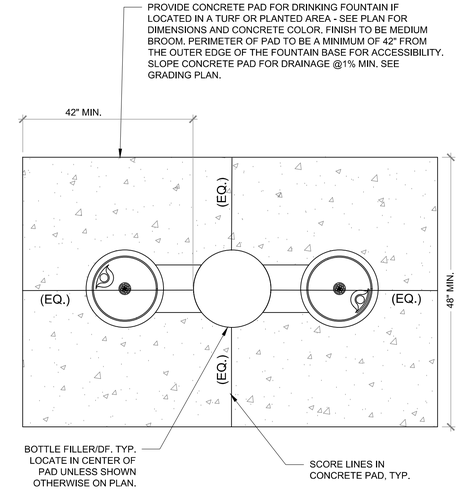
PLOTTED: 9/22/2025

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.



E1	COMPACT PARKING LETTERING		E5	ACCESSIBLE DRINKING FOUNTAIN	
N.T.S.		RP DETAIL 612	N.T.S.	BOE Version Feb/22	RP DETAIL L1732





PLAN VIEW - LAYOUT
NOT TO SCALE

DOMESTIC LINE STERILIZATION PROCEDURE:

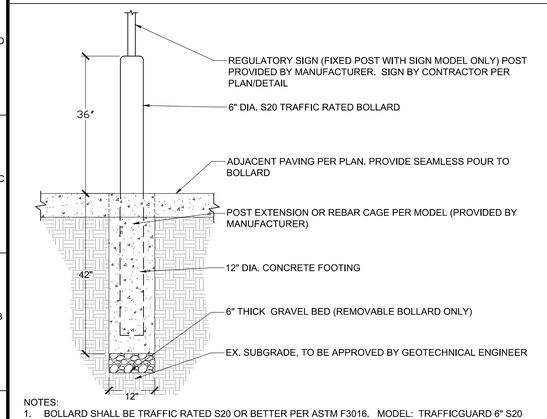
1.) FLUSH DOMESTIC WATER LINES COMPLETELY.
2.) USING A PROPORTIONING PUMP, INJECT SODIUM HYPOCHLORITE LIQUID DISINFECTANT INTO THE DOMESTIC LINE THROUGH A ¾" SERVICE COCK AT A POINT AS CLOSE TO THE WATER METER AS POSSIBLE.
3.) OPEN BUBBLERS ON ALL D.F. UNITS INSTALLED TO DISTRIBUTE DISINFECTANT THROUGHOUT THE DOMESTIC LINE SYSTEM.
4.) VERIFY BY TESTING THAT A MINIMUM CONCENTRATION OF 50 PPM OF DISINFECTANT IS ACHIEVED AT EACH D.F. UNIT.
5.) DISINFECTANT SHALL REMAIN IN THE SYSTEM FOR 24 HOURS MINIMUM.
6.) AT THE END OF THE 24 HOUR PERIOD, THE RESIDUAL LEVEL OF DISINFECTANT SHALL NOT BE LESS THAN 10 PPM.
7.) ALL LINES SHALL BE FLUSHED THOROUGHLY AFTER DISINFECTION IS COMPLETED.
8.) A WATER SAMPLE AT EACH D.F. UNIT SHALL BE TESTED BY AN APPROVED TESTING LABORATORY. REQUIRED RESULTS ARE:
- COLIFORM-AEROGENES ORGANISMS: NEGATIVE
- TOTAL BACTERIA PLATE COUNT: LESS THAN 100 PER CUBIC CENTIMETER
- WATER POTABILITY: SAFE TO USE

IF THE REQUIRED RESULTS ARE NOT MET, STERILIZATION PROCESS LISTED ABOVE SHALL BE REPEATED UNTIL THE REQUIRED TEST RESULTS ARE MET.

NOTES:

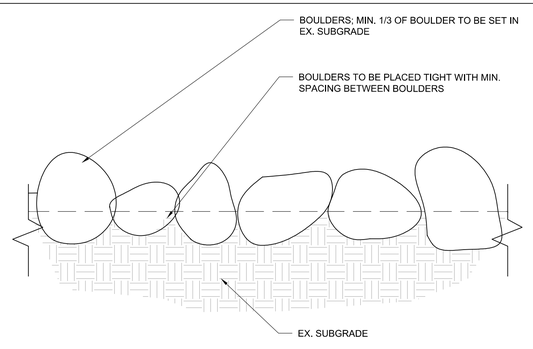
1.) INSTALL PER DETAIL. REFER TO MANUFACTURER'S INSTRUCTION FOR PLUMBING AND MOUNTING DRINKING FOUNTAIN UNIT.

2.) CONTRACTOR SHALL SUBMIT LOCATION FOR SUMP AND OVERFLOW DRAINAGE LAYOUT FOR APPROVAL BY PROJECT MANAGER PRIOR TO BEGINNING EXCAVATION.

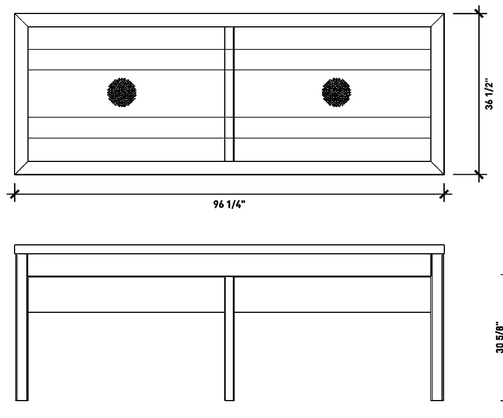


NOTES:
1. BOLLARD SHALL BE TRAFFIC RATED S20 OR BETTER PER ASTM F3016. MODEL: TRAFFICGUARD 6" S20 CORE-IN PROTECTION SYSTEM OR APPROVED EQUAL. REMOVABLE, FIXED, OR FIXED WITH SIGN OPTION PER PLAN. FINISH: POWDERCOATED, COLOR: XXXXXX SUPPLIER: TRAFFICGUARD®, INC WWW.TRAFFICGUARD.NET, (877) 727-7347 SALES@TRAFFICGUARD.NET
2. ALL STEEL PARTS PROVIDED ARE HOT-DIPPED GALVANIZED PER ASTM A123.
3. SURROUNDING PAVING SHALL BE POURED UP TO NEW BOLLARD AND HAVE SAME FINISH (TOP OF BOLLARD SHALL HAVE SAME FINISH AS SURROUNDING PAVING).

A1	FIXED BOLLARD		A5	BOULDER MULCHING		A9	ADA GARDEN PLANTER	
N.T.S.			N.T.S.			N.T.S.		



NOTES:
1. GRANITE COBBLESTONE SHALL BE 9" MIN. DIAMETER TO 24" MAX. DIAMETER FROM SITEONE LANDSCAPE(661) 255-6300 OR APPROVED EQUAL.
2. CONTRACTOR SHALL SUBMIT A SAMPLE OF THE STONE TO THE PROJECT MANAGER FOR APPROVAL PRIOR TO DELIVERY TO THE JOBSITE.

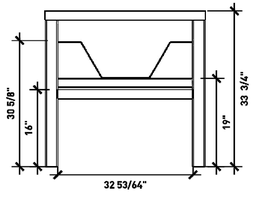


Wishbone site furnishings

WISHBONE SITE FURNISHINGS
210-27090 GLOUCESTER WAY LANGLEY, BC

DWG. TITLE: RUTHERFORD PLANTER W/C ACCESSIBILITY FROM BOTH SIDES 8'
REVISION: 07/03/2023 R:00

MATERIAL: ALUMINUM	DWG. NO. DWSBBN07032300	DRAWN BY: J. WRIGHT
PATTERN NO. N/A	MODEL NO. RPLWC-96-36	



NOTES
1. FILL PLANTER WITH KELLOGG GARDEN ORGANICS ALL NATURAL RAISED BED & POTTING MIX PREMIUM MIX OR APPROVED EQUAL PER MANUFACTURER'S INSTRUCTIONS.
2. COLOR: OIL RUBBED BRONZE.

OFFICIAL RECORD

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #4110 PGS 701A
HORIZONTAL CONTROL: FB #4110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 4
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L407
SHEET 62 OF SHEETS 115

PLOTTED: 9/22/2025

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

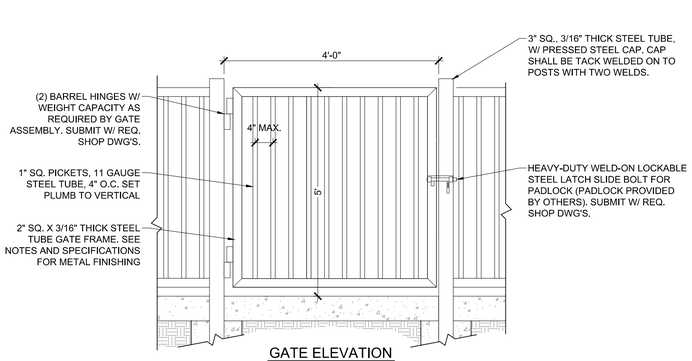
NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

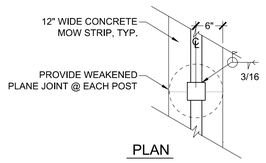
INTERIM CITY ENGINEER — DATE: 9/22/25
ALFRED MATA, PE — ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESER — 9/22/25
DESIGNED BY: GREG MOESER — 9/22/25
DRAWN BY: GREG MOESER — 9/22/25
CHECKED BY: RICHARD FISHER — 9/22/25
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT — 9/22/25

LANDSCAPE ARCHITECT ★ KENNETH ROBERT MOSER ★ LICENSED ★ STATE OF CALIFORNIA
No. 6280 — Signature — Renewal: 2026 — Date: 9/22/2025

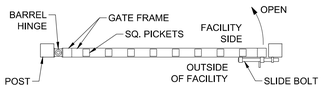
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)



GATE ELEVATION



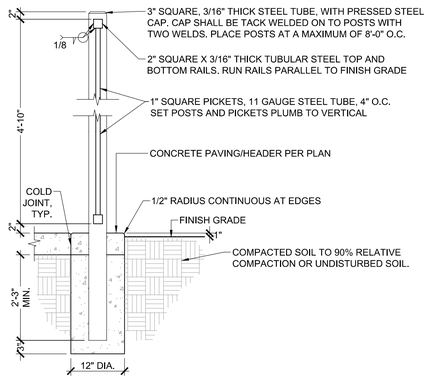
PLAN



GATE ASSEMBLY

NOTES:
REFER TO GATE DETAIL A1 THIS SHEET FOR FOOTING INFORMATION AND FENCE DETAIL J9 THIS SHEET FOR ADDITIONAL FENCING INFORMATION.

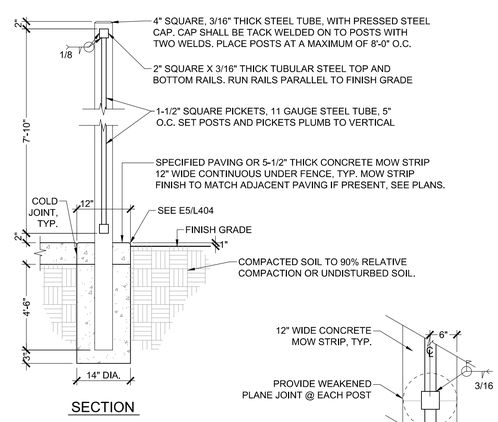
J1	5' HIGH TUBULAR MAINTENANCE GATE
N.T.S.	



SECTION

NOTES:
1. WHEN FENCING IS NOTED AT A CURB, EXTEND FOOTING/POST SO THAT DIMENSIONS ARE MAINTAINED BELOW THE LOWEST ADJACENT GRADE (BOTTOM OF CURB).

J9	5'-0" TUBULAR STEEL FENCE
N.T.S.	



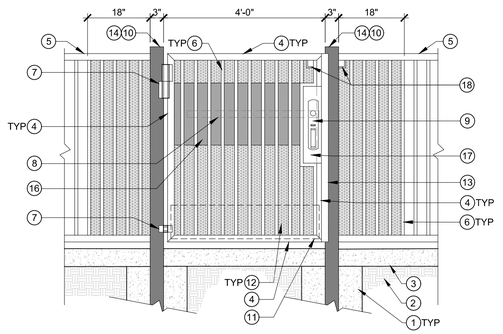
SECTION

PLAN

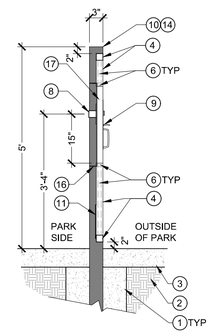
NOTE:
WHEN MOW STRIP IS INSTALLED ADJACENT TO EXIST. A.C. PAVING, PAVING SHALL BE SAW CUT 12" BACK FROM EDGE OF MOW STRIP. INSTALL NEW A.C. AFTER CONSTRUCTION OF MOW STRIP. (SEE PLANS)

J13	8'-0" TUBULAR STEEL FENCE
N.T.S.	

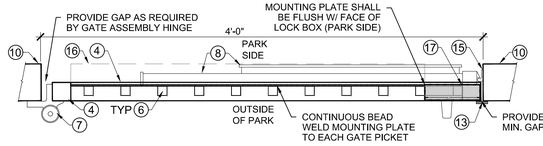
KEYNOTE LEGEND
1. POURED-IN-PLACE CONCRETE FOOTING. SEE FOOTING ENLARGEMENT BELOW.
2. COMPACTED SUBGRADE - REFER TO APPROVED GEOTECHNICAL REPORT.
3. POURED-IN-PLACE CONCRETE SLAB. SEE PLANS FOR MORE INFORMATION.
4. 2"X2"X3/16" THICK GATE FRAME.
5. TUBULAR STEEL FENCE - PER DETAILS THIS SHEET..
6. PICKETS: FOR 8'-0" TELL FENCE & GATE, USE 1-1/2"X11 GAUGE SQ. TUBULAR STEEL PICKETS @ 5" O.C. MAX. FOR 5'-0" TALL FENCE & GATE, USE 1"X11 GAUGE SQ. TUBULAR STEEL PICKETS @ 4" O.C. MAX.
7. LOCINOX HYDRAULIC GATE CLOSER AND HINGE - OR APPROVED EQUAL, WITH WEIGHT CAPACITY AS REQUIRED BY GATE ASSEMBLY.
8. VON DUPRIN E099 PANIC BAR ASSEMBLY IN SATIN CHROME FINISH - OR APPROVED EQUAL.
9. VON DUPRIN 990TP-R/V THUMB-PIECE TRIM WITH 1-1/8" RIM CYLINDER, SATIN CHROME FINISH, (KEY CYLINDER TO BE PROVIDED BY RAP) - OR APPROVED EQUAL.
10. SQ. STEEL POST, 3/16" THICK. SEE DETAIL FOR POST SIZE. SET PLUMB TO GRADE.
11. 10" TALL X3/16" THICK SHEET STEEL KICK PLATE (INSTALLED ON PARK SIDE OF GATE), WELDED TO GATE FRAME. .
12. PERFORATED METAL PANELS: 16 GAUGE GALVANIZED STEEL WITH 3/16" HOLES AND 3/32" STAGGERED, PERFORATED PANELS TO BE FRAMED WITH 1/8" THICK SHEET STEEL TO CREATE A 1/2" MINIMUM WIDTH FOR STABILITY AND MOUNTING (OR APPROVED EQUAL METHOD). ATTACH TO GATE FRAME PICKETS ON ALL 4 EDGES BY TACK-WELDING AT 1" O.C. MAX. INSTALL ON THE INSIDE OF GATE & FENCE (PARK SIDE), TO COVER ENTIRE HEIGHT OF GATE & FENCE AS SHOWN. SECURE PERFORATED METAL PANEL TO PICKETS WITH 3/4" LONG SELF-TAPPING METAL SCREWS WITH GALVANIZED WASHERS @ 18" O.C.
13. 3" WIDE X 3/16" THICK STEEL STRIP, WELDED TO GATE FRAME CONTINUOUS ON 2 SIDES, CANTILEVER 1" MIN. OVER ADJACENT FENCE POST ON STREET SIDE.
14. 3" SQ. PRESSED STEEL CAP. WELD TO POSTS ON 4 SIDES.
15. VON DUPRIN STRIKE PLATE - OR APPROVED EQUAL. MOUNT TO GATE FRAME. MODEL AND SIZE PER MANUFACTURER'S RECOMMENDATIONS.
16. 18" TALL X 3/16" THICK STEEL PANIC SHIELD. PROVIDE 3 7/8" 90 DEGREE ANGLE AT TOP AND BOTTOM OF PANIC SHIELD. BEAD-WELD PLATE TO PICKETS, LOCKING BOX, AND GATE FRAME AS SHOWN. LENGTH TO BE EQUAL TO WIDTH OF GATE FRAME.
17. 6" WIDE X 21" TALL X 1-3/4" DEPTH WELDED STEEL LOCK HARDWARE BOX TO HOUSE GATE OPERATION HARDWARE. STEEL TO BE 3/16" THICK.
18. 2"X2" MIN. SQUARE OPENING IN PERFORATED STEEL PANEL TO ACCOMMODATE CHAIN AND LOCK - FRAME WITH 2" SQUARE TUBING ON 3 SIDES AND WELDED TO GATE FRAME. (CHAIN AND LOCK TO BE PROVIDED BY RAP).



5'- 0" GATE ELEVATION
N.T.S.



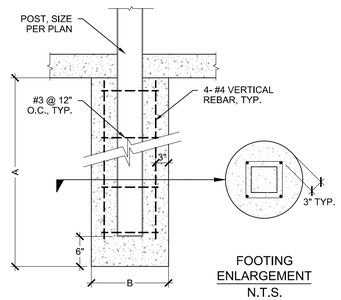
5'-0" GATE SECTION
N.T.S.



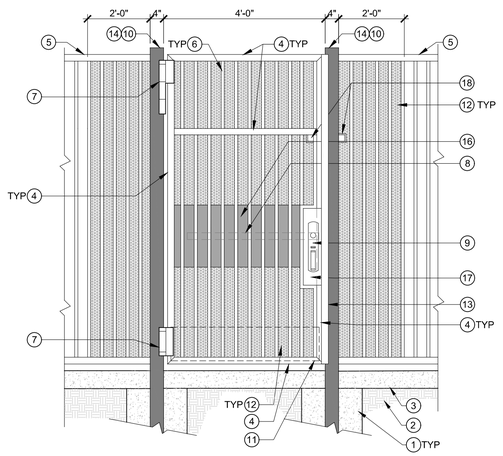
GATE ASSEMBLY PLAN
N.T.S.

FOOTING SIZE TABLE

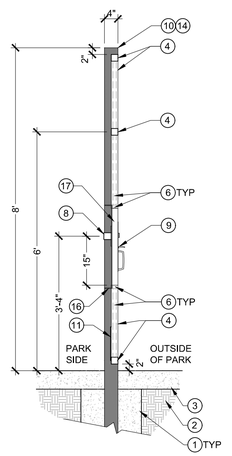
	8'-0" GATE	5'-0" GATE
A	4'-6"	3'-0"
B	1'-6"	1'-6"



FOOTING ENLARGEMENT
N.T.S.



8'-0" GATE ELEVATION
N.T.S.



5'-0" GATE SECTION
N.T.S.

A1	5' & 8' TUBULAR STEEL GATE
N.T.S.	

STEEL FENCE & GATE NOTES & SPECIFICATIONS (APPLIES TO ENTIRE SHEET):

THIS SPECIFICATION SHALL SUPERCEDE GENERAL SPECIFICATIONS FOR TUBULAR STEEL AND PAINTING.

GRIND ALL WELDS SMOOTH. REMOVE ALL LOOSE MILL SCALE, RUST, OIL AND GREASE PRIOR TO PAINTING. ALL FENCING SHALL BE SHOP PRIMED AND PAINTED UNDER INSPECTION BY BUREAU OF CONTRACT ADMINISTRATION (PLANT INSPECTION).

FASTENERS:
1. ALL FASTENERS SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL, AND COATED WITH POLYESTER COATING AS SPECIFIED BELOW IF NOTED.
2. ALL BOLTS AND NUTS SHALL BE TAMPER RESISTANT. DAMAGING OR ALTERING THREADS OF BOLTS OR SCREWS WILL NOT BE CONSIDERED TO BE TAMPER RESISTANT AND WILL NOT BE ALLOWABLE.

COATINGS:
1. THE TUBULAR STEEL POSTS, GATE FRAME AND FENCE PANELS SHALL BE COATED WITH 1.5 OZ/SQ. FT. (460 G/M^2) ZINC IN CONFORMITY WITH ASTM A 123/A 123M STANDARD SPECIFICATION FOR ZINC (HOT DIP GALVANIZED) COATING ON IRON AND STEEL PRODUCTS, KNOWN AS GALVANIZED AFTER WELDING (GAW).
2. THE POLYESTER SURFACE COATING COLOR SHALL BE DARK BRONZE/BROWN. POLYESTER COATING TO BE MINIMUM 4 MILS APPLIED BY AN ELECTROSTATIC METHOD. COATING SHALL COVER ALL SURFACES OF THE FENCE, GATE AND POST SECTIONS. COATING SHALL BE CAPABLE OF WITHSTANDING THE FOLLOWING TESTS:
   - 2.1. MECHANICAL ADHESION TEST AS PER ASTM D 3359 (1990) - METHOD B
   - 2.2. SHOCK RESISTANCE TEST AS PER ASTM D 2794 (1990)
   - 2.3. SALT SPRAY TESTING WITH A MIN. OF 1,000 HOURS WITHOUT RED RUST APPEARANCE, AS PER ASTM B 117 (1990)
   - 2.4. HUMIDITY RESISTANCE IN A WEATHER METER CHAMBER AS PER ASTM D 2247 (1988)
   - 2.5. EXPOSURE TO ULTRAVIOLET LIGHT WITH EXPOSURE OF 1,000 HOURS USING APPARATUS TYPE E AND 63°C AS PER ASTM D 1499

INSTALLATION GENERAL:
1. STAKE LOCATIONS OF FENCE LINES, GATES, AND TERMINAL POSTS. DO NOT EXCEED INTERVALS OF 500 FEET OF LINE OF SIGHT BETWEEN STAKES. INDICATE LOCATIONS OF UTILITIES, LAWN SPRINKLER SYSTEM, UNDERGROUND STRUCTURES, BENCHMARKS, AND PROPERTY MONUMENTS.
2. INSTALL FENCING PER LOCATIONS INDICATED ON PLANS INSIDE PROPERTY LINE.
3. POST EXCAVATION: EXCAVATE HOLES FOR POSTS TO DIAMETERS, DEPTH AND SPACING INDICATED ON PLANS IN FIRM, UNDISTURBED OR COMPACTED SOILS PER DETAILS.
4. POST SETTING: SET POSTS IN CONCRETE FOOTINGS SO THAT POSTS ARE SET PLUMB, ALIGNED AND SET AT CORRECT HEIGHT AND SPACING. PLACE CONCRETE AROUND POSTS. HOLD POST IN POSITION DURING PLACEMENT AND FINISHING OPERATIONS UNTIL CONCRETE IS SUFFICIENTLY CURED.
5. EXPOSED FOOTING: SEE PLANS AND DETAILS.

FENCE INSTALLATION:
1. TERMINAL POSTS: LOCATE TERMINAL END, CORNER, AND GATE POSTS AT CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT OF 15 DEGREES OR GREATER.
2. SQUARE POST INSTALLATION: AS INDICATED ON DRAWINGS.
3. INSTALL MESH TO PANELS WITH BRACKETS AT REQUIRED SPACING PER PLANS AND DETAILS. THE FENCE PANEL SHALL BE INSTALLED A DISTANCE OF A MINIMUM OF 1-1/4" IN. AND MAXIMUM OF 2 IN. ABOVE THE GROUND SURFACE. UPON CUTTING OR TRIMMING, A POST OR A WIRE MESH SECTION, APPLY ZINC RICH PRIMER TO THE EXPOSED ENDS AND FINISH WITH THE MATCHING TOUCH-UP PAINT SUPPLIED BY THE MFR.

GATE INSTALLATION:
1. GATE POST INSTALLATION: PER PLAN AND DETAILS.
2. INSTALL GATES PERFECTLY HORIZONTAL AND LEVEL, PLUMB, AND SECURE FOR FULL OPENING WITHOUT INTERFERENCE UNLESS INDICATED ON DRAWINGS.
3. ATTACH HARDWARE TO HAVE THE NUTS INSIDE THE PROPERTY THUS MAKING THE ASSEMBLY TAMPER-PROOF WHICH WILL PREVENT UNAUTHORIZED REMOVAL.
4. INSTALL GROUND-SET ITEMS IN CONCRETE FOOTINGS FOR ANCHORAGE.
5. ADJUST HARDWARE FOR SMOOTH OPERATION AND LUBRICATE WHERE NECESSARY TO OPERATE SMOOTHLY, EASILY, AND QUIETLY, FREE FROM BINDING, WARP, EXCESSIVE DEFLECTION, DISTORTION, NONALIGNMENT, MISPLACEMENT, DISRUPTION, OR MALFUNCTION, THROUGHOUT THE ENTIRE OPERATIONAL RANGE. CONFIRM THAT LATCHES AND LOCKS ENGAGE ACCURATELY AND SECURELY WITHOUT FORCING OR BINDING.

BUREAU OF ENGINEERING
OFFICIAL RECORD

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	INDEX NO.	REVISION DESCRIPTION	DATE	BY
	MF-300512			

CIP NO. G1163

ALFRED MATA, PE
ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESER
DESIGNED BY: GREG MOESER
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

LANDSCAPE ARCHITECT ★ ROBERT WALKER ★ STATE OF CALIFORNIA ★ LICENSED
No. 6380
Expiration Date: 08/31/2026

INTERIM CITY ENGINEER	DATE:
	9/22/25
	9/22/25
	9/22/25
	9/22/25

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 5
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L408
SHEET 63 OF SHEETS 115

PLOTTED: 9/22/2025

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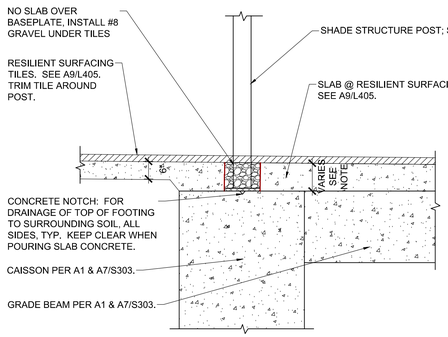
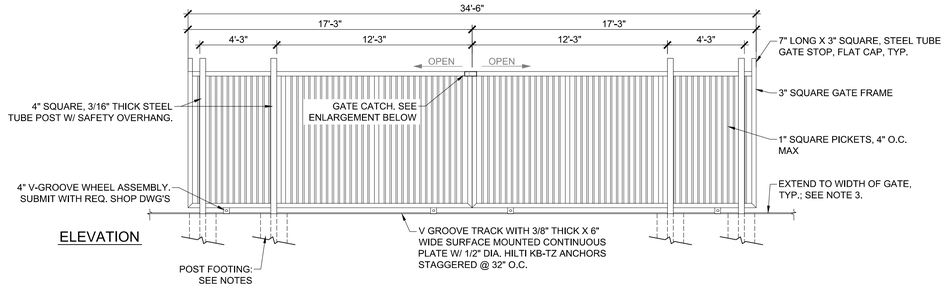
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES: (DESIGN STAGE ONLY)



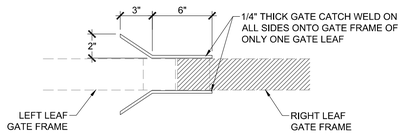
NOTES:
1. CAISSON/BASE PLATE/GRADE BEAM SHALL BE AT SAME ELEVATION. RESILIENT SURFACING SLAB/TILE SHALL SLOPE AT 1% MIN, PER GRADING PLAN. THICKEN SLAB OVER THE GRADE BEAM AND CAISSON AS REQUIRED TO ACHIEVE THE SLOPES NOTED IN THE GRADING PLAN, PROVIDING 6" MIN. SLAB THICKNESS.
2. PORTIONS OF THE RESILIENT SURFACING TILE SLAB NOT OVER THE GRADE BEAMS/CAISSONS SHALL BE 6" THICK.

J1	RESILIENT SURFACING TILE AT SHADE STRUCTURE POSTS		
N.T.S.	BOE VERSION Oct/08 - SHD, RWF	RP DETAIL L3650	

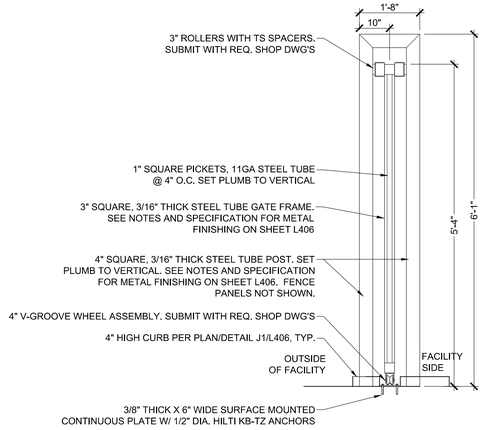


ELEVATION

NOTES:
1. ALL STEEL MATERIALS SHALL CONFORM TO THE STEEL GATE & FENCE NOTES AND SPECIFICATIONS THIS SHEET.
2. CONTRACTOR TO PROVIDE A SHOP DRAWING OF GATE BASED ON FIELD CONDITIONS. CONTRACTOR TO MEET WITH LANDSCAPE ARCHITECT PRIOR TO SHOP DRAWING SUBMITTAL TO REVIEW GATE DESIGN.
3. SEE DETAIL J9/L408 FOR POST FOOTING DETAIL.
4. CONTRACTOR TO INCLUDE/PROPOSE METHOD TO ENSURE GATE DOES NOT OPEN BEYOND LENGTH OF TRACK.
5. FENCING PANELS TO CONNECT TO POSTS IN FRONT OF GATE (NOT SHOWN).



GATE CATCH ENLARGEMENT PLAN



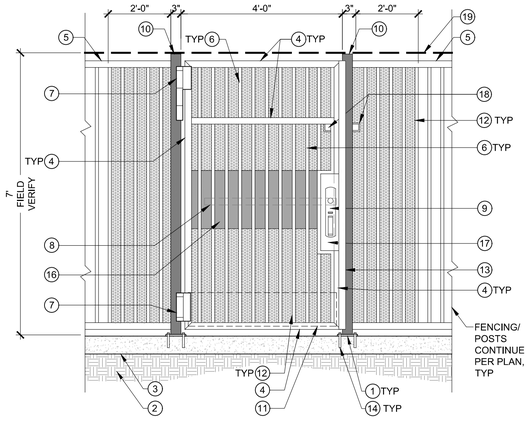
SECTION

J5	DOUBLE-LEAF VEHICULAR GATE		
N.T.S.			

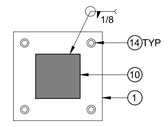
CURB WALL SCHEDULE				
C	0" TO 6"	6" TO 1'	1' TO 1' 6"	1' 6"" TO 2'
F	6"	1'	1' 6"	2'

E1	CONCRETE CURB WALL	
N.T.S.		DETAIL 360 A

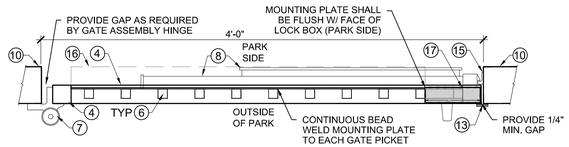
KEYNOTE LEGEND
1. 6" SQ. X 1/2" THICK STEEL BASE PLATE, TYP.,
2. COMPACTED SUBGRADE - REFER TO APPROVED GEOTECHNICAL REPORT.
3. POURED-IN-PLACE CONCRETE SLAB. SEE PLANS FOR MORE INFORMATION.
4. 2"X2"X3/16" THICK GATE FRAME. PROVIDE A 2"X2"X2" THICK MID-RAIL WELDED TO GATE FRAME.
5. TUBULAR STEEL FENCE - WELD TO POSTS.
6. 1-1/2"X11 GAUGE SQ. TUBULAR STEEL PICKETS @ 5" O.C. MAX.
7. LOCINOX HYDRAULIC GATE CLOSER AND HINGE - OR APPROVED EQUAL, WITH WEIGHT CAPACITY AS REQUIRED BY GATE ASSEMBLY.
8. VON DUPRIN E099 PANIC BAR ASSEMBLY IN SATIN CHROME FINISH - OR APPROVED EQUAL.
9. VON DUPRIN 990TP-R/V THUMB-PIECE TRIM WITH 1-1/8" RIM CYLINDER, SATIN CHROME FINISH, (KEY CYLINDER TO BE PROVIDED BY RAP) - OR APPROVED EQUAL.
10. 3"X3"X3/16" THICK SQ. STEEL POST, SET PLUMB TO GRADE.
11. 10" TALL X3/16" THICK SHEET STEEL KICK PLATE (INSTALLED ON PARK SIDE OF GATE), WELDED TO GATE FRAME.
12. PERFORATED METAL PANELS: 16 GAUGE GALVANIZED STEEL WITH 3/16" HOLES AND 3/32" STAGGERED, PERFORATED PANELS TO BE FRAMED WITH 1/8" THICK SHEET STEEL TO CREATE A 1/2" MINIMUM WIDTH FOR STABILITY AND MOUNTING (OR APPROVED EQUAL METHOD). ATTACH TO GATE FRAME PICKETS ON ALL 4 EDGES BY TACK-WELDING AT 1" O.C. MAX. INSTALL ON THE INSIDE OF GATE & FENCE (PARK SIDE), TO COVER ENTIRE HEIGHT OF GATE & FENCE AS SHOWN. SECURE PERFORATED METAL PANEL TO PICKETS WITH 3/4" LONG SELF-TAPPING METAL SCREWS WITH GALVANIZED WASHERS @ 18" O.C.
13. 3" WIDE X 3/16" THICK STEEL STRIP. WELDED TO GATE FRAME CONTINUOUS ON 2 SIDES, CANTILEVER 1" MIN. OVER ADJACENT FENCE POST ON STREET SIDE.
14. HILTI ANCHOR BOLTS WITH4" NOMINAL EMBEDMENT. PROVIDE (4) BOLTS FOR EACH BASE PLATE, TYP.
15. VON DUPRIN STRIKE PLATE - OR APPROVED EQUAL. MOUNT TO GATE FRAME. MODEL AND SIZE PER MANUFACTURER'S RECOMMENDATIONS.
16. 18" TALL X 3/16" THICK STEEL PANIC SHIELD, PROVIDE 90 DEGREE 3 7/8" ANGLE AT TOP AND BOTTOM OF PANIC SHIELD, LENGTH OF ANGLE TO MEET WIDTH OF PANIC BAR. BEAD-WELD PLATE TO PICKETS, LOCKING BOX, AND GATE FRAME AS SHOWN. LENGTH TO BE EQUAL TO WIDTH OF GATE FRAME.
17. 6" WIDE X 21" TALL X 1-3/4" DEPTH WELDED STEEL LOCK HARDWARE BOX TO HOUSE GATE OPERATION HARDWARE. STEEL TO BE 3/16" THICK.
18. 2"X2" MIN. SQUARE OPENING IN PERFORATED STEEL PANEL TO ACCOMMODATE CHAIN AND LOCK - FRAME WITH 2" SQUARE TUBING ON 3 SIDES AND WELDED TO GATE FRAME. (CHAIN AND LOCK TO BE PROVIDED BY RAP).
19. EXISTING TRELLIS STEEL FRAME. WELD ALL FOUR SIDES EACH POST TO TRELLIS FRAME.



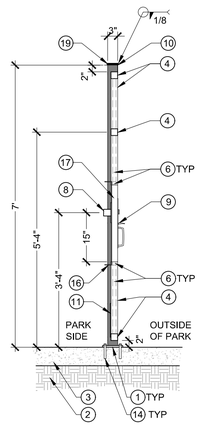
GATE/FENCE ELEVATION
N.T.S.



BASE PLATE - PLAN
N.T.S.



GATE ASSEMBLY PLAN
N.T.S.



GATE SECTION
N.T.S.

A5	7' TUBULAR STEEL GATE/FENCE AT TRELLIS	
N.T.S.		

STEEL FENCE & GATE NOTES & SPECIFICATIONS (APPLIES TO ENTIRE SHEET)

THIS SPECIFICATION SHALL SUPERCEDE GENERAL SPECIFICATIONS FOR TUBULAR STEEL AND PAINTING.

GRIND ALL WELDS SMOOTH. REMOVE ALL LOOSE MILL SCALE, RUST, OIL AND GREASE PRIOR TO PAINTING. ALL FENCING SHALL BE SHOP PRIMED AND PAINTED UNDER INSPECTION BY BUREAU OF CONTRACT ADMINISTRATION (PLANT INSPECTION).

FASTENERS:
1. ALL FASTENERS SHALL BE HOT-DIPPED GALVANIZED STEEL OR STAINLESS STEEL, AND COATED WITH POLYESTER COATING AS SPECIFIED BELOW IF NOTED.
2. ALL BOLTS AND NUTS SHALL BE TAMPER RESISTANT. DAMAGING OR ALTERING THREADS OF BOLTS OR SCREWS WILL NOT BE CONSIDERED TO BE TAMPER RESISTANT AND WILL NOT BE ALLOWABLE.

COATINGS:
1. THE TUBULAR STEEL POSTS, GATE FRAME AND FENCE PANELS SHALL BE COATED WITH 1.5 OZ/SQ. FT. (460 G/M^2) ZINC IN CONFORMITY WITH ASTM A 123/A 123M STANDARD SPECIFICATION FOR ZINC (HOT DIP GALVANIZED) COATING ON IRON AND STEEL PRODUCTS, KNOWN AS GALVANIZED AFTER WELDING (GAW).
2. THE POLYESTER SURFACE COATING COLOR SHALL BE DARK BRONZE/BROWN. POLYESTER COATING TO BE MINIMUM 4 MILS APPLIED BY AN ELECTROSTATIC METHOD. COATING SHALL COVER ALL SURFACES OF THE FENCE, GATE AND POST SECTIONS. COATING SHALL BE CAPABLE OF WITHSTANDING THE FOLLOWING TESTS:
   - 2.1. MECHANICAL ADHESION TEST AS PER ASTM D 3359 (1990) - METHOD B
   - 2.2. SHOCK RESISTANCE TEST AS PER ASTM D 2794 (1990)
   - 2.3. SALT SPRAY TESTING WITH A MIN. OF 1,000 HOURS WITHOUT RED RUST APPEARANCE, AS PER ASTM B 117 (1990)
   - 2.4. HUMIDITY RESISTANCE IN A WEATHER METER CHAMBER AS PER ASTM D 2247 (1988)
   - 2.5. EXPOSURE TO ULTRAVIOLET LIGHT WITH EXPOSURE OF 1,000 HOURS USING APPARATUS TYPE E AND 63°C AS PER ASTM D 1499

INSTALLATION GENERAL:
1. STAKE LOCATIONS OF FENCE LINES, GATES, AND TERMINAL POSTS. DO NOT EXCEED INTERVALS OF 500 FEET OF LINE OF SIGHT BETWEEN STAKES. INDICATE LOCATIONS OF UTILITIES, LAWN SPRINKLER SYSTEM, UNDERGROUND STRUCTURES, BENCHMARKS, AND PROPERTY MONUMENTS.
2. INSTALL FENCING PER LOCATIONS INDICATED ON PLANS INSIDE PROPERTY LINE.
3. POST EXCAVATION: EXCAVATE HOLES FOR POSTS TO DIAMETERS, DEPTH AND SPACING INDICATED ON PLANS IN FIRM, UNDISTURBED OR COMPACTED SOILS PER DETAILS.
4. POST SETTING: SET POSTS IN CONCRETE FOOTINGS SO THAT POSTS ARE SET PLUMB, ALIGNED AND SET AT CORRECT HEIGHT AND SPACING, PLACE CONCRETE AROUND POSTS, HOLD POST IN POSITION DURING PLACEMENT AND FINISHING OPERATIONS UNTIL CONCRETE IS SUFFICIENTLY CURED.
5. EXPOSED FOOTING: SEE PLANS AND DETAILS.

FENCE INSTALLATION:
1. TERMINAL POSTS: LOCATE TERMINAL END, CORNER, AND GATE POSTS AT CHANGES IN HORIZONTAL OR VERTICAL ALIGNMENT OF 15 DEGREES OR GREATER.
2. SQUARE POST INSTALLATION: AS INDICATED ON DRAWINGS.
3. INSTALL MESH TO PANELS WITH BRACKETS AT REQUIRED SPACING PER PLANS AND DETAILS. THE FENCE PANEL SHALL BE INSTALLED A DISTANCE OF A MINIMUM OF 1-1/4" IN. AND MAXIMUM OF 2 IN. ABOVE THE GROUND SURFACE. UPON CUTTING OR TRIMMING, A POST OR A WIRE MESH SECTION, APPLY ZINC RICH PRIMER TO THE EXPOSED ENDS AND FINISH WITH THE MATCHING TOUCH-UP PAINT SUPPLIED BY THE MFR.

GATE INSTALLATION:
1. GATE POST INSTALLATION: PER PLAN AND DETAILS.
2. INSTALL GATES PERFECTLY HORIZONTAL AND LEVEL, PLUMB, AND SECURE FOR FULL OPENING WITHOUT INTERFERENCE UNLESS INDICATED ON DRAWINGS.
3. ATTACH HARDWARE TO HAVE THE NUTS INSIDE THE PROPERTY THUS MAKING THE ASSEMBLY TAMPER-PROOF WHICH WILL PREVENT UNAUTHORIZED REMOVAL.
4. INSTALL GROUND-SET ITEMS IN CONCRETE FOOTINGS FOR ANCHORAGE.
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BUREAU OF ENGINEERING
OFFICIAL RECORD

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #4110 PGS 701A
HORIZONTAL CONTROL: FB #4110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 6
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L409
SHEET 64 OF SHEETS 115

PLOTTED: 9/22/2025

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE
INTERIM CITY ENGINEER

	DATE:
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT	9/22/25

LANDSCAPE ARCHITECT ROBERT WALKER GLICKMAN No. 6380 REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT 12-31-2025 STATE OF CALIFORNIA

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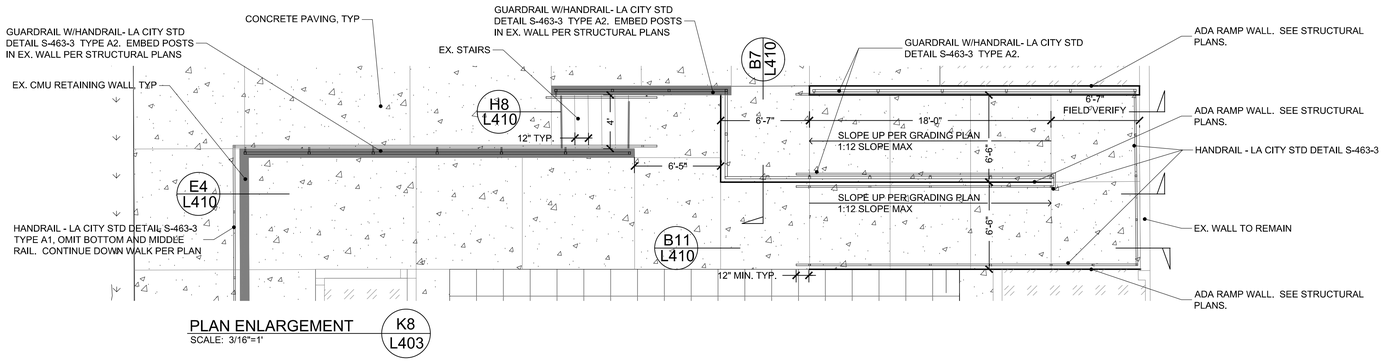
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES: (DESIGN STAGE ONLY)

NOTES THIS SHEET

1. TUBULAR STEEL GUARDRAILS/HANDRAILS SHALL BE CONSTRUCTED WITH SQUARE TUBULAR STEEL. HANDRAIL GRIPPING SURFACE SHALL HAVE ROUNDED EDGES. TUBULAR STEEL GUARDRAIL/HANDRAILS TO BE PAINTED PER SPECIFICATIONS, COLOR: DARK BRONZE/BROWN.
2. RETAINING WALLS UNDER SEPARATE PERMIT.
3. EX. CMU WALLS TO BE REPAIRED/PAINTED, SEE L411.
4. NOT ALL WEEP HOLES SHOWN, INSTALL ON ALL ADA RAMP WALLS 6' MAX SPACING.



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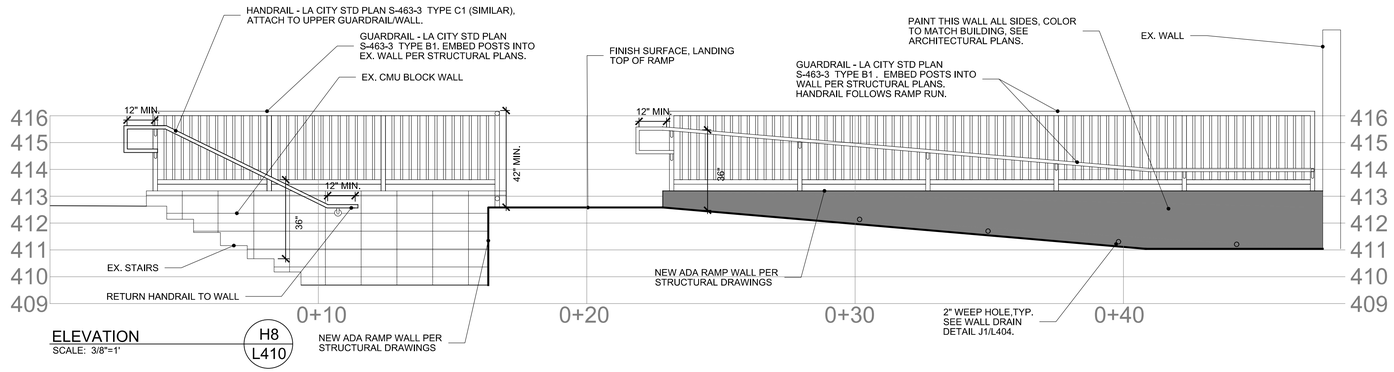

ELEVATION — H8 L410
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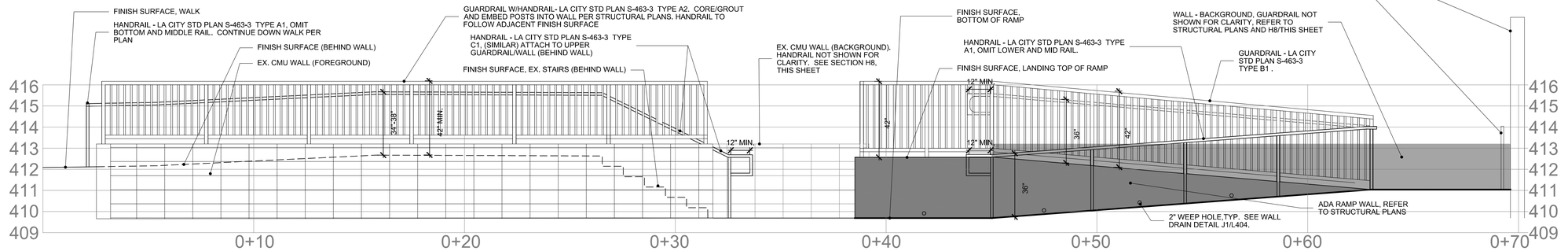

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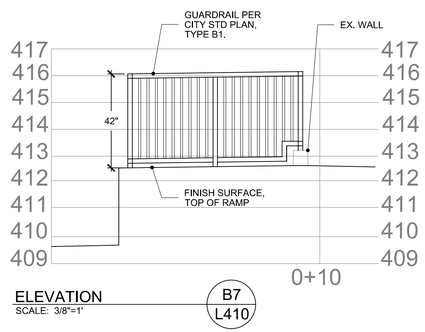

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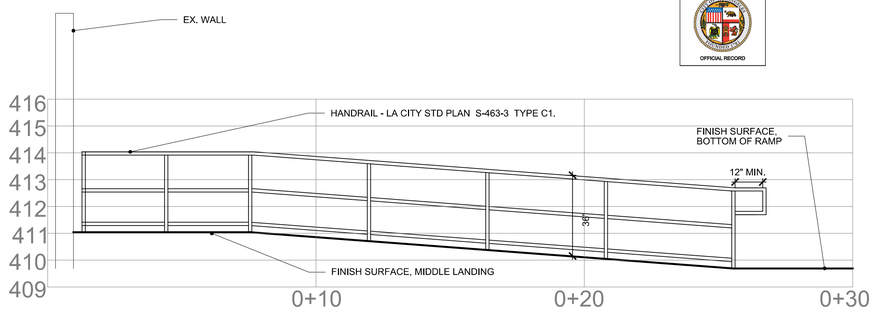

ELEVATION — B11 L410
SCALE: 3/8"=1'

BUREAU OF ENGINEERING
OFFICIAL RECORD

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
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REVISION DATES: (DESIGN STAGE ONLY)

PUBLIC WORKS
BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT ROBERT WALKER No. 6300 LICENSED — STATE OF CALIFORNIA

INTERIM CITY ENGINEER	DATE:
ALFRED MATA, PE	9/22/25
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/25

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #4110 PGS 701A
HORIZONTAL CONTROL: FB #4110 PGS 701A

SHEET TITLE: CONSTRUCTION DETAILS SHEET 7

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L410

SHEET 65 OF SHEETS 115

PLOTTED: 9/22/2025

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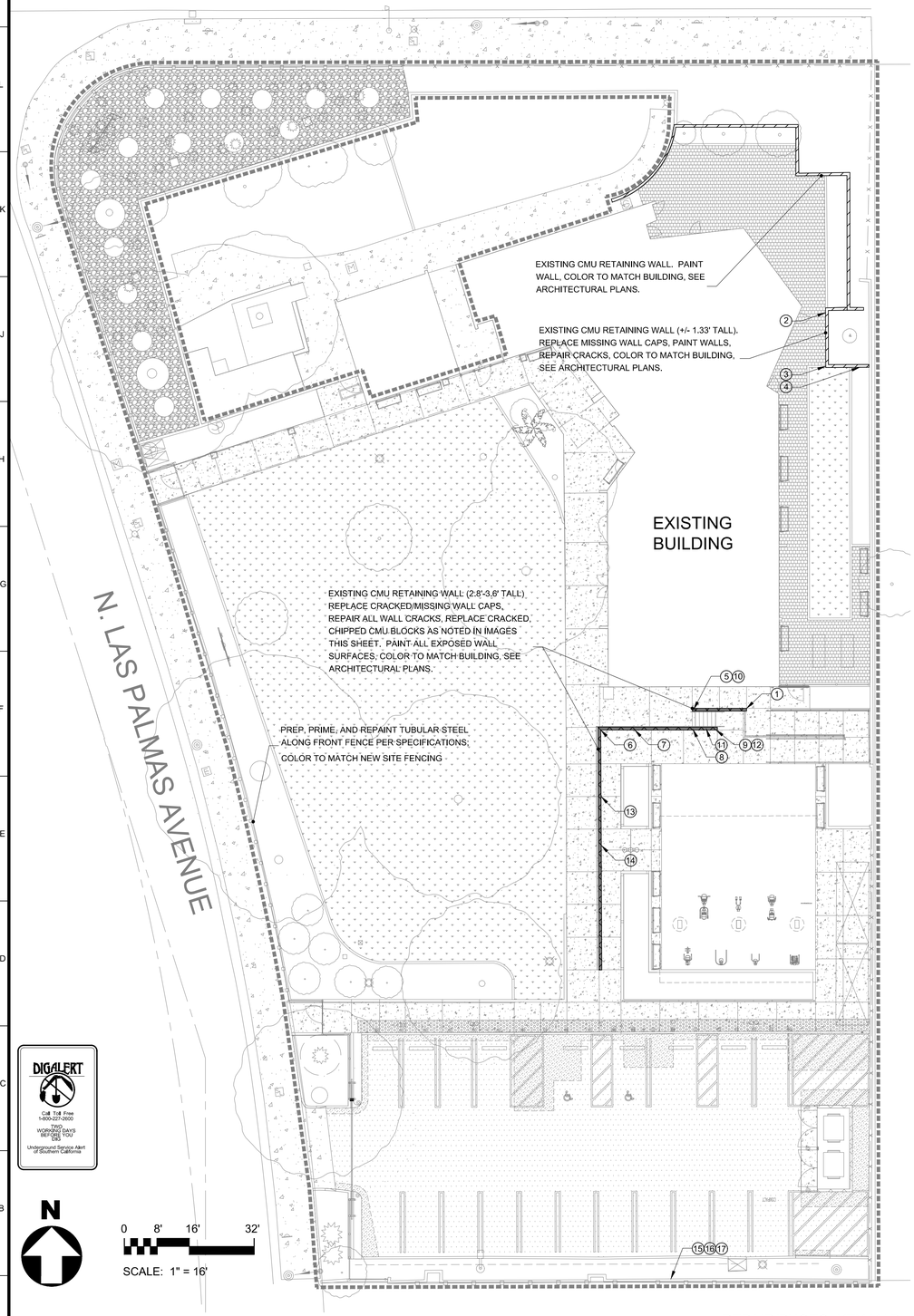


DIGALERT
Call Toll Free 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
Underground Service Alert of Southern California

N

0 8' 16' 32'

SCALE: 1" = 16'

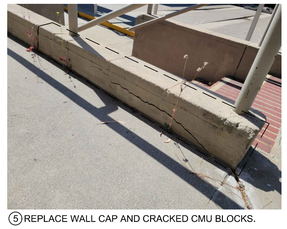
REPAIR/PHOTO KEY MAP


1 REPLACE WALL CAP, REPAIR CRACKS IN WALL.


2 INSTALL NEW WALL CAPS WHERE MISSING.

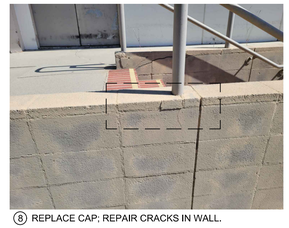

3 INSTALL NEW WALL CAP WHERE MISSING. FILL CRACKS.


4 INSTALL NEW WALL CAP WHERE MISSING. REPAIR/FILL CRACKS.

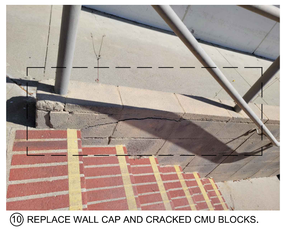

5 REPLACE WALL CAP AND CRACKED CMU BLOCKS.

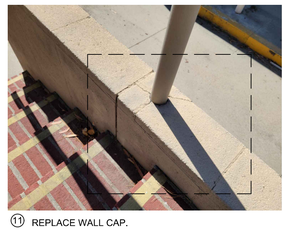

6 REPAIR CRACKS IN WALL.


7 REPLACE BROKEN CMU BLOCK/CAP.

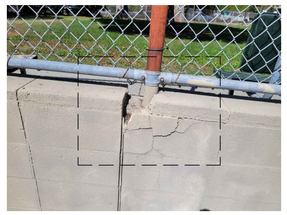

8 REPLACE CAP; REPAIR CRACKS IN WALL.


9 REPAIR CRACKS IN WALL. REPLACE WALL CAP.


10 REPLACE WALL CAP AND CRACKED CMU BLOCKS.


11 REPLACE WALL CAP.


12 REPLACE CMU BLOCK AND WALL CAP.


13 REPLACE BROKEN CMU BLOCK AND WALL CAP, FILL CRACKS.


14 REPLACE WALL CAP, FILL CRACKS.


15 REPAIR/RE-GROUT BROKEN WALL AREAS. REPAINT TO MATCH EXISTING.


16 REPAIR/RE-GROUT BROKEN WALL AREAS. REPAINT TO MATCH EXISTING.


17 REPAIR/RE-GROUT BROKEN WALL AREAS. REPAINT TO MATCH EXISTING.

NOTES

1. PAINT WALLS PER PLAN NOTES AND IMAGE NOTES IN ACCORDANCE WITH SPECIFICATIONS.
2. FOR ANY RAILINGS/FENCING INDICATED TO BE REMOVED PER DEMOLITION PLANS, THE REMAINING WALL HOLES TO BE FILLED WITH MORTAR (SIKAGROUT-212 OR APPROVED EQUAL. DEEP CRACKS TO BE REPAIRED WITH SIKA SIKADUR CRACK FIX OR APPROVED EQUAL.
3. CONTRACTOR SHALL REPAIR ANY WALLS DAMAGED DURING CONSTRUCTION.

BUREAU OF ENGINEERING
OFFICIAL RECORD

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT ROBERT WISER No. 6380 LICENSED Expiration Date: 12-31-2026 STATE OF CALIFORNIA

INTERIM CITY ENGINEER: ALFRED MATA, PE — DATE: 9/22/25
ARCHITECTURAL DIVISION — DATE: 9/22/25
LANDSCAPE ARCHITECT: GREG MOESER — DATE: 9/22/25
DESIGNED BY: GREG MOESER — DATE: 9/22/25
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

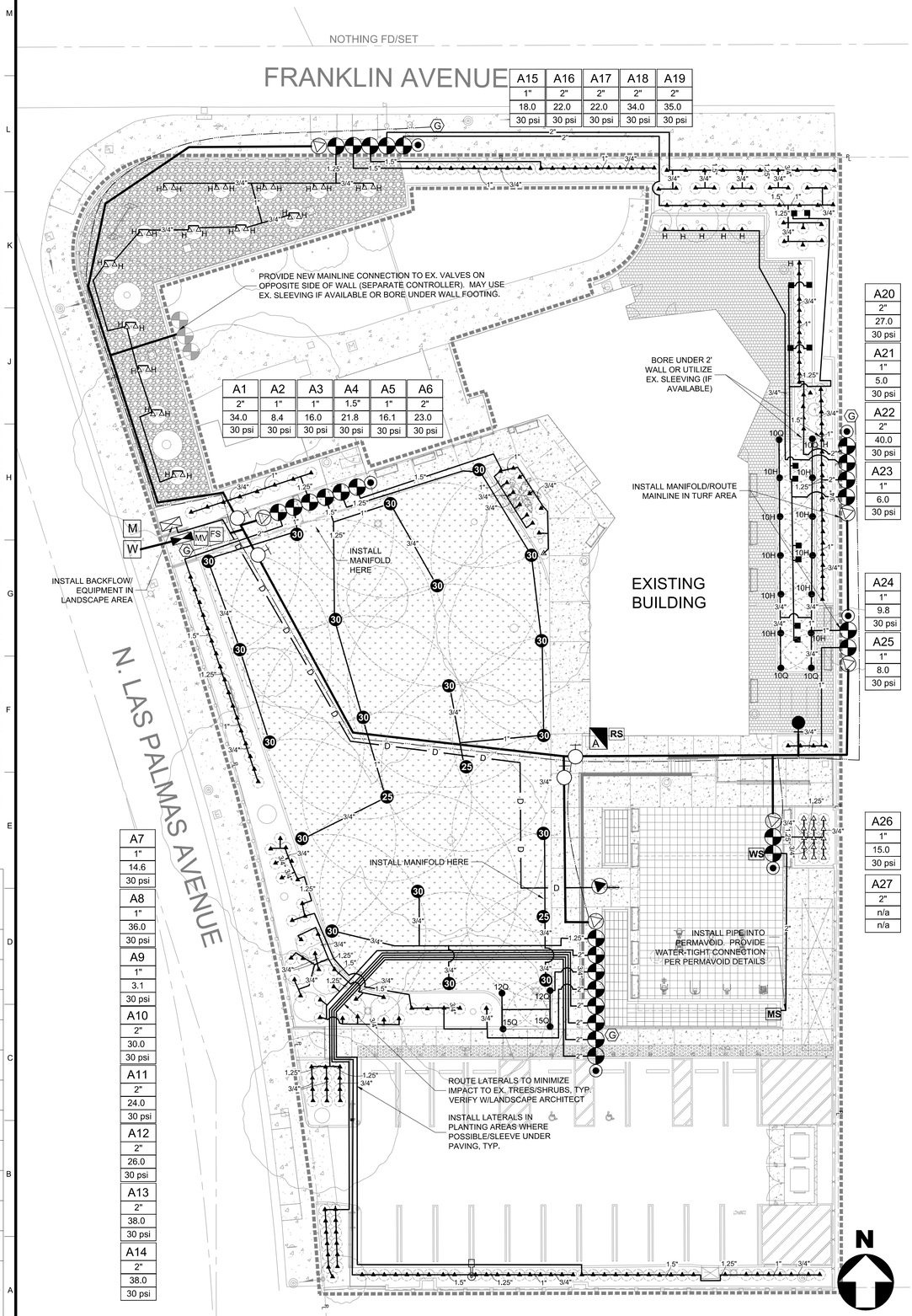
VERTICAL CONTROL: FB #4110 PGS 701A
HORIZONTAL CONTROL: FB #4110 PGS 701A

SHEET TITLE: EXTERIOR WALL/FENCING REPAIR DETAILS
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L411
SHEET 66 OF SHEETS 115

PLOTTED: 9/22/2025

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)



IRRIGATION NOTES

HIGH STATIC PRESSURE - 77 PSI

LOW STATIC PRESSURE - 51 PSI

1. INFORMATION PROVIDED BY LADWP ON 10/26/2023
2. THE IRRIGATION SYSTEM DESIGN IS BASED ON A MINIMUM OPERATING PRESSURE OF 30 P.S.I. AND A MAXIMUM FLOW DEMAND OF 40 G.P.M. THE CONTRACTOR SHALL VERIFY AVAILABLE WATER PRESSURE PRIOR TO CONSTRUCTION, AND REPORT ANY DIFFERENCE BETWEEN WATER PRESSURE AND AVAILABLE FLOW INDICATED ON THE DRAWINGS AND THE ACTUAL READING AT THE IRRIGATION POINT OF CONNECTION IMMEDIATELY TO THE PROJECT MANAGER.
3. BEFORE COMMENCING ANY EXCAVATION, THE CONTRACTOR SHALL OBTAIN AN UNDERGROUND SERVICE ALERT I.D. NUMBER BY CALLING 1-800-422-4133. PROVIDE TWO (2) WORKING DAYS AFTER THE NUMBER IS OBTAINED AND BEFORE THE EXCAVATION WORK IS STARTED SO THAT UTILITY OWNERS CAN BE NOTIFIED.
4. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, STRUCTURES AND SERVICES BEFORE COMMENCING WORK. THE LOCATIONS OF ANY UTILITIES, STRUCTURES AND SERVICES SHOWN IN THESE PLANS ARE APPROXIMATE ONLY. ANY DISCREPANCIES BETWEEN THESE PLANS AND ACTUAL FIELD CONDITIONS SHALL BE REPORTED TO THE PROJECT MANAGER IMMEDIATELY. THE CONTRACTOR SHALL PROMPTLY REPAIR OR REPLACE ANY EXISTING OR NEWLY CONSTRUCTED UTILITIES OR SITE FEATURES DAMAGED BY HIS WORK AT HIS OWN EXPENSE.
5. ANY EXISTING IRRIGATION SYSTEM COMPONENTS DEPICTED HEREIN ARE BASED UPON AS-BUILT RECORD DRAWINGS, AND ARE SHOWN HERE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SYSTEM COMPONENTS TO REMAIN PRIOR TO ENGAGING IN CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL IMMEDIATELY NOTIFY PROJECT MANAGER OF ANY DISCREPANCIES BETWEEN AS-BUILT AND EXISTING CONDITIONS.
6. THE CONTRACTOR SHALL NOT WILLFULLY INSTALL ANY EQUIPMENT AS SHOWN ON THE PLANS WHEN IT IS OBVIOUS IN THE FIELD THAT CONDITIONS OR OBSTRUCTIONS EXIST THAT WERE UNKNOWN AT THE TIME THESE PLANS WERE PREPARED. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT MANAGER OF ANY SUCH CONDITIONS PRIOR TO PERFORMING ANY AFFECTED WORK. IN THE EVENT THAT THIS NOTIFICATION IS NOT GIVEN, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY MODIFICATIONS TO COMPLETED WORK.
7. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, ETC. SHOWN WITHIN PAVED AREAS ARE FOR CLARITY ONLY AND SHALL BE INSTALLED IN PLANTING AREAS. SET ALL VALVES AND QUICK COUPLERS ADJACENT TO WALKS OR PAVED SURFACES PER DETAILS. ALL IRRIGATION PRESSURE AND LATERAL LINES AND CONTROL WIRING THAT PASS UNDER PAVING SHALL BE SLEEVED PER LANDSCAPE CONSTRUCTION NOTES.
8. ANY TRENCHES DUG TO ACCOMMODATE NEW IRRIGATION LINES OR 2-WIRE CONDUIT THAT PASS INSIDE THE PROTECTED ROOT AREA OF AN EXISTING TREE ARE SUBJECT TO THE REQUIREMENTS LISTED IN THE SECTION "TREE PROTECTION GUIDELINES," SEE G104.
9. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS FOR THE LOCATION AND INSTALLATION OF PIPE SLEEVES AND LATERALS UNDER PAVING IN A TIMELY MANNER. SEE TRENCHING DETAIL AND SPECIFICATIONS FOR SLEEVING REQUIREMENTS.
10. 2-WIRE CABLE CONDUIT SHALL GENERALLY FOLLOW MAINLINE WHERE POSSIBLE. CONTRACTOR SHALL SUBMIT PROPOSED LOCATION OF 2-WIRE CONDUIT RUNS AND PULL BOXES FOR APPROVAL BY PROJECT ENGINEER PRIOR TO INSTALLATION.
11. THE CONTRACTOR SHALL FLUSH AND PRESSURE TEST ALL MAINLINES PER LANDSCAPE CONSTRUCTION NOTES. CONTRACTOR SHALL FLUSH ALL LATERAL LINES AND IRRIGATION HEADS PER SPECIFICATIONS.
12. THE INTENT OF THESE IRRIGATION PLANS IS TO PROVIDE 100% COVERAGE TO ALL PLANTING AREAS. AS PART OF THE SCOPE OF WORK, CONTRACTOR SHALL PROVIDE ANY ADDITIONAL HEADS, SPECIAL NOZZLES, OR PATTERNS TO ACHIEVE PROPER COVERAGE WITH A MINIMUM OF OVERSPRAY AT NO ADDITIONAL COST TO THE CITY.
13. UPON COMPLETION OF INSTALLATION, CONTRACTOR SHALL CONDUCT A COVERAGE TEST PER SPECIFICATIONS. CONTRACTOR SHALL NOTIFY PROJECT MANAGER TO REQUEST THE TEST, WHICH WILL BE SCHEDULED AT THE SOONEST DATE POSSIBLE PER AVAILABILITY OF RAP STAFF.
14. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING THIS SECTION OF WORK.

IRRIGATION EQUIPMENT LEGEND

SYMBOL	DESCRIPTION
W	New 2" Irrigation meter. Coordinate installation/new service with LADWP and obtain plumbing permit.
M	Ex. Domestic Water Meter to remain.
MV	Buckner-Superior 3100 X Normally Open Brass Master Valve. Install per detail J5/L602.
FS	Rainbird UFS150 Ultrasonic flow sensor. Install per detail J5/L602.
A	Controller: Rainbird ESP-LXIVM Controller with NCC 4G Cellular Cartridge. Install controller inside ex. empty controller enclosure. Provide new electrical wiring. See Electrical and detail E9/L602 (for reference).
	Replace ex. irrigation backflow with new 2" Reduced Pressure Backflow Prevention Device per detail J13/L602 and E13/L602.
	Domestic Reduced Pressure Type Backflow Device. See Mechanical plans.
RS	Rainbird WR2 -RC Rain sensor. Install sensor on building, coordinate with landscape architect. Install module directly at controller per manufacturer's instructions.
WS	Irrometer WaterSwitch WS-DC. Connect to two wire path with Rainbird IVM-SEN per manufacturer's instructions. Install in valve box with the RCV Valve that is connected to LID planter.
MS	Irrometer Watermark soil sensor. Install in LID planter per detail A9/L603. Wire to WaterSwitch per detail/manufacturer's instructions.
	Remote Contol Valve: Rainbird IVM-EFB-CP brass valve - EFB-CP Valve with IVM-SOL. See plan callout for valve size. Install per A5/L602 and E1/L602.
	Quick Coupling Valve: RB 44LRC: 1" QC valve, locking rubber cover, acme key socket. Provide one quick coupler key and brass hose swivel for each five quick coupler valves installed, typ. Install per A9/L602.
	2" PVC sch. 40 Mainline piping; solvent weld.
	PVC sch. 40 Lateral Line piping; solvent weld. Size as noted.
D	Domestic Water Line. See Landscape Construction Notes. Size per plan.
	Line size brass Gate Valve, Nibco T-113 or Stockham B-103, non-rising stem, solid wedge gate valve. Install per detail A1/L602.
	Manifold Gate Valve, Nibco T-113 or Stockham B-103, non-rising stem, solid wedge gate valve. Install per detail A1/L602 and E1/L602.
	Domestic line gate valve. Install per detail J1/L602.
	3/4" Buckner B401LK brass hose bibb with brass hose bib vacuum breaker on 3/4" galvanized riser with 3/4" swing joint. Attach to tubular steel fence min. 12" above finish surface.
	Limit of Work

IRRIGATION VALVE LEGEND

A1 — Controller & Station No. (Verify with RAP Irrigation staff)
2" — Valve Size
XX.X PSI — System GPM, Set PSI Reg.

Verify existing valve sizes in field.

Typical conventional spray system: symbol is body type, nozzle is noted for each head.

12H 12H 12Q

Typical turf rotor system (number is nozzle size):

8 3

2-WIRE EQUIPMENT LEGEND

G — Rainbird Grounding Rod. Install in locations shown per manufacturer's instructions and per details J1/L603 andJ9/L603. Connect to two-wire path with Rainbird IVM-SD located in nearest valve box.

Rainbird 14 AWG Maxi 2-wire system cable or approved equal. See detail J9/L603.

IRRIGATION HEADS LEGEND

SYMBOL	DESCRIPTION	GPM	SPACING	NOZZLE PRESSURE	PRECIP. RATE	DETAIL NUMBER	NOTES
25	**Rainbird 5004-SAM-PRS-SS MPR-25' NOZZLE** Rotary pop-up with stainless steel riser	.98-3.82	22.5'	30psi	.68-.74 in/hr	E9/ L603	Use appropriate nozzle for intended arc pattern of each head. Adjust radius as needed for full coverage.
30	**Rainbird 5004-SAM-PRS-SS MPR-30' NOZZLE** Rotary pop-up with stainless steel riser	1.4-5.78	27'	30psi	.69-.73 in/hr	E9/ L603	Use appropriate nozzle for intended arc pattern of each head. Adjust radius as needed for full coverage.
●	**Rainbird RD1806-SAM-PRS** Pop-up spray body with U-series nozzle - radius and arc as noted.	.41-1.85	10'-12'	30psi	1.83-2.01 in/hr	E13/ L603	Install per detail.
▲	**Rainbird RD1806-SAM-PRS** Pop-up spray body with Hunter Multi Stream Bubbler Nozzle (MSBN-10H or MSBN-20F) Full circle unless noted per plan.	1-2	per plan	30psi	--	E13/ L603	Install per detail.
△	**Rainbird RD1806-SAM-PRS** Pop-up spray body with Hunter Multi Stream Bubbler Nozzle (MSBN-50H or MSBN-10F) Full circle unless noted per plan.	.5-1	per plan	30psi	--	E13/ L603	Install per detail.
■	**Rainbird RWS-M-BC1402** Root watering system assembly.	.50	per plan	30psi	--	A13/ L603	Install per detail.

BUREAU OF ENGINEERING — OFFICIAL RECORD

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CITY OF LOS ANGELES — DEPARTMENT OF PUBLIC WORKS — BUREAU OF ENGINEERING

ENGINEERING — CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT ★ KINETA ★ ROBERT WASKER ★ No. 6290 ★ Signature ★ Renewal Date 08-31-2026 ★ STATE OF CALIFORNIA ★ LICENSED

ALFRED MATA, PE — INTERIM CITY ENGINEER — DATE: 9/22/25
ARCHITECTURAL DIVISION — 9/22/25
LANDSCAPE ARCHITECT: GREG MOESER — 9/22/25
DESIGNED BY: GREG MOESER — 9/22/25
DRAWN BY: GREG MOESER — 9/22/25
CHECKED BY: RICHARD FISHER — 9/22/25
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT — 9/22/25

VERTICAL CONTROL: FB #41110 PGS 703A
HORIZONTAL CONTROL: FB #41110 PGS 703A

SHEET TITLE: IRRIGATION PLAN

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE, LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L601

SHEET 67 OF SHEETS 115

PLOTTED: 9/22/2025

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TTLB TEMPLATE REVISION DATE: 02/2013
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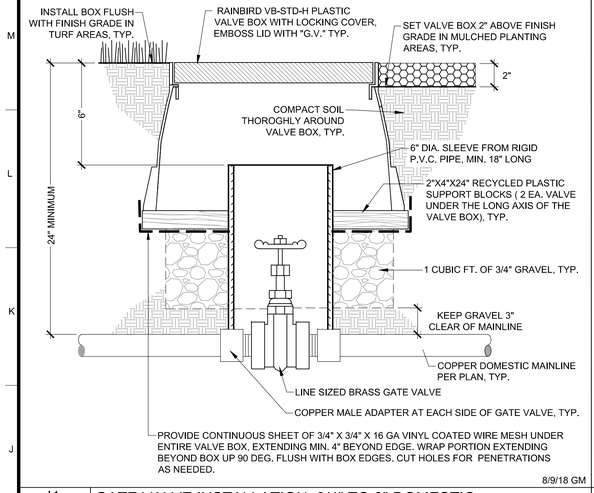
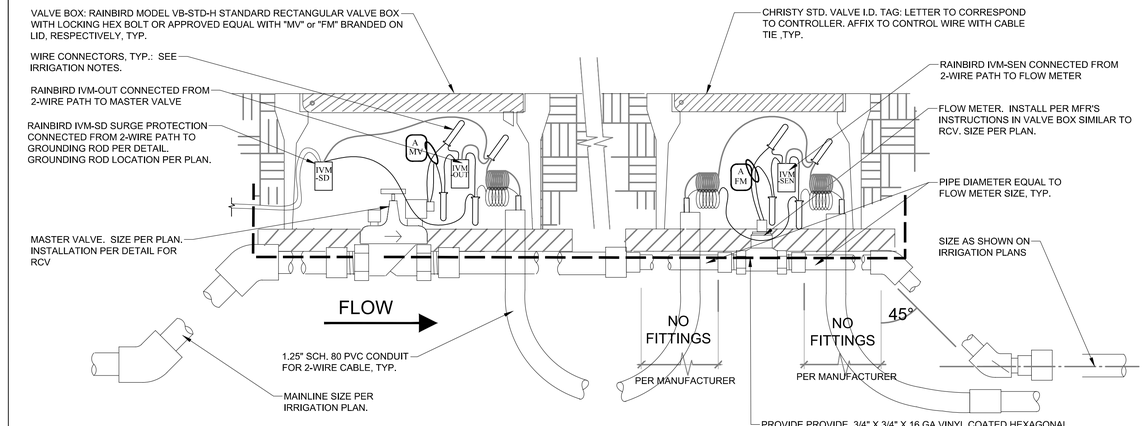


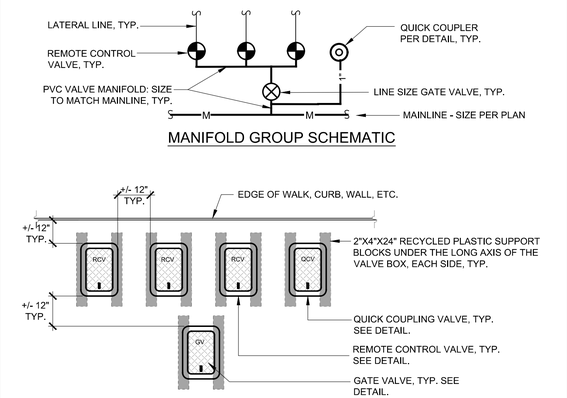
8/9/18 GM

J1	GATE VALVE INSTALLATION, 3/4" TO 2" DOMESTIC		
N.T.S.			RP DETAIL 1100

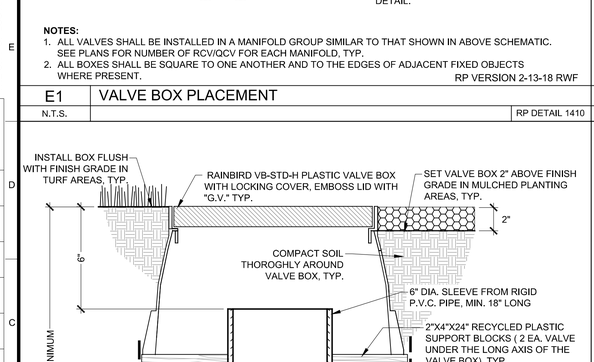


NOTES:
1. REFER TO MANUFACTURER'S INSTRUCTIONS FOR ADDITIONAL WIRING INFORMATION.
2. ALL WIRE CONNECTIONS SHALL BE MADE WITH A WIRE CONNECTOR PER IRRIGATION NOTES.

J5	FLOW METER AND MASTER VALVE, 2-WIRE SYSTEM		
N.T.S.			RAP DETAIL L1512



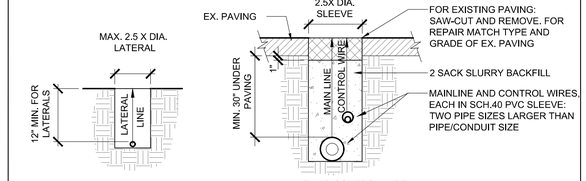
MANIFOLD GROUP SCHEMATIC

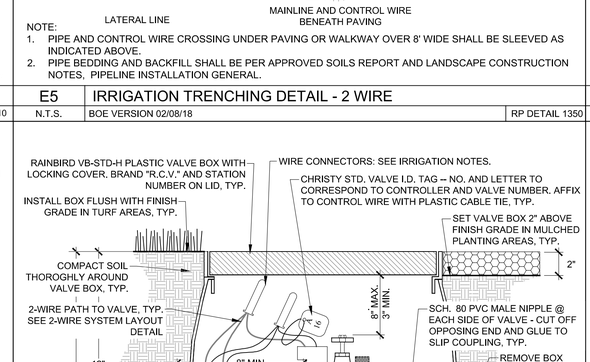


NOTES:
1. ALL VALVES SHALL BE INSTALLED IN A MANIFOLD GROUP SIMILAR TO THAT SHOWN IN ABOVE SCHEMATIC. SEE PLANS FOR NUMBER OF RCV/QCV FOR EACH MANIFOLD, TYP.
2. ALL BOXES SHALL BE SQUARE TO ONE ANOTHER AND TO THE EDGES OF ADJACENT FIXED OBJECTS WHERE PRESENT.

RP VERSION 2-13-18 RWF

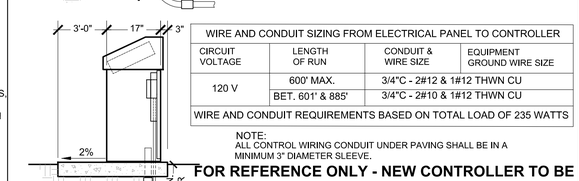
E1	VALVE BOX PLACEMENT		
N.T.S.			RP DETAIL 1410





NOTE:
1. PIPE AND CONTROL WIRE CROSSING UNDER PAVING OR WALKWAY OVER 8' WIDE SHALL BE SLEEVED AS INDICATED ABOVE.
2. PIPE BEDDING AND BACKFILL SHALL BE PER APPROVED SOILS REPORT AND LANDSCAPE CONSTRUCTION NOTES, PIPELINE INSTALLATION GENERAL.

E5	IRRIGATION TRENCHING DETAIL - 2 WIRE		
N.T.S.	BOE VERSION 02/08/18		RP DETAIL 1350



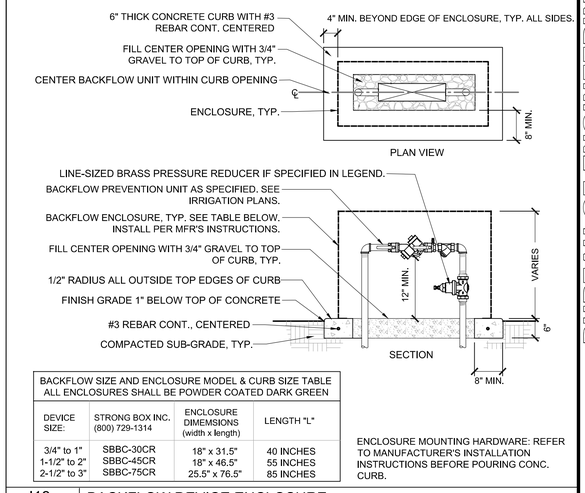
WIRE AND CONDUIT SIZING FROM ELECTRICAL PANEL TO CONTROLLER			
CIRCUIT VOLTAGE	LENGTH OF RUN	CONDUIT & WIRE SIZE	EQUIPMENT GROUND WIRE SIZE
120 V	600' MAX.	3/4"C - 2#12 & 1#12 THWN CU	
	BET. 601' & 885'	3/4"C - 2#10 & 1#12 THWN CU	
WIRE AND CONDUIT REQUIREMENTS BASED ON TOTAL LOAD OF 235 WATTS			

NOTE:
ALL CONTROL WIRING CONDUIT UNDER PAVING SHALL BE IN A MINIMUM 3" DIAMETER SLEEVE.

FOR REFERENCE ONLY - NEW CONTROLLER TO BE INSTALLED IN EX. ENCLOSURE W/ NEW WIRING

BOE VERSION 2-1-18 /RWF

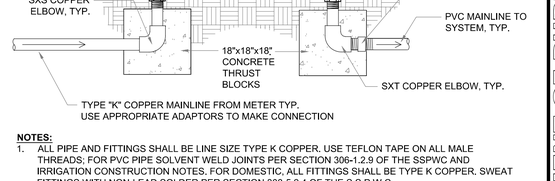
E9	CONTROLLER AND ENCLOSURE		
N.T.S.	BOE VERSION JAN/07		RP DETAIL 1472



BACKFLOW SIZE AND ENCLOSURE MODEL & CURB SIZE TABLE ALL ENCLOSURES SHALL BE POWDER COATED DARK GREEN			
DEVICE SIZE:	STRONG BOX INC. (800) 729-1314	ENCLOSURE DIMEMSIONS (width x length)	LENGTH "L"
3/4" to 1"	SBBC-30CR	18" x 31.5"	40 INCHES
1-1/2" to 2"	SBBC-45CR	18" x 46.5"	55 INCHES
2-1/2" to 3"	SBBC-75CR	25.5" x 76.5"	85 INCHES

ENCLOSURE MOUNTING HARDWARE: REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS BEFORE POURING CONC. CURB.

J13	BACKFLOW DEVICE ENCLOSURE		
N.T.S.	BOE VERSION MAR/21		RP DETAIL L1010



NOTES:
1. ALL PIPE AND FITTINGS SHALL BE LINE SIZE TYPE K COPPER. USE TEFLON TAPE ON ALL MALE THREADS; FOR PVC PIPE SOLVENT WELD JOINTS PER SECTION 306-1.2.9 OF THE SSPWC AND IRRIGATION CONSTRUCTION NOTES. FOR DOMESTIC, ALL FITTINGS SHALL BE TYPE K COPPER. SWEAT FITTINGS WITH NON-LEAD SOLDER PER SECTION 308-5.2.4 OF THE S.S.P.W.C.
2. THE CONTRACTOR SHALL HAVE THE BACKFLOW PREVENTER TESTED BY A CERTIFIED TESTER. A "BACKFLOW PREVENTION DEVICE TESTING REPORT" SHALL BE SUBMITTED TO THE LOS ANGELES COUNTY HEALTH DEPT; A COPY OF THE REPORT SHALL BE GIVEN TO THE PROJECT MANAGER AT THE OPERATIONAL FINAL.
3. SEE BACKFLOW ENCLOSURE DETAIL.

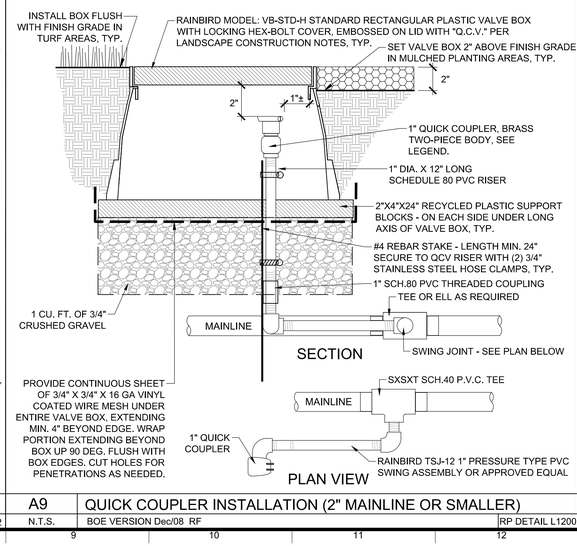
E13	BACKFLOW PREVENTION UNIT, 3/4" TO 2" SIZE		
N.T.S.	BOE VERSION 02/08/18 RWF		RP DETAIL L1002

NOTE: FOR 3" GATE VALVES AND LARGER REFER TO RP DETAIL L1101

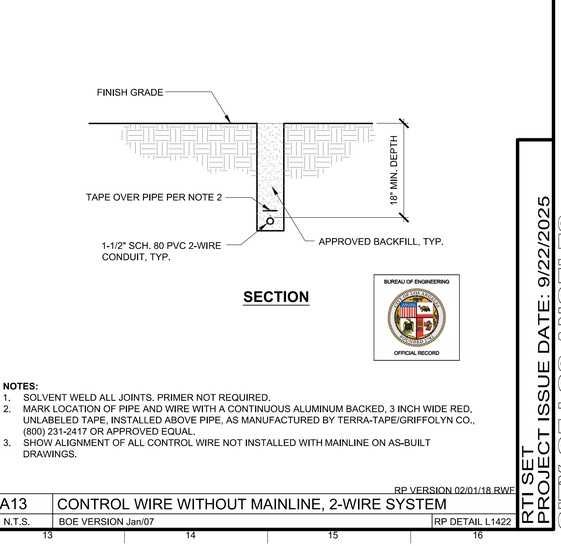
A1	GATE VALVE INSTALLATION, 3/4" TO 2"		
N.T.S.			RP DETAIL 1100

NOTES: 1. VALVE INSTALLED WITH RAINBIRD IVM-SOL IN VALVE. SEE DETAILS FOR 2-WIRE CABLE INSTALLATION.

A5	RCV INSTALLATION DETAIL, 2-WIRE SYSTEM, ESP-LXIVM		
N.T.S.			RP DETAIL 1402



A9	QUICK COUPLER INSTALLATION (2" MAINLINE OR SMALLER)		
N.T.S.	BOE VERSION Dec/08 RF		RP DETAIL L1200



NOTES:
1. SOLVENT WELD ALL JOINTS. PRIMER NOT REQUIRED.
2. MARK LOCATION OF PIPE AND WIRE WITH A CONTINUOUS ALUMINUM BACKED, 3 INCH WIDE RED, UNLABELED TAPE, INSTALLED ABOVE PIPE, AS MANUFACTURED BY TERRA-TAPE/GRIFFOLYN CO., (800) 231-2417 OR APPROVED EQUAL.
3. SHOW ALIGNMENT OF ALL CONTROL WIRE NOT INSTALLED WITH MAINLINE ON AS-BUILT DRAWINGS.

A13	CONTROL WIRE WITHOUT MAINLINE, 2-WIRE SYSTEM		
N.T.S.	BOE VERSION Jan/07		RP DETAIL L1422

RP VERSION 02/01/18 RWF

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
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ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

PUBLIC WORKS
DEPARTMENT OF
BUREAU OF ENGINEERING

ALFRED MATA, PE
ARCHITECTURAL DIVISION

	INTERIM CITY ENGINEER	DATE:
LANDSCAPE ARCHITECT:	GREG MOESER	9/22/25
DESIGNED BY:	GREG MOESER	9/22/25
DRAWN BY:	GREG MOESER	9/22/25
CHECKED BY:	RICHARD FISHER	9/22/25
APPROVED BY:	STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT	9/22/25

LANDSCAPE ARCHITECT
ROBERT WALKER
No. 6290
Registration Date
Renewal Date
09-30-2026
STATE OF CALIFORNIA

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

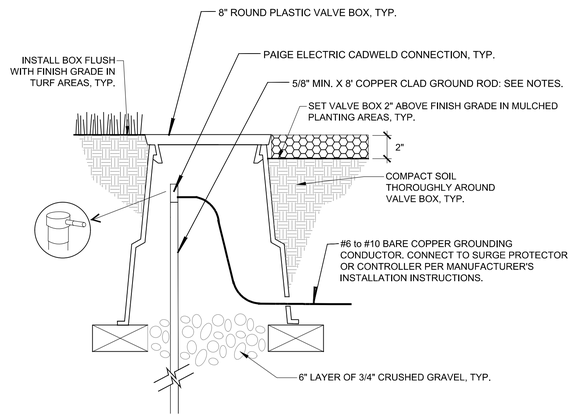
VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: IRRIGATION DETAILS SHEET 1
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

BUREAU OF ENGINEERING
OFFICIAL RECORD

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L602
SHEET 68 OF SHEETS 115

PLOTTED: 9/22/2025



J1	2-WIRE SYSTEM GROUNDING ROD	
N.T.S.		

TWO-WIRE SYSTEM GROUNDING REQUIREMENTS:

SURGE PROTECTION USING PROPER GROUNDING RODS AND RAINBIRD LINE SURGE PROTECTION IS REQUIRED FOR PROTECTION AGAINST SURGE DAMAGE DUE TO LIGHTNING OR OTHER ELECTRICAL SURGE EVENTS. SEE TWO-WIRE SYSTEM LAYOUT DETAIL. CONFORMANCE TO THIS SURGE SUPPRESSION SPECIFICATION IS NECESSARY TO RETAIN WARRANTY PROTECTION UNDER RAINBIRD WARRANTY TERMS.

THE INSTALLATION SHALL CONFORM TO MANUFACTURER'S INSTRUCTIONS, AND MUST MEET OR EXCEED THE AMERICAN SOCIETY OF IRRIGATION CONSULTANTS (ASIC) EARTH GROUNDING GUIDELINE 100-2002.
HTTP://WWW.ASIC.ORG/UPLOADS/ASSETS/011007_121320_ASIC_GROUNDING_GUIDELINES.DOC

GROUND RODS AS REFERRED TO IN THIS SPECIFICATION SHALL CONFORM TO THE FOLLOWING STANDARDS:

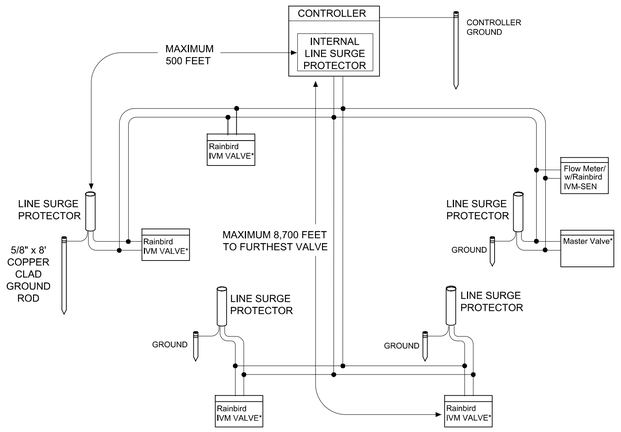
1. ALL GROUNDING RODS SHALL BE BARE COPPER OF 5/8" DIAMETER OR GREATER, AND 8' LENGTH OR GREATER.
2. A MEASURED RESISTANCE READING OF LESS THAN 10 OHMS IS NECESSARY AT EACH LSP-1 (OR DECODER WHERE SURGE PROTECTION IS BUILT INTO THE DECODER). ASIC SPEC: SECTION 7.0 - MEASURING RESISTANCE, ITEM A.

GROUND RODS SHALL BE LOCATED AT A MINIMUM DISTANCE TO ASSURE THAT THE TWO-WIRE PATH IS OUTSIDE OF THE ELECTRODE SPHERE OF INFLUENCE FOR THE GROUNDING ROD: THE GROUND ROD MUST BE CONNECTED AT LEAST 8' AWAY FROM THE TWO-WIRE PATH, AT A RIGHT ANGLE TO THE TWO-WIRE PATH.

UNDER NO CIRCUMSTANCES SHOULD A GROUND ROD BE INSTALLED IN OR UNDER A VALVE BOX, METER BOX OR ELECTRICAL BOX.

CONNECTIONS TO GROUNDING RODS:
ALL CONNECTIONS TO GROUND RODS SHALL CONFORM TO ASIC EARTH GROUNDING GUIDELINE 100-2002, AND SHALL CONSIST OF EITHER A CADWELD TYPE OR SCREW CLAMP TYPE OF CONNECTION. CADWELD OR EQUIVALENT CONNECTIONS ARE PREFERRED.

ANY WIRE EXTENSIONS REQUIRED TO CONNECT FROM A GROUND ROD TO A SURGE PROTECTOR OR ENCLOSURE GROUND LUG SHALL BE BARE COPPER, AND SHALL NOT HAVE ANY SHARP BENDS OR KINKS. WIRE EXTENSIONS CONNECTED TO SURGE PROTECTORS SHALL USE A CADWELD TYPE OR SCREW CLAMP TYPE CONNECTION WHERE THE BARE COPPER GROUND WIRE MEETS THE GREEN GROUNDING WIRE FROM THE SURGE PROTECTOR.



*RAINBIRD VALVE INSTALLED WITH IVM-SOL, OR NON-RAINBIRD VALVE WITH DC LATCHING SOLENOID INSTALLED WITH IVM-OUT. SEE PLAN FOR VALVE TYPE.

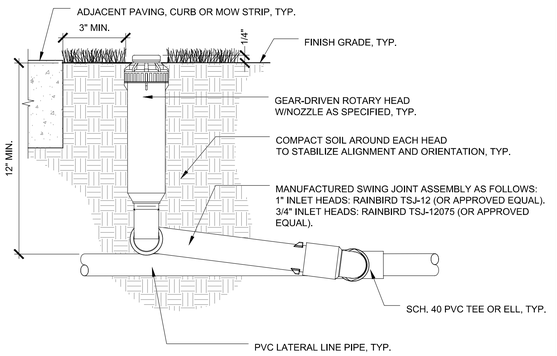
NOTES:

1. ALL TWO-WIRE COMPONENTS (SURGE PROTECTORS, ETC.) SHALL BE PROVIDED BY RAINBIRD, 800-724-6247.
2. SEE RELATED DETAILS FOR WIRING AND GROUNDING CONNECTIONS.
3. TWO-WIRE PATH MUST BE SURGE PROTECTED WITH A SURGE DEVICE, SEE TABLE.
4. SEE IRRIGATION PLAN FOR GROUNDING ROD LOCATIONS.

SURGE PROTECTION	
RAINBIRD CONTROLLER	LX-IVM
SURGE PROTECTION DEVICES	IVM-SD
MAX DISTANCE BETWEEN SURGE DEVICES	500' OR 15 FIELD DEVICES

WIRE CONFIGURATION		
WIRE GAUGE	Total WireLength (feet)	Max Distance from Decoder to Solenoid
MAXI-Cable 14-2UF	8,700	456

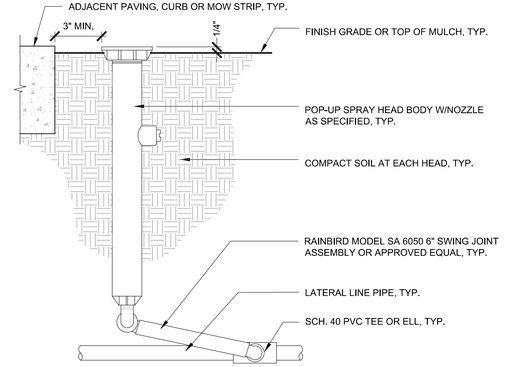
J9	2-WIRE SYSTEM LAYOUT, ESP-LXIVM CONTROLLER	
N.T.S.	B.O.E. 02/16/18	L1372



NOTES:
1. PLACE ALL HEADS 1/4" ABOVE FINISH GRADE AT INITIAL INSTALLATION. SET HEADS 3" AWAY FROM WALKS, CURBS, OR MOW STRIPS.
2. INSTALL ALL HEADS PERPENDICULAR TO FINISH GRADE.
3. THOROUGHLY FLUSH ALL LATERAL LINE PIPES TO REMOVE DIRT AND DEBRIS BEFORE INSTALLATION OF NOZZLES.
4. ADJUST ALL HEADS TO PROPER ARC AND RADIUS AS NECESSARY TO ACHIEVE PROPER COVERAGE AND UNIFORMITY. IF PROPER COVERAGE AND UNIFORMITY IS NOT ACHIEVED WITH THE SPECIFIED NOZZLE, CONTRACTOR SHALL CHANGE NOZZLE AS NEEDED IN CONSULTATION WITH LANDSCAPE ARCHITECT UNTIL DESIRED PERFORMANCE IS ACHIEVED.

REVISED: 6/14/06 RWF/SLG

E9	GEAR-DRIVEN ROTOR HEAD INSTALLATION	
N.T.S.		RP DETAIL 162



NOTES:
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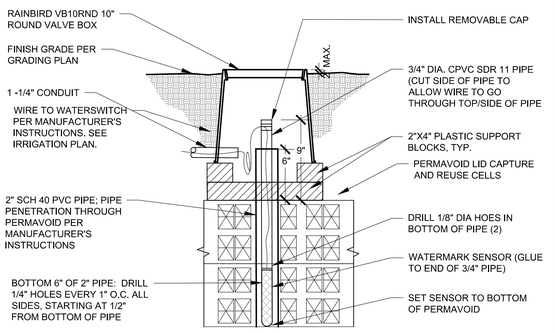
2. INSTALL ALL HEADS PERPENDICULAR TO FINISH GRADE.
3. THOROUGHLY FLUSH ALL LATERAL LINE PIPES TO REMOVE DIRT AND DEBRIS BEFORE INSTALLATION OF NOZZLES.
4. ADJUST ALL HEADS TO PROPER ARC AND RADIUS AS NECESSARY TO ACHIEVE PROPER COVERAGE AND UNIFORMITY. IF PROPER COVERAGE AND UNIFORMITY IS NOT ACHIEVED WITH THE SPECIFIED NOZZLE, CONTRACTOR SHALL CHANGE NOZZLE AS NEEDED UNTIL DESIRED PERFORMANCE IS ACHIEVED.

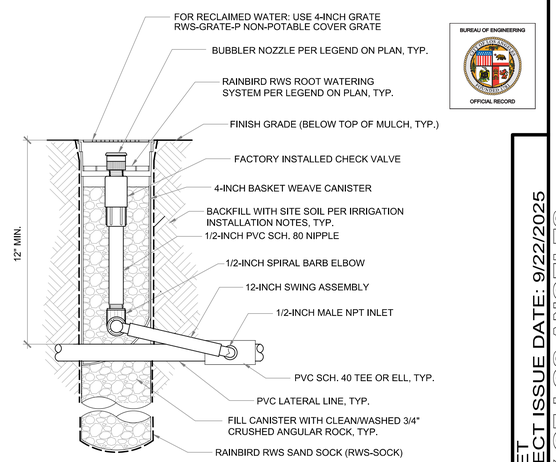
REVISED: 6/14/06 RWF/SLG

E13	POP-UP SPRAY HEAD INSTALLATION	
N.T.S.		RP DETAIL 162



NOTES:
1. SOAK SENSOR OVERNIGHT PRIOR TO INSTALLATION. SENSOR SHALL BE INSTALLED WET.
2. SEE MANUFACTURER'S INSTRUCTIONS FOR "WATERMARK ON PIPE ASSEMBLY" FOR ADDITIONAL INFORMATION.
3. SEE PERMAVOID DETAILS ON L304/L305/L306 FOR ADDITIONAL INFORMATION.

A9	LID PLANTER SENSOR	
N.T.S.		



NOTE: ALWAYS LOCATE RWS CANISTERS WITHIN 12" OR LESS FROM EDGE OF TREE ROOTBALL.

A13	ROOT WATERING SYSTEM BUBBLER ASSEMBLY	
N.T.S.	BOE VERSION Sep/07 - RF	RAP DETAIL L1660

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
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REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ALFRED MATA, PE
INTERIM CITY ENGINEER

	DATE:
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT	9/22/25

LANDSCAPE ARCHITECT ★ ROBERT WALKER ★ LICENSED ★ STATE OF CALIFORNIA
No. 6260
Signature
Robert Walker
Date 09-22-2025

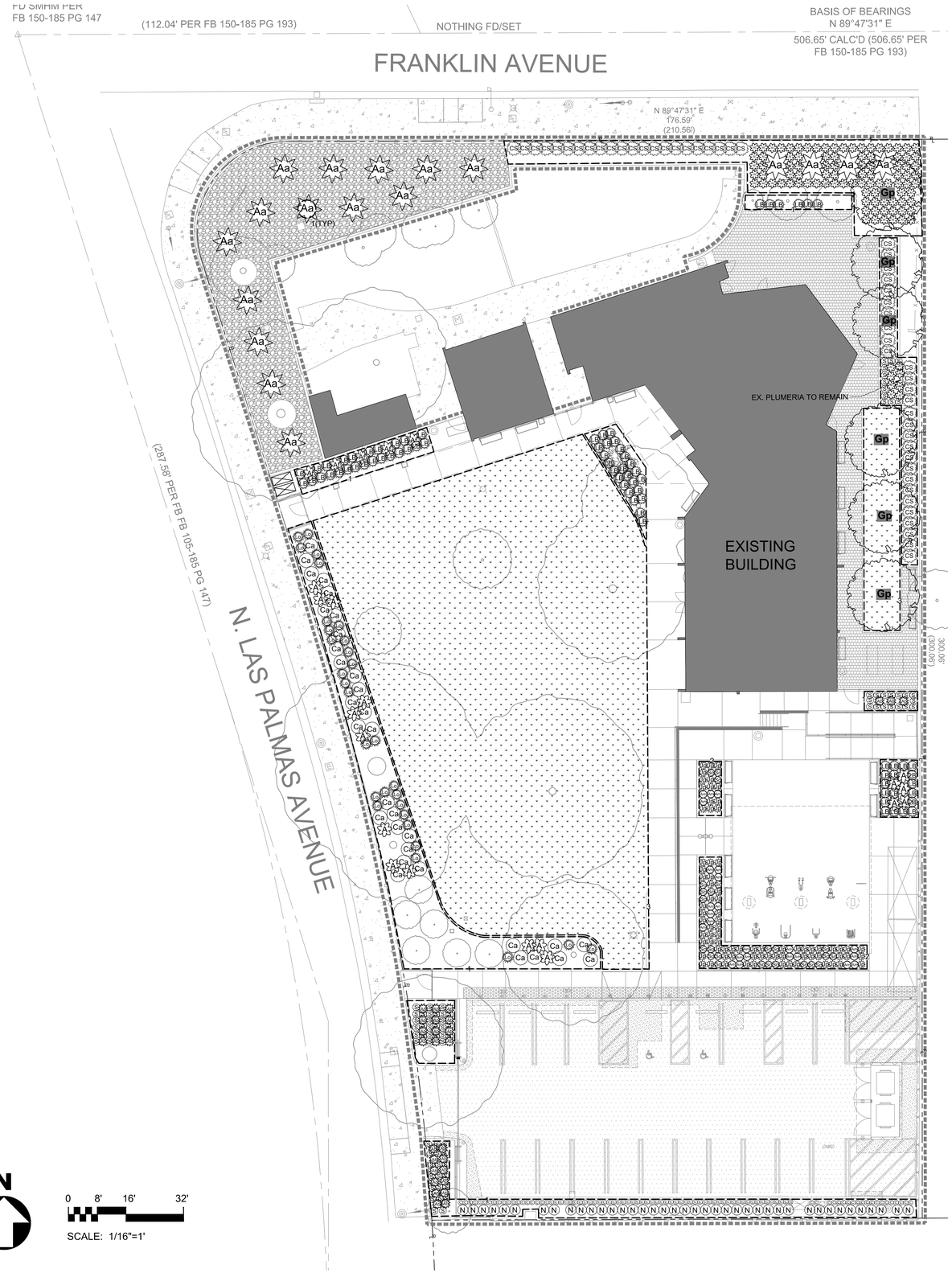
RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: IRRIGATION DETAILS SHEET 2
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L603
SHEET 69 OF SHEETS 115

PLOTTED: 9/22/2025



0 8' 16' 32'

SCALE: 1/16"=1'

TREE LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY	SPACING	WUCOLS	REMARKS
Gp	GEIJERA PARVIFLORA	AUSTRALIAN WILLOW	24" BOX	6	PER PLAN	LOW	LOW BRANCHING; STAKE PER DETAIL.

SHRUB LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QTY	SPACING	WUCOLS	REMARKS
AM	ACHILLEA MILLEFOLIUM 'PAPRIKA'	YARROW	1 GAL	24	24" O.C.	LOW	INSTALL PER DETAIL
Aa	AGAVE AMERICANA 'SILVER SURFER'	CENTURY PLANT	15 GAL	18	10' O.C.	LOW	INSTALL PER DETAIL
AT	AGAVE ATTENUATA 'RAY OF LIGHT'	RAY OF LIGHT FOXTAIL AGAVE	5 GAL	17	PER PLAN	LOW	INSTALL PER DETAIL
AF	AGAVE 'BLUE FLAME'	RAY OF LIGHT FOXTAIL AGAVE	5 GAL	5	PER PLAN	LOW	INSTALL PER DETAIL
AG	AGAVE 'BLUE GLOW'	BLUE GLOW AGAVE	5 GAL	27	PER PLAN	LOW	INSTALL PER DETAIL
AC	ALOE 'CYNTHIA GIDDY'	GIDDY FLAME ALOE	5 GAL	101	30" O.C.	LOW	INSTALL PER DETAIL
Ca	CALLISTEMON 'GREEN JOHN'	GREEN JOHN BOTTLEBRUSH	5 GAL	32	4' O.C.	LOW	INSTALL PER DETAIL
CS	CALLISTEMON 'SLIM'	SLIM BOTTLEBRUSH	15 GAL	50	3' O.C.	LOW	INSTALL PER DETAIL
©	CAREX DIVULSA	EUROPEAN GREY SEDGE	1 GAL	279	18" O.C.	LOW	INSTALL PER DETAIL
JP	JUNCUS PATENS	COMMON RUSH	1 GAL	78	24" O.C.	LOW	INSTALL PER DETAIL
LB	LOMANDRA 'BREEZE'	BREEZE LOMANDRA	1 GAL	68	30" O.C.	LOW	INSTALL PER DETAIL
LP	LOMANDRA 'PLATINUM BEAUTY'	PLATINUM BEAUTY LOMANDRA	1 GAL	30	30" O.C.	LOW	INSTALL PER DETAIL
N	NANDINA 'GULFSTREAM'	GULF STREAM HEAVENLY BAMBOO	1 GAL	40	36" O.C.	LOW	INSTALL PER DETAIL
S	SENECIO MANDRALISCAE	BLUE CHALK STICKS	1 GAL	74	24" O.C.	LOW	INSTALL PER DETAIL
SV	SYMPHYOTRICHUM CHILENSE 'PURPLE HAZE'	PURPLE HAZE COAST ASTER	1 GAL	24	24" O.C.	LOW	INSTALL PER DETAIL

TURF LEGEND

SYMBOL	DESCRIPTION	REMARKS
	TURF	"BALLPARK BLEND" TURF SOD BY AG SOD OR APPROVED EQUAL.

HYDROZONE - REFER TO MWELO - WATER EFFICIENT LANDSCAPE WORKSHEET ON L702

EX. TREE TO REMAIN. PROTECT IN PLACE.

PLANTING NOTES

1. EXISTING TREE PROTECTION: SEE TREE PROTECTION SECTION ON G104.
2. CONTRACTOR SHALL PAY FOR TWO (2) AGRONOMIC SOIL TESTS FROM WALLACE LABORATORY OR APPROVED EQUAL FROM LOCATIONS NOTED BY LANDSCAPE ARCHITECT. SOIL PREPARATION AMENDMENTS IDENTIFIED IN THE PLANTING SPECIFICATIONS MAY NEED TO BE MODIFIED PER THE TESTING RESULTS AND SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT/PROJECT MANAGER.
3. ALL PLANTING AREAS SHALL RECEIVE SOIL PREPARATION PER THE PLANTING SPECIFICATIONS. AREAS INSIDE TREE PROTECTION ZONES SHALL RECEIVE ALTERNATE SOIL PREPARATION METHODS AND MATERIALS PER THE PLANTING SPECIFICATIONS WHERE DESIGNATED ON THE TREE PROTECTION PLAN, SHEET G104.
4. SOIL PREPARATION FOR EACH AREA SHALL NOT BE PERFORMED UNTIL THE IRRIGATION SYSTEM IS COMPLETED, INSPECTED AND APPROVED PER THE SPECIFICATIONS.
5. HYDROSEEDING, SOD OR CONTAINER PLANTING SHALL NOT BE INSTALLED UNTIL AFTER SOIL PREPARATION, FINE GRADING AND "GROW AND KILL" WEED ABATEMENT PER THE LANDSCAPE CONSTRUCTION NOTES ARE COMPLETED AND APPROVED. SPECIMEN TREES IN PAVED AREAS MAY BE EXEMPTED AT THE DISCRETION OF CITY ENGINEER.
6. TREE PLANTING SHALL BE PERFORMED PER DETAIL J13/L702.
7. SHRUB PLANTING SHALL BE PERFORMED PER DETAIL E13/L702
8. PLANTING LEGEND AS SHOWN ON EACH PLANTING PLAN SHEET IS ***FOR THE ENTIRE PROJECT***, AND IS INCLUDED FOR THE CONVENIENCE OF THE CONTRACTOR. IN CASE OF DISCREPANCIES, THE QUANTITY OF SYMBOLS FOR EACH PLANT SHOWN ON THE PLANTING PLAN SHALL TAKE PRECEDENCE. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL QUANTITIES AS SHOWN ON THE PLANTING PLAN.
9. AVAILABILITY & SUBSTITUTIONS: NO SUBSTITUTIONS OF PLANT SPECIES, TYPE, CULTIVAR, SIZE ETC. WILL BE ACCEPTED WITHOUT PRIOR APPROVAL OF PROJECT MANAGER. CONTRACTOR IS EXPECTED TO UTILIZE ALL APPROPRIATE NURSERY RESOURCES IN THE SOUTHERN CALIFORNIA REGION BEFORE DETERMINING IF A SPECIFIED MATERIAL IS UNAVAILABLE. SEE SPECIFICATIONS.
10. SEE THE SPECIFICATIONS FOR REQUIRED INSPECTIONS OF PLANT MATERIALS PRIOR TO INSTALLATION.
11. AFTER PLANT MATERIALS ARE INSPECTED AND APPROVED, AND PLANTING AREA IS READY FOR PLANTING, CONTRACTOR SHALL PLACE ALL CONTAINER PLANTS IN A GIVEN AREA - STILL INSIDE THEIR RESPECTIVE NURSERY CONTAINERS - IN THE PLANTING AREAS PER THE LAYOUT SHOWN ON THE PLANTING PLAN FOR INSPECTION AND APPROVAL BY THE LANDSCAPE ARCHITECT. NO PLANTING SHALL BE INSTALLED (OR PLANTING HOLES EXCAVATED) UNTIL THE PLANT TYPE, QUALITY AND LOCATION HAS BEEN APPROVED BY THE LANDSCAPE ARCHITECT. ANY PLANTS INSTALLED PRIOR TO APPROVAL ARE SUBJECT TO REMOVAL AND RE-PLANTING OR REPLACEMENT AT THE CONTRACTOR'S EXPENSE. PROJECT MANAGER SHALL BE NOTIFIED MINIMUM 48 HOURS IN ADVANCE OF REQUESTED INSPECTION.
12. ALL PLANTING AREAS EXCEPT HYDROSEEDED AND SODDED AREAS SHALL BE COVERED IN WEED BARRIER FABRIC PRIOR TO INSTALLING PLANTING AND MULCH IN ACCORDANCE WITH THE SPECIFICATIONS. PRIOR TO PLACING MULCH, PRE-EMERGENT HERBICIDE SHALL BE APPLIED TO THE SOIL PER THE SPECIFICATIONS.
13. ALL PLANTING AREAS EXCEPT HYDROSEEDED AND SODDED AREAS SHALL RECEIVE A MINIMUM (3) INCH DEEP LAYER OF TOP DRESSING MUCH PER THE PLANTING DETAILS AND THE PLANTING SPECIFICATIONS MATERIALS LIST. MULCH SHALL BE SPREAD EVENLY THROUGHOUT PLANTING BEDS. DO NOT BURY PLANT CROWNS.
14. SEE SPECIFICATIONS FOR PLANTING MAINTENANCE AND ESTABLISHMENT PERIOD REQUIREMENTS.

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ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LANDSCAPE ARCHITECT ROBERT WISER LICENSE NO. 6380 Signature Date 9/22/2025 My License Expires 08/31/2025 STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE
ARCHITECTURAL DIVISION

		DATE:
LANDSCAPE ARCHITECT:	GREG MOESER	9/22/25
DESIGNED BY:	GREG MOESER	9/22/25
DRAWN BY:	GREG MOESER	9/22/25
CHECKED BY:	RICHARD FISHER	9/22/25
APPROVED BY:	STEVEN PIERCE, AIA., PRINCIPAL ARCHITECT	9/22/25

INTERIM CITY ENGINEER

VERTICAL CONTROL: FB #4111O PGS 701A
HORIZONTAL CONTROL: FB #4111O PGS 701A

SHEET TITLE: PLANTING PLAN

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L701
SHEET 70 OF SHEETS 115

PLOTTED: 9/22/2025

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TTLB TEMPLATE REVISION DATE: 02/2013 FILE PATH:
SHEET ISSUE DATE:
REVISION DATES (DESIGN STAGE ONLY)

GREEN BUILDING NOTES:

1. FOR PROJECTS THAT INCLUDE LANDSCAPE WORK, THE LANDSCAPE CERTIFICATION, FORM GRN 12, SHALL BE COMPLETED PRIOR TO FINAL INSPECTION APPROVAL.
2. RECIRCULATING WATER SYSTEMS SHALL BE USED FOR WATER FEATURES.
3. A MINIMUM 3-INCH LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT TURF AREAS, CREEPING OR ROOTING GROUNDCOVERS, OR DIRECT DIRECT SEEDING APPLICATIONS WHERE MULCH IS CONTRAINDICATED.
4. FOR SOILS LESS THAN 6% ORGANIC MATTER IN THE TOP 6 INCHES OF SOIL, COMPOST AT A RATE OF A MINIMUM OF FOUR CUBIC YARDS PER 1,000 SQUARE FEET OF PERMEABLE AREA SHALL BE INCORPORATED TO A DEPTH OF SIX INCHES INTO THE SOIL.
5. I AGREE TO COMPLY WITH THE REQUIREMENTS OF THE WATER EFFICIENT LANDSCAPE ORDINANCE AND SUBMIT A COMPLETE LANDSCAPE DOCUMENTATION PACKAGE.

10/2/2023
GREG MOESER, LANDSCAPE ARCHITECT DATE

6. I HAVE COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE DESIGN PLANS.

10/2/2023
GREG MOESER, LANDSCAPE ARCHITECT DATE

WATER EFFICIENT LANDSCAPE WORKSHEET
Las Palmas Senior Center

Reference Evapotranspiration (ETo): 50.1

Hydrozone # /Planting Description[a]	Plant Factor (PF)	Irrigation Method[b]	Irrigation Efficiency (IE)[c]	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU)[d]
Regular Landscape Areas							
ZONE 1 - low water mixed shrub/tree planting	0.2	spray bubbler	0.75	0.267	5,503.00	1,467.47	45,582.45
				Totals	5,503.00	1,467.47	
Special Landscape Areas							
ZONE 2 - LID Capture and Reuse planter				1	535.00	535.00	16,618.17
ZONE 3 - turf/tree areas - recreation				1	10,307.00	10,307.00	320,156.03
				1			-
				Totals	10,307.00	10,542.00	
						ETWU Total	382,356.65
						Maximum Allowed Water Allowance (MAWA)[e]	397,076.42

[a]Hydrozone #/Planting Description
E.g.
1.) front lawn
2.) low water use plantings
3.) medium water use planting

[b]Irrigation Method
overhead spray or drip

[c]Irrigation Efficiency:
0.75 for spray head
0.81 for drip

[d]ETWU (Annual Gallons Required) = Eto x 0.62 x ETAF x Area
where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year.

[e]MAWA (Annual Gallons Allowed) = (Eto) (0.62) ((PF)(AF) + (1-AF)(SLA))
where 0.62 is a conversion factor that converts acre-inches per acre per year to gallons per square foot per year, LA is the total landscape area in square feet, SLA is the total special landscape area in square feet, and ETAF is .55 for residential areas and 0.45 for non-residential areas.

ETAF Calculations

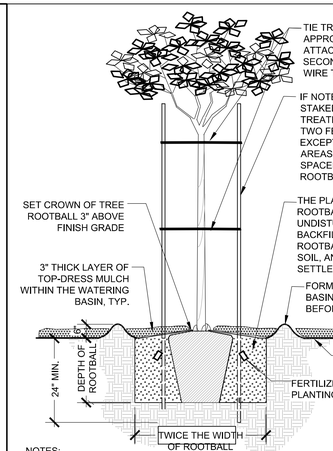
Regular Landscape Areas

Total ETAF x Area	1467.47
Total Area	5503.00
Average ETAF	**0.27**

All Landscape Areas

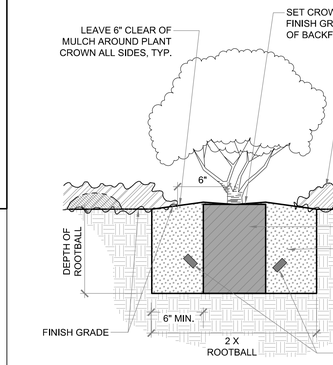
Total ETAF x Area	12589.47
Total Area	15810.00
Sitewide ETAF	**0.78**

Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.



NOTES:
1. ALL TREES PLANTED IN LAWN AREAS SHALL HAVE A 48" DIAMETER UNPLANTED AREA AROUND EACH TREE TRUNK. INSTALL 4" TOP-DRESS MULCH INSIDE CIRCLE.
2. WHEN PLANTING TREES IN AREAS TO RECEIVE SOD, CONTRACTOR SHALL COMPENSATE FOR THE THICKNESS OF THE SOD AND SET TOP OF TREE ROOTBALL APPROPRIATELY TO AVOID A LOW AREA AND PONDING OF WATER.

J13 | TREE PLANTING AND STAKING
N.T.S. | BOE VERSION DEC/19 | RP DETAIL L2000



SECTION

NOTES:
1. PLANTING FINISH GRADE SHALL BE DEFINED AS TOP OF SOIL.
2. IN ALL CASES THE PLANT ROOTBALL SHALL BE COMPLETELY COVERED WITH BACKFILL SOIL - NO PORTION OF THE ROOTBALL SHALL BE LEFT EXPOSED TO AIR OR SUNLIGHT ***BEFORE APPLICATION OF MULCH.***
3. DELETE FERTILIZER TABLETS FOR CERTAIN CALIF. NATIVE PLANTS - SEE PLANTING LEGEND.

E13 | SHRUB PLANTING
N.T.S. | BOE VERSION OCT/19 | RP DETAIL L2030

BUREAU OF ENGINEERING
OFFICIAL RECORD

DIGALERT
Call Toll Free 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
Underground Service Alert of Southern California

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: MWELO DOCUMENTATION/PLANTING DETAILS
PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION
ADDRESS: 1820 N. LAS PALMAS AVENUE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L702
SHEET 71 OF SHEETS 115

PLOTTED: 9/22/2025

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

ALFRED MATA, PE
INTERIM CITY ENGINEER

	DATE:
ARCHITECTURAL DIVISION	9/22/25
LANDSCAPE ARCHITECT: GREG MOESER	9/22/25
DESIGNED BY: GREG MOESER	9/22/25
DRAWN BY: GREG MOESER	9/22/25
CHECKED BY: RICHARD FISHER	9/22/25
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT	9/22/25

LANDSCAPE ARCHITECT ★ ROBERT LESSER ★ LICENSED ★ STATE OF CALIFORNIA
No. 6586 Signature Date 9/22/2025

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REVISION DATES (DESIGN STAGE ONLY)

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

Structure Summary

LUMOS

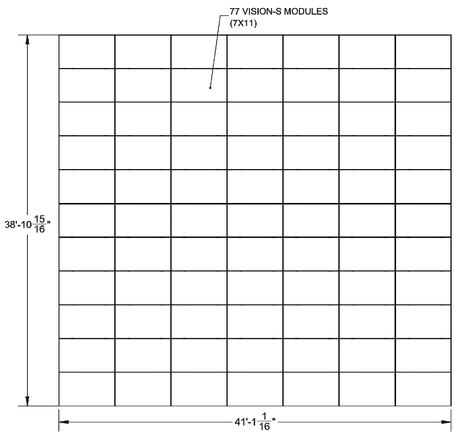
Las Palmas Senior Center - OTS - 7 x 11 - Revision 0

PRELIMINARY DESIGN SCHEDULE	
PRODUCT MODEL	OTS - HEAVY DUTY - MODERN - STEEL
STRUCTURE FRAMES	(3x) OTS HD7.3-14-VisionS-Modern - Steel
STRUCTURE PURLINS (If Applicable)	(28x) HSS6X2X1/4
STRUCTURE FINISH	POWDER COATED -
ARRAY ORIENTATION	Portrait
APPROX ARRAY AREA (PLAN VIEW)	Approx 1600 ft²
SOLAR MODULE	(77x) VISION S SERIES
MODULE ROWS	(7)
MODULE COLUMNS	(11)
SOLAR RACKING	(14x runs of) Vision SD Edge Rail
SOLAR RACKING ORIENTATION	Portrait - Across Short Side of Module
GUTTER BRACKETS?	No
3M SEAL?	No

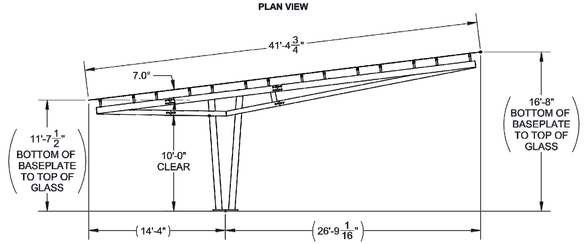
PRELIMINARY STRUCTURE DIMENSIONS		
DESCRIPTION	**LABEL**	**VALUE**
ARRAY WIDTH (PLAN)	(A)	~ 38'-10.9"
COLUMN SPACING (OC)	(B)	~ 12'-5"
CLEARANCE HEIGHT	(C)	14' - 0"
ARRAY LENGTH (PLAN)	(D)	~ 41'-1.1"
MAX HEIGHT	(E)	~ 20'-1.8"
SYSTEM TILT	(F)	7°
COLUMN INSET	(G)	~ 17'-7.4"

APPROXIMATE COMPONENT WEIGHTS (lbs)		
COMPONENT	**EACH**	**TOTAL**
SOLAR MODULE	75	5775
SOLAR RACKING	49	26921
COLUMN	820	2460
GIRDER	2090	6270
PURLIN	254	7121

PRELIMINARY DESIGN



PLAN VIEW



PROFILE VIEW

APPROVAL DRAWING

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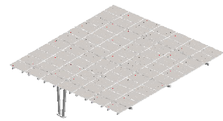
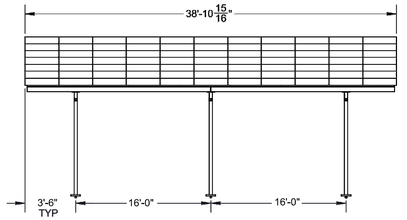


ISOMETRIC VIEW



VIEW FROM LOW SIDE

CUSTOMER APPROVAL OF OVERALL DESIGN CONCEPT

NAME:_____

COMPANY:_____

TITLE:_____

DATE:_____

SIGNATURE:_____

NOTES:
PANELS SHALL BE VISION S60 355 WATT PANELS.

STRUCTURE MATERIAL: STEEL
STRUCTURE FINISH: POWDER COAT, STANDARD COLOR (COLOR TBD)

BASEPLATE ATTACHMENTS QNTY FOR THIS STRUCTURE: 3

BASEPLATES INSTALLED AT HEIGHT TO ENSURE LEVEL CANOPY INSTALLATION

CANOPY, ARRAY, FOUNDATION COUNT, AND ALL DIMENSIONS ON THIS SHEET ARE SUBJECT TO CHANGE PRIOR TO SIGNING.

LOCATION OF CANOPY ON SITE BY OTHERS

DIMENSIONS ON THIS SHEET ARE TO CONVEY OVERALL DESIGN INTENT ONLY. THEY SHOULD NOT BE USED FOR ANY OTHER PURPOSE. VALUES MAY CHANGE UPON FINAL ENGINEERING

LUMOS
WWW.LUMOSSOLAR.COM
CUSTOMER APPROVAL DRAWING

DISCLAIMER:
THIS DRAWING IS THE PROPERTY OF LUMOS SOLAR AND IS PROPRIETARY. ALL CONTENTS ARE PROPRIETARY AND CONFIDENTIAL AND SHALL NOT BE REPRODUCED OR DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF LUMOS.

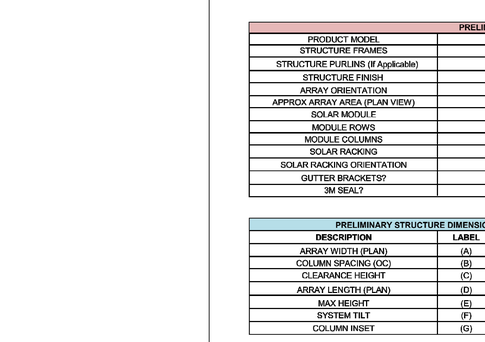
PROJECT NAME:
Las Palmas Senior Center
PROJECT ADDRESS
1820 N. Las Palmas Ave
Los Angeles, CA 90028
APN NUMBER:
Customer Approval Drawings - Las Palmas Senior Center

PROJECT NUMBER:	NA
REVISION:	0
DRAWN BY:	BR
INTERNALLY REVIEWED BY:	NR
DATE PRINTED:	12/14/2022
ORIGINAL SHEET SIZE:	11"X17"
SHEET #:	**1**

Vision Module System

LUMOS

VISION MOUNTING RAIL



VISION RAIL LENGTHS



VISION RAIL SPANS*

	Wind Speed (mph)	Snow Load (psf)	SD Max Span (ft)	MD Max Span (ft)
Honolulu	110	0	9' 3"	20'
Los Angeles	110	0	9' 3"	20'
Atlanta	115	5	8' 9"	18' 6"
Denver	110	20	7' 9"	16'
Miami	180	0	7' 3"	15' 3"
Boston	130	40	6'	12' 6"

*Assumes multiple span condition. Additional site factors outside the scope of this chart can increase or decrease the allowable span.

Patent Pending

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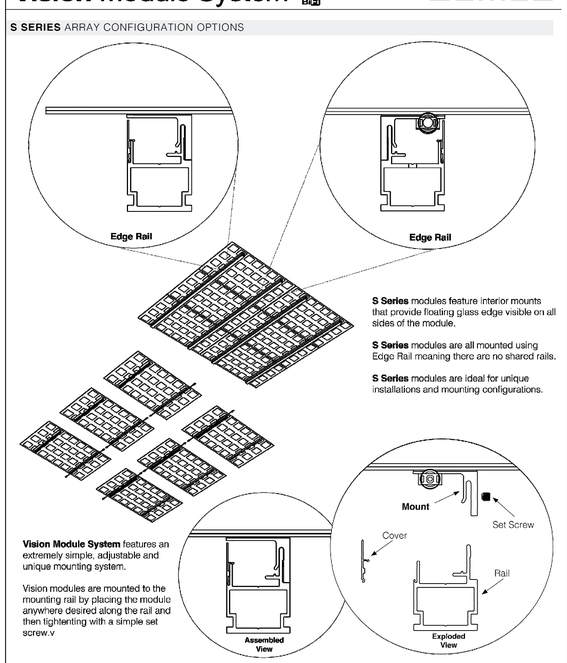
Vision Module System

LUMOS

S SERIES ARRAY CONFIGURATION OPTIONS



S Series modules feature interior mounts that provide floating glass edge visible on all sides of the module.

S Series modules are all mounted using Edge Rail meaning there are no shared rails.

S Series modules are ideal for unique installations and mounting configurations.

Vision Module System features an extremely simple, adjustable and unique mounting system.

Vision modules are mounted to the mounting rail by placing the module anywhere desired along the rail and then tightening with a simple set screw.v

Patent Pending

Lumos Solar © 2021 Specifications are subject to change without notice. Version 2021-1

Vision Module System

LUMOS

VISION SYSTEM SPECIFICATIONS

Series		S		
Matrix	Cells	60		
	Power	355 W		
	Transmittance	13%		
Peak Power Voltage* (Vmp)		32.9 V		
Maximum Power Current (Imp)		10.8 A		
Open Circuit Voltage (Voc)		41.0 V		
Short Circuit Current (Isc)		11.4 A		
Module Efficiency		18.4%		
Operating Temperature		-40 °C to 85 °C		
Maximum System Voltage		1500 V		
Maximum Series Fuse Rating		20 A		
Power Tolerance		-3/+3%		
Solar Cell		Monocrystalline Bifacial 6.5" x 6.5" (166 mm x 166 mm)		
Cell Layout		6 x 10		
Module Dimensions		84.02 in x 42.47 in x 2.06 in (2134 mm x 1078.85 mm x 52.17 mm)	70.77 in x 42.22 in x 2.06 in (1797.50 mm x 1072.50 mm x 52.17 mm)	
Module Area		24.6 ft² (2.3m²)	20.8 ft2 (1.9m²)	
Front/ Back Glass		Fully Tempered 3.2mm Low-Iron PV Glass		
Module Weight		105.5 lbs (47.8 kg)	78.6 lbs (35.6 kg)	
System Weight / Area		SD 4.85 psf (23.68 kg/m²) MD 5.06 psf (24.71 kg/m²)	SD 4.55 psf (22.22 kg/m²) MD 4.81 psf (23.48 kg/m²)	
Static Load		Short Term / Long Term	Short Term / Long Term	
	PM	105.1 / -101 / 91.6		
	EM	116 / -89 / 86		
	LM/ RM	92.8 / -98 / 79.4		
	LC/ RC	68 / -74 / 50		
	IM		96 / -102 / 71	
Output Cables		500mm 12 Awg. PV Wire and MC4 Compatible Connectors		
Fire Rating		Class A		
Warranty		10 years Workmanship / 30 years Linear Power Production		
Certifications		UL 61730		

* All values are based on STC. Power Production Warranty on Front Side STC Only

TEMPERATURE COEFFICIENTS

Nominal Operating Cell Temperature (NOCT)	43.6 °C
Power Temperature Coefficient (Pmpp)	-0.38 % / °C
Voltage Temperature Coefficient (Voc)	-0.36 % / °C
Current Temperature Coefficient (Isc)	0.07 % / °C

NOTES:

1. PHOTOVOLTAIC (SOLAR) SHADE STRUCTURE SHALL BE A DESIGN-BUILD BY THE CONTRACTOR BASED ON THE PRELIMINARY DESIGN ON THIS SHEET. SHADE STRUCTURE SUPPORTS AND FRAMING, AND GLASS PHOTOVOLTAIC PANELS SHALL BE BY LUMOS SOLAR OR APPROVED EQUAL. CONTACT RYAN SCHUAB: (303) 407-7994 (lumossolar.com). CONTRACTOR SHALL SUPPLY AND INSTALL ALL REQUIRED COMPONENTS TO INSTALL/OPERATE SYSTEM INCLUDING BUT NOT LIMITED TO STRUCTURE/FRAMING, MOUNTING SYSTEM, PHOTOVOLTAIC PANELS, FOOTINGS, INVERTERS, WIRING. SEE ELECTRICAL PLANS FOR ADDITIONAL REQUIREMENTS.
3. SOLAR SHADE STRUCTURE AND LIGHTING SHALL BE UNDER SEPARATE PERMIT.
4. "OR EQUAL" SUBSTITUTIONS FOR PHOTOVOLTAIC PANELS WILL BE EVALUATED BASED ON POWER PROVIDED AND LIGHT TRANSMITTANCE FOR THE GIVEN PHOTOVOLTAIC SHADE STRUCTURE DIMENSIONS, PANEL STRUCTURAL PROPERTIES, MANUFACTURER WARRANTY AND SPECIFICATIONS. SOLAR PANELS SHALL BE INTEGRAL TO THE SHADE STRUCTURE ROOFING SYSTEM OR NOT CONSIDERED EQUAL.
5. CONTRACTOR SHALL PROVIDE FINAL ENGINEERED PERMIT DRAWINGS FOR THE STRUCTURE (EXCLUDING FOOTINGS) BY THE MANUFACTURER AND INCLUDE THE COST OF PERMIT DRAWINGS IN THEIR BID. SEE SHEET S303 FOR STRUCTURAL DRAWINGS FOR FOOTINGS.
6. CONTRACTOR SHALL PROVIDE DESIGN OF SOLAR SHADE STRUCTURE LIGHTING SYSTEM AND ALL REQUIRED PERMIT DRAWINGS IN THEIR BID. SEE ADDITIONAL NOTES ON SHEET E100.
7. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND CLEARANCES REQUIRED FOR THE INSTALLATION OF SOLAR SHADE STRUCTURE INCLUDING (BUT NOT LIMITED TO) STRUCTURAL AND ELECTRICAL WORK. PERMIT COST SHALL BE REIMBURSED TO THE CONTRACTOR BY THE CITY.
8. SEE GENERAL REQUIREMENTS AND OR SSPWC FOR REQUIRED AND THIRD PARTY INSPECTIONS FOR FABRICATION, WELDING AND PAINTING.
9. CONTRACTOR SHALL HOLD BACK TOP OF FOOTING SO THAT TOP OF SHADE STRUCTURE ANCHORS/BOLTS ARE BENEATH RUBBER SURFACE TILE. SEE DETAIL J1/L409.
10. REFER TO SPECIFICATIONS SECTIONS FOR PHOTOVOLTAIC PANELS AND FABRICATED SOLAR SHADE STRUCTURE FOR ADDITIONAL REQUIREMENTS.

BUREAU OF ENGINEERING
OFFICIAL RECORD

BUREAU OF ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION

LANDSCAPE ARCHITECT: GREG MOESER
DESIGNED BY: GREG MOESER
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT

DATE:	9/22/25	9/22/25	9/22/25	9/22/25

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: SOALR SHADE STRUCTURE DETAILS

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L801
SHEET 72 OF SHEETS 115

PLOTTED: 9/22/2025

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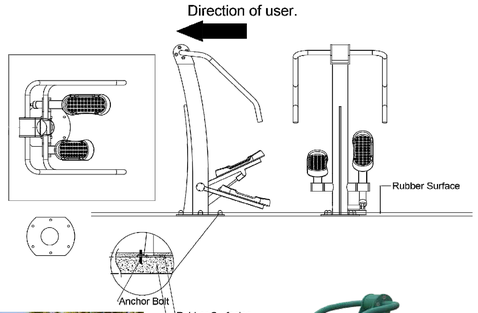
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:
REVISION DATES (DESIGN STAGE ONLY)

Installation Instructions:
UBX292
Stepper

Greenfields Outdoor Fitness

Questions? Please call 888-315-9037 x105







During installation, please be sure to also refer to the general installation instructions for surface mount.
Epoxy is <u>not</u> included in shipment and must be provided by installer.

In order to honor our commitment to quality and safety, Greenfields Outdoor Fitness reserves the right to make changes and revise the design specifications without notice.

Greenfields' units are designed to accommodate the majority of users age 14 and above; however, due to the nature of outdoor fitness equipment, units are "one size fits most."

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LU22bDv2

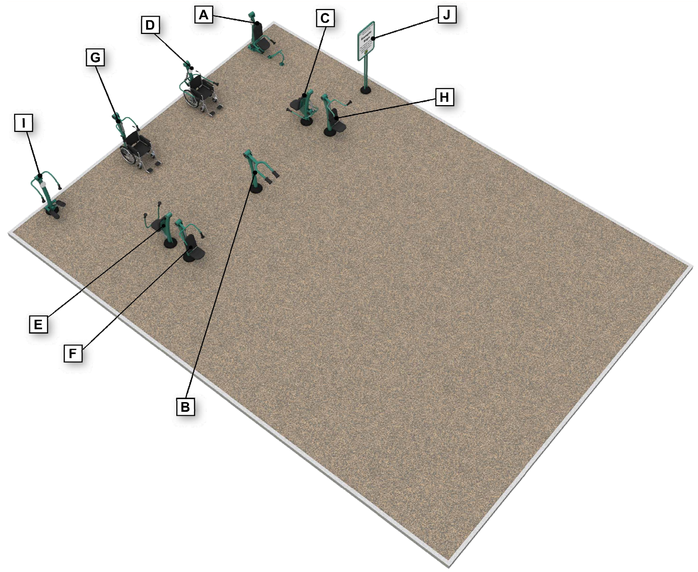
NOTES:
1. CONTRACTOR TO PROVIDE AND INSTALL ALL EQUIPMENT AND ANNOUNCEMENT SIGN WITH STANDARD COLORS AS NOTED ON THE PLAN ON THIS SHEET, AND DETAILS ON THIS SHEET AND L803.
2. FINAL LAYOUT TO BE COORDINATED WITH SHADE STRUCTURE POSTS; CONTRACTOR TO BE PROVIDED WITH CAD FILE TO LOCATE EQUIPMENT. CONFIRM WITH LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
3. ALL FITNESS EQUIPMENT (AND ANNOUNCEMENT SIGN) TO BE INSTALLED WITH SURFACE MOUNT PER MANUFACTURER'S INSTRUCTIONS. EXERCISE AREA SURFACING TO BE RESILIENT SURFACING TILES PER DETAIL A9/L405.
4. INSTALL FITNESS EQUIPMENT WITH BASE PLATE COVER (NOT SHOWN IN DIAGRAMS; PROVIDED BY MANUFACTURER) PER MANUFACTURER'S INSTRUCTIONS.
5. SIGNAGE TEXT TO BE COORDINATED WITH LANDSCAPE ARCHITECT.

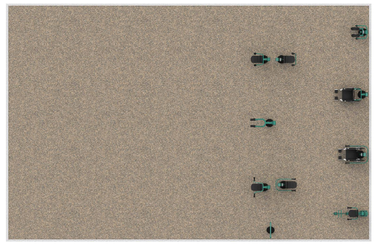
BUREAU OF ENGINEERING
OFFICIAL RECORD

Greenfields Outdoor Fitness

CA - Los Angeles - Las Palmas Senior Center
VERSION3 REV1 - 2022-01-12
GREENFIELDS PROPOSED OUTDOOR FITNESS ZONE

Los Angeles Parks Foundation
10 YEARS & GROWING





PROPOSED EQUIPMENT LEGEND

A	UBX215	Leg Press (adjustable resistance)
B	UBX217	Squat (adjustable resistance)
C	UBX244	Tricep Press (adjustable resistance)
D	UBX244W	Accessible Tricep Press (adjustable resistance)
E	UBX246	Chest Press (adjustable resistance)
F	UBX247	Vertical Press (adjustable resistance)
G	UBX247W	Accessible Vertical Press
H	UBX248	Shoulder Press (adjustable resistance)
I	UBX292	Stepper (adjustable resistance)
J	SGR105	Customized Announcement Sign

These 9 units may serve up to 9 people at a time.

888-315-9037 | www.greenfieldsfitness.com

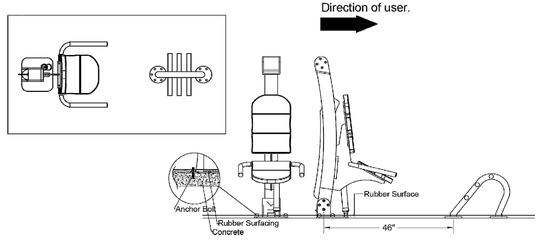
Greenfields' units are designed to accommodate the majority of users age 14 and above; however, due to the nature of outdoor fitness equipment, units are "one size fits most." This document is for presentation purposes only, not for construction. Before you begin installation, please contact Greenfields at (888) 315-9037 or cs@greenfieldsfitness.com for up to date installation instructions. This presentation has been designed for printing on tabloid (11"x17") sized paper.

4

Installation Instructions:
UBX215
Leg Press

Greenfields Outdoor Fitness
Promoting Wellness & Fighting Obesity One Community at a Time.

Questions? Please call 888-315-9037 x105







During installation, please be sure to also refer to the general installation instructions for surface mount.
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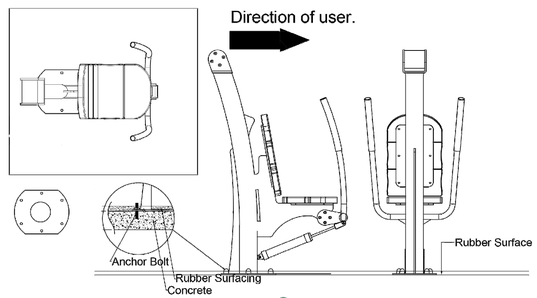
LU22bDv2

Installation Instructions:
UBX246
Chest Press (adjustable resistance)

Greenfields Outdoor Fitness

Questions? Please call 888-315-9037 x105







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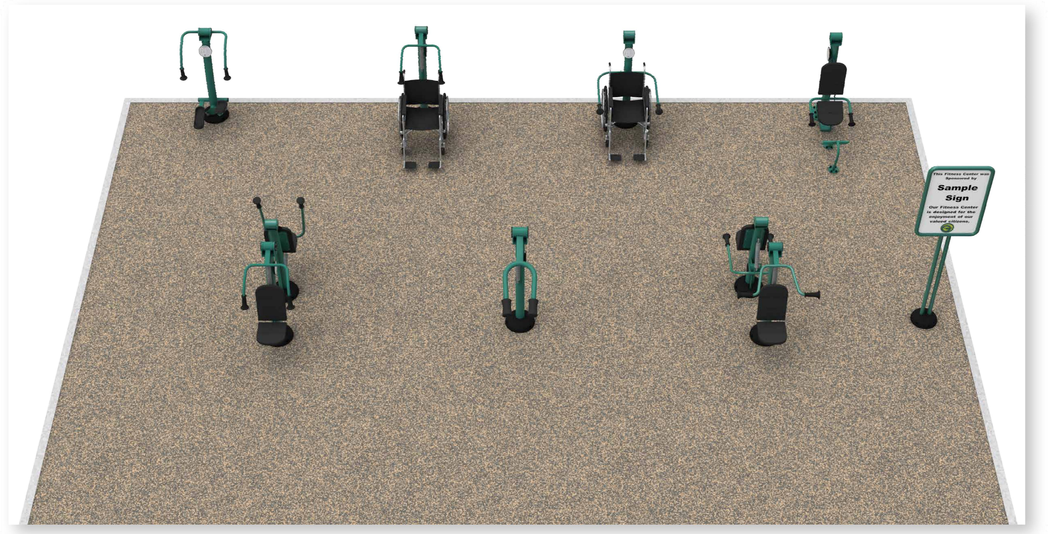
LU22bDv2

Greenfields Outdoor Fitness

CA - Los Angeles - Las Palmas Senior Center
VERSION3 REV1 - 2022-01-12
GREENFIELDS PROPOSED OUTDOOR FITNESS ZONE

Los Angeles Parks Foundation
10 YEARS & GROWING



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3

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163
INDEX NO. MF-300512

LANDSCAPE ARCHITECT ROBERT MOSER No. 6580 LICENSED
STATE OF CALIFORNIA
Signature
Print Name: Robert Moser
Date: 9/22/2025

ALFRED MATA, PE
INTERIM CITY ENGINEER
DATE: 9/22/25

ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESER
DESIGNED BY: GREG MOESER
DRAWN BY: GREG MOESER
CHECKED BY: RICHARD FISHER
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: FITNESS EQUIPMENT LAYOUT/DETAILS

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. L802
SHEET 73 OF SHEETS 115

PLOTTED: 9/22/2025

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

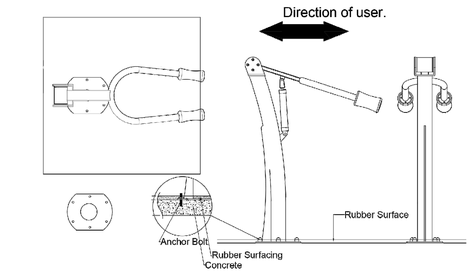
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

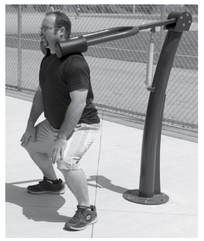
REVISION DATES (DESIGN STAGE ONLY)

Installation Instructions:
UBX217
Squat

Greenfields Outdoor Fitness

Questions? Please call 888-315-9037 x105







During installation, please be sure to also refer to the general installation instructions for surface mount.
Epoxy is not included in shipment and must be provided by installer.

In order to honor our commitment to quality and safety, Greenfields Outdoor Fitness reserves the right to make changes and revise the design specifications without notice.

Greenfields' units are designed to accommodate the majority of users age 14 and above; however, due to the nature of outdoor fitness equipment, units are "one size fits most."

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LU22x2x2

Installation Instructions:
UBX244
Triceps Press

Greenfields Outdoor Fitness

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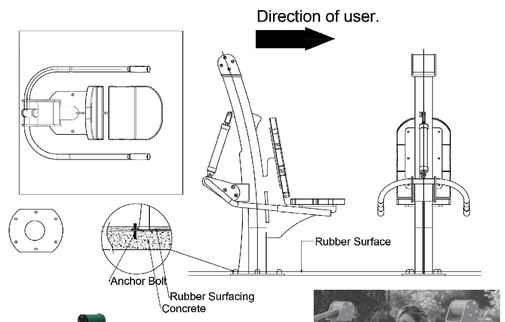





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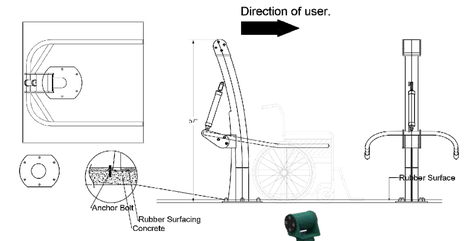
LU22x2x2

Installation Instructions:
UBX244W
Accessible Triceps Press

U.S. Pat. No. 11,130,039

Greenfields Outdoor Fitness

Questions? Please call 888-315-9037 x105







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LU22x2x2

Installation Instructions:
UBX247W
Accessible Vertical Press

U.S. Pat. No. 11,130,039

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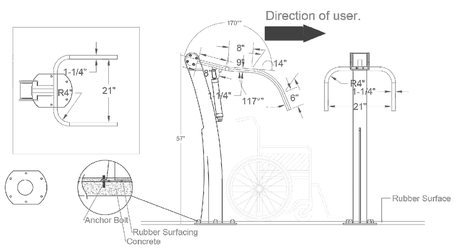





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Greenfields Outdoor Fitness

CA - Los Angeles - Las Palmas Senior Center
VERSION3 REV1 - 2022-01-12
GREENFIELDS PROPOSED OUTDOOR FITNESS ZONE

Los Angeles Parks Foundation
10 YEARS & GROWING

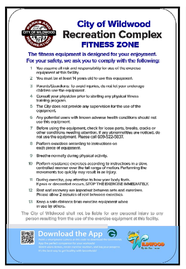


CUSTOMIZED ANNOUNCEMENT BOARD
SGR105

This announcement board can be used to:
- State safety guidelines
- Acknowledge project donors/sponsors
- Encourage healthy lifestyle choices
- Provide sample workouts

Customization available at no charge
(text, logos, etc.)

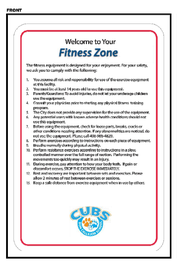
EXAMPLES OF COMPLETED SIGNS













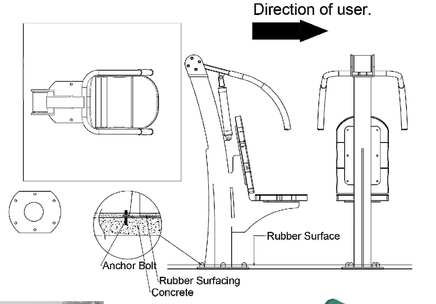
888-315-9037 | www.greenfieldsfitness.com

Greenfields' units are designed to accommodate the majority of users age 14 and above; however, due to the nature of outdoor fitness equipment, units are "one size fits most." This document is for presentation purposes only, not for construction. Before you begin installation, please contact Greenfields at (888) 315-9037 or csc@greenfieldsfitness.com for up to date installation instructions. This presentation has been designed for printing on tabloid (11"x17") sized paper.

Installation Instructions:
UBX247
Vertical Press

Greenfields Outdoor Fitness

Questions? Please call 888-315-9037 x105







BUREAU OF ENGINEERING
OFFICIAL RECORD

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LU22x2x2

Installation Instructions:
UBX248W
Accessible Shoulder Press

U.S. Pat. No. 11,130,039

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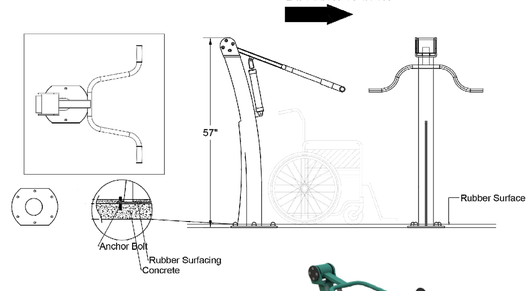





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LU22x2x2

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE:
FILE PATH:

REVISION DATES (DESIGN STAGE ONLY)

ENGINEERING
CITY OF LOS ANGELES

PUBLIC WORKS
BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

CIP NO. G1163

INDEX NO. MF-300512

LICENSED LANDSCAPE ARCHITECT ROBERT MOSER No. 6280 Signature Renewal: 08/31/2025 ★ STATE OF CALIFORNIA ★

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE
INTERIM CITY ENGINEER
DATE: 9/22/25

ARCHITECTURAL DIVISION
LANDSCAPE ARCHITECT: GREG MOESER 9/22/25
DESIGNED BY: GREG MOESER 9/22/25
DRAWN BY: GREG MOESER 9/22/25
CHECKED BY: RICHARD FISHER 9/22/25
APPROVED BY: STEVEN FIERCE, AIA., PRINCIPAL ARCHITECT

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: FITNESS EQUIPMENT DETAILS

PROJECT: LAS PALMAS SENIOR CENTER - RENOVATION

ADDRESS: 1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

RTI SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. L803

SHEET 74 OF SHEETS 115

PLOTTED: 9/22/2025

LEGEND

SYMBOL	ABBREV.	DESCRIPTION
R		DUCT RISE IN DIRECTION OF AIR FLOW
D		DUCT DROP IN DIRECTION OF AIR FLOW
		DUCT WITH SOUND LINING
		BRANCH TAKE OFF WITH 45° BOOT
	T.V.	TURNING VANES
		DUCT SECTION - SUPPLY
		DUCT SECTION - RETURN
		DUCT SECTION - EXHAUST
		RECTANGULAR TO ROUND TRANSITION
D/L	D.L.	DOOR LOUVER
U/C	U.C.	UNDERCUT DOOR
BP		0-4 HR BY-PASS SWITCH
	OSA	OUTSIDE AIR
	S.A.	SUPPLY AIR
	R.A.	RETURN AIR
	E.A.	EXHAUST AIR
	MD	MOTORIZED DAMPER
	FD	AUTO. FIRE DAMPER
	VD	MANUAL VOLUME DAMPER
	SWR	SUPPLY WALL REGISTER
	RWR	RETURN WALL REGISTER
	C.S.F.D.	COMBINATION SMOKE/FIRE DAMPER
	B.D.	BAROMETRIC DAMPER
	F.C.	FLEXIBLE CONNECTION PIPE
DSD		DUCT SMOKE DETECTOR
AS		AREA SMOKE DETECTOR (AT CEILING)
	UTR	UP THRU ROOF
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
		PIPING TO BE REMOVED
		EQUIP. TO BE REMOVED OR RELOCATED
	AP	ACCESS PANEL
	CD	CEILING DIFFUSER
	RR	CEILING RETURN REGISTER
	ER	CEILING EXHAUST REGISTER
	LSD	LINEAR SLOT DIFFUSER (SUPPLY)
	LSD	LINEAR SLOT DIFFUSER (RETURN)
	SAC	SUPPLY AIR CHAMBER
	RAC	RETURN AIR CHAMBER
VAV	VAV	VARIABLE AIR VOLUME BOX
T	TSTAT	THERMOSTAT
H	HSTAT	HUMIDISTAT
S		WALL SWITCH/WALL STAT
CO	CO	CARBON MONOXIDE SENSOR
CO_2	CO_2	CARBON DIOXIDE SENSOR
SD	SD	DUCT MOUNTED SMOKE DETECTOR
TC	TC	TIME CLOCK (ELECTRONIC PROGRAMMABLE)
TS	TS	TIMER SWITCH
CHWR	CHWR	CHILLED WATER RETURN
CHWS	CHWS	CHILLED WATER SUPPLY
HHWR	HHWR	HEATING HOT WATER RETURN
HHWS	HHWS	HEATING HOT WATER SUPPLY
	CFM	CUBIC FEET PER MINUTE
	A.D.A.	AMERICANS WITH DISABILITIES ACT
	A.F.F.	ABOVE FINISH FLOOR
	AL	ALUMINUM
	AMB.	AMBIENT
	APRX.	APPROXIMATE(LY)
	BHP	BRAKE HORSEPOWER
	BTU(H)	BRITISH THERMAL UNIT (PER HOUR)
	CAP.	CAPACITY
	C.B.C.	CALIFORNIA BUILDING CODE

LEGEND (CONT.)

SYMBOL	ABBREV.	DESCRIPTION
	C.E.C.	CALIFORNIA ENERGY COMMISSION
	C.M.C.	CALIFORNIA MECHANICAL CODE
	C.P.C.	CALIFORNIA PLUMBING CODE
	CD	CONDENSATE DRAIN
	CGBSC	CALIFORNIA GREEN BUILDING STANDARDS COMMISSION
	C.O.P.	COEFFICIENT OF PERFORMANCE
	DB	DRY BULB
	(E)	EXISTING
	EAT	ENTERING AIR TEMPERATURE
	EDB.	ENTERING DRY BULB
	EWT	ENTERING WATERTEMPERATURE
	EER	ENERGY EFFICIENCY RATIO
	ELEC.	ELECTRICAL
	ESP	EXTERNAL STATIC PRESSURE
	F.A.R.	FREE AREA REQUIRED
	FLA	FULL LOAD AMPS
	FPM	FEET PER MINUTE
	FT.	FEET
	GPM	GALLONS PER MINUTE
	HP	HORSEPOWER
	HSPF	HEATING SEASONAL PERFORMANCE FACTOR
	HVAC	HEATING, VENTILATION AND AIRCONDITIONING
	IN.	INCHES
	IPLV	INTEGRATED PART-LOAD VALUE
	KW	KILOWATT
	L.A.M.C.	LOS ANGELES MECHANICAL CODE
	LAT	LEAVING AIR TEMPERATURE
	LBS.	POUNDS
	LVG.	LEAVING
	LWT	LEAVING WATER TEMPERATURE
	MAX.	MAXIMUM
	MBH	1000 BTUH
	MCA	MINIMUM CIRCUIT AMPACITY
	MECH.	MECHANICAL
	MIN.	MINIMUM
	MOCP	MAXIMUM OVERCURRENT PROTECTION
	MVD	MANUAL VOLUME DAMPER
	N/A	NOT APPLICABLE
	N.F.P.A.	NATIONAL FIRE PROTECTION ASSOCIATION
	NIC	NOT IN CONTRACT
	NC	NOISE CRITERIA
	OBD	OPPOSED BLADE DAMPER
	PH	PHASE
	QTY.	QUANTITY
	RPM	REVOLUTIONS PER MINUTE
	SEER	SEASONAL ENERGY EFFICIENCY RATIO
	SF	SQUARE FEET
	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION
	SQ	SQUARE
	STRUCT.	STRUCTURAL
	TEMP.	TEMPERATURE
	THRU	THROUGH
	TSP	TOTAL STATIC PRESSURE
	TYP.	TYPICAL
	U.L.	UNDERWRITER'S LABORATORIES
	V	VOLTAGE/VOLTS
	VEL.	VELOCITY
	VAV	VARIABLE AIR VOLUME
	VFD	VARIABLE FREQUENCY DRIVE
	WB	WET BULB
	WT.	WEIGHT

GENERAL NOTES - MECHANICAL

1. EXISTING CONDITIONS SHOWN ON PLAN ARE FROM RECORD DRAWINGS AND ARE SHOWN DIAGRAMMATICALLY. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO VERIFY THE EXACT EXISTING CONDITIONS BEFORE SUBMITTING HIS BID.
2. CONTRACTOR SHALL VERIFY AND EXAMINE EXISTING CONDITION BEFORE STARTING ANY ALTERATION OR CONSTRUCTION. NOTIFY CITY ENGINEER OF ANY DISCREPANCIES SHOWN ON THE DRAWING. CONTRACTOR SHALL AGREE TO MAKE MODIFICATION TO FIT EXISTING CONDITIONS. WORK SHALL BE OUTLINED AND APPROVED BY THE CITY ENGINEER.
3. CONTRACTOR SHALL PROTECT PART OR ALL STRUCTURES NOT INCLUDED IN ALTERATION. ANY DAMAGE RESULTED DUE TO ALTERATION SHALL BE REPAIRED AND/OR REPLACED TO THE ORIGINAL CONDITION AS APPROVED BY THE CITY ENGINEER.
4. PERFORM DEMOLITION IN SUCH A MANNER AS TO ELIMINATE HAZARDS TO PERSON AND PROPERTY AND TO MINIMIZE INTERFERENCE WITH USE OF NEIGHBORING FACILITIES AND STRUCTURES OR INTERRUPTION OF USE OF SUCH FACILITIES AND FREE PASSAGE TO AND FROM THE STRUCTURES.
5. ON COMPLETION OF THE DEMOLITION WORK AND AFTER REMOVAL OF ALL DEBRIS, THE SITE SHALL BE LEFT IN CLEAN CONDITION SATISFACTORY TO THE CITY ENGINEER. CLEANING SHALL INCLUDE OFF-SITE DISPOSAL OF ALL ITEMS, MATERIALS, DEBRIS, AND RUBBISH RESULTING FROM DEMOLITION OF OPERATIONS.
6. ALL NEW AND EXISTING HVAC EQUIPMENT SHALL HAVE PERMANENT MAINTENANCE LABELS, AND EQUIPMENT TAGS AND/OR LABELS IDENTIFYING THE AREA THAT IT SERVES. TWO SETS OF MAINTENANCE MANUALS SHALL BE FURNISHED TO THE CITY ENGINEER.
7. FOLLOW AS CLOSE AS POSSIBLE TO LAYOUT INDICATED ON DRAWINGS. HOWEVER IF IT IS NOT POSSIBLE DUE TO A JOB CONDITION, CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE CITY ENGINEER FOR A REVISED LAYOUT BEFORE ITS INSTALLATION.
8. ALL CUTTING, PATCHING, FRAMING, CORING AND FURRING REQUIRED FOR EQUIPMENT PLATFORMS AND DUCTWORK SHALL BE PROVIDED BY OTHER TRADES (EXCEPT WHERE NOTED OTHERWISE). PROVIDE CORRECT REQUIREMENTS AND DETAILS TO THE OTHER TRADES AND COORDINATE.
9. MAINTENANCE LABEL SHALL BE AFFIXED TO MECHANICAL EQUIPMENT AND A MAINTENANCE MANUAL SHALL BE PROVIDED FOR THE OWNER'S USE,. CALIFORNIA ENERGY STANDARDS T-20-1517.
10. WHERE DIMENSIONS OR SPECIFIC INSTALLATIONS AND OPERATING INSTRUCTIONS OF EQUIPMENT ARE NOT PROVIDED IN THE DRAWINGS OR SPECIFICATIONS, INSTALL THE WORK ACCORDING TO THE MANUFACTURER'S PUBLISHED SPECIFICATIONS AND RECOMMENDATIONS.
11. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED IN CONFORMANCE WITH CALIFORNIA STATE SAFETY ORDERS INCLUDING EARTHQUAKE PROVISIONS.
12. CONTRACTOR SHALL TEST AND BALANCE ALL AIR SYSTEMS OF THE HVAC SYSTEMS TO THE QUANTITIES SHOWN ON THE DESIGN DRAWINGS. SUBMIT FOR APPROVAL DRAWINGS AND AIR & WATER BALANCE PROCEDURES PRIOR TO PERFORMING THE TESTING AND BALANCING OF THE HVAC SYSTEM. TESTING AND BALANCING PROCEDURES SHALL INCLUDE AS A MINIMUM THE REQUIREMENTS OF THE SPECIFICATION. THE CONTRACTOR SHALL DEMONSTRATE TO THE CITY ENGINEER THAT THE SYSTEM IS IN BALANCE AND SHALL SPOT-CHECK DIFFUSERS, REGISTERS, AND COOLING AND HEATING COILS AT RANDOM TO ASCERTAIN PROPER AIR AND WATER DELIVERY. SUBMIT FIVE (5) COPIES OF AIR AND WATER BALANCE REPORTS TO CITY ENGINEER.
13. THE WORK SHALL BE GUARANTEED IN WRITING AGAINST DEFECT OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF FIVE (5) YEARS AFTER THE DATE OF THE RECORDING OF THE NOTICE OF COMPLETION FOR THIS PROJECT, OR ACCEPTANCE BY THE CITY.
14. REMOVAL OF EXISTING EQUIPMENT, DIFFUSERS, GRILLES, SHEET METAL, ETC. SHALL BE DISPOSED OR SALVAGED AS PER CITY ENGINEER DIRECTIONS. OF EXISTING EQUIPMENT.
15. INFORM THE CITY ENGINEER IN WRITING WITHIN 10 WORKING DAYS PRIOR TO SHUTDOWN
16. COORDINATE POINTS OF CONNECTION AND DISCONNECT OF ALL EQUIPMENT WITH THE EXISTING FIELD CONDITIONS.
17. THE TOTAL INSTALLATION SHALL COMPLY WITH ANY AND ALL REQUIREMENTS OF THE CITY OF L.A U.B.C., L.A.M.C., L.A.P.C., O.S.H.A., THE STATE OF CALIFORNIA, DIVISION OF INDUSTRIAL SAFETY, AND ANY OTHER APPLICABLE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
18. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE CITY ENGINEER FOR THE REMOVAL OF ANY PIPING (CHILLED WATER, STEAM LINE, CONDENSATE AND ETC.) THAT ARE OBSTRUCTING THE INSTALLATION OF ANY SHOTCRETE SHEAR WALLS OR SEISMIC REINFORCING ASSEMBLY.
19. PRIOR TO THE REMOVAL OF ANY HVAC CONTROL DEVICES (THERMOSTAT, SENSORS AND ETC.) WHERE NEEDED DUE TO DEMOLITION WORK, THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE CITY ENGINEER
20. ALL PIPE PENETRATION THROUGH WALLS OR FLOORS SHALL BE PROTECTED WITH METAL SLEEVES. CORE DRILL ONE PIPE SIZE LARGER THAN THE PIPE. APPLY FIRE STOPPING SEALANT BETWEEN METAL SLEEVE AND PIPE.

GENERAL NOTES - MECHANICAL

21. SHEET METAL DUCTS CONSTRUCTION FOR STATIC AIR PRESSURE UP TO 2" WC SHALL BE PER CHAPTER 6 OF THE L.A.M.C. AND THE CALIFORNIA MECHANICAL CODE.
22. FOR PRESSURE IN EXCESS OF 2" WC, DUCT WALL THICKNESS SHALL BE TWO GAGE HEAVIER THAN SET FORTH IN TABLES PER L.A.M.C., CHAPTER 6, OR CALIFORNIA MECHANICAL CODE.
23. ALL DUCTWORK, INSULATION, EQUIPMENT AND INSTALLATION SHALL CONFORM TO CALIFORNIA ADMINIS. CODE 24, U.M.C., CITY OF LOS ANGELES MECHANICAL CODE, AND/OR THE CALIFORNIA MECHANICAL CODE.
24. DUCTS SHALL BE GALVANIZED STEEL OR APPROVED EQUAL. HANGERS SHALL BE PER CALIFORNIA MECHANICAL CODE AND/OR L.A.M.C., CHAPTER 6. C. PROVIDE TURNING VANES AT ALL CHANGES OF DIRECTION OF AIR STREAM; THE VANES TO BE DOUBLE THICKNESS, SECURELY RIVETED OR WELDED IN FRAMES, AND SHALL BE OF ADEQUATE THICKNESS TO PREVENT BUCKLING OR OR VIBRATION DURING OPERATION OFTHE SYSTEM. D. ALL FLEXIBLE DUCTWORK SHALL HAVE A MAXIMUM LENGTH OF FIVE (5) FEET.
25. ALL DUCT SIZES GIVEN ON THE DRAWINGS ARE NET INSIDE CLEAR DIMENSIONS. DUCT SIZES INDICATED SHALL BE INCREASED TO COMPENSATE FOR THICKNESS OF INSULATION OR ACCOUSTICAL LINING.
26. FOR EXACT LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES SEE ARCHITECTURALS REFLECTED CEILING PLAN. MANUAL VOLUME DAMPER SHALL BE INSTALLED AS A MEANS TO BALANCE AIR FLOW AT ALL DIFFUSERS AND REGISTERS.
27. FOR ALL LOUVERS AND EQUIPMENT PAD/RAILS, SEE STRUCTURAL & ARCHITECTURAL PLANS.
28. PROVIDE LOCAL DISCONNECT SWITCH FOR HVAC UNITS, CONDENSING UNIT, FAN COIL UNIT, AND EXHAUST FANS.
29. PERMANENT ACCESS TO EQUIPMENT SHALL BE PROVIDED.

APPLICABLE CODES

- 2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), CCR, TITLE 24, PART 1
- 2022 CALIFORNIA BUILDING CODE (CBC), CCR, TITLE 24, PART 2 (VOLUMES 1 & 2)
- 2022 CALIFORNIA ELECTRICAL CODE (CEC), CCR, TITLE 24, PART 3
- 2022 CALIFORNIA MECHANICAL CODE (CMC), CCR, TITLE 24, PART 4
- 2022 CALIFORNIA PLUMBING CODE (CPC), CCR, TITLE 24, PART 5
- 2022 CALIFORNIA ENERGY CODE (CEC), CCR, TITLE 24, PART 6
- 2022 CALIFORNIA FIRE CODE (CFC), CCR, TITLE 24, PART 9
- 2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), TITLE 24, PART 10
- 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen), CCR, TITLE 24, PART 11
- 2022 CALIFORNIA REFERENCED STANDARDS CODE, CCR, TITLE 24, PART 12

LADWP INCENTIVE PROGRAM NOTE

CONTRACTOR TO NOTIFY THE ARCHITECT SIX (6) WEEKS BEFORE ANY DEMOLITION OF THE GAS-POWERED BUILDING EQUIPMENT TO ALLOW FOR THE LADWP TO INSPECT THE EXISTING SYSTEMS FOR THEIR INCENTIVE PROGRAMS.

MECHANICAL SHEET INDEX

M001	HVAC GENERAL NOTES, SYMBOLS AND LEGENDS
M002	HVAC GENERAL NOTES, SYMBOLS AND LEGENDS
M003	HVAC EQUIPMENT SCHEDULES
M004	HVAC EQUIPMENT SCHEDULES
M005	HVAC EQUIPMENT SCHEDULES
M101	TITLE 24 COMPLIANCE DOCUMENT (1 OF 3)
M102	TITLE 24 COMPLIANCE DOCUMENT (2 OF 3)
M103	TITLE 24 COMPLIANCE DOCUMENT (3 OF 3)
M201	HVAC DEMOLITION FLOOR PLAN
M202	HVAC DEMOLITION ROOF PLAN
M203	HVAC FLOOR PLAN
M204	HVAC ROOF PLAN
M301	HVAC DETAILS
M302	HVAC DETAILS
M303	HVAC DETAILS
M304	HVAC CONTROL DETAILS
M305	HVAC CONTROL DETAILS
M306	HVAC CONTROL DETAILS

BUREAU OF ENGINEERING
OFFICIAL RECORD

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 09/22/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
ALFRED MATA
No. M35354
EXP. 12-31-25
MECHANICAL
STATE OF CALIFORNIA

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
LIC. NO.: M35354 DATE: 9/22/2025

ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC GENERAL NOTES, SYMBOLS AND LEGENDS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M001
SHEET 75 OF SHEETS 115

PLOTTED:9/25/2025 10:34:54 AM

GENERAL NOTES - MECHANICAL

30. ACCESS DOORS: PROVIDE WHERE NECESSARY IN DUCTWORK, CEILINGS, WALLS OR CASINGS, SUITABLE ACCESS DOORS AND FRAMES TO PERMIT INSPECTION, OPERATION AND MAINTENANCE OF ALL CONTROLS, MOTOR BEARINGS, OR OTHER APPARATUS CONCEALED BEHIND THE SHEET METAL WORK, CEILING, OR WALLS. ACCESS DOORS IN DUCTS MAY BE OF SINGLE PANEL CONSTRUCTION OF NOT LESS THAN NO. 18 GAUGE, GALVANIZED, AND SHALL HAVE SPONGE RUBBER GASKETS WITH HINGES AND LATCHES.

31. ALL DUCTWORK, EQUIPMENT,CONTROLS, AND CONTROL PANELS EXPOSED TO THE WEATHER SHALL BE MADE WEATHERPROOFED.

32. MECHANICAL CONTRACTOR SHALL PERFORM INSTALLATION, START-UP AND TEST OF ALL AIR CONDITIONING UNITS, EXHAUST FANS, MAKE-UP AIR FANS, CONTROLS, AND ETC.

33. PROVIDE ONE INCH THICK ACCOUSTICAL DUCT LINING ON SUPPLY AND RETURN DUCTWORK WITHIN 20 FEET FROM HVAC UNITS AND FANS OR AS INDICATED ON DESIGN DRAWINGS. INCREASE DUCT SIZE TO ACCOMMODATE DUCT LINING.

34. ALL HVAC UNITS SYSTEMS WITH MORE THAN 2000 CFM SERVING A COMMON AIR SPACE MUST BE INTERCONNECTED TO SHUT DOWN IMMEDIATELY UPON ALARM CONDITION FROM DUCT DETECTORS (OR FIRE ALARM SYSTM WHEN USING AREA SMOKE DETECTORS IN LIEU OF DUCT DETECTORS) WITHOUT INTERFACE FROM EMS OR ANY OTHER SYSTEMS.ALL CONTROL RELAYS USED FOR SHUTDOWN MUST BE CALIFORNIA STATE FIRE MARSHAL LISTED.

35. CONTRACTOR SHALL INSTALL REQUIRED HVAC COMPONENTS TO FIT ACTUAL JOBSITE CONDITIONS WITHOUT IMPAIRING THE CONCEPT OF THE DESIGN SYSTEM

36. CONTRACTOR SHALL VISIT JOBSITE AND VERIFY ALL CONDITIONS, LOCATIONS AND DIMENSIONS BEFORE SUBMITTING THE BID AND STARTING WORK.

37. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLING ANY MATERIAL OR EQUIPMENT.

38. ALL WORK SHALL BE IN FULL ACCORDANCE WITH ALL CODES, RULES, AND REGULATIONS OF GOVERNING AGENCIES AND SHALL COMPLY WITH THE REQUIREMENTS OF THE SERVING UTILITY COMPANIES.

39. HVAC EQUIPMENT, DIFFUSERS, REGISTERS, AND GRILLES SHALL BE LOCATED IN ACCORDANCE WITH DESIGN DRAWINGS. LOCATIONS OF EQUIPMENT, DUCTS , REGISTERS, AND GRILLES ARE APPROXIMEATE. EXACT LOCATION OF HVAC EQUIPMENT, SUPPLY AND RETURN REGISTERS, AND DUCT SHALL BE COORDINATED IN THE FIELD BY THE CONTRACTOR. PROVIDE NECESSARY ADJUSTMENTS, OFFSETS, FITTINGS, TRANSITIONS TO MISS BEAMS, OR OTHER STRUCTURAL MEMBERS, LIGHT FIXTURES, CONDUITS, ETC.. WITHOUT ANY ADDITIONAL COST TO THE L.A. CITY.

40. ALL ROOF PENETRATIONS , CUTTING, PATCHING, BLOCKOUTS, STRUCTURAL SUPPORT, ROOF OPENINGS, LEVELING OF PRE-FAB CURBS SHALL BE BY GENERAL CONTRACTOR. CONTRACTOR SHALL VERIFY EXACT ROOF OPENING SIZES WITH UNIT MANUFACTURER PRIOR TO START OF WORK AND SHALL MAKE ALL NECESSARY ADJUSTMENTS AT NO EXTRA COST TO THE L.A. CITY.

41. CONTRACTOR SHALL INSTALL REQUIRED HVAC COMPONENTS TO FIT ACTUAL JOBSITE CONDITIONS WITHOUT IMPAIRING THE CONCEPT OF THE DESIGN SYSTEM.

42. CONTRACTOR SHALL INCLUDE ANY DUCT OR PIPE TURNS OR ANY ADDITIONAL APPURTENANCE NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM EVEN IF THEY ARE NOT SHOWN IN THE DRAWINGS AND IN THE SPECIFICATIONS.

43. CONTRACTOR SHALL BE RESPONSIBLE FOR EXACT LOCATION OF ROOF, WALL, AND FLOOR PENETRATIONS BY DUCTS AND PIPES. VERIFY IN FIELD.

44. INFORM THE CITY ENGINEER IN WRITING WITHIN 10 WORKING DAYS PRIOR TO SHUTDOWN.

45. PATCH AND REPAIR ALL EXISTING MATERIALS OR EQUIPMENT DAMAGED OR EXPOSED BY REMOVAL WORK OR BY ANY OTHER CONSTRUCTION WORK. MATCH ADJACENT SIMILAR MATERIALS IN TEXTURE AND COLOR.

46. UPON COMPLETION OF THE WORK, REMOVE ALL WASTES AND DEBRIS AND LEAVE PREMISES IN A CLEAN CONDITION.

47. ALL THERMOSTATS SHALL BE ADJUSTABLE TO PROVIDE A TEMPERATURE RANGE OF UP TO 10 DEGREES FARENHEIT BETWEEN FULL HEATING AND FULL COOLING AND SHALL HAVE THE CAPABILITY OF TERMINATING ALL HEATING AT A TEMPERATURE NO MORE THAN 70°F AND TERMINATING ALL COOLING AT A TEMPERATURE NOT LESS THAN 78°F.

48. ALL LOW VOLTAGE WIRING AND COMMUNICATION BUS LINES SHALL BE INSTALLED INSIDE ELECTRICAL CONDUITS. THESE CONDUITS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR PER DIVISION 26. SEE ELECTRICAL DRAWINGS FOR CONDUIT LOCATIONS. LOW VOLTAGE WIRING AND COMMUNICATION BUS LINES SHALL BE PROVIDED BY MECHANICAL CONTRACTOR OR DDC CONTRACTOR PER DIVISION 23. FOR WIRING EXPOSED TO THE WEATHER, USE CONDUIT APPROVED FOR EXTERIOR USE. MECHANICAL AND ELECTRICAL CONTRACTORS SHALL COORDINATE WITH EACH OTHER TO PROVIDE A COMPLETE WORKING CONTROLS SYSTEM

49. ACCESS PANELS SHALL BE PROVIDED TO ALL EQUIPMENT, MANUAL VOLUME DAMPER, ETC. LOCATED IN ACCESSIBLE AREAS.

50. PROVIDE ISOLATION FOR ALL MOVING EQUIPMENT, AND BETWEEN EQUIPMENT AND DUCTWORK (I.E. ISOLATORS, FLEX CONNECTORS, AND ETC.).

GENERAL NOTES - MECHANICAL

51. MOUNT ALL THERMOSTATS, FAN SWITCHES, AND BY PASS TIMERS A DISTANCE OF 48-INCHES ABOVE THE FINISHED FOOR LEVEL TO THE CENTER OF DEVICE OR MATCH THE HEIGHT OF OTHER WALL MOUNTED SWICHES AND DEVICES IN THE ROOM.

52. COORDINATE EXACT LOCATIONS OF HVAC UNITS AND EXHAUST FANS WITH MECHANICAL AND STRUCTURAL DESIGN DRAWINGS.

53. PROVIDE PIPE SUPPORTS FOR CONDENSATE DRAIN PIPING PER THE CALIFORNIA PLUMBING AND LOS ANGELES PLUMBING CODES.

54. PROVIDE CLEAR PLASTIC LOCKING COVERS FOR ALL THERMOSTATS LOCATED IN CORRIDORS.

55. ROOF CURB FOR HVAC UNITS AND EXHAUST FANS SHALL BE 8 INCHES MINIMUM ABOVE THE FINISH ROOF LINE.

57. PROVIDE TRAPEZE TYPE DUCT SUPPORTS FOR DUCTWORK LOCATED INSIDE OF SOFFITS. SUPPORT DUCTWORK INACCORDANCE WITH CALIFORNIA MECHANICAL CODE. MOUNT DUCKWORK AS CLOSE AS POSSIBLE TO THE BOTTOM OF THE STRUCTURAL BEAM TO ALLOW FOR THE INSTALLATION OF ANY LIGHT FIXTURES. DO NOT DEFORM OR CONCAVE THE TOP OF THE DUCTWORK.

58. COORDINATE EXACT LOCATIONS OF HVAC UNITS AND EXHAUST FANS WITH MECHANICAL AND STRUCTURAL DESIGN DRAWINGS.

59. CONTRACTOR SHALL BE RESPONSIBLE FOR EXACT LOCATION OF ROOF, WALL, AND FLOOR PENETRATIONS BY DUCTS AND PIPES. VERIFY IN FIELD.

60. COORDINATE WITH L.A. CITY CONSTRUCTION MANAGER PRIOR TO PRESSURE TESTING OF REFRIGERANT LINES. L.A. CITY CONSTRUCTION MANAGER SHALL WITNESS THE PRESSURE TEST PRIOR TO INSPECTION.

61. A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEMS SHALL BE COMPLETED PRIOR TO ISSUANCE OF PERMIT. THIS REPORT SHALL BE SIGNED BY THE INDVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.

62. ALL DUCT AND OTHER RELATED AIR DISTRUBTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, OR SHEETMETAL UNTIL THE FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT.

63. AIR FILTERS WITH A MINIMUM EFFICIENCY REPORTING VALUE OF MERV13 OR HIGHER SHALL BE INSTALLED IN THE MECHANICAL SYSTEM FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY.

64. THE BUILDING SHALL MEET OR EXCEED THE PROVISIONS FOR MECHANICAL VENTILATION OF SECTION 1203 OF THE LOS ANGELES BUILDING CODE.

65. BUILDINGS THAT USE DEMAND CONTROL VENTILATION SHALL HAVE CO2 SENSORS AND VENTILATION CONTROLS INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF THE CALIFORNIA ENERGY CODE, CCR, TITLE 24, PART6, SECTION 12(C).

66. THE HVAC, REFRIGERATION, AND FIRE SUPPRESSION EQUIPMENT SHALL NOT CONTAIN CFC OR HALONS.

67. THE CONTRACTOR SHALL PROVIDE FIELD-TRAINING TO L.A.CITY AND/OR L.A. CITY'S REPRESENTATIVES AFTER THE HVAC SYSTEM IS FUNCTIONALLY COMPLETE. PROVIDE FACTORY-AUTHORIZED SERVICE REPRESENTATIVES TO TRAIN MAINTENANCE PERSONNEL ON PROCEDURES AND SCHEDULES RELATED TO START-UP, SHUT-DOWN, OPERATION, TROUBLESHOOTING, SERVICING AND PREVENTIVE MAINTENANCE. THE TRANING WILL INCLUDE 6 PEOPLE FOR A PERIOD OF 3 DAYS, 8 HOURS PER DAY.

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR IT'S OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND JIANG HUANG No. M35354 EXP. 6/30/27 MECHANICAL ENGINEER STATE OF CALIFORNIA

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION

ENGINEER:	RAYMOND HUANG, P.E.	INTERIM CITY ENGINEER LIC. NO.: M35354 DATE: 9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

CITY OF LOS ANGELES

BID SET
PROJECT ISSUE DATE: 9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC GENERAL NOTES, SYMBOLS AND LEGENDS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M002
SHEET 76 OF SHEETS 115

PLOTTED:9/25/2025 10:34:55 AM

VARIABLE REFRIGERANT FLOW (VRF) - OUTDOOR UNIT SCHEDULE

MARK	MANUFACTURER & MODEL NO.	SERVES	COOLING CAPACITY			HEATING CAPACITY			ELECTRICAL UNITS POWER SUPPLY				MAX. dBA	REFRIGERANT TYPE	OPER. WEIGHT (LBS)	REMARKS
			TOTAL (MBH)	AMB. (F)	SEER2 (EER2)	SENSIBLE (MBH)	AMB. (F)	HSPF2 (COP)	V	PH	MCA	MOCP				
HP 3	MITSUBISHI MXZ-SM60NL	PANTRY/RECEPTION/ CORRIDOR 110/OFFICE	60	95	20 (12)	66	47	10.5 (4.1)	208/230	1	45	80	59	R454B	278	1,2,3,4,5,6,7,8
HP 4	MITSUBISHI MXZ-SM60NL	MULTI-PURPOSE SPACE 118	60	95	20 (12)	66	47	10.5 (4.1)	208/230	1	45	80	59	R454B	278	1,2,3,4,5,6,7,8
HP 5	MITSUBISHI MXZ-SM48NL	LOBBY/MUSIC ROOM	48	95	23 (12)	50	47	10.4 (4)	208/230	1	36	64	54	R454B	250	1,2,3,4,5,6,7,8

REMARKS:

1. PROVIDE REFRIGERANT PIPING AND INSULATION INCLUDING FULL REFRIGERANT CHARGE. SIZES SHALL BE BASED ON FINAL DEVELOPED LENGTH AND MANUFACTURER'S REQUIREMENTS. PROVIDE ALL REFRIGERANT ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATION. VERIFY SIZING WITH MANUFACTURER'S REP. PRIOR TO INSTALLATION.
2. PROVIDE WITH R454B REFRIGERANT BASED SYSTEM.
3. PROVIDE OUTDOOR UNIT WITH FACTORY SUPPLIED WALL BRACKET.
4. PROVIDE WITH DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR.
5. PROVIDE POWER FROM BATTERY BACK-UP DURING EMERGENCY, BY ELECTRICAL CONTRACTOR.
6. PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR A COMPLETE AND OPERATIONAL SYSTEM.
7. FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.
8. PROVIDE WITH MAINTENANCE INTERFACE SERVICE TOOL PART # PAC-USCMS-MN-1, TOTAL OF TWO (2) FOR THE VRF SYSTEM.

VARIABLE REFRIGERANT FLOW (VRF) - INDOOR UNIT SCHEDULE

MARK	MANUFACTURER & MODEL NO.	SERVES	MATCHED VRF HP	CFM	ESP	MIN. OSA	COOLING		HEATING	ELECTRICAL				MAX. dBA	OPER. WEIGHT (LBS)	REMARKS
					(IN.WG.)	(CFM)	TOTAL (MBH)	SENSIBLE (MBH)	(MBH)	V	PH	MCA	MOCP			
FC 3	MITSUBISHI PLFY-L18NFMU-A	PANTRY 108 / RECEPTION 107	HP-3	460	-	250	18	11.1	20	208/230	1	0.36	15	43	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 4	MITSUBISHI PLFY-L18NFMU-A	CORRIDOR A 110	HP-3	460	-	75	18	11.1	20	208/230	1	0.36	15	43	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 5	MITSUBISHI PLFY-L18NFMU-A	CORRIDOR A 110	HP-3	460	-	75	18	11.1	20	208/230	1	0.36	15	43	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 6	MITSUBISHI PLFY-L15NFMU-A	OFFICE 111	HP-3	390	-	50	15	9.2	17	208/230	1	0.36	15	39	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 7	MITSUBISHI PLFY-L15NFMU-A	MULTI-PURPOSE 118	HP-4	390	-	260	15	9.2	17	208/230	1	0.36	15	39	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 8	MITSUBISHI PLFY-L15NFMU-A	MULTI-PURPOSE 118	HP-4	390	-	260	15	9.2	17	208/230	1	0.36	15	39	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 9	MITSUBISHI PLFY-L15NFMU-A	MULTI-PURPOSE 118	HP-4	390	-	260	15	9.2	17	208/230	1	0.36	15	39	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 10	MITSUBISHI PLFY-L15NFMU-A	MULTI-PURPOSE 118	HP-4	390	-	260	15	9.2	17	208/230	1	0.36	15	39	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 11	MITSUBISHI PLFY-L18NFMU-A	ENTRY LOBBY 106	HP-5	460	-	165	18	11.1	20	208/230	1	0.36	15	43	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 12	MITSUBISHI PLFY-L18NFMU-A	ENTRY LOBBY 106	HP-5	460	-	165	18	11.1	20	208/230	1	0.36	15	43	37	1,2,3,4,5,6,7,8,9,10,11,12
FC 13	MITSUBISHI PMPY-M06NCMU-A	MUSIC ROOM 105	HP-5	198	-	30	6	4.8	6.7	208/230	1	0.25	15	37	38	1,2,3,4,5,6,7,8,9,10,11,12

REMARKS:

1. PROVIDE REFRIGERANT PIPING AND INSULATION INCLUDING FULL REFRIGERANT CHARGE. SIZES SHALL BE BASED ON FINAL DEVELOPED LENGTH AND MANUFACTURER'S REQUIREMENTS. PROVIDE ALL REFRIGERANT ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATION. VERIFY SIZING WITH MANUFACTURER'S REP. PRIOR TO INSTALLATION.
2. PROVIDE WITH R454B REFRIGERANT BASED SYSTEM.
3. PROVIDE FAN COIL WITH INTEGRAL CONDENSATE PUMP WITH OVERFLOW CUTOUT SWITCH.
4. PROVIDE WITH MANUFACTURER'S REUSABLE FILTER, SIZED PER MANUFACTURER'S RECOMMENDATION.
5. PROVIDE WITH PROGRAMMABLE THERMOSTAT WITH LOCKABLE COVER, BY CONTROLS CONTRACTOR.
6. PROVIDE FAN COIL WITH HANGERS WITH NEOPRENE BUSHING AND ALL MOUNTING HARDWARE INCLUDING SEISMIC BRACING.
7. PROVIDE WITH DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR.
8. PROVIDE WITH POWER RELAYS FOR AUTOMATIC SHUTOFF, BY ELECTRICAL CONTRACTOR, COORDINATE WITH FIRE ALARM CONTRACTOR ON USING THE EXISTING AREA SMOKE DETECTORS FOR AUTOMATIC SHUTOFF.
9. PROVIDE POWER FROM BATTERY BACK-UP DURING EMERGENCY, BY ELECTRICAL CONTRACTOR.
10. PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR A COMPLETE AND OPERATIONAL SYSTEM.
11. PROVIDE WITH REFRIGERANT BALL VALVES WITH SERVICE PORT ON REFRIGERANT LINES AT EACH INDOOR UNIT.
12. FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
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BUREAU OF ENGINEERING
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BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER ALFRED MATA JR. No. M35354 CIVIL STATE OF CALIFORNIA

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION
LIC. NO. - M35354

		DATE:
ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

INTERIM CITY ENGINEER

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC EQUIPMENT SCHEDULES

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE: 9/22/2025

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. M003

SHEET 77 OF SHEETS 115

PLOTTED:9/25/2025 10:34:58 AM

ROOFTOP PACKAGED HEAT PUMP UNIT SCHEDULE

TAG	MANUFACTURER & MODEL NO.	SERVES	NOMINAL CAP. @ AHRI COND. (TONS)	SEER2 (EER2)	HSPF2 (COP)	SUPPLY FAN						COMPRESSOR			CONDENSER FAN			UNITS POWER SUPPLY				COOLING CAPACITY					HEATING CAPACITY			FILTERS		OPER. WEIGHT (LBS.)	REMARKS
						CFM	OSA CFM	ESP (IN. W.G.)	NO.	HP	FLA	NO.	RLA	LRA	NO.	HP	FLA	MCA	MOCP	V	PH	TOTAL (MBH)	SENS. (MBH)	EDB (°F)	EWB (°F)	AMB (°F)	SENS. (MBH)	EDB (°F)	AMB (°F)	QTY	SIZE (IN.)		
AC 1	TRANE 5WCZ5036A1	CLASSROOM 300 DAYCARE OFFICE 302	3	15.2 (11.5)	7.7 (3.47)	1200	200	0.7	1	1/2	4.3	1	14.7	90	1	1/6	0.85	23	35	208/230	1	35.2	28.2	80	67	95	33	70	47	1	18x25	596	1,2,3,4,5,6,7,8

REMARKS:

1. PROVIDE WITH R454B REFRIGERANT BASED SYSTEM WITH FACTORY INSTALLED REFRIGERANT LEAK SENSOR.
2. PROVIDE WITH MANUAL OUTSIDE AIR DAMPER AND RAIN HOOD.
3. PROVIDE NEW PRE-FABRICATED VIBRATION ISOLATION ROOF CURB.
4. PROVIDE INTERNALLY MOUNTED FILTER RACK WITH UL900 MERV 13 DISPOSABLE PLEATED FILTER.
5. PROVIDE WITH T24 COMPLIANT PROGRAMMABLE THERMOSTAT, BY CONTROLS CONTRACTOR.
6. PROVIDE WITH FUSED DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR.
7. PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR A COMPLETE AND OPERATIONAL SYSTEM.
8. FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

ENERGY RECOVERY VENTILATOR SCHEDULE

TAG	MANUFACTURER & MODEL NO.	LOCATION	DESIGN CONDITION			UNIT CONFIGURATION				SUPPLY FAN						EXHAUST FAN						UNITS POWER SUPPLY				OPER. WEIGHT (LBS.)	REMARKS
			SUMMER		WINTER	OUTDOOR AIR		EXHAUST AIR		CFM	ESP (IN. W.G.)	TSP (IN. W.G.)	DRIVE TYPE	RPM	HP	CFM	ESP (IN. W.G.)	TSP (IN. W.G.)	DRIVE TYPE	RPM	HP	MCA	MOCP	V	PH		
			EDB (°F)	EWB (°F)	EDB (°F)	INTAKE	DISCHARGE	INTAKE	DISCHARGE																		
ERV 1	GREENHECK ERVe-20-30L	ROOF	92	70	41	END	END	END	SIDE	2000	0.50	1.12	BELT	1556	1.5	1400	0.3	0.49	BELT	1052	0.5	17.9	25	230	1	1022	1,2,3,4,5,6,7,8,9,10

REMARKS:

1. PROVIDE WITH OUTSIDE AIR AND RETURN AIR LOW LEAKAGE DAMPER AND WEATHERHOOD ASSEMBLY.
2. PROVIDE UNIT WITH INTEGRAL BACKDRAFT DAMPER AS PART OF THE WEATHERHOOD ASSEMBLY.
3. PROVIDE NEW PRE-FABRICATED LEVEL ROOF CURB.
4. PROVIDE INTERNALLY MOUNTED FILTER RACK, MERV 13 FILTER FOR OUTDOOR AIR AND MERV 8 FOR EXHAUST AIR.
5. PROVIDE WITH FUSED DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR.
6. PROVIDE POWER FROM BATTERY BACK-UP DURING EMERGENCY, BY ELECTRICAL CONTRACTOR.
7. PROVIDE WITH POWER RELAYS FOR AUTOMATIC SHUTOFF, BY ELECTRICAL CONTRACTOR. COORDINATE WITH FIRE ALARM CONTRACTOR ON USING THE EXISTING AREA SMOKE DETECTORS FOR AUTOMATIC SHUTOFF.
8. PROVIDE UNIT WITH MICROPROCESSOR CONTROL, SENSOR MONITORING PACKAGE, SUPPLY & EXHAUST FAN CONTROL, AND NETWORK PROTOCOL (BACNet/MSTP) FOR BAS INTEGRATION.
9. PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR A COMPLETE AND OPERATIONAL SYSTEM.
10. FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

SPLIT SYSTEM HEAT PUMP UNIT SCHEDULE

CONDENSING UNIT														FAN COIL UNIT															REMARKS
TAG	MANUFACTURER & MODEL NO.	COOLING CAPACITY			SEER2 (EER2)	HEATING CAPACITY		HSPF2 (COP)	ELECTRICAL				OPER. WEIGHT (LBS.)	TAG	MANUFACTURER & MODEL NO.	SERVES	CFM	ESP (IN. W.G.)	MIN. OSA (CFM)	COOLING		HEATING	ELECTRICAL						OPER. WEIGHT (LBS.)	
		TOTAL (MBH)	SENS. (MBH)	AMB. (°F)		SENS. (MBH)	AMB. (°F)		UNITS POWER SUPPLY											EDB (°F)	EWB (°F)	EDB (°F)	SUPPLY FAN		UNITS POWER SUPPLY					
									MCA	MOCP	V	PH												NO.	WATTS	MCA	MOCP	V	PH		
CU A	MITSUBISHI PUZ-AK12NL	12	8.76	95	20.8 (12)	18	47	10.1 (3.1)	16	27	208/230	1	100	FC A	MITSUBISHI PKA-AL12NL	INVERTER ROOM	385	---	---	80	67	70	1	30	SEE NOTE 6		208/230	1	28	1,2,4,7,8,9,10,11,12,13,14,15
HP 1	MITSUBISHI PUZ-AK48NL	48	38.3	95	18.1 (10.6)	60	47	8.4 (3.1)	38	67	208/230	1	265	FC 1	MITSUBISHI PVA-AA48NL	COMMUNITY ROOM 120	1400	0.8	340	80	67	70	1	430	5.63	15	208/230	1	172	1,2,3,5,6,7,8,10,11,12,13,14,15
HP 2	MITSUBISHI PUZ-AK48NL	48	38.3	95	18.1 (10.6)	60	47	8.4 (3.1)	38	67	208/230	1	265	FC 2	MITSUBISHI PVA-AA48NL	COMMUNITY ROOM 120	1400	0.8	340	80	67	70	1	430	5.63	15	208/230	1	172	1,2,3,5,6,7,8,10,11,12,13,14,15

REMARKS:

1. PROVIDE REFRIGERANT PIPING AND INSULATION INCLUDING FULL REFRIGERANT CHARGE. SIZES SHALL BE BASED ON FINAL DEVELOPED LENGTH AND MANUFACTURER'S REQUIREMENTS. PROVIDE ALL REFRIGERANT ACCESSORIES AS PER MANUFACTURER'S RECOMMENDATION. VERIFY SIZING WITH MANUFACTURER'S REP. PRIOR TO INSTALLATION, SEE DETAILS
2. PROVIDE WITH R454B REFRIGERANT BASED SYSTEM.
3. PROVIDE FAN COIL WITH FACTORY INSTALLED REFRIGERANT LEAK SENSOR.
4. ROVIDE FAN COIL WITH GOBI-II CONDENSATE PUMP WITH OVERFLOW SWITCH.
5. PROVIDE FAN COIL WITH CONDENSATE PUMP AND SECONDARY CONDENSATE DRAIN OVERFLOW CUTOUT SWITCH.
6. PROVIDE WITH UL900 MERV 13 DISPOSABLE PLEATED FILTER, SIZED PER MANUFACTURER'S RECOMMENDATION.
7. PROVIDE FAN COIL WITH HANGERS WITH NEOPRENE BUSHING AND ALL MOUNTING HARDWARE INCLUDING SEISMIC BRACING
8. PROVIDE WITH PROGRAMMABLE THERMOSTAT WITH LOCKABLE COVER, BY CONTROLS CONTRACTOR.
9. PROVIDE OUTDOOR UNIT WITH FACTORY SUPPLIED WALL BRACKET.
10. INDOOR FAN COIL UNIT RECEIVES POWER FROM OUTDOOR CONDENSING UNIT.
11. PROVIDE WITH DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR.
12. PROVIDE WITH POWER RELAYS FOR AUTOMATIC SHUTOFF, BY ELECTRICAL CONTRACTOR. COORDINATE WITH FIRE ALARM CONTRACTOR ON USING THE EXISTING AREA SMOKE DETECTORS FOR AUTOMATIC SHUTOFF.
13. PROVIDE POWER FROM BATTERY BACK-UP DURING EMERGENCY, BY OTHERS.
14. PROVIDE ALL CONTROL WIRING INSIDE CONDUIT AND ALL OTHER ACCESSORIES REQUIRED BY MANUFACTURER FOR PROPER OPERATION AND CONNECTION WITH NEW BAS.
15. PROVIDE WITH REFRIGERANT BALL VALVES WITH SERVICE PORT ON REFRIGERANT LINES AT EACH INDOOR UNIT.

BUREAU OF ENGINEERING OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025

REVISION DATES: (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND JIANG HUANG No. M35354 Exp. 6/30/27 STATE OF CALIFORNIA

ENGINEER	DATE:
INTERIM CITY ENGINEER	9/22/2025
ALFRED MATA, P.E.	9/22/2025
ARCHITECTURAL DIVISION	9/22/2025
LIC. NO.- M35354	9/22/2025
ENGINEER: RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY: EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY: EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY: RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC EQUIPMENT SCHEDULES
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M004
SHEET 78 OF SHEETS 115

PLOTTED:9/25/2025 10:35:00 AM

FAN SCHEDULE

MARK	MANUFACTURER & MODEL NO.	SERVES	CFM	ESP (IN.W.G.)	DRIVE TYPE	RPM	MOTOR			MAX. SONES	FAN TYPE	OPER. WEIGHT (LBS)	REMARKS
							HP (WATTS)	VOLTS	PH				
EF 1	GREENHECK SP-B110ES	RR101	110	0.25	DIRECT	650	(30)	115	1	2.5	CEILING	12	2,3,4,5,8,9,10,12,13
EF 2	GREENHECK SP-B110ES	RR102	110	0.25	DIRECT	650	(30)	115	1	2.5	CEILING	12	2,3,4,5,8,9,10,12,13
EF 3	GREENHECK SP-B80	JAN. 103	50	0.25	DIRECT	817	(13)	115	1	0.8	CEILING	11	2,3,4,5,8,9,10,12,13
EF 4	GREENHECK SP-B110ES	RR112	110	0.25	DIRECT	650	(30)	115	1	2.5	CEILING	12	2,3,4,5,8,9,10,12,13
EF 5	GREENHECK SP-B110ES	RR113	80	0.25	DIRECT	570	(30)	115	1	2.5	CEILING	12	2,3,4,5,8,9,10,12,13
EF 6	GREENHECK SP-B110ES	RR114	80	0.25	DIRECT	570	(30)	115	1	2.5	CEILING	12	2,3,4,5,8,9,10,12,13
EF 7	GREENHECK G-090-VG	MECH/ELEC 104	500	0.4	DIRECT	1495	1/10	115	1	6.9	ROOF MOUNTED	45	1,3,4,5,7,8, 9,10,12,13
EF 8	GREENHECK SP-B80	STORAGE 100	50	0.25	DIRECT	817	(13)	115	1	0.8	CEILING	11	2,3,4,5,8,9,10,12,13
EF 9	GREENHECK SP-B200	CHILDREN'S RR 301	210	0.25	DIRECT	980	(172)	115	1	4.5	CEILING	18	2,3,4,5,9,11,12,13
SF 1	BROAN FIN-180B	OFFICE 111	50	0.4	DIRECT	-	(38)	120	1	-	IN-LINE	11	2,3,4,5,6,8,9,10,12,13
SF 2	BROAN FIN-180B	MUSIC ROOM 105	30	0.4	DIRECT	-	(38)	120	1	-	IN-LINE	11	2,3,4,5,6,8,9,10,12,13

REMARKS:

1. PROVIDE WITH BACKDRAFT DAMPER AND ROOF CURB.
2. PROVIDE WITH INTEGRAL BACKDRAFT DAMPER AND CEILING GRILLE.
3. PROVIDE ALL MOUNTING HARDWARE INCLUDING SEISMIC BRACING BY INSTALLING CONTRACTOR.
4. PROVIDE WITH MANUFACTURER'S FAN SPEED CONTROLLER. INSTALL AT FAN HOUSING. COORDINATE CFM WITH CERTIFIED T.A.B. AGENCY.
5. PROVIDE THERMAL OVERLOAD PROTECTION ON FAN MOTOR.
6. PROVIDE PROVIDE INTERNALLY MOUNTED FILTER RACK WITH UL900 MERV 13 DISPOSABLE PLEATED FILTER.
7. INTERLOCK WITH THERMOSTAT (WITH LOCKABLE COVER) BY CONTROLS CONTRACTOR.
8. INTERLOCK WITH BUILDING AUTOMATION SYSTEM BY CONTROLS CONTRACTOR.
9. PROVIDE WITH DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR..
10. PROVIDE POWER FROM BATTERY BACK-UP DURING EMERGENCY, BY ELECTRICAL CONTRACTOR.
11. PROVIDE WITH OCCUPANCY SENSING SWITCH WITH ADJUSTABLE TIMEOUT FEATURE, BY ELECTRICAL CONTRACTOR.
12. PROVIDE ALL CONTROL WIRING IN CONDUIT AND ALL ACCESSORIES REQUIRED BY MANUFACTURER FOR A COMPLETE AND OPERATIONAL SYSTEM.
13. FIELD VERIFY EXACT ELECTRICAL REQUIREMENTS WITH MANUFACTURER AND COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO START OF WORK.

GRILLES, REGISTERS, & DIFFUSERS SCHEDULE

MARK	MANUFACTURER & MODEL NO.	TYPE	FRAME STYLE	OBD (YES/NO)	MAX NC.	REMARKS
A CFM	PRICE MCD	MODULAR CORE SUPPLY	BORDER TYPE 1	YES	25	1, 2, 3
B CFM	PRICE HCD	DRUM LOUVER SUPPLY	-	NO	25	2, 4
C CFM	PRICE 530D	LOUVERED RETURN	BORDER TYPE F	YES	25	2
D CFM	GREENHECK XG-DGDF	DOOR GRILLE	DOUBLE FLANGE	NO	25	5

REMARKS:

1. SQUARE NECK.
2. STEEL CONSTRUCTION.
3. MODULAR CORE WITH 4-WAY DELECTION.
4. SPLIT BLADE.
5. ALUMINUM CONSTRUCTION.

A — TYPE
CFM — DESIGN CFM
- x - — DIFFUSER NECK SIZE / GRILLE NOMINAL SIZE

ASHRAE 62.1 VENTILATION CALCULATIONS

ROOM INFORMATION	Area (Az)	Default Occupant Density	Calculated Occ based on Occupant Density	Design Zone Population (Pz)	Occupancy Outdoor Air Rate (Rp)	Area Outdoor Air Rate (Ra)	Breathing Zone Outdoor Airflow (Vbz)	Zone Air Distribution Effectiveness	Zone Outdoor Airflow Req'd (Voz)	PROVIDED (CFM) per T24
	SF	(People/ 1000 SF)	# People	# People	(CFM / PERSON)	(CFM / SF)	CFM	(Ez)	CFM	(CFM)
MUSIC ROOM 105	95	5.0	0.5	2	5.0	0.06	16	1.0	16	30
ENTRANCE/LOBBY 106	680	10.0	8	8	5.0	0.06	81	1.0	81	340
RECEPTION DESK 107	128	30.0	3.7	4	5.0	0.06	28	1.0	28	30
COMMUNITY ROOM 120	1,362	50.0	68	68	5.0	0.06	421	1.0	421	680
PANTRY 108	218	25.0	5.5	8	5.0	0.06	53	1.0	53	120
CORRIDOR A 110	609	5.0	3.1	16	-	0.06	37	1.0	37	240
MULTI-PURPOSE 118	1,020	50.0	51.6	52	5.0	0.06	321	1.0	321	520
OFFICE 111	187	5.0	0.9	2	5.0	0.06	21	1.0	21	50
VESTIBULE 115	104	0.0	0.0	0.0	0.0	0.06	6	1.0	6	20
STORAGE 100	153	2.0	0.3	1	5.0	0.06	11	1.0	11	30
CLASSROOM 300	378	25.0	9.5	10	10.0	0.18	168	1.0	168	180
DAYCARE OFFICE 302	89	5.0	0.4	1	5.0	0.06	10	1.0	10	20

ASHRAE 62.1 MINIMUM EXHAUST RATES

ROOM INFORMATION	EXHAUST RATE	NUMBER OF UNITS/FIXTURES	EXHAUST RATE	EXHAUST AIRFLOW REQ'D	PROVIDED
	(CFM/UNIT)	(QTY.)	(CFM/SF)	(CFM)	(CFM)
RR 101	*50	2	0	100	110
RR 102	*50	2	0	100	110
JANITOR103	-	-	1	42	50
RR 112	*50	1	0	50	110
RR 113	*50	1	0	50	80
RR 114	*50	1	0	50	80
CHILDREN'S RR 301	70	3	0	210	210

* CONTINUOUS OPERATION DURING NORMAL/OCCUPIED HOURS

A2L REFRIGERANT EFFECTIVE DISPERSAL VOLUME CHARGE CALCULATION

(EDVC = V_{eff} x LFL x CF x F_{occ})

SYSTEM		ROOM	ROOM AREA (SF)	TOTAL FLOOR AREA (SF)	CEILING HEIGHT (FT)	TOTAL ROOM VOLUME (CU.FT.)	SYSTEM TOTAL REFRIGERANT CHARGE (LBS)	REFRIGERANT CONCENTRATION LIMIT (LBS/1000 CU.FT.)	LOWER FLAMABILITY LIMIT (LBS/1000 CU.FT.)	EFFECTIVE DISCHARGE VOLUME CHARGE (LBS)	ASHRAE 15 COMPLIANCE
OUTDOOR UNIT	INDOOR UNIT										SYSTEM CHARGE BELOW EDVC?
HP-1	FC-1	COMMUNITY ROOM 120	1362	1362	14	19,068	11.46	3.1	22	209.75	YES
HP-2	FC-2	COMMUNITY ROOM 120	1362	1362	14	19,068	11.46	3.1	22	209.75	YES
HP-3	FC-3	PANTRY 108 & RECEPTION 107	346	346	8	2,768	19.26	3.1	22	30.45	YES
	FC-4, FC-5	CORRIDOR A 110	609	609	8	10,312	19.26	3.1	22	53.59	YES
	FC-6	OFFICE 111 (WITH OPENING TO ENTRY LOBBY)	187	867	8	6,936	19.26	3.1	22	76.3	YES
HP-4	FC-7, FC-8, FC-9, FC-10	MULTI-PURPOSE 118	1020	1020	8	8,160	19.68	3.1	22	89.76	YES
HP-5	FC-11, FC-12	ENTRY LOBBY 106	680	680	8	5,440	14.71	3.1	22	59.84	YES
	FC-13	MUSIC ROOM 105 (WITH OPENING TO ENTRY LOBBY)	95	775	8	6,200	14.71	3.1	22	68.2	YES

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FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025

REVISION DATES (DESIGN STAGE ONLY)

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING
ALFRED MATA, P.E.
ARCHITECTURAL DIVISION
ENGINEER: RAYMOND HUANG, P.E.
LIC. NO.- M35354
DESIGNED BY: EUGENE SAN DIEGO, P.E.
DRAWN BY: EUGENE SAN DIEGO, P.E.
CHECKED BY: RAYMOND HUANG, P.E.
APPROVED BY: STEVEN PIERCE, AIA, PRINCIPAL ARCHITECT
INTERIM CITY ENGINEER
DATE: 9/22/2025

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512



BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: HVAC EQUIPMENT SCHEDULES
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M005
SHEET 79 OF SHEETS 115

PLOTTED:9/25/2025 10:35:02 AM

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 1 of 17)

Project Name: Las Palmas Senior Center | **Date Prepared:** 2025-09-22

A. General Information

1	Project Name	Las Palmas Senior Center			
2	Run Title	Title 24 Analysis			
3	Project Location	1820 N Las Palmas Ave			
4	City	Los Angeles	5	Standards Version	Compliance 2022
6	Zip code	90028	7	Compliance Software (version)	EnergyPro 9.4
8	Climate Zone	9	9	Building Orientation (deg)	270
10	Building Type(s)	• Nonresidential	11	Weather File	LOS-ANGELES-USC_STYP20.epw
12	Project Scope	• Existing alteration	13	Number of Dwelling Units	0
14	Total Conditioned Floor Area in Scope (ft^2)	5291	15	Total # of hotel/motel rooms	0
16	Total Unconditioned Floor Area (ft^2)	0	17	Fuel Type	Natural gas
18	Nonresidential Conditioned Floor Area	5291	19	Total # of Stories (Habitable Above Grade)	1
20	Residential Conditioned Floor Area	0			

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 2 of 17)

B. PROJECT SUMMARY

Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Building Components Complying via Performance					Building Components Complying Prescriptively	
Envelope (See Table G)	Nonres	Performance	Solar Thermal Water Heating (See Table I3)	☐ Performance	The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form listed if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).	
	MultiFam	Not Included		☒ Not Included		
Mechanical (See Table H)	Nonres	Performance	Covered Process: Commercial Kitchens (see table J)	☐ Performance	Indoor Lighting (Unconditioned) 140.6 & 170.2(e)	NRCC-LTI-E is required
	MultiFam	Not Included		☒ Not Included	Outdoor Lighting 140.7 & 170.2(e)	NRCC-LTO-E is required
Domestic Hot Water (See Table I)	Nonres	Performance	Covered Process: Laboratory Exhaust (see table J)	☐ Performance	Sign Lighting 140.8 & 170.2(e)	NRCC-LTS-E is required
	MultiFam	Not Included		☒ Not Included	**Building Components Complying with Mandatory Measures**	
Lighting (Indoor Conditioned, see Table K)	Nonres	Not Included	Photovoltaics (see Table F)	☐ Performance	Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)	
	MultiFam	Not Included		☒ Not Included	Electrical Power Distribution 110.11	NRCC-ELC-E is required
			Battery (see Table F)	☐ Performance	Commissioning 120.8	NRCC-CXR-E is required
				☒ Not Included	Solar and Battery 110.10	NRCC-SAB-E is required

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 3 of 17)

C1. COMPLIANCE SUMMARY

	COMPLIES[3]		
	Time Dependent Valuaton (TDV)		Source Energy Use
	Efficiency[1] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)	Total[2] (kBtu/ft² - yr)
Standard Design	377.37	n/a	n/a
Proposed Design	191.06	n/a	n/a
Compliance Margins	**186.31**	**n/a**	**n/a**
	Pass	**n/a**	**n/a**

[1] Efficiency measures include improvements like a better building envelope and more efficient equipment
[2] Compliance Totals include efficiency, photovoltaics and batteries
[3] New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded
Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 4 of 17)

C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

	COMPLIES[2]		
Energy Component	**Standard Design (TDV)**	**Proposed Design (TDV)**	**Compliance Margin (TDV)[1]**
Space Heating	8.27	5.2	3.07
Space Cooling	118.78	77.18	41.6
Indoor Fans	180.55	40.04	140.51
Heat Rejection	0	0	0
Pumps & Misc.	0	0	0
Domestic Hot Water	7.19	6.06	1.13
Indoor Lighting	62.58	62.58	0
Flexibility	---	---	---
EFFICIENCY COMPLIANCE TOTAL	**377.37**	**191.06**	**186.31 (49.4%)**
Photovoltaics	---	---	---
Batteries	---	---	---
TOTAL COMPLIANCE	**377.37**	**191.06**	**186.31 (49.4%)**

[1] Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 5 of 17)

C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS[1]

Non-Regulated Energy Component	Standard Design (TDV)	Proposed Design (TDV)	Compliance Margin (TDV)[1]
Receptacle	82.44	82.44	---
Process	---	---	---
Other Ltg	---	---	---
Process Motors	3.88	3.88	---
TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)	**463.69**	**277.38**	**186.31 (40.2%)**

[1] Notes: This table is not used for Energy Code Compliance.

C6. 'ABOVE CODE' QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1 ☐ This project is pursuing CalGreen Tier 2

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 6 of 17)

C7. ENERGY USE SUMMARY

Energy Component	Standard Design Site (MWh)	Proposed Design Site (MWh)	Margin (MWh)	Standard Design Site (MBtu)	Proposed Design Site (MBtu)	Margin (MBtu)
Space Heating	---	0.9	---	15.2	---	---
Space Cooling	19.3	12	7.3	---	---	---
Indoor Fans	34.2	7.6	26.6	---	---	---
Heat Rejection	---	---	---	---	---	---
Pumps & Misc.	---	---	---	---	---	---
Domestic Hot Water	0.8	1.2	-0.4	6.9	---	---
Indoor Lighting	11.7	11.7	0	---	---	---
Flexibility	---	---	---	---	---	---
EFFICIENCY TOTAL	**66**	**33.4**	**32.6**	**22.1**	**0**	**22.1**
Photovoltaics	---	---	---	---	---	---
Batteries	---	---	---	---	---	---
ENERGY USE SUBTOTAL	**66**	**33.4**	**32.6**	**22.1**	**0**	**22.1**
Receptacle	15.4	15.4	0	---	---	---
Process	---	---	---	---	---	---
Other Ltg	---	---	---	---	---	---
Process Motors	0.7	0.7	0	---	---	---
ENERGY USE TOTAL	**82.1**	**49.5**	**32.6**	**22.1**	**0**	**22.1**

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 7 of 17)

C8. ENERGY USE INTENSITY (EUI)

	Standard Design (kBtu/ft² / yr)	Proposed Design (kBtu/ft² / yr)	Margin (kBtu/ft² / yr)	Margin Percentage
GROSS EUI[1]	57.12	31.92	25.2	44.12
NET EUI[1]	57.12	31.92	25.2	44.12

[1] Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

D1. EXCEPTIONAL CONDITIONS

• DesignedOccupancyUsedForCalculatingVentilation

E4. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

This file demonstrates a designed with Trane-Mitsubishi VRF units.

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01	02	03	04
Opaque Surfaces & Orientation	**Total Gross Surface Area (ft^2)**	**Total Fenestration Area (ft^2)**	**Window to Wall Ratio (%)**
North-Facing[1]	1215.59	184	15.14
East-Facing[2]	1189	140	11.77
South-Facing[3]	798	276	34.59
West-Facing[4]	641.36	376	58.63
Total	**3843.95**	**976**	**25.39**

Notes
[1] North-Facing is oriented to within 45 degrees of true north, including 4500'00" east of north (NE), but excluding 4500'00" west of north (NW),
[2] East-Facing is oriented to within 45 degrees of true east, including 4500'00" south of east (SE), but excluding 4500'00" north of east (NE),
[3] South-Facing is oriented to within 45 degrees of true south, including 4500'00" west of south (SW), but excluding 4500'00" east of south (SE),
[4] West-Facing is oriented to within 45 degrees of true west, including 4500'00" north of west (NW), but excluding 4500'00" south of west (SW),

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 8 of 17)

G1. ENVELOPE GENERAL INFORMATION (conditioned spaces only)

01	02	03	04
Opaque Surfaces & Orientation	**Total Gross Surface Area (ft^2)**	**Total Fenestration Area (ft^2)**	**Window to Wall Ratio (%)**
Roof	5291	0	0

Notes
[1] North-Facing is oriented to within 45 degrees of true north, including 4500'00" east of north (NE), but excluding 4500'00" west of north (NW),
[2] East-Facing is oriented to within 45 degrees of true east, including 4500'00" south of east (SE), but excluding 4500'00" north of east (NE),
[3] South-Facing is oriented to within 45 degrees of true south, including 4500'00" west of south (SW), but excluding 4500'00" east of south (SE),
[4] West-Facing is oriented to within 45 degrees of true west, including 4500'00" north of west (NW), but excluding 4500'00" south of west (SW),

G4. NONRESIDENTIAL AIR BARRIER

01	02
Building Story Name	**Air Barrier**
Com-Floor 1A	No air barrier
Com-Floor 1B	No air barrier

BUREAU OF ENGINEERING — OFFICIAL RECORD

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 9 of 17)

G5. OPAQUE SURFACE ASSEMBLY SUMMARY

01	02	03	04	05	06		07	08	09	10
					Continuous R-Value					
Surface Name	**Construction Type**	**Area (ft^2)**	**Framing Type**	**Cavity R-Value**	**Interior**	**Exterior**	**Units**	**Value**	**Description of Assembly Layers**	**Status[1]**
2x8 Altered Roof9	Roof	2,131	Wood	19	N/A	8.8	U-factor	0.0338	Single Ply Roofing - 1/4 in. Gypsum Board - 3/8 in. Cellular polyisocyanurate (unfaced) - 1 1/2 in. R8.8 Plywood - 1/2 in. Air - Ceiling - 3/4 in. Composite-1 Gypsum Board - 5/8 in.	A
Slab On Grade11	Underground Floor	5,298	N/A	0	N/A	N/A	F-factor	0.73	Slab Type =Unheated slab on grade Insulation Orientation =None Insulation R-Value =none	E
8 CMU Wall13	Exterior Wall	1,650	N/A	0	N/A	N/A	U-factor	0.3794	Concrete - Part Grouted and Empty - 125 lb/ft3 - 8 in.	E
2x10 Altered Roof20	Roof	2,142	Wood	19	N/A	8.8	U-factor	0.0335	Single Ply Roofing - 1/4 in. Gypsum Board - 3/8 in. Cellular polyisocyanurate (unfaced) - 1 1/2 in. R8.8 Plywood - 1/2 in. Air - Ceiling - 3/4 in. Composite-2 Gypsum Board - 5/8 in.	A

[1] Status: N - New, A - Altered, E - Existing

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING — CITY OF LOS ANGELES — DEPARTMENT OF PUBLIC WORKS

ENGINEERING — CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER — RAYMOND HUANG — No. M35354 — CIVIL — STATE OF CALIFORNIA

VERTICAL CONTROL:	INTERIM CITY ENGINEER	DATE:
HORIZONTAL CONTROL:	LIC. NO.- M35354	9/22/2025
		9/22/2025
		9/22/2025
		9/22/2025

ALFRED MATA, P.E., ARCHITECTURAL DIVISION

ENGINEER: RAYMOND HUANG, P.E.
DESIGNED BY: EUGENE SAN DIEGO, P.E.
DRAWN BY: EUGENE SAN DIEGO, P.E.
CHECKED BY: RAYMOND HUANG, P.E.
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT

SHEET TITLE: TITLE 24 COMPLIANCE DOCUMENT (1 OF 3)

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. M101

SHEET 80 OF SHEETS 115

PLOTTED:9/25/2025 10:35:09 AM

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 10 of 17)

G5. OPAQUE SURFACE ASSEMBLY SUMMARY

01	02	03	04	05	06		07	08	09	10
Surface Name	Construction Type	Area (ft^2)	Framing Type	Cavity R-Value	Continuous R-Value		Units	Value	Description of Assembly Layers	Status[1]
					Interior	Exterior				
2x12 Altered Roof26	Roof	1,018	Wood	19	N/A	8.8	U-factor	0.0332	Single Ply Roofing - 1/4 in. Gypsum Board - 3/8 in. Cellular polyisocyanurate (unfaced) - 1 1/2 in. R8.8 Plywood - 1/2 in. Air - Ceiling - 3/4 in. Composite-3 Gypsum Board - 5/8 in.	A
Default Wall Prior to 19736	Exterior Wall	2,073.95	Wood	0	N/A	N/A	U-factor	0.537	Stucco - 7/8 in. Vapor permeable felt - 1/8 in. Composite-4 Gypsum Board - 1/2 in.	E
6 CMU Wall40	Exterior Wall	120	N/A	0	N/A	N/A	U-factor	0.6944	Concrete - Solid Grout - 115 lb/ft3 - 6 in.	E

[1] *Status: N - New, A - Altered, E - Existing*

G6A. OPAQUE DOOR SUMMARY (NONRESIDENTIAL)

01	02	03	04
Assembly Name	Area (ft^2)	Overall U-factor	Status[1]
Metal Door15	147	0.7	E

[1] *Status: N - New, A - Altered, E - Existing*

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 11 of 17)

G7A. FENESTRATION ASSEMBLY SUMMARY (NONRESIDENTIAL)

01	02	03	04	05	06	07	08	09
Fenestration Assembly Name	Fenestration Type/ Product Type / Frame Type	Certification Method[1]	Assembly Method	Area (ft^2)	Overall U-factor	Overall SHGC	Overall VT	Status[2]
Solarban 70	Vertical fenestration Fixed window N/A	NFRC	Site built	744	0.4	0.25	0.56	A
Single Metal Clear	Vertical fenestration Fixed window Metal	Default 110.6	Site built	232	1.19	0.83	0.77	E

[1] *Notes: Newly installed fenestration shall have a certified NFRC Label Certificate or use the CEC default tables found in Table 110.6-A and Table 110.6-B. Center of Glass (COG) values are for the glass-only, determined by the manufacturer, and are shown for ease of verification. Site-built fenestration values are calculated per Nonresidential Appendix NA6 and are used in the analysis.*
[2] *Status: N - New, A - Altered, E - Existing*

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
HP-1/ HP-2	Single Zone Heat Pump (SZHP) Air System	2	60	0	HSPF2	8.4	48	EER2 SEER2	10.6 18.1	No Economizer	N
CU-A / FC-A	Single Zone Heat Pump (SZHP) Air System	1	14	0	HSPF2	10.1	12	EER2 SEER2	12 20.8	No Economizer	N

[1] *Status: N - New, A - Altered, E - Existing*

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 12 of 17)

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01	02	03	04	05	06	07	08	09	10	11	12
Equipment Name	Equipment Type	Qty	Heating				Cooling			Economizer Type (if present)	Status[1]
			Total Heating Output (kBtu/h)	Supp Heat Output (kBtu/h)	Efficiency Unit	Efficiency	Total Cooling Output (kBtu/h)	Efficiency Unit	Efficiency		
AC-1	Single Zone Heat Pump (SZHP) Air System	1	34.37	0	HSPF2	7.7	33.8	EER2 SEER2	11.5 15.2	No Economizer	N
HP-3	Variable Refrigerant Flow	1	66	N/A	COP HSPF	10.5 10.5	60	EER SEER	12 20	N/A	N
HP-4	Variable Refrigerant Flow	1	66	N/A	COP HSPF	10.5 10.5	60	EER SEER	12 20	N/A	N
HP-5	Variable Refrigerant Flow	1	50	N/A	COP HSPF	10.4 10.4	48	EER SEER	12 23	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 13 of 17)

H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13
Name or Item Tag	Qty	Design OA CFM	Supply Fan				Return / Relief Fan					Status[1]
			CFM	Power	Power Units	Control	Fan Type	CFM	Power	Power Units	Control	
HP-1/ HP-2	2	337.5	1,400	0.16	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
CU-A / FC-A	1	0	425	0.04	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
AC-1	1	98.07	1,100	0.5	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
3-Pantry 108 + Reception De-VRF	1	150	460	0.06	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
4-Corridor A 110-VRF	2	120	460	0.06	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
5-Office 111-VRF	1	45	390	0.06	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
6-Multi Purpose 118-VRF	4	127.5	390	0.06	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
8-Entrance Lobby 106-VRF	2	170	390	0.06	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N
9-Music Room 105-VRF	1	30	198	0.05	BHP	Constant Vol	N/A	N/A	N/A	N/A	N/A	N

[1] *Status: N - New, A - Altered, E - Existing*

H5. GENERAL EXHAUST FAN SUMMARY

01	02	03	04	05	06	07	08
System ID	Zone Name	Qty	CFM	Power	Power Units	Continuous Operation?	Status[1]
Restrooms52-EF	6-Restrooms	3	90	0.02	BHP	No	N
Restrooms75-EF	9-Restrooms	3	90	0.02	BHP	No	N

[1] *Status: N - New, A - Altered, E - Existing*

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 14 of 17)

H8. SYSTEM SPECIAL FEATURES

01	02	03	04
System Name	Equipment Type	Interlocks per 140.4(n)[1]	Other Special Features and Controls
N/A1 - SHW	Service Hot Water	N/A	Fixed Temperature Control

Notes: This table includes controls related to the performance path only. For projects using the prescriptive path, mandatory and prescriptive controls requirements are documented on the NRCC-MCH-F.

[1] *Yes = Interlocks are provided, No = Interlocks are not provided, NA means no operable openings.*

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01	02	03		04	05	06	07
Zone Name	Ventilation Function	Mechanical Ventilation				Conditioned Area (sf)	DCV or Occupant Sensor Controls, or Both
		# of People		Supply OA CFM	Exhaust CFM		
1-Community Room 120	Lodging - Multipurpose assembly	45		675	0	1362	N/A
2-Pantry 108 + Reception De	Office - Breakrooms	10		150	0	345	N/A
3-Corridor A 110	General - Corridors	16		240	0	609	N/A
4-Office 111	Office - Office space	3		45	0	187	N/A
5-Multi-Purpose 118	Lodging - Multipurpose assembly	34		510	0	1020	N/A
6-Restrooms	Exhaust - Toilets, private	1.61		0	270	322	N/A
7-Entrance Lobby 106	Office - Main entry lobbies	22.67		340	0	680	N/A
8-Music Room 105	Office - Office space	2		30	0	95	N/A
9-Restrooms	Exhaust - Toilets, private	0.94		0	270	188	N/A
10-Inverter Room	General - Unoccupied	0.02		0	0	16	N/A
11-Classroom 300	Education - Daycare (through age 4)	11.68		98.07	0	467	N/A

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 15 of 17)

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12
System ID	System Type	Qty	Rated Capacity (kBtuh)		Airflow (cfm)			Fan			VSD
			Heating	Cooling	Design	Min.	Min. Ratio	Power	Power Units	Cycles	
1-Community Room 120-Trm	Uncontrolled	2	N/A	N/A	2,800	N/A	0	N/A	N/A	N/A	☐
10-Inverter Room-Trm	Uncontrolled	1	N/A	N/A	425	N/A	0	N/A	N/A	N/A	☐
11-Classroom 300-Trm	Uncontrolled	1	N/A	N/A	1,100	N/A	0	N/A	N/A	N/A	☐
3-Pantry 108 + Reception De-VRF	Variable Refrigerant Flow	1	20	18	460	N/A	N/A	0.06	BHP	Continuous	☐
4-Corridor A 110-VRF	Variable Refrigerant Flow	2	20	18	460	N/A	N/A	0.06	BHP	Continuous	☐
5-Office 111-VRF	Variable Refrigerant Flow	1	17	15	390	N/A	N/A	0.06	BHP	Continuous	☐
6-Multi-Purpose 118-VRF	Variable Refrigerant Flow	4	17	15	390	N/A	N/A	0.06	BHP	Continuous	☐
8-Entrance Lobby 106-VRF	Variable Refrigerant Flow	2	17	15	390	N/A	N/A	0.06	BHP	Continuous	☐
9-Music Room 105-VRF	Variable Refrigerant Flow	1	6.7	6	198	N/A	N/A	0.05	BHP	Continuous	☐

I1. WATER HEATER EQUIPMENT SUMMARY

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Heater Element Type	Tank Type	Qty	Tank Vol (gal)	Rated Input	Rated Input Unit	Efficiency	Efficiency Unit	Tank Insulation R-value Int/Ext	Standby Loss Fraction	1st Hr. Rating or Flow Rate (gal)	Heat Pump Type	Tank Location or Ambient Condition
Bradford White LE3S0S3-32	Electricity	Storage	1	50	4.5	kW	0.92	UEF	N/A	N/A	60	N/A	N/A
Chronomite Insta-Flow3	Electricity	Instantaneous	3	1	1.44	kW	0.99	UEF	N/A	N/A	0	N/A	N/A

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 16 of 17)

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

Building Component	Form/Title
Envelope	NRCI-ENV-E - Envelope (for all buildings)
Mechanical	NRCI-MCH-E - For all buildings with Mechanical Systems
Plumbing	NRCI-PLB-E - For all buildings with Plumbing Systems

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title & System Name(s)
Envelope	NRCA-ENV-02-F - NRFC label verification for fenestration
Mechanical	NRCA-MCH-02-A - Outdoor Air must be submitted for all newly installed HVAC units. Note: MCH-02-A can be performed in conjunction with MCH-07-A Supply Fan VFD Acceptance (if applicable) since testing activities overlap
Mechanical	HP-1/ HP-2, CU-A / FC-A and AC-1.
Mechanical	NRCA-MCH-03-A - Constant Volume Single Zone HVAC HP-1/ HP-2, CU-A / FC-A and AC-1.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online

There are no Certificates of Verification applicable to this project

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD — NRCC-PRF-E

Nonresidential Performance Compliance Method — (Page 17 of 17)

Documentation Author's Declaration Statement

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Eugene San Diego	Documentation Author Signature:
Company: City of Los Angeles Bureau of Engineering	Signature Date:
Address: 1149 S. Broadway, Suite 830	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Los Angeles, CA 90015	Phone: (213) 847-4776

Responsible Person's Declaration statement

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections, and I will take the necessary steps to accomplish this requirement.
6. I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to accomplish these requirements.

Responsible Designer Name:	Responsible Designer Signature:
Company: City of Los Angeles Bureau of Engineering	
Address: 1149 S. Broadway, Suite 830	Date Signed:
City/State/Zip: Los Angeles, CA 90015	License #:
Phone:	Title: Scope:

Responsible Designer Name: Raymond Huang	Responsible Designer Signature:	
Company: City of Los Angeles Bureau of Engineering		
Address: 1149 S. Broadway, Suite 830	Date Signed: 2025-09-22	
City/State/Zip: Los Angeles, CA 90015	License #: M35354	
Phone: (213) 485-4874	Title: BUILDING MECHANICAL ENGINEER	Scope: MECHANICAL

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220601 — Report Generated: 2025-09-22 13:21:21 Compliance ID: EnergyPro-2716-0925-0049

BUREAU OF ENGINEERING — OFFICIAL RECORD

STATE OF CALIFORNIA

Domestic Water Heating System

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE — NRCC-PLB-E

This document is used to demonstrate compliance for nonresidential occupancies with requirements in 110.1, 110.3, 120.3, and 140.5, and with requirements in 141.0 for additions and alterations, for domestic water heating scopes using the prescriptive path. For high-rise residential and hotel/motel occupancies compliance is demonstrated with requirements in 110.1, 110.3, 160.4 and 170.2(d), and with requirements 180.1 for additions and 180.2 for alterations.

Project Name:	Las Palmas Senior Center	Report Page:	(Page 1 of 8)
Project Address:	1820 N Las Palmas Ave	Date Prepared:	9/22/2025

A. GENERAL INFORMATION

01	Project Location (city)	Los Angeles	02	Climate Zone	9
03	Occupancy Types Within Project (select all that apply):				

● Classroom ● Office ● Support Areas ● All Other Occupancies

B. PROJECT SCOPE

This table includes domestic water heating systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive paths outlined in 140./ 170.2(d) and 141.0(a)/ 180.1, or 141.0(b)2N / 180.2 for additions or alterations. Solar water heating systems are documented on the NRCC-SAB compliance document. Combined hydronic water heating systems are documented on the NRCC-MCH compliance document.

01	02	03
My project consists of (check all that apply):	System Type[1,2]	System Components
☒ New system (DHW system being installed for the first time)	Individual System (serving nonresidential spaces)	☒ Equipment ☒ Distribution ☒ Controls
☒ System Alteration (equipment, distribution or controls)	Individual System (serving nonresidential spaces)	☒ Equipment ☒ Distribution ☒ Controls

[1] *FOOTNOTES: Point of use water heaters, or other non-central systems used to serve nonresidential spaces, are considered Individual systems.*
[2] *Dwelling units refers to hotel/motel guest rooms and units in a multifamily residential occupancy.*
[3] *DHW systems serving 2 or more dwelling units are considered "Central Systems" for multifamily occupancies*

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with water heating requirements. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. or the table indicated as not compliant for guidance.

01	02	03	04
Domestic Hot Water Equipment	Distribution Systems	Controls	Compliance Results
Table F	Table G	Table H	
Yes	Yes	Yes	COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

Generated Date/Time: — Documentation Software: EnergyPro

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220101 — Compliance ID: EnergyPro-2716-0925-1026 Report Generated: 2025-09-22 13:25:46

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FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025

REVISION DATES (DESIGN STAGE ONLY)

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES — DEPARTMENT OF PUBLIC WORKS — BUREAU OF ENGINEERING

ENGINEERING — CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION

		DATE:
INTERIM CITY ENGINEER		9/22/2025
LIC. NO.: M35354		9/22/2025
ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	
CHECKED BY:	RAYMOND HUANG, P.E.	
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	

REGISTERED PROFESSIONAL ENGINEER — RAYMOND HUANG — No. M35354 — CIVIL — MECHANICAL — STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: TITLE 24 COMPLIANCE DOCUMENT (2 OF 3)

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. M102

SHEET 81 OF SHEETS 115

PLOTTED9/25/2025 10:35:17 AM

STATE OF CALIFORNIA
Domestic Water Heating System
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 2 of 8)
	Date Prepared:	9/22/2025

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Domestic Water Heating System
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 3 of 8)
	Date Prepared:	9/22/2025

F. DOMESTIC HOT WATER EQUIPMENT

This table is used to demonstrate compliance with mandatory equipment requirements in 110.1 and 110.3. Compliance with prescriptive requirements in 140.5(c) / 170.2(d) must also be demonstrated and with 141.0 / 180.1/ 180.2 for addition and alteration scopes.

Equipment Schedule: Water Heating Efficiency and Standby Loss

03		04			05		06		
System Name	Bradford White LE35053-3	Exception to 140.5(c)/ 170.2(d)3			☐	Gas Service Water Heating System >= 1MMBtu/h[1]	Capacity-weighted Average Efficiency %		
07	08	09	10		11	12	13	14	15
Name or Item Tag	Equipment Type	Volume (gal)	Rated Input Capacity (Btu/h)	Max GPM/ First Hour Rating (FHR)	Rated Efficiency	Minimum Efficiency Required	Efficiency Unit	Designed Standby Loss	Maximum Standby Loss
Bradford White LE35053-3	Consumer Rated Electric Storage	50	15,354	51 <= FHR <75	0.92	0.93	UEF		
03		04			05		06		
System Name	Chronomite Insta-Flow	Exception to 140.5(c)/ 170.2(d)3			☐	Gas Service Water Heating System >= 1MMBtu/h[1]	Capacity-weighted Average Efficiency %		
07	08	09	10		11	12	13	14	15
Name or Item Tag	Equipment Type	Volume (gal)	Rated Input Capacity (Btu/h)	Max GPM/ First Hour Rating (FHR)	Rated Efficiency	Minimum Efficiency Required	Efficiency Unit	Designed Standby Loss	Maximum Standby Loss
Chronomite Insta-Flow	Consumer Rated Electric Instantaneous { <=12kW]	0.2	4,912	FHR >=75	0.99	0.91	UEF		

STATE OF CALIFORNIA
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CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 4 of 8)
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F. DOMESTIC HOT WATER EQUIPMENT

[1]*FOOTNOTE: In systems >= 1MMBtu/h with multiple units, gas water heaters with input capacity > 100,000 Btu/h may meet 90% Et requirements via an input capacity-weighted average.*

Water Heating Equipment All Occupancies

	Yes	No	Not Applicable	Requirement
18	☐	☐	☒	Unfired storage tank insulation shall have Internal + External >=R-16 OR External >=R-3.5. Label required per 110.3(c)3
19	☐	☐	☒	New state buildings 60% of energy for service water heating from site solar energy or recovered energy per 110.3(c)5
20	☐	☐	☒	Isolation valves for instantaneous water heater with input rating >6.8 kBTUH or 2 kW has been specified per 110.3(c)6
21	☐	☐	☒	School buildings < 25,000 ft^2 and < 4 stories must install a heat pump water heating system per 140.5(a)1. Water heating systems serving an individual bathroom space may be an instantaneous electric water heater.

STATE OF CALIFORNIA
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CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 5 of 8)
	Date Prepared:	9/22/2025

G. DOMESTIC HOT WATER DISTRIBUTION SYSTEM

This table is used to demonstrate compliance for nonresidential occupancies with distribution requirements in 120.3 and 140.5. For multifamily and hotel/motel occupancies, compliance is demonstrated with requirements 110.3(c). 160.4, 170.2(d).

Mandatory Pipe Insulation All Occupancies

13	☐	For systems serving dwelling units, pipe insulation must meet the minimum insulation requirements in Table 160.4-A (see blow) except: • Piping that penetrates framing members shall not be required to have pipe insulation for the distance of the framing penetration. Piping that penetrates metal framing shall use grommets, plugs, wrapping or other insulating material to assure that no contact is made with the metal framing. Insulation shall abut securely against all framing members • Piping installed in interior or exterior walls shall not be required to have pipe insulation if all of the requirements are met for compliance with Quality Insulation Installation (QII) as specified in the Reference Residential Appendix RA3.5. • Piping surrounded with a minimum of 1 inch of wall insulation, 2 inches of crawlspace insulation, or 4 inches of attic insulation, shall not be required to have pipe insulation.
14	☒	For systems serving nonresidential spaces, pipe insulation for the following applications is specified to comply with Table 120.3-A (see below) per 120.3: • Recirculating system piping, including supply and return piping of the water heater • The first 8 ft of hot and cold outlet piping, including between storage tank and heat trap, for a nonrecirculating storage system • Pipes that are externally heated
15	☒	Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather shall be installed with a cover suitable for outdoor service per 120.3(b) / 160.4(f). Pipe insulation buried below grade must be installed in a water proof and non-crushable casing or sleeve.

TABLE 120.3-A / 160.4-A PIPE INSULATION THICKNESS

Fluid Temperature Range (°F)	Conductivity Range (Btu-in per hour per ft^2 per °F)	Insulation Mean Rating Temp (°F)	Nominal Pipe Diameter (in)			
			< 1	1 to < 1.5	1.5 to < 4	1.5 to < 4 Multifamily & Hotel/Motel
			Minimum Insulation Required			
105-140	0.22 - 0.28	100	1.0 in or R-7.7	1.5 in or R-12.5	1.5 in or R-11	2.0 in or R-16

STATE OF CALIFORNIA
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CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 6 of 8)
	Date Prepared:	9/22/2025

H. DOMESTIC HOT WATER CONTROLS

This table is used to demonstrate compliance with control requirements in 110.3 for all occupancies. For multifamily residential and hotel/motel occupancies, compliance is also demonstrated with requirements in 160.4(e) / 170.2(d).

	Yes	No	Not Applicable	Requirement
01	☒	☐	☐	Construction documents require manufacturer certification that service water-heating systems are equipped with automatic temperature controls capable of adjusting temperature settings per 110.3(a).
02	☐	☐	☒	Systems with capacity > 167,000 BTUH equipped with outlet temperature controls per 110.3(c)1 unless covered by California Plumbing Code 613.0.
03	☐	☐	☒	Controls for circulating pumps or electrical heat trace systems are capable of automatically turning off the system per §110.3(c)2 unless systems serves healthcare facility.
04	☐	☐	☒	For recirculation systems serving multiple dwelling units, design includes automatic pump controls per 170.2(d) or 180.1(b)3 for additions.
05	☐	☐	☒	For recirculation systems serving individual dwelling units, design includes manual on/off controls as specified in Reference Appendix RA4.4.9 per 170.2(d).
06	☐	☐	☒	Combustion air positive shut-off shall be provided per 160.4(3).on all newly installed commercial boilers as follows: • Boilers with input capacity >= 2.5 MMBtu/h, in which the boiler is designed to operate with a nonpositive vent static pressure • Boilers where one stack serves two or more boilers with a total combined input capacity per stack of 2.5 MMBtu/h.
07	☐	☐	☒	Boiler combustion air fans with motor >= 10 hp shall meet one of the following • The fan motor shall be driven by a variable speed drive OR • The fan motor shall include controls that limit the fan motor demand to <=30% of the total design wattage at 50% of the design air volume.
08	☐	☐	☒	Newly installed boilers with an input capacity (di:gte/] 5MMBtu/h and a steady state full-load combustion efficiency < 90% shall maintain excess (stack-gas) oxygen concentrations <= 5% by volume on a dry basis over firing rates of 20-100%. Combustion air volume shall be controlled with respect to firing rate or flue gas oxygen concentration. Use of a common gas and combustion air control linkage or jack shaft is prohibited.

STATE OF CALIFORNIA
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CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 7 of 8)
	Date Prepared:	9/22/2025

I. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-PLB-E - Must be submitted for all buildings

J. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

K. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no forms required for this project.

STATE OF CALIFORNIA
Domestic Water Heating System
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PLB-E
Project Name: Las Palmas Senior Center	**Report Page:**	(Page 8 of 8)
Project Address: 1820 N Las Palmas Ave	**Date Prepared:**	9/22/2025

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Eugene San Diego	Documentation Author Signature:
Company: City of Los Angeles Bureau of Engineering	Signature Date: 2025-09-22
Address: 1149 S. Broadway, Suite 830	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Los Angeles CA 90015	Phone: (213) 847-4776

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Raymond Huang	Responsible Designer Signature:
Company: City of Los Angeles Bureau of Engineering	Date Signed: 2025-09-22
Address: 1149 S. Broadway, Suite 830	License: M35354
City/State/Zip: Los Angeles CA 90015	Phone: (213) 485-4874

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

REVISION DATES (DESIGN STAGE ONLY)

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 CIVIL STATE OF CALIFORNIA

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
LIC. NO.: M35354

		DATE:
ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

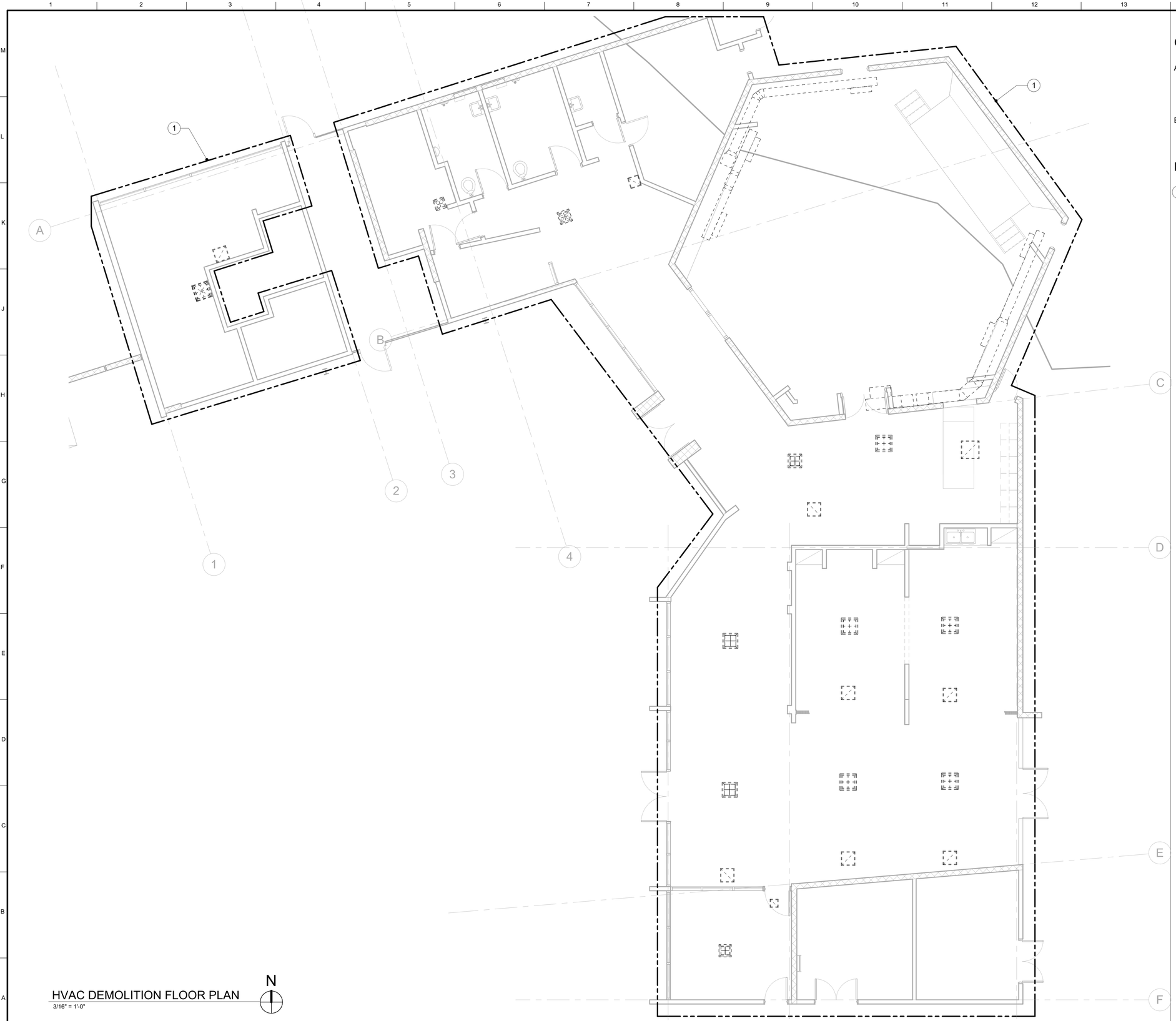
VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: TITLE 24 COMPLIANCE DOCUMENT (3 OF 3)
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M103
SHEET 82 OF SHEETS 115

PLOTTED:9/25/2025 10:35:23 AM



HVAC DEMOLITION FLOOR PLAN
3/16" = 1'-0"

N

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS AND DETERMINE THE EXTENT OF DEMOLITION. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. ALL WORK TO BE DEMOLISHED SHALL NOT BE RE-USED.

KEY NOTES:

1. REMOVE ALL EXISTING DUCTWORK, DIFFUSERS, GRILLES, HANGERS AND ALL RELATED MECHANICAL APPURTENANCES WITHIN THE OUTLINE INDICATED ON THIS PLAN BACK TO THE MECHANICAL UNIT CONNECTION UNLESS NOTED OTHERWISE.

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

INDEX NO. MF-300512
BUILDING NO. -

REGISTERED PROFESSIONAL ENGINEER
HSU-LIANG HUANG
No. M35354
Exp. 6-30-27
MECHANICAL ENGINEER
STATE OF CALIFORNIA

ALFRED MATA, P.E.
INTERIM CITY ENGINEER

		DATE:
ENGINEER:	RAYMOND HUANG, P.E. LIC. NO.: M35354	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC DEMOLITION FLOOR PLAN
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M201
SHEET 83 OF SHEETS 115

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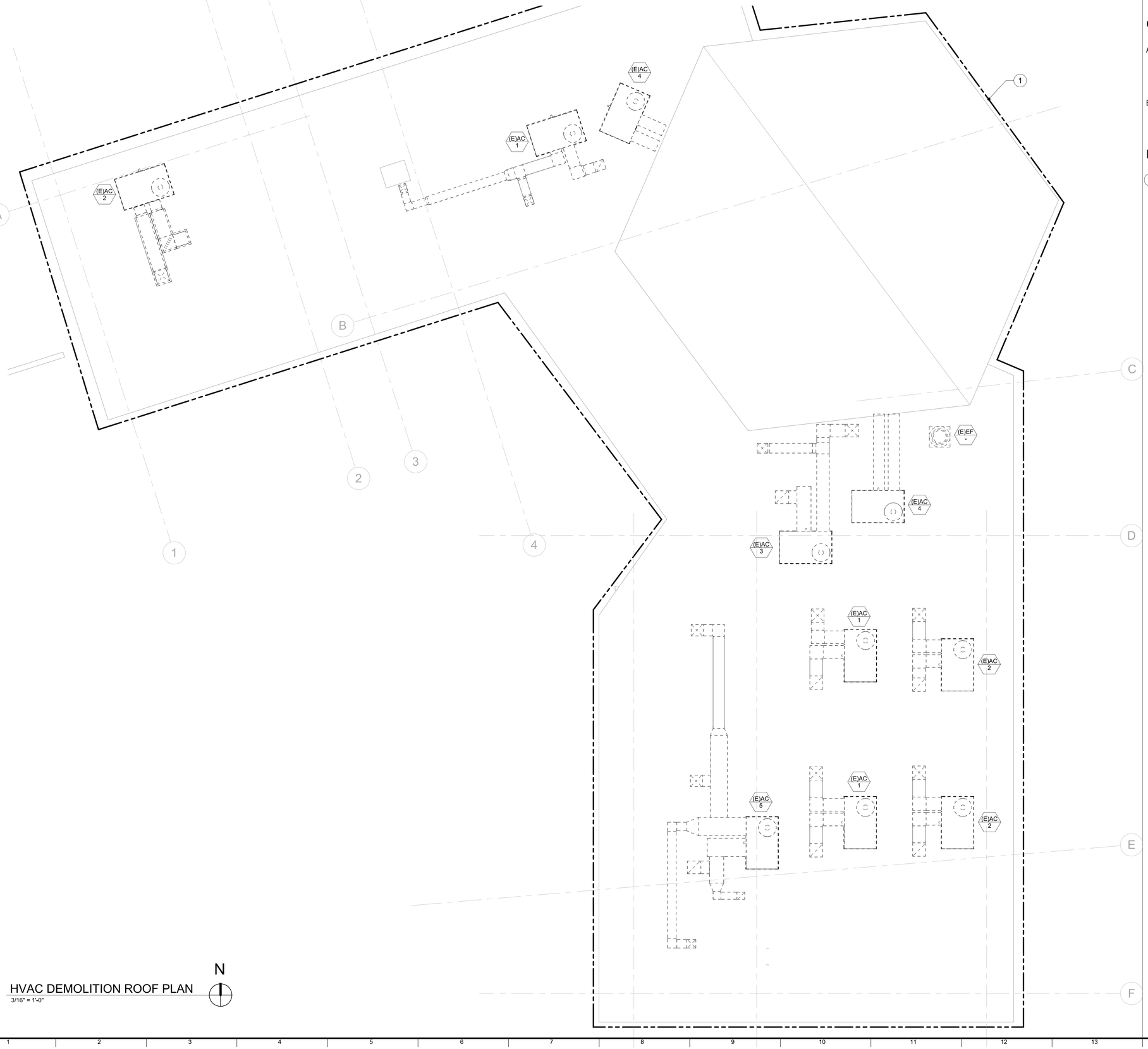
SHEET ISSUE DATE: 08/19/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

REVISION DATES (DESIGN STAGE ONLY)



GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS AND DETERMINE THE EXTENT OF DEMOLITION. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. ALL WORK TO BE DEMOLISHED SHALL NOT BE RE-USED.

KEY NOTES:

(1) REMOVE ALL EXISTING PACKAGED ROOFTOP UNITS, EXHAUST FAN, DUCTWORKS AND ALL RELATED MECHANICAL APPURTENANCES WITHIN THE OUTLINE INDICATED ON THIS PLAN. DISCONNECT EXISTING CONDENSATE PIPING. DISCONNECT AND REMOVE EXISTING GAS PIPING. COORDINATE WITH ELECTRICAL CONTRACTOR THE DISCONNECTION OF ELECTRICAL WIRING PRIOR TO START OF WORK.

N

HVAC DEMOLITION ROOF PLAN

3/16" = 1'-0"

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SHEET ISSUE DATE: 09/22/5025

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
RAYMOND HUANG
No. M35354
EXP. 6/30/27
CIVIL
STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION

INTERIM CITY ENGINEER		DATE: 9/22/2025
ENGINEER:	RAYMOND HUANG, P.E.	LIC. NO.- M35354 9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC DEMOLITION ROOF PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

PLAN FILE NO.

DRAWING NO. M202

SHEET 84 OF SHEETS 115

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt



***THIS BUILDING IS COVERED BY AN EXISTING TOTAL COVERAGE SMOKE-DETECTION SYSTEM WITH AC UNIT SHUTDOWN

HVAC FLOOR PLAN
3/16" = 1'-0"

N

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. VERIFY EXACT PLACEMENT OF MECHANICAL EQUIPMENT AND ACCESS PANEL WITH ARCHITECTURAL/STRUCTURAL DRAWINGS PRIOR TO START OF WORK.

C. COORDINATE WITH FIRE ALARM CONTRACTOR TO PROVIDE AUTOMATIC SHUTOFF FOR ALL FAN COIL UNITS DURING FIRE/SMOKE EVENT USING THE EXISTING AREA SMOKE DETECTORS (TOTAL COVERAGE SMOKE-DETECTION SYSTEM). ALL FAN COIL UNITS SHALL BE ELECTRICALLY INTERLOCKED WITH THE EXISTING AREA DETECTORS.

D. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF HANGERS AND SUPPORTS FOR HVAC EQUIPMENT SHOWING INSTALLATION DETAILS FOR REVIEW AND APPROVAL BY CITY ENGINEER PRIOR TO START OF WORK.

KEY NOTES:

1. 8"x8" EXHAUST DUCT UP THROUGH ROOF. RE-USE EXISTING OPENING FOR DUCT PENETRATION ON ROOF.
2. REMOVE & REPLACE EXISTING THERMOSTAT WITH NEW T24 COMPLIANT PROGRAMMABLE THERMOSTAT.
3. NEW BUILDING AUTOMATION SYSTEM CONTROL PANEL AND VRF CENTRAL CONTROLLER. COORDINATE WITH ARCHITECT / OWNER'S REP FOR FINAL LOCATION PRIOR TO START OF WORK.
4. 18"x18" ACCESS PANEL FOR CEILING CASSETTTE. SEE ARCHITECTURAL DRAWINGS FOR LOCATION DETAILS.
5. INSTALL CEILING CASSETTE AND ACCESS PANEL IN BETWEEN EXISTING/MODIFIED ROOF JOISTS. SEE ARCHITECTURAL/STRUCTURAL DRAWINGS FOR THE MODIFIED ROOF JOIST DETAILS.
6. PROVIDE THERMOSTAT / ROOM SENSOR. COORDINATE WITH ARCHITECT / OWNER'S REP FOR FINAL LOCATION PRIOR TO START OF WORK.
7. 6"Ø EA DUCT UP THRU ROOF TO A ROOF CAP. SEE DETAIL E5/M301.
8. 10"x10" EA DUCT UP THRU ROOF TO EF-7. PROVIDE DUCT TRANSITION TO MAKE FINAL CONNECTION TO THE CEILING GRILLE. SEE DETAIL A5/M302.
9. 6"Ø OSA DUCT UP THRU ROOF TO GOOSENECK AIR INTAKE. SEE DETAIL J13/M301.
10. 12"x12" DOOR TRANSFER GRILLE, 6" ABOVE FINISHED FLOOR.
11. 24"x24" 90-MINUTE FIRE RATED DOOR LOUVER, MINIMUM 1.4 SF F.A.R.
12. 24"x6" TRANSFER GRILLE, AIR BALANCE TO 200 CFM.
13. EXISTING WINDOW OPENING AS SOURCE OF MAKE-UP AIR, TO REMAIN.
14. 72"x36" ACCESS PANEL, SEE ARCHITECTURAL DRAWINGS FOR LOCATION DETAILS.
15. 16"x16" OSA INTAKE WALL LOUVER.
16. NEW ROOF ACCESS LADDER SHOWN FOR REFERENCE ONLY. SEE ARCHITECTURAL DRAWINGS FOR DETAIILS.

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND JUANG No. M35354 CIVIL STATE OF CALIFORNIA

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
LIC. NO.: M35354 DATE: 9/22/2025

ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

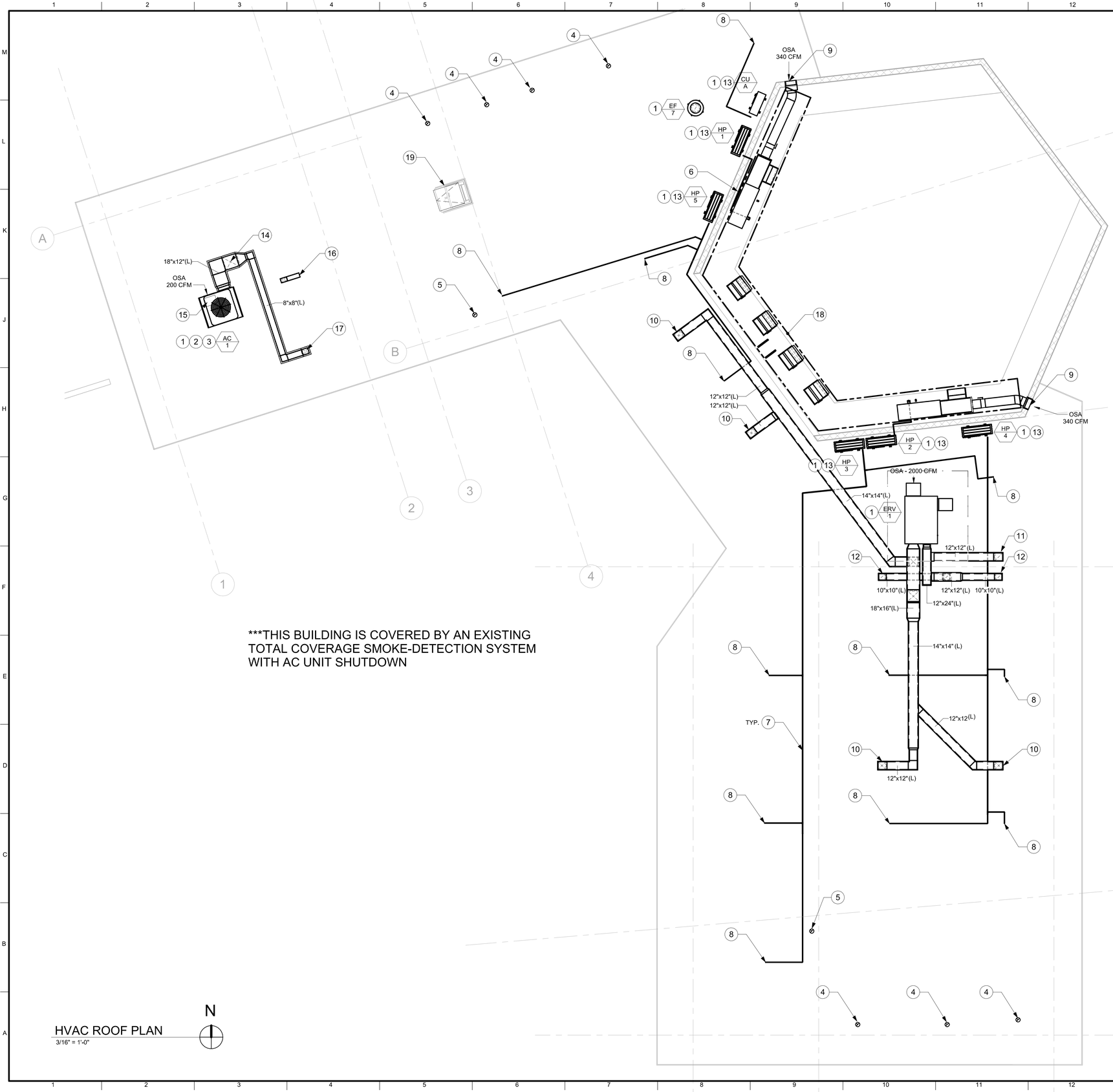
VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC FLOOR PLAN
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M203
SHEET 85 OF SHEETS 115

PLOTTED:9/25/2025 10:35:29 AM

REVISION DATES (DESIGN STAGE ONLY)



***THIS BUILDING IS COVERED BY AN EXISTING TOTAL COVERAGE SMOKE-DETECTION SYSTEM WITH AC UNIT SHUTDOWN

HVAC ROOF PLAN
3/16" = 1'-0"

N

GENERAL NOTES:

A. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

B. FRESH AIR INTAKE SHALL BE AT LEAST 10 FT AWAY OR 3 FT BELOW EXHAUST OPENINGS OR SANITARY VENTS.

C. ENVIRONMENTAL EXHAUST TERMINATIONS SHALL BE NO LESS THAN 3 FT FROM A PROPERTY LINE AND OPENINGS INTO THE BUILDING, AND NO LESS THAN 3 FT ABOVE FRESH/MAKE-UP AIR INLETS WITHIN 10 FT.

D. CONTRACTOR SHALL FIELD VERIFY EXACT REFRIGERANT PIPE ROUTING PRIOR TO START OF WORK.

E. ALL REFRIGERANT PIPING SHALL BE SIZED AND INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. VRF PIPING MUST HAVE ALL BRAZED CONNECTIONS THAT MEET ASME B31.5 REQUIREMENTS.

F. REFRIGERANT PIPING INSULATION SHALL MEET THE REQUIREMENT OF CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARD.

G. VERIFY EXACT PLACEMENT OF ROOFTOP EQUIPMENT WITH ARCHITECTURAL/STRUCTURAL DRAWINGS PRIOR TO START OF WORK.

H. COORDINATE WITH FIRE ALARM CONTRACTOR TO PROVIDE AUTOMATIC SHUTOFF FOR ERV-1 DURING FIRE/SMOKE EVENT USING THE EXISTING AREA SMOKE DETECTORS (TOTAL COVERAGE SMOKE-DETECTION SYSTEM). ERV-1 SHALL BE ELECTRICALLY INTERLOCKED WITH THE EXISTING AREA DETECTORS.

KEY NOTES:

1. MAINTAIN MANUFACTURER'S MINIMUM CLEARANCE. KEEP FREE OF OBSTRUCTION. VERIFY EXACT DIMENSION WITH MANUFACTURER PRIOR TO START OF WORK.
2. PROVIDE DUCT TRANSITION (AS NEEDED) FROM THE SUPPLY AND RETURN DUCTS TO MAKE FINAL CONNECTION TO THE NEW AC UNIT.
3. RECONNECT EXISTING CONDENSATE PIPING.
4. EXHAUST AIR ROOF CAP, SEE DETAIL E5/M301.
5. GOOSENECK AIR INTAKE, SEE DETAIL J13/M301.
6. REFRIGERANT PIPES (LIQUID & GAS LINES) RUNNING ALONG INTERIOR WALL. MAKE FINAL CONNECTION TO THE FAN COIL UNIT. SEE DETAIL A1/M303 FOR REFRIGERANT PIPE SIZES.
7. REFRIGERANT PIPES (LIQUID AND GAS LINES) ON THE ROOF. SEE DETAIL A1/M303 FOR REFRIGERANT PIPE SIZES.
8. REFRIGERANT PIPES (LIQUID AND GAS LINES) DOWN TO FC UNIT. MAKE FINAL CONNECTION TO THE FC UNIT. SEE DETAIL A1/M303 FOR REFRIGERANT PIPE SIZES.
9. 16"x16" OSA INTAKE WALL LOUVER.
10. 12"x12" LINED SUPPLY DUCT DOWN TO CEILING DIFFUSER.
11. 12"x12" LINED RETURN DUCT DOWN TO RETURN GRILLE.
12. 10"x10" LINED RETURN DUCT DOWN TO RETURN GRILLE.
13. MOUNT OUTDOOR UNIT TO THE EXTRIOR WALL, MINIMUM 12" ABOVE THE ROOF, USING FACTORY-SUPPLIED WALL BRACKET. SEE DETAIL E13/M302.
14. 14"X14" LINED SUPPLY DUCT DOWN TO CEILING DIFFUSER. RE-USE EXISTING OPENING FOR DUCT PENETRATION ON ROOF.
15. 14"X14" LINED RETURN DUCT DOWN TO CEILING DIFFUSER. PROVIDE DUCT TRANSITION (AS NEEDED) FROM THE RETURN DUCT TO MAKE FINAL CONNECTION TO THE NEW AC UNIT. RE-USE EXISTING OPENING FOR DUCT PENETRATION ON ROOF.
16. 6"X8" EXHAUST DUCT EXTENSION CONNECTED TO THE EXHAUST DUCT RISER DOWN TO EF-9 TO MAINTAIN EXHAUST TERMINATION 10 FT AWAY FROM AC-1 OUTSIDE SUPPLY AIR INTAKE. SEE DETAIL E1/M302.
17. 8"X8" LINED SUPPLY DUCT DOWN TO CEILING DIFFUSER.
18. FAN COIL UNITS AND ASSOCIATED DUCTWORKS AND GRILLES WITHIN THE OUTLINE INDICATED ARE SHOWN FOR CLARITY ONLY. REFER TO SHEET M203 FOR COMPLETE DETAILS.
19. ROOF ACCESS HATCH SHOWN FOR REFERENCE ONLY, REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND JIANG No. M35354 EXP. 6/30/27 MECHANICAL ENGINEERING STATE OF CALIFORNIA

INTERIM CITY ENGINEER	LIC. NO.: M35354	DATE: 9/22/2025
ARCHITECTURAL DIVISION		9/22/2025
ENGINEER: RAYMOND HUANG, P.E.		9/22/2025
DESIGNED BY: EUGENE SAN DIEGO, P.E.		9/22/2025
DRAWN BY: EUGENE SAN DIEGO, P.E.		9/22/2025
CHECKED BY: RAYMOND HUANG, P.E.		9/22/2025
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT		9/22/2025

ALFRED MATA, P.E.
GENERAL MANAGER

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC ROOF PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M204
SHEET 86 OF SHEETS 115

PLOTTED:9/25/2025 10:35:32 AM

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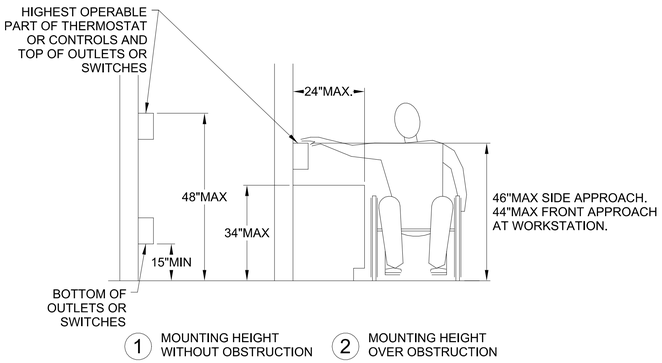
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

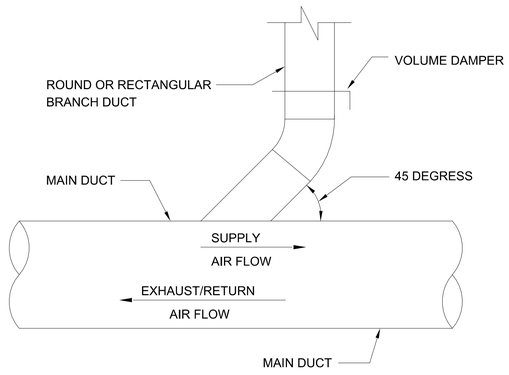
REVISION DATES (DESIGN STAGE ONLY)



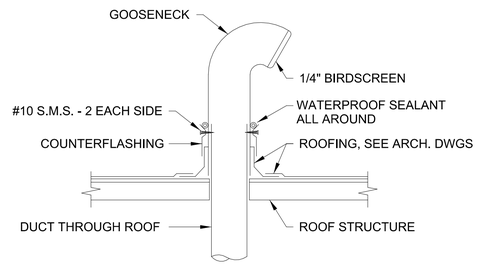
NOTE: ELECTRICAL OUTLETS, SWITCHES AND SIMILAR CONTROLS SHALL BE MOUNTED A MAXIMUM OF 48" ABOVE FINISHED FLOOR, MEASURED TO THE TOP OF THE ELECTRICAL BOX.

THE MINIMUM MOUNTING HEIGHT FOR SWITCHES AND OUTLETS IS 18"A.F.F. MEASURED FROM CENTERLINE OF ELECTRICAL BOX.

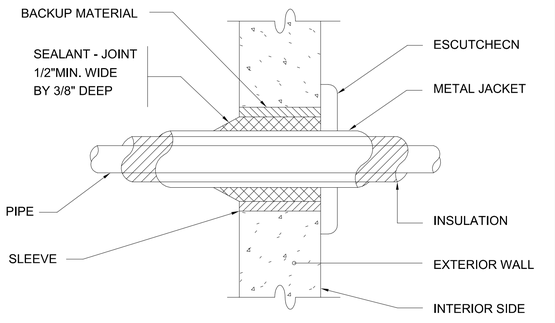
J1 THERMOSTAT MOUNTING DETAIL
SCALE: NONE



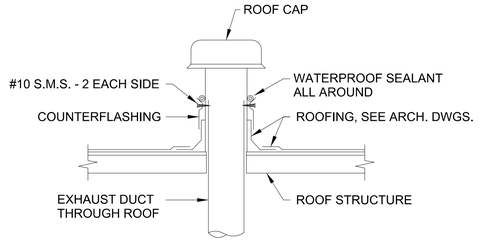
J9 DUCT TAKE-OFF DETAIL
SCALE: NONE



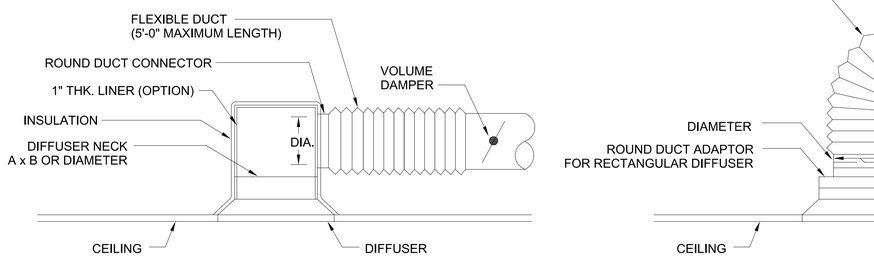
J13 ROOF GOOSENECK DETAIL
SCALE: NONE



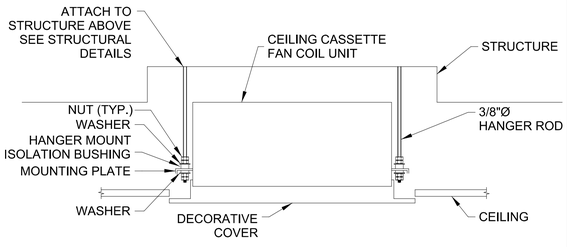
E1 PIPE THRU WALL DETAIL
SCALE: NONE



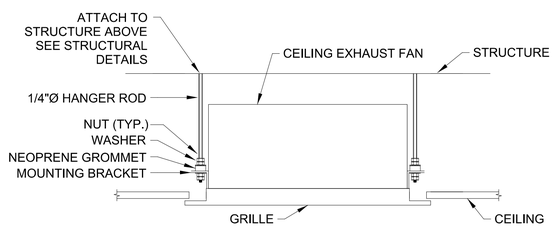
E5 ROOF CAP DETAIL
SCALE: NONE



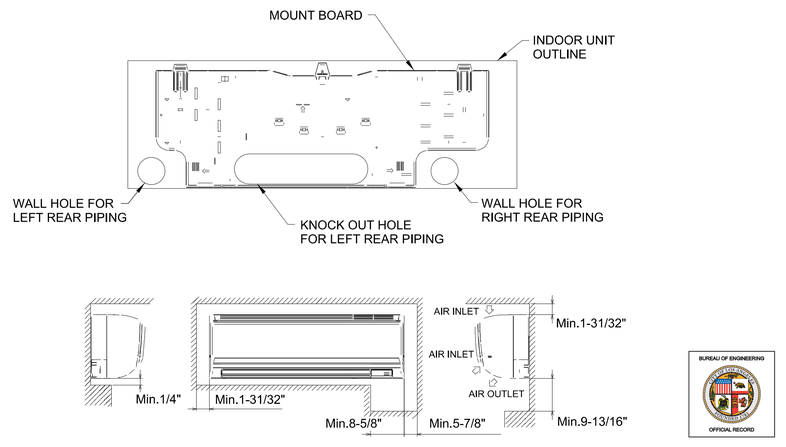
E9 CEILING DIFFUSER/REGISTER DETAIL
SCALE: NONE



A1 CEILING CASSETTE FAN COIL DETAIL
SCALE: NONE



A5 CEILING EXHAUST FAN DETAIL
SCALE: NONE



A9 WALL MOUNTED FAN COIL UNIT DETAIL
SCALE: NONE

BUREAU OF ENGINEERING OFFICIAL RECORD

REVISION DATES (DESIGN STAGE ONLY)

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 EXP. 6/30/27 MECHANICAL ENGINEERING STATE OF CALIFORNIA

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION

ENGINEER:	RAYMOND HUANG, P.E.	INTERIM CITY ENGINEER LIC. NO.- M35354
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	DATE: 9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M301
SHEET 87 OF SHEETS 115

PLOTTED:9/25/2025 10:35:34 AM

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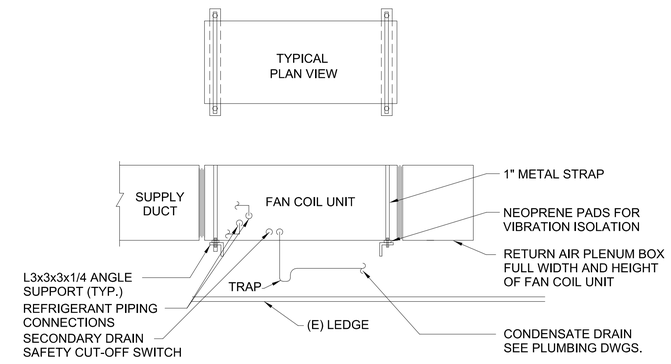
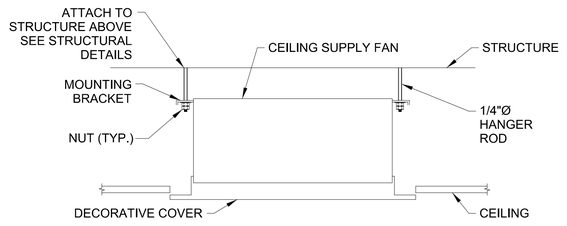


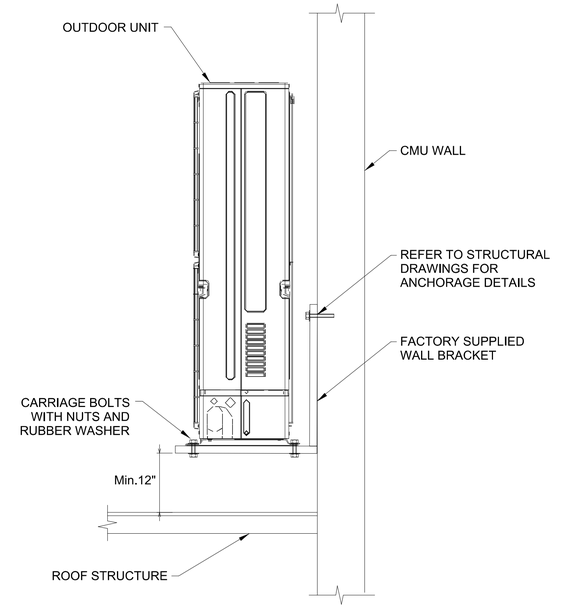
NOTE:

1) SECURE FAN COIL UNIT TO THE ANGLE SUPPORT USING 1" METAL STRAP.
2) PROVIDE NEOPRENE PADS BETWEEN THE FAN COIL UNIT AND ANGLE SUPPORT FOR VIBRATION ISOLATION
3) ACCESS SHALL BE PROVIDED TO FAN COIL UNITS SUCH THAT CAN BE SERVICED AND REMOVED WITHOUT REMOVAL OF THE PERMANENT CONSTRUCTION.
4) REFER TO THE STRUCTURAL DRAWINGS FOR THE ATTACHMENT OF ANGLE SUPPORT TO THE STRUCTURE.

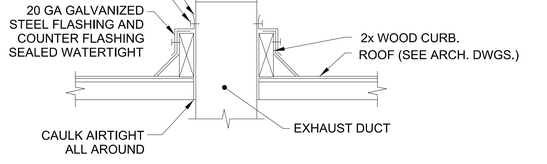
J1	SUSPENDED FAN COIL UNIT DETAIL
SCALE:	NONE



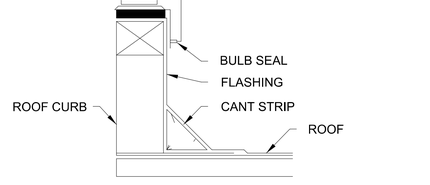
J9	CEILING SUPPLY FAN DETAIL
SCALE:	NONE



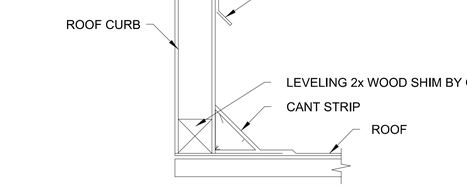
E13	OUTDOOR UNIT MOUNTING DETAIL
SCALE:	NONE



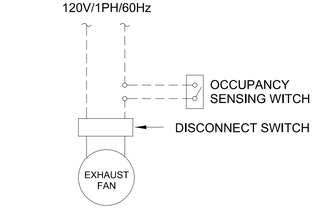
E1	EXHAUST DUCT TERMINATION DETAIL
SCALE:	NONE



E5	AC UNIT MOUNTING DETAIL
SCALE:	NONE



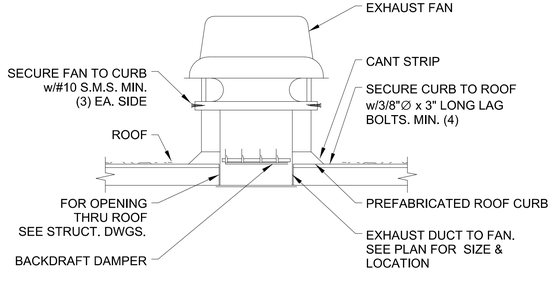
E9	ERV UNIT MOUNTING DETAIL
SCALE:	NONE



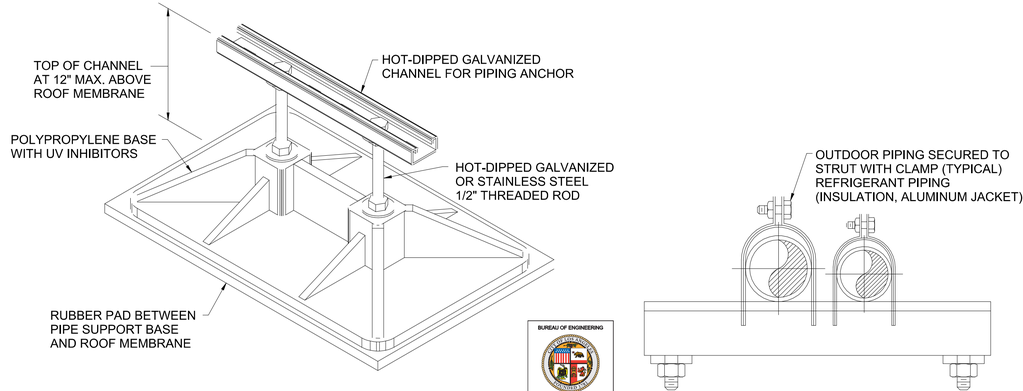
EXHAUST FAN (EF-9)

EXHAUST FAN SHALL BE CONTROLLED BY OCCUPANCY SENSING SWITCH WITH ADJUSTABLE TIMEOUT FEATURE.

A1	EF-9 CONTROL DIAGRAM
SCALE:	NONE



A5	ROOF MOUNTED FAN DETAIL
SCALE:	NONE



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OFFICIAL RECORD

A9	REFRIGERANT PIPE SUPPORT ON ROOF DETAIL
SCALE:	NONE

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
RAYMOND HUANG
No. M35354
EXP. 12-31-25
CIVIL
STATE OF CALIFORNIA

CITY ENGINEER		DATE:
ALFRED MATA, P.E.	INTERIM CITY ENGINEER	
	ARCHITECTURAL DIVISION	
ENGINEER:	LIC. NO. M35354	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE: 9/22/2025

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
M302

SHEET 88 OF SHEETS 115

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025

Quick Results

Connection Summary
Indoor Units: 1 / 1 to 1
Capacity: 48 / 24 to 48 (100.0%)
* Connectable capacity is not actual capacity.
Total Pipe Length: 23.9/245.0 feet

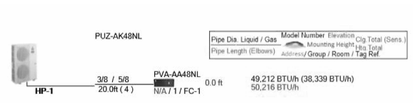
Refrigerant
System Refrigerant: **R454B**
Additional Field-Charge: **0.00 lb**
Total System Charge: **11.46 lb**
Min. Applied Floor Area: **172.3 ft²**
Max System Charge: **11.52 lb**

Correction Factors

	Cooling	Heating
Outdoor Temperature:	1.05	0.99
Piping Length:	0.98	1.00
Defrosting:	-	1.00
User Derate:	1.00	1.00
Outdoor Altitude:	1.00	1.00
	1.03	**0.98**

Conditions

Cooling		Heating	
Indoor Dry Bulb	80.0 °F	Indoor Dry Bulb	70.0 °F
Indoor Wet Bulb	67.0 °F		
Indoor Humidity	51.8 %	Outdoor Dry Bulb	47.0 °F
		Outdoor Wet Bulb	43.0 °F
Outdoor Dry Bulb	95.0 °F	Outdoor Humidity	72.8 %



Quick Results

Connection Summary
Indoor Units: 1 / 1 to 1
Capacity: 48 / 24 to 48 (100.0%)
* Connectable capacity is not actual capacity.
Total Pipe Length: 23.9/245.0 feet

Refrigerant
System Refrigerant: **R454B**
Additional Field-Charge: **0.00 lb**
Total System Charge: **11.46 lb**
Min. Applied Floor Area: **172.3 ft²**
Max System Charge: **11.52 lb**

Correction Factors

	Cooling	Heating
Outdoor Temperature:	1.05	0.99
Piping Length:	0.98	1.00
Defrosting:	-	1.00
User Derate:	1.00	1.00
Outdoor Altitude:	1.00	1.00
	1.03	**0.98**

Conditions

Cooling		Heating	
Indoor Dry Bulb	80.0 °F	Indoor Dry Bulb	70.0 °F
Indoor Wet Bulb	67.0 °F		
Indoor Humidity	51.8 %	Outdoor Dry Bulb	47.0 °F
		Outdoor Wet Bulb	43.0 °F
Outdoor Dry Bulb	95.0 °F	Outdoor Humidity	72.8 %



Quick Results

Connection Summary
Indoor Units: 4 / 1 to 12
Capacity: 69 / 30 to 78 (115.0%)
* Connectable capacity is not actual capacity.
Total Pipe Length: 130.0/492.0 feet
Furthest Actual: 85.0/262.0 feet
Furthest Equiv.: 89.9/262.0 feet
After 1st Branch Actual: 80.0/98.0 feet
After 1st Branch Equiv.: 84.9/98.0 feet

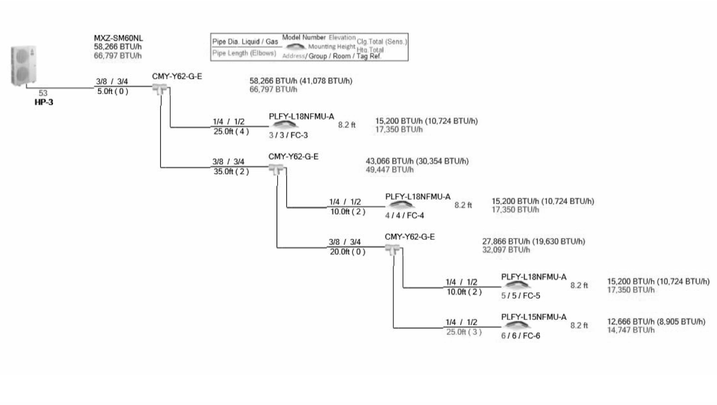
Refrigerant
System Refrigerant: **R454B**
Additional Field-Charge: **12.64 lb**
Total System Charge: **19.26 lb**
Min. Applied Floor Area: **96.9 ft²**
Max System Charge: **27.75 lb**

Correction Factors

	Cooling	Heating
Outdoor Unit Capacity:	1.03	1.03
Outdoor Temperature:	1.00	1.00
Piping Length:	0.94	0.99
Defrosting:	-	1.00
User Derate:	1.00	1.00
Outdoor Altitude:	1.00	1.00
	0.97	**1.01**

Conditions

Cooling		Heating	
Indoor Dry Bulb	80.0 °F	Indoor Dry Bulb	70.0 °F
Indoor Wet Bulb	67.0 °F		
Indoor Humidity	51.8 %	Outdoor Dry Bulb	47.0 °F
		Outdoor Wet Bulb	43.0 °F
Outdoor Dry Bulb	95.0 °F	Outdoor Humidity	72.8 %



Quick Results

Connection Summary
Indoor Units: 4 / 1 to 12
Capacity: 60 / 30 to 78 (100.0%)
* Connectable capacity is not actual capacity.
Total Pipe Length: 86.0/492.0 feet
Furthest Actual: 66.0/262.0 feet
Furthest Equiv.: 69.0/262.0 feet
After 1st Branch Actual: 36.0/98.0 feet
After 1st Branch Equiv.: 39.0/98.0 feet

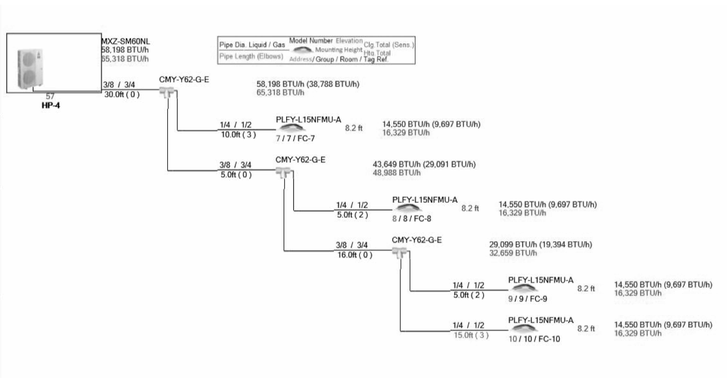
Refrigerant
System Refrigerant: **R454B**
Additional Field-Charge: **13.07 lb**
Total System Charge: **19.68 lb**
Min. Applied Floor Area: **96.9 ft²**
Max System Charge: **27.75 lb**

Correction Factors

	Cooling	Heating
Outdoor Unit Capacity:	1.00	1.00
Outdoor Temperature:	1.00	1.00
Piping Length:	0.97	0.99
Defrosting:	-	1.00
User Derate:	1.00	1.00
Outdoor Altitude:	1.00	1.00
	0.97	**0.99**

Conditions

Cooling		Heating	
Indoor Dry Bulb	80.0 °F	Indoor Dry Bulb	70.0 °F
Indoor Wet Bulb	67.0 °F		
Indoor Humidity	51.8 %	Outdoor Dry Bulb	47.0 °F
		Outdoor Wet Bulb	43.0 °F
Outdoor Dry Bulb	95.0 °F	Outdoor Humidity	72.8 %



Quick Results

Connection Summary
Indoor Units: 3 / 1 to 12
Capacity: 42 / 24 to 62 (87.5%)
* Connectable capacity is not actual capacity.
Total Pipe Length: 70.0/787.0 feet
Furthest Actual: 35.0/262.0 feet
Furthest Equiv.: 38.0/262.0 feet
After 1st Branch Actual: 30.0/98.0 feet
After 1st Branch Equiv.: 33.0/98.0 feet

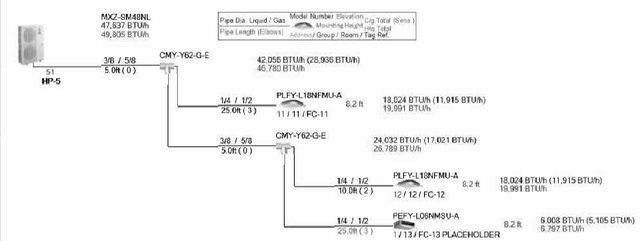
Refrigerant
System Refrigerant: **R454B**
Additional Field-Charge: **12.07 lb**
Total System Charge: **14.71 lb**
Min. Applied Floor Area: **96.9 ft²**
Max System Charge: **20.47 lb**

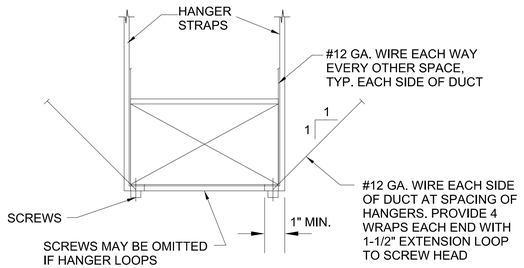
Correction Factors

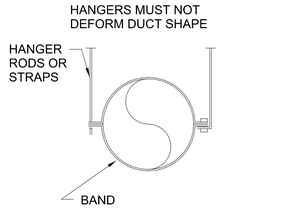
	Cooling	Heating
Outdoor Unit Capacity:	1.00	1.00
Outdoor Temperature:	1.00	1.00
Piping Length:	0.99	1.00
Defrosting:	-	1.00
User Derate:	1.00	1.00
Outdoor Altitude:	1.00	1.00
	0.99	**1.00**

Conditions

Cooling		Heating	
Indoor Dry Bulb	80.0 °F	Indoor Dry Bulb	70.0 °F
Indoor Wet Bulb	67.0 °F		
Indoor Humidity	51.8 %	Outdoor Dry Bulb	47.0 °F
		Outdoor Wet Bulb	43.0 °F
Outdoor Dry Bulb	95.0 °F	Outdoor Humidity	72.8 %







DUCT SUPPORT - VERTICAL DUCTS			
MAXIMUM SIDE OF RECTANGULAR DUCT	METAL STRAP OR ANGLE BRACKET	MAXIMUM DIAMETER OF ROUND DUCTS	STRAP
24"	1" x 1/8" STRAP [1]	10"	0.047" (NO.18 GAGE) GALVANIZED STEEL 2" WIDE [1]
36"	1" x 1" x 1/8" ANGLE [1]	20"	0.058" (NO.16 GAGE) GALVANIZED STEEL 2" WIDE [1]

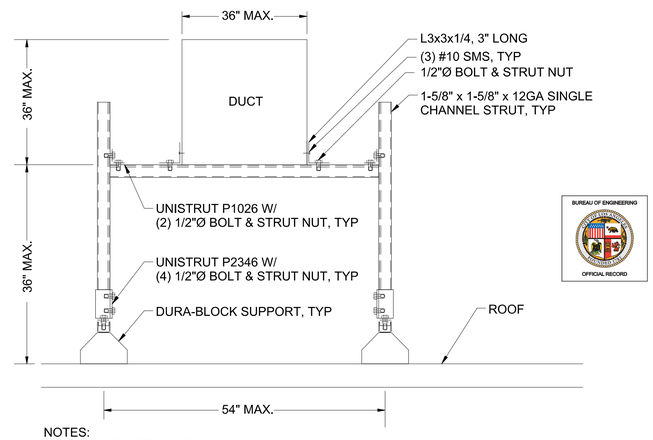
DUCT SUPPORT - HORIZONTAL DUCTS			
MAXIMUM SIDE OF RECTANGULAR DUCT	METAL STRAP OR ANGLE BRACKET	MAXIMUM DIAMETER OF ROUND DUCTS	STRAP
18"	1" x 18 GAGE [2]	12"	SAME GAGE AS GALVANIZED STEEL DUCT 1" WIDE OR (NO. 18 GAGE GALVANIZED STEEL WIRE) ON 10' ON CENTERS
30"	1" x 18 GAGE [2]		

HORIZONTAL DUCTS - TRAPEZE-TYPE SUPPORTS		
MAXIMUM DIAMETER OF ROUND DUCT OR SIDE OF RECTANGULAR DUCT	HORIZONTAL SUPPORT ANGLE [3]	HANGER
36"	1-1/2" x 1-1/2" x 1/8"	1/4 " ROUND ROD OR 1" x 1" x 1/8" ANGLE

NOTES:
1 SPACED VERTICALLY NOT MORE THAN 12 FEET ON CENTERS.
2 SPACED HORIZONTALLY NOT MORE THAN 10 FEET ON CENTERS.
3 SPACED NOT MORE THAN 8 FEET ON CENTERS.

E9 DUCT SUPPORT DETAIL

SCALE: NONE



NOTES:
1) MAX. SUPPORT SPACING = 3'-0".
2) ALL STEEL SHAPES AND BOLTS TO BE SS OR HOT- DIPPED GALVANIZED.
3) STRUCTURAL ENGINEER TO VERIFY ADEQUACY OF STRUCTURE FOR IMPOSED LOADS.

A1 VRF SCHEMATIC PIPING DIAGRAM

SCALE: NONE

A9 DUCT ON ROOF SUPPORT DETAIL

SCALE: NONE

REVISION DATES (DESIGN STAGE ONLY)

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION
INTERIM CITY ENGINEER
LIC. NO.: M33354 DATE: 9/22/2025

ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 Civil STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BUREAU OF ENGINEERING OFFICIAL RECORD

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M303
SHEET 89 OF SHEETS 115

PLOTTED:9/25/2025 10:35:42 AM

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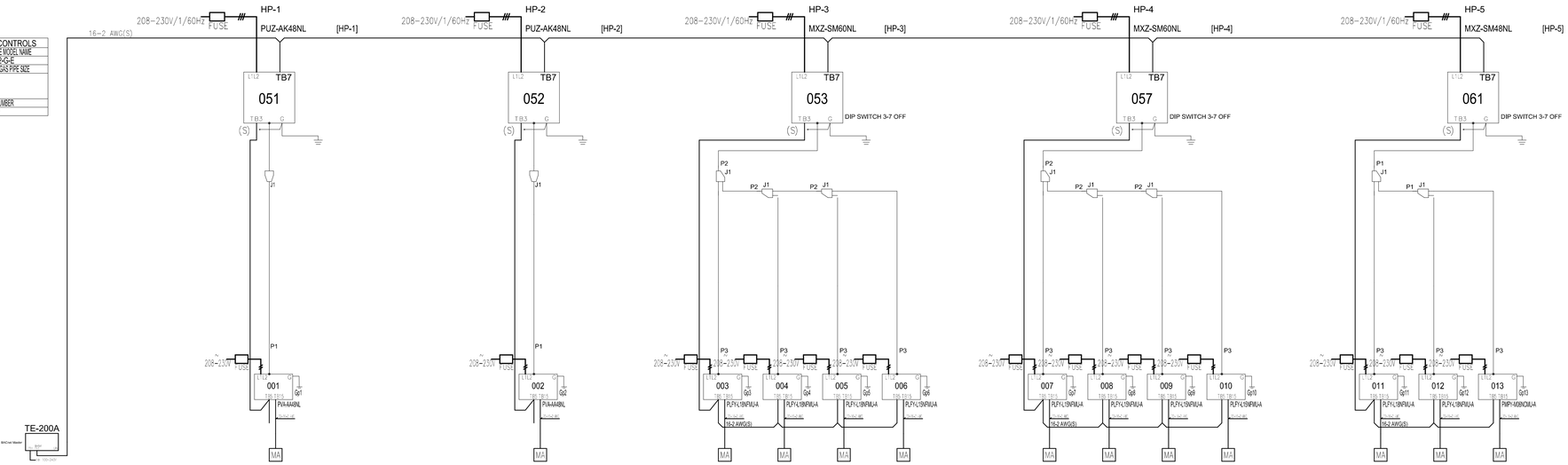
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 08/19/2025

DIAGRAM SYMBOL LEGEND	
DISPLAY	DESCRIPTION
——W——	POWER WIRE
————	CONTROL WIRE
————	REF. PIPE

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE SIZE/ NAME
J1	CMY-Y62-G-E
SYMBOL	LIQUID PIPE/GAS PIPE SIZE
P1	3/8 / 5/8
P2	3/8 / 3/4
P3	1/4 / 1/2
SYMBOL	MODEL NUMBER
MA	TAR-20MAB

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record
Additional refrigerant charge is needed depending on the size and length of extended piping.
Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
1.25mm(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

CITY MULTI
SYSTEM SCHEMATIC DWG.



E1 VRF PIPING AND WIRING DIAGRAM

SCALE: NONE

VRF FAN COILS SEQUENCE OF OPERATIONS

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE VRF SYSTEM CONTROLLER SETPOINT CONTROL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS THE VRF SYSTEM CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

BUILDING AUTOMATION SYSTEM INTERFACE:
THE BUILDING AUTOMATION SYSTEM (BAS) SHALL SEND THE VRF SYSTEM CONTROLLER SETPOINT CONTROL, OCCUPIED / UNOCCUPIED AND HEAT / COOL MODES. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS THE VRF SYSTEM CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

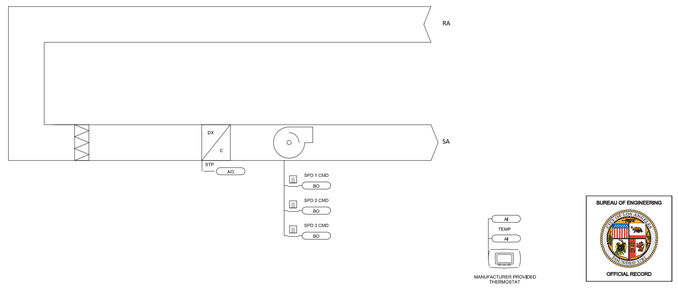
OCCUPIED MODE:
THE FAN COILS SHALL OPERATE BASED ON A TIME OF DAY SCHEDULE AND THE SUPPLY FAN SHALL RUN CONTINUOUSLY. THE DX COOLING AND HEATING SHALL OPERATE TO MAINTAIN THE ACTIVE SPACE TEMPERATURE SETPOINT.

HEATING SETPOINT: 70 DEG. F. (ADJ.)
COOLING SETPOINT: 75 DEG. F. (ADJ.)

LOCAL USER SHALL BE ABLE TO ADJUST SPACE TEMPERATURE +/- 2 DEG. F FROM SETPOINT.

SUPPLY FAN OPERATION:
THE SUPPLY FAN SHALL CYCLE ON DEMAND DURING THE UNOCCUPIED MODE. WHEN THE CONTROLLER TRANSITIONS TO THE OCCUPIED MODE, THE SUPPLY FAN SHALL START AT HIGH SPEED BEFORE TRANSITIONING TO CONTINUOUS OPERATION AT THE SELECTED SPEED.

EMERGENCY OPERATION:
WHEN THE BAS SENSES AN ON STATUS FROM THE BATTERY BACK-UP SYSTEM, THE BAS SHALL START UP EACH SYSTEM (OUTDOOR UNT AND ASSOCIATED FAN COIL UNITS) IN STAGGERED SEQUENCE (1 MINUTE INTERVAL, ADJ.) AND CYCLE ON FOR 45 MINUTES AND OFF FOR 15 MINUTES FOR UP TO 4 HOURS. AFTER 4 HOURS THE EQUIPMENT SHALL BE DISABLED.



A1 VRF FAN COIL CONTROL DIAGRAM

SCALE: NONE

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 CIVIL STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION

INTERIM CITY ENGINEER		DATE: 9/22/2025
ENGINEER:	LIC. NO.- M35354	9/22/2025
DESIGNED BY:	RAYMOND HUANG, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
APPROVED BY:	RAYMOND HUANG, P.E.	9/22/2025
PRINCIPAL ARCHITECT	STEVEN FIERCE, AIA	9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC CONTROL DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M304
SHEET 90 OF SHEETS 115

PLOTTED:9/25/2025 10:35:44 AM

CONTROL SYSTEM NOTES:

A. REFER TO CONTROL DRAWINGS FOR ALL POINTS REQUIRED FOR MONITORING AND CONTROLS AT THE BUILDING AUTOMATION SYSTEM.

B. NEW BAS PANEL TO BE INSTALLED.

C. DIVISION 26 RESPONSIBLE FOR ALL 120 VAC POWER AND CONDUIT TO ALL BAS PANELS. COORDINATE WITH TRANE PROJECT MANAGER.

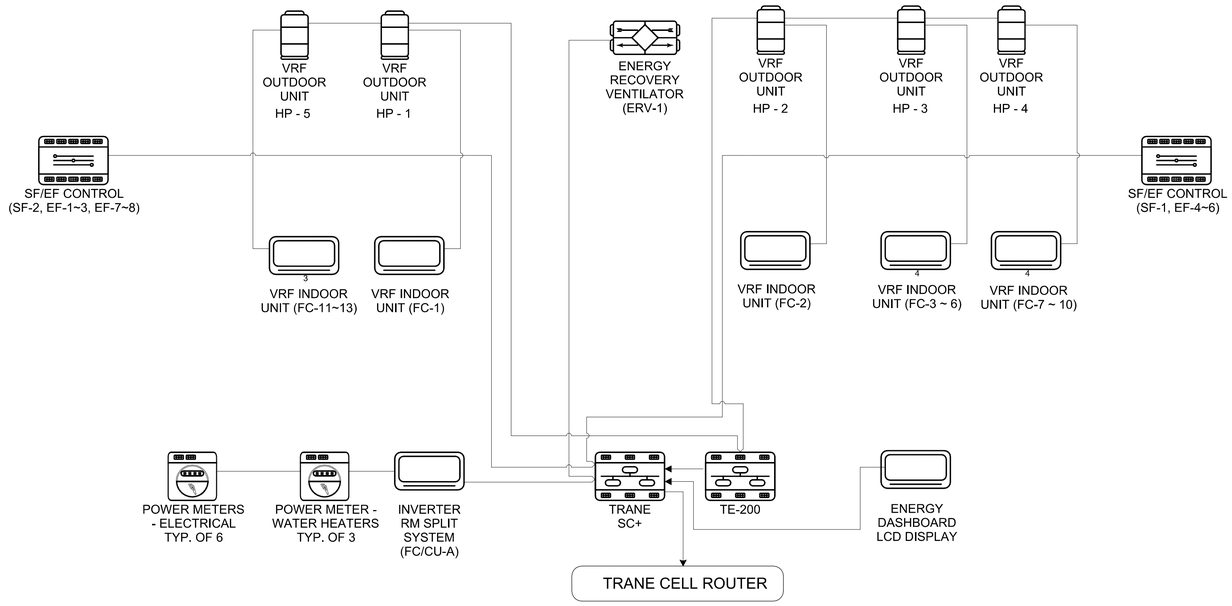
D. ALL REQUIRED CABLE/WIRING TO BE INSTALLED IN CONDUIT WERE NON-ACCESSABLE. ALL REQUIRED CONDUIT SHALL BE EMT.

E. THE CONTROL SYSTEM IS BASED ON THE TRANE SYSTEM. CONTACT ANDREW LEMANCZYK (TRANE) AT (951) 310-5581.

F. FURNISHING OR INSTALLATION OF A CONTROL SYSTEM BY THE MECHANICAL CONTRACTOR IS NOT ACCEPTABLE.

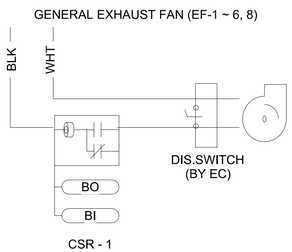
G. PROVIDE CONTROLS TO INTEGRATE THE VRF SYSTEM, OA SUPPLY FANS, AND GENERAL EF'S.

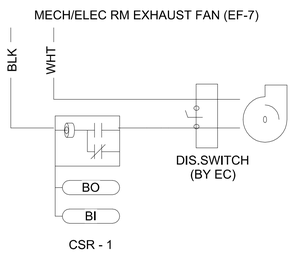
H. PROVIDE ENERGY DASHBOARD FOR PUBLIC VIEWING. DISPLAY SHALL INCLUDE HVAC SYSTEM GRAPHICS, BUILDING ENERGY CONSUMPTION, AND BUILDING ENERGY GENERATION. CONSUMPTION AND GENERATION DATA SHALL BE PRESENTED IN SIMPLE GRAPHICAL FORMAT WITH MONTHLY AND YEARLY TIME SCALES. DISPLAY SCREENS SHALL ROTATE AUTOMATICALLY IN SLIDESHOW MODE, WITH NEW SCREEN EVERY 30 SECONDS, ADJUSTABLE.



E1 COMMUNICATION RISER DIAGRAM

SCALE: NONE







EXHAUST FANS (EF-1 THRU EF-6 & EF-8)

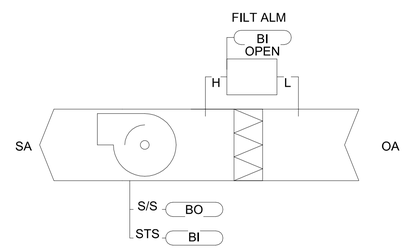
EXHAUST FANS SHALL RUN BASED ON AN OCCUPIED TIMESCHEDULE (ADJ.). EXHAUST FAN STATUS WILL BE MONITORED THROUGH A CURRENT SENSING SWITCH. IT THE CURRENT SWITCH DOES NOT DETECT FAN STATUS AFTER A 3-MIN (ADJ.) START COMMAND HAS BEEN SENT TO THE ASSOCIATED EXHAUST FAN, AN ALARM WILL BE GENERATED TO THE BAS..

EXHAUST FAN (EF-7)

EXHAUST FAN SHALL RUN BASED ON SPACE TEMPERATURE SETPOINT OF 78 DEG. F. (ADJ.). EXHAUST FAN STATUS WILL BE MONITORED THROUGH A CURRENT SENSING SWITCH. IT THE CURRENT SWITCH DOES NOT DETECT FAN STATUS AFTER A 3 MIN (ADJ.) START COMMAND HAS BEEN SENT TO THE ASSOCIATED EXHAUST FAN, AN ALARM WILL BE GENERATED TO THE BAS.

A1 EXHAUST FANS CONTROL DIAGRAM

SCALE: NONE



SUPPLY FANS (SF-1 & SF-2)

SUPPLY FANS SHALL RUN BASED ON AN OCCUPIED TIME SCHEDULE (ADJ.). FAN STATUS WILL BE MONITORED THROUGH A CURRENT SENSING SWITCH. IF THE CURRENT SWITCH DOES NOT DETECT FAN STATUS AFTER A 3 MIN (ADJ.), AN ALARM WILL BE GENERATED TO THE BAS. THE SUPPLY FANS SHALL BE INTERLOCKED THROUGH THE BAS SYSTEM WITH THE VRF SYSTEM.

A9 SUPPLY FAN CONTROL DIAGRAM

SCALE: NONE

WATER HEATER POWER METERING:

THE BAS SHALL MONITOR THE ELECTRICAL USAGE OF THE HOT WATER HEATERS. AN ALARM SHALL BE GENERATED IF THERE IS A SPIKE IN ELECTRICAL POWER AND/OR IF THE TOTAL ELECTRICAL POWER IS ABOVE THE HIGH LIMIT (ADJ.).

A13 WATER HEATER POWER METERING

SCALE: NONE

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 EXP. 6/30/27 CIVIL STATE OF CALIFORNIA

ALFRED MATA, P.E.
INTERIM CITY ENGINEER DATE: 9/22/2025
LIC. NO. - M35354

ENGINEER:	ARCHITECTURAL DIVISION	9/22/2025
DESIGNED BY:	RAYMOND HUANG, P.E.	9/22/2025
DRAWN BY:	EUGENE SAN DIEGO, P.E.	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: HVAC CONTROL DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M305
SHEET 91 OF SHEETS 115

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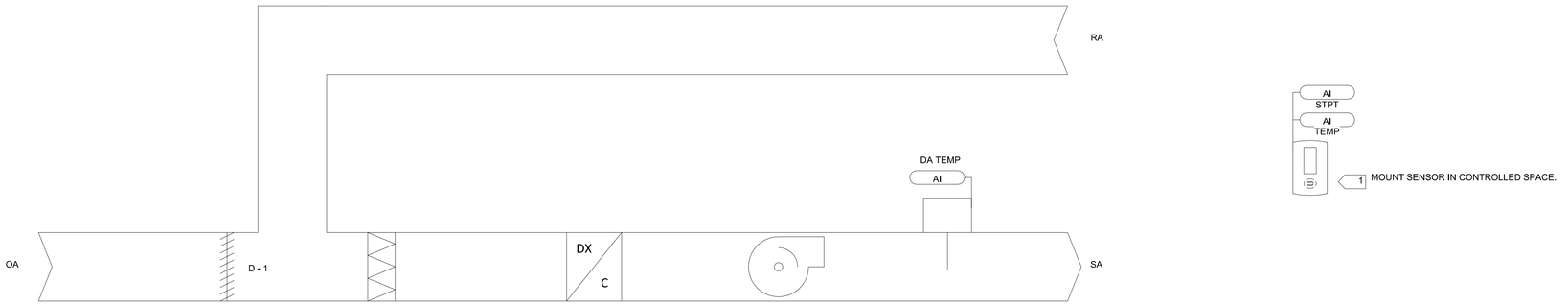
REVISION DATES (DESIGN STAGE ONLY)



ROOFTOP HEAT PUMP - SEQUENCE OF OPERATIONS

OCCUPIED MODE:
DURING OCCUPIED PERIODS, THE SUPPLY FAN(S) SHALL RUN CONTINUOUSLY.

A. HEATING MODE:
WHEN THE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT OF 70.0 DEG. F (ADJ.)
THE DX HEATING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE OCCUPIED HEATING SETPOINT OF 70.0 DEG. F (ADJ.) PLUS THE OCCUPIED DIFFERENTIAL OF 2.0 DEG. F (ADJ.) THE DX HEATING SHALL BE DISABLED.

B. COOLING MODE:
WHEN THE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT OF 75.0 DEG. F (ADJ.)
THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE OCCUPIED COOLING SETPOINT OF 75.0 DEG. F MINUS THE OCCUPIED DIFFERENTIAL OF 2.0 DEG. F (ADJ.) THE DX COOLING SHALL BE DISABLED.

UNOCCUPIED MODE:
ON A CALL FOR HEATING OR COOLING, THE FAN(S) SHALL BE COMMANDED ON CONTINUOUSLY UNTIL THE HEATING OR COOLING NEED IS SATISFIED.

A. HEATING MODE:
WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START AND THE DX HEATING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE DX HEATING SHALL BE DISABLED.

B. COOLING MODE:
WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN(S) SHALL STOP, AND THE DX COOLING SHALL BE DISABLED.

E1 | ROOFTOP HEAT PUMP UNIT CONTROLS
SCALE: NONE

ENERGY RECOVERY VENTILATOR - SEQUENCE OF OPERATIONS

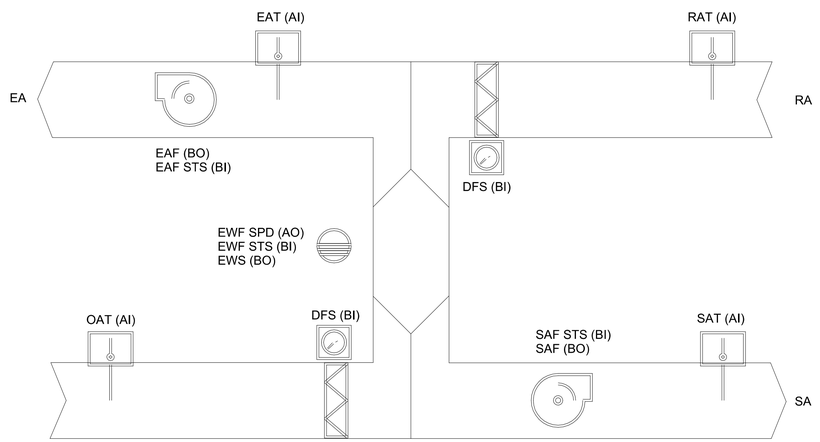
BUILDING AUTOMATION SYSTEM INTERFACE:

THE BUILDING AUTOMATION SYSTEM (BAS) SHALL MONITOR THE STATUS OF VARIABLE REFRIGERANT FLOW (VRF) TERMINAL UNITS AND OUTDOOR UNITS. IF ANY OF THE INDOOR UNITS ARE ON, THE BAS SHALL ENABLE THE ERV UNIT. IF COMMUNICATION BETWEEN THE ERV EQUIPMENT AND THE BAS IS LOST, THE ERV WILL OPERATE BASED ON ITS LAST COMMAND.

OCCUPIED:
DURING OCCUPIED PERIODS, THE ENERGY RECOVERY VENTILATOR SHALL RUN CONTINUOUSLY.

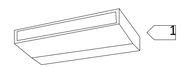
UNOCCUPIED:
DURING UNOCCUPIED PERIODS THE ENERGY RECOVERY VENTILATOR SHALL BE DISABLED.

FILTER STATUS:
THE FAN-RUN TIME (HRS) SHALL BE COMPARED TO THE FILTER MAINTENANCE TIMER SETPOINT. ONCE THE SETPOINT IS REACHED A FILTER TIMER ALARM DIAGNOSTIC SHALL ANNUNCIATE AT THE BAS. WHEN THE DIAGNOSTIC IS CLEARED, THE FILTER-MAINTENANCE TIMER IS RESET TO ZERO, AND THE TIMER BEGINS ACCUMULATING FAN-RUN TIME AGAIN.



A1 | ERV CONTROL DIAGRAM
SCALE: NONE

INVERTER ROOM SPLIT SYSTEM



MITSUBIHSI SPLIT SYSTEM
FC/CU - A



MITSUBISHI SPLIT THERMOSTAT
(FURNISHED, WIRED & INSTALLED BY OTHERS)
INTERLOCK WIRING FOR SPLIT SYSTEM BY DIV 26
MOUNT SENSOR IN CONTROLLED SPACE.

SPLIT HEAT PUMP (CU-A/FC-A)

THE DUCTLESS SPLIT SYSTEMS SHALL OPERATE 24/7 TO MAINTAIN SPACE TEMPERATURE. THE BAS SHALL MONITOR THE SPACE TEMPERATURE AND GENERATE AN ALARM IF THE SPACE TEMPERATURE EXCEEDS THE ALARM SETPOINT OF 80 DEG. (ADJ.) FOR MORE THAN 10 MINS (ADJ.).

A13 | SPLIT HEAT PUMP CONTROL DETAIL
SCALE: NONE

BUREAU OF ENGINEERING
OFFICIAL RECORD

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 EXP. 6/30/27 STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
BUREAU OF ENGINEERING

ALFRED MATA, P.E.
INTERIM CITY ENGINEER

DATE: 9/22/2025
ARCHITECTURAL DIVISION
LIC. NO. - M35354
ENGINEER: RAYMOND HUANG, P.E. 9/22/2025
DESIGNED BY: EUGENE SAN DIEGO, P.E. 9/22/2025
DRAWN BY: EUGENE SAN DIEGO, P.E. 9/22/2025
CHECKED BY: RAYMOND HUANG, P.E. 9/22/2025
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT 9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: HVAC CONTROL DETAILS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. M306
SHEET 92 OF SHEETS 115

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REVISION DATES (DESIGN STAGE ONLY)

PLUMBING LEGEND

SYMBOL	ABBREV.	DESCRIPTION
	W/S	WASTE/SEWER BELOW FLOOR/GRADE
	W/S	WASTE/SEWER ABOVE FLOOR/GRADE
	FCO/COTG	FLOOR CLEANOUT OR CLEANOUT THRU GRADE
OD	OD	OVERFLOW DRAIN
SD	SD	STORM DRAIN
	V	SANITARY VENT ABOVE GRADE
	V	SANITARY VENT BELOW GRADE
	CW	COLD WATER PIPE
	CO	CLEANOUT
	WCO	WALL CLEANOUT
	GV	GATE VALVE
	WHA	WATER HAMMER ARRESTOR
	FD	FLOOR DRAIN
	RI & C	ROUGH-IN & CONNECT
	AFF	ABOVE FINISHED FLOOR
	HC	HANDICAPPED
	WC	WATER CLOSET
	L	LAVATORY
	ABV	ABOVE
	CLG	CEILING
	CONN	CONNECTION
	CONT	CONTINUATION
	CYB	CONCRETE YARD BOX
	DN	DOWN
	DS	DOWNSPOUT
(E)	EXIST	EXISTING
	FU	FIXTURE UNIT
	HDR	HEADER
	IE	INVERT ELEVATION
	NTS	NOT TO SCALE
	POC	POINT OF CONNECTION
	DFU	DRAINAGE FIXTURE UNITS
	SOV	SHUT-OFF VALVE
	VTR	VENT THRU ROOF
	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
	TPV	TRAP PRIMER VALVE
	PRV	PRESSURE REDUCING VALVE
	BEL. GR.	BELOW GRADE
(N)	N	NEW
	TDL	TOTAL DEVELOPMENT LENGTH
	OD	OVERFLOW DRAIN
	RD	ROOF DRAIN
	NIC	NOT IN CONTRACT
	U/G	UNDERGROUND
	U	URINAL
	TP	TRAP PRIMER
	COTG	CLEAN OUT TO GRADE
	HW	HOT WATER
	HB	HOSE BIB

GENERAL NOTES - PLUMBING

1. VERIFY ALL CONDITIONS AND DIMENSIONS AT JOBSITE PRIOR TO START OF NEW WORK.
2. LOCATIONS OF PLUMBING APPARATUS AND EQUIPMENT INDICATED ON THE DRAWINGS ARE APPROXIMATE ONLY AND SHALL BE CHANGED TO MEET THE ARCHITECTURAL AND STRUCTURAL CONDITIONS AS REQUIRED.
3. DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC TO THE EXTENT THAT ALL OFFSETS, BENDS, SPECIAL FITTINGS AND EXACT LOCATIONS ARE NOT INDICATED. EXAMINE DRAWINGS AND PREMISES IN ORDER TO DETERMINE BUILDING OBSTRUCTIONS, EXACT LOCATIONS, PIPE ROUTES, AND THE BEST METHODS FOR INSTALLATION OF APPARATUS AND EQUIPMENT.
4. DIMENSIONS ARE APPROXIMATE. BEFORE PROCEEDING WITH ANY WORK, CHECK AND VERIFY DIMENSIONS AND SIZES, AND ASSUME FULL RESPONSIBILITY FOR FITTING IN OF EQUIPMENT AND MATERIALS TO OTHER PARTS OF EQUIPMENT, OTHER TRADES AND TO THE STRUCTURE. WHERE APPARATUS AND EQUIPMENT HAVE BEEN INDICATED ON THE DRAWINGS, DIMENSIONS HAVE BEEN TAKEN FROM TYPICAL EQUIPMENT OF THE CLASS INDICATED. CHECK DRAWINGS TO SEE THAT EQUIPMENT COMTEMPLATED FOR USE WILL FIT INTO SPACE PROVIDED, WITH AMPLE SPACE FOR MAINTENANCE REQUIREMENTS.
5. ALL PLUMBING FIXTURES, PIPING MATERIALS, AND WORK SHALL BE IN ACCORDANCE WITH THE CURRENT L.A. CITY AND CALIFORNIA PLUMBING CODES.
6. ALL PLUMBING PIPING, FIXTURES, VALVES, AND EQUIPMENT SHALL BE NEW.
7. PLUMBING FIXTURES AND EQUIPMENT SHALL HAVE ISOLATING VALVES ON WATER SUPPLY LINES. ISOLATING VALVES SHALL BE BALL VALVES WITH BRONZE CONSTRUCTION.
8. ALL FLUSH VALVES, WATER HAMMER ARRESTORS, SHUT-OFF VALVES, AND OTHER PLUMBING EQUIPMENT AND ACCESSORIES SHALL BE ACCESSIBLE.
9. CLEANOUTS:
   A. MATERIAL: ABOVE GROUND: CAST IRON, LOS ANGELES APPROVED TYPE.
   A.1 OUTSIDE BUILDING: EXTRA HEAVY CAST IRON BODY AND NONCORROSIVE.
   A.2 LOS ANGELES CITY APPROVED PLASTIC FOR TAPERED PLUGS, BRASS FOR STRAIGHT THREAD PLUGS WITH LEAD SEAL.
   B. ACCESS COVER AND FRAME: REQUIRED: WHERE CLEANOUTS OCCUR IN FINISHED INTERIOR WALLS OR FLOORS.
   C. IN PAVED AREAS: SMITH FIG. 4020-U VANDAL PROOF ROUND TOP, SPIGOT CONNECTION.
   D. IN UNPAVED AREAS: SMITH FIG. 4220-U WITH EXTENSIONS TO FINISH GRADE, WITH VANDAL PROOF TOP.
   E. WALL CLEANOUT: SMITH FIG. 4532S-U VANDAL PROOF W/ROUND ACCESS COVER.
10. WASTE, SOIL, AND VENT PIPING MATERIALS SHALL BE CAST IRON, GALVANIZED STEEL, COPPER, OR BRASS.
11. HORIZONTAL DRAINAGE PIPING 4 INCHES OR LESS SHALL HAVE A MINIMUM 1/4 INCH PER FOOT. PIPING 4 INCHES THROUGH 6 INCHES SHALL BE PERMITTED TO HAVE A SLOPE OF NOT LESS THAN 1/8 INCH PER FOOT.
12. COLD WATER:
    A. BELOW GROUND: 2" AND SMALLER, TYPE K HARD COPPER, CAST- COPPER-ALLOY SOLDER-JOINT PRESSURE FITTINGS, AND SOLDERED JOINTS.
    B. ABOVE GROUND: TYPE L HARD COPPER, WROUGHT-COPPER OR CAST-COPPER-ALLOY PRESSURE FITTINGS, COPPER UNIONS, BRONZE FLANGES, AND SOLDERED JOINTS.
13. VENT PIPE OR STACK SHALL EXTEND THROUGH ITS FLASHING AND SHALL TERMINATE VERTICALLY NOT LESS THAN 6" ABOVE ROOF NOR LESS THAN 1 FT. FROM ANY VERTICAL SURFACE. EACH VENT SHALL TERMINATE NOT LESS THAN 10 FT. FROM, OR AT LEAST 3 FT. ABOVE ANY OPENABLE WINDOW, DOOR, OPENING, AIR INTAKE, OR VENT SHAFT, NOR LESS THAN 3 FT. IN EVERY DIRECTION FROM ANY LOT LINE.
14. LAVATORY FAUCETS AND SINK FAUCETS (NOT INCLUDING SERVICE SINK) SHALL MEET THE FLOW REQUIREMENTS OUTLINED IN THE APPLIANCE EFFICIENCY STANDARDS (TITLE 24).
15. WATER CLOSETS SHALL BE CITY OF LOS ANGELES MECHANICAL TEST LAB OR IAPMO APPROVED AND USE 1.28 GALLONS PER FLUSH.
16. HORIZONTAL STORM DRAIN PIPING AT CEILING SHALL HAVE 1/4 INCH PER FOOT SLOPE.
17. PROVIDE ACCESS PANELS FOR TRAP PRIMERS AND WATER HAMMER ARRESTORS:
    A. FOR VALVES OR EQUIPMENT LOCATED BEHIND CERAMIC TILE WALLS: PROVIDE 8"X8" OPENING, STAINLESS STEEL, BEVELED EDGE FRAME, STAINLESS STEEL COVER SECURED WITH FLUSH-HEAD SCREWS, POLISHED FINISH, VANDAL-PROOF SCREWS WHERE INDICATED OR REQUIRED.
    B. FOR VALVES, CLEANOUTS OR EQUIPMENT LOCATED BEHIND FINISH PLASTER WALLS OR CEILINGS: PROVIDE 8"X8" MINIMUM OPENING, 16 GAGE STEEL FRAME, 14 GAGE STEEL DOOR WITH CONCEALED HINGES ARRANGED TO OPEN 180 DEGREES OR TO BE REMOVABLE AND WITH ALLEN HEAD LOCKING DEVICE, WITH BORDERIZED AND PRIME COATED FINISH.
18. N/A
19. WATER HEATER SHALL BE CERTIFIED AND LISTED BY THE CALIFORNIA ENERGY COMMISSION.
20. THE CONTRACTOR SHALL PAY FOR INSTALLATION COSTS AND CONNECTION FEES FOR ALL UTILITIES.
21. ANY PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE PROPERLY PATCHED / REPAIRED.
22. INSTALL GARBAGE DISPOSER: IN-SINK-ERATOR, MODEL NO. 444 3/4 H.P., 1725 R.P.M., 120/1/60 MOTOR WITH INTEGRAL THERMAL OVERLOAD PROTECTION AND MANUAL RESET, U.L. APPROVED.
23. NEW PLUMBING FIXTURES AND FITTINGS SHALL NOT EXCEED THE MAXIMUM ALLOWABLE FLOW RATE SPECIFIED IN TABLE 10.303.2.3
24. PROCEDURE FOR THE TESTING AND ADJUSTMENT OF THE WATER HEATER: TURN THE HOT WATER FIXTURE TO ACTIVATE THE FLOW SWITCH. THE FLOW SWITCH ACTIVATES AT 0.4 GALLONS PER MINUTE (GPM) AND DEACTIVATES AT 0.35 GALLONS PER MINUTE (GPM). IF YOU INCREASE THE FLOW RATE OF THE WATER ABOVE 0.5 GPM THE WATER TEMPERATURE WILL BECOME COOLER. COLD WATER CAN ALWAYS BE MIXED JUST AS WITH A CONVENTIONAL SYSTEM IF USING A TWO HANDLE FAUCET. ONCE YOU DECREASE THE FLOW RATE TO 0.35 GPM THE UNIT WILL DEACTIVATE. IT IS NOT ADVISABLE TO OPERATE THE HEATERS AT 0.35 GPM. PERIODICALLY INSPECT THE SUPPLY LINE, CONNECTIONS AND HEATER FOR ANY MOISTURE, CORROSION OR OTHER POTENTIAL PREVENTABLE PROBLEMS.

PLUMBING FIXTURE SCHEDULE

UNIT NO.	DESCRIPTION	ROUGH-IN CONNECTION SIZES						BRANCH SIZES		REMARKS
		TRAP	S/W	V	DFU	CW	HW	CW	HW	
WC-1H	WATER CLOSET (WALL-MOUNTED)	INT.	4"	2"	5	1"	--	1-1/2"	--	WATER CLOSET. AMERICAN STANDARD AFWALL 2257.101; WALL MOUNTED HIGH EFFICIENCY WATER CLOSET; FLUSHVALVE: AMERICAN STANDARD 6067.721, TOP SPUD, SELECTRONIC HARD WIRED, 1.1 GPF; TOILET COVER, AMERICAN STANDARD 5901.100 HEAVY DUTY TOILET COVER; CARRIER, JAY R. SMITH MODEL NO. 0115. ADA COMPLIANT. SEE ARCHITECTURAL PLAN FOR INSTALLATION DETAILS.
WC-1	WATER CLOSET (WALL-MOUNTED)	INT.	4"	2"	5	1"	--	1-1/2"	--	WATER CLOSET. AMERICAN STANDARD AFWALL 2257.101; WALL MOUNTED HIGH EFFICIENCY WATER CLOSET; FLUSHVALVE: AMERICAN STANDARD 6067.721, TOP SPUD, SELECTRONIC HARD WIRED, 1.1 GPF; TOILET COVER, AMERICAN STANDARD 5901.100 HEAVY DUTY TOILET COVER; CARRIER, JAY R. SMITH MODEL NO. 0115. SEE ARCHITECTURAL PLAN FOR INSTALLATION DETAILS.
U-1 / U-1H	URINAL (WALL MOUNTED)	INT.	2"	1-1/2"	4	1/2"	--	3/4"	--	URINAL. AMERICAN STANDARD WASHBROOK 6501.610; EXPOSED TOP SPUD HIGH EFFICIENCY WALL HUNG URINAL; FLUSHVALVE: AMERICAN STANDARD 6063.101, SELECTRONIC HARD WIRE AC POWER FLUSH VALVE, 0.125 GPF. CARRIER: JAY R SMITH MODEL NO. 0637, ADA COMPLIANT. SEE ARCHITECTURAL PLAN FOR INSTALLATION DETAILS.
L-1H	LAVATORY	1-1/2"	2"	1-1/2"	1	1/2"	1/2"	3/4"	3/4"	LAVATORY. AMERICAN STANDARD LUCERNE 0355.012 WALL HUNG 4" CENTERSET LAVATORY; SINGLE CHROME PLATED P-TRAP, FAUCET; CHICAGO FAUCETS 802-V765E39ABCP DECK MOUNTED MANUAL METERING FAUCET, 0.35GPM, BELOW DECK THERMOSTATIC MIXING VALVE; 605XTMV1070. SEE ARCHITECTURAL PLAN FOR FINISH AND INSTALLATION DETAILS. ADA COMPLIANT.
KS-1	KITCHEN SINK (UNDERCOUNTER)	2"	2"	1-1/2"	2	1/2"	1/2"	3/4"	--	KITCHEN SINK. ELKAY GOURMET UNDERMOUNT SINK MODEL ELUHAD311855PD. 30-3/4" X 18-1/2" X 6-7/8" A.D.A. COMPLIANT. FAUCET: CHICAGO FAUCETS 1100-E35VP317ABCP, DECK MOUNTED MANUAL FAUCET, 8" CENTERS, 1.5 GPM, ADA COMPLIANT. PROVIDE GARBAGE DISPOSAL, (SEE NOTE 22).
DF-1H	DRINKING FOUNTAIN	----	2"	2"	1.5	3/4"	----	3/4"	----	DRINKING FOUNTAIN. ELKAY MODEL LVRCGRNTL8WSK WITH LZWSR. BI-LEVEL HIGH EFFICIENCY VANDAL RESISTANT COOLER AND EZH20 BOTTLE FILLING STATION. ADA COMPLIANT.
WHA-1	WATER HAMMER ARRESTOR	----	----	----	----	----	3/4"	----	----	WATER HAMMER ARRESTOR. PRECISION PLUMBING PRODUCTS MODEL SC-750; WATER HAMMER ARRESTORS; PIPE SIZE 3/4"
TP-1	TRAP PRIMER VALVE	----	----	----	----	----	1/2"	----	----	TRAP PRIMER. PRECISION PLUMBING PRODUCTS MODEL P2-500; AUTOMATIC TRAP PRIMER VALVE WITH BRASS BODY CONSTRUCTION.
RPBP- 1	REDUCED PRESSURE PRINCIPLE ASSEMBLY	----	----	----	----	2"	----	2"	----	REDUCED PRESSURE PRINCIPLE ASSEMBLY. ZURN MODEL 375XL LEAD FREE REDUCED PRESSURE PRINCIPLE ASSEMBLY SIZE 2". CAST BRONZE VALVE BODY, BRONZE ACCESS COVERS, STAINLESS STEEL 300 FASTENERS AND SPRINGS. PROVIDE WYE STRAINER. PROVIDE BACKFLOW ENCLOSURE, STRONGBOX.
FS-1	FLOOR SINK	----	3"	----	3	----	----	----	----	FLOOR SINK. J.R. SMITH FIG. 3100Y-03 8-1/2" TOP- MEDIUM RECEPTOR WITH SANI-CEPTOR ACID RESISTANT COATED FLOOR SINK; PROVIDE FIG.3591 FUNNEL ASSEMBLY WITH ARC OPTION. (ACID RESISTANT COATED CAST IRON)
FD-1	FLOOR DRAIN	----	2"	----	2	----	----	----	----	FLOOR DRAIN. J.R. SMITH FIG. 2030T-02-P050-U; PROVIDE TRAP PRIMER CONNECTION AND VANDAL PROOF SCREWS
ET-1	EXPANSION TANK	----	----	----	----	----	----	----	----	EXPANSION TANK. THERM-X-TROL MODEL NO. ST-5, IN-LINE MODEL, 2 GALLON TANK VOLUME, 3/4" CONNECTION, 8" DIA. X 12-1/2" HIGH, SHIP WT = 5 LBS

GENERAL NOTES - PLUMBING

25. PLUMBING FIXTURES AND EQUIPMENT:
FOR THE RESTROOMS AND SHOWER: THE ACCESSIBLE PLUMBING FIXTURES TO BE PROVIDED AND INSTALLED SHALL BE ADA COMPLIANT. INSTALLATION, TESTING AND OPERATION OF WATER HEATER SHALL COMPLY WITH AND THE MEET THE MANUFACTURERS SPECIFICATIONS AND REQUIREMENTS.THE WATER HEATER SYSTEM WILL APPLY THE LATEST ENERGY CODE REGULATIONS FOR ENERGY COMPLIANCE (TITLE 24) AS WELL AS THE LATEST CALIFORNIA PLUMBING CODE REGULATIONS. THIS SYSTEM WILL CONTRIBUTE SIGNIFICANTLY TO THE ENERGY EFFICIENT OPERATING FOR THE BUILDING.
26. THE PLUMBING SYSTEM AND COMPONENTS WILL BE TESTED AND ADJUSTED ACCORDANCE WITH ONE OF THE FOLLOWING PROCEDURES:
1. TURN THE FIXTURE ON TO ITS NORMAL POSITION.
2. PLACE A CONTAINER UNDER THE FIXTURE AND COLLECT THE WATER FOR 10 SECONDS
3. MEASURE THE QUANTITY OF WATER IN THE CONTAINER AND CONVERT THE MEASUREMENT TO GALLONS
4. MULTIPLY THE MEASURED QUANTITY OF WATER BY 6 TO CALCULATE THE FLOW RATE IN GALLONS PER MINUTE (0.25 GAL X 6 = 1.5 GPM).
NOTE: NONMETALLIC SHOWER STALLS SHALL BE TESTED FOR LEAKS BY FILLING THE PAN WITH WATER TO THE TOP OF THE DAM FOR NOT LESS THAN 15 MINUTES.
27. ALL WATER HEATERS SHALL BE EQUIPPED WITH APPROVED AND LISTED FULLY AUTOMATIC VALVES OR A SINGLE VALVE DESIGN TO PROVIDE TEMPERATURE AND PRESSURE RELIEF. WATER TEMPERATURE SHALL BE SET NO MORE THAN AT 120 DEGREES FAHRENHEIT TO HELP PREVENT SCALDING AND SAVE ENERGY. THE TEMPERATURE SHALL BE MEASURED USING THE FOLLOWING PROCEDURE TO ENSURE PROPER MAXIMUM TEMPERATURE:
1. ALLOW THE WATER HEATER TO SET AN HOUR UNUSED BEFORE CHECKING THE TEMPERATURE.
2. USING A CANDY OR COOKING THERMOMETER TO CHECK YOUR WATER HEATER TEMPERATURE BY GOING TO THE FAUCET NEAREST THE WATER HEATER.
3. RUN THE HOT WATER FOR ONE FULL MINUTE (THIS WILL HEAT THE WATER PIPES AND GIVE YOU A MORE ACCURATE READING).
4. FILL A COFFEE CUP FROM THE FAUCET AND READ THE THERMOMETER.
FULL SIZE DRAIN LINES SHALL BE PROVIDED AND SHALL DISCHARGE BY GRAVITY WITHOUT BEING TRAPPED AND SHALL NOT HAVE THE OUTLET THREADED. THE FIXTURE TRAPS SHALL BE FILLED WITH WATER AND THE REMAINING OPENING SHALL BE SECURELY PLUGGED. THE ENTIRE SYSTEM SHALL BE SUBJECTED TO A 2 INCH (MANOMETER) WATER COLUMN AIR PRESSURE TEST. IF THE SYSTEM LOSES PRESSURE, LEAKS MAY BE LOCATED WITH SMOKED PUMPED INTO THE SYSTEM OR WITH SOAP SUDS SPREAD ON THE EXTERIOR OF THE PIPING.

28 GREYWATER READY: ALTERNATE WASTE PIPING SHALL BE INSTALLED TO PERMIT THE DISCHARE FROM THE CLOTHES WASHER, BATHTUB, SHOWERS AND BATHROOM/RESTROOM WASH BASINS TO BE USED FOR A FUTURE GRAYWATER IRRIGATION SYSTEM. THE FLOW SHALL BE PIPED SEPARATELY. THE POINT OF CONNECTION BETWEEN THE GRAYWATER PIPING AND OTHER WASTE PIPING SHALL BE ACCESSIBLE AND PROVIDED WITH SIGNAGE THAT IS SATISFACTORY TO THE DEPARTMENT.
EXCEPTIONS:
1.BUILDINGS WITH A GRAYWATER SYSTEM OR WATER REUSE SYSTEM.
2.SITES WITH LANDSCAPE AREAS NOT EXCEEDING 500 SQUARE FEET.
3.PROJECTS WHERE GRAYWATER SYSTEMS ARE NOT PERMITTED DUE TO GEOLOGICAL CONDITIONS.
4.ADDITIONS AND ALTERATIONS THAT USE THE EXISTING BUILDING DRAIN.

PLUMBING CALCULATIONS:

1. ADDRESS : 1820 N. LAS PALMAS AVE., LOS ANGELES, CA 90028
2. STREET PRESSURE: MAX. **80** MIN. **77** P.S.I.
3. SIZE OF METER: 2 INCH WITH MAXIMUM 160 G.P.M. BUILDING CAPACITY.
4. PRESSURE SET AT P.R.V. ___P.S.I.
5. PRESSURE LOSS THROUGH METER @ 65 G.P.M.: **1.7** P.S.I.
6. PRESSURE LOSS THROUGH PIPE RUN FROM METR TO P.R.V.
7. PRESSURE LOSS THROUGH R.P.B.F.P., (ZURN 375XL: 2"): **14** P.S.I.
8. FALL OFF PRESSURE THROUGH P.R.V., SIZE:__IN ___P.S.I.
9. ELEVATION FROM WATER METER OR P.R.V. TO HIGHEST FIXTURE = 10 FT.
10. LOSS DUE TO ELEVATION: 25 FT. X 0.434 = **4.34** P.S.I.
11. RESIDUAL PRESSURE REQUIRED FOR FLUSHOMETER VALVE: **25** P.S.I.
12. PRESSURE AVAILABLE FOR FRICTION LOSS, (P.A.F.L.): **31.96** P.S.I.
13. LENGTH FROM WATER METER OR P.R.V. TO FURTHEST FIXTURE = **175** FT.
14. DEVELOPED LENGTH, DL: **175** FT. X 125% = **220** FT.
15. AVERAGE PERMISSIBLE FRICTION LOSS PER 100 FT. OF PIPE:
A.P.F.L. = P.A.F.L. **31.96** X 100 / D.L. **220** = **14.6** P.S.I.
16. TOTAL BLDG. C.W. FIXTURE UNITS: 80 F.U. = 65 G.P.M.
17. MISC. C.W. DEMAND (FUTURE DEMAND): _____ G.P.M.
18. TOTAL BLDG. C.W. DEMAND: 65 G.P.M.
19. SIZE OF SITE C.W. SERVICE: 2 INCH.

BASE CALCULATION ON **8.8** PSI PER 100 FT. AND 8FT/SEC VELOCITY FOR COLD WATER TYPE "L" COPPER

PIPE SIZE	FIXTURE UNITS	
	F.T.	F.V.
1/2"	3	--
3/4"	10	--
1"	24	--
1-1/4"'	54	13
1-1/2"	103	35
2"	254	132

BASE CALCULATION ON **8.8** PSI PER 100 FT. AND 5FT/SEC VELOCITY FOR HOT WATER TYPE "L" COPPER

PIPE SIZE	FIXTURE UNITS	
	F.T.	F.V.
1/2"	3	--
3/4"	8	--
1"	16	--
1-1/4"	28	--
1-1/2"	46	--
2"	119	--

DWP CONTACT: @ (213) 367-1225 (WESTERN)
STATIC WATER PRESSURE: HIGH : 80 PSI, LOW: 77 PSI @ 412 FT.
DATE CALLED: 2-7-2023

FIXTURE UNIT COUNTS

TYPE OF FIXTURES	NO.	CW F.U. / FIX.	WASTE F.U. / FIX.	TOTAL CW F.U.	TOTAL WASTE F.U.
WATER CLOSET	5	5	4	25	20
URINAL	1	4	2	4	2
LAVATORY	5	1	1	5	5
KITCHEN SINK	1	2	2	2	2
DRINKING FOUNTAIN	2	0.5	0.5	1	1
FLOOR DRAIN	3	--	2	--	6
NEW FIXTURE TOTAL:				37	36
EXISTING FIXTURE TOTAL:				38	30
BUILDING TOTAL:				75	66

ELECTRIC WATER HEATER AND EXPANSION TANK SCHEDULE

UNIT NO.	MAKE	MODEL	LOCATION	SERVICE	STORAGE CAPACITY (GAL.)	ELECTRICAL		WEIGHT	REMARKS
						VOLT-PH-HZ	WATTS		
EWH-1	BRADFORD WHITE	LE50S3-3	JANITOR'S ROOM	MEN'S RESTROOM WOMEN'S RESTROOM CHILD CARE	50	240-1-60	4.5 KW	144 LBS	ELECTRIC WATER HEATER, 24" DIA X 49-7/16" H PROVIDE AMTROL THERM-X-TROL MODEL ST-5 THERMO EXPANSION TANK; 2 GAL, 8" DIA X 12-1/2" H PROVIDE SEPARATE DISCONNECT SWITCH.

INSTANTANEOUS WATER HEATER SCHEDULE

UNIT NO.	MAKE	MODEL	LOCATION	SERVICE	STORAGE CAPACITY (GAL.)	ELECTRICAL		WEIGHT	REMARKS
						VOLT-PH-HZ	WATTS		
IWH-1	CHRONOMITE	CM-12L / 120	RESTROOM	RESTROOM RESTROOM RESTROOM	--	120-1-60	1.44 KW	5 LBS	ELECTRIC INSTANTANEOUS WATER HEATER, 10-1/8 W X 6-1/4" H X 2-3/4" D, FIELD AJDJUSTABLE TEMPERATURE (ADJ), PRESSURE AND TEMPERATURE RELIEF VALVE ASSEMBLY (TP), DISCONNECT SWITCH (2095-1)
IWH-2	CHRONOMITE	CM-30L / 240	KITCHEN SINK	KITCHEN SINK	--	240-1-60	7.2 KW	5 LBS	ELECTRIC INSTANTANEOUS WATER HEATER, 10-1/8 W X 6-1/4" H X 2-3/4" D, FIELD AJDJUSTABLE TEMPERATURE (ADJ), PRESSURE AND TEMPERATURE RELIEF VALVE ASSEMBLY (TP), DISCONNECT SWITCH (2095-1)

PIPE SCHEDULE / PIPE MATERIAL

TYPE OF SERVICE		PEX PIPE	TYPE "L" COPPER	TYPE "K" COPPER	SCH. 40 PVC WATER	CAST IRON "NO HUB"	SCH. 40 PVC DWV	CHED. 40 ABS DWV
WATER	ABOVE GROUND		●					
	BELOW GROUND			●				
SANITARY DRAINAGE	ABOVE GROUND					●		
	BELOW GROUND					●		
SANITARY VENT	ABOVE GROUND					●		
	BELOW GROUND					●		

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 04/12/10
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER — JUAN CARLOS RUANG — No. M35354 — Exp. 6-30-27 — CIVIL — STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
ALFRED MATA, PE
BOARD OF PUBLIC WORKS MEMBERS

INTERIM CITY ENGINEER		DATE:	9/22/2025
ARCHITECTURAL DIVISION	LIC. NO.: M35354		9/22/2025
ENGINEER: RAYMOND HUANG, P.E.			9/22/2025
DESIGNED BY: BRANDON MCKNIGHT			9/22/2025
DRAWN BY: BRANDON MCKNIGHT			9/22/2025
CHECKED BY: RAYMOND HUANG, P.E.			9/22/2025
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT			9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: GENERAL NOTES

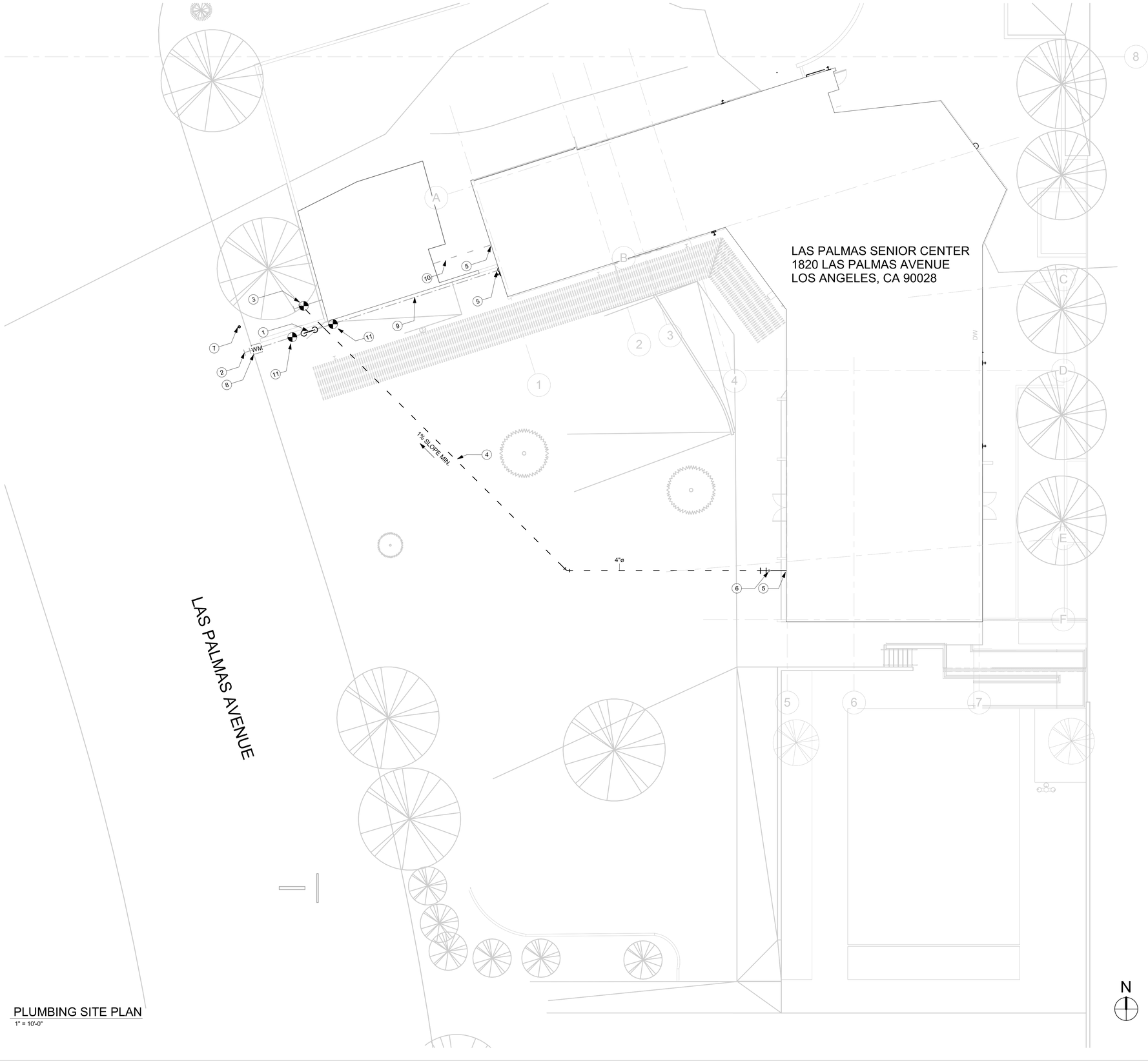
PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P001
SHEET 93 OF SHEETS 115

PLOTTED:9/24/2025 9:25:41 AM



PLUMBING SITE PLAN
1" = 10'-0"

GENERAL NOTES

A. PLUMBING CONDITIONS SHOWN ON PLAN ARE DIAGRAMMATIC. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND COORDINATE WITH ALL DISCIPLINES TO AVOID CONFLICT.

B. CONTRACTOR SHALL BE SOLEY RESPONSIBLE FOR, AND HAVE CONTROL OVER THE FOLLOWING: CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, PROCEDURES AND COORDINATION OF ALL PORTIONS OF WORK.

C. FOR ACCESS DOORS AND PANELS, SEE PLUMBING GENERAL NOTES AND MECHANICAL GENERAL NOTES.

D. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS AND DETERMINE THE EXTENT OF DEMOLITION. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

E. ALL WORK TO BE DEMOLISHED SHALL NOT BE RE-USED.

PLUMBING KEYNOTES

KEY	KEYNOTE
1	NEW 2" RP DEVICE.
2	EXISTING 2" COLD WATER LINE TO 8" MAIN.
3	POINT OF CONNECTION TO EXISTING SEWER LINE. VERIFY LOCATION AND ROUTING IN FIELD.
4	NEW 4" DIA. SEWER LINE. VERIFY LOCATION AND ROUTING IN FIELD. SEWER LINE SHALL AVOID TREES.
5	SEE PLUMBING FLOOR PLAN FOR CONTINUATION.
6	NEW CLEANOUT TO GRADE (COTG).
7	EXISTING CLEANOUT TO GRADE (COTG). VERIFY IN FIELD.
8	EXISTING 2" WATER METER.
9	EXISTING 2" COLD WATER LINE TO REMAIN.
10	EXISTING 4" SEWER LINE TO REMAIN. VERIFY IN FIELD.
11	POINT OF CONNECTION TO EXISTING DOMESTIC COLD WATER LINE. VERIFY LOCATION AND ROUTING IN FIELD.

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

ENGINEERING
CITY OF LOS ANGELES

BUREAU OF ENGINEERING
OFFICIAL RECORD

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE
INTERIM CITY ENGINEER

ENGINEER:	RAYMOND HUANG, P.E.	LIC. NO.: M35354
DESIGNED BY:	BRANDON MCKNIGHT	DATE: 9/22/2025
DRAWN BY:	BRANDON MCKNIGHT	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

ARCHITECTURAL DIVISION

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING SITE PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE: 9/22/2025

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
P101

SHEET 94 OF SHEETS 115

PLOTTED:9/24/2025 9:25:44 AM

REVISION DATES (DESIGN STAGE ONLY)

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SHEET ISSUE DATE: 05/08/15
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

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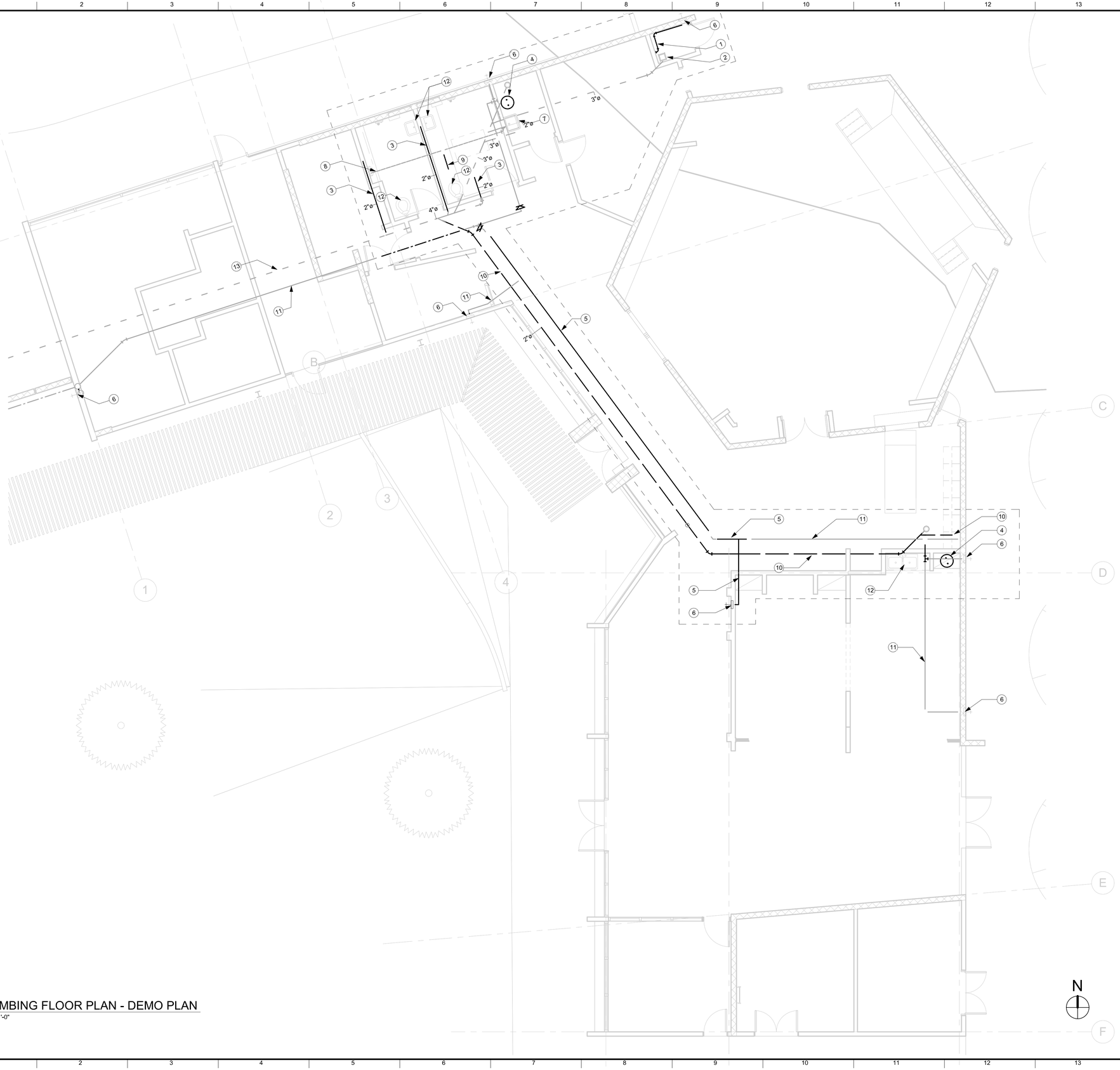
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 05/06/15
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt



PLUMBING FLOOR PLAN - DEMO PLAN
3/16" = 1'-0"

GENERAL NOTES

A. PLUMBING CONDITIONS SHOWN ON PLAN ARE DIAGRAMMATIC. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND COORDINATE WITH ALL DISCIPLINES TO AVOID CONFLICT.

B. CONTRACTOR SHALL BE SOLEY RESPONSIBLE FOR, AND HAVE CONTROL OVER THE FOLLOWING: CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, PROCEDURES AND COORDINATION OF ALL PORTIONS OF WORK.

C. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS AND DETERMINE THE EXTENT OF DEMOLITION. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

D. CONTRACTOR SHALL REFER TO ARCHITECTURAL DRAWINGS FOR DEMOLITION OF PLUMBING FIXTURES OTHERWISE STATED.

E. CONTRACTOR SHALL PERFORM TRACING AND CAMERA THE SEWER LINE TO DETERMINE THE SEWER LINE LOCATION AND CONDITION BEFORE ANY WORK IS PERFORMED.

F. ALL WORK TO BE DEMOLISHED SHALL NOT BE RE-USED.

PLUMBING KEYNOTES

KEY	KEYNOTE
1	EXISTING COLD WATER LINE AND CONDENSATE DRAIN LINE TO BE REMOVED. EXISTING LINE BEFORE DEMOLITION POINT TO BE CAPPED. VERIFY LOCATION AND ROUTING IN FIELD.
2	EXISTING FLOOR SINK TO BE REMOVED. EXISTING SEWER PIPING TO BE CAPPED. VERIFY LOCATION AND ROUTING IN FIELD.
3	EXISTING SEWER LINE TO BE REMOVED.
4	EXISTING GAS WATER HEATER TO BE REMOVED. GAS LINE TO BE REMOVED AND CAPPED. WATER HEATER FLUE VENT TO BE REMOVED.
5	EXISTING COLD WATER LINE TO BE REMOVED AND REPLACED. SEE PLUMBING FLOOR PLAN FOR ROUTING AND RISER DIAGRAM FOR PIPE SIZE.
6	EXISTING HOSE BIBB TO REMAIN. VERIFY EXISTING CONDITIONS IN FIELD.
7	EXISTING MOP SINK TO REMAIN. VERIFY EXISTING CONDITIONS IN FIELD .
8	EXISTING HOT WATER TO EXISTING HOT WATER LINE LOCATED IN CHILD CARE AREA. VERIFY IN FIELD.
9	EXISTING HOT WATER LINE TO BE REMOVED.
10	EXISTING SEWER LINE TO BE REPLACED. VERIFY IN FIELD.
11	EXISTING COLD WATER LINE TO REMAIN.
12	EXISTING PLUMBING FIXTURE TO BE REMOVED. SEE ARCHITECTURAL PLANS FOR DETAILS.
13	EXISTING SEWER LINE TO REMAIN. VERIFY CONDITION, LOCATION, ROUTING AND SIZE IN FIELD. INFORM THE ENGINEER AND ARCHITECT OF ANY DISCREPANCIES.

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 Exp. 6-30-27 CIVIL STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
ALFRED MATA, PE

INTERIM CITY ENGINEER		DATE:	9/22/2025
ARCHITECTURAL DIVISION		LIC. NO.: M35354	9/22/2025
ENGINEER:	RAYMOND HUANG, P.E.		9/22/2025
DESIGNED BY:	BRANDON MCKNIGHT		
DRAWN BY:	BRANDON MCKNIGHT		9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.		9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT		9/22/2025

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING FLOOR PLAN - DEMO PLAN

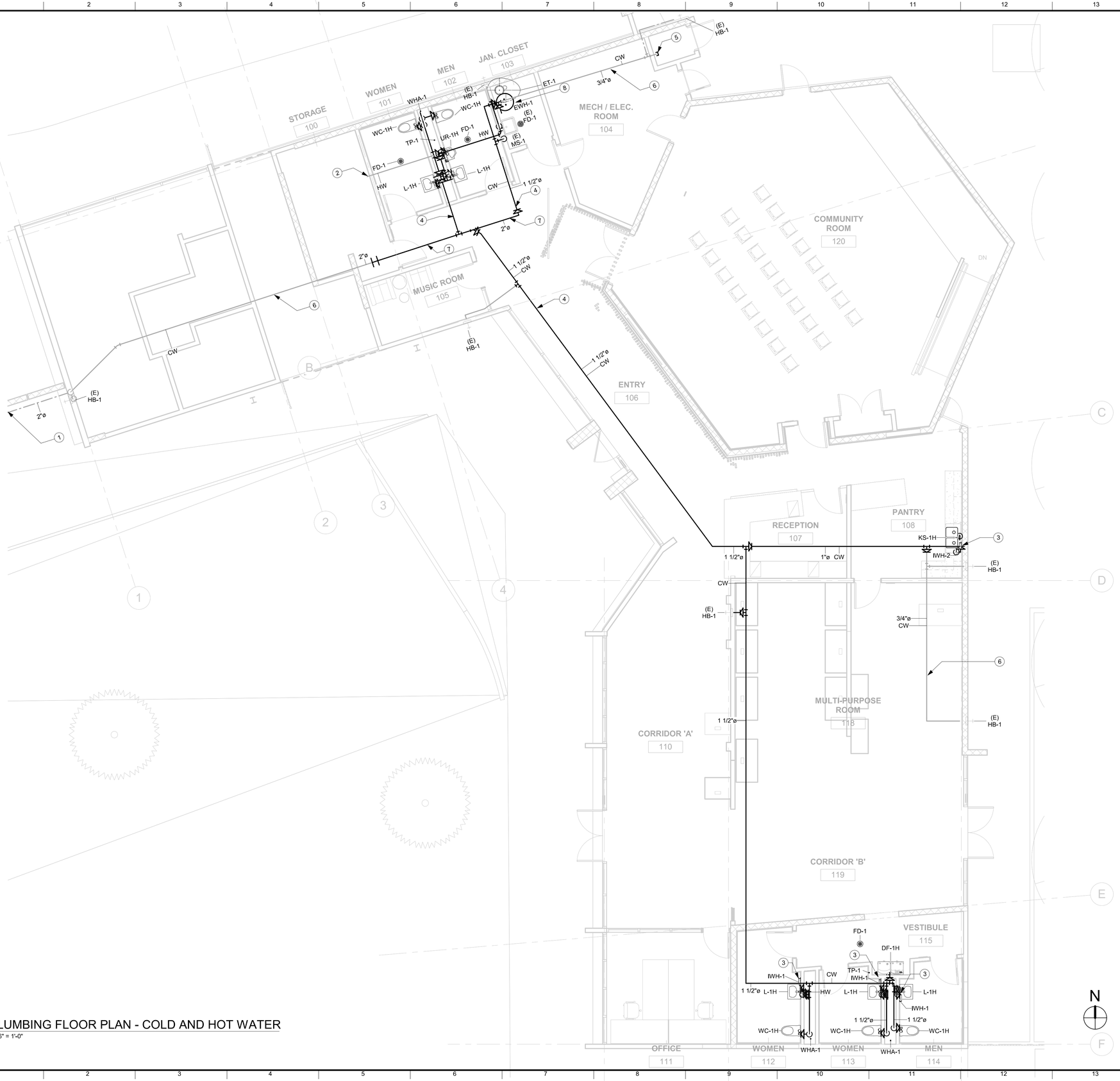
PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P201
SHEET 95 OF SHEETS 115

PLOTTED:9/24/2025 9:25:45 AM

REVISION DATES (DESIGN STAGE ONLY)



PLUMBING FLOOR PLAN - COLD AND HOT WATER

3/16" = 1'-0"

GENERAL NOTES

A. PLUMBING CONDITIONS SHOWN ON PLAN ARE DIAGRAMMATIC. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND COORDINATE WITH ALL DISCIPLINES TO AVOID CONFLICT.

B. CONTRACTOR SHALL BE SOLEY RESPONSIBLE FOR, AND HAVE CONTROL OVER THE FOLLOWING: CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, PROCEDURES AND COORDINATION OF ALL PORTIONS OF WORK.

C. FOR ACCESS DOORS AND PANELS, SEE PLUMBING GENERAL NOTES AND MECHANICAL GENERAL NOTES.

D. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

E. ALL WORK TO BE DEMOLISHED SHALL NOT BE RE-USED.

PLUMBING KEYNOTES

KEY	KEYNOTE
1	SEE PLUMBING SITE PLAN AND LANDSCAPE DRAWINGS FOR CONTINUATION.
2	EXISTING HOT WATER TO EXISTING HOT WATER LINE LOCATED IN CHILD CARE AREA. VERIFY IN FIELD.
3	NEW INSTANTANEOUS WATER HEATER. SEE PLUMBING GENERAL NOTES FOR TYPE.
4	NEW 1-1/2" DIA. COLD WATER LINE.
5	EXISTING COLD WATER LINE TO BE CAPPED.
6	EXISTING COLD WATER LINE TO REMAIN.
7	NEW 2" DIA COLD WATER LINE. VERIFY ROUTING AND LOCATION IN FIELD.
8	NEW ELECTRIC WATER HEATER. TEMPERATURE AND PRESSURE RELIEF VALVE TO SPILL TO EXISTING MOP SINK. SEE PLUMBING SCHEDULE AND DETAILS.

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TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 05/06/15
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

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NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

ENGINEERING
CITY OF LOS ANGELES

OFFICIAL RECORD

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ALFRED MATA, PE	INTERIM CITY ENGINEER	
	ARCHITECTURAL DIVISION	DATE:
ENGINEER:	RAYMOND HUANG, P.E.	LIC. NO.- M35354 9/22/2025
DESIGNED BY:	BRANDON MCKNIGHT	9/22/2025
DRAWN BY:	BRANDON MCKNIGHT	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

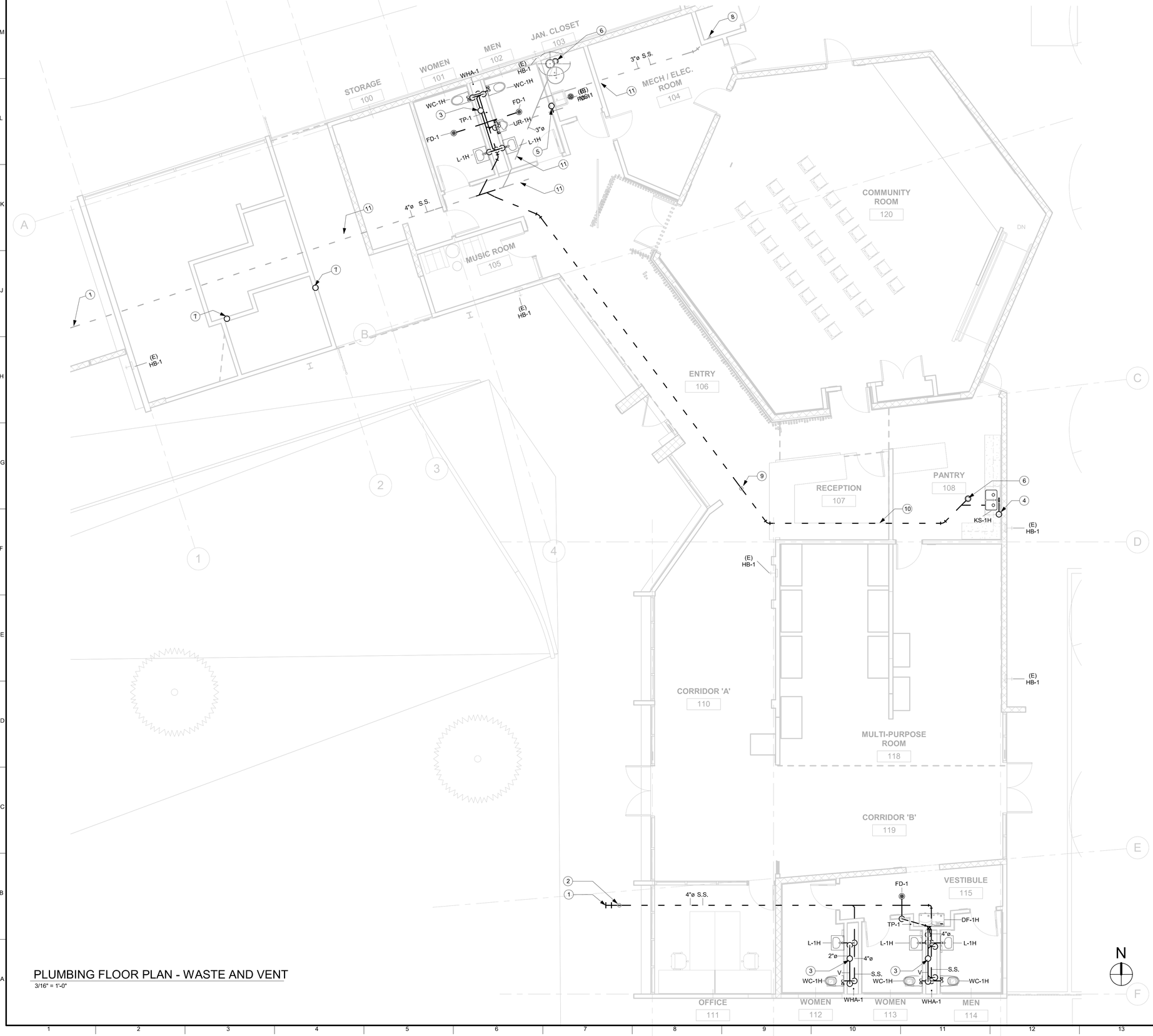
SHEET TITLE: PLUMBING FLOOR PLAN - COLD AND HOT WATER

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P202
SHEET 96 OF SHEETS 115

PLOTTED:9/24/2025 9:25:47 AM



PLUMBING FLOOR PLAN - WASTE AND VENT
3/16" = 1'-0"

GENERAL NOTES

A. PLUMBING CONDITIONS SHOWN ON PLAN ARE DIAGRAMMATIC. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND COORDINATE WITH ALL DISCIPLINES TO AVOID CONFLICT.

B. CONTRACTOR SHALL BE SOLEY RESPONSIBLE FOR, AND HAVE CONTROL OVER THE FOLLOWING: CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, PROCEDURES AND COORDINATION OF ALL PORTIONS OF WORK.

C. FOR ACCESS DOORS AND PANELS, SEE PLUMBING GENERAL NOTES AND MECHANICAL GENERAL NOTES.

D. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS AND DETERMINE THE EXTENT OF DEMOLITION. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

PLUMBING KEYNOTES

KEY	KEYNOTE
1	SEE PLUMBING SITE PLAN AND LANDSCAPE DRAWINGS FOR CONTINUATION.
2	NEW CLEANOUT TO GRADE (COTG).
3	NEW 2" DIA. VENT THROUGH ROOF. SEE PLUMBING DETAILS.
4	EXISTING 1-1/2" DIA. VENT THROUGH ROOF. VERIFY IN FIELD.
5	NEW 1-1/2" DIA. VENT THROUGH ROOF. SEE PLUMBING DETAILS.
6	EXISTING FLOOR CLEANOUT TO BE REPLACED. VERIFY IN FIELD.
7	EXISTING 2" DIA. VENT THROUGH ROOF TO BE RELOCATED TO MAINTAIN A MINIMUM 10 FEET CLEARANCE FROM MECHCANICAL UNITS AND OPENINGS. VERIFY IN FIELD.
8	EXISTING SEWER PIPING TO BE CAPPED.
9	NEW FLOOR CLEANOUT. VERIFY LOCATION AND ROUTING IN FIELD.
10	NEW 2" DIA. SEWER LINE. VERIFY LOCATION AND ROUTING IN FIELD.
11	EXISTING SEWER LINE TO REMAIN. VERIFY CONDITION, LOCATION, ROUTING AND SIZE IN FIELD. INFORM THE ENGINEER AND ARCHITECT OF ANY DISCREPANCIES.

BUREAU OF ENGINEERING
OFFICIAL RECORD

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 Exp. 6-30-27 MECHANICAL STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
ALFRED MATA, PE
BOARD OF PUBLIC WORKS MEMBERS

INTERIM CITY ENGINEER		DATE: 9/22/2025
ARCHITECTURAL DIVISION	LIC. NO.: M35354	9/22/2025
ENGINEER: RAYMOND HUANG, P.E.		9/22/2025
DESIGNED BY: BRANDON MCKNIGHT		9/22/2025
DRAWN BY: BRANDON MCKNIGHT		9/22/2025
CHECKED BY: RAYMOND HUANG, P.E.		9/22/2025
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT		9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING FLOOR PLAN - WASTE AND VENT

PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P203
SHEET 97 OF SHEETS 115

PLOTTED:9/24/2025 9:25:52 AM

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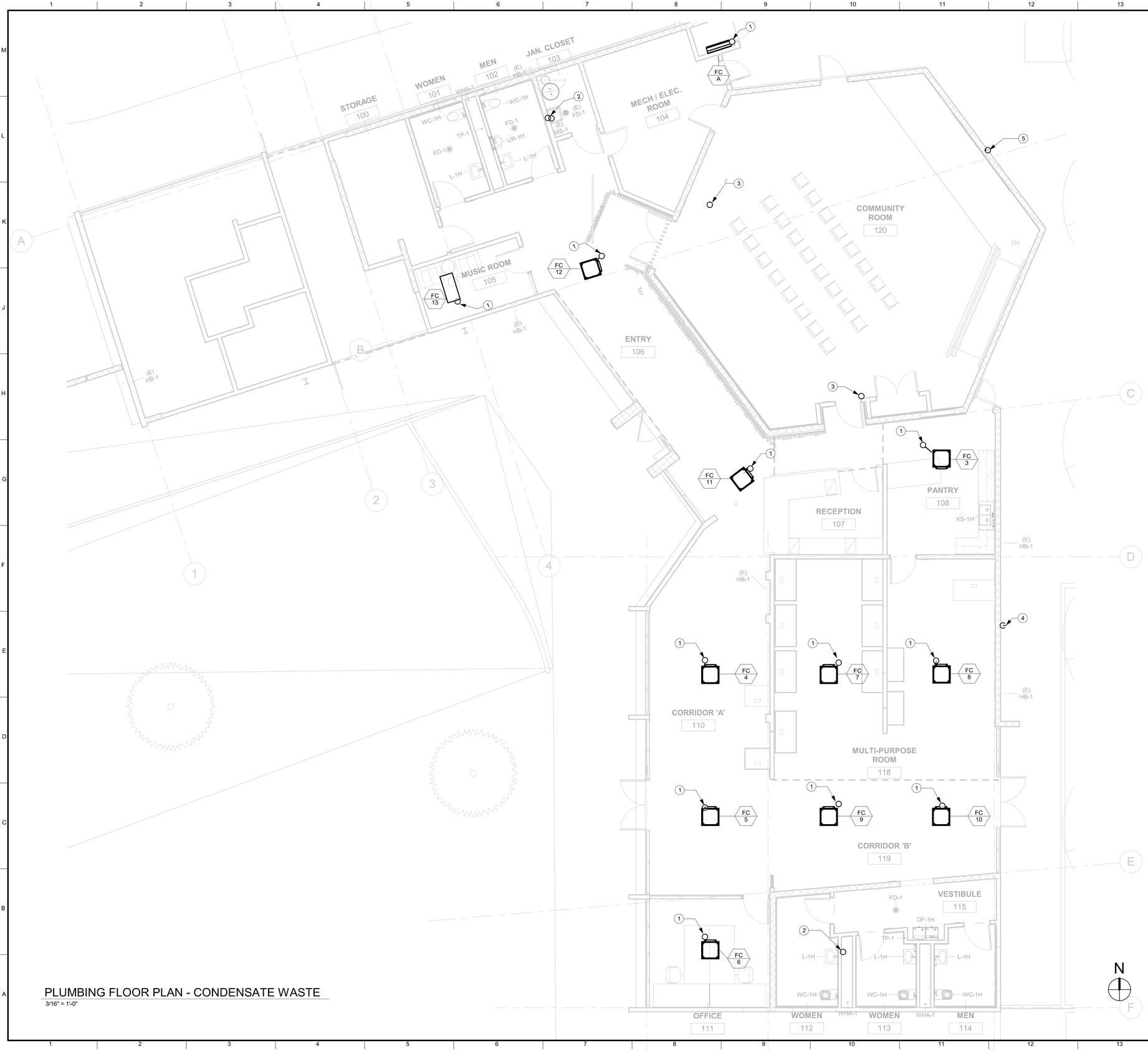
TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 05/06/15
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt



GENERAL NOTES

A. PLUMBING CONDITIONS SHOWN ON PLAN ARE DIAGRAMMATIC. IT SHALL BE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND COORDINATE WITH ALL DISCIPLINES TO AVOID CONFLICT.

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C. FOR ACCESS DOORS AND PANELS, SEE PLUMBING GENERAL NOTES AND MECHANICAL GENERAL NOTES.

D. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS AND DETERMINE THE EXTENT OF DEMOLITION. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

PLUMBING KEYNOTES

KEY	KEYNOTE
1	NEW CONDENSATE DRAIN PIPING TO BE PUMPED UP TO ROOF LEVEL. SEE PLUMBING ROOF PLAN FOR PIPE ROUTING.
2	NEW CONDENSATE DRAIN PIPING ROUTED DOWN TO GROUND LEVEL. SEE PLUMBING FLOOR PLAN AND DETAILS FOR POINT OF TERMINATION.
3	NEW CONDENSATE DRAIN PIPING TO BE PUMPED UP TO ROOF FROM INDOOR FAN COIL UNIT. SEE PLUMBING ROOF PLAN FOR PIPE ROUTING.
4	EXISTING ROOF DRAINAGE SYSTEM TO BE REPLACED WITH SAME SIZE AND TYPE. SEE LANDSCAPE DRAWINGS FOR CONTINUATION. VERIFY IN FIELD.
5	EXISTING ROOF DRAINAGE SYSTEM TO REMAIN. VERIFY CONDITION, LOCATION, ROUTING AND SIZE IN FIELD.

PLUMBING FLOOR PLAN - CONDENSATE WASTE

3/16" = 1'-0"

N

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
LIC. NO.: M35354 9/22/2025

ENGINEER:	RAYMOND HUANG, P.E.	9/22/2025
DESIGNED BY:	BRANDON MCKNIGHT	
DRAWN BY:	BRANDON MCKNIGHT	
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 Exp. 6-30-27 CIVIL STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING FLOOR PLAN - CONDENSATE WASTE

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P204
SHEET 98 OF SHEETS 115

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SHEET ISSUE DATE: 05/08/15
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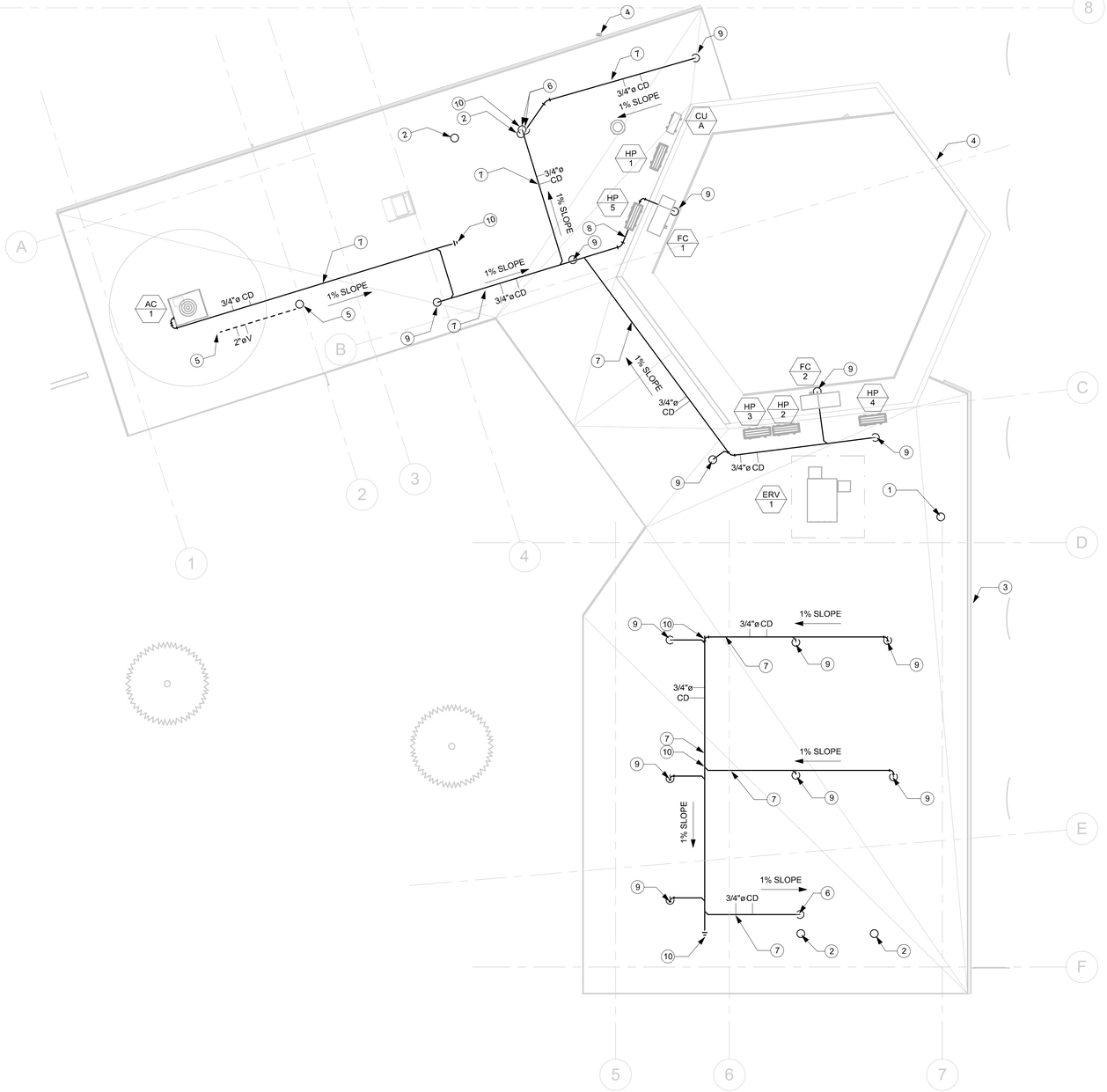

GENERAL NOTES

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C. CONTRACTOR SHALL FIELD VERIFY EXISITNG CONDITIONS. IF THERE ARE DISCREPANCIES OR POTENTIAL CONFLICTS, INFORM THE ARCHITECT AND ENGINEER IN WRITING PRIOR TO START OF WORK.

PLUMBING KEYNOTES

KEY KEYNOTE

1. EXISTING 1-1/2" DIA. VENT THROUGH ROOF. VERIFY IN FIELD.
2. NEW 1-1/2" DIA. VENT THROUGH ROOF. SEE PLUMBING DETAILS.
3. EXISTING ROOF DRAINAGE SYSTEM TO BE REPLACED WITH SAME SIZE AND TYPE. SEE LANDSCAPE DRAWINGS FOR CONTINUATION. VERIFY IN FIELD.
4. EXISTING ROOF DRAINAGE SYSTEM TO REMAIN. VERIFY CONDITION, LOCATION, ROUTING AND SIZE IN FIELD.
5. EXISTING 2" DIA. VENT THROUGH ROOF TO BE RELOCATED TO MAINTAIN A MINIMUM 10 FEET CLEARANCE FROM MECHCANICAL UNITS AND OPENINGS. VERIFY IN FIELD.
6. NEW CONDENSATE DRAIN PIPING ROUTED DOWN TO GROUND LEVEL. SEE PLUMBING FLOOR PLAN AND DETAILS FOR POINT OF TERMINATION.
7. NEW CONDENSATE DRAIN PIPING TO BE ROUTED ON ROOF LEVEL.
8. NEW CONDENSATE DRAIN PIPING TO BE ROUTED BELOW OUTDOOR UNIT. VERIFY IN FIELD.
9. NEW CONDENSATE DRAIN PIPING TO BE PUMPED UP TO ROOF FROM INDOOR FAN COIL UNIT. SEE PLUMBING ROOF PLAN FOR PIPE ROUTING.
10. CONDENSATE CLEANOUT. PER LAPC 814.3.1 CONDENSATE DRAIN LINES SHALL BE CONFIGURED OR PROVIDED WTIH A CLEANOUT.

PLUMBING ROOF PLAN

1/8" = 1'-0"

N

BUREAU OF ENGINEERING
OFFICIAL RECORD

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
RAYMOND HUANG
No. M35354
Exp. 6-30-27
MECHANICAL
STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE	INTERIM CITY ENGINEER	
ARCHITECTURAL DIVISION		DATE:
ENGINEER:	RAYMOND HUANG, P.E.	LIC. NO.-M35354 9/22/2025
DESIGNED BY:	BRANDON MCKNIGHT	9/22/2025
DRAWN BY:	BRANDON MCKNIGHT	9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING ROOF PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P205
SHEET 99 OF SHEETS 115

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SHEET ISSUE DATE: 05/06/15
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REVISION DATES (DESIGN STAGE ONLY)

BASE CALCULATION ON **8.8** PSI PER 100 FT.
AND 8FT/SEC. VELOCITY
FOR COLD WATER TYPE "L" COPPER

PIPE SIZE	FIXTURE UNITS	
	F.T.	F.V.
1/2"	3	--
3/4"	10	--
1"	24	--
1-1/4"	54	13
1-1/2"	103	35
2"	254	132

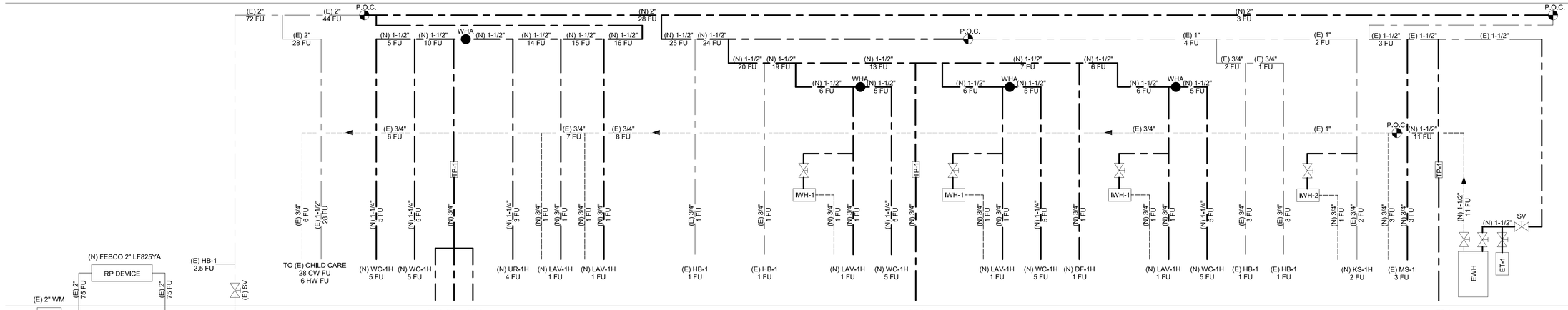
BASE CALCULATION ON **8.8** PSI PER 100 FT.
AND 5FT/SEC. VELOCITY
FOR HOT WATER TYPE "L" COPPER

PIPE SIZE	FIXTURE UNITS	
	F.T.	F.V.
1/2"	3	--
3/4"	8	--
1"	16	--
1-1/4"	28	--
1-1/2"	46	--
2"	119	--

CW-EXISTING
CW-NEW
HW-EXISTING
HW-NEW
HWR-NEW

UPPER ROOF

LOWER ROOF



COLD AND HOT WATER PIPE RISER DIAGRAM

BUREAU OF ENGINEERING
OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 04/12/10
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/MP Las Palmas Senior Center LIVE R25.rvt

REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. **MF-300512**

ENGINEERING
CITY OF LOS ANGELES

REGISTERED PROFESSIONAL ENGINEER
RAYMOND HUANG
No. M35354
Exp. 6-30-27
CIVIL
STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, PE	INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION	DATE: 9/22/2025
ENGINEER: RAYMOND HUANG, P.E.	LIC. NO.: M35354 9/22/2025
DESIGNED BY: BRANDON MCKNIGHT	9/22/2025
DRAWN BY: BRANDON MCKNIGHT	9/22/2025
CHECKED BY: RAYMOND HUANG, P.E.	9/22/2025
APPROVED BY: STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT	9/22/2025

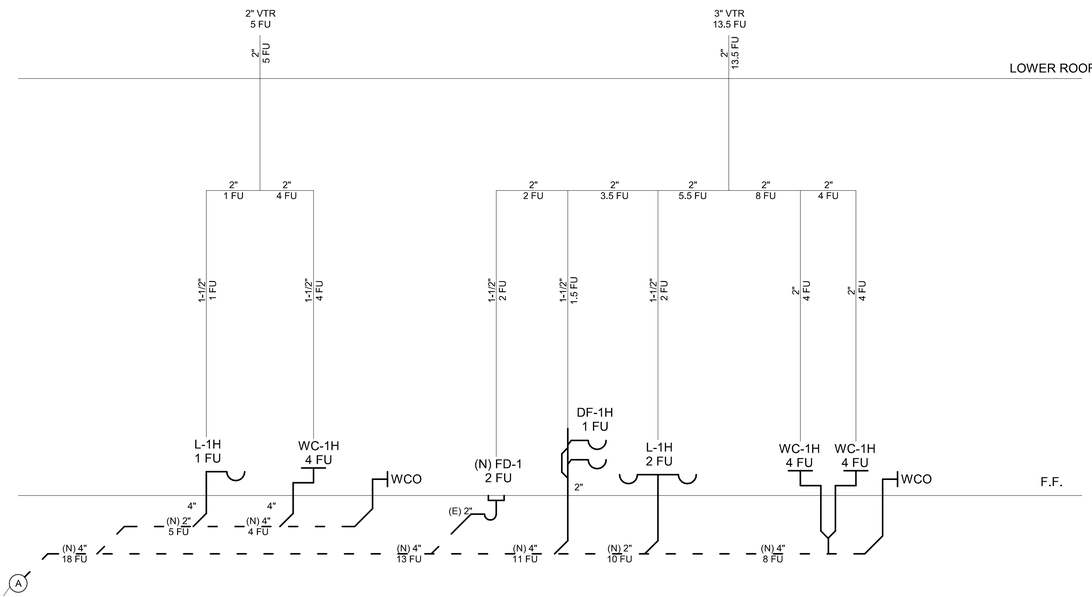
BID SET
PROJECT ISSUE DATE: 9/22/2025
CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING RISER PLAN - COLD AND HOT WATER
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P301
SHEET 100 OF SHEETS 115

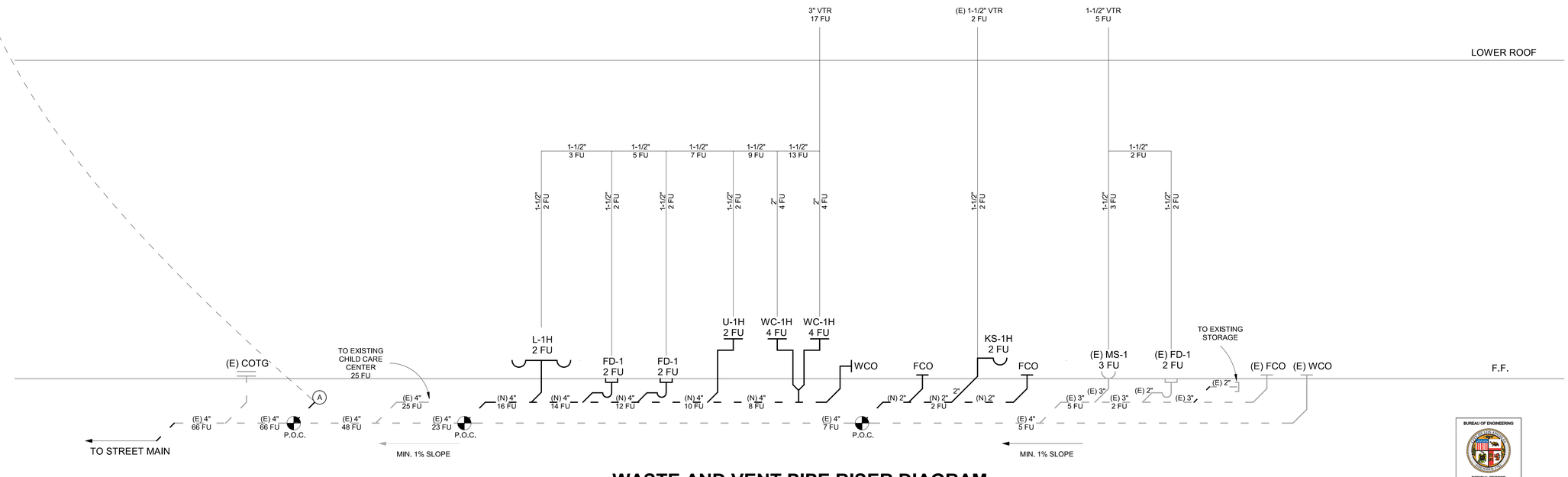
PLOTTED:9/24/2025 9:25:59 AM



WASTE AND VENT PIPE RISER DIAGRAM (CONT.)

SANITARY DRAIN

VENT



WASTE AND VENT PIPE RISER DIAGRAM

BUREAU OF ENGINEERING
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TTLB TEMPLATE REVISION DATE: 02/2013
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REVISION DATES (DESIGN STAGE ONLY)

BID SET
PROJECT ISSUE DATE: 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

ALFRED MATA, PE
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION

ENGINEER:	RAYMOND HUANG, P.E.	LIC. NO.-M35354	9/22/2025
DESIGNED BY:	BRANDON MCKNIGHT		9/22/2025
DRAWN BY:	BRANDON MCKNIGHT		9/22/2025
CHECKED BY:	RAYMOND HUANG, P.E.		9/22/2025
APPROVED BY:	STEVEN FIERCE, AIA, PRINCIPAL ARCHITECT		9/22/2025

REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 Exp. 6-30-27 MECHANICAL ENGINEER STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

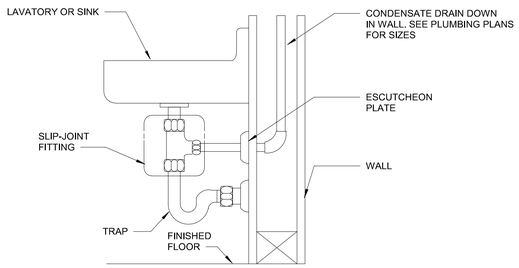
SHEET TITLE: PLUMBING RISER PLAN - WASTE AND VENT

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

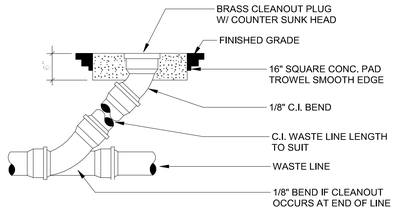
WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P302
SHEET 101 OF SHEETS 115

PLOTTED:9/24/2025 9:26:00 AM



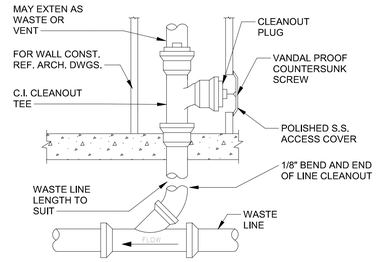
G1 CONDENSATE DRAIN TO LAV. DETAIL

SCALE: NONE



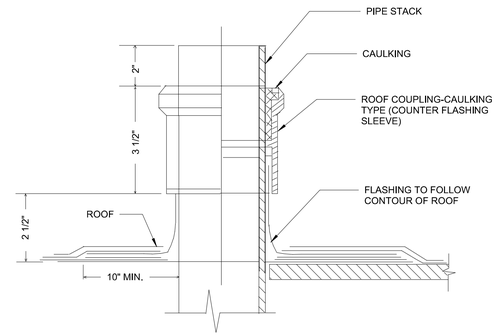
G5 CLEANOUT TO GRADE (COTG) DETAIL

SCALE: NONE



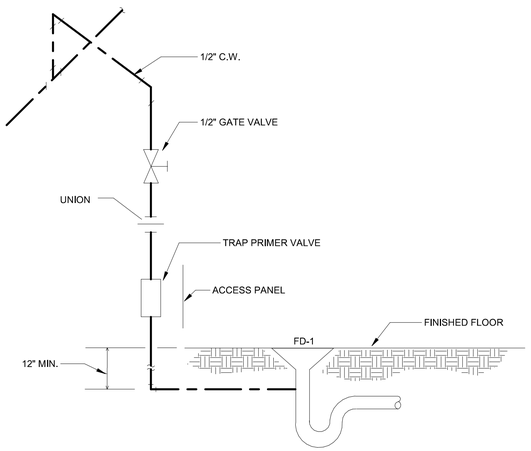
G9 WALL CLEANOUT (W.C.O.) DETAIL

SCALE: NONE



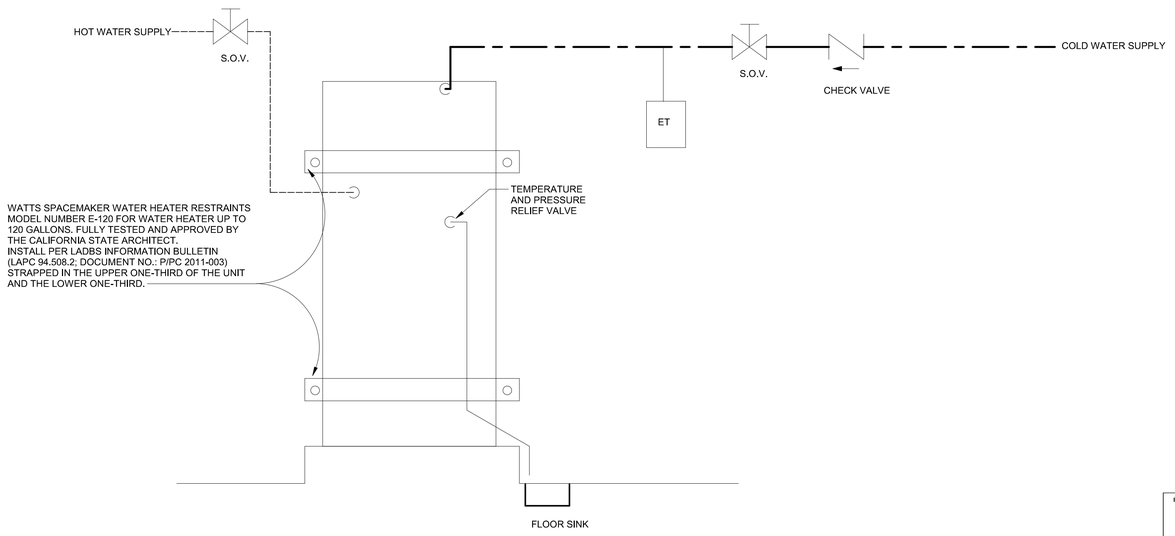
G13 VENT THROUGH ROOF (VTR) DETAIL

SCALE: NONE



A1 TRAP PRIMER DETAIL

SCALE: NONE



A5 ELECTRIC WATER HEATER INSTALLATION DETAIL

SCALE: NONE

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REVISION DATES (DESIGN STAGE ONLY)

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, PE
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	ARCHITECTURAL DIVISION		DATE:
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REGISTERED PROFESSIONAL ENGINEER RAYMOND HUANG No. M35354 Exp. 6-30-27 CIVIL STATE OF CALIFORNIA

BID SET
PROJECT ISSUE DATE: 9/22/2025

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PLUMBING DETAILS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. P401
SHEET 102 OF SHEETS 115

PLOTTED:9/24/2025 9:26:00 AM

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	WATTS	MOUNTING	VOLTAGE
A1	4' LINEAR LED - MED. LUMEN	Prudential Lighting	BPRO3-REC-FLSH-LED35-MO-4-TMW-SAL-SC-UNV-X3-DM01	23W	RECESSED	120 V
A2	3' LINEAR LED - MED. LUMEN	Prudential Lighting	BPRO3-REC-FLSH-LED35-MO-3-TMW-SAL-SC-UNV-X3-DM01	17W	RECESSED	120 V
A3	4' LINEAR LED - LOW LUMEN	Prudential Lighting	BPRO3-REC-FLSH-LED35-LO-4-TMW-SAL-SC-UNV-X3-DM01	15W	RECESSED	120 V
A4	3' LINEAR LED - LOW LUMEN	Prudential Lighting	BPRO3-REC-FLSH-LED35-LO-3-TMW-SAL-SC-UNV-X3-DM01	12W	RECESSED	120 V
A5	8' LINEAR LED - LOW LUMEN	Prudential Lighting	BPRO2-REC-FLSH-LED35-LO-8-TMW-SAL-SC-UNV-X3-DM01	31W	RECESSED	120 V
A6	3' LINEAR LED - LOW LUMEN	Prudential Lighting	BPRO2-REC-FLSH-LED35-LO-3-TMW-SAL-SC-UNV-X3-DM01	12W	RECESSED	120 V
A12	3' LINEAR LED - WALL MOUNT	Prudential Lighting	BIO-LIN-LED35-MO-LO-3'-T-MW-AWL-D1R-ASY-R-SC-U-NV-WB-DM01	34W	WALL @7' AFF	120 V
B2	2' LINEAR LED - LOW. LUMEN	Prudential Lighting	HSS-LED35-LO-2'-SAL-YBR-SC-UNV-SUR-X3-DM01	8.4W	SURFACE	120 V
B3	3' LINEAR LED - LOW LUMEN	Prudential Lighting	HSS-LED35-LO-3'-SAL-YBR-SC-UNV-SUR-X3-DM01	12.6W	SURFACE	120 V
B4	4' LINEAR LED - LOW LUMEN	Prudential Lighting	HSS-LED35-LO-4'-SAL-YBR-SC-UNV-SUR-X3-DM01	16.8W	SURFACE	120 V
C1	2" DOWNLIGHT	DMF LIGHTING	M4-NC-R-F-DRD2M-15-9-3500-GA-W-O-M4T-R-S-WH	17W	RECESSED	120 V
C2	2" DOWNLIGHT	DMF LIGHTING	M4-NC-R-F-DRD2M-15-9-3000-GA-W-O-M4T-R-S-WH	17W	RECESSED	120 V
C3	2" DOWNLIGHT	DMF LIGHTING	M4-NC-R-F-DRD2M-12-9-3500-GA-W-O-M4T-R-S-WH	14W	RECESSED	120 V
C4	2" DOWNLIGHT	DMF LIGHTING	M4-NC-R-F-DRD2M-07-9-3500-GA-W-O-M4T-R-S-WH	9.5W	RECESSED	120 V
D	2' ROUND	PRUDENTIAL LIGHTING	GAZERDH-24-LED35-MO-TMW-D1-SC-UNV-SURF-X3-DM01	27W	SURFACE	120 V
E	EXIT LIGHT	EVENLITE	CCDS-AC-G-1-CN-DK	5W	SURFACE	120 V
F	VANITY LIGHT	MODERN FORMS	WS62021-AB	17W	SURFACE	120 V
G	4" CYLINDRICAL PENDANT	DMF LIGHTING	DC4-CC-S-L-D-30-GA-0-00-00-35-BK-O-00	40W	PENDANT	120 V
G1	4" CYLINDRICAL PENDANT	DMF LIGHTING	DC4-CC-S-L-D-10-GA-0-00-00-35-BK-O-00	12W	PENDANT	120 V
H	LED STRIP	COLUMBIA LIGHTING	LCS-2-40-ML-E-U-CSWG4	23W	SURFACE	120 V
(1) S	TRACK LIGHT	CONTECH LIGHTING	CTL-942-ME-35KC-D-P	240W	TRACK	120 V
(3) T	8' TAPELIGHT	Prudential Lighting	LSM15-35K-8-24-(ALU-SF)	12W	SURFACE	120 V
U	(E) DOWNLIGHT	GREEN CREATIVE	17A21G4DIM/840/R	9W	RECESSED	120 V
(2) V	25' POLE MOUNTED LIGHT FIXTURE	NLS LIGHTING	VUE-1-T4-32L-7-50K-UNV-BRZ-FSP-40	71W	POLE MOUNTED	120 V
W	(E) WALL PACK	HUBBELL LIGHTING	NRG-356L-5K-U	17 W	WALL	120 V
X	(E) FLOOD LIGHT	HUBBELL LIGHTING	MBUL-1L3K-1	17 W	WALL	120 V

(1) TRACK LIGHT TO BE MOUNTED ON "LT-12-P" LIGHTING TRACK BY CONTECH LIGHTING. ACCESSORIES TO BE INCLUDED ARE LA-2-P MINI CONNECTOR, LASB-2 SUPPORT BRACKET, LACD-180 CABLE MOUNTING KIT, AND LA-23-R-P/REG21-P CURRENT LIMITER. SEE SHEET E103 FOR MORE DETAILS.

(2) FIXTURE TO BE PROVIDED WITH FSIR-100 CONFIGURATION TOOL. FIXTURE WILL BE MOUNTED TO "RTSP-25-7G-12BC-T2R-136-GLV" LIGHT POLE BY NLS LIGHTING.

(3) INCLUDE REMOTE LED DRIVER (CAT#: PSDE-100W-24V-010-JB)

GENERAL NOTES

1. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO COVER A COMPLETE INSTALLATION OF SYSTEMS.
2. CONSTRUCT PROJECT IN ACCORDANCE WITH FOLLOWING CODES: REGULATIONS OF STATE AND LOCAL FIRE MARSHAL; NATIONAL ELECTRIC CODE, NATIONAL FIRE PROTECTION ASSOCIATION, EDITION IN FORCE; LOCAL CODES AND ORDINANCES; TITLE 19, 21 AND 24 CALIFORNIA ADMINISTRATIVE CODE.
3. PERMITS, FEES AND INSPECTIONS: OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND FEES REQUIRED BY ANY CONSTITUTED AUTHORITY HAVING JURISDICTION INCLUDING UTILITIES. ARRANGE AND PAY FOR ALL REQUIRED INSPECTIONS OR EXAMINATIONS AND DELIVER CERTIFICATES OF INSPECTION TO ARCHITECT.
4. THE TERM "PROVIDE" USED ON DRAWINGS SHALL BE CONSIDERED TO MEAN "FURNISH AND INSTALL".
5. BEFORE PROCEEDING WITH WORK CAREFULLY CHECK AND VERIFY ALL DIMENSIONS AND SIZES AND ASSUME ALL RESPONSIBILITY FOR FITTING OF MATERIALS AND EQUIPMENT TO OTHER PARTS OF EQUIPMENT AND TO STRUCTURE. WHERE APPARATUS AND EQUIPMENT HAVE BEEN INDICATED ON DRAWINGS, DIMENSIONS HAVE BEEN TAKEN FROM TYPICAL EQUIPMENT OF CLASS INDICATED. CAREFULLY CHECK DRAWINGS AND SEE THAT EQUIPMENT WILL FIT INTO SPACES PROVIDED.
6. LOCATIONS OF CONDUITS, OUTLETS, APPARATUS AND EQUIPMENT INDICATED ON DRAWINGS ARE APPROXIMATE ONLY AND SHALL BE CHANGED TO MEET ARCHITECTURAL AND STRUCTURAL CONDITIONS AS REQUIRED.
7. BE CAUTIONED THAT DIAGRAMS SHOWING ELECTRICAL CONNECTIONS ARE DIAGRAMMATIC ONLY AND MUST NOT BE USED FOR OBTAINING LENGTH OF RUNS OF WIRING OR CONDUIT. WIRING DIAGRAMS DO NOT NECESSARILY SHOW EXACT PHYSICAL ARRANGEMENT OF EQUIPMENT.
8. WHERE EQUIPMENT IS MOUNTED ON VIBRATION ISOLATORS, USE FLEXIBLE CONNECTIONS TO REDUCE TRANSMISSION OF NOISE.
9. WHERE CONDUITS PASS THROUGH SLEEVES IN INTERIOR WALLS, FLOORS, OR CEILINGS, COMPLETELY FILL SPACE BETWEEN EACH CONDUIT AND ITS SLEEVE TO PROVIDE AN AIRTIGHT SEAL.
10. USE GLASS FIBER MATERIAL, "DUXSEAL" COMPOUND, FOR ACOUSTIC SEALS.
11. ALL EQUIPMENT SHALL BE BRACED AND/OR ANCHORED TO RESIST A HORIZONTAL FORCE PER TITLE 24, PART 2 SECTION 2312 FOR ZONE 4.
12. PROVIDE CAST OUTLET BOXES IN EXTERIOR LOCATIONS AND WET LOCATIONS.
13. WHERE BOXES ARE INSTALLED IN FIRE RATED CEILING OR WALLS, BE RESPONSIBLE FOR PRESERVING INTEGRITY OF FIRE RATING AS REQUIRED.
14. IN FIRE-RATED WALL, USE 4" SQUARE DEEP BOXES. DO NOT AGGREGATE MORE THAN 100 SQUARE INCHES OF BOXES FOR ANY 100 SQUARE FEET OF WALL OR PARTITIONS. SEPARATE OUTLET BOXES ON OPPOSITE SIDES OF WALLS OR PARTITION BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES.
15. PROVIDE COPPER CONDUCTORS ONLY.
16. PROVIDE TYPE "THWN/THHN" WIRES ONLY.
17. PROVIDE "U.L. APPROVED" OR "U.L. LISTED" ELECTRICAL EQUIPMENT ONLY.
18. PROVIDE WHEREVER NECESSARY ALL ADDITIONAL BACKING, BLOCKING AND SUPPORTS FOR LIGHT FIXTURES.
19. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
20. PROVIDE APPROVED PADLOCKING ATTACHMENT FOR ALL DISCONNECT SWITCHES AT REMOTE EQUIPMENT, ALL FUSED SWITCHES AND CIRCUIT BREAKERS IN MAIN SWITCHBOARD, DISTRIBUTION SECTIONS AND MOTOR CONTROL CENTERS.
21. PROVIDE A #12 PULL WIRE IN ALL CONDUITS INDICATED AS CONDUIT ONLY (C.O.) RATED 250 POUND TENSILE STRENGTH.
22. WIRING DEVICES: HIGHEST SPECIFICATION GRADE, COLOR AS SELECTED BY ARCHITECT.
23. WIRING DEVICE PLATES: COLOR-FINISH SHALL BE WHITE AND/OR SELECTED BY ARCHITECT.
24. PROVIDE ALL NECESSARY J-BOXES AND PULL BOXES OF PROPER SIZES AS REQUIRED.
25. PROVIDE WEATHERPROOF TYPE ELECTRICAL EQUIPMENT FOR EXTERIOR LOCATIONS.
26. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY AND INDICATE GENERAL ARRANGEMENT OF WORK. BE RESPONSIBLE FOR CHECKING AND COORDINATING WITH OTHER TRADES AND VERIFYING SPACE IN WHICH WORK WILL BE INSTALLED.
27. SEAL ALL SPACE AROUND CONDUIT PENETRATION THROUGH FIRE-RATED WALL WITH A UL LISTED FIRE BARRIER COMPOUND. "3M" CAULKING OR EQUAL.
28. DRAWINGS DO NOT SHOW ALL NECESSARY J-BOXES AND PULL BOXES WHICH WILL BE REQUIRED THROUGHOUT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL THESE INTERMEDIATE BOXES AS NECESSARY TO TERMINATE CONDUITS AND RACEWAYS TO COMPLY WITH CODE. PAINT BOXES TO MATCH COLOR OF THE FINISHED SURFACES WHERE THE BOXES ARE ATTACHED.
29. ELECTRICAL EQUIPMENT SHALL BE LISTED BY A CITY OF LOS ANGELES RECOGNIZED ELECTRICAL TESTING LABORATORY OR APPROVED BY THE DEPARTMENT.
30. FUSIBLE DISCONNECT SWITCH SHALL BE PROVIDED WITH REJECTION TYPE FUSE HOLDERS.
31. WHEN TRENCHING FOR NEW UNDERGROUND CONDUIT, EXERCISE EXTREME CARE TO AVOID DAMAGE TO EXISTING UNDERGROUND UTILITIES. CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ALL DAMAGED LINES.
32. AS PART OF CLOSEOUT DOCUMENT CONTRACTOR SHALL PROVIDE ONE SET OF AS-BUILTS DRAWINGS AT THE COMPLETION OF THE JOB. SHOW EXACT LOCATION AND MOUNTING OF EQUIPMENT INCLUDING DIMENSIONS.
33. CONDUITS ENTERING AND/OR LEAVING POLE FOOTING SHALL BE RIGID PVC COATED STEEL WITH PLASTIC BUSHING. MAKE TRANSITION FROM PVC TO METALLIC AT A MINIMUM DISTANCE OF 3'-0" FROM FOOTING.
34. UNDERGROUND CONDUIT RUNS INSTALLED WITH SCHEDULE 40 PVC SHALL HAVE A MINIMUM 3" TOP COVER TO CONCRETE OVER ITS ENTIRE LENGTH (EXCEPT UNDER CONCRETE SIDEWALKS) AND SHALL HAVE AN EQUIPMENT GROUNDING CONDUCTOR SIZED ACCORDING TO THE PREVAILING CODE BUT NOT LESS THAN SHOWN ON THE PLAN. CONCRETE COVER SHALL BE MINIMUM OF 100-E-100 SLURRY MIX.
35. ALL CONDUITS BENDS INSTALLED UNDERGROUND SHALL BE THE LONG RADIUS TYPE WITH RADII NOT LESS THAN 10 TIMES THE INTERNAL DIAMETER TON THE CONDUIT AND WITH NOT MORE THAN THREE 90° BENDS IN ANY RUN. EXCEPTION: FOR POWER AND LIGHT CONDUIT ABOVE GROUND, FACTORY ELLS ARE PERMITTED.
36. CONDUITS IN UNDERGROUND PULL BOXES SHALL BE SEALED WITH "LHD1" OR "LHDS" DUCT SEAL AS MANUFACTURED BY DOTTIE CO. OR APPROVED EQUAL.
37. PLACE 6" WIDE, 4 MIL PLASTIC YELLOW MARKER TAPE AT 12 INCHES BELOW FINISH GRADE ALONG AND ABOVE BURIED CONDUITS. LABEL TAPE "CAUTION: ELECTRIC LINE BELOW" OR SIMILAR WORDING.
38. ALL SPLICES IN UNDERGROUND PULL BOXES SHALL BE SCOTCH BAGGED AND WATER TIGHT AND ALLOWED ONLY IF APPROVED BY OWNER.
39. RECORD DRAWINGS: IMMEDIATELY AFTER WORK IS INSTALLED, CAREFULLY DRAW ON PRINTS IN RED INK ALL WORK WHICH IS INSTALLED AT VARIANCE WITH THE WORK AS INDICATED ON THE DRAWINGS. INDICATE BY MEASURED DIMENSION TO BUILDING CORNERS OR OTHER PERMANENT MONUMENTS THE EXACT LOCATION OF ALL CHANGES.

GENERAL ELECTRICAL SYMBOLS LIST

(E) NEXT TO EQUIPMENT, INDICATES TO REMAIN.
(R) NEXT TO EQUIPMENT, INDICATES TO BE REMOVED.
E EXISTING CONDUIT AND WIRES TO REMAIN.
R EXISTING CONDUIT AND WIRES TO BE REMOVED.
(RL) NEXT TO EQUIPMENT, INDICATES TO BE RELOCATED.
(RLD) NEXT TO EQUIPMENT, INDICATES RELOCATED.

3/4" MINIMUM CONDUIT CONCEALED IN A WALL, CEILING SPACE WITH POWER WIRING. UNLESS OTHERWISE NOTED ON THE ELECTRICAL PLANS.

CONDUIT HOMERUN. 3/4" MINIMUM, OR AS NOTED ON THE ELECTRICAL PLANS.

(J) JUNCTION BOX, PLENUM MOUNTED, SIZED BY CONTRACTOR PER ACTUAL NUMBER OF CONDUITS AND/OR CONDUCTORS PASSING THRU

STANDARD 20A, 120V-1Φ GROUNDING TYPE DUPLEX RECEPTACLE RECESSED MOUNTED AT +18" A.F.F. TO THE CENTER. - U.O.N.

C CONTROLLED STANDARD 20A, 120V-1Φ GROUNDING TYPE DUPLEX RECEPTACLE RECESSED MOUNTED AT +18" A.F.F. TO THE CENTER. - U.O.N.. THE RECEPTACLE SHALL BE PERMANENTLY LABELED "CONTROLLED".

GFCI GROUND FAULT CIRCUIT INTERRUPT DUPLEX RECEPTACLE 20A, 120V-1Φ.

SPECIAL USE RECEPTACLE, GROUNDING TYPE, RECESSED MOUNTED AT +42". ABOVE THE FINISHED FLOOR TO THE CENTER, UNLESS OTHERWISE NOTED. THE VOLTAGE SHALL BE SPECIFIED.

STANDARD 20A, 120V-1Φ GROUNDING TYPE DOUBLE DUPLEX RECEPTACLE RECESSED MOUNTED AT +18" A.F.F. TO THE CENTER. - U.O.N..

C CONTROLLED STANDARD 20A, 120V-1Φ GROUNDING TYPE DOUBLE DUPLEX RECEPTACLE RECESSED MOUNTED AT +18" A.F.F. TO THE CENTER. - U.O.N.. HALF SHADING INDICATES HALF CONTROLLED.

(C) FURNITURE COMMUNICATION FEED, FROM THE WALL.PROVIDE 1"C.O TO THE COMMUNICATION ROOM

(P) FURNITURE POWER FEED, FROM THE WALL.

WALL COMBINATION TELEPHONE AND DATA OUTLET AT +18" ABOVE THE FINISHED FLOOR, UNLESS OTHERWISE NOTED.PROVIDE 3/4"C.O TO THE COMMUNICATION ROOM.

WALL COMBINATION DATA ONLY OUTLET AT +18" ABOVE THE FINISHED FLOOR, UNLESS OTHERWISE NOTED.PROVIDE 3/4"C.O TO THE COMMUNICATION ROOM.

CEILING MOUNTED ILLUMINATED EXIT SIGN, WITH NUMBER OF FACES INDICATED BY SHADING, ARROWS INDICATE DIRECTION OF EGRESS PATH

S^a_D WIRELESS DIMMER SWITCH MOUNTED @ 42" A.F.F. TO THE CENTER, BY "LUTRON", CAT#: "PJ2-2BRL-GWH-L01", ORDER WITH SURFACE MOUNT KIT, CAT#: " PJ2-WALL-WH-L01"
a - DENOTES THE CONTROLLED LIGHTS

S^a WIRELESS ON/OFF SWITCH MOUNTED @ 42" A.F.F. TO THE CENTER, BY "LUTRON". CAT#: "PJ2-2B-GWH-L01",ORDER WITH SURFACE MOUNT KIT, CAT#: " PJ2-WALL-WH-L01"
a - DENOTES THE CONTROLLED LIGHTS

(DS) DAYLIGHT SENSOR BY LUTRON. CAT #: "LRF2-DCRB-WH"

(OS) WIRELESS CEILING MOUNTED OCCUPANCY SENSOR. CAT #: "LRF2-OCR2B-P-WH"

OSW WIRED WALL MOUNTED OCCUPANCY SENSOR/SWITCH. CAT #: "MS-B102". SEE WIRING DIAGRAM ON SHEET E500.

OS WALL MOUNTED WIRELESS OCCUPANCY SENSOR BY LUTRON. CAT #: "LRF2-OWLB-P-WH"

PP POWERPACK DIMMING MODULE (0-10V) . CAT #: "RMJS-8TN-DV-B"

PPE PHASE SELECT (ELV) POWERPACK DIMMING MODULE . CAT #: "RMJS-PNE-DV"

EM EMERGENCY LIGHTING CONTROL MODULE BY LUTRON CAT #: "RMJS-8T-DV-B-EM"

(H) LUTRON VIVE HUB. CAT #: "HJS-1-FM"

LINEAR LED LIGHT FIXTURE,FOR EXACT LENGTH REFER TO LIGHTING PLAN. EM AND/OR HALF SHADED LIGHTING FIXTURE INDICATES FIXTURE ON EMERGENCY CIRCUIT. C.L. INDICATES FIXTURE TO BE BACKED UP BY FUTURE BATTERY ENERGY STORAGE SYSTEM FOR 4 HOURS.

RECESSED/SURFACE LED DOWNLIGHT FIXTURE. EM AND/OR HALF SHADED LIGHTING FIXTURE INDICATES FIXTURE ON EMERGENCY CIRCUIT. C.L. INDICATES FIXTURE TO BE BACKED UP BY FUTURE BATTERY ENERGY STORAGE SYSTEM FOR 4 HOURS.

F NEMA 3R FUSED DISCONNECT SWITCH.

SURFACE MOUNTED ELECTRICAL PANEL

RECESSED MOUNTED ELECTRICAL PANEL

T TRANSFORMER

S_M MOTOR RATED SWITCH DISCONNECT

P TYPE 2 CONCRETE PULLBOX

(T) NEW THERMOSTAT FOR FAN COIL UNITS MOUNTED ON A RECESSED 2-GANG J-BOX. ELECTRICAL CONTRACTOR TO ROUTE 1/2"C.O. FOR CONTROL WIRES TO THE CORRESPONDING FAN COIL UNIT. SEE MECHANICAL SHEETS AND COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.

18"x18" CEILING MOUNTED ACCESS PANEL FOR HVAC FAN COIL UNITS AND LIGHTING CONTROLS. COORDINATE WITH ARCHITECT AND MECHANICAL CONTRACTOR PRIOR TO ROUGH IN.

ANNOTATION TAGS

(1) KEY NOTE REFERENCE

(#/##) DETAIL REFERENCE INDICATOR, # DESIGNATES DETAIL NUMBER, ## DESIGNATES ON WHICH DETAIL SHEET IT IS LOCATED

(#) (TYP-#) LIGHT FIXTURE TYPE DESIGNATION. FOR SMALL ROOMS OR AREAS WHERE THERE IS ONLY ONE FIXTURE TYPE, THE "TYP" ABBREVIATION IS USED. THIS STANDS FOR "TYPICAL" AND INDICATES THAT THE FIXTURES WITH THE SAME SYMBOL IN THE SURROUNDING AREA ARE OF THE SAME FIXTURE TYPE. THE NUMBER NEXT TO TYP INDICATES THE QUANTITY.

ELECTRICAL SHEET LIST

SHEET NUMBER	SHEET NAME
E001	SYMBOL LIST, GENERAL NOTES, FIXTURES SCHEDULE
E100	EXISTING AND NEW SITE PLAN
E101	EXISTING AND PROPOSED SINGLE LINE DIAGRAM
E102	PANEL SCHEDULES
E103	PROPOSED LIGHTING PLAN
E104	PROPOSED POWER PLAN
E105	ROOF POWER PLAN
E401	TITLE 24 - INDOOR LIGHTING
E402	TITLE 24 - ELECTRICAL POWER DISTRIBUTION
E403	TITLE 24 - OUTDOOR LIGHTING
E500	LIGHTING CONTROLS WIRING DIAGRAMS
E501	EMERGENCY LIGHTING PHOTOMETRICS
E502	E-MON D-MON WIRING DIAGRAM AND LIGHT WALL ELEVATIONS

ELECTRICAL SCOPE OF WORK

* DEMOLISH EXISTING INTERIOR LIGHT FIXTURES & CONTROLS & INSTALL NEW LIGHT FIXTURES AND CONTROLS
*WHERE SHOWN ON THE PLAN: DEMOLISH EXISTING POWER RECEPTACLES, AND PROVIDE NEW POWER RECEPTACLES.
*PROVIDE ELECTRIC VEHICLE SUPPLY EQUIPMENT
*REPLACE EXISTING HVAC EQUIPMENT
*INSTALL NEW ELECTRIC WATER HEATERS
*INSTALL ONE NEW OUTDOOR LIGHT POLE

CONTRACTOR SHALL DESIGN-BUILD A NEW FIRE ALARM SYSTEM THAT IS COMPLIANT WITH THE LATEST FIRE ALARM CODE REQUIREMENTS. ALL EXISTING SURFACE MOUNTED CONDUITS SHALL BE RE-INSTALLED TO BE CONCEALED IN THE CEILING SPACE. RE-USE EXISTING DEVICES, FIRE ALARM CONTROL PANEL(FACP), AND DIALER IF POSSIBLE.

FIRE ALARM DEVICES AND CONDUITS IN THE CHILDCARE AREA SHALL REMAIN AND BE RE-CONNECTED TO THE FACP.

IF THERE IS THE NEED FOR A NEW FACP, THEN THE NEW FACP SHALL BE FROM THE SAME MANUFACTURER AS THE EXISTING FACP.

NOTE: THIS PROJECT CONTAINS INSTRUCTIONS FOR SCOPE OF WORK ITEMS THAT SHALL BE DESIGNED BY A DESIGN-BUILD CONTRACTOR. THIS SCOPE OF WORK CAN BE SUMMARIZED AS FOLLOWS:

- **PV SOLAR SHADE STRUCTURE, AND SUBMITTAL TO LADWP**
- **LIGHTING SYSTEM AND CONTROLS FOR THE AREA BELOW PV SOLAR SHADE STRUCTURE.**
- **CAM LOCK HOOKUP FOR PORTABLE GENERATOR AND MTS TO BACK UP NEW CRITICAL LOAD PANEL. (C.L.)**
- **INTRODUCE A NEW CRITICAL LOAD PANEL(C.L.) AND RELOCATE EXISTING CIRCUITS MARKED BY "C.L." TO THIS PANEL.**

ABBREVIATIONS

A, AMP	AMPERE(S)
A.C.	ABOVE COUNTER
A.F.F.	ABOVE FINISH FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C.	CONDUIT
C.L.	TO BE CONNECTED TO CRITICAL LOAD PANEL BY OTHERS
C.O.	CONDUIT ONLY W/ PULL ROPE
C.U.	COPPER
E	EXISTING CONDUIT AND WIRES TO REMAIN
(E)	NEXT TO EQUIPMENT , INDICATES EXISTING TO REMAIN
EM.	EMERGENCY
FLA	FULL LOAD AMPS
G.D.	GARBAGE DISPOSAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND,G	GROUND
LMP	LUMEN MAINTENANCE PHOTOCELL
LCP	LIGHTING CONTROL PANEL
MCB	MAIN CIRCUIT BREAKER
M.L.O	MAIN LUGS ONLY
MP	MICROPANEL
MW	MICROWATT
(N)	NEXT TO EQUIPMENT, INDICATES NEW
N.I.C	NOT INCLUDED IN CONTRACT
N.L.	NIGHT LIGHT
O.C.	ON CENTER
PC	PHOTOCELL
R	EXISTING CONDUIT AND WIRES TO BE REMOVED
(R)	NEXT TO EQUIPMENT, INDICATES REMOVE AND DISCARD
(RL)	NEXT TO EQUIPMENT, INDICATES REMOVE AND RELOCATE
S.R.	SERIES RATED
TYP	TYPICAL
U/G	UNDERGROUND
U.O.N	UNLESS OTHERWISE NOTED
V	VOLT(S)
V.L.	VERIFY LOCATION
WP	WEATHERPROOF

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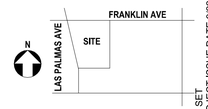

BID SET
PROJECT ISSUE DATE 9/22/2025

BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
NO. E 12231
EXP. 9/30/2026
ELECTRICAL
STATE OF CALIFORNIA

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION
INTERIM CITY ENGINEER
LIC. NO.: E12231
DATE:

ENGINEER: SARO DERSARJOIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARJOIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: SYMBOL LIST, GENERAL NOTES, FIXTURES SCHEDULE
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E001
SHEET 103 OF SHEETS 115

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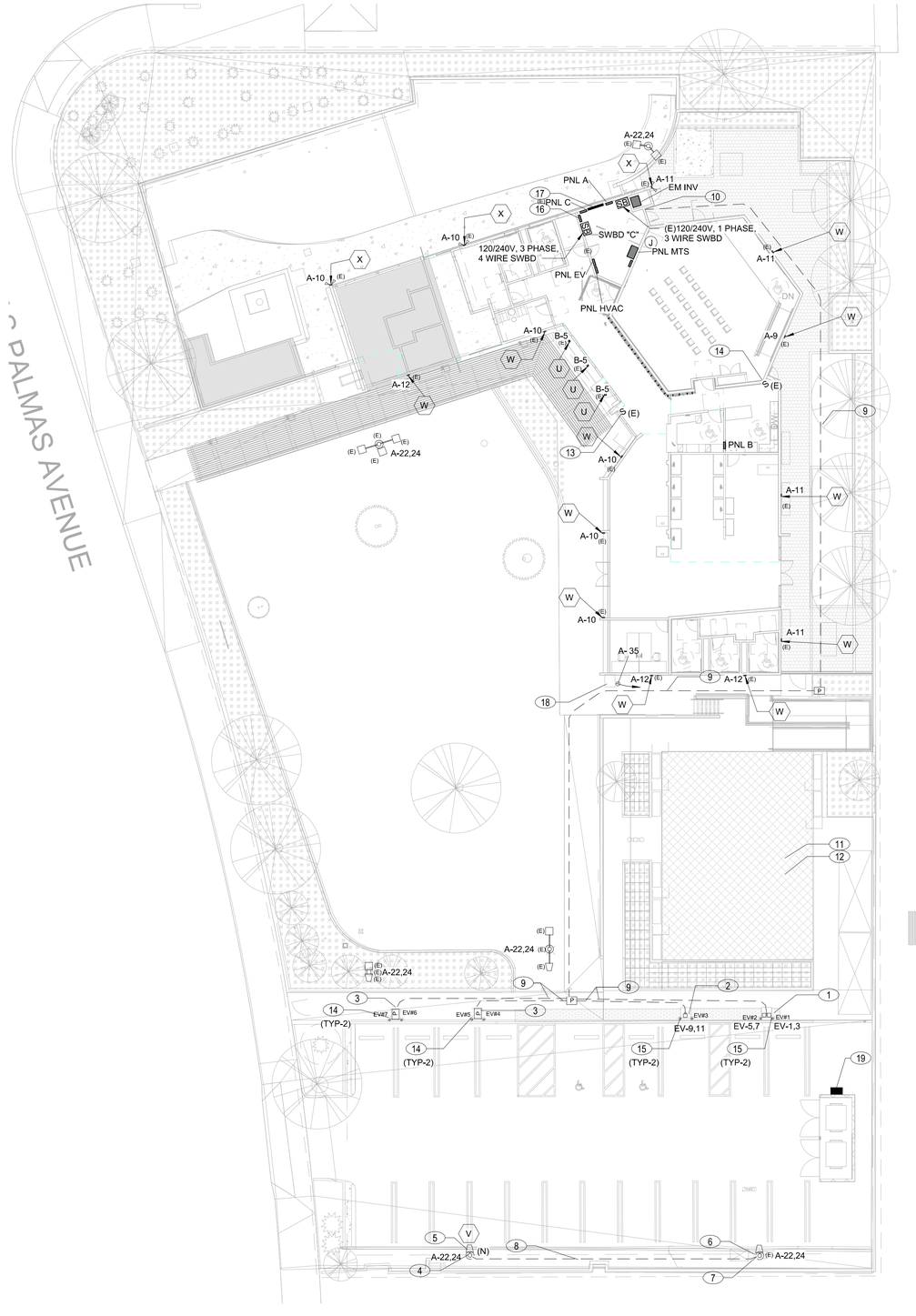
SHEET ISSUE DATE: 12/26/19
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC -Las Palmas Senior Ctr_RV25_LIVE.rvt
1/16" = 1' 0' 4' 8' 16'
1/8" = 1' 0' 4' 8' 16'
3/16" = 1' 0' 4' 8' 16'
1/4" = 1' 0' 4' 8' 16'
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

SITE PLAN KEYNOTES: #

1. NEW DUAL OUTPUT LEVEL 2 EV CHARGER, INSTALLED ON A CONCRETE HOUSEKEEPING PAD WITH PROTECTIVE BOLLARDS. (3704 SERIES BY EVSE LLC.). SEE LANDSCAPE SHEETS FOR HOUSEKEEPING PADS AND BOLLARDS.
2. NEW SINGLE OUTPUT LEVEL 2 EV CHARGER, INSTALLED ON A CONCRETE HOUSEKEEPING PAD WITH PROTECTIVE BOLLARDS. (3704 SERIES BY EVSE LLC.). SEE LANDSCAPE SHEETS FOR HOUSEKEEPING PADS AND BOLLARDS.
3. IN GRADE TYPE 2 CONCRETE PULL BOX AND TWO REMOVABLE BOLLARDS FOR FUTURE DUAL OUTPUT LEVEL 2 EV CHARGER.
4. NEW 25FT LIGHT POLE. SEE STRUCTURAL SHEETS FOR FOOTING DETAIL.
5. NEW POLE MOUNTED LIGHT FIXTURE TO BE ADDED TO THE SAME LIGHTING ZONE AS THE EXISTING LIGHT POLE VIA THE EXISTING TIMECLOCK. FIXTURE TO BE PROVIDED WITH FSIR-100 CONFIGURATION TOOL. CONTRACTOR SHALL USE FSIR-100 CONFIGURATION TOOL TO PROGRAM THE NEW LIGHT POLE TO BE ON 100% WHEN THERE IS MOTION, AND TO DIM BY 75% WHEN THERE IS NO MOTION.
6. CONTRACTOR TO REPAIR VANDALIZED WIRING, AND RERUN WIRING AS NEEDED. CONTRACTOR SHALL REPLACE HAND HOLE COVER.
7. SURFACE MOUNT THE NEW UNDERGROUND CONDUIT COMING FROM THE NEW POLE ON THE SIDE OF THE EXISTING POLE FOOTING, AND EXTEND CONDUIT ABOVE THE GROUND TO ENTER THE LIGHT POLE NEAR THE EXISTING HAND HOLE.
8. 1"C, 2#10, 1#10G
9. SEE SINGLE LINE DIAGRAM ON SHEET E101 FOR CONDUCTOR/CONDUIT SIZE.
10. SURFACE MOUNT THE TWO 2" RGS CONDUITS(SHOWN ON SINGLE LINE DIAGRAM) ON EXTERIOR WALL AND ENTER THE ELECTRICAL ROOM ABOVE THE DOOR HEIGHT BY CORE DRILLING THE WALL, AND USING A 90 DEGREE CONDULET. CONNECT CONDUITS TO EV PANEL.
11. SOLAR PV SHADE STRUCTURE OVER EXERCISE AREA. SOLAR PV SYSTEM TO BE DESIGN-BUILD BY THE CONTRACTOR UNDER A SEPARATE PERMIT. COORDINATE WITH SUPPLIER OF SHADE STRUCTURE AS SHOWN ON SHEET L801. DESIGN BUILD CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR SUBMITTING PV SOLAR PLANS TO LADWP SOLAR GROUP FOR THEIR APPROVAL, AND FOR ASSISTING CITY WITH COMPLETING THE INTERCONNECTION AGREEMENT DOCUMENTS, AND WITH REPLACING THE EXISTING LADWP METER WITH A NEW NEM METER.
12. CONTRACTOR SHALL DESIGN-BUILD AN INTEGRATED RECESSED LED LIGHTING SYSTEM THAT IS MOUNTED ON THE SHADE STRUCTURE MENTIONED IN KEYNOTE 14. THIS LIGHTING SYSTEM SHALL PROVIDE A MAINTAINED 10 FOOT-CANDLE AVERAGE ON THE EXERCISE AREA FLOOR. THIS LIGHTING SYSTEM WILL BE UNDER A SEPARATE PERMIT. COORDINATE WITH SUPPLIER OF SHADE STRUCTURE AS INDICATED ON L801.
13. ALL SWITCHES THAT CONTROL OUTDOOR LIGHTS SHALL REMAIN.
14. NEW REMOVABLE BOLLARD. SEE LANDSCAPE SHEETS.
15. NEW PERMANENT BOLLARD. SEE LANDSCAPE SHEETS.
16. EXISTING CHILDCARE METER BOX.
17. EXISTING TELECOMM BACKBOARD.
18. NEW IRRIGATION CONTROLLER. ROUTE CONDUIT UNDERGROUND ALONG THE SAME ROUTE AS THE NEW EV CHARGER CONDUITS SHOWN ON THE SINGLE LINE DIAGRAM.HOMERUN SHALL BE 1"C, 2#12, 1#12G. COORDINATE WITH LANDSCAPE CONTRACTOR PRIOR TO ROUGH-IN.
19. NEW CAM LOCK PORTABLE GENERATOR CONNECTOR BOX WITH A BUILT-IN CIRCUIT BREAKER. SHOWN FOR REFERENCE ONLY. TO BE DESIGNED BY DESIGN BUILD CONTRACTOR UNDER A SEPARATE PERMIT. RECOMMEND TO ROUTE CONDUIT BACK TO ELECTRICAL ROOM VIA THE SAME TRENCH THAT IS BEING INTRODUCED FOR NEW EV CHARGER CONDUITS. FINAL CONDUIT ROUTING, CONDUIT SIZE, AND WIRE SIZE SHALL BE DETERMINED BY DESIGN BUILD CONTRACTOR.

SITE PLAN SHEET NOTES:

1. EXISTING WALL MOUNTED LIGHT FIXTURES ON THE PERIMETER OF THE BUILDING SHALL REMAIN.



1 / E100 EXISTING AND NEW SITE PLAN
1/16" = 1'-0"

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
JOHN DESMOND
NO. E 12231
EXP. 9/30/2026
CIVIL
STATE OF CALIFORNIA

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION
INTERIM CITY ENGINEER
DATE:
LIC. NO.: E12231

ENGINEER: SARO DERSARDJIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARDJIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: EXISTING AND NEW SITE PLAN
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E100
SHEET 104 OF SHEETS 115

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TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
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FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC -Las Palmas Senior Cntr_RV25_LIVE.rvt
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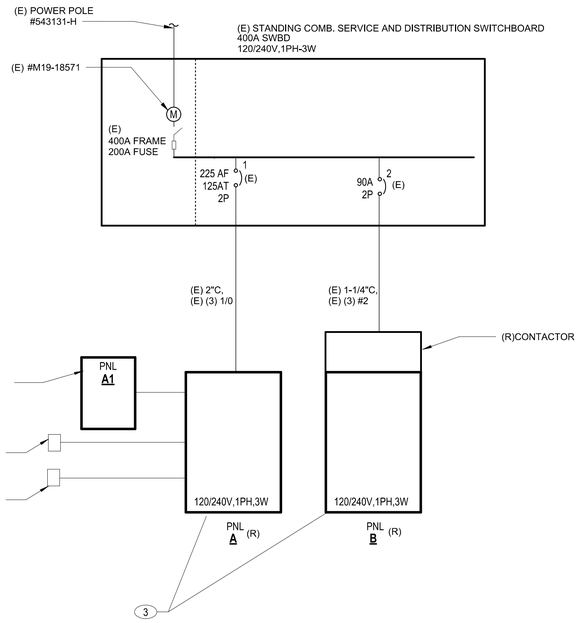
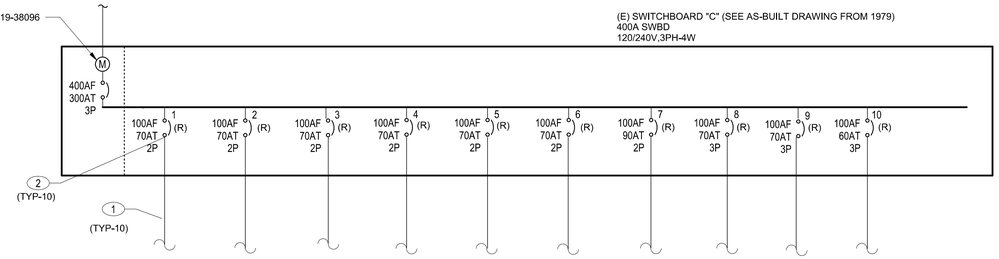




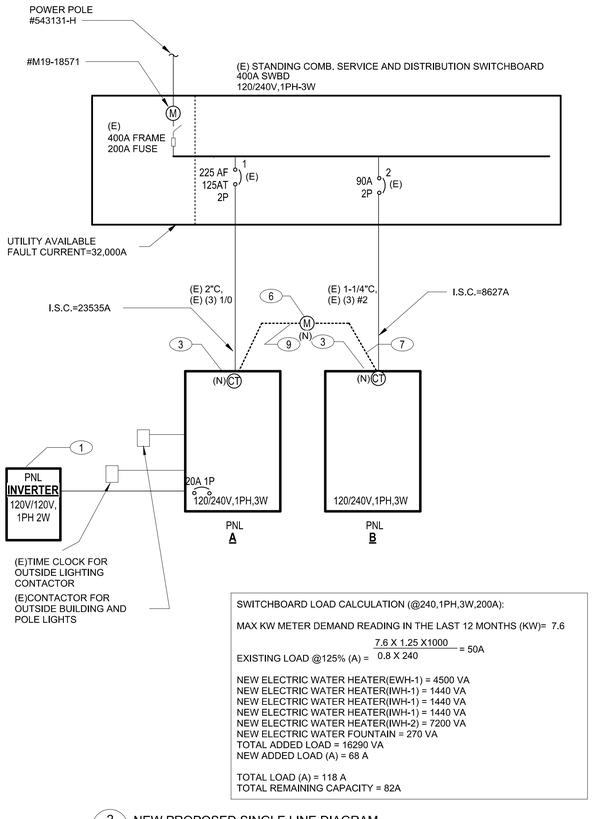
GENERAL NOTES:

1. ALL ELECTRICAL EQUIPMENT SHOWN ON THIS SINGLE LINE DIAGRAM ARE EXISTING UNLESS OTHERWISE NOTED.

KEYNOTES: (#)

1. THESE EXISTING FEEDERS ARE SERVING THE EXISTING HVAC ROOFTOP UNITS AS SHOWN ON SHEET M202. SEE GENERAL DEMO NOTE #1 ON SHEET E105 FOR INSTRUCTIONS REGARDING THE REQUIRED DEMO WORK. SEE NEW PROPOSED SINGLE LINE DIAGRAM FOR THE NEW REQUIRED WORK.
2. THE EXISTING BREAKERS FOR SWBD "C" SHALL BE REMOVED OR REPLACED WITH THE BREAKERS AS SHOWN ON THE NEW PROPOSED SINGLE LINE DIAGRAM.
3. REPLACE EXISTING PANEL BOARD WITH A NEW ONE AS SHOWN ON THE NEW PROPOSED SINGLE LINE DIAGRAM AT THE SAME LOCATION. RECONNECT EXISTING CIRCUITS TO THE NEW PANEL BOARD PER THE PANEL SCHEDULE ON SHEET E102.

1 E101 EXISTING SINGLE LINE DIAGRAM
NOT TO SCALE



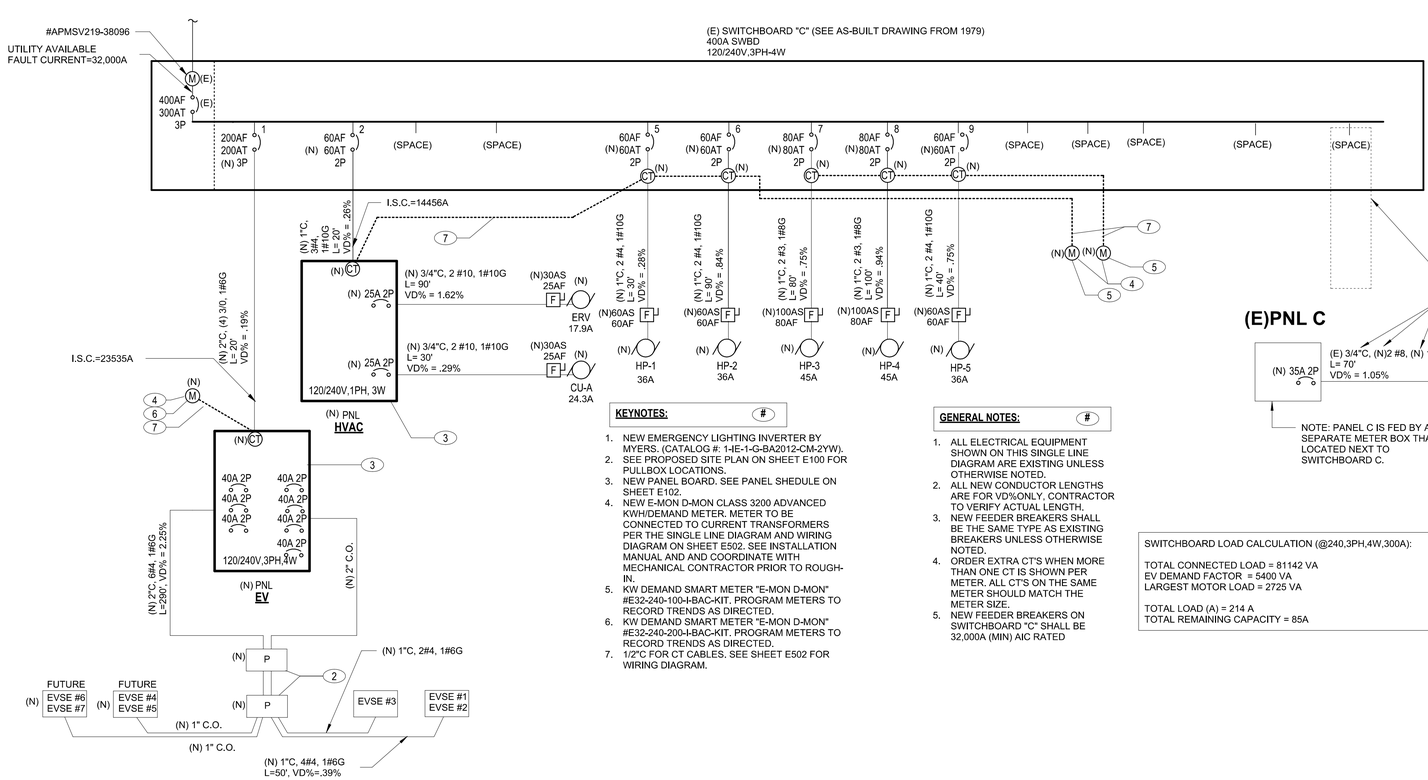
SWITCHBOARD LOAD CALCULATION (@240,1PH,3W,200A):

MAX KW METER DEMAND READING IN THE LAST 12 MONTHS (KW)= 7.6

EXISTING LOAD @125% (A) = $\frac{7.6 \times 1.25 \times 1000}{0.8 \times 240}$ = 50A

NEW ELECTRIC WATER HEATER(EWH-1) = 4500 VA
NEW ELECTRIC WATER HEATER(IWH-1) = 1440 VA
NEW ELECTRIC WATER HEATER(IWH-1) = 1440 VA
NEW ELECTRIC WATER HEATER(IWH-1) = 1440 VA
NEW ELECTRIC WATER HEATER(IWH-2) = 7200 VA
NEW ELECTRIC WATER FOUNTAIN = 270 VA
TOTAL ADDED LOAD = 16290 VA
NEW ADDED LOAD (A) = 68 A

TOTAL LOAD (A) = 118 A
TOTAL REMAINING CAPACITY = 82A



KEYNOTES: (#)

1. NEW EMERGENCY LIGHTING INVERTER BY MYERS. (CATALOG #: 1-IE-1-G-BA2012-CM-2YW).
2. SEE PROPOSED SITE PLAN ON SHEET E100 FOR PULLBOX LOCATIONS.
3. NEW PANEL BOARD. SEE PANEL SHEDULE ON SHEET E102.
4. NEW E-MON D-MON CLASS 3200 ADVANCED KWH/DEMAND METER. METER TO BE CONNECTED TO CURRENT TRANSFORMERS PER THE SINGLE LINE DIAGRAM AND WIRING DIAGRAM ON SHEET E502. SEE INSTALLATION MANUAL AND AND COORDINATE WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
5. KW DEMAND SMART METER "E-MON D-MON" #E32-240-100-I-BAC-KIT. PROGRAM METERS TO RECORD TRENDS AS DIRECTED.
6. KW DEMAND SMART METER "E-MON D-MON" #E32-240-200-I-BAC-KIT. PROGRAM METERS TO RECORD TRENDS AS DIRECTED.
7. 1/2"C FOR CT CABLES. SEE SHEET E502 FOR WIRING DIAGRAM.

GENERAL NOTES: (#)

1. ALL ELECTRICAL EQUIPMENT SHOWN ON THIS SINGLE LINE DIAGRAM ARE EXISTING UNLESS OTHERWISE NOTED.
2. ALL NEW CONDUCTOR LENGTHS ARE FOR VD%ONLY. CONTRACTOR TO VERIFY ACTUAL LENGTH.
3. NEW FEEDER BREAKERS SHALL BE THE SAME TYPE AS EXISTING BREAKERS UNLESS OTHERWISE NOTED.
4. ORDER EXTRA CT'S WHEN MORE THAN ONE CT IS SHOWN PER METER. ALL CT'S ON THE SAME METER SHOULD MATCH THE METER SIZE.
5. NEW FEEDER BREAKERS ON SWITCHBOARD "C" SHALL BE 32,000A (MIN) AIC RATED

PART OF THE DESIGN-BUILD SOLAR PV PANELS LOCATED ON SHADE STRUCTURE, BY OTHERS. SEE KEYNOTE 11 ON SHEET E100.

NOTE: EXTEND EXISTING CONDUIT FEEDING EXISTING UNIT AC#2 TO NEW UNIT AC-1 LOCATION, RUN NEW WIRES BACK TO PANEL C.

(E)PNL C

(N) 35A 2P
(E) 3/4"C, (N)2 #8, (N) 1#10G
L= 70'
VD% = 1.05%
(N)60AS
35AF
AC-1
24.3A

NOTE: PANEL C IS FED BY A SEPARATE METER BOX THAT IS LOCATED NEXT TO SWITCHBOARD C.

SWITCHBOARD LOAD CALCULATION (@240,3PH,4W,300A):

TOTAL CONNECTED LOAD = 81142 VA
EV DEMAND FACTOR = 5400 VA
LARGEST MOTOR LOAD = 2725 VA

TOTAL LOAD (A) = 214 A
TOTAL REMAINING CAPACITY = 85A

2 E101 NEW PROPOSED SINGLE LINE DIAGRAM
NOT TO SCALE

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY
1	POWER METERS	Date 2	ML

BUILDING NO. -

INDEX NO. MF-300512

PROFESSIONAL ENGINEER — REGISTERED — NO. E 12231 EXP. 9/30/2026 — ELECTRICAL — STATE OF CALIFORNIA

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:

ARCHITECTURAL DIVISION
LIC. NO.: E12231

ENGINEER: SARO DERSARKOIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARKOIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: EXISTING AND PROPOSED SINGLE LINE DIAGRAM

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BUREAU OF ENGINEERING — OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
E101

SHEET 105 OF SHEETS 115

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PANEL: A

LOCATION: MECH/ELECTRICAL ROOM 104
SUPPLY FROM: 125A AT SWITCHBOARD
MOUNTING: SURFACE
ENCLOSURE: Type 1

VOLTS: 120/240 Single
PHAS... 1
WIRES: 3

A.I.C. RATING: 22096A (MIN)
BUS RATING: 125A
MAINS TYPE: MLO

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	(N) Light Wall	20 A	1	515	392			1	20 A	(N) Cylinder Lights - Community Room (C.L.)	2
3	(N) Receptacles Community Room(C.L.)	20 A	1			540	0	1	20 A	(N) Lutron ELI - Normal Power	4
5	(N) Soffit Lighting - Community Room	20 A	1	370	296			2	20 A	(N) Emergency Lighting Inverter	6
7	(N) Downlights - Music R. - Restrooms (C.L.)	20 A	1			165	218				8
9	(E) Patio Flood Lights	20 A	1	17	120			1	20 A	(E) OUTDOOR WALL MOUNTED LIGHTS	10
11	(E) Lights Patio	20 A	1			51	51	1	20 A	(E) OUTDOOR WALL MOUNTED LIGHTS	12
13	(E) Sump Pump	20 A	1	500	540			1	20 A	(E) Receptacles	14
15	(N) Downlights - Music Room - Restrooms	20 A	1			33	360	1	20 A	(E) Receptacles	16
17	(E) Motors, Louvers (2)	20 A	1	500	2250			2	25 A	(N)EWH-1	18
19	(N) IWH-1	20 A	1			1440	2250				20
21	(N) IWH-1	20 A	1	1440	716			2	20 A	(E) Pole Lights	22
23	(N) IWH-1	20 A	1			1440	716				24
25	(N) EXIT SIGNS (C.L.)	15 A	1	25	10			1	15 A	(N) EXIT SIGNS (C.L.)	26
27	(N) LOAD CENTER CIRCUIT 1	20 A	1			360	360	1	20 A	(N) LOAD CENTER CIRCUIT 2	28
29	(N) LOAD CENTER CIRCUIT 3	20 A	1	360	360			1	20 A	(N) LOAD CENTER CIRCUIT 3	30
31	(N) STAGE LIGHTING	20 A	1			450	540	1	20 A	(N) FAUCET RECEPTACLE	32
33	SPACE	--	1	--	360			1	20 A	(N) FAUCET RECEPTACLE	34
35	(N) Irrigation Controller	20 A	1			0	0	2	15 A	(N) E-MON D-MON FUSE BOX	36
37	(N) Projector	20 A	1	360	0						38
39	SPACE	--	1			--	--	1	--	SPACE	40
41	SPACE	--	1	--	--			1	--	SPACE	42
			TOTAL LOADS:	9107 VA		8962 VA					
			TOTAL AMPS:	76 A		75 A					

LEGEND:

	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
NON-CONTINUOUS LOADS	9072 VA	100%	9072 VA		
LONG CONTINUOUS LOAD	3893 VA	125%	4866 VA	**TOTAL CONNECTED LOAD:**	18068 VA
LARGEST MOTOR LOAD	4500 VA	125%	5625 VA	**TOTAL ESTIMATED DEMAND:**	2098 VA
				TOTAL CONNECTED:	19563 VA
				TOTAL ESTIMATED DEMAND:	82 A

PANEL: EV

LOCATION: MECH/ELECTRICAL ROOM E104
SUPPLY FROM: 200A 3P BREAKER AT "C" SWITCHBOARD
MOUNTING: SURFACE
ENCLOSURE: Type 1

VOLTS: 120/240 Delta
PHAS... 3
WIRES: 4

A.I.C. RATING: 23535A (MIN)
BUS RATING: 200
MAINS TYPE: MLO

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		C		POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	(N) EVSE #1(*)	40 A	2	3600	0					2	40 A	(N) SPARE FOR EVSE #4(*)(FUTURE)	2
3						3600	0						4
5	(N) EVSE #2(*)	40 A	2					3600	0	2	40 A	(N) SPARE FOR EVSE #5(*)(FUTURE)	6
7				3600	0								8
9	(N) EVSE #3(*)	40 A	2			3600	0			2	40 A	(N) SPARE FOR EVSE #6(*)(FUTURE)	10
11								3600	0				12
13	(N) E-MON D-MON FUSEBOX	15 A	3	0	0					2	40 A	(N) SPARE FOR EVSE #7(*)(FUTURE)	14
15						0	0						16
17								0	--	1	--	SPACE	18
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
			TOTAL LOADS:	7200 VA		7200 VA		7200 VA					
			TOTAL AMPS:	60 A		60 A		60 A					

LEGEND:

(*) SEE SITE PLAN ON SHEET E100 FOR LAYOUT AND MOUNTING

	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EV CHARGERS	21600 VA	125%	27000 VA		
				TOTAL CONNECTED LOAD:	21600 VA
				TOTAL ESTIMATED DEMAND:	5400 VA
				TOTAL CONNECTED:	27000 VA
				TOTAL ESTIMATED DEMAND:	65 A

PANEL: HVAC

LOCATION: MECH/ELECTRICAL ROOM 104
SUPPLY FROM: 60A 2P BREAKER AT "C"
MOUNTING: SURFACE
ENCLOSURE: Type 1

VOLTS: 120/240 Single
PHAS... 1
WIRES: 3

A.I.C. RATING: 14456A (MIN)
BUS RATING: 100 A
MAINS TYPE: MLO

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	FC1 (C.L.)	15 A	2	675	675			2	15 A	FC2(C.L.)	2
3						675	675				4
5	FC3, FC4, FC5, FC6(C.L.)	15 A	2	222	168			2	15 A	FC7, FC8, FC9, FC10(C.L.)	6
7						222	168				8
9	FC11, FC12, FC13 (C.L.)	15 A	2	149	55			1	20 A	EF4, EF5, EF6(C.L.)	10
11						149	56	1	20 A	EF1, EF2, EF3, EF7, EF8 (C.L.)	12
13	CU-A(C.L.)	20 A	2	1320	2148			2	25 A	ERV(C.L.)	14
15						1320	2148				16
17	SF-1(C.L.)	20 A	1	38	38			1	20 A	SF-2(C.L.)	18
19	EF-7(C.L.)	20 A	1			75					20
21											22
23											24
			TOTAL LOADS:	5488 VA		5488 VA					
			TOTAL AMPS:	46 A		46 A					

LEGEND:

	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
NON-CONTINUOUS LOAD	6418 VA	100%	6418 VA		
CONTINUOUS LOAD	187 VA	125%	234 VA	**TOTAL CONNECTED LOAD:**	10976 VA
LARGEST MOTOR LOAD	4296 VA	125%	5370 VA	**TOTAL ESTIMATED DEMAND:**	1121 VA
				TOTAL CONNECTED:	12022 VA
				TOTAL ESTIMATED DEMAND:	50A

PANEL: B

LOCATION: MECH/ELECTRICAL ROOM 104
SUPPLY FROM: 90A 2P AT SWITCHBOARD
MOUNTING: RECESSED
ENCLOSURE: Type 1

VOLTS: 120/240 Single
PHAS... 1
WIRES: 3

A.I.C. RATING: 10000A (MIN)
BUS RATING: 100 A
MAINS TYPE: MLO

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	(N) Kitchen and Reception Lighting	20 A	1	78	168			1	20 A	(N) Multi-Purpose Room Lighting (C.L.)	2
3	(N) Microwave(C.L.)	20 A	1			1000	143	1	20 A	(N) Multi-Purpose Room Lighting	4
5	(E) COVE LIGHTING	20 A	1	100	41			1	20 A	(N) Entryway Lighting	6
7	(N) Reception Counter Lighting	20 A	1			24	360	1	20 A	(N) Receptacles Tech Alcove	8
9	SPARE	20 A	1	0	1260			1	20 A	(E) Receptacles	10
11	(E) Kitchen Counter	20 A	1			1000	118	1	20 A	(N) Downlights - Reception - Kitchen (C.L.)	12
13	(N) Roof receptacles	20 A	1	360	82			1	20 A	(N) Entryway Lighting (C.L.)	14
15	(N) Refrigerator Receptacle(C.L.)	20 A	1			1200	360	1	20 A	(N) Reception Receptacles (C.L)	16
17	(N) Tech Alcove Lighting (C.L.)	20 A	1	75	540			1	20 A	(N) Multi-Purpose Room Lighting (C.L.)	18
19	(N) Main Office Lighting	20 A	1			23	540	1	20 A	(N) TECH ALCOVE AND OFFICE REC....	20
21	(N) Tech Alcove Receptacles	20 A	1	900	3600			2	30 A	(N)IWH-2	22
23	(N) Tech Alcove Receptacles	20 A	1			540	3600				24
25	(N) Office and Restroom Lighting (C.L.)	20 A	1	205	1200			1	20 A	(N) DISHWASHER	26
27	(N) WATER FOUNTAIN(C.L.)	20 A	1			260	175	1	20 A	(N) Corridor Lighting	28
29	(N) GARBAGE DISPOSAL	20 A	1	1656	--			1	--	SPACE	30
			TOTAL LOADS:	10253 VA		9336 VA					
			TOTAL AMPS:	85 A		78 A					

LEGEND:

	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
NON-CONTINUOUS LOAD	16161 VA	100%	16161 VA		
LONG CONTINUOUS LOAD	1728 VA	125%	2160 VA	**TOTAL CONNECTED LOAD:**	19589 VA
LARGEST MOTOR LOAD	1656 VA	125%	2070 VA	**TOTAL ESTIMATED DEMAND:**	846 VA
				TOTAL CONNECTED:	20391 VA
				TOTAL ESTIMATED DEMAND:	85 A

PANEL: INV

LOCATION: ELEC/MECH ROOM 104
SUPPLY FROM: 20A 2P BREAKER AT PANEL A
MOUNTING: SURFACE
ENCLOSURE: Type 1

VOLTS: 120/240 Single
PHAS... 1
WIRES: 3

A.I.C. RATING: 22535A (MIN)
BUS RATING:
MAINS TYPE: MLO

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	Lighting - Club Room	20 A	1	61	0			1	20 A	PPDV and Hub Power Supply	2
3	Lighting - Restrooms and Main Office	20 A	1			89	40	1	20 A	Lighting - Corridor	4
5	Lighting - Pantry, Reception, and Corridor	20 A	1	57	133			1	20 A	Lighting - Music Room, Lobby, and Restroom	6
7	Lighting - Community Room	20 A	1			80	10	1	20 A	Exit Signs	8
9	Lighting - Inverter Closet	20 A	1	23	25			1	20 A	Exit Signs	10
11	SPARE	20 A	1			0	0	1	20 A	SPARE	12
			TOTAL LOADS:	296 VA		218 VA					
			TOTAL AMPS:	2 A		2 A					

LEGEND:

	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
CONTINUOUS LOAD	520 VA	125%	650 VA		
				TOTAL CONNECTED LOAD:	513 VA
				TOTAL ESTIMATED DEMAND:	130 VA
				TOTAL CONNECTED:	650 VA
				TOTAL ESTIMATED DEMAND:	3 A

PANEL: C (E)

LOCATION: ELEC/MECH ROOM 104
SUPPLY FROM: 100A 2P BREAKER AT CHILDCARE METER BOX
MOUNTING: SURFACE
ENCLOSURE: Type 1

VOLTS: 120/240 Single
PHAS... 1
WIRES: 3

A.I.C. RATING: 22 kA
BUS RATING: 100 A
MAINS TYPE: MLO

NOTES:

CKT	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		POLE	TRIP	CIRCUIT DESCRIPTION	CKT
1	(N)AC-1	35 A	2	2916	1500			1	20 A	(E) COUNTERTOP RECEPTACLES	2
3						2916	1500	1	20 A	(E) CLASSROOM RECEPTACLES	4
5	(E) EXISTING LOAD	20 A	1	500	500			1	20 A	(E) PRE-SCHOOL LIGHTS	6
7	(N)EF-9	20 A	1			172	500	1	20 A	(E) OFFICE/BTHRM. LIGHTS AND REC.	8
9	(N)ROOF RECEPTACLE	20 A	1	180	1000			1	15 A	(E) FIRE ALARM PANEL(C.L.)	10
11	SPACE	--	1			--	--	1	--	SPACE	12
13	SPACE	--	1	--	--			1	--	SPACE	14
15	SPACE	--	1			--	--	1	--	SPACE	16
			TOTAL LOADS:	6596 VA		5088 VA					
			TOTAL AMPS:	55 A		42 A					

LEGEND:

	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
NON-CONTINUOUS LOAD	4852 VA	100%	4352 VA		
LIGHTING LOAD	1000 VA	125%	1250 VA	**TOTAL CONNECTED LOAD:**	11684 VA
LARGEST MOTOR LOAD	5832 VA	125%	7290 VA	**TOTAL ESTIMATED DEMAND:**	1208 VA
				TOTAL CONNECTED:	12892 VA
				TOTAL ESTIMATED DEMAND:	54 A

PANEL SCHEDULE SHEET NOTES:

1. SEE KEYNOTE 3 ON NEW PROPOSED SINGLE LINE DIAGRAM ON SHEET E101 FOR AIC RATING OF NEW BRANCH BREAKERS.
2. ANY CIRCUITS WITH "(C.L.)" MARKING SHALL BE RELOCATED OR ADDED TO NEW "C.L." PANEL BY DESIGN BUILD CONTRACTOR.

PANEL SCHEDULE KEYNOTES: (#)

1. REPLACE EXISTING 30A 2P BREAKER WITH NEW 35A 2P BREAKER AS SHOWN ON THE PANEL SCHEDULE.

BUREAU OF ENGINEERING

OFFICIAL RECORD

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
ALFRED MATA, P.E.
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
LIC. NO., E12231

ENGINEER: SARO DERSAROJAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSAROJAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PANEL SCHEDULES
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E102
SHEET 106 OF SHEETS 115

PLOTTED:10/2/2025 4:25:42 PM

TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
SHEET ISSUE DATE: 05/22/23
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER\ELEC -Las Palmas Senior Cntr_RV25_LIVE.rvt
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

LIGHTING PLAN SHEET NOTES:

1. ALL NEW LIGHTING CONTROL SENSORS AND SWITCHES WILL BE WIRELESS U.O.N.
2. ALL CONDUITS SHALL BE CONCEALED IN THE CEILING SPACE (U.O.N.). ROUTE THE CONDUITS IN THE SPACE BETWEEN PARALLEL JOISTS TO MINIMIZE THE CORING OF THE JOISTS.
3. ALL EXIT SIGNS SHOWN ON THE PLAN ARE NEW. ALL EXISTING EXIT SIGNS SHALL BE REMOVED IN ADDITION TO THEIR ASSOCIATED CONDUITS AND CONDUCTORS.
4. THE (C.L.) SYMBOL INDICATES A LOAD THAT SHALL BE BACKED UP BY PORTABLE GENERATOR VIA NEW CAM LOCK CONNECTOR BOX AND NEW MTS. THIS EQUIPMENT AND INFRASTRUCTURE SHALL DESIGN-BUILD.

LIGHTING PLAN KEYNOTES: (#)

1. PRIMARY DAYLIGHTING ZONE BOUNDARY.
2. SECONDARY DAYLIGHTING ZONE. BOUNDARY.
3. SEE SHEET E500 FOR WIRING DIAGRAM.
4. MOUNT (2) REMOTE LED DRIVERS FOR (2) TAPE LIGHTS (TYPE T) UNDER THE COUNTER IN A 10"x6" SURFACE MOUNTED JUNCTION BOX AT 18" AFF. CONNECT TO THE TAPELIGHT FROM THIS BOX. POWER PACK FOR ILLUMINATED WALL IN THE ENTRY WAY SHALL ALSO BE CONCEALED IN THIS JUNCTION BOX.
5. CONCEAL LIGHTING CONTROL POWER PACK IN THE PLUMBING UTILITY CHASE. COORDINATE WITH ARCHITECT TO PROVIDE AN 18"X18" ACCESS PANEL.
6. PLACE LUTRON LIGHTING CONTROLS IN CEILING ABOVE THE ACCESS PANEL FOR THE NEAREST FAN COIL UNIT. COORDINATE WITH MECHANICAL CONTRACTOR TO MAINTAIN WORKING CLEARANCE FOR FAN COIL UNIT.
7. CONCEAL LUTRON LIGHTING CONTROLS IN CLOSET NEAR THE CEILING.
8. THIS 12' TRACK SHALL BE INTERCONNECTED TO THE ADJACENT 12' TRACK USING THE "LA-2-P" MINI-CONNECTOR IN ADDITION TO THE "LASB-2" MINI CONNECTOR SUPPORT BRACKET.
9. "LACD-180" CABLE MOUNTING KIT WITH TOGGLE BOLT. TRACK SHALL BE SUSPENDED AT 10' AFF.
10. POWER FEED COMES FROM THE CEILING MOUNTED J-BOX TO THE TRACK VIA WHITE POWER CABLE WITH (3) #12AWG WIRES, AND ENTERS THE TRACK VIA THE CURRENT LIMITER "LA-23-R-P-REG21-P".
11. 3-PHASE NORMAL POWER SENSE SHALL BE IMPLEMENTED PER FIGURE 1 ON SHEET E500
12. 3/4"C, 2#12 & 1#12G TO EXHAUST FAN EF-9 AS SHOWN ON SHEET E104. EXHAUST FAN SHALL BE SET TO TURN OFF 15 MINUTES AFTER MOTION IS LAST DETECTED.
13. PLACE LUTRON LIGHTING CONTROLS IN SPACE ABOVE THE SOFFIT BEHIND THE NEW ACCESS PANEL FOR THE NEAREST FAN COIL UNIT. COORDINATE WITH MECHANICAL CONTRACTOR TO MAINTAIN WORKING CLEARANCE FOR FAN COIL UNIT.
14. INCLUDE



RESPONSIBLE PROFESSIONAL ENGINEER IN CHARGE SUPERVISION
NO. E 12231
EXP. 9/30/2026
ELECTRICAL
STATE OF CALIFORNIA

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -

INDEX NO. MF-300512

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:

ARCHITECTURAL DIVISION
LIC. NO.: E12231

ENGINEER: SARO DERSARDJIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARDJIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: PROPOSED LIGHTING PLAN

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
E103

SHEET 107 OF SHEETS 115

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TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
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POWER PLAN KEYNOTE: (#)

1. REPLACE EXISTING POWER RECEPTACLE WITH A GFCI TYPE POWER RECEPTACLE. USE EXISTING CIRCUIT.
2. EXISTING CHILDCARE METER BOX.
3. EXISTING TELECOMM BACKBOARD.
4. REPLACE EXISTING DAMAGED RECEPTACLE WITH A NEW RECEPTACLE.
5. REPLACE THIS RECEPTACLE WITH A NEW ONE AND ADD TO THE CIRCUIT NUMBER SHOWN ON THE PLAN. REMOVE ANY UNUSED CONDUCTORS ASSOCIATED WITH THE ORIGINAL CIRCUIT.
6. EXTEND CONDUCTORS AND CONDUIT TO NEW RECEPTACLE AS SHOWN ON THE POWER PLAN. REMOVE EXISTING RECEPTACLE AS INDICATED WITH THE "(R)" SYMBOL.
7. ADD NEW RECEPTACLE TO EXISTING CIRCUIT AS SHOWN ON THE POWER PLAN. VERIFY CIRCUIT NUMBER PRIOR TO ROUGH-IN.
8. CONNECT TO IWH-2 VIA 40A CHRONOMITE 2095-1 DISCONNECT SWITCH. SWITCH SHALL BE CONCEALED UNDER THE SINK. CONDUCTORS/CONDUITS SHALL BE 3/4"C 2#10, 1#10G. COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
9. CONNECT TO IWH-1 VIA 40A CHRONOMITE 2095-1 DISCONNECT SWITCH. SWITCH SHALL BE LOCATED UNDER THE SINK. CONDUCTORS/CONDUITS SHALL BE 3/4"C 2#12, 1#12G. COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
10. EXISTING TIMECLOCK WITH THE "UNIT 10" LABEL SHALL BE REMOVED IN ADDITION TO ITS ASSOCIATED WIRES AND CONDUIT.
11. REMOVE RECEPTACLE NEAR THE CEILING IN ADDITION TO ITS ASSOCIATED J-BOX, UN-USED WIRES, AND SURFACE MOUNTED CONDUIT TO THE NEAREST J-BOX.
12. REMOVE SURFACE MOUNTED RECEPTACLE IN ADDITION TO IT'S ASSOCIATED UN-USED WIRES AND CONDUIT TO THE NEAREST J-BOX.
13. POWER CONDUCTORS FED FROM THE ROOFTOP UNIT "CU-A". USE 3/4"C, 3#14, 1#14G. SEE ROOF PLAN KEYNOTE 10 ON SHEET E105 FOR CONTINUATION OF CONNECTION.
14. 3/4" C.O. FOR CONTROL CONDUCTORS. SEE MECHANICAL SHEETS FOR WIRING DIAGRAM.
15. 3/4" C.O. FOR CONTROL CONDUCTORS ROUTED TO THE ASSOCIATED ROOFTOP HEATPUMP. SEE SHEET E105 FOR CONTINUATION OF CONDUIT AND SEE MECHANICAL SHEETS FOR WIRING DIAGRAM.
16. CONNECT TO DISCONNECT SWITCH VIA CURRENT SENSING SWITCH. SEE KEYNOTE 12 ON SHEET E103 FOR CONTINUATION OF HOMERUN AND SHEET M305 FOR WIRING DIAGRAMS.
17. 3/4" C.O. FOR CONTROL CONDUCTORS ROUTED TO BMS PANEL(SC+). SEE MECHANICAL SHEETS FOR WIRING DIAGRAM.
18. ROUTE POWER CONDUIT/CONDUCTORS TO EF-7 ON THE ROOF LEVEL. ALSO ROUTE 1/2"C.O. FOR CONTROL CONDUCTORS UP TO EF-7 ON THE ROOF. SEE KEYNOTES 8 AND 15 ON SHEET E105 FOR CONTINUATION.
19. UNDER SINK RECEPTACLE TO BE USED FOR PLUG-IN VOLTAGE ADAPTER FOR L-1H LAV. SEE PLUMBING SHEETS AND COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
20. NEW 20A SINGLE POLE MOTOR RATED TOGGLE SWITCH FOR GARBAGE DISPOSAL, LOCATED ABOVE COUNTER. COORDINATE WITH ARCHITECT FOR FINAL PLACEMENT AND ADA REQUIREMENTS.
21. REPLACE PANEL BOARD WITH A NEW PANEL BOARD. CONTACTOR THAT FEEDS THE PANEL AND ASSOCIATED PUSHBUTTON IN ROOM 100 SHALL BE REMOVED AND DISCARDED. CONNECT CIRCUITS TO NEW PANEL AS SHOWN ON THE NEW PANEL SCHEDULE ON SHEET E102. SEE SINGLE LINE DIAGRAM ON SHEET E101 AND PANEL SCHEDULES ON SHEET E102 PRIOR TO ROUGH-IN.
22. REMOVE 4 CIRCUIT LOAD CENTER AND RECONNECT CIRCUITS TO NEW PANEL A. EXISTING TIME CLOCKS AND CONTACTORS THAT CONTROL OUTDOOR LIGHTING THAT ARE CONNECTED TO PANEL A SHALL REMAIN AND BE CONNECTED TO NEW PANEL A.
23. NEW BMS PANELS SC+ AND TE-200 PER MECHANICAL SHEET M203.
24. CONNECT TO EWH-1 VIA A 2P 30A DISCONNECT SWITCH. HOMERUN TO PANEL SHALL BE 3/4"C 2#10, 1#10G. COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
25. ROUTE 1/2" C.O. FOR CONTROL WIRES TO THE ROOF AND CONNECT TO THE AC-1 UNIT. SEE MECHANICAL SHEETS AND COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
26. NEW 1/2" C.O. FOR CONTROL CONDUCTORS ROUTED TO CU-A ON THE ROOF. SEE E105 FOR CONTINUATION OF CONDUIT. SEE MECHANICAL SHEETS AND COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
27. NEW 1/2" C.O. FOR CONTROL CONDUCTORS TO BMS PANEL "SC+". SEE MECHANICAL SHEETS AND COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
28. PROVIDE NEW 14 POLE 20A RELAY THAT HAS A 24V COIL THAT IS USED FOR THE AIR HANDLING UNIT SHUTDOWN WHEN SMOKE IS DETECTED. COORDINATE WITH MECHANICAL AND FIREALARM CONTRACTOR PRIOR TO ROUGH-IN.
29. HOMERUN(3/4"C, 2#12, 1#12G) TO CONNECT TO PANEL VIA 14 POLE RELAY MENTIONED IN KEYNOTE 28
30. NEW DATA OUTLET FOR ENERGY DASHBOARD DISPLAY. SHALL BE CONNECTED BACK TO SC+ BAS PANEL IN THE ELECTRICAL ROOM. COORDINATE WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
31. MOUNT E-MON D-MON METERS, FUSE BOXES HERE FOR PANEL EV/ PANEL HVAC, AND HEAT PUMP UNITS. SEE SHEET E502 FOR WIRING DIAGRAM AND SEE E101 FOR SINGLE LINE DIAGRAM.
32. CONNECT TO WIRES FROM CT TO THE E-MON D-MON METER IN THE ELECTRICAL ROOM. SEE SHEET E502 FOR WIRING DIAGRAM.
33. E-MON D-MON METER AND FUSE BOX FOR PANEL A AND PANEL B. SEE SHEET E502 FOR WIRING DIAGRAM, AND SEE SHEET E101 FOR SINGLE LINE DIAGRAM AND CATALOG NUMBERS.
34. COORDINATE WITH PLUMBING CONTRACTOR TO INSTALL WATER HEATER POWER METER. INSTALL 3/4" CONDUIT GOING TO THE WATER HEATER FOR CT WIRES AND GOING FROM THE METER TO THE SC+ BMS PANEL COMMUNICATION CABLES. SEE MECHANICAL/PLUMBING SHEETS AND COORDINATE WITH MECHANICAL/PLUMBING CONTRACTOR PRIOR TO ROUGH-IN.
35. NEW DATA OUTLETS FOR COMPUTER STATIONS WITH CONDUIT ONLY GOING BACK TO NETWORK SWITCH. COORDINATE WITH ITA PRIOR TO ROUGH-IN.
36. NEW DATA OUTLET FOR CELL ROUTER PROVIDED BY CONTROLS CONTRACTOR. COORDINATE WITH CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
37. NEW 3/4" CONDUIT ONLY GOING TO TRANE CELL ROUTER FOR CAT6. PER WIRING DIAGRAM ON SHEET M305. COORDINATE WITH CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.
38. NEW HDMI PORT MOUNTED IN A SINGLE GANG J-BOX 18" ABOVE THE STAGE TO THE CENTER OF THE BOX. ROUTE 3/4" C.O. TO THE PROJECTOR SHOWN ON THE LIGHTING PLAN. COORDINATE WITH AV CONTRACTOR FOR INSTALLATION OF HDMI CABLE.
39. RAISE/LOWER PUSHBUTTON FOR MOTORIZED PROJECTOR SCREEN.
40. J-BOX FOR MOTORIZED PROJECTOR SCREEN. COORDINATE FINAL LOCATION WITH ARCHITECT AND SCREEN MANUFACTURER INSTALLATION MANUAL. BRING POWER FROM NEARBY RECEPTACLE AS SHOWN ON THE PLAN.
41. 1/2" C.O. FOR RAISE/LOWER CONTROL WIRES.
42. NEW RECEPTACLE FOR PROJECTOR MOUNTED AT THE CEILING. PROJECTOR SHALL BE MOUNTED ON A METALLIC SUPPORT POLE. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH ARCHITECT AND ITA PRIOR TO ROUGH-IN. PROJECTOR SHALL BE ABOVE NEW TRACK LIGHTS SHOWN ON SHEET E103. WRAP POWER CABLE AROUND POLE GOING DOWN TO THE PROJECTOR. HDMI MAY BE RUN INSIDE SUPPORT POLE TO THE PROJECTOR.
43. NEW CRITICAL LOAD PANEL TO BE BACKED UP BY PORTABLE GENERATOR VIA MTS. SHOWN FOR REFERENCE ONLY. TO BE DESIGNED BY DESIGN BUILD CONTRACTOR UNDER A SEPARATE PERMIT. LOADS WITH A "C.L." LABEL AS SHOWN ON SHEETS E103, E104, AND E105 SHALL BE ADDED TO THIS PANEL.
44. NEW MANUAL TRANSFER SWITCH(MTS) FOR PORTABLE GENERATOR CONNECTION SHOWN BY KEYNOTE 19 ON SHEET E100. SHOWN FOR REFERENCE ONLY. TO BE DESIGNED BY DESIGN BUILD CONTRACTOR UNDER A SEPARATE PERMIT.
45. EXISTING FIRE ALARM CONTROL PANEL TO BE ADDED TO CRITICAL LOAD PANEL.

POWER PLAN SHEET NOTE:

1. LOADS WITH THE SYMBOL (E*) SHALL BE VERIFIED IN THE FIELD.
2. CONTRACTOR SHALL VERIFY ALL EXISTING CIRCUIT NUMBERS SHOWN ON THE PLAN PRIOR TO ROUGH-IN.
3. COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN FOR ALL ELECTRICAL WORK REGARDING MECHANICAL ITEMS.
4. COORDINATE WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN FOR ALL ELECTRICAL WORK REGARDING PLUMBING ITEMS.
5. THE (C.L.) SYMBOL INDICATES A LOAD THAT SHALL BE RELOCATED OR ADDED TO NEW PANEL "C.L." BY DESIGN BUILD CONTRACTOR.

1 / E104 PROPOSED POWER PLAN
3/16" = 1'-0"



BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY
1	POWER METERS	Date 2	ML

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER — ELECTRICAL — STATE OF CALIFORNIA — NO. E 12231 EXP. 9/30/2026

ALFRED MATA, P.E.
ARCHITECTURAL DIVISION
LIC. NO.: E12231
DATE:
INTERIM CITY ENGINEER
VERTICAL CONTROL:
HORIZONTAL CONTROL:

ENGINEER: SARO DERSARDJIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARDJIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

SHEET TITLE: PROPOSED POWER PLAN
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BUREAU OF ENGINEERING — OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE 9/22/2025
CITY OF LOS ANGELES

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E104
SHEET 108 OF SHEETS 115

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TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
SHEET ISSUE DATE: 12/30/19
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC -Las Palmas Senior Cntr_RV25_LIVE.rvt
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.
1/16" = 1' 0' 4' 8' 16' | 1/8" = 1' 0' 4' 8' 16' | 3/16" = 1' 0' 4' 8' 16' | 1/4" = 1' 0' 4' 8' 16'

KEYNOTES: (#)

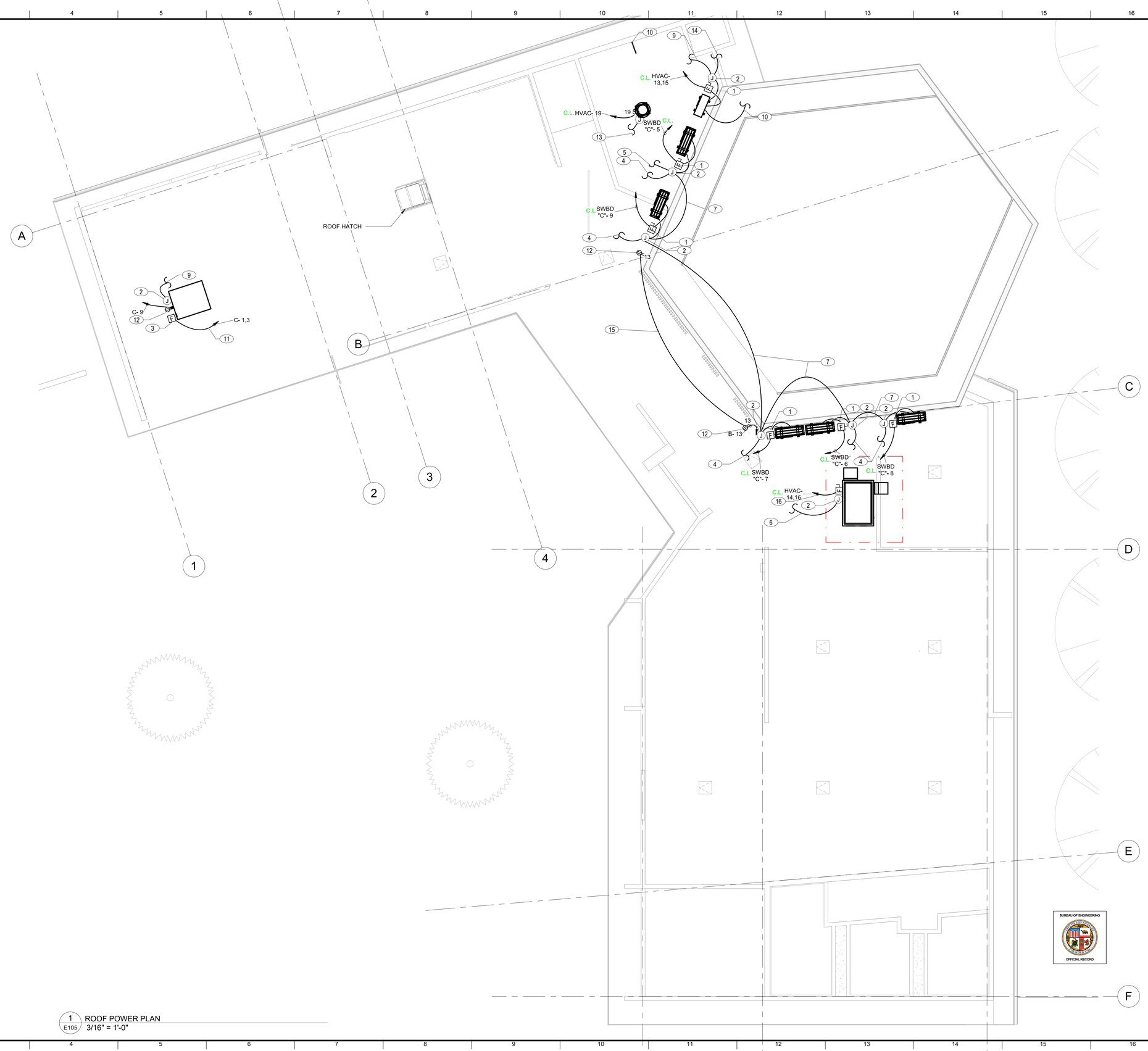
1. NEW NEMA 3R FUSIBLE DISCONNECT TO BE WALL MOUNTED. SEE SINGLE LINE DIAGRAM FOR SWITCH/FUSE SIZE AND CONDUCTOR/CONDUIT SIZE. FINAL CONNECTION TO HVAC SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METALLIC CONDUIT.
2. NEW SINGLE GANG WEATHERPROOF J-BOX FOR CONTROL CONDUCTORS TO BE MOUNTED 6" AFF. FINAL CONNECTION TO HEAT PUMP SHALL BE MADE WITH 3/4" LIQUID TIGHT FLEXIBLE METALLIC CONDUIT.
3. NEW NEMA 3R FUSIBLE DISCONNECT TO BE MOUNTED ON A UNISTRUT THAT IS NOT ATTACHED TO THE UNIT. SEE SINGLE LINE DIAGRAM FOR SWITCH/FUSE SIZE AND CONDUCTOR/CONDUIT SIZE. FINAL CONNECTION TO HEAT PUMP SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METALLIC CONDUIT.
4. 3/4"C.O. FOR CONTROL CONDUCTORS ROUTED TO THE ASSOCIATED FAN COIL. SEE SHEET E104 FOR CONDUIT CONTINUATION AND SEE MECHANICAL SHEETS FOR WIRING DIAGRAM. COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
5. 3/4"C.O. FOR CONTROL CONDUCTORS ROUTED TO BMS PANEL (TE-200) PER THE WIRING DIAGRAM ON THE MECHANICAL SHEETS. SEE SHEET E104 FOR CONDUIT CONTINUATION. COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
6. 3/4"C.O. FOR CONTROL CONDUCTORS ROUTED TO BMS PANEL (SC+) PER THE WIRING DIAGRAM ON THE MECHANICAL SHEETS. COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
7. 3/4"C.O. UNDER THE ROOF FOR CONTROL CONDUCTORS PER THE WIRING DIAGRAM ON THE MECHANICAL SHEETS. COORDINATE WITH HVAC CONTRACTOR PRIOR TO ROUGH-IN.
8. 1/2"C.O. FOR CONTROL CONDUCTORS ROUTED TO AC-1 THERMOSTAT. SEE NOTE 16 ON SHEET E104 FOR CONTINUATION OF CONDUIT.
9. POWER CONDUCTORS FOR THE INDOOR UNIT "FC-A". USE 3/4"C, 3#14, 1#14G. CONDUIT SHALL BE RUN EXPOSED ON THE ROOF AND SHALL STUB DOWN THROUGH THE ROOF NEAR THE INDOOR FAN COIL UNIT. SEE NOTE 13 ON SHEET E104 FOR CONTINUATION OF CONNECTION.
10. CONDUIT ROOF PENETRATIONS FOR EXISTING ROOFTOP HVAC UNITS. THESE STUB DOWN POINTS AND CONDULETS SHALL BE RE-USED AS NEEDED. CAP ANY UNUSED STUB DOWN POINTS THAT ARE NOT NEEDED.
11. REPLACE EXISTING 30A 2P BREAKER ON PANEL C (CIRCUIT 1,3) WITH A 35A 2P BREAKER.
12. NEW WEATHERPROOF NEMA 3R GFCI POWER RECEPTACLE TO BE MOUNTED 6" AFF.
13. CONTRACTOR SHALL DESIGN BUILD ROOF MOUNTED SOLAR PV SYSTEM INCLUDING THE SUPPORTS UNDER A SEPARATE PERMIT. SEE SHEET A108 FOR PROPOSED AREA ALLOCATED FOR ROOF MOUNTED SOLAR PV.
14. 1/2"C.O. TO SC+ BMS PANEL.
15. 1/2" C.O. FOR CONTROL CONDUCTORS ROUTED TO FC-A. SEE E104 FOR CONTINUATION OF CONDUIT.
16. CONDUIT UNDER ROOF LEVEL.
17. 3/4"C, 2#12, 1#10G HOMERUN ROUTED THROUGH 14P RELAY MENTIONED IN KEYNOTE 28 OF E104.

SHEET NOTES:

1. EXISTING WALL MOUNTED LIGHT FIXTURES ON THE PERIMETER OF THE BUILDING SHALL REMAIN.
2. ALL CONDUITS ON THE ROOF SHALL BE RGS UNLESS OTHERWISE NOTED. ALL FINAL CONNECTIONS TO VIBRATING EQUIPMENT SHALL BE LIQUID TIGHT FLEXIBLE METALLIC CONDUIT U.O.N.
3. THE (C.L.) SYMBOL INDICATES A LOAD THAT SHALL BE BACKED UP BY A PORTABLE GENERATOR VIA NEW CAM LOCK CONNECTOR BOX AND NEW MTS.

GENERAL DEMO NOTES:

1. ALL EXISTING DISCONNECT SWITCHES, CONDUITS, POWER J-BOXES, CONTROL J-BOXES, AND WIRING FOR EXISTING HVAC UNITS SHALL BE REMOVED UNLESS OTHERWISE NOTED. SEE SHEET M202 FOR EXISTING HVAC UNIT LOCATIONS.
2. ANY EXISTING ROOF MOUNTED POWER RECEPTACLES SHALL BE REMOVED IN ADDITION TO J-BOXES, CONDUITS AND CONDUCTORS.



1 E105 ROOF POWER PLAN
3/16" = 1'-0"

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

ALFRED MATA, P.E.
INTERIM CITY ENGINEER

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL
NO. E 12231
EXP. 9/30/2026
STATE OF CALIFORNIA

ENGINEER: SARO DERSARKOIAN — ARCHITECTURAL DIVISION — LIC. NO.: E12231
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARKOIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: ROOF POWER PLAN
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E105
SHEET 109 OF SHEETS 115

PLOTTED:10/2/2025 4:25:57 PM

TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
SHEET ISSUE DATE: 06/07/23
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC -Las Palmas Senior Cntr_RV25_LIVE.rvt
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.
1/16" = 1' 0' 4' 8' 16' | 1/8" = 1' 0' 4' 8' 16' | 3/16" = 1' 0' 4' 8' 16' | 1/4" = 1' 0' 4' 8' 16'

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Las Palmas Senior Center	Report Page: (Page 1 of 10)
Project Address: 1820 N Las Palmas Ave, Los Angeles, CA 90028	Date Prepared: 2025-05-30T15:45:04-04:00

This document is used to demonstrate compliance with requirements in 110.9, 110.10(c), 130.0, 130.1, 140.6 and 141.0(b)2 for indoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e) and 180.2(b)4 for indoor lighting scopes using the prescriptive path for multifamily occupancies. Multifamily includes dormitory and senior living facilities.

A. GENERAL INFORMATION

01 Project Location (city)	Los Angeles	04 Total Conditioned Floor Area (ft²)	5,550
02 Climate Zone	9	05 Total Unconditioned Floor Area (ft²)	0
03 Occupancy Types Within Project (select all that apply):		06 # of Stories (Habitable Above Grade)	1
● Auditorium ● Office			

B. PROJECT SCOPE

This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.6 / 170.2(e) or 141.0(b)2 / 180.2(b)4 for alterations.

Scope of Work	Conditioned Spaces		Unconditioned Spaces	
01	02	03	04	05
My Project Consists of (check all that apply):	Calculation Method	Area (ft²)	Calculation Method	Area (ft²)
☑ New Lighting System	Area Category Method	5550	N/A	0
☐ New Lighting System - Parking Garage	N/A	0	N/A	0
Total Area of Work (ft²)		5550		

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
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C. COMPLIANCE RESULTS

If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table G, for guidance.

Lighting in conditioned and unconditioned spaces must not be combined for compliance per 140.6(b)1 / 170.2(e)	Allowed Lighting Power per 140.6(b) / 170.2(e) (Watts)						Adjusted Lighting Power per 140.6(a) / 170.2(e) (Watts)			Compliance Results
	01	02	03	04	05		06	07	08	09
	Complete Building 140.6(c)1	Area Category 140.6(c)2 / 170.2(e)4	Area Category Additional 140.6(c)2 / 170.2(e)4Aiv (+)	Tailored 140.6(c)3 / 170.2(e)4Ci (+)	Total Allowed (Watts)		Total Designed (Watts)	Adjustments PAF Lighting Controls Credits 140.6(a)2 / 170.2(e)1B (+)	Total Adjusted (Watts) *Includes Adjustments	09 must be >= 08 140.6 / 170.2(e)
	(See Table I)	(See Table I)	(See Table J)	(See Table K)			(See Table F)	(See Table P)		
Conditioned		3,549.65			= 3,549.65	≥	2,923.5		= 2923.5	COMPLIES
Unconditioned					=					
							Controls Compliance (See Table H for Details)			COMPLIES
							Rated Power Reduction Compliance (See Table Q for Details)			

D. EXCEPTIONAL CONDITIONS

This table is auto filled with uneditable comments because of selections made or data entered in tables throughout the form.

Track Lighting has been included in this project, details are provided in Table G.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
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F. INDOOR LIGHTING FIXTURE SCHEDULE

This table includes all planned permanent and portable lighting other than dwelling unit/ hotel/ motel room lighting. Multifamily dwelling unit and hotel/motel room lighting is documented in Table T. If using Table T to document lighting in multifamily common use areas providing shared provisions for living, eating, cooking or sanitation, those luminaires are not included here.

Designed Wattage: Conditioned Spaces

01 Name or Item Tag	02 Complete Luminaire Description	03 Modular (Track) Fixture	04 Small Aperture & Color Change[1]	05 Watts per luminaire[1]	06 How is Wattage determined	07 Total Number of Luminaires	08 Excluded per 140.6(c)3 / 170.2(e)2C	09 Design Watts	10 Field Inspector Pass	10 Field Inspector Fail
A1	4' Linear LED - Med. Lumen	No	NA	23	Mfr. Spec	8	No	184	☐	☐
A2	3' Linear LED - Med. Lumen	No	NA	17	Mfr. Spec	10	No	170	☐	☐
A3	4' Line ar LED - Low Lumen	No	NA	15	Mfr. Spec	4	No	60	☐	☐
A4	3' Line ar LED - Low Lumen	No	NA	12	Mfr. Spec	10	No	120	☐	☐
A5	8' Linear LED - Low Lumen	No	NA	31	Mfr. Spec	10	No	310	☐	☐
A6	3' Linear LED - Low Lumen	No	NA	12	Mfr. Spec	5	No	60	☐	☐
C1	2' DOWNLIGHT	No	NA	17	Mfr. Spec	33	No	561	☐	☐
C2	2' DOWNLIGHT	No	NA	17	Mfr. Spec	11	No	187	☐	☐
C3	2' DOWNLIGHT	No	NA	14	Mfr. Spec	6	No	84	☐	☐
D	2' ROUND DOWNLIGHT	No	NA	27	Mfr. Spec	4	No	108	☐	☐
F	VANITY LIGHT	No	NA	17	Mfr. Spec	5	No	85	☐	☐
G	4" CYLINDRICAL PENDANT	No	NA	40	Mfr. Spec	9	No	360	☐	☐
G1	4" CYLINDRICAL PENDANT	No	NA	17	Mfr. Spec	8	No	96	☐	☐
A7	22" Linear LED - Wall Wash	No	NA	124	Mfr. Spec	1	No	124	☐	☐
H	LED STRIP	No	NA	23	Mfr. Spec	1	No	23	☐	☐
A8	6' Linear LED - Wall Wash	No	NA	37	Mfr. Spec	1	No	37	☐	☐
A9	5' Linear LED - Wall Wash	No	NA	28	Mfr. Spec	1	No	28	☐	☐
S	TRACK LIGHT	*Yes	NA	240	See Other Section	1	No	240	☐	☐
C4	2" DOWNLIGHT	No	NA	9.5	Mfr. Spec	3	No	28.5	☐	☐
T	8' TAPELIGHT	No	NA	12	Mfr. Spec	2	No	24	☐	☐

STATE OF CALIFORNIA
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CALIFORNIA ENERGY COMMISSION

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G. MODULAR LIGHTING SYSTEMS

This table calculates wattage for modular lighting systems[2] track lighting fixtures indicated on Table F and transfers wattage to Table F.

01 Name or Item Tag	02 Complete Track Description	03 Calculation Method per 130.0(c)6								04 Track Wattage
S	TRACK LIGHT	☐ i Installed Luminaires vs Default: 30 W/ft	☑	i Current Limiter	☐	ii Overcurrent Protection Panel	☐	iv Power supplied by driver, power supply or transformer[3]		
		VA of current limiter								240
		240								

[2]FOOTNOTE: For power-over-ethernet lighting systems, power provided to installed non-lighting devices may be subtracted from the total power rating of the power-over-ethernet system.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)

This table includes lighting controls for conditioned and unconditioned spaces.

Building Level Controls		
01	02	03 Field Inspector Pass	03 Field Inspector Fail
Mandatory Demand Response 110.12(c)	Shut-off controls 130.1(c) / 150.0(k)1C	☐	☐
NA < 4,000W subject to multilevel	See Area/Space Level Controls	☐	☐

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CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Area Level Controls

04 Area Description	05 Complete Building or Area Category Primary Function Area	06 Manual Area Controls 130.1(a) / 160.5(b)1A	07 Multi-Level Controls 130.1(b) / 160.5(b)4B	08 Shut-Off Controls 130.1(c) / 160.5(b)4C	09 Primary/Sky lit Daylighting 130.1(d) / 160.5(b)4D	10 Secondary Daylighting 130.1(d) / 160.5(b)4D	11 Interlocked Systems 130.1(c)1 / 170.2(e)2A	12 Field Inspector Pass	12 Field Inspector Fail
WOMEN RR 101	Restroom (Low Vision)	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
MEN RR 102	Restroom (Low Vision)	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Community Room 120	Conference, Multipurpose and Meeting Area	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Pantry 108	Kitchen/ Food Preparation	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Multi-Purpose Room 118	Dining (Low Vision)	Readily Accessible	Dimmer	Occupancy Sensor	NA: General Ltg < 120W	NA: General Ltg < 120W	No	☐	☐
Entry 106	Corridor (Low Vision)	Readily Accessible	Dimmer	Occupancy Sensor	NA: General Ltg < 120W	NA: General Ltg < 120W	No	☐	☐
Reception 107	Office (<=250 square feet)	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Men RR 114	Restroom (Low Vision)	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Women RR 113	Restroom (Low Vision)	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Women RR 112	Restroom (Low Vision)	Readily Accessible	NA: Restrooms	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐
Vestibule 115	Corridor (Low Vision)	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐	☐

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H. INDOOR LIGHTING CONTROLS (Not including PAFs)

Office 111	Office (<=250 square feet)	Readily Accessible	Dimmer	Occupancy Sensor	NA: General Ltg < 120W	NA: General Ltg < 120W	No	☐ ☐
Music Room 105	Office (<=250 square feet)	Readily Accessible	Dimmer	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐ ☐
Inverter Closet	Electrical Mechanical Telephone Room	Readily Accessible	NA: Enclosed area <1000SF	Occupancy Sensor	NA: Not daylit zone	NA: Not daylit zone	No	☐ ☐
Corridor 'A' 110	Corridor (Low Vision)	Readily Accessible	Dimmer	Occupancy Sensor	Included	Included	No	☐ ☐
Corridor 'B' 119	Corridor (Low Vision)	Readily Accessible	Dimmer	Occupancy Sensor	NA: General Ltg < 120W	NA: General Ltg < 120W	No	☐ ☐
							13	
							Plan Sheet Showing Daylit Zones:	
							E101	

I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Each area complying using the Complete Building or Area Category Methods per 140.6(b) are included in this table. Column 05 indicates if additional lighting power allowances per 140.6(c) or adjustments per 140.6(a) are being used .

Conditioned Spaces

01 Area Description	02 Complete Building or Area Category Primary Function Area	03 Allowed Density (W/ft²)	04 Area (ft²)	05 Allowed Wattage (Watts)	06 Additional Allowance / Adjustment Area Category	06 Additional Allowance / Adjustment PAF
WOMEN RR 101	Restroom (Low Vision)	1	70	70	No	No
MEN RR 102	Restroom (Low Vision)	1	70	70	No	No
Community Room 120	Conference, Multipurpose and Meeting Area	0.75	1,350	1,012.5	No	No
Pantry 108	Kitchen/ Food Preparation	0.95	220	209	No	No
Multi-Purpose Room 118	Dining (Low Vision)	0.8	694	555.2	No	No
Entry 106	Corridor (Low Vision)	0.7	865	423.5	No	No
Reception 107	Office (<=250 square feet)	0.65	130	84.5	No	No

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Indoor Lighting
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I. LIGHTING POWER ALLOWANCE: COMPLETE BUILDING OR AREA CATEGORY METHODS

Men RR 114	Restroom (Low Vision)	1	55	55	No	No
Women RR 113	Restroom (Low Vision)	1	60	60	No	No
Women RR 112	Restroom (Low Vision)	1	65	65	No	No
Music Room 105	Office (<=250 square feet)	0.65	97	63.05	No	No
Office 111	Office (<=250 square feet)	0.65	188	122.2	No	No
Vestibule 115	Corridor (Low Vision)	0.7	112	78.4	No	No
Inverter Closet	Electrical Mechanical Telephone Room	0.4	37	6.8	No	No
Corridor 'B' 119	Corridor (Low Vision)	0.7	326	228.2	No	No
Corridor 'A' 110	Corridor (Low Vision)	0.7	609	426.3	No	No
		TOTALS:	4,708	3,569.65	See Tables J. or P for detail	

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM

This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE

This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY

This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING

This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED DECORATIVE /SPECIAL EFFECTS

This section does not apply to this project.

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

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O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE

This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))

This section does not apply to this project.

Q. RATED POWER REDUCTION COMPLIANCE FOR ONE-FOR-ONE ALTERATIONS

This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS

This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)

This section does not apply to this project.

T. DWELLING UNIT LIGHTING

This section does not apply to this project.

U. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selections have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-LTI-E - Must be submitted for all buildings

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Las Palmas Senior Center	Report Page: (Page 9 of 10)
	Date Prepared: 2025-04-25T17:20:36-04:00

V. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selections have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "-A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title	Systems/Spaces To Be Field Verified
NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	WOMEN RR 101; MEN RR 102; Community Room 120; Pantry 108; Multi-Purpose Room 118; Entry 106; Reception 107; Men RR 114; Women RR 113; Women RR 112; Vestibule 115; Office 111; Music Room 105; Inverter Closet; Corridor 'A' 110; Corridor 'B' 119
NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	Corridor 'A' 110

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-E
Project Name: Las Palmas Senior Center	Report Page: (Page 10 of 10)
Project Address: 1820 N Las Palmas Ave, Los Angeles, CA 90028	Date Prepared: 2025-04-25T17:20:36-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Morgan Lytle	Documentation Author Signature: Morgan Lytle
Company: City of Los Angeles Bureau of Engineering	Signature Date: 4/25/2025
Address: 1149 S Broadway	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Los Angeles/CA/90015	Phone: (213) 847-2017

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Saro Dersarojan	Responsible Designer Signature: Saro Dersarojan
Company: City of Los Angeles Bureau of Engineering	Date Signed: 4/25/2025
Address: 1149 S Broadway	License: E12231
City/State/Zip: Los Angeles/CA/90015	Phone: (213) 485-4426

BUREAU OF ENGINEERING OFFICIAL RECORD

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:
ARCHITECTURAL DIVISION
LIC. NO.: E12231

ENGINEER: SARO DERSAROJAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSAROJAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

NO. | REVISION DESCRIPTION | DATE | BY

BUILDING NO. -
INDEX NO. MF-300512

PROFESSIONAL ENGINEER NO. E 12231 EXP. 9/30/2026 CIVIL ELECTRICAL STRUCTURAL STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: TITLE 24 - INDOOR LIGHTING
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E401
SHEET 110 OF SHEETS 115

BID SET
PROJECT ISSUE DATE 9/22/2025
CITY OF LOS ANGELES

PLOTTED:10/2/2025 4:25:58 PM

TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
SHEET ISSUE DATE: 12/30/19
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC - Las Palmas Senior Cntr_RV25_LIVE.rvt
THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.
1/8" = 1' 0' 3/16" = 1' 0' 1/4" = 1' 0' 1/16" = 1' 0' 4' 8' 16'

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
This document is used to demonstrate compliance with mandatory requirements in 130.5, for electrical systems in newly constructed nonresidential and hotel/motel occupancies and 160.6 and 160.9 for electrical systems in newly constructed multifamily occupancies. Additions and alterations to electrical service systems in nonresidential and hotel/motel occupancies will also use this document to demonstrate compliance per 141.0(a) or 141.0(b)2R for alterations. For multifamily addition or alterations compliance will be documented per 180.1(a) or 180.2 (b)4Bvii	
Project Name: Las Palmas Senior Center	**Report Page:** (Page 1 of 4)
Project Address: 1820 N Las Palmas Ave, Los Angeles, CA 90028	**Date Prepared:** 2023-09-19T18:00:51-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Los Angeles	02	Climate Zone	9
			03	Occupancy Types Within Project:	All Other OccupanciesAuditoriumOffice

B. PROJECT SCOPE

This table includes electrical systems that are within the scope of the permit application.

01	02	03	04	05	06	07
Electrical Service Designation/ Description	Scope of Work[1]	Rating[2] (kVA)	Utility Provided Metering System Exception to 130.5(a)/ 160.6(a)[3]	System subject to CA Elec Code Article 517 Exception to 130.5(a)and (b)	Demand Response Controls	Provides power to dwelling units/common living areas only in multifamily occupancy
Mech/Electrical Room 104	Add/Alt to feeders and branch circuits only	---	☐	☐	Where required, demand response controls must be specified which are capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal. Sections 120.2/ 160.3, 130.1/ 160.5, and 130.3/ 160.5, and mechanical, indoor lighting, and sign lighting Certificate of Compliance documents will indicate when demand response controls are required.	☐

[1] *FOOTNOTES: Adding only new feeders and branch circuits triggers Voltage Drop 130.5(c)/160.6(c), no other requirements from 130.5/160.6 are required.*
[2] *If common use areas in a multifamily are submetered, rating is for submeter size serving common use areas.*
[3] *Applicable if the utility company is providing a metering system that indicates instantaneous kW demand and kWh for a utility-defined period.*

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
Project Name: Las Palmas Senior Center	**Report Page:** (Page 2 of 4)
	Date Prepared: 2023-09-19T18:00:51-04:00

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through J. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01		02		03		04	05	06
Service Electrical Metering 130.5(a)/ 160.6(a) (See Table F)	AND	Separation for Monitoring 130.5(b)/ 160.6(b) (See Table G)	AND	Voltage Drop 130.5(c)/ 160.6(c) (See Table H)	AND	Controlled Receptacles 130.5(d)/ 160.6(d) (See Table I)	Electric Ready 160.9 (See Table J)	**Compliance Results**
	AND		AND	Yes	AND			COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

H. VOLTAGE DROP

This table includes entirely new or complete replacement electrical power distribution systems, or alterations that add, modify or replace both feeders and branch circuits to demonstrate compliance with 130.5(c)/ 160.6(c). For alterations, only the altered circuits must demonstrate compliance per 141.0(b)2Piii/ 180.2(b)4Bviic.

01	02			03	04	05	
Electrical Service Designation/Description	Combined Voltage Drop on Installed Feeder/Branch Circuit Conductors Compliance Method			Location of Voltage Drop Calculations[1]	Sheet Number for Voltage Drop Calculations in Construction Documents	Field Inspector	
						Pass	Fail
Mech/Electrical Room 104	☒	Voltage drop less than 5%	☐	Permitted by CA Elec Code (Exception to 130.5(c))*	In construction documents	E101	☐	☐

** NOTES: If "Permitted by CA Elec Code *" is selected under Compliance Method above, please indicate where the exception applies in the space provided below.*

[1] *FOOTNOTES: Voltage drop calculations may be attached to the permit application outside the construction documents if allowed by the Authority Having Jurisdiction. Select "attached" if applicable. If calculations will be the responsibility of the installing contractor, select "Contractor Responsible".*

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
Project Name: Las Palmas Senior Center	**Report Page:** (Page 3 of 4)
	Date Prepared: 2023-09-19T18:00:51-04:00

K. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online

Form/Title
NRCI-ELC-E - Must be submitted for all buildings

L. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

STATE OF CALIFORNIA
Electrical Power Distribution
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-ELC-E
Project Name: Las Palmas Senior Center	**Report Page:** (Page 4 of 4)
Project Address: 1820 N Las Palmas Ave, Los Angeles, CA 90028	**Date Prepared:** 2023-09-19T18:00:51-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Morgan Lytle	Documentation Author Signature: Morgan Lytle
Company: City of Los Angeles Bureau of Engineering	Signature Date: 09/19/2023
Address: 1149 S Broadway	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Los Angeles/CA/90015	Phone: (213) 847-2017

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Saro Dersarojan	Responsible Designer Signature: Saro Dersarojan
Company: City of Los Angeles Bureau of Engineering	Date Signed: 09/19/2023
Address: 1149 S Broadway	License: E12231
City/State/Zip: Los Angeles/CA/90015	Phone: (213) 485-4426

BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

PROFESSIONAL ENGINEER REGISTERED PROFESSIONAL ENGINEER NO. E 12231 EXP. 9/30/2026 ELECTRICAL STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:
ARCHITECTURAL DIVISION
LIC. NO.: E12231

ENGINEER: SARO DERSAROJAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSAROJAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: TITLE 24 - ELECTRICAL POWER DISTRIBUTION
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E402
SHEET 111 OF SHEETS 115

PLOTTED:10/2/2025 4:25:58 PM

BUREAU OF ENGINEERING OFFICIAL RECORD

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
SHEET ISSUE DATE: 09/19/23
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC -Las Palmas Senior Cntr_RV25_LIVE.rvt

STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
This document is used to demonstrate compliance with requirements in 110.9, 130.0, 130.2, 140.7, and 141.0(b)2L for outdoor lighting scopes using the prescriptive path for nonresidential and hotel/motel occupancies. It is also used to document compliance with requirements in 160.5, 170.2(e)6, 180.1(a) and 180.2(b)4Bv for outdoor lighting scopes using the prescriptive path for multifamily and mixed-use occupancies. Multifamily includes dormitory and senior living facilities.		
Project Name: Las Palmas Senior Center	**Report Page:**	**(Page 1 of 7)**
Project Address: 1820 N Las Palmas Ave, Los Angeles, CA 90028	**Date Prepared:**	2023-09-19T19:20:30-04:00

A. GENERAL INFORMATION

01	Project Location (city)	Los Angeles	04	Total Illuminated Hardscape Area (ft²)	9450
02	Climate Zone	9			
03	Outdoor Lighting Zone per Title 24 Part 1 10,114 or as designated by Authority Having Jurisdiction (AHJ):				
☐	LZ-0: Very Low - Undeveloped Parkland	☐ LZ-2: Moderate - Urban Clusters	☐ LZ-4: High - Must be reviewed by CA Energy Commission for Approval		
☐	LZ-1: Low - Rural Areas	☒ LZ-3: Moderately High - Urban Areas			
05	Occupancy Types within Project				
● Auditorium ● Office ● All Other Occupancies					

B. PROJECT SCOPE

This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv for alterations.

My Project Consists of:

01	02		
☐	New Lighting System	Must Comply with Allowances from 140.7 / 170.2(e)6	
☒	Altered Lighting System	Is your alteration increasing the connected lighting load (Watts)?	● Yes ○ No
03		04	05
% of Existing Luminaires Being Altered[1]		Sum Total of Luminaires Being Added or Altered	Calculation Method
☐ < 10% ☐ >= 10% and < 50% ☐ >= 50%			

Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires.

[1] *FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.*

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STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Las Palmas Senior Center	**Report Page:**	**(Page 2 of 7)**
	Date Prepared:	2023-09-19T19:20:30-04:00

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through N. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) 140.7 / 170.2(e)6 or 141.0(b)2L / 180.2(b)4Bv											Compliance Results			
01		02		03		04		05		06	07		08	09
General Hardscape Allowance 140.7(d)1 / 170.2(e)6 (See Table I)	+	Per Application 140.7(d)2 / 170.2(e)6 (See Table J)	+	Sales Frontage 140.7(d)2 (See Table K)	+	Ornamental 140.7(d)2 / 170.2(e)6 (See Table L)	+	Per Specific Area 140.7(d)2 / 170.2(e)6 (See Table M)	OR	Existing Power Allowance 141.0(b)2L / 180.2(b)4Bv (See Table N)	= **Total Allowed** (Watts)	≥	**Total Actual** (Watts)	**07 must be >= 08**
281.64	+	---	+	---	+	---	+	---	OR	---	= 281.64	≥	71	COMPLIES
Shielding Compliance (See Table G for Details)														COMPLIES
Controls Compliance (See Table H for Details)														COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

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STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Las Palmas Senior Center	**Report Page:**	**(Page 3 of 7)**
	Date Prepared:	2023-09-19T19:20:30-04:00

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with 140.7 / 170.2(e)6 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per 141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie, existing luminaires remaining or existing luminaires being moved are not included). Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

Designed Wattage:

01	02		03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description		Watts per luminaire[1, 2]	How is Wattage determined	Total Number Luminaires[1]	Luminaire Status[4]	Excluded per 140.7(a) / 170.2(e)6A	Design Watts	Cutoff Req.: > 6,200 initial lumen output 130.2(b) / 160.5(c)[1]	Field Inspector	
										Pass	Fail
V	Pole Light	☐ Linear	71	Mfr. Spec	1	New	☐	71	Provided	☐	☐
							Total Design Watts:	71			

* NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
EX: Luminaire is lighting ø status; EXCEPTION 2 to 130.2(b)

[1] *FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per 130.0(c) / 160.5(b)*
[2] *For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.*
[3] *Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of the project scope.*
[4] *Compliance with mandatory shielding requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by 130.2(b)/ 160.5(c)*

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STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Las Palmas Senior Center	**Report Page:**	**(Page 4 of 7)**
	Date Prepared:	2023-09-19T19:20:30-04:00

G. SHIELDING REQUIREMENTS (BUG)

This table includes fixtures of >=6,200 initial lumens indicated on Table F as needing to comply with Shielding Requirements. Maximum lumens can be found in Title 24, Part 11, Section 5.106.8.

01	02	03		04	05	06		07	08	09		10	11	12	
Name or Item Tag	Complete Luminaire Description	Backlight Rating[2]				Uplight Rating[2]				Glare Rating (Lumens)[2]				Field Inspector	
		Mounting Height[1]		Max Allowable Backlight Rating[3]	Backlight Rating Per Design	Lighting Type		Max Allowable Uplight Rating[3]	Uplight Rating Per Design	Mounting Height[1]		Max Allowable Glare Rating[3]	Glare Rating Per Design	Pass	Fail
V	Pole Light	Back hemisphere ≤ 0 MH from prop line		B1	B1	Area Lighting		U0	U0	Front hemisphere is 1 - 2 MH from prop line		G1	G1	☐	☐

[1] *FOOTNOTES: Mounting Height is labeled MH in this table.*
[2] *Authority Having Jurisdiction may ask for Luminaire cut sheets or other documentation to confirm luminaire type, uplight ratings and glare ratings used for compliance per 130.2(b)/ 160.5(c)*
[3] *BUG ratings with a lower number than the "Max Allowable" are compliant. Ex. if Max Allowable is Bug Rating B4, then B0, B1, B2 and B3 are all compliant.*

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01	02	03	04	05	
Area Description	Shut-Off 130.2(c)1 / 160.5(c)	Auto-Schedule 130.2(c)2 / 160.5(c)	Motion Sensor 130.2(c)3 / 160.5(c)	Field Inspector	
				Pass	Fail
Parking Lot: "V"	Photocontrol	Provided	Provided	☐	☐

[1] *FOOTNOTE: Text has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.*
[2] *Authority having jurisdiction may ask for cutsheets or other documentation to confirm compliance of light source.*
[3] *Recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are excepted from II and III.*

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STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Las Palmas Senior Center	**Report Page:**	**(Page 5 of 7)**
	Date Prepared:	2023-09-19T19:20:30-04:00

I. LIGHTING POWER ALLOWANCE (per 140.7 / 170.2(e))

This table includes areas using allowance calculations per 140.7 / 170.2(e). General Hardscape Allowance is per Table 140.7-A/Table 170.2-R while "Use it or lose it" Allowances are per Table 140.7-B /Table 170.2-S indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.
Outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit are included in Table H, and are not included here. All other multifamily outdoor lighting is included here.

	01 "Use it or lose it" Allowance (select all that apply)			
☒ General Hardscape Allowance Table I (below)	☐ Per Application Table J	☐ Sales Frontage Table K	☐ Ornamental Table L	☐ Per Specific Area Table M

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A for Nonresidential & Hotel/Motel

02	03	04	05	06	07	08	09
Area Description	Area Wattage Allowance (AWA)			Linear Wattage Allowance (LWA)			Total General AWA + LWA (Watts)
	Illuminated Area (ft²)	Allowed Density (W/ft²)	Area Allowance (Watts)	Perimeter Length (lf)	Allowed Density (W/lf)	Linear Allowance (Watts)	
Parking Lot	9450	0.021	198.45	416	0.2	83.2	281.64
Initial Wattage Allowance for Entire Site (Watts)							
Instances of Initial Wattage Allowance (17.0 only)[1]							
Total General Hardscape Allowance (Watts)							281.64

J. LIGHTING ALLOWANCE: PER APPLICATION

This section does not apply to this project.

K. LIGHTING ALLOWANCE: SALES FRONTAGE

This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL

This section does not apply to this project.

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STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Name: Las Palmas Senior Center	**Report Page:**	**(Page 6 of 7)**
	Date Prepared:	2023-09-19T19:20:30-04:00

G. SHIELDING REQUIREMENTS (BUG)

This table includes fixtures of >=6,200 initial lumens indicated on Table F as needing to comply with Shielding Requirements. Maximum lumens can be found in Title 24, Part 11, Section 5.106.8.

01	02	03		04	05	06		07	08	09		10	11	12	
Name or Item Tag	Complete Luminaire Description	Backlight Rating[2]				Uplight Rating[2]				Glare Rating (Lumens)[2]				Field Inspector	
		Mounting Height[1]		Max Allowable Backlight Rating[3]	Backlight Rating Per Design	Lighting Type		Max Allowable Uplight Rating[3]	Uplight Rating Per Design	Mounting Height[1]		Max Allowable Glare Rating[3]	Glare Rating Per Design	Pass	Fail
V	Pole Light	Back hemisphere ≤ 0 MH from prop line		B1	B1	Area Lighting		U0	U0	Front hemisphere is 1 - 2 MH from prop line		G1	G1	☐	☐

[1] *FOOTNOTES: Mounting Height is labeled MH in this table.*
[2] *Authority Having Jurisdiction may ask for Luminaire cut sheets or other documentation to confirm luminaire type, uplight ratings and glare ratings used for compliance per 130.2(b)/ 160.5(c)*
[3] *BUG ratings with a lower number than the "Max Allowable" are compliant. Ex. if Max Allowable is Bug Rating B4, then B0, B1, B2 and B3 are all compliant.*

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
Outdoor lighting for nonresidential buildings, parking garages and common service areas in multifamily buildings must be documented separately from outdoor lighting attached to multifamily buildings and controlled from the inside of a dwelling unit

Mandatory Controls for Nonresidential Occupancies, Parking Garages & Common Areas in Multifamily Buildings

01	02	03	04	05	
Area Description	Shut-Off 130.2(c)1 / 160.5(c)	Auto-Schedule 130.2(c)2 / 160.5(c)	Motion Sensor 130.2(c)3 / 160.5(c)	Field Inspector	
				Pass	Fail
Parking Lot: "V"	Photocontrol	Provided	Provided	☐	☐

[1] *FOOTNOTE: Text has been abbreviated, please refer to Table 160.5-A to confirm compliance with the specific light source technologies listed.*
[2] *Authority having jurisdiction may ask for cutsheets or other documentation to confirm compliance of light source.*
[3] *Recessed luminaires marked for use in fire-rated installations, and recessed luminaires installed in non-insulated ceilings are excepted from II and III.*

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STATE OF CALIFORNIA
Outdoor Lighting
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-LTO-E
Project Address: 1820 N Las Palmas Ave, Los Angeles, CA 90028	**Date Prepared:**	2023-09-19T19:20:30-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Morgan Lytle	Documentation Author Signature: Morgan Lytle
Company: City of Los Angeles Bureau of Engineering	Signature Date: 09/18/2023
Address: 1149 S Broadway	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Los Angeles/CA/90015	Phone: (213) 847-2017

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Saro Dersarolan	Responsible Designer Signature: Saro Dersarolan
Company: City of Los Angeles Bureau of Engineering	Date Signed: 09/18/2023
Address: 1149 S Broadway	License: E12231
City/State/Zip: Los Angeles/CA/90015	Phone: (213) 485-4426

Generated Date/Time: Documentation Software: Energy Code Ace

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220101 — Compliance ID: 94461-0923-0011 — Report Generated: 2023-09-19 16:20:32

BUREAU OF ENGINEERING
OFFICIAL RECORD

BID SET
PROJECT ISSUE DATE 9/22/2025

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

INDEX NO. —
BUILDING NO. —
MF-300512

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:
ARCHITECTURAL DIVISION
LIC. NO.: E12231
ENGINEER: SARO DERSAROIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSAROIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

REGISTERED PROFESSIONAL ENGINEER — STEVEN FIERCE — NO. E 12231 EXP. 9/30/2026 — CIVIL — STATE OF CALIFORNIA

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: TITLE 24 - OUTDOOR LIGHTING
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E403
SHEET 112 OF SHEETS 115

PLOTTED:10/2/2025 4:25:59 PM

TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
SHEET ISSUE DATE: 09/19/23
DESIGN STAGE REVISION DATE
FILE PATH: Autodesk Docs://ARC - RAP - LAS PALMAS SENIOR CENTER/ELEC - Las Palmas Senior Cntr_RV25_LIVE.rvt
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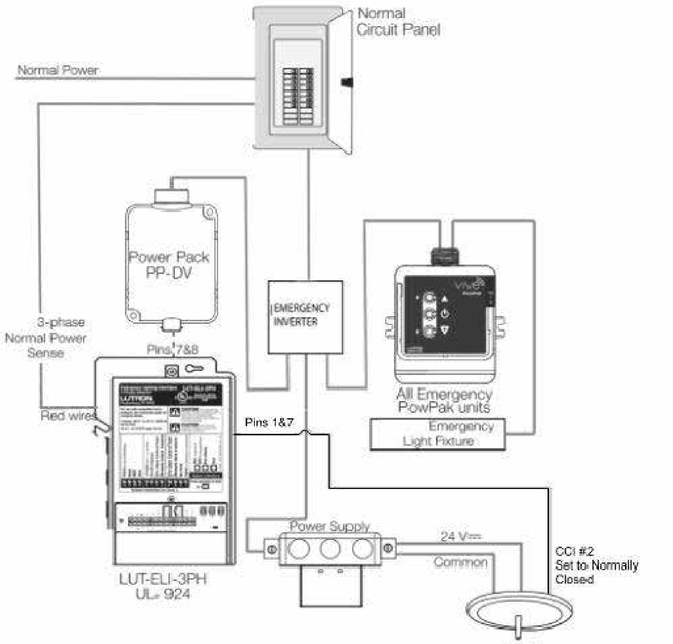
1/16" = 1' 0' 4' 8' 16' 1/8" = 1' 0' 4' 8' 16' 1/4" = 1' 0' 4' 8' 16' 3/16" = 1' 0' 4' 8' 16'



THE 3-PHASE NORMAL POWER SENSE IN THE ABOVE DIAGRAM SHALL BE IMPLENTED PER THE DIAGRAM BELOW. SEE INSTALLATION MANUAL FOR FULL DETAILS AND INSTRUCTIONS.

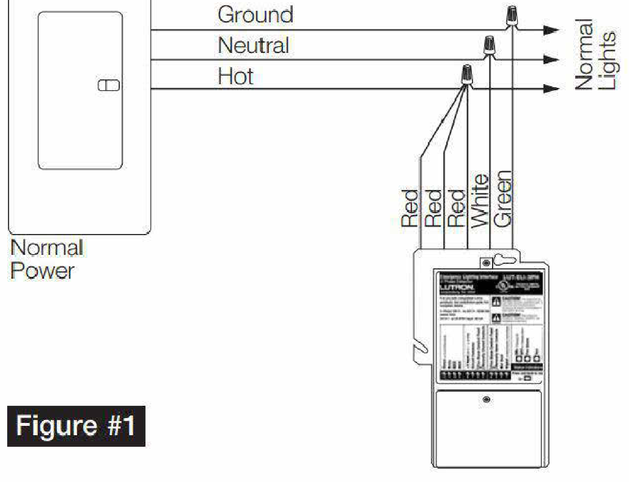
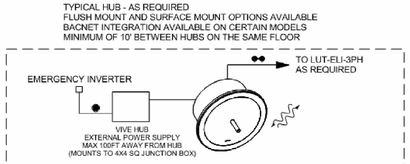


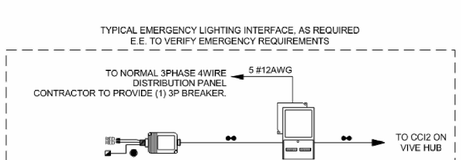
Figure #1

TYPICAL HUB - AS REQUIRED
FLUSH MOUNT AND SURFACE MOUNT OPTIONS AVAILABLE
BACNET INTEGRATION AVAILABLE ON CERTAIN MODELS
MINIMUM OF 10' BETWEEN HUBS ON THE SAME FLOOR

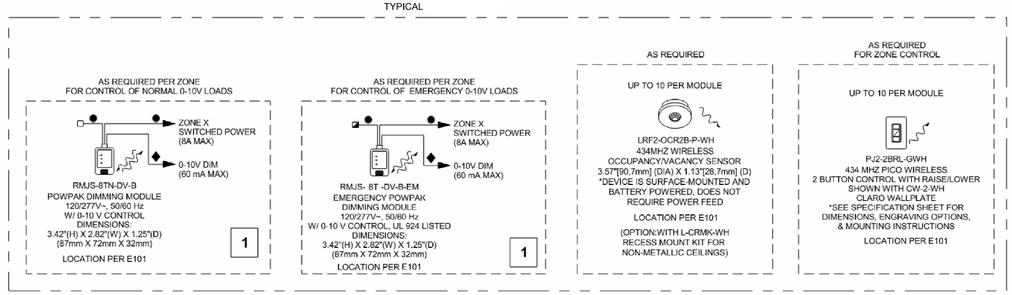


HJ-0-FM
VIVE HUB W/ CLEAR CONNECT & TIMECLOCK
24V POWER SUPPLY & ADAPTER INCLUDED
SEE SPEC SHEET FOR MOUNTING REQUIREMENTS
COMMUNICATES W/ CLEAR CONNECT DEVICES WITHIN 71'[22m] RADIUS

TYPICAL EMERGENCY LIGHTING INTERFACE, AS REQUIRED
E.E. TO VERIFY EMERGENCY REQUIREMENTS

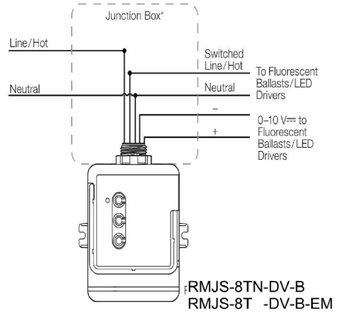


TYPICAL



TYPICAL SENSORS & REMOTE CONTROLS CAN BE A MAX OF 30' TO LOAD DEVICES - MAX OF 71' FROM VIVE HUB AND LOCATED ON THE SAME FLOOR
TYPICAL LOAD DEVICES CAN BE A MAX OF 71' FROM VIVE HUB AND LOCATED ON SAME FLOOR
TYPICAL WALLBOX LOAD CONTROLS CAN BE A MAX OF 71' FROM VIVE HUB AND LOCATED ON SAME FLOOR

Wiring Schematic



RMJS-8TN-DV-B
RMJS-8T -DV-B-EM 1

WIRING LEGEND:

- INPUT POWER (NORMAL)
- EMERGENCY INVERTER
- 2 #12AWG (4 mm²)
- 0-10V SIGNAL: 2 #18AWG (1.0 mm²)
- 1/2" C-2#18 AWG
- 1-WAY RF COMMUNICATION
- 2-WAY RF COMMUNICATION

CONCEPT DRAWING NOTES:
CONTROL SYSTEM DRAWING IS PROVIDED FOR CONCEPTUAL PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION. EXACT EQUIPMENT REQUIREMENTS, INCLUDING LOCATIONS AND QUANTITIES, SHOULD BE VERIFIED IN ACCORDANCE WITH THE MOST UP-TO-DATE LIGHTING/ELECTRICAL REFLECTED CEILING PLANS, LIGHTING FIXTURE SCHEDULES, PANEL SCHEDULES, CONTROL INTENT AND SPECIFICATIONS.

LED DIMMING REQUIRES AN EXACT MATCH BETWEEN THE LED ARRAY, DRIVER AND CONTROL. LUTRON CANNOT GUARANTEE COMPATIBILITY OR PERFORMANCE WITHOUT TESTING THIS COMBINATION.

TO CONFIRM WHAT PRODUCTS LUTRON HAS AVAILABLE OR WHAT INTERFACES MAY BE REQUIRED, CALL 1-877-DIM-LEDS OR CHECK LUTRON'S PRODUCT COMPATIBILITY MATRIX ON-LINE AT WWW.LUTRON.COM/LED.

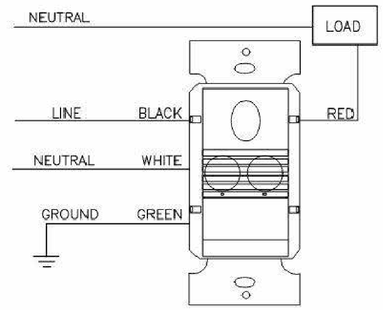
TO REQUEST THE TESTING OF AN LED PRODUCT BY LUTRON MANUFACTURERS CAN FILL OUT AN LED EVALUATION REQUEST FORM ON-LINE AT WWW.LUTRON.COM/LED OR CONTACT LEDS@LUTRON.COM.

LUTRON CAN GUARANTEE COMPATIBILITY AND PERFORMANCE OF LUTRON HI-LUME LED DRIVERS USED WITH APPROPRIATE LUTRON CONTROLS. PLEASE REFER TO THE SPECIFICATION SUBMITTAL SHEET FOR FURTHER INFORMATION.

IF USING UNTESTED, NON-LUTRON LED DRIVERS REQUIRING 0-10V CONTROL, PERFORMANCE AND COMPATIBILITY CANNOT BE GUARANTEED BY LUTRON. PRODUCTS FOLLOWING THE IEC STANDARD 60929 ARE MORE LIKELY TO PROVIDE ACCEPTABLE PERFORMANCE RESULTS. DETERMINATION OF RESULT ACCEPTABILITY IS UP TO THE USER'S DISCRETION.

IF USING UNTESTED, NON-LUTRON LED DRIVERS REQUIRING PHASE CONTROL, PERFORMANCE AND COMPATIBILITY CANNOT BE GUARANTEED BY LUTRON. ELV PRODUCTS PROVIDING HIGH END AND LOW END TRIM ADJUSTMENTS OR LUTRON HI-LUME 1% 2-WIRE DRIVERS ARE MORE LIKELY TO PROVIDE ACCEPTABLE PERFORMANCE RESULTS. DETERMINATION OF RESULT ACCEPTABILITY IS UP TO THE USER'S DISCRETION.

MS-B102 WIRING DIAGRAM



1 E500 LIGHTING CONTROL WIRING DIAGRAMS LUTRON
NTS

BUREAU OF ENGINEERING
OFFICIAL RECORD

BUREAU OF ENGINEERING
DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES
ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

RESPONSIBLE PROFESSIONAL ENGINEER IN CHARGE OF DESIGN
NO. E 12231
EXP. 9/30/2026
STATE OF CALIFORNIA

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:
ARCHITECTURAL DIVISION
LIC. NO.: E12231
ENGINEER: SARO DERSARKOIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARKOIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: LIGHTING CONTROLS WIRING DIAGRAMS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E500
SHEET 113 OF SHEETS 115

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TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
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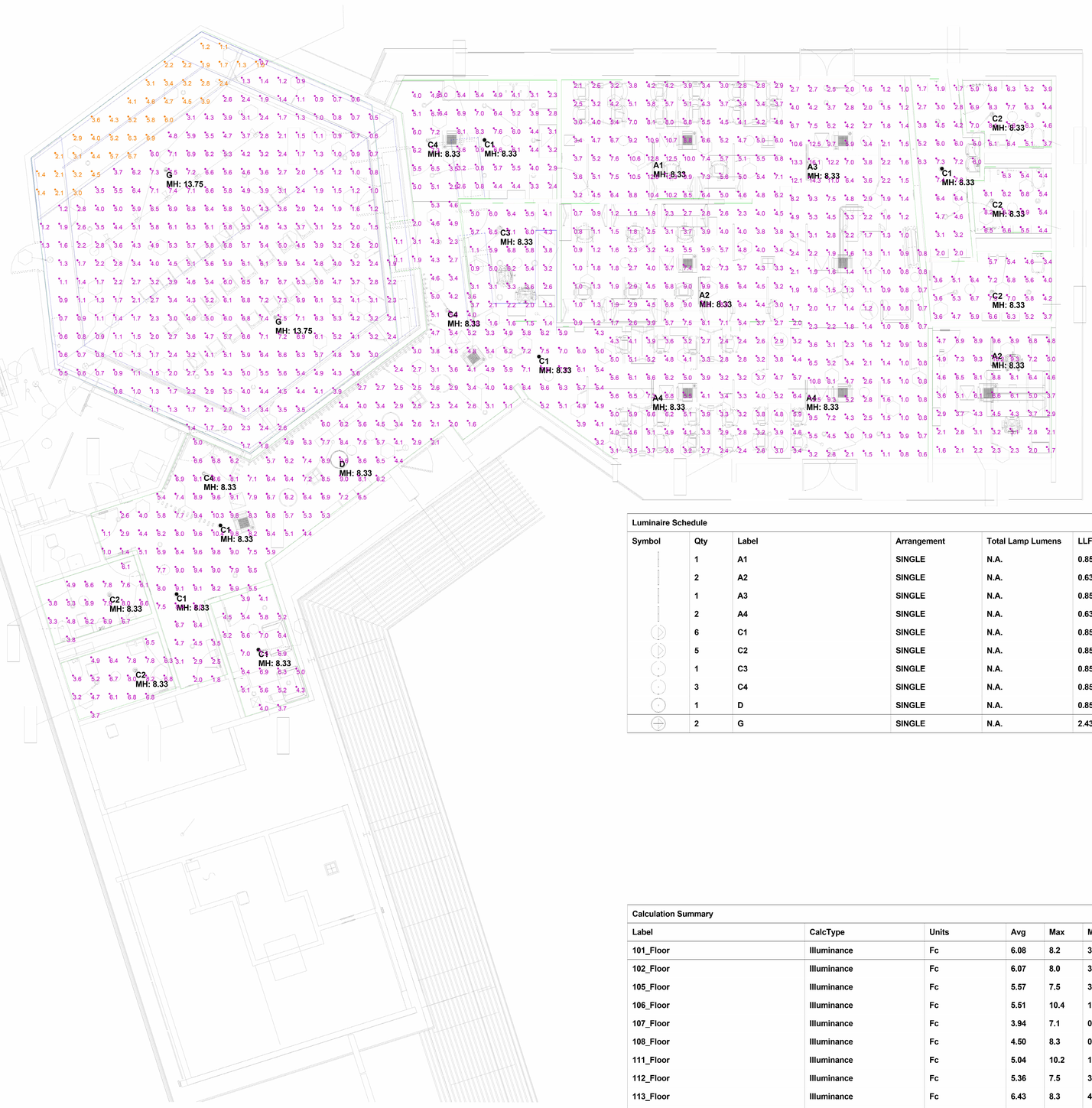

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
	1	A1	SINGLE	N.A.	0.850	PRUDENTIAL // BPRO3-REC-FLSH-LED35-MO-4-SAL
	2	A2	SINGLE	N.A.	0.638	PRUDENTIAL // BPRO3-REC-FLSH-LED35-MO-3-SAL__(LLF derated from 4')
	1	A3	SINGLE	N.A.	0.850	PRUDENTIAL // BPRO3-REC-FLSH-LED35-LO-4-SAL
	2	A4	SINGLE	N.A.	0.638	PRUDENTIAL // BPRO3-REC-FLSH-LED35-LO-3-SAL__(LLF derated from 4')
	6	C1	SINGLE	N.A.	0.850	DMF // M4-NC-R-F-DRD4M15935GA-M4TRSWH
	5	C2	SINGLE	N.A.	0.850	DMF // M4-NC-R-F-DRD4M15930GA-M4TRSWH
	1	C3	SINGLE	N.A.	0.850	DMF // M4-NC-R-F-DRD4M12935GA-M4TRSWH
	3	C4	SINGLE	N.A.	0.850	DMF // M4-NC-R-F-DRD2M07935GA-M4TRSWH
	1	D	SINGLE	N.A.	0.850	PRUDENTIAL // GAZERD-24-LED35-LO
	2	G	SINGLE	N.A.	2.438	DMF // DC4-CC-S-L-F-30-GA-0-00-00-35-BZ-O-00__(LLF prorated to 3000lm)

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
101_Floor	Illuminance	Fc	6.08	8.2	3.2	1.90	2.56
102_Floor	Illuminance	Fc	6.07	8.0	3.3	1.84	2.42
105_Floor	Illuminance	Fc	5.57	7.5	3.7	1.51	2.03
106_Floor	Illuminance	Fc	5.51	10.4	1.0	5.51	10.40
107_Floor	Illuminance	Fc	3.94	7.1	0.9	4.38	7.89
108_Floor	Illuminance	Fc	4.50	8.3	0.8	5.63	10.38
111_Floor	Illuminance	Fc	5.04	10.2	1.6	3.15	6.38
112_Floor	Illuminance	Fc	5.36	7.5	3.4	1.58	2.21
113_Floor	Illuminance	Fc	6.43	8.3	4.4	1.46	1.89
114_Floor	Illuminance	Fc	6.15	8.3	3.7	1.66	2.24
115_Floor	Illuminance	Fc	4.53	7.4	1.7	2.66	4.35
118 _Floor	Illuminance	Fc	4.68	12.8	0.7	6.69	18.29
119 _Floor	Illuminance	Fc	3.30	16.1	0.6	5.50	26.83
120_Floor	Illuminance	Fc	3.55	7.5	0.5	7.10	15.00
Stage_Floor	Illuminance	Fc	3.48	6.9	1.0	3.48	6.90

Jobname
Las Palmas Senior Center__2025-04 EGRESS.AGI
Report for: Andrew Crane
Report by: Ismael Avina-Prieto / Applications Engineer
Mounting Ht.: See Drawing
See Luminaire Schedule for Light Loss Factor - Unless otherwise specified by customer
Reflectance: 80/50/20 - Unless otherwise specified by customer
Date:4/18/2025

------Disclaimer------
Luminaire data is obtained according to IES procedures under controlled laboratory conditions. Field results may differ from computer predictions due to many uncontrollable factors including, but not limited to Line Voltage Variations, Lamp Performance, Ballast input watts, LED Drivers input watts, Temperature Variations and Jobsite Conditions.

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OFFICIAL RECORD

DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
CITY OF LOS ANGELES
ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO. MF-300512

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
ARCHITECTURAL DIVISION
DATE:

ENGINEER: SARO DERSAROIAN LIC. NO.: E12231
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSAROIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

REGISTERED PROFESSIONAL ENGINEER
STEVEN FIERCE
NO. E12231
EXP. 9/30/2026
STATE OF CALIFORNIA

CITY OF LOS ANGELES
VERTICAL CONTROL:
HORIZONTAL CONTROL:
CITY ENGINEER
DATE:

SHEET TITLE: EMERGENCY LIGHTING PHOTOMETRICS
PROJECT: LAS PALMAS SENIOR CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE. LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO. E1908358
PLAN FILE NO.
DRAWING NO. E501
SHEET 114 OF SHEETS 115

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TITLE BLOCK TEMPLATE REVISION DATE: 07/2018
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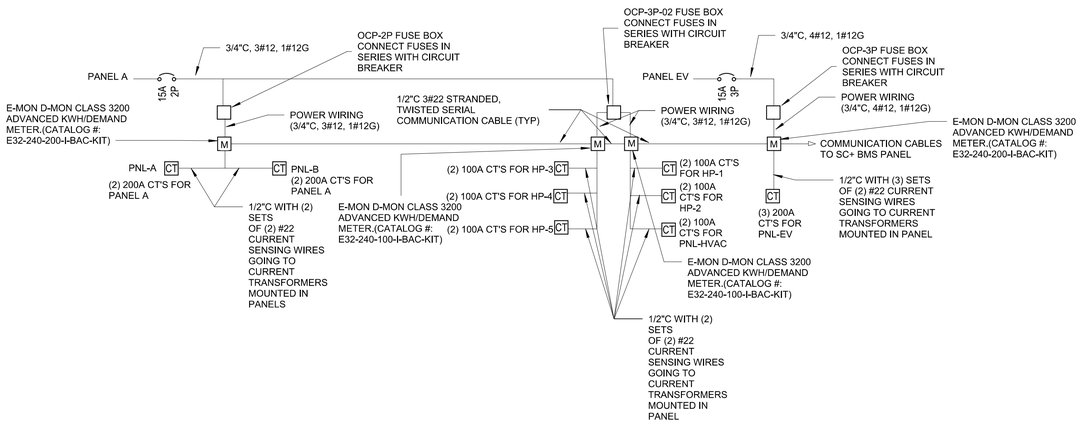
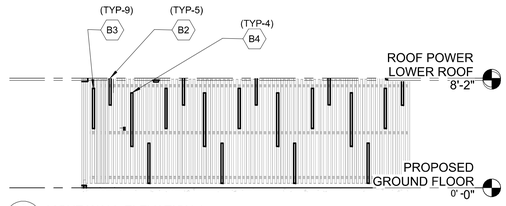
1/8" = 1' 0' 4' 8' 16'
3/16" = 1' 0' 4' 8' 16'
1/4" = 1' 0' 4' 8' 16'



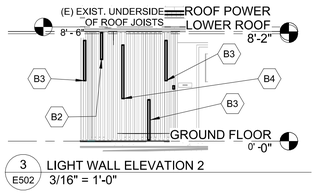
1 E502 E-MON D-MON WIRING DIAGRAM
NOT TO SCALE



2 E502 LIGHT WALL ELEVATION 1
3/16" = 1'-0"

LIGHT WALL ELEVATION NOTES

1. USE DURACLAD MC-PCS DUO ARMORED CABLE WITH POWER AND CONTROL WIRES(USE 2#12 & 1#12GND SOLID WIRE FOR POWER AND 2#16 SOLID FOR DIMMING WIRES.) CONCEAL THIS MC CABLE AND J-BOXES IN THE 2" FURRED SPACE BEHIND DECORATIVE PANEL.
2. REFER TO ARCHITECTURAL SHEETS AND COORDINATE WITH ARCHITECT FOR EXACT PLACEMENT OF LIGHT FIXTURES.



3 E502 LIGHT WALL ELEVATION 2
3/16" = 1'-0"

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OFFICIAL RECORD

BUREAU OF ENGINEERING

NO.	REVISION DESCRIPTION	DATE	BY
1	POWER METERS	Date 2	ML

INDEX NO.

BUILDING NO. -

MF-300512

ENGINEERING
CITY OF LOS ANGELES

REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL
NO. E12231
EXP. 9/30/2026
STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

ALFRED MATA, P.E.
INTERIM CITY ENGINEER
DATE:

ARCHITECTURAL DIVISION
LIC. NO.: E12231

ENGINEER: SARO DERSARKOIAN
DESIGNED BY: MORGAN LYTLE
DRAWN BY: MORGAN LYTLE
CHECKED BY: SARO DERSARKOIAN
APPROVED BY: STEVEN FIERCE, A.I.A., PRINCIPAL ARCHITECT

CITY OF LOS ANGELES

VERTICAL CONTROL:
HORIZONTAL CONTROL:

SHEET TITLE: E-MON D-MON WIRING DIAGRAM AND LIGHT WALL ELEVATIONS

PROJECT: LAS PALMAS SENIOR CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE.
LOS ANGELES, CA 90028

BID SET
PROJECT ISSUE DATE 9/22/2025

WORK ORDER NO.
E1908358

PLAN FILE NO.

DRAWING NO.
E502

SHEET 115 OF SHEETS 115

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SHEET ISSUE DATE: 12/21/23
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DESIGN STAGE REVISION DATE

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LAS PALMAS SENIOR CENTER
(G1163)

1820 N LAS PALMAS AVE., LOS ANGELES CA 90028

W.O. E1908358



DEPARTMENT OF RECREATION AND PARKS

LAS PALMAS SENIOR CENTER

(G1163)

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DEPARTMENT OF RECREATION AND PARKS

LAS PALMAS SENIOR CENTER

(G1163)

I. GENERAL CONDITIONS

W.O. E1908358

DEPARTMENT OF RECREATION AND PARKS

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GENERAL

1. DEFINITIONS

The following terms as used in the Contract shall be defined and interpreted as follows:

ADDENDA

Written documents issued during the bidding period which modify, supersede, or supplement the original Contract Documents.

AGREEMENT

See "CONTRACT."

AS SHOWN, AS INDICATED, AND AS SPECIFIED

These words are understood to be followed by the words "in the Contract Documents."

BENEFICIAL USE

Use of a building, system, structure, or facility by the CITY.

BID

The offer of the Bidder submitted on the prescribed forms setting forth the price(s) for the Work.

BIDDING PERIOD

The time period allocated to the Bidder to enable preparation of a Bid or Proposal.

BIDDER

The person or persons, partnership, firm or corporation submitting a Bid or proposal for the Work defined in the Contract Documents.

BID GUARANTY

The cash, certified check or Bidders Surety Bond accompanying the Bid as a guaranty that the Bidder will enter into a contract with the RECREATION AND PARK COMMISSION for the performance of the Work.

BOARD OF RECREATION AND PARK COMMISSIONERS

The Board of Recreation and Park Commissioners, of the City of Los Angeles.

BOND

Bid bond, performance and payment bond or other instrument of security.

CHANGE ORDER

A written order to the CONTRACTOR signed by the GENERAL MANAGER directing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or time which is issued after the effective date of the Contract and effects less modification than is effected by a Supplemental Agreement. A Change Order may or may not also be signed by the CONTRACTOR.

CITY

The CITY of Los Angeles, a municipal corporation.

CLAIM

A written demand or assertion by one of the parties seeking, as a matter of right, an interpretation of the Contract Documents, payment of money, extension of time or other relief. The party asserting the claim must set forth the facts and circumstances for which the other party is responsible.

CODE

Codes of the State of California as well as any other Federal or local law, statute, ordinance, rule or regulation.

CONTRACT

A binding agreement between the CITY and the CONTRACTOR for the Work described in the Contract Documents.

CONTRACT COMPLETION DATE

The date the CITY accepts the entire Work as being in compliance with the Contract Documents, and authorizes the final payment in accordance with the requirements set forth in Article 25, FINAL PAYMENT of the General Requirements.

CONTRACT DOCUMENTS

The following documents constitute a part of and comprise the Contract Documents: Agreement, Notice Inviting Bids or Proposals, Instruction to Bidders, Contractor's Bid or Proposal, Special and Supplementary Conditions, General Requirements, Geotechnical Baseline Report (if provided for the in the General Requirements), Federal and State Requirements, Standard and Reference Specifications, Standard Plans, Plans and Specifications, Soil Reports and Subsurface Investigation Reports, Summary of First Notice Replies, Addenda and Notice to Bidders issued prior to the opening of bids, Plan Clarifications, Request for Information, Supplemental Agreements and Change Orders issued after Contract award.

CONTRACTOR DEFAULT

See TERMINATION OF CONTRACT BY CITY (CONTRACTOR DEFAULT) Article of these General Conditions.

CONTRACT PRICE

The total amount of money for which the Contract is awarded.

CONTRACT UNIT PRICE

The amount stated in the Bid for a single unit of an item of Work.

CONTRACTOR

The person or persons, partnership, firm or corporation who enters into the Contract as stipulated in the Agreement awarded by the CITY. Prime Contractor and Contractor shall mean the same.

CONTRACTOR'S REPRESENTATIVE

The representative of the CONTRACTOR at the site who shall supervise and direct the construction and who is authorized to receive and fulfill instructions from the PROJECT MANAGER or INSPECTOR.

DAYS

Unless otherwise specifically stated, the term "days" will be understood to mean consecutive calendar days.

EASEMENT

Permission to access or utilize property not owned by the CITY.

EQUAL

See "OR EQUAL".

GENERAL CONDITIONS

Instructions to the CONTRACTOR setting forth its responsibilities and the CITY'S responsibilities for proper execution of the Work indicated herein.

GENERAL MANAGER

GENERAL MANAGER of the Department of Recreation and Parks, or an authorized representative.

GENERAL REQUIREMENTS

Instructions to the CONTRACTOR setting forth its responsibilities and the CITY'S responsibilities for proper execution of the administration and technical aspects of the project indicated herein.

GEOTECHNICAL DESIGN SUMMARY REPORT /GEOTECHNICAL BASELINE REPORT (GBR)

The report that sets forth the geotechnical interpretations regarding anticipated conditions for the design and construction of the project. This report establishes a geotechnical baseline that provides the basis for identification of changed site/ground conditions.

GEOTECHNICAL SITE ASSESSMENT

SEE AGEOTECHNICAL DESIGN SUMMARY REPORT.@

HOLIDAY

Those holidays and dates observed by the CITY. A list of such holiday dates is available from the RECREATION AND PARK COMMISSION Office.

IMMEDIATELY NOTIFY

The obligation to cause verbal notification of some condition or event as soon as possible upon discovery or knowledge of the condition or event and in all instances, no more than two (2) hours.

INSPECTOR

The Inspector of Public Works, the Director of the Bureau of Contract Administration, or an authorized representative(s) located at the Public Works Building, 1149 S. Broadway, 3rd Floor, Los Angeles, CA, 90015.

JOBSITE

The area upon or in which the CONTRACTOR'S operations are carried on and such other areas adjacent thereto as may be designated as such by the Contract Documents.

LAW

Any Federal, State or local law, statute, ordinance, rule, regulation or code.

LIQUIDATED DAMAGES

The amount the CONTRACTOR shall pay to the CITY, as determined by rates and amounts as fixed and agreed in the Contract Documents, due to the CONTRACTOR'S failure to complete the Work or submit the schedule within the time specified, or for non-compliance with other specified requirements.

MODIFICATIONS

Includes Change Orders and Supplemental Agreements. A modification may only be issued after the effective date of the Contract.

NON-CONFORMING WORK

Non-conforming Work is Work which does not conform in all respects to all requirements in the Contract Documents, including damaged Work and damaged materials, without respect to the causes or nature of such lack of conformity.

NOTICE OF AWARD

The written notice by the CITY to the successful Bidder stating that upon compliance by the successful Bidder of required conditions, the City will execute the Contract.

NOTICE TO BIDDERS

A notice included in the bidding documents that informs prospective bidders of the bidding procedures and the opportunity to submit a bid.

NOTICE TO CONTRACTOR

The written notice by the CITY to the CONTRACTOR which officially advises on direction and provides information pertinent to the Contract.

NOTICE TO PROCEED

The written notice by the CITY to the successful Bidder stating that the Work or portions of the Work may commence.

NOTICE TO WITHHOLD

The written notice by the CITY to the CONTRACTOR advising that certain payments shall be withheld due to unacceptable execution of the Work by the CONTRACTOR.

OR EQUAL

The product, equipment, or material which is proposed by the CONTRACTOR for use in the Work which in the sole judgment of the PROJECT MANAGER is equal to, better than and as suitable as the product or material specified in the Contract Documents as to function, performance, reliability, quality, and general configuration.

PARTIAL ACCEPTANCE

Any portion of the Work which has been completed in accordance with the plans and specifications and has been accepted in writing by the PROJECT MANAGER and the INSPECTOR on the "Statement of Partial Completion" form.

PLANS OR DRAWINGS

The drawings, profiles, cross sections, working drawings, and supplemental drawings, or reproductions thereof, issued or approved by the PROJECT MANAGER, which show the location, character, dimensions or details of the Work.

PROJECT

The Work and/or construction operations executed through the performance of this Contract.

PROJECT MANAGER

The authorized representative of the GENERAL MANAGER.

PROTEST

See definition of Claim.

REFERENCE SPECIFICATIONS

Those bulletins, standards, rules, methods of analysis or test, codes, and specifications of other agencies, PROJECT MANAGER societies, or industrial associations referred to in the Contract Documents. These refer to the latest edition, including amendments in effect and published at the time of advertising the project, adopted by the RECREATION AND PARK COMMISSION, if applicable, unless specifically referred to by edition, volume, or date.

RIGHTS OF ENTRY

Written permission from an owner of a facility or property to access the facility or property for a specific purpose.

RIGHT OF WAY

Rights of way, easements, or rights of entry for the Work will be provided by the CITY. The CONTRACTOR shall make arrangements, pay for, and assume all responsibility for acquiring, using, and disposing of additional work areas and facilities temporarily required in addition to those provided by the CITY. The

CONTRACTOR shall indemnify and hold the CITY harmless from all claims for damages caused by such actions.

SPECIAL PROVISIONS

Any provision which supplements or modifies the Specifications.

SPECIFICATIONS

The Contract Documents and revisions to it which were prepared to specifically describe the commercial, legal, technical and nontechnical requirements of the project. Specifications include but are not limited to Terms, Provisions, General Conditions, General Requirements, Special Provisions, Technical Specifications, Equipment Schedules, and all revisions made to the specifications in Addenda, Notice To Bidders, and Change Orders or Modifications, signed by the GENERAL MANAGER.

STANDARD PLANS

Details of standard structures, devices or instructions referred to on the plans or in the specifications by title or number issued by the CITY.

STANDARD SPECIFICATIONS

Documents, Materials and items specified in Article 5 of these General Conditions.

STARTUP

That stage of performance testing as defined in the specifications which use the actual process fluid, material, or medium for a specified number of days of continuous operation without major interruptions and prior to acceptance by the CITY.

SUBCONTRACTOR

A "Subcontractor" is a contractor who is licensed pursuant to California Business and Professions Code, Section 7000 *et.seq.* and who contracts directly with the prime CONTRACTOR. The Subcontractor performs some part of the Work of the Contract. A Subcontractor does not have any direct contract with the CITY related to the project.

SUB-SUBCONTRACTOR

A "Sub-subcontractor" is a Subcontractor, within the definition of that term, who has a contract with a Subcontractor and has no Contract with the City related to the project.

SUPERVISOR

The designated individual who is responsible for the proper execution or installation of some portion or portions of the Work. The SUPERVISOR reports directly or indirectly to the CONTRACTOR'S REPRESENTATIVE.

SUPPLEMENTAL AGREEMENT

A written amendment of the Contract Documents which modifies the Contract in price or scope by a percentage which is more than can be accomplished by a Change Order and signed by the CITY and the CONTRACTOR.

SUPPLIER

An individual, organization, or firm who is not required for the purposes of the Work to be licensed pursuant to California Business and Professions Code as a CONTRACTOR, Subcontractor, or Sub-subcontractor, within the meanings of those terms as defined herein above, who provides equipment and/or materials for the Work, to the CONTRACTOR, a Subcontractor, or a Sub-subcontractor, including that fabricated to a special design, but who does not perform labor at the site except for labor or labor supervision required by some manufacturers as part of their equipment installation for warranty or other purposes. The term "supplier" also includes fabricator, manufacturer, or vendor.

SURETY

Any individual, firm or corporation, bound with and for the CONTRACTOR for the acceptable performance, execution and completion of the Work, and for the satisfaction of all obligations incurred.

TERMS

Unless otherwise stated, the words "directed, required, permitted, ordered, instructed, designated, considered necessary, prescribed, approved, acceptable, satisfactory," or words of like meaning, refer to actions, statements, judgments, conclusions, and decisions within the responsibility of the PROJECT MANAGER or the INSPECTOR.

UNAVOIDABLE DELAY

Delay arising from causes beyond the control and without the fault or negligence of the CONTRACTOR and its Subcontractors at all tiers.

UTILITY

Tracks, overhead or underground wires, cables, pipeline, conduits, ducts, or structures, sewers, or storm drains owned, operated, or maintained in or across a public right of way, private easement, or jobsite.

VOLUME I

Are the items in the bid package entitled “CITY OF LOS ANGELES, CALIFORNIA, DEPARTMENT OF RECREATION AND PARKS INSTRUCTION TO BIDDERS, PROPOSAL, AFFIDAVIT AND BOND FOR…” inclusive.

VOLUME II

Are the items in the bid package entitled “CONTENTS GENERAL CONDITIONS”, “CONTENTS GENERAL REQUIREMENTS”, and any specifications and attachments inclusive.

WORK

Includes all material, labor, utility services, tools, expendable equipment, and all appliances, machinery, transportation, appurtenances and specified services necessary to perform and complete the Contract; and such additional items not specifically indicated or described that can be reasonably inferred as belonging to the item described or indicated and as required by good practice to provide a complete and satisfactory system or structure. As used herein, "provide" shall be understood to mean "furnish and install, complete in place."

WORKSITE

See "JOBSITE."

WORKDAY

Any day within the period between the start of the Contract time and the date provided in the Contract for completion or the date established in the Statement of Completion by the CITY acknowledging that all Work under the contract is complete, whichever occurs last, other than:

- Saturday,
- Sunday,
- any day designated as a holiday by the CITY, and,
- any other day designated as a holiday in a Master Labor Agreement entered into by the CONTRACTOR or on behalf of the CONTRACTOR as an eligible member of a Contractor's Association,
- any day the CONTRACTOR is prevented from working for cause as established by UNAVOIDABLE DELAY of these General Conditions; and,

- any day the Contractor is prevented from working during the first five (5) hours of the workday with at least sixty percent (60%) of the normal Work force from cause as established by an Unavoidable Delays of these General Conditions.

CONTRACT DOCUMENTS

2. SCOPE

A. The work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies and manufactured articles, and for furnishing all transportation, services, including fuel, power and water, and essential communications, and the performance of all labor, Work, or operations required for the fulfillment of the Contract, in strict accordance with the specifications, schedules, and drawings, all of which are made a part hereof, and including such detail sketches as may be furnished by the PROJECT MANAGER from time to time during the construction in explanation of said drawings. The items shall be complete and all Work, material, and services not expressly called for in the Specifications, or not shown on the drawings, which may be necessary for complete and proper construction to carry out the Contract in good faith shall be performed, furnished, and installed by the CONTRACTOR at no increase in cost to the CITY.

B. The Work required by the Contract shall be completed within **Five Hundred and Twelve (512)** calendar days of the date specified by the General Manager in the notice to proceed with the work. The Contract completion time shall consist of **Four Hundred Sixty Seven (467)** calendar days for construction, and **Forty Five (45)** calendar days for maintenance.

3. AUTHORITY OF THE RECREATION AND PARK COMMISSION, PROJECT MANAGER, AND INSPECTOR

The GENERAL MANAGER, RECREATION AND PARKS has the final authority in all matters affecting the Work The CONTRACTOR shall promptly comply with instructions from the PROJECT MANAGER or the INSPECTOR.

On all questions relating to quantities, the acceptability of material, equipment, or Work, the execution, progress or sequence of Work, and the meaning of specifications or drawings, the decision of the PROJECT MANAGER is final and binding, and shall be precedent to any payment under the Contract, unless otherwise ordered by the BOARD OF RECREATION AND PARKS.

The PROJECT MANAGER is authorized to require performance of the Work consistent with the meaning of the plans and specifications and to approve necessary additive changes in Plans up to a maximum as authorized by the Recreation and Park Commission. The PROJECT MANAGER may initiate changes in Plans or scope of Work, regardless of cost, for submission to the RECREATION AND PARK COMMISSION for its approval.

The INSPECTOR is authorized to enforce compliance with Plans and Specifications, to determine the acceptability of materials and workmanship, administer requirements with respect to subcontracts, and to prepare and process progress payment estimates. In the event of a dispute between the CONTRACTOR and the INSPECTOR, the latter is authorized to reject materials or suspend the Work until any questions at issue can be referred to and decided by the RECREATION AND PARK COMMISSION or, in design matters, by the PROJECT MANAGER.

The INSPECTOR may sample and test all materials to be incorporated into the Work. The INSPECTOR may delegate this authority to sample materials and perform tests to the Department of General Services, Standards Division, or other approved agencies, the CONTRACTOR will pay for testing.

4. INTENT OF CONTRACT DOCUMENTS

The Contract Documents are complementary, and what is called for by one part shall be as binding as if called for by all. The intent of the Documents is to include all Work consistent therewith and reasonably inferable there from as being necessary for completion of the Contract. Materials or Work described in words that indicate the proper execution and a well known technical or trade designation shall be held to refer to such recognized standards.

It is understood and agreed that the written terms and provisions of the Contract Documents represent the entire and integrated agreement between the parties hereto and supersede all prior negotiations, representations, or agreements, either written or oral. The Contract Documents shall not be construed to create any contractual relationship of any kind between the PROJECT MANAGER or the INSPECTOR and the CONTRACTOR.

5. STANDARD SPECIFICATIONS

The applicable portions of the Standard Specifications for Public Works Construction (SSPWC) shall become part of these Contract Documents, and unless otherwise specified, all Work and materials shall conform to the Standard Specifications as modified by the corresponding issue of Standard Plan No. S-610 as amended or revised and adopted by the RECREATION AND PARK COMMISSION in effect on the date of advertising for bids.

6. INTERPRETATION OF PLANS AND SPECIFICATIONS

Every part of the Contract, as shown on the Plans and described in the Specifications, must be completed and finished. No deviations are to be made from the Plans or Specifications without previous written authorization from the PROJECT MANAGER.

In general, the Plans will show dimensions, positions and type of construction, and the Specifications will define materials, quantities, and if indicated, required methods of construction. Any Work called for on the Plans and not mentioned in the Specifications, or vice versa, shall be performed as though fully set forth in both. Work not particularly detailed, marked, or specified shall be the same as similar parts that are detailed, marked, or specified.

The Plans have been drawn to the indicated scales except where otherwise noted. Dimensions indicated by figures or numerals shall govern in all cases whether drawn to scale or not. Larger scale drawings shall take precedence over smaller scale drawings. Drawings shall not be scaled for dimensions.

The general character of the detailed Work is shown on the Contract drawings, but minor modifications may be made in larger scale drawings. The PROJECT MANAGER will furnish additional details, when needed, to more fully explain the Work, and the same shall be considered part of the Contract.

Where on any drawings, a portion of the Work is drawn out or detailed and the remainder is indicated in outline, the drawn out or detailed parts shall apply also to all other like portions of the Work. Where ornament or other detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to all other similar parts in the Work, unless otherwise indicated.

References made to other specifications and codes refer to the edition including amendments in effect and published at the time of advertising the project or issuing the permit, unless specifically referred to by edition, volume, or date as noted in the Contract Documents.

The CONTRACTOR shall furnish and install all equipment and materials required to complete installations whether or not the quantities are specifically shown, called out, or reflected in the Contract Drawings.

7. PRECEDENCE OF CONTRACT DOCUMENTS

In resolving inconsistencies or ambiguities among two (2) or more components of the Contract Documents, the highest precedence shall be given to Permits from the other agencies as may be required by law and decreasing order as follows:

1. Permits from other agencies as may be required by law
2. Agreement
3. Special Provisions
4. General Conditions
5. Specifications - Division 01: General Requirements
6. Specifications - Divisions 02 - 17
7. Geotechnical Site Assessment
8. Drawings
9. Standard Plans
10. Standard Specifications
11. Reference Specifications

12. Reference Drawings

Supplemental Agreements, Change Orders, PROJECT MANAGER'S written interpretations and clarifications, Notice to Bidders and Addenda, in the precedence listed, will take precedence over all other Contract Document components referenced therein. Figure dimensions on Drawings will take precedence over scaled dimensions.

Detailed Drawings, including Process and Instrumentation Drawings (P & ID's), will take precedence over general Drawings.

8. ACCURACY OF PLANS AND SPECIFICATIONS

Omissions from the Plans and Specifications shall not relieve the CONTRACTOR from the responsibility of furnishing, making, or installing all items required by law or usually furnished, made, or installed in a project of the scope and character indicated by the Plans and Specifications. If the CONTRACTOR is of the opinion that it will incur costs above and beyond what would reasonably be anticipated in meeting the above requirements, it shall inform the PROJECT MANAGER in writing within twenty (20) calendar days after discovering the omission and before starting the Work.

The Plans show conditions as they are supposed or believed by the PROJECT MANAGER to exist, but it is not intended or to be inferred that the conditions as shown thereon constitute a representation or warranty, expressed or implied, by the CITY or its officers, that such conditions are actually existent, nor shall the CITY, or any of its officers, be liable for any loss sustained by the CONTRACTOR as a result of any variance between conditions as shown on the Plans, and the actual conditions revealed during progress of the Work or otherwise, except as indicated in Article 53, Differing Site Conditions of these General Conditions.

9. EXAMINATION OF COVERED WORK

If any Work is covered without inspection, approval or consent of the INSPECTOR, and examination is required by the INSPECTOR, it shall be uncovered at the CONTRACTOR'S sole expense.

Examination of covered Work may be ordered by the PROJECT MANAGER and if so ordered, the Work shall be uncovered by the CONTRACTOR. If such Work is found to be in accordance with the Contract Documents, the CITY will issue a Change Order authorizing payment for the cost of examination and replacement. If such Work is found to be not in conformance with the Contract Documents, the CONTRACTOR shall correct the non-conforming Work and the cost of examination and correction of the non-conforming Work shall be borne solely by the CONTRACTOR.

10. UNNOTICED DEFECTS

Any non-conformity in the Work that is discovered before Contract Completion, or before final payment has been made, or during the guarantee period, shall be removed and replaced by the CONTRACTOR with Work which conforms to the provisions of the Contract Documents. Failure on the part of the PROJECT MANAGER or the INSPECTOR to condemn or reject non-conforming Work shall not constitute acceptance or implied acceptance of such Work.

11. BUILDING CODES AND REGULATIONS

The CONTRACTOR shall perform the Work in accordance with the requirements of the Los Angeles City Building Code and all other regulations, laws, and ordinances, even though such requirements are not specifically mentioned in the Specifications or shown on the drawings.

It is not the responsibility of the CONTRACTOR to make certain that the Contract Documents are in accordance with applicable laws, statutes, building codes and regulations. If the CONTRACTOR observes that any of the Contract Documents are at variance therewith in any respect, it shall promptly notify the PROJECT MANAGER in writing, and any necessary changes shall be accomplished by issuance of a Change Order.

If the CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the PROJECT MANAGER, it shall assume full responsibility therefore and shall bear all costs attributable thereto.

12. LENGTH OF WORKDAY AND WORK WEEK

Eight (8) hours of labor shall constitute a calendar day's work for employees of the CONTRACTOR under this Contract. Said employees shall be paid not less than the prevailing wage rate for the first eight (8) hours work of each day.

A working day shall be Monday through Friday, and work shall be between 7:00 a.m. and 4:00 p.m., unless otherwise approved by the PROJECT MANAGER or the RECREATION AND PARK COMMISSION or revised by CITY Ordinance.

When work in excess of eight (8) hours per day, or forty (40) hours during any one (1) week is performed, wages for all hours over eight (8) hours in any day or over forty (40) hours during any one (1) week shall be paid at the prevailing wage rate, as provided in the California Code and the CITY's code requirements.

13. PAYMENT OF EMPLOYEES

The CONTRACTOR and each Subcontractor shall pay each employee engaged in Work on the project under this Contract in compliance with the Federal and State wage provisions indicated on the appropriate page of the Proposal (General Instruction and Information for Bidders), and LENGTH OF WORKDAY AND WORK WEEK of these General Conditions.

The certified payroll and the Statement of Compliance shall be submitted to the INSPECTOR by the CONTRACTOR and all Subcontractors performing Work on the project, regardless of dollar amount or type of contract.

If there is a difference between the Federal and State minimum wage rates for similar classifications of labor, the CONTRACTOR and its Subcontractors shall pay not less than the higher wage rate.

When the CONTRACTOR intends to use a craft or classification not shown on the general prevailing wage determinations, it will be required to pay the wage rate of that craft or classification most closely related to it as shown in the general prevailing wage determinations. In case of disagreement between the CONTRACTOR and the CITY, the INSPECTOR shall make the final determination as to the prevailing wages for the Work.

14. CONVICT-MADE MATERIALS

No materials manufactured or produced in a penal or correctional institution shall be incorporated in the project under this Contract.

15. SALES; BUSINESS OR USE TAX

Purchases of materials and equipment which will be incorporated or installed permanently in the Contract Work, or which will be used in the operation of the CONTRACTOR or Subcontractors, and not incorporated in the Contract Work, are not exempt from City of Los Angeles and California State Sales or Use Taxes as applicable. The CITY shall consider any required business taxes to be included in the overhead costs of the CONTRACTOR.

16. NONDISCRIMINATION IN EMPLOYMENT

The CONTRACTOR shall comply with all of the provisions of the Los Angeles Administrative Code, Mandatory Provision Pertaining to Nondiscrimination in Employment.

The CONTRACTOR shall submit Monthly Ethnic Composition of Work Force Reports to the INSPECTOR indicating the number of employees in the various work categories and ethnic groups and gender on forms furnished by the CITY. Failure to furnish the reports shall constitute grounds for the CITY to withhold the progress payment.

Nondiscrimination Clause: "The CONTRACTOR shall not discriminate during the performance of this Contract against any employee or applicant for employment because of employee's or applicant's race, religion, national origin, ancestry, sex, age, sexual orientation or physical handicap." The CONTRACTOR shall include in all subcontracts awarded under this Contract the same Nondiscrimination Clause.

If conflicts exist between these provisions and the Federal Rules and Regulations governing the same, the more stringent requirements shall prevail.

17. APPRENTICE UTILIZATION

Any Contract awarded hereunder will require the CONTRACTOR to comply with the provisions of the California Labor Code relating to apprentice employment and training; and will require the CONTRACTOR to assume full responsibility for compliance with said section with respect to all Apprenticing Occupations involved in the Project. (Compliance with said Apprentice Utilization provisions of the Labor Code is not required for Public Works Contracts involving less than $30,000 or less than twenty (20) Working days in duration).

18. LAWS AND REGULATIONS

The CONTRACTOR shall observe and comply with all Federal, State, and local laws, ordinances, codes, orders, and regulations which in any manner affect those engaged or employed on the Work, the materials used in the Work, or the conduct of the Work. If any discrepancy or inconsistency should be discovered in this Contract in relation to any such law, ordinance, code, order, or regulation, the CONTRACTOR shall report the same in writing to the PROJECT MANAGER. The CONTRACTOR shall indemnify and save harmless the CITY, and its officers, agents, and employees, against all claims or liability arising from violation of any such law, ordinance, code, order, or regulation, whether by itself or by its employees or subcontractors as stated in these Contract Documents. Any particular law or regulation specified or referred to elsewhere in these specifications shall not in any way limit the obligation of the CONTRACTOR to comply with all other provisions of Federal, State, and local laws and regulations.

19. PERMITS AND CONSTRUCTION EASEMENTS

The CONTRACTOR shall anticipate, obtain and pay for all permits, excluding the General Building Permit, necessary for performance of the Work.

The CONTRACTOR shall obtain and pay all costs incurred and submit to the PROJECT MANAGER copies of all permits required for the construction and installation of all Work called for on this project. All costs shall be included in the CONTRACTOR'S bid. The permit list to be obtained by the CONTRACTOR shall include, but not be limited to the following:

1. Night Work, hauling, overload, grading, excavation, demolition, foundation, and associated building permits.
2. Electrical permits.
3. Mechanical permits.
4. Plumbing permits.
5. South Coast Air Quality Management District permits.
6. Fire sprinkler permit.
7. All Federal, State, County and CITY issued permits.

Rights of ways, easements, or rights of entry for the Work will be provided by the CITY. The CONTRACTOR shall make arrangements, pay for, and assume all responsibility for acquiring, using, and disposing of Work areas and facilities temporarily required which are necessary in addition to those provided by the CITY. The CONTRACTOR shall indemnify and hold the CITY harmless for all claims for damages caused by such actions.

20. PARTIES EXCLUDED FROM THE WORK

Lists of individuals, firms and organizations which have been debarred, suspended or have voluntarily excluded themselves from Federal Procurement and Non Procurement Program is maintained by US General Services Administration. A copy can be obtained from Superintendent of Documents, US Government Printing Office, Washington, DC 20402, Tel: (202) 783-3238.

The CITY will not conduct business with an individual, firm or organization, and the CONTRACTOR shall not employ or otherwise utilize any Subcontractor, supplier or equipment vendor at any tier which is on the U.S. General Services Administration "List of Parties Excluded from Federal Procurement and Non Procurement Programs". The CONTRACTOR shall not utilize or otherwise employ any subcontractors or suppliers on the CITY's list of nonresponsible bidders maintained by the General Services Division of the Bureau of Contract Administration.

21. BUSINESS TAX REGISTRATION CERTIFICATES

The CONTRACTOR represents that it has, or will obtain upon award, the Business Tax Registration Certificate(s) required by the Los Angeles City Business Tax Ordinance. The CONTRACTOR shall maintain, or obtain as necessary, all such Certificates required of it under said Ordinance and shall not cause or allow any such Certificate to be revoked or suspended.

The CITY requires all firms that have business activity within the City of Los Angeles to pay CITY business taxes.

Payments for goods or services will be withheld unless proof of tax compliance is provided to the CITY. All firms and individuals that do business with the CITY will be required to provide a Business Tax Registration Certificate number or an exemption number as proof of compliance with Los Angeles City business tax requirements in order to receive payment for goods or services.

The Tax and Permit Division of the City Clerk's Office has the sole authority to determine whether a firm is covered by business tax requirements.

22. FINANCIAL LIABILITY

The CITY's liability under this Contract shall not exceed the CITY's appropriation to fund the Contract at the time of Contract award. However, if the CITY shall appropriate funds for any successive years, the CITY'S maximum liability shall not exceed the extent of such appropriation, subject to the terms and conditions of this Contract.

THE CONTRACTOR'S RESPONSIBILITIES

23. CONTRACTOR'S OBLIGATIONS

Only competent workers shall be employed on the Work. Any worker, at the journey level or above, employed on the Work shall have a current license or certificate as required for the type of Work being performed, issued by the Department of Building and Safety of the City of Los Angeles and any such other organization as required.

Any person or subcontractor employed who is found by the PROJECT MANAGER AND/OR INSPECTOR to be incompetent, disorderly or otherwise objectionable, or who fails or refuses to perform Work properly, acceptably and as directed shall be immediately removed from the Work by the CONTRACTOR and not be reemployed on the Work.

The CONTRACTOR, at its sole cost and expense, shall perform all labor and services and furnish all the materials, tools, and appliances, except as hereinafter otherwise definitely provided, necessary or proper for performing and completing the Work required, in the manner and within the time stipulated in these specifications. The CONTRACTOR shall furnish, erect, maintain, and remove the construction plant and such temporary works as may be required. If, at any time before the commencement or during the progress of the Work or any part of it, the CONTRACTOR'S methods or appliances appear to the PROJECT MANAGER or the INSPECTOR to be unsafe, inefficient, or inadequate for securing the safety of the workers, the quality of the Work required, or the rate of progress stipulated, the PROJECT MANAGER or the INSPECTOR may order the CONTRACTOR to increase their safety and efficiency or to improve their character, and the CONTRACTOR shall comply with such orders at its own expense. Neither the making of such demands by the PROJECT MANAGER nor the failure to make such demands shall relieve the CONTRACTOR of its obligation to secure the safe conduct of the Work, the quality of Work required, nor the rate of progress stipulated in the Contract. The CONTRACTOR shall be fully responsible for the safety, efficiency, and adequacy of its plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation. All of the labor and materials shall be performed and furnished strictly pursuant to and in conformity with the Contract Documents, the lines and grades and other directions of the PROJECT MANAGER or the INSPECTOR as given from time to time during the progress of the Work under the terms of the Contract, and in accordance with working drawings to be furnished from time to time as provided herein. The CONTRACTOR shall complete the entire Work to the satisfaction of the PROJECT MANAGER and INSPECTOR and in accordance with the Specifications and drawings herein mentioned, at the prices fixed in the Contract.

Where articles or materials are especially manufactured or fabricated for delivery under these specifications, the CONTRACTOR shall at all times employ such workforce, plant, materials, and tools as will be sufficient to complete the performance of the Contract and every part thereof within the time limits stipulated herein. If the

CONTRACTOR fails to employ sufficient workforce, plant, materials, tools, or to maintain adequate progress, the PROJECT MANAGER may require an increase in progress at any point or points or a modification of plans and procedure in such a manner as to accelerate the Work. Failure to adequately staff the project shall be just cause for the CITY to terminate the Contract.

24. CONTRACTOR'S REPRESENTATIVE AT THE SITE

A technically qualified and English-speaking project representative shall be designated in writing as the CONTRACTOR'S representative at the job site, who shall supervise the Work and shall provide competent supervision of the Work until its completion. The CONTRACTOR'S project representative shall be assigned full time and exclusively to this project. Alternate representatives with qualifications equal to or better than the previous representative may be designated. The CONTRACTOR'S representatives shall have at least five (5) years of verifiable experience as the person primarily responsible for supervision of the Work on projects of the same or similar size and nature as this project. Within five (5) days after the Notice of Award the CONTRACTOR shall provide a statement to the PROJECT MANAGER with the following:

1. Identification and resume, showing the qualifications and experience of the CONTRACTOR'S representative and the alternate appointed to act in the place of the CONTRACTOR'S representative.
2. References of not less than two (2) previous projects on which the CONTRACTOR'S representative and the alternate had supervisory responsibility on a project of a similar nature and at least one-half or more of the cost of this project. Such references shall include names, addresses, and telephone numbers of owner representatives who worked on the project as well as project information such as project type, size, location and duration.

The PROJECT MANAGER reserves the right to disapprove any candidate named as the CONTRACTOR'S representative or alternate who fails to meet the provisions set forth herein. The PROJECT MANAGER reserve the right to remove, without any right to work on the project, either the CONTRACTOR'S representative or alternate, who in the sole opinion of the PROJECT MANAGER has demonstrated incompetence, lack of ability, or other unsuitability to perform supervision of the Work.

If the CONTRACTOR'S representative or alternate leave the employ of the CONTRACTOR, the CONTRACTOR will be required to replace the individual(s) and fulfill the requirements of this Article within fifteen (15) calendar days. In no event shall any Work proceed in the absence of an approved representative.

The CONTRACTOR'S representative or alternate shall have full authority to act on behalf of the CONTRACTOR, including, but not limited to final approval of Change Orders and Supplemental Agreements. All directions given by the PROJECT MANAGER to said representative or alternate shall be considered as having been given to the CONTRACTOR. Such instructions given by the PROJECT MANAGER to the CONTRACTOR'S representative or alternate will be confirmed in writing. All instructions and directions given by the PROJECT MANAGER or the INSPECTOR will be limited to matters properly falling within the PROJECT MANAGER'S or the INSPECTOR'S authority as specified in AUTHORITY OF THE RECREATION AND PARK COMMISSION, PROJECT MANAGER AND INSPECTOR of these General Conditions.

The CONTRACTOR'S representative or alternate shall be present at the site of the Work at all times while Work under the Contract is in progress. Failure to observe this requirement shall constitute suspension of the Work by the CONTRACTOR, until such time as said representative or alternate is again present at the site, and no payment will be allowed for any Work performed in the absence of said representative or alternate. Work performed in violation of these provisions shall be removed and reconstructed, re-fabricated, or reinstalled under the required supervision. No extensions of time will be granted, nor will additional payment be allowed for any costs to the CONTRACTOR for slowdown, delays, idled equipment, or any other costs incurred by the CONTRACTOR as the direct or indirect result of such suspension.

Whenever the Work is defined as being suspended under the provisions of this Article, any such suspension in excess of ten (10) calendar days shall constitute just cause for the CITY to terminate the Contract under the provisions of TERMINATION OF CONTRACT BY CITY (CONTRACTOR DEFAULT) of these General Conditions.

25. FAMILIARITY WITH PLANS AND SPECIFICATIONS

It shall be the responsibility of the CONTRACTOR to be thoroughly familiar with all details of the Project, including the Work of CONTRACTOR'S forces and all Subcontractors. The CONTRACTOR shall call the following to the attention of both the PROJECT MANAGER and the INSPECTOR in writing within twenty-four (24) hours of discovery, before any Work is performed:

1. Errors and omissions in the Plans and Specifications;
2. Work on the Plans or in the Specifications which, if so constructed, would result in a conflict or interference with other Work or the Work of other trades, including the location of fixtures and equipment;
3. Existing improvements visible at the job site, for which no existing disposition is made on the Plans or in the Specifications but which could reasonably be assumed to interfere with the satisfactory completion of the improvements contemplated by the Plans and Specifications.

Failure to notify shall constitute a waiver by the CONTRACTOR of any claim for delay or other damages occasioned by such defect. If the CONTRACTOR proceeds with the Work without instructions from the PROJECT MANAGER, the incorrect Work shall be removed and corrections made to comply with the PROJECT MANAGER'S instructions, at no cost to the CITY. The requirements of this Article are applicable to typographical errors in the Specifications and notational errors on the Plans where ambiguity or inadequate description exists.

26. JOB CONDITIONS

The CONTRACTOR shall visit the job site as soon as practicable after award of the Contract and ascertain all conditions affecting necessary procedure and sequencing of Work operations in the execution of the Work, including condition of available roads and streets, or clearances, restrictions and other limitations affecting transportation and ingress and egress to the job site. The CONTRACTOR shall determine the nature and types of Work to be performed and shall be responsible for all Work to be accomplished.

The CONTRACTOR shall enter the job site as noted in Article 4, SITE SECURITY of the General Requirements. The CONTRACTOR will be restricted to the immediate Work areas on the job site and shall in no case go beyond the Work limits noted on the drawings or as otherwise directed by the PROJECT MANAGER. The job site shall be enclosed with a temporary chain link fence and gates which shall be removed upon completion of the Work. The CONTRACTOR shall confine all operations of the contracted Work to the boundaries of the job site(s) and shall not interfere with CITY personnel and CITY operations or the Work of other contractors working on or near the site.

CONTRACTOR'S employee access to the job site by private vehicles is prohibited.

No vehicle is allowed in the facility or on the job site except delivery trucks and CONTRACTOR'S identified vehicles and equipment. It shall be the CONTRACTOR'S sole responsibility to arrange and pay for offsite employee parking and transportation, if necessary, so as not to affect the availability of public parking on the grounds of the facility or park site. The CONTRACTOR shall fully cooperate with all authorities on the job site and other contractors not related to the Work of this Contract who might be at the job site and shall comply with all regulations in force at the job site.

27. RESPONSIBILITY FOR SITE

The CONTRACTOR shall be in full charge of and be responsible for the job site and the construction Work of this Contract, subject to the directions of the PROJECT MANAGER or the INSPECTOR. Article 33, INTERFACE/COORDINATION REQUIREMENTS of the General Requirements describes interfaces with other contractors working on the job site. No other operations of any nature shall be performed except as specifically authorized in the Contract Documents or as authorized by the PROJECT MANAGER.

The CONTRACTOR shall exercise care not to damage improvements and adjacent land. The CONTRACTOR shall correct any damage caused within seventy-two (72) hours by restoring the land and improvements damaged to their original condition and shall indemnify and hold the CITY harmless for any such damage as specified in INDEMNIFICATION of these General Conditions.

28. WORKMANSHIP AND MATERIALS

All materials, parts and equipment furnished by the CONTRACTOR for the Work shall be new, high grade and free from defects. Materials and Work quality shall be subject to the INSPECTOR'S approval.

29. INJURY AND ILLNESS PREVENTION - SAFETY MEASURES

Safety is the responsibility of the CONTRACTOR. The CONTRACTOR shall observe and comply with the safety provisions of all applicable laws, building and construction codes, safety and health regulations of the California Code of Regulations, and with applicable CITY Safety Policies.

If a Work procedure or condition exists that is a violation of said safety standards, the PROJECT MANAGER or INSPECTOR may order the CONTRACTOR to comply with said safety provisions, and the CONTRACTOR shall comply with such orders at its own expense. If the CONTRACTOR fails to act promptly, the PROJECT MANAGER or INSPECTOR is authorized to suspend the Work. Failure of the PROJECT MANAGER or the INSPECTOR to make such demands shall not relieve the CONTRACTOR of its obligations to secure the safe conduct of the Work.

In the event of an emergency constituting an immediate hazard to the health or safety of the public or CITY employees, property, or licensee, the CITY may undertake, at the CONTRACTOR'S sole expense, without prior notice, all Work necessary to correct such hazardous conditions when it was caused by Work of the CONTRACTOR not being in accordance with the requirements of this Contract.

First aid facilities and supplies shall be kept and maintained by the CONTRACTOR at the site of the Work. The CONTRACTOR shall cause all persons within the construction area to wear protective helmets. In addition, all employees of the CONTRACTOR and its Subcontractors shall be provided with, and required to use, personal protective and life saving equipment set forth in California Construction Safety Orders and the OSHA Safety and Health Standards for Construction.

30. PROTECTION OF PERSONS AND PROPERTY AND RESTORATION OF EXISTING IMPROVEMENTS

The CONTRACTOR shall not destroy, remove, or otherwise disturb any existing survey monuments or reference points without authorization from the PROJECT MANAGER. No pavement breaking or excavation shall be started until all survey monuments or other reference points that will be disturbed by the construction operations have been properly referenced by the PROJECT MANAGER. It shall be the CONTRACTOR'S responsibility to notify the PROJECT MANAGER and the INSPECTOR of the time and location that Work will be done. Such notification shall be sufficiently in advance of construction so that there will be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey monuments or reference points disturbed, without authorization by the PROJECT MANAGER, shall be accurately restored by the CITY at the CONTRACTOR'S sole expense after all street or roadway resurfacing has been completed.

All paved areas including asphaltic concrete beams cut or damaged as a result of construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. All temporary and permanent pavement shall conform to the requirements of the affected pavement owner. All pavement which is subject to partial removal shall be neatly saw cut in straight lines.

In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

Where sidewalks have been removed for purposes of construction, the CONTRACTOR shall place suitable temporary sidewalks, properly protected, promptly after backfilling and shall maintain them in satisfactory condition until the final restoration thereof has been made.

All utilities encountered along the line of the Work shall be maintained continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the PROJECT MANAGER are made. Utilities shall include, but not be limited to, all above or below-ground conduit, pipes, ducts, cables, and appurtenances associated with oil, gas, water, steam, irrigation, process, sewer, storm drain, wastewater, air, electrical, power, instrumentation, communication, telephone, cable, TV, and lighting systems, whether or not owned by the CITY.

The CONTRACTOR shall protect all existing utilities and improvements not designated for removal. Necessary potholing shall be accomplished at the CONTRACTOR'S expense. The CONTRACTOR shall determine the exact locations and depths of all utilities indicated on the drawings. The CONTRACTOR shall make exploratory excavations of all utilities. All such exploratory excavations shall be performed as soon as practicable after award of the Contract and in any event, a sufficient time in advance of construction to avoid possible delays to the CONTRACTOR'S Work. When such exploratory excavations show the utility location as indicated on the drawings to be in error, the CONTRACTOR shall so notify the INSPECTOR and the PROJECT MANAGER. The CONTRACTOR should not rely upon plan designation of location of underground utilities. The number of exploratory excavations and extent of potholing required shall be that number which is sufficient to determine the alignment and grade of the utility. No costs shall be allowed for such Work except those included in the CONTRACTOR'S proposal.

Prior to any excavation in the vicinity of any existing underground facilities, the CONTRACTOR shall notify the INSPECTOR and the PROJECT MANAGER, and the respective authorities representing the owners or agencies responsible for such facilities, not less than three (3) working days, nor more than five (5) working days, of their intention to begin excavation. The CONTRACTOR shall make arrangements for and provide access such that a representative of said owners or agencies may be present during such Work.

Where the proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is shown on the drawings, the CONTRACTOR shall at its own expense, remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement to a place and in a manner as directed by the PROJECT MANAGER, and the owner of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the CONTRACTOR in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal. When utilities that are to be removed are encountered within the area of operations, the CONTRACTOR shall notify the PROJECT MANAGER not less than fifteen (15) days in advance for necessary measures to be taken to prevent interruption of service.

The CONTRACTOR shall notify the PROJECT MANAGER thirty (30) calendar days in advance of any proposed connection, and shall notify the PROJECT MANAGER and the INSPECTOR twenty-four (24) hours prior to the actual connection, to any existing utility.

Any utility or improvement which is damaged by the CONTRACTOR shall be immediately repaired at the CONTRACTOR'S expense, to a condition equal to, or better than, the condition it was in prior to such damage or temporary relocation. If the CONTRACTOR fails or refuses to promptly repair the utility or improvement, the CITY may perform the necessary Work at the CONTRACTOR'S expense and no time extension shall be allowed to the CONTRACTOR. The CONTRACTOR is not relieved of provisions of this Article even in the event such damage occurs after backfilling or is not discovered until after completion of backfilling.

All repairs to a damaged improvement shall be inspected and approved by the INSPECTOR and an authorized representative of the improvement owner before being concealed by backfill or other Work. In case of damage, which in the opinion of the PROJECT MANAGER or the INSPECTOR, threatens the safety of persons or property, the CONTRACTOR shall immediately make all repairs necessary for removal of the hazard. Should the CONTRACTOR fail to promptly take all necessary action, the CITY has the option to remove any hazard resulting

from damages caused by the CONTRACTOR at the CONTRACTOR'S expense without waiving any other rights the CITY may have, and no time extension will be allowed to the CONTRACTOR.

In the event that the CONTRACTOR damages any existing utilities that are not shown on the drawings or the locations of which are not made known to the CONTRACTOR prior to excavation, the CONTRACTOR shall immediately notify the INSPECTOR and take all measures necessary to prevent further damage. The CONTRACTOR shall then immediately make a written report to the PROJECT MANAGER and shall make repairs as directed by the PROJECT MANAGER. Payment for this extra Work will be made pursuant to the provisions contained in Article 27, PAYMENT FOR CHANGES AND EXTRA WORK of the General Requirements.

Notwithstanding that an existing utility or substructure is not shown on the original Plans and Specifications, if the existence and location thereof was made known to the CONTRACTOR prior to excavation, the utility or

substructure constitutes an existing known condition, and the CONTRACTOR is responsible for protecting the utility or substructure.

Damage to a utility known to the CONTRACTOR shall be repaired at the CONTRACTOR'S expense.

31. NON-CONFORMING WORK

Except as set forth in this Article, all non-conforming Work and materials, in place or not, shall be removed immediately from the site or corrected to conform to all requirements of the Contract Documents, by the CONTRACTOR, at the sole expense of the CONTRACTOR.

If the CONTRACTOR fails to remove, replace or correct any non-conforming Work or materials within seventy two (72) hours of discovery, the PROJECT MANAGER may cause such Work or materials to be removed and replaced. Such removal and replacement shall be at the sole expense of the CONTRACTOR and all such cost shall be deducted from any amounts that are due or may become due to the CONTRACTOR.

Failure of the INSPECTOR or the PROJECT MANAGER to notify the CONTRACTOR of any non-conforming Work shall not constitute acceptance of any non-conforming Work. The CONTRACTOR'S obligation to remove, replace or correct any non-conforming Work, whenever discovered, shall continue to the end of the guaranty-warranty period provided for in Article 16, GUARANTY-WARRANTY of the General Requirements. The CITY reserves and retains all rights and remedies at law against the CONTRACTOR and their Surety for correction of any and all latent defects discovered after the guaranty-warranty period.

The Contract Documents may be modified for the purpose of allowing non-conforming Work to become acceptable in lieu of the CONTRACTOR'S obligation to remove and replace all such non-conforming Work. Such modification shall be effective only upon the written agreement of the CONTRACTOR and the PROJECT MANAGER. Such written agreement shall be issued as a Change Order, which shall include all of the following provisions.

1. A statement that the Work as constructed is non-conforming Work.
2. The specifications by which the non-conforming Work will be made to conform to the requirements of the Contract Documents.
3. A statement that all modifications to the non-conforming Work shall be at the sole expense of the CONTRACTOR.
4. A statement that the CONTRACTOR waives and releases any and all claims against the CITY, including time and impacts, in any way whatsoever related to the non-conforming Work, the modification of such non-conforming Work, and the time to negotiate such a modification.
5. The amount representing the value of the Work specified in the Contract Documents less the value of the Work as constructed, as a credit to the CITY, which shall be deducted from the amount of the Contract.

No Work shall proceed which shall make the non-conforming Work more costly to correct nor to modify such non-conforming Work until the PROJECT MANAGER and the CONTRACTOR execute such a Change Order. The PROJECT MANAGER may grant permission, in response to a written request from the CONTRACTOR, to proceed with the Work before finalization of such a Change Order, if they find the request to be in the best interest of the CITY.

Any delays or impacts arising on the Work as a result of construction or delivery of non-conforming Work or materials shall be at the CONTRACTOR'S sole expense, regardless of whether the Work ultimately becomes the subject of a Change Order, and no time extension shall be allowed to the CONTRACTOR.

Acceptance by the INSPECTOR of such previous non-conforming Work, after execution of the Change Order, does not act to waive or otherwise negate the CONTRACTOR'S obligations to guarantee such Work as set forth in Article 16, GUARANTY-WARRANTY of the General Requirements.

Failure of the CONTRACTOR to comply with the requirements of this Article shall constitute default of the Contract by the CONTRACTOR and the CITY may terminate the Contract as provided for in TERMINATION OF CONTRACT BY CITY (CONTRACTOR DEFAULT).

32. SUBCONTRACTORS AND SUB-SUBCONTRACTORS (Revised as of 2/12/2016)

The Contractor shall perform on the site and with its own organization not less than thirty (30%) of the total Contract Price, unless a different percentage is designated on Schedule "A" SUBCONTRACTORS AND SUPPLIERS in the Instructions to Bidders, page 16. Any items designated "specialty items" in the Bid Proposal may be performed by subcontract and the amount of all such "specialty items" may be deducted from the Contract Price before computing the amount of Work required to be performed by the Contractor with its own organization. The dollar value included in the percentage performed by the Contractor shall include the value of labor, materials and equipment to be incorporated or used in the Work and directly purchased by the Contractor and shall not include the value of Work, including labor, materials and equipment, incorporated or used in the Work, performed or provided by Subcontractors.

Bidders must list all Subcontractors in the Bid, regardless of the dollar amount of the work to be performed, if the Bidder wishes to have the Subcontract amount credited toward meeting the MBE/WBE/SBE/EBE/DVBE/OBE levels of participation of the Project. Subcontractors added to the project following acceptance of the Bid and award of the Project will not be credited toward meeting the MBE/WBE/SBE/EBE/DVBE/OBE levels of participation for this Project.

Listed vendors and/or Suppliers will be limited to 60% of their listed dollar value toward achieving the anticipated MBE/WBE/SBE/EBE/DVBE/OBE levels of participation for this Project, unless the vendor and/or Supplier manufactures or substantially alters the materials/supplies.

The designated percentage of the total Contract Price the Contractor is to perform may not be reduced below that level by the addition of Subcontractor's added after Award of the Project.

The Inspector, acting on behalf of the Board of Recreation and Park Commissioners, will be responsible for approval of all Subcontractors, whether Bid-listed or not, and all Sub-subcontractors employed on the Project.

The Contractor must list in the original bid each Subcontractor who will perform Work or render services in an amount in excess of one-half of 1 percent of the Contractor's total Bid or $10,000.00, whichever is greater.

Subletting or Subcontracting of any portion of the Work in excess of one-half of 1 percent of the Contractor's original total Bid or $10,000.00, whichever is greater, for which no Subcontractor was designated in the original Bid shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the Inspector setting forth the facts constituting the emergency or necessity.

If the Contractor fails to specify a Subcontractor, or if the Contractor specifies more than one Subcontractor for the same portion of Work to be performed under the Contract in excess of one-half of 1 percent of the Contractor's total original Bid or $10,000.00, whichever is greater, the Contractor agrees that it is fully qualified to perform that portion of Work itself, and that it shall perform that portion itself.

The Contractor shall set forth in its Bid the following: The name, location of the place of business, telephone number, California State Contractor's License Number and dollar amount of each Subcontractor who will perform Work, labor, service, supply specifically fabricated materials or equipment in an amount in excess of one-half of 1 percent of the Contractor's total Bid, or $10,000.00, whichever is greater.

The Contractor shall list only one Subcontractor for each portion of Work as defined by the Contractor in its Bid.

Acceptance by the Board of Recreation and Park Commissioners of its Bid is dependent upon each Bid listed Subcontractor, and all subsequently approved additional Subcontractors, performing the dollar value of Work listed or approved. Any reduction, increase, or other change to any Subcontract amount without prior approval by Board of Recreation and Park Commissioners is considered an Unauthorized Subcontractor Substitution and is subject to a penalty of ten (10) percent of the Subcontract amount, whether Bid-listed or not. A Subcontract dollar value

increased or reduced as the result of a Change Order issued by the Engineer to add or delete from the original scope of Work shall not be subject to a penalty for an Unauthorized Subcontract Substitution.

Acceptance by the Board of Recreation and Park Commissioners of its Bid shall not entitle Subcontractors to recognition for any direct or contractual relationship with the City, nor shall it constitute approval of the use of any materials other than those specified.

The Contractor shall be responsible for all acts of all Subcontractors at all tiers. The Contractor shall coordinate all work performed by subcontractors in the interest of the City.

All Subcontractors who will be working on the Project shall be approved in writing by the Inspector prior to beginning Work, regardless of the dollar amount of Work to be performed, and whether or not they were listed in the original Bid.

Requests for approval of all Subcontractors, or request for substitution of a Subcontractor, shall be made in writing to the Inspector located at the Public Works Building, 1149 S. Broadway, 3rd Floor, Los Angeles, CA, 90015, and said request shall contain the following information for each Subcontractor:

1) Project Name
2) Project Work Order Number
3) Subcontractor's Name
4) Subcontractor's Address
5) Subcontractor's Phone Number
6) Subcontractor's Status (WBE, MBE, SBE, EBE, DVBE, OBE)
7) Subcontractor's State of California Contractor License Number
8) Subcontractor's City Business Tax Registration Certificate Number (BTRC)
9) Dollar amount of Subcontract work to be performed
10) Description of Subcontract work to be performed

Failure to provide any of the information listed will result in denial of approval until such time as the information is provided.

Failure to obtain approval of the Inspector prior to each Subcontractor performing Work on the Project may result in suspension of Work by that Subcontractor, removal of Work performed by unapproved Subcontractors, assessment of penalties, and possible sanctions against the Contractor.

Additional Subcontractors may be added after the time of original Bid. The value of Work to be performed by additional Subcontractors may not be greater than one-half of 1 percent of the Contractor's original total Bid or ten thousand dollars ($10,000.00), whichever is greater, unless the Subcontractor will be performing Work added by Change Order causing changes or deviations from the original Contract.

The Contractor shall provide the dollar amount of Work to be performed in all requests for additional Subcontractors. Failure to specify a dollar amount of Work to be performed will result in denial of additional Subcontractors until such time as the amount is provided.

Failure of the Contractor to request and obtain approval for a reduction in either a Bid-listed Subcontract amount or the Subcontract amount of a Subcontract added after the original Bid shall result in a penalty of ten percent of the Subcontract amount.

A Contractor whose Bid is accepted may not:

1) Substitute any person as Subcontractor in place of a Subcontractor listed in the original Bid, except that the Inspector, acting on behalf of the Board of Recreation and Park Commissioners, may consent to the substitution of another Subcontractor for one of the following situations:

A) When the Subcontractor listed in the original Bid or proposal after having had a reasonable opportunity to do so fails or refuses to execute a written contract, when that written contract, based upon the general terms, conditions, plans and specifications for the project involved or the terms of that Subcontractor's written bid, is presented to the subcontractor by the Contractor.

B) When the listed Subcontractor becomes bankrupt or insolvent.

C) When the listed Subcontractor fails or refuses to perform its subcontract.

D) When the listed Subcontractor fails or refuses to meet the bond requirements of the Contractor as set forth herein.

E) When the Contractor demonstrates to the Inspector's satisfaction that the name of the Subcontractor was listed as a result of an inadvertent clerical error.

F) When the listed Subcontractor is not licensed pursuant to the State of California Contractor's License Law.

G) When the listed Subcontractor refuses to obtain a City of Los Angeles Business Tax Receipt Certificate (BTRC).

H) When the Inspector concurs with the Contractor that the Work being performed by the listed Subcontractor is unsatisfactory and not in substantial accordance with the Contract Documents, or the listed Subcontractor is delaying or disrupting the progress of the work.

I) When the listed Subcontractor fails to submit an Affirmative Action Plan acceptable to the Inspector.

J) When the Board of Recreation and Park Commissioners determines that a listed Subcontractor is not a responsible contractor.

2) Permit a Subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original Subcontractor listed in the original Bid, without the consent of the Inspector.

3) Other than in the performance of Change Orders causing changes or deviations from the original Contract, sublet or Subcontract any portion of the Work in excess of one half of 1 percent of the Contractor's total Bid as to which its original Bid did not designate a Subcontractor.

4) Reduce the dollar amount of a Bid-listed Subcontract without the written approval of the Inspector.

A request for substitution of any Subcontractor, whether Bid-listed or not, must be made in writing to the Inspector and must include letter(s) of explanation as to the reason for the requested substitution.

It is considered a substitution if anyone other than the Bid-listed and/or approved Subcontractor(s), including the Contractor, performs any portion of the Work designated to be performed by said Subcontractor.

Failure to obtain approval for a Subcontractor substitution may result in rejection of the affected Work, penalties assessed for failure to obtain approval, and possible sanctions by the City.

All substitutions of Subcontractors, whether MBE/WBE/SBE/EBE/DVBE/OBE or not, shall be approved in writing by the Board of Recreation and Park Commissioners prior to any Work being performed by the substituting Subcontractor.

The Contractor shall conduct a Business Inclusion Program Outreach prior to approval of any requested Subcontractor substitution, regardless of the status (MBE/WBE/SBE/EBE/DVBE/OBE) of the contractor being substituted for. For MBE/WBE/SBE/EBE/DVBE/OBE Subcontractor substitution requests, the Contractor shall comply with the Business Inclusion Program Outreach requirements of Pages 15-15R of the Instructions to Bidders (Volume I). The Business Inclusion Program Outreach for any requested Subcontractor substitution must be reviewed and approved by the Special Research and Investigation Section of the General Services Division of the Bureau of Contract Administration, whether the Subcontractor was Bid listed or approved after the Award of the Project.

There shall be no decrease in dollar value of Work to be performed by Subcontractors approved as a substitute for a Bid-listed Subcontractor without a change in scope of the Work to be performed by the originally Bid-listed Subcontractor. Written evidence of a change of scope must be provided by the Engineer prior to approval of a change in dollar value of a Bid-listed Subcontractor.

Prior to approval of the Contractor's request for substitution, the Inspector shall give notice in writing to the Subcontractor affected by the Contractor's request to substitute and of the reasons for the request. The notice shall be served by certified or registered mail to the last known address of the Subcontractor. The listed Subcontractor who has been so notified shall have five (5) Workdays within which to submit written objections to the substitution. Failure to file these written objections within five (5) Workdays of notification shall constitute the listed Subcontractor's consent to the substitution. Notification by the Inspector may be made by phone in lieu of written notification via certified or registered mail if agreed to by the listed Subcontractor and followed by written request. Upon notification by phone, the listed Subcontractor may file written objections within five (5) days of notification.

If written objections are filed, the Inspector shall give notice of at least five (5) Workdays to the listed Subcontractor of a hearing on the Contractor's request for substitution.

The Contractor, as a condition to assert a claim of Inadvertent Clerical Error in the listing of a Subcontractor, shall within two Workdays after the time of the original Bid opening by the Board of Recreation and Park Commissioners give written notice to the Inspector and the Board of Recreation and Park Commissioners and copies of such notice to both the Subcontractor he claims to have listed in error and the intended Subcontractor who had bid to the Contractor prior to Bid opening.

Written notice of an Inadvertent Clerical Error shall be forwarded within two (2) days after the time of the original Bid opening by every Contractor claiming such an error. Failure to submit such notice within the time prescribed shall make any such subsequent claim of Inadvertent Clerical Error invalid.

Any listed Subcontractor who has been notified by the Contractor of an Inadvertent Clerical Error shall be allowed six (6) Workdays from the time of the Bid opening to submit to the Inspector and to the Contractor written objection to the Contractor's claim of Inadvertent Clerical Error. Failure of such listed Subcontractor to file such written notice within the six (6) Workdays shall constitute agreement that an advertent clerical error was made.

The Inspector shall, in the absence of compelling reasons to the contrary, consent to the requested substitution based on an Inadvertent Clerical Error if:

1) The Contractor, the Subcontractor listed in error, and the intended Subcontractor each submit an affidavit to the Inspector along any additional information as the parties may wish to submit that an Inadvertent Clerical Error was in fact made, provided that the affidavits from each of the three parties are filed within eight (8) Workdays from the time of the original Bid opening, or

2) If such affidavits are filed by both the Contractor and the intended Subcontractor within eight days of the original Bid opening but the Subcontractor whom the Contractor claims to have listed in error does not submit within six (6) Workdays, to the Inspector and to the Contractor, written objection to the Contractor's claim of Inadvertent Clerical Error as provided in this article.

If such affidavits are filed by both the Contractor and the intended Subcontractor but the listed Subcontractor has, within six (6) Workdays from the time of the original Bid opening, submitted to the Inspector and to the Contractor written objection to the Contractor's claim of Inadvertent Clerical Error, the Inspector shall investigate the claims of all parties and schedule a public hearing before the Board of Recreation and Park Commissioners to determine the validity of such claims. Any determination shall be based on the facts contained in the declarations submitted under penalty of perjury by all three parties and supported by testimony given to the Board of Recreation and Park Commissioners. The Board of Recreation and Park Commissioners may, on its motion or that of any other party, admit testimony of other Contractors, any Bid registries or depositories, or any other party in possession of facts, which may have a bearing on the decision of the Board of Recreation and Park Commissioners. The findings of the Board of Recreation and Park Commissioners shall be final.

33. RESPONSIBILITY OF CONTRACTOR TO ACT IN EMERGENCY

In case of an emergency that threatens loss of or damage to property or injury to persons, the CONTRACTOR shall act, without instructions from the CITY, as the situation may warrant. The CONTRACTOR shall immediately inform the PROJECT MANAGER and the INSPECTOR of the emergency action taken. Any claim shall be submitted to the PROJECT MANAGER. If practical the amount of compensation, if any, shall be determined by agreement prior to the issuance of a Change Order. However, if the emergency is created or aggravated by the CONTRACTOR, it shall be liable for the resulting damages. If the CONTRACTOR fails to take the necessary action as required by such an emergency the CITY may assign another CONTRACTOR or use its own forces to perform the emergency Work at the CONTRACTOR'S sole expense.

34. ASSIGNMENT

The CONTRACTOR shall not assign, transfer, convey or otherwise dispose of this Contract or any of the proceeds there under unless written consent of the CITY has been obtained. No right under this Contract or claim for any proceeds due or to become due hereunder shall be asserted against the CITY, or persons acting for the CITY, by reason of any so-called assignment, transfer or conveyance of this Contract or any part thereof unless such assignment, transfer or conveyance has been authorized by the written consent of the CITY. The instrument of assignment, transfer or conveyance shall contain a clause subordinating the claim of the assignee, transfer or conveyor to all prior liens for services rendered or materials supplied for the execution of the Work.

35. INDEPENDENT CONTRACTOR

The CONTRACTOR represents that it is fully experienced and properly qualified to perform the class of Work required for the CONTRACT and that it is properly licensed, equipped, organized and financed to perform the Work. The CONTRACTOR shall be an independent contractor. The CONTRACTOR is not an agent of the CITY in the performance of the CONTRACT, and shall maintain complete control over its employees and its Subcontractors and Suppliers of any tier. Nothing contained in the CONTRACT or any Subcontract awarded by the CONTRACTOR shall create any relationship between any Subcontractor and the CITY. The CONTRACTOR shall perform the Work in accordance with its own methods, in compliance with the terms of the CONTRACT.

INDEMNIFICATION AND INSURANCE REQUIREMENTS

36. INDEMNIFICATION

Except for the active negligence or willful misconduct of the CITY, the CONTRACTOR undertakes and agrees to defend, indemnify and hold harmless, through legal counsel acceptable to the CITY, the CITY, and any and all of the CITY'S Boards, Officers, Agents, Employees, Assigns, and Successors in Interest from and against all suits and causes of action, claims, losses, demands and expenses, including, but not limited to, attorney's fees and cost

of litigation, damage or liability of any nature whatsoever, arising out of or related to the performance or nonperformance by CONTRACTOR or its Subcontractors, Sub-Subcontractors, or Suppliers, of any tier, of any portion of the construction of the Project, including but not limited to CONTRACTOR'S negligent acts, errors, omissions, breach of contract, breach of warranty (express or implied), or willful misconduct.

It is agreed that such defense and indemnity shall extend to the CITY'S PROJECT MANAGER, Architect/Engineer or other Design Consultant providing services under written agreement with the CITY covering any portion of the Project. Provided, however, that the Design Consultant shall be solely responsible for the enforcement of any request made by said Consultant for indemnification or defense by the CONTRACTOR. It is further provided that the CITY shall have no liability whatsoever for any failure of the CONTRACTOR to comply with any request from the Consultant for indemnity or defense.

It is further agreed that the defense and indemnity obligations of the CONTRACTOR under this Article shall not extend to the liability of the Design Consultant or its agents, employees or subconsultants, arising as a result of such indemnitee's own active negligence, errors or omissions or from (1) the preparation or approval of maps, Plans, opinions, reports, surveys, change orders, designs or Specifications, or (2) the giving of or failure to give directions or instructions by the indemnitee provided that such giving or failure to give is the primary cause of the dame or injury.

37. INSURANCE

A. GENERAL

During the term of this Contract and without limiting the CONTRACTOR's indemnification of the CITY, the CONTRACTOR shall provide and maintain at its own expense, insurance having the limits customarily carried and actually arranged by the CONTRACTOR but not less than the amounts and types listed on the Insurance Requirements Form in Volume 1 of these Contract Documents, covering its operations hereunder subject to the following conditions as they may variously apply:

1. ADDITIONAL INSURED/ADDITIONAL INTEREST/LOSS PAYEE

The CITY, it's Recreation and Park Commissions, Officers, Agents, Employees and Design Consultant shall be included as:

a. Additional Insureds in all required General Liability and property insurance and Additional Interests in all required Automobile Liability insurance.

b. Named Insureds in all required Owners and Contractors Protective Liability insurance policies.

c. Loss Payee As Its Interest May Appear in all required property, fidelity or Surety coverages.

d. Listing of other entities as additional insures may be required for specific projects due to their funding source (such as, Prop A funded projects require that Los Angeles County be listed as an additional insured).

The CITY and other interests listed above need not be named on Workers' Compensation/Employer's Liability, Professional Errors and Omissions and Second-party Legal Liability coverages (such as Garage Keepers' Legal).

2. INSURANCE APPROVAL

All insurance required hereunder shall conform to the CITY requirements established by Charter, ordinance or policy. Evidence of insurance shall be submitted to the Department's Risk Control Coordinator and approved by the City Attorney prior to commencement of any Work or tenancy under this Contract in accordance with the Los Angeles Administrative Code.

3. ALTERNATIVE PROGRAMS

Alternative Risk Financing mechanisms such as Risk Retention Groups, Risk Purchasing Groups, off-shore carriers and captive insurance programs are subject to review of their financial statements by the CITY before an approval can be granted by the City Attorney.

4. ADMITTED CARRIER/LICENSED CALIFORNIA BROKER

Insurance shall be obtained from brokers or carriers authorized to transact insurance business in California. Surplus lines insurance from carriers who are not admitted in California must be submitted through a California-licensed broker or agent.

Surplus lines coverage must also contain a Service of Suite provision whereby the underwriters will submit as necessary to any court of competent jurisdiction in California and agree that all matters arising there under will be determined in accordance with the law and practice of such court. It must further give the name and address of the underwriter's agent for service of process located within California or must nominate the California Insurance Commissioner as such agent.

5. PRIORITY OF COVERAGE

The CONTRACTOR's insurance shall not call on the CITY's program for contributions.

6. CANCELLATION/REDUCTION IN COVERAGE NOTICE

With respect to the interest of the CITY, if an insurance company elects to cancel insurance before the stated expiration date, or declines to renew in the case of a continuous policy, or materially reduces the coverage period by changing the retroactive date (if any), or the extended discovery period (if any), or reduces the stated limits other than by impairment of an aggregate limit, or materially reduces the scope of coverage which affects the CITY's interest, the company will provide the CITY at least thirty (30) calendar days prior written of such election. Notice will be made by receipted delivery addressed as follows: CITY ATTORNEY, INSURANCE AND BONDS, 1240 City Hall East, 200 NORTH MAIN STREET, LOS ANGELES, CA 90012-4168. It is understood, however, that such notice to the CITY shall not affect the company's right to give a lesser notice to the Named Insured in the event of nonpayment of premium. (L.A. Admin. Code Section 11.54).

7. ACCEPTABLE EVIDENCE

The appropriate CITY Special Endorsement forms, contained in Volume 1 of these Contract Documents, are the preferred form of evidence of insurance. Alternatively, the CONTRACTOR may submit two (2) certified copies of the policy or other evidence acceptable to the City Attorney containing language which complies with subparagraphs 1) through 6) above.

With respect to Professional Liability insurance, either a signed copy of the Policy Declarations Page or a letter from the CONTRACTOR's insurance broker certifying coverage, together with a thirty (30) day cancellation notice endorsement in favor of the CITY as specified in subparagraph 6) will satisfy this requirement.

8. SEPARATION OF INSUREDS

Except with respect to the insurance company's limits of liability, each liability insurance policy shall apply separately to each insured against whom a claim or suit is brought. The inclusion of any person or organization as an insured shall not affect any right which such person or organization would have as a claimant if not so included.

9. RENEWAL

Once the insurance has been approved by the CITY, evidence of renewal of an expiring policy may be submitted on a manually signed renewal endorsement or certificate form. If the policy or carrier has changed, however, new evidence as specified in paragraphs 1) through 8) above, must be submitted.

B. AGGREGATE LIMITS/REDUCTION IN COVERAGE

If any of the required insurance coverages contain aggregate limits, or apply to other operations or tenancy of the CONTRACTOR not related to this Contract, the CONTRACTOR shall give the CITY prompt, written notice of any incident, occurrence, claim, settlement or judgement against such insurance which in the CONTRACTOR's best judgement may diminish the protection such insurance affords the CITY. Further, the CONTRACTOR shall immediately take all reasonable and available steps to restore such aggregate limits or shall provide other insurance protection for such aggregate limits. The CITY may, at its option, specify a minimum acceptable aggregate for each line of coverage required.

The CONTRACTOR shall not make any substantial reductions in scope of coverage (e.g., elimination of contractual liability or reduction of discovery period) which may affect the CITY's protection without the CITY's prior written consent.

C. SELF-INSURANCE AND SELF-INSURED RETENTIONS

Self-insurance programs and self-insured retention in insurance policies are subject to separate approval by the CITY upon review of evidence of the CONTRACTOR's financial capacity to respond. Additionally, such programs or retention must provide the CITY with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance.

D. MODIFICATION OF COVERAGE

The CITY reserves the right at any time during the term of this Contract to change the amounts and types of insurance required hereunder by giving the CONTRACTOR ninety (90) calendar days advance written notice of such change. If such change should result in substantial additional cost to the CONTRACTOR, the CITY agrees to negotiate additional compensation.

E. FAILURE TO PROCURE INSURANCE

The required coverage and limits are subject to availability on the open market at reasonable cost as determined by the CITY. Non-availability or non-affordability must be documented by a letter from the CONTRACTOR'S insurance broker or agent indicating a good faith effort to procure the required insurance and showing, as a minimum, the names of the insurance carriers and the declinations or quotations received from each.

Within the foregoing constraints, the CONTRACTOR'S failure to procure or maintain required insurance or a self-insurance program during the entire term of this Contract shall constitute a material breach of this Contract under which the CITY may immediately suspend or terminate this Contract or, at its discretion, procure or renew such insurance to protect the CITY'S interests and pay any and all premiums in connection therewith, and recover all monies so paid from the CONTRACTOR.

F. UNDERLYING INSURANCE

The CONTRACTOR shall be responsible for requiring indemnification and insurance as it deems appropriate from its consultants, agents and Subcontractors, if any, to protect the CONTRACTOR's and the CITY'S interests, and for ensuring that such persons comply with any applicable insurance statutes. The CONTRACTOR is encouraged to seek professional advice in this regard.

G. WORKERS' COMPENSATION

By signing this Contract, the CONTRACTOR hereby certifies that it is aware of the provisions of Section 3700 *et seq.*, of the Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that Code, and that it will comply with such provisions at all such times as they may apply during the performance of the Work pursuant to this Contract.

A waiver of subrogation in favor of the CITY will be required when Work is performed on CITY premises under hazardous conditions.

H. ALL RISK BUILDER'S RISK/INSTALLATION FLOATER

During the course of construction, the CONTRACTOR shall secure and maintain an All Risk Builder's Risk Insurance policy covering loss, damage or destruction of property, including materials in transit and stored on and off site, in an amount equal to the value of the construction and materials on hand.

An Installation Risk or "Floater" Policy, written to cover only specific types of equipment during construction, may be provided to cover damage to Work or high valued equipment or materials.

Coverage shall remain in force until the Work is completed and accepted by the CITY. Acceptable evidence of coverage shall be in the form of an endorsement to the policy which names the CITY as an additional named insured and as Loss Payee As Its Interest May Appear.

I. TYPICAL COVERAGES REQUIRED

The coverages required in A above shall be at least as broad as:

1. General Liability: Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 00 01).
2. Automobile Liability: Insurance Services Office Form Number CA 00 01 (Ed. 1/87) covering Automobile Liability, code 1 (any auto).
3. Professional Liability: If applicable, errors and omissions liability appropriate to the consultant's profession, with a discovery period of not less than twelve (12) months after completion of Work or termination of Contract.

J. TYPICAL LIMITS OF LIABILITY

Unless otherwise specified in Form Gen. 146/IR, the CONTRACTOR shall maintain limits no less than:

1. General Liability: $1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability or other form with a general aggregate limit is used, either the general aggregate shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability: $1,000,000 per accident for bodily injury and property damage, combined or equivalent in split limits.
3. Employer's Liability: $1,000,000 per accident for bodily injury or disease.
4. Professional Liability: $1,000,000 per occurrence.

K. CONTRACT BONDS

Before the execution of the Contract by the RECREATION AND PARK COMMISSION, the bidder shall file with the RECREATION AND PARK COMMISSION Surety bonds satisfactory to the RECREATION AND PARK COMMISSION in the amounts and for purposes noted below. Bonds shall be duly executed by a responsible corporate Surety, authorized to issue such bonds in the State of California and secured through an authorized agent with an office in California. Bonds shall be issued by a Surety who is listed in the latest revision of U.S. Department of Treasury Circular 570, is authorized to issue bonds in California, and whose bonding limitation shown in said circular is sufficient to provide bonds in the amount required by the Contract. The Bidder shall pay all bond premiums, costs, and incidentals. On Contracts estimated by the PROJECT MANAGER to be less than $2 million, bonds may be obtained from an insurance company with a Certificate of Authority from the California Insurance Commissioner authorizing the company to write Surety insurance within the State of California.

Each bond shall be signed by both the Bidder and the Surety, and the signature of the authorized agent of the Surety shall be notarized.

The Bidder shall provide two good and sufficient surety bonds. The "Payment Bond" (Material and Labor Bond) shall be for not less than one hundred percent (100%) of the Contract price, to satisfy claims of material suppliers and of mechanics and laborers employed by it on the Work. The bond shall be maintained by the CONTRACTOR in full force and effect until the Work is accepted by the RECREATION

AND PARK COMMISSION, and until all claims for materials and labor are paid, and shall otherwise comply with the California Civil Code.

The "Performance Bond" shall be for one hundred percent (100%) of the Contract price to guaranty faithful performance of all Work, within the time period prescribed, in a manner satisfactory to the RECREATION AND PARK COMMISSION, and that all materials and Workmanship will be free from original or developed defects, and comply with requirements and guaranty specified in Article 16, GUARANTY-WARRANTY of the General Requirements.

Should any Surety at any time be unsatisfactory to the RECREATION AND PARK COMMISSION, notice will be given the CONTRACTOR to that effect. No further payments shall be deemed due or will be made under the contract until a new Surety shall qualify and be accepted by the RECREATION AND PARK COMMISSION.

Changes in the Work, or extensions of time, made pursuant to the Contract, shall in no way release the CONTRACTOR or Surety from its obligations. Notice of such changes or extensions shall be waived by the Surety. In addition to the bonds detailed above, the CONTRACTOR shall provide a guarantee bond as detailed in Article 16, GUARANTY-WARRANTY of the General Requirements.

38. SERVICE OF NOTICE

The delivering of any notice, instruction, claim or protest, or other written communication, personally to the CONTRACTOR or the CONTRACTOR'S representative or to the PROJECT MANAGER, or to the City Clerk of the CITY shall constitute service therefore upon the CONTRACTOR, the PROJECT MANAGER, or the CITY, respectively.

The depositing of a post-paid (Registered Mail) wrapper directed to the official address of the CONTRACTOR, the PROJECT MANAGER, or the CITY in any post office, of any notice, instruction, claim or protest, or written communication, shall be deemed sufficient service thereof upon the CONTRACTOR, the PROJECT MANAGER, or the CITY, respectively, and the date of said service shall be the day following the date of postmark.

The official address of the CONTRACTOR shall be the address given in the accepted bid or such other address as the CONTRACTOR may subsequently designate in writing either to the PROJECT MANAGER or to the CITY. The official name and address of the PROJECT MANAGER and the CITY will be supplied to the CONTRACTOR after the award.

39. AGENT TO ACCEPT SERVICE

The CONTRACTOR shall maintain within Los Angeles County a duly authorized agent as identified in the Article entitled SERVICE OF NOTICE to accept service of legal process on its behalf, and shall keep the CITY advised of such agent's name and address during the duration of the CONTRACT and for three (3) years after the Final Payment, or as long as the CONTRACTOR has warranty obligations under Article 16, GUARANTY-WARRANTY of General Requirements, whichever period terminates later. In the event that no such duly authorized agent is on file with the CITY, the CONTRACTOR agrees that the Secretary of State of the State of California shall be the Contractor's agent for service of legal process.

PROGRESS OF WORK

40. TEMPORARY SUSPENSION OF WORK

If the Work of the Contract is suspended or delayed, the CONTRACTOR shall so notify the PROJECT MANAGER in writing within twenty-four (24) hours after the start thereof. If the CONTRACTOR is entitled to reimbursement for such suspension or delay, as specified hereinafter, the CONTRACTOR shall submit a completely detailed statement of the costs thereof, to the PROJECT MANAGER, within twenty (20) calendar days after the termination thereof. Failure to submit such statement of costs or notification within the time specified shall be deemed a waiver of any claims for delay or damages or both by the CONTRACTOR.

If the Work of the Contract is suspended or delayed through no fault of the CITY, all expenses and losses shall be borne by the CONTRACTOR.

If the Work of the Contract is suspended or delayed by an act of the CITY, or by failure of the CITY to furnish required information, and the CONTRACTOR thereby incurs expenses or sustains losses which could not have been avoided by the judicious handling of forces and equipment, and if by a diligent prosecution of the Work the CONTRACTOR could not have completed the Work before such suspension, the CONTRACTOR will be paid such amount as the RECREATION AND PARK COMMISSION may find to be a fair and reasonable compensation for such part of the CONTRACTOR'S actual loss. In no case shall any compensation be made to cover any loss other than actual cash paid for wages, rental of equipment, and materials used in protection of the Work, all of which must be supported by satisfactory written evidence. Such wages shall not include the wages or salary of any individual not necessary for protection of the Work. The CONTRACTOR shall not be entitled to any mark-up for overhead or profit on damages or for extended duration.

The CONTRACTOR shall maintain complete and accurate daily records of all costs due to delay, clearly distinguishing them from the costs of other portions of the Work, and shall submit a detailed written report of such costs to the PROJECT MANAGER within twenty (20) calendar days of incurring the delay. Failure to comply shall result in waiver by the CONTRACTOR to any claims for additional payment and schedule change. In addition, the CONTRACTOR shall submit evidence of any cause of delay specified herein if it has not already done so.

As soon as practicable, following receipt of such report and evidence, if required, the PROJECT MANAGER will determine the nature and extent of such costs and will, if the PROJECT MANAGER finds that payment is due, issue a Change Order therefore, subject to the provisions in Article 27, PAYMENT FOR CHANGES AND EXTRA WORK of the General Requirements. If the PROJECT MANAGER determines that payment is not due, the CONTRACTOR will be so advised in writing. Should the CONTRACTOR disagree with such finding, CONTRACTOR may submit a notice of protest to the PROJECT MANAGER as provided in CLAIMS AND PROTESTS in these General Conditions. The CONTRACTOR shall provide the PROJECT MANAGER with access to its daily cost records or certified copies thereof as requested. All such records shall be retained by the CONTRACTOR and open to inspection and audit by the CITY and the PROJECT MANAGER'S authorized representatives. Except for the additional compensation provided herein before, the CONTRACTOR shall have no claim for damage or compensation for any delay or hindrance whether or not contemplated by the Contract.

41. UNAVOIDABLE DELAY

Should the CONTRACTOR be obstructed or delayed or completion of the Work from causes beyond its control and without its fault or negligence, and solely due to acts of God, acts of government in its sovereign capacity, riots, insurrections, wars, fires, floods, earthquakes, tidal waves, epidemics, quarantine restrictions, industry-wide strikes, freight embargoes, or unusually severe weather, it shall be entitled to a noncompensable extension of time.

The CONTRACTOR shall only be entitled to a noncompensable extension of time for Unavoidable delay in the Work which negatively impacts the critical path of the approved project schedule, and causes the Work of the project to extend beyond the approved Contract Completion date.

The CONTRACTOR shall be entitled to a noncompensable time extension only if it notifies the PROJECT MANAGER immediately at the time the CONTRACTOR is prevented from proceeding with the Work and follows with written notification of the causes of the delay within five (5) calendar days from the beginning of any delay. Also, the CONTRACTOR shall notify the PROJECT MANAGER immediately at the end of the delay and follow up with written notification of the cessation of delay within five (5) calendar days from the end of the delay.

Any claim for a time extension shall be made in writing within twenty (20) calendar days after the conclusion of the delay. The PROJECT MANAGER shall ascertain the facts and the extent of the delay and extend the time for completing the Work if, in his/her judgement, the findings of fact justify such an extension. The PROJECT MANAGER'S decision shall be final and conclusive, subject only to appeal as provided by CLAIMS AND PROTESTS of these General Conditions.

42. ARCHAEOLOGICAL AND PALEONTOLOGICAL DISCOVERIES

If discovery is made of items of archaeological or paleontological interest, the CONTRACTOR shall immediately cease excavation in the area of discovery and shall not continue until ordered by the PROJECT MANAGER.

When resumed, excavation operations within the area of discovery shall be as directed by the PROJECT MANAGER.

Discoveries which may be encountered may include, but not be limited to, dwelling sites, stone implements or other artifacts, animal bones, human bones and fossils. The CONTRACTOR shall be entitled to an extension of time and compensation in accordance with the provision of TEMPORARY SUSPENSION OF WORK of these General Conditions.

43. OTHER CONTRACTS

The CITY may perform other Work related to the Project at the site by the CITY'S own forces, have other Work performed by utility owners or let other direct contracts therefore which shall contain General Conditions similar to these. If such other Work to be performed was not noted in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other Work; and, if the CONTRACTOR believes that such performance will involve additional expense to the CONTRACTOR or requires additional time and the parties are unable to agree as the extent thereof, the CONTRACTOR may make a claim therefore as provided under CLAIMS AND PROTESTS of these General Conditions.

The CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or the CITY, if the CITY is performing the additional Work with the CITY'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such Work, and shall properly connect and coordinate the Work with theirs. The CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other Work. The CONTRACTOR shall not endanger any Work of others by cutting, excavating or otherwise altering their Work and will only cut or alter their Work with the written consent of the PROJECT MANAGER and the others whose Work will be affected. The duties and responsibilities of the CONTRACTOR under this Article are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of the CONTRACTOR in said direct contracts between the CITY and such utility owners and other contractors.

If any part of the CONTRACTOR'S Work depends upon proper execution or results of the Work of any such other contractor or utility owner or the CITY, the CONTRACTOR shall inspect and promptly report to the PROJECT MANAGER in writing any delays, defects or deficiencies in such Work that renders it unavailable or unsuitable for such proper execution and results. The CONTRACTOR'S failure to do so will constitute an acceptance of the other Work as fit and proper for integration with the CONTRACTOR'S Work except for latent or nonapparent defects and deficiencies in the other Work.

44. TERMINATION OF CONTRACT BY CITY (CONTRACTOR NOT AT FAULT)

The CONTRACT may be terminated, in whole or in part, at any time, by the CITY, at its sole discretion, without cause and for the CITY'S convenience. Such termination will be accomplished by delivery of a notice of Termination to the CONTRACTOR, specifying the extent to which performance of the Work under the CONTRACT or portion of the CONTRACT shall be terminated and the date upon which such termination shall become effective.

After receipt of a Notice of Termination, except as otherwise directed by the CITY the CONTRACTOR shall:

1. Stop Work under the CONTRACT on the date and to the extent specified in the Notice of Termination.
2. Notify the CITY in writing of all outstanding orders, Subcontracts and contracts entered into by CONTRACTOR for performance of the Work, including the (i) name and address of the vendor, supplier or Subcontractor; (ii) a copy of the complete contract, order or Subcontract; (iii) an accounting of the Work performed and compensation earned by the vendor, supplier or Subcontractor, and (iv) such other information as the CITY may request to assist it in determining whether to terminate or accept assignment of the order, Subcontract or contract.
3. Upon written notice by CITY, terminate all Subcontracts, orders and contracts, of any tier, related to the performance of the Work that the CITY determines shall be terminated and not assigned.

4. Place no further orders or Subcontracts for Goods or services, except as may be necessary for completion of that portion of the Work that has not been terminated.

5. Settle outstanding liabilities and claims arising out of such termination of orders and Subcontracts, with the Acceptance of the CITY if required (which Acceptance shall be final for the purposes of this Article). Assign to the CITY in the manner, at the times, and to the extent directed by the CITY all of the rights, titles, and interests of the CONTRACTOR under such orders, contracts and Subcontracts so terminated.

6. Transfer title and deliver to the CITY in the manner, at the times and to the extent directed by it, the:

    a. Fabricated or unfabricated parts, Work in process, completed Work, supplies, and other Goods procured as a part of, or acquired in connection with the performance of the Work terminated; and

    b. Completed or partially completed plans, drawings, information and other items that would have been required (per the Technical Specifications) to be furnished to the CITY if the Contract had been completed.

7. Use its best efforts to sell the property of the types referred to above in the manner, at the times, to the extent, and at the price(s) directed or authorized by the CITY, providing that the:

    a. CONTRACTOR is not required to extend credit to any purchaser;

    b. CONTRACTOR may acquire any such property under the prescribed conditions; and/or proceeds of any such transfer or disposition are applied or otherwise credited to reduce payments made by the CITY to the CONTRACTOR under the CONTRACT.

8. Take any action that may be necessary, or that the CITY may direct, for the protection and preservation of the property related to the CONTRACT that is in the possession of the CONTRACTOR and in which the CITY has or may acquire an interest.

9. Complete performance of that portion of the Work that has not been terminated by the Notice of Termination, as applicable and in accordance with the CONTRACT.

After receipt of a Notice of Termination for the CITY's convenience, the CONTRACTOR shall submit its termination claim to the CITY requesting payment of such sums as are permitted under the terms of this Article, in the form and with the certification(s) prescribed by the CITY for Claims and Protests. Such Claim shall be submitted promptly but in no event later than six months from the effective date of termination, unless one or more extensions are granted in writing by the CITY upon written request by the CONTRACTOR during such six month period or authorized extension thereof. However, the CITY may receive and act upon any termination claim at any time after the six month period or any extension thereof, if it determines that the facts justify such action. Upon failure of the CONTRACTOR to submit its termination claim within the time specified, the CITY will determine the amount due the Contractor, if any, on the basis of information available, and will pay the CONTRACTOR the amount so determined. Such determination shall be final and binding and payment shall be in full settlement for the Work performed under the CONTRACT.

Subject to the provisions of this Article, the CONTRACTOR and the CITY may agree upon the total or partial amount to be paid to the CONTRACTOR by reason of the total of or partial termination pursuant to this Article. The agreed upon amount shall under no circumstances include any sum for lost profits on the terminated portion of the Work or for consequential damages, of any kind. If agreement is reached, the CONTRACT will be amended by Modification accordingly and the CONTRACTOR will be paid the agreed upon amount.

In the event of failure of the CONTRACTOR and the CITY to agree on the total amount to be paid the CONTRACTOR by reason of the termination of Work pursuant to this Article, the CITY will pay the CONTRACTOR the amounts determined by the City as follows, exclusive of any amounts agreed upon in accordance with the preceding Paragraph:

The CONTRACTOR'S actual cost for the Work properly performed by the CONTRACTOR as of the date of termination, including a 5% allowance for profit on such costs; plus, the reasonable cost of preserving and

protecting property; plus other reasonable costs incidental to the termination of the Work under the CONTRACT, including expense incurred to determine the amounts due; provided however, that the maximum payable or paid for any portion of the completed Work shall not exceed the values listed in the corresponding bid item of Schedule of Values.

The total sum to be payable or paid to the CONTRACTOR, exclusive of the settlement amounts described in the Paragraph immediately above, shall not exceed the total CONTRACT Price less the:

1. Payments made previously by CITY for the Work; plus
2. A prorated portion of the total CONTRACT Price for the terminated portion of the Work as determined by the PROJECT MANAGER.

Except for normal spoilage and to the extent that the CITY will have otherwise expressly assumed the risk of loss, the fair value (as determined by the CITY) of property that is destroyed, lost, stolen, or damaged (so as to become undeliverable to the CITY or other buyer as described above) shall be excluded from the amounts paid to the CONTRACTOR.

In arriving at the amount due the CONTRACTOR under this Article, a deduction shall be made for the following:

1. Any claim that the CITY may have against the CONTRACTOR in connection with the CONTRACT; and
2. The agreed upon price for and/or proceeds from the sale of Goods or other items acquired or sold by the CONTRACTOR that have not been otherwise recovered by or credited to the CITY.

Under such terms and conditions as it may prescribe and at its sole discretion, the CITY may make partial payments against costs incurred by the CONTRACTOR in connection with terminated portion of the CONTRACT whenever the CITY decides that the aggregate of such payments is within the amount to which the CONTRACTOR is entitled hereunder. If the total of such payments is in excess of the amount finally agreed upon or determined to be due under this Article, such excess shall be payable by the CONTRACTOR or to the CITY upon demand together with interest at a rate equal to that set forth in California Code of Civil Procedure, Section 685.010.

Under no circumstances shall the CONTRACTOR be entitled to anticipatory or unearned profits or consequential damages as a result of a termination of partial termination under this Article, or for any other termination by the CITY. The payment to the Contractor determined in accordance with this Article shall constitute the exclusive remedy of the CONTRACTOR for termination hereunder.

Anything contained in the CONTRACT to the contrary notwithstanding, a termination under this Article shall not waive any right or claim to damages that the CITY may have; the CITY may pursue any clause of action that it may have by law or under the CONTRACT; and shall not relieve CONTRACTOR of its warranty obligations with respect to any Work performed prior to such termination.

If the termination hereunder is only for a part of the Work, the Contract Price shall be reduced by the amount of the Contract Price applicable to the portion of the Work, which is terminated, including overhead and profit, on the basis of one or more of the following:

1. Unit prices stated in the CONTRACT or agreed upon by the CITY and the CONTRACTOR.
2. A lump sum determined by the PROJECT MANAGER, based on the estimate costs including overhead and profit of the terminated portions of the Work.

45. TERMINATION OF CONTRACT BY CITY (CONTRACTOR DEFAULT)

In the event of conduct by the CONTRACTOR which is determined by the PROJECT MANAGER or the to constitute default, the CITY may either suspend the Work under the provisions of TEMPORARY SUSPENSION OF WORK of these General Conditions or, upon ten (10) calendar days' written notice to the CONTRACTOR, terminate the Contract as provided herein. Default by the CONTRACTOR shall occur whenever it shall declare bankruptcy; become insolvent or assign its assets for the benefit of its creditors; fail to provide materials, equipment, or workmanship meeting the requirements of the Specifications; disregard or violate provisions of the

Contract Documents or the PROJECT MANAGER's instructions; fail to prosecute the Work according to the approved progress schedule; or fail to provide a qualified representative, competent workers or Subcontractors. Upon request, the RECREATION AND PARK COMMISSION will provide the CONTRACTOR a hearing by the RECREATION AND PARK COMMISSION to contest the recommendation of the PROJECT MANAGER as to default by the CONTRACTOR.

In the event the Contract is terminated pursuant to this Article, the CITY may take possession of the Work and of all materials, tools, equipment, and property of the CONTRACTOR, which have been provided in connection with the Work, and may complete the Work by whatever method or means the CITY may select. The unpaid balance of the Contract cost for completing the Contract Work shall be used to complete the Work in accordance with the Contract Documents. If cost of completing the Work exceeds the unpaid balance, the CONTRACTOR shall pay the excess amount to the CITY. If such cost is less than the unpaid balance, the CONTRACTOR shall not have claim to the difference except to such extent as may be necessary, in the opinion of the PROJECT MANAGER, to reimburse the CONTRACTOR or the CONTRACTOR'S sureties for any unpaid expense properly incurred for materials, tools, equipment, property, and labor devoted to the prosecution of the Work, or which the CITY shall have received the benefit. In computing such expenses, as it relates to equipment and property, the salvage value at completion of Work shall be deducted from the salvage value at the time the contract was terminated, and the difference shall be considered as an expense. If after termination for failure of the CONTRACTOR to fulfill contractual obligations (CONTRACTOR Default), it is determined by a Court of competent jurisdiction that the CONTRACTOR had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the CITY. In such an event, adjustment of the Contract price shall be made as provided in TERMINATION OF CONTRACT BY CITY (CONTRACTOR NOT AT FAULT) of these General Conditions.

46. PRE-FINAL INSPECTION

Approximately two weeks before completion of the Work, the contractor will schedule a Pre-final Inspection to be attended by the Bureau of Contract Administration Inspector, the Project Manager, the Contractor and invited parties associated with the Project. At this time, a list of items requiring correction or completion before the Final Inspection will be compiled. In addition, at this time the Contractor shall arrange for the delivery of manufacturers' data, manuals, and operating instructions and keys to the appropriate Department of Recreation and Parks personnel.

47. FINAL INSPECTION

Approximately seven (7) days prior to completion of the Work, the Contractor shall first notify the Bureau of Contract Administration Inspector and then the Project Manager that he desires a Final Inspection of the Project. During this inspection, which will be arranged as soon as possible, the Inspector, the Project Manager, the Contractor and other parties concerned with contractual requirements will compile a Final Inspection Correction List, incorporating all items of work and corrections required to complete the Project. This list must be completed within thirty (30) days of Final Inspection, or a new Final Inspection will be held and a new Final Inspection Correction List compiled.

48. PARTIAL ACCEPTANCE

The CITY shall have the right to utilize or place into service any item of equipment or other usable portion of the Work prior to completion of the entire project. Whenever the CITY plans to exercise said right, the CONTRACTOR will be notified in writing by the CITY, identifying the specific portion or portions of the Work to be so utilized or otherwise placed into service. Following inspection by the Bureau of Contract Administration's Final Inspector and establishment of a Final Inspection Correction List, a Statement of Partial Completion will be issued.

It shall be understood by the CONTRACTOR that until a Statement of Partial Completion is issued, all responsibility for care and maintenance of all items or portions of the Work to be placed in use shall be borne by the CONTRACTOR. Upon issuance of a Statement of Partial Completion, the CITY will accept responsibility for the protection and maintenance of all such items or portions of the Work described in the written notice, and it is further understood that the manufacturer's warranties of any affected equipment will commence not later than the date for commencement of the warranties indicated on the Statement of Partial Completion. However, the CONTRACTOR shall retain full responsibility for satisfactory operation of the total project and the CONTRACTOR'S guarantee period shall commence only after the final acceptance of the Contract by the

RECREATION AND PARK COMMISSION. Such guarantee of total systems operation shall include that portion or portions previously placed into beneficial use by the CITY.

The issuance of a Statement of Partial Completion for any part of the Work shall not relieve the CONTRACTOR of its obligation to promptly remedy any omissions and latent or unnoticed defects in the Work covered by the Statement of Partial Completion. The CITY shall have the right to restrict the CONTRACTOR'S use of the occupied portion of the Work but shall allow the CONTRACTOR reasonable access to complete or correct items required by the Contract Documents.

The CITY may, if the Work is progressing satisfactorily, release part of the retention on portions of the Work for which a Statement of Partial Completion has been issued, provided that the following conditions have been met:

1. Partial final inspection corrections have been completed to the satisfaction of the INSPECTOR;
2. The CONTRACTOR submits a written request for release of retention which includes a verifiable valuation of the identified portions of the Work covered by the Statement of Partial Completion;
3. Impacted Subcontractors, major suppliers and the CONTRACTOR's Surety all agree in writing to release of retention;
4. If any minor corrections remain which do not directly affect operations or maintenance then twice the values of the remaining cleanup items shall be retained on each request for release; and
5. The CONTRACTOR signs a Change Order which specifically states the value of the retention being released.

The PROJECT MANAGER shall issue a no-change-in-contract-cost Change Order reflecting the Work for which a Statement of Partial Completion has been issued and the amount of the retention to be released. This Change Order shall authorize reduction of the retention on the next payment.

49. FINAL ACCEPTANCE

When all Work has been completed on the entire project, the CONTRACTOR shall notify the INSPECTOR and the PROJECT MANAGER in writing and request a final inspection by the INSPECTOR. The inspection conducted by the Final Inspector will include the CONTRACTOR and major Subcontractors' representatives. The CONTRACTOR shall promptly and diligently correct all items on the Final Inspection Correction List. The correction list Work will be reinspected until all Work is complete. If deemed necessary by the PROJECT MANAGER, a deductive Change Order may be issued for twice the value of final correction list items remaining to be corrected to attain completion, and permit the acceptance of the Contract by the RECREATION AND PARK COMMISSION.

Final payment to the CONTRACTOR is made following action by the RECREATION AND PARK COMMISSION that formally adopts the recommendation of the PROJECT MANAGER to accept the Contract. Said action by the RECREATION AND PARK COMMISSION establishes the following:

1. The start date of the CONTRACTOR'S material and workmanship warranty/guarantee for the total project.
2. The start date of any equipment or material warranties for which the "warranty clock" had not started.

50. LIQUIDATED DAMAGES

Time is of the essence in completing the Work required by the Contract. If the CONTRACTOR fails or refuses to complete the Work or any part thereof within the time fixed by the terms of the Contract, or any approved extension thereof, the actual damage to the CITY due to the delay will be difficult or impossible to determine. In lieu thereof, the CONTRACTOR shall pay to the CITY, as fixed and agreed, liquidated damages for each calendar day of delay in completion, the sum of **$ 2,500.00 per day**. The CONTRACTOR shall be liable for the amount thereof. The CITY reserves the right, however, to terminate the CONTRACTOR's completing the Work, charging against the CONTRACTOR and its sureties any excess cost occasioned the CITY thereby, together with liquidated damages accruing until such time as the CITY may reasonably vcomplete the Work.

Permitting the CONTRACTOR to continue and complete the Work, or any portion thereof, after the time fixed herein for completion, or after the expiration of any extensions of said time, shall in no way operate as a waiver on the part of the CITY of any of its rights under the Contract.

51. COMPENSATION FOR DELAY, DISRUPTION, AND UNANTICIPATED OVERHEAD

Notwithstanding anything to the contrary in the Contract Documents, CONTRACTOR agrees the provisions of this Article, set forth CONTRACTOR'S sole and exclusive rights to compensation for costs, expenses or damages, of any kind, arising from or relating to (i) delay, disruption, hindrance, interference, schedule compression, and the impact, ripple or cumulative effect thereof; or (ii) additional supervision, administration, excess, extended or extraordinary overhead, loss of productivity, or similar costs, expenses or damages incurred as a result of or related to extras, changes, additions or deletions in the Work, errors, omissions, conflicts or ambiguities in the Contract Documents, suspensions of the Work, acts or omissions of CITY or its representatives, agents, contractors or consultants, Differing Site Conditions, or other unforeseen circumstances, of any kind.

CONTRACTOR shall not be entitled to, and hereby conclusively waives, any right to recovery of compensation, costs, expenses or damages for delays, disruptions, hindrances or interferences (including without limitation interruption of schedules, extended, excess or extraordinary field and indirect overhead costs, loss of productivity and the impact, ripple or cumulative effect on other Work) that are the result of Unavoidable Delays or which are caused by the acts or omissions of CONTRACTOR or of its SUBCONTRACTORS, of any tier.

CONTRACTOR'S rights to recovery of compensation, costs, expenses and damages for delay, disruption, hindrance and interference (including without limitation interruption of schedules, extended, excess and extraordinary field and indirect overhead costs, loss of productivity and the impact, ripple or cumulative effect on other Work) that are the result of extras, changes, additions or deletions in the Work for which CONTRACTOR is entitled to an adjustment of the Contract Price as set forth in CHANGES AND EXTRA WORK of these General Conditions and shall constitute the sole, exclusive and complete compensation that the CITY is obligated to pay CONTRACTOR for all such costs, expenses and damages incurred by CONTRACTOR and its SUBCONTRACTORS, of every tier.

Time extension in calendar days will be granted only if delays are caused by unforeseen events beyond the control of both the CONTRACTOR and the City. Such delays will entitle the CONTRACTOR to an extension of time as provided herein, but the CONTRACTOR shall not be entitled to damages or additional payment due to such delays. War, government regulations, labor disputes, strikes (when not brought solely against the CONTRACTOR, its subcontractors or material suppliers), fires, floods, adverse weather necessitating cessation of work, other similar action of the elements, inability to obtain materials, equipment or labor, required "extra work", or other specific reasons as may be further described in the specifications may constitute such a delay.

No extension of time will be granted for a delay caused by the inability to obtain materials unless the CONTRACTOR furnishes to the Project Manager documentary proof of the inability to obtain such materials in a timely manner in accordance with the sequence of the CONTRACTOR'S operations and the approved construction schedule.

The amount of time given to the CONTRACTOR is limited to the amount of time the Project is directly impacted by the above described delays. Direct impact means no other project work can proceed.

The CONTRACTOR may be compensated for delays caused solely by the failure of the City to furnish necessary rights-of-way, failure to deliver materials shown in the CONTRACTOR Documents to be furnished by the City, or for the suspension of the work by the City for its own convenience or benefit. If compensable delays could not have been avoided by the judicious handling of forces, equipment or plant, there shall be paid to the CONTRACTOR such amount as the General Manager may find to be fair and reasonable compensation for such part of the CONTRACTOR'S actual loss as was unavoidable.

If the CONTRACTOR desires payment for a delay as specified above or an extension of time, it shall, within thirty (30) days after the beginning of the delay, file with the General Manager a written request and report as to the cause and extent of the delay. The request of payment or extension must be made at least fifteen (15) days before the specified completion date, so as to allow for appropriate investigation. Failure by the CONTRACTOR to

file these items within the times specified will be considered grounds for refusal by the City to consider such a request.

Any and all extensions of time granted under the Provisions of these Specifications shall not release the sureties on the bonds accompanying the Contract for the work required herein. The bonds shall remain in full force and effect until the discharge of the Contract.

CHANGES TO THE CONTRACT

52. CHANGES AND EXTRA WORK

The PROJECT MANAGER may, at any time, with or without notice to the Sureties, by written order designated or indicated to be a Change Order, order performance of extra work or make any change, addition or deletion in the Work, including but not limited to changes in the Specifications including Plans and Designs; in the time, method or manner of performance of the Work; in the CITY furnished facilities, equipment, materials, services, or site; or directing acceleration in the performance of the Work.

Upon receipt of such Change Order, the CONTRACTOR shall promptly proceed with the Work covered thereby, which shall be performed in accordance with the provisions of the Contract Documents except as otherwise specifically provided.

In the event that CONTRACTOR receives any written order or direction by the CITY, PROJECT MANAGER that is not so designated or indicated to be a Change Order, but which CONTRACTOR believes to constitute an extra, change, addition or deletion in the Work, then CONTRACTOR shall, prior to performance of any Work related thereto, give written confirmation notice to the PROJECT MANAGER confirming CONTRACTOR'S belief that such order or direction is believed to be a Change Order within one (1) working day of CONTRACTOR'S receipt of such order or direction.

CONTRACTOR conclusively waives any right to additional compensation, costs, expenses, damages or extension of time associated with an extra, change, addition or deletion to the Work that is performed by CONTRACTOR without either (i) a written order signed by the CITY, PROJECT MANAGER designated or indicated to be a Change Order and any change, addition or deletion, or (ii) a written confirmation notice issued by CONTRACTOR in accordance with the provisions of this Article.

Should a change be required and it is not feasible to delay construction of that portion of the Work until such time as a regular Change Order can be issued, and the estimated increase in Contract cost does not exceed the amount which can be authorized by the PROJECT MANAGER, an Emergency Change Authorization, in writing, will be issued in the field by the PROJECT MANAGER, and the CONTRACTOR shall then proceed with the Work without delay. Such Emergency Change Authorization shall be followed by a subsequent regular Change Order.

Except as provided in this Article, no order, Statement, or conduct of the PROJECT MANAGER shall be treated as a change under this Article or shall entitle the CONTRACTOR to an adjustment in the Contract Price or Contract Completion Date.

If any change under this Article causes an increase or decrease in the CONTRACTOR'S cost or the time required to perform any part of the Work under this Contract, whether or not said costs or time are specified by any order, the PROJECT MANAGER will make an adjustment to the Contract Price and modify the Contract in writing. Except for claims based on defective Specifications, no claim for any change under this Article shall be allowed for any costs incurred more than twenty (20) calendar days before the CONTRACTOR gives written notice as required. Except as otherwise provided in the Contract Documents, in the case of defective specifications for which the PROJECT MANAGER is responsible, the adjustment shall include any increased cost the CONTRACTOR reasonably incurred in attempting to comply with those defective specifications.

If the CONTRACTOR intends to assert a claim for an adjustment in the Contract Price under this Article, it must, within twenty (20) calendar days after receipt of a written Change Order or the furnishing of a written confirmation notice as hereinbefore specified, submit a written statement to the PROJECT MANAGER setting forth the general nature and monetary extent of such claim and all factual grounds therefor. The CONTRACTOR may include the statement of claim in the written notice as hereinbefore specified. Failure to comply with the twenty (20) calendar day notice requirement shall be deemed a waiver of claims by the CONTRACTOR.

No adjustment shall be made under this Article for any suspension, delay, interruption, change or any other cause, to the extent that an adjustment is provided for or excluded under any other provision of the Contract.

Recovery of compensation, costs, expenses or damages resulting from delay, disruption, hindrance, or interference in the performance of the Work (including without limitation interruption of schedules, extended, excess or extraordinary field overhead and indirect overhead costs, loss of productivity and the impact, ripple or cumulative effect on other Work), shall not be permitted, and all rights thereto are conclusively waived by CONTRACTOR, except to the extent allowed by COMPENSATION FOR DELAY, DISRUPTION AND UNANTICIPATE OVERHEAD of these General Conditions.

No claim by the CONTRACTOR shall be allowed if the claim is made after final payment under this Contract.

53. DIFFERING SITE CONDITIONS

The following provisions shall apply only in the event that there is not a Geotechnical Baseline Report for the Project. If a Geotechnical Baseline Report is so identified, then the provisions of this Article shall not apply and the CONTRACTOR'S rights arising from Differing Site Conditions shall be governed solely by the provisions of the General Requirements pertaining to the CONTRACTOR'S rights in the event of Differing Site Conditions.

Upon discovery and before further disturbance of any unforeseen conditions, the CONTRACTOR shall immediately notify the INSPECTOR and the PROJECT MANAGER, followed by a written notice to the PROJECT MANAGER within twenty-four (24) hours of subsurface or latent physical conditions at the site differing materially from those indicated in the Contract Documents; or unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in the Work of the character provided for in this Contract; or materially differing from that represented in the Contract Documents which the CONTRACTOR believes may be hazardous waste, as defined in the California Health and Safety Code, that is required to be removed to a Class I, Class II or Class III disposal site in accordance with provisions of existing law.

The PROJECT MANAGER shall promptly investigate the conditions. If the PROJECT MANAGER finds that conditions materially differ and will cause an increase or decrease in the CONTRACTOR'S cost or the time required to perform any part of the Work under this contract, whether or not changed as a result of such conditions, the PROJECT MANAGER shall, make an adjustment in the Contract Price by Modification to the Contract in writing.

If the CONTRACTOR intends to seek an adjustment to the Contract Price or Contract Completion Date based upon this Article, it must, within twenty (20) calendar days after it first discovered or should have discovered in the exercise diligence and extreme care the existence of Differing Site Conditions, submit a written statement setting forth a detailed cost breakdown in the form required by Article 27, PAYMENT FOR CHANGES AND EXTRA WORK of the General Requirements, setting forth the basis of CONTRACTOR'S calculation of the costs saved or, detailed information demonstrating the effect on the CONTRACTOR'S schedule of performance in the same manner as required by the Contract Documents for obtaining approval of extensions of time, identification of the Escrow Bid Documents that formed the basis of the CONTRACTOR'S bid estimate to perform the Work affected by such conditions, and a complete and detailed explanation of the factual basis for the request.

Failure by CONTRACTOR to strictly comply with the requirements of this Article concerning the timing and content of any notice of Differing Site Conditions or of any request for adjustment in Contract Price or Contract Completion Date based on Differing Site Conditions shall be deemed waiver of any claim by the CONTRACTOR for increase in the Contract Price or extension of the Contract Completion Date by reason of such conditions.

CONTRACTOR'S right to compensation for (i) delay, disruption, hindrance, interference, schedule compression, and the impact, ripple or cumulative effect thereof; or (ii) additional supervision, administration, excess, extended or extraordinary overhead, loss of productivity, or similar costs, expenses or damages incurred as a result of or related to any Claim based on Differing Site Conditions shall be limited to such sums as are allowable under COMPENSATION FOR DELAY, DISRUPTION, AND UNANTICIPATED OVERHEAD of these General Conditions.

No claim by the CONTRACTOR for an adjustment hereunder be allowed if asserted after final payment under this Contract.

LEGAL REQUIREMENTS

54. CLAIMS AND PROTESTS

A Claim or Protest that involves an extra, change, addition or deletion to the Work as set forth in CHANGES AND EXTRA WORK of these General Conditions shall arise upon issuance of a final decision of the PROJECT MANAGER denying, in whole or in part, a request for adjustment in the Contract Price or Contract Completion Date; provided however, that failure to comply with the requirements of CHANGES AND EXTRA WORK of these General Conditions shall be conclusively deemed to constitute grounds to deny such Claim or Protest.

A Claim or Protest that does not involve an extra, change, addition or deletion to the may be asserted only if the CONTRACTOR shall immediately and prior to performing the Work affected thereby give written notice to the PROJECT MANAGER of such circumstances and of CONTRACTOR'S intention to file a Claim or Protest based thereon. Unless otherwise directed by the PROJECT MANAGER the CONTRACTOR shall proceed without delay to perform the Work and to conform to any order, instruction, or decision of the PROJECT MANAGER with respect thereto.

The CONTRACTOR shall, within twenty (20) calendar days after it first knew, or in the exercise of diligence and extreme care should have known, of the circumstances giving rise to the Claim or Protest, file a written Claim or Protest with the PROJECT MANAGER, stating in detail all objections, grounds and reasons therefore. The CONTRACTOR shall, upon instruction by the PROJECT MANAGER provide, within ten (10) days or such other time as agreed to between the PROJECT MANAGER, the INSPECTOR, and the CONTRACTOR, any and all documents, records or other materials identified by the PROJECT MANAGER as necessary for the resolution of the CONTRACTOR's Claim or Protest.

Claims or Protests seeking time extensions shall be accompanied by such documentation as is required by Article 18, CONTRACTOR'S CONSTRUCTION SCHEDULE AND REPORTS of the General Requirements. Claims or Protests seeking recovery of compensation or adjustments to the CONTRACT PRICE, whether or not based on extras, changes, additions or deletions to the Work, shall be in the form of Change Order Cost Quotations prepared in accordance with and subject to all of the requirements of Article 27, PAYMENT FOR CHANGES AND EXTRA WORK of the General Requirements, including without limitation the prohibition on use of total cost and modified total cost methodologies.

CONTRACTOR waives all rights to assert any claims or seek any relief in the form of extensions of time or recovery of additional compensation, costs, expenses, damages from the CITY that are not presented as a Claim or Protest in the manner specified and within the time stated herein. CONTRACTOR further hereby agrees that in the interest of avoiding the additional expense and potential inequity of piecemeal resolution of Claims or Protests, all decisions by PROJECT MANAGER shall be final and binding not only as to all matters asserted in the Claim or Protest, but also as to all matters (including without limitation all rights to extensions of time and recovery of extra compensation, costs, expenses and damages) not asserted in the Claim or Protest that were known to CONTRACTOR, or that could have been reasonably discovered by CONTRACTOR in the exercise of diligence and extreme care, at the time of submission of the Claim or Protest and that are in any way related to the subject matter of the Claim or Protest. All orders, instructions and decisions of the PROJECT MANAGER will be limited to matters properly falling within their respective authority as specified in AUTHORITY OF THE RECREATION AND PARK COMMISSION, PROJECT MANAGER AND INSPECTOR of these General Conditions.

The CONTRACTOR will be informed of the PROJECT MANAGER's decision within thirty (30) days after the CONTRACTOR last submits data pertinent to the protest previously mentioned. In the case of a Claim or Protest that involves an extra, change, addition or deletion to the Work as set forth in CHANGES AND EXTRA WORK of these General Conditions, if the Contractor accepts the decision of the PROJECT MANAGER, then the CONTRACTOR and CITY shall enter into a Change Order adjusting the Contract Price and Contract Completion Date in accordance with such decision. In the case of a Claim or Protest does not involve an extra, change, addition or deletion to the Work as set forth in CHANGES AND EXTRA WORK of these General Conditions and the CONTRACTOR accepts the decision of the PROJECT MANAGER, then the CONTRACTOR and CITY shall enter into a Modification of the Contract setting forth the terms of the decision and, if appropriate, its effect on the Contract Price or Contract Completion Date. If the CONTRACTOR does not accept the decision of the PROJECT

MANAGER, then further appeal of the PROJECT MANAGER's or the decision must be made to the RECREATION AND PARK COMMISSION in writing within twenty (20) calendar days after receipt of the PROJECT MANAGER's decision. The RECREATION AND PARK COMMISSION shall afford the CONTRACTOR an opportunity to be heard and to offer evidence in support of its appeal. All determinations of the RECREATION AND PARK COMMISSION with respect to Claims or Protests shall be final and binding.

In all matters concerning the validity, interpretation, performance, effect or otherwise of the Contract, the Federal regulations (if and to the extent expressly incorporated by reference in the Contract Documents), the laws of the State of California, and the Charter of the City of Los Angeles shall govern and be applicable. Pending final disposition of a protest, the CONTRACTOR shall proceed diligently with the performance of the Contract and in accordance with the previously mentioned decision.

Any Claim or Protest, including without limitation any Claim or Protest filed on behalf of or having its source in a claim by Subcontractor, Sub-Subcontractor, or Supplier, at any tier, which the CONTRACTOR chooses to make to the CITY, shall be accompanied by the certification language set forth below signed by a responsible managing officer of the CONTRACTOR'S organization, who has the authority to sign Subcontracts or Purchase Orders on behalf of the CONTRACTOR, and who has personally investigated and confirmed the truth and accuracy of the matters set forth in such certification. Submission of certification in accordance herewith is a condition precedent to the CITY's consideration of or decision on the Claim or Protest and to the filing and maintenance of any legal action or proceeding to enforce or recover monies under such Claim or Protest. Failure to submit such a certification along with the Claim or Protest, shall result in the Claim or Protest being returned to the CONTRACTOR without any decision and shall waive the CONTRACTOR's right to pursue the Claim or Protest either on its own behalf or on behalf of such Subcontractor or Supplier.

I hereby certify under penalty of perjury that I am a managing officer of (CONTRACTOR'S name) and that I have reviewed this Claim or Protest presented herewith on CONTRACTOR'S behalf and/or on behalf of (Subcontractor's/Supplier's name(s)) and that the following statements are true and correct:

1. The facts alleged in or that form the basis for the Claim or Protest are true and accurate; and,
2. CONTRACTOR does not know of any facts or circumstances, not alleged in the Claim or Protest, that by reason of their not being alleged render any fact or statement alleged in the Claim or Protest materially misleading; and,
3. CONTRACTOR has, with respect to any request for money or damages alleged in or that forms the basis for the Claim or Protest, reviewed the job cost records (including those maintained by CONTRACTOR and by any Subcontractor or Supplier, of any tier, that is asserting all or any portion of the Claim or Protest) and confirmed with mathematical certainty that the losses or damages suffered by CONTRACTOR and /or such Subcontractor or Supplier were in fact suffered in the amounts and for the reasons alleged in the Claim or Protest; and,
4. CONTRACTOR has, with respect to any request for extension of time or claim of delay, disruption, hindrance or interference alleged in or that forms the basis for the Claim or Protest, reviewed the job schedules (including those maintained by CONTRACTOR and by any Subcontractor or Supplier, of any tier, that is asserting all or any portion of the Claim or Protest) and confirmed on an event-by-event basis that the delays or disruption suffered by CONTRACTOR and /or such Subcontractor or Supplier were in fact experienced for the durations, in the manner, and with the consequent effects on the time and/or sequence of performance of the Work, as alleged in the Claim or Protest; and,
5. CONTRACTOR has not received payment from CITY for, nor has CONTRACTOR previously released CITY from, any portion of the Claim or Protest.

Signature: _____

Name:

Title: _____

Company: _____

Date: _____

No Claim or Protest by the CONTRACTOR shall be allowed if made after final payment under this Contract.

55. COMMENCEMENT OF STATUTE OF LIMITATIONS

Unless otherwise provided in this Contract, all claims, counterclaims, disputes and other matters in question between the CITY and the CONTRACTOR arising out of or relating to this Contract or the breach of it will be decided by a Court of competent jurisdiction. It is understood that this Contract is executed and to be performed within the City and County of Los Angeles.

Any applicable statute of limitations shall commence to run and any alleged cause of action by the CONTRACTOR against the CITY arising out of or related to the Project shall be deemed to have accrued in any and all events no later than 30 days after CONTRACTOR'S submittal of its last application for progress payment.

56. GOVERNING LAW

The terms and conditions of this Contract shall be construed and interpreted under, and all respective rights and duties shall be governed by, the laws of the State of California. Wherever applicable each provision of these Contract Documents shall be interpreted in such a manner as to be effective and valid under applicable law, but if any provision of these Contract Documents shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of these Contract Documents.

57. VENUE

This Contract will be executed and performed within the City and County of Los Angeles, California.

58. NO WAIVER OF RIGHTS

Neither the inspection by the CITY, nor any order by the CITY for payment of money, nor any payment for or acceptance of the whole or any part of the Work by the CITY, nor any extension of time, nor any possession taken by the CITY, shall operate as a waiver of any provision of this Contract, or any power herein reserved to the CITY, or any right to damages herein provided, nor shall any waiver of any breach in this Contract be held to be a waiver of any other or subsequent breach.

59. ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE

The acceptance by the CONTRACTOR of final payment shall release the CITY, the PROJECT MANAGER, the INSPECTOR, their officers, agents, representatives, or employees, as representatives of the CITY, from all claims and all liability to the CONTRACTOR for all things done or furnished in connection with the Work and every act of the CITY relating to or arising out of the Work.

60. PATENTS AND COPYRIGHTS

The CONTRACTOR shall include in its bid the patent fees or royalties on any patented article or process which may be furnished or used in the Work. The CONTRACTOR shall indemnify and hold the CITY harmless from any legal action that may be brought for infringement of patents. The CONTRACTOR'S attention is directed to "Notice of Patents, Data, and Copyright Regulations" of the Federal Labor Standards.

The CONTRACTOR shall bear all costs arising from the use of patented goods and /or processes used on and/or incorporated into the Work. When use of these goods and/or processes are judged to be an infringement and their use is banned, the Contractor, at its own expense, shall, with concurrence of the PROJECT MANAGER, do one of the following:

1. Secure for the CITY the right to continue using goods and/or processes by suspension of the injunction or by procuring a license(s);
2. replace said goods and/or processes with non-infringing goods and /or processes;
3. modify said goods and/or processes so that they become non-infringing; or
4. remove said goods and/or processes and refund the sum paid therefore without prejudice to any other rights of the CITY.

The preceding Subarticle shall not apply to any goods manufactured to the detailed design of the CITY contained in the Contract Documents.

61. PUBLIC RECORDS ACT

All records, documents, plans, specifications and all other information relating to the conduct of the CITY's business, including information submitted by the CONTRACTOR, shall become the exclusive property of the CITY and except as provided by law shall be deemed public records. Said information shall be subject to the provisions of the California Public Records Act (Government Code Sections 6250 *et seq.*).

Under no circumstances, will the CITY be responsible or liable to the CONTRACTOR, submitter or any other party for the disclosure of any records or information submitted to the CITY, regardless of whether such records or information are labeled "TRADE SECRET", "CONFIDENTIAL", or "PROPRIETARY" (or words to similar effect) and regardless of, whether the disclosure is required by law or a court order or occurs through inadvertence, mistake, or negligence on the part of the CITY or its officers, employees, and/or contractors.

The CITY will not advise as to the nature or content of documents entitled to protection from disclosure under the California Public Records Act", including interpretations of the Act or the definition of "Trade Secret". The submitting party shall be solely responsible for all determinations made under the Act, and where appropriate for clearly and prominently marking each and every page or sheet of information with "TRADE SECRET", "CONFIDENTIAL", or "PROPRIETARY". Each submitting party is advised to contact its own legal counsel concerning the California Public Records Act and its applicability to the submitting party's own circumstances.

In the event of litigation concerning the disclosure of any information submitted by the submitting party, the CITY's sole involvement will be as a stake holder, retaining the information until otherwise ordered by a court. The submitting party, at its sole expense and risk, shall be responsible for any and all fees and costs for prosecuting or defending any action concerning the information, and shall indemnify and hold the CITY harmless from all costs and expenses including attorneys' fees, in connection with such action.

LAS PALMAS SENIOR CENTER
(G1163)

II. GENERAL REQUIREMENTS
W.O. E1908358

DEPARTMENT OF RECREATION AND PARKS

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GENERAL REQUIREMENTS

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GENERAL

1. ABBREVIATIONS AND REFERENCE STANDARDS

A. ABBREVIATIONS

Wherever the following abbreviations are used they shall have the meanings indicated:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AGMA	American Gear Manufacturers' Association
AI	The Asphalt Institute
AISC	American Institute of Steel Construction
AISI	American Iron & Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
AREA	American Railway Engineering Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
CBM	Certified Ballast Manufacturers
CRS	Concrete Reinforcement and Steel Institute
EPA	Environmental Protection Agency
ETL	Department of Building & Safety Electrical Test Laboratory
FCI	Fluid Control Institute, Inc.
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
LABC	City of Los Angeles Building Code
NAAMM	National Architectural Association of Metal Manufacturers
NEC	National Electrical Code
NECA	National Electrical Contractors Association

NEMA	National Electrical Manufacturers Association
NOAA	National Oceanic and Atmospheric Administration (Dept. of Commerce)
OSHA	Occupational Safety and Health Administration (Dept. of Labor)
PCA	Portland Cement Association
RCSC	Research Council on Structural Connections of the Engineering Foundation
SAMA	Scientific Apparatus Manufacturer's Association
SSPWC	Standard Specifications for Public Works Construction
SWRCB	State Water Resources Control Board
UBC	Uniform Building Code, International Conference of Building Officials
UL	Underwriters Laboratories, Inc.
USGS	United States Geological Survey
WATCH	Work Area Traffic Control Handbook
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

B. REFERENCE STANDARDS

1. APPLICABLE PUBLICATIONS - Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Work is advertised for bids shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.

2. SPECIALISTS' ASSIGNMENTS - In certain instances, specification text requires (or implies) that specific Work is to be assigned to specialists or expert entities, which must be engaged for the performance of that Work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of Work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of Contract requirements remains with the CONTRACTOR.

3. CODES AND SAFETY STANDARDS - Without limiting the generality of other requirements of the Specifications, Work specified herein shall conform to or exceed the applicable requirements of the following Codes and Safety Standards.

   a. Applicable Codes:

      - City of Los Angeles Building Code
      - City of Los Angeles Mechanical Code
      - City of Los Angeles Plumbing Code
      - City of Los Angeles Fire Code
      - City of Los Angeles Electrical Code

   b. References herein to "Building Code" shall mean City of Los Angeles Building Code. Similarly references to "Mechanical Code," "Plumbing Code," "Fire Code," and "Electric Code" shall mean City of Los Angeles Mechanical Code, City of Los Angeles Plumbing Code, City of Los Angeles Fire Code and City of Los Angeles Electric Code respectively.

   c. Applicable Safety Standards:

      - OSHA Regulations for Construction
      - OSHA Standards
      - Cal-OSHA

   d. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

   e. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

f. References herein to "Cal-OSHA" shall mean State of California, Department of Industrial Relations, as amended to date, and all changes and amendments thereto which are effective as of the date of construction.

g. The latest edition of the codes as approved and adopted for use by the CITY as of the date of award shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.

4. STANDARD SPECIFICATIONS - References in the Contract Documents to "Standard Specifications" shall mean the Standard Specifications for Public Works Construction (SSPWC), including all current supplements, addenda, and revisions thereof, except that the provisions therein for measurement and payment shall not apply.

5. STANDARD PLANS - References herein to "Standard Plans" shall mean the Standard Plans issued by the City of Los Angeles which drawings are hereby incorporated in and made a part of these Contract Documents, and copies of which are available for a fee.

6. CONFLICT BETWEEN CODES, SAFETY STANDARDS, REFERENCE STANDARDS, DRAWINGS AND OTHER CONTRACT DOCUMENTS - In case of conflict between codes, reference standards, drawings and other Contract Documents, the most stringent requirements shall govern. Conflicts shall be brought to the attention of the PROJECT MANAGER for clarification and directions prior to ordering or providing any materials or labor. The CONTRACTOR shall bid for the most stringent requirements.

CONTRACT DOCUMENTS

2. ISSUANCE OF PLANS AND SPECIFICATIONS

A. Unless otherwise provided in the Contract Documents, the PROJECT MANAGER will furnish to the CONTRACTOR TEN (10) sets each of the Plans, Specifications and, Geotechnical Report without charge. Additional sets desired by the CONTRACTOR or Subcontractors will be furnished upon request, but at the CONTRACTOR's expense.

B. Drawings, Specifications, Special Provisions, and copies thereof are the property of the CITY. They are not to be used on other work. Necessary bid documents will be available to prospective bidders. Bidders will be issued plans and specifications for a fee. This fee is stated in the "Notice Inviting Bids" of the Contract Documents.

C. Standard Plans for the CITY, which are noted on the drawings, are available for a fee. Also see the City of Los Angeles, Bureau of Engineering Web pages for Standard Plans at http://eng.lacity.org/techdocs/stdplans.

3. DIVISIONS OF SPECIFICATIONS

The specifications are arranged into the Construction Specifications Institute (CSI) sixteen (16) Division format with an additional Division 17 for Instrumentation and Controls (if applicable).

A. The organization of the Specifications into divisions, sections, parts, and paragraphs shall not control or limit the CONTRACTOR in dividing the Work among Subcontractors of any tier. The CONTRACTOR shall be solely responsible for all subcontract arrangements of Work regardless of the organization of the specifications.

B. Titles of Specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.

THE CONTRACTOR'S RESPONSIBILITIES

4. SITE SECURITY

A. In addition to the responsibilities specified in other Articles of these Requirements, and the General Conditions, the CONTRACTOR shall be responsible for the security of all its construction equipment, materials, tools, facilities, and vehicles (personal, private, or contractual) while performing the Work of this Contract. This requirement shall be effective twenty-four (24) hours per day for the duration of the Contract. CONTRACTOR shall familiarize themselves with the location of the job site and scan the premises by means necessary to protect the property, including but not limited to, provision of fencing, guards, security system or other means as necessary.

5. ENVIRONMENTAL CONTROL AND MITIGATION

A. CONTROL

1. Fugitive Dust and Smoke Control:

   Comply with the requirements of Title 8, California Code of Regulations, concerning handling of asbestos dust.

   a. Criteria for Fugitive Dust - Detailed descriptions and explanations of specific impact mitigation measures are contained in South Coast Air Quality Management District (SCAQMD) Rules and Regulations (Rule 403, Limitation on Fugitive Dust Emissions). Key features of mitigation options described are as follows:

      i. Do not cause or allow emissions of fugitive dust from any transport, handling, construction or storage activity to remain visible in atmosphere beyond property line of the emission source.

      ii. Take precautions to minimize fugitive dust emissions from operations involving demolition, excavation, grading, clearing of land and disposal of solid waste. Utilizes at least one Reasonably Available Control Measure (RACM) for each potential source of fugitive dust. Do not cause or allow particulate matter to exceed 50 mg/m^3 when determined as difference between upwind and downwind samples collected on high volume particulate matter samplers or other EPA approved equivalent method for PM-10 monitoring at the property line for a five hour period during the time of active operations.

      iii. Take precautions to prevent visible particulate matter from being deposited upon public roadways as a direct result of their operations. Precautions include, removal of particulate matter from equipment before movement to paved streets or prompt removal of material from paved streets onto which such material has been deposited.

   b. As a minimum - Use the following procedures and techniques:

      i. Cover loads of materials, debris and soil transported from construction sites. Trim or remove loose material from loads before leaving Project.

      ii. Daily or more frequently, if necessary, water down and sweep adjacent streets and sidewalks that have construction vehicles carrying debris and excavated materials.

      iii. Establish regular cycles and locations for cleaning trucks that haul soil from site.

      iv. Water down construction sites whenever required to suppress dust, particularly during handling of excavation soil or debris or during demolition.

      v. If conveyors are used, cover all transfer points along conveyor system moving soil. Minimize drop height to the stockpile. Provide a sprinkler system that will apply water to soil before it drops to stockpile.

      vi. Any adapted measures developed by SCAQMD on Best Available Control Measures

(BACM) for Fugitive Dust and Rule 403 will be incorporated into the site operations for Fugitive Dust Control.

vii. Burning of wastes is prohibited. Remove scrap and waste material and dispose of in accordance with laws, codes, regulations, ordinances and permits.

viii. Use construction equipment designed and equipped to prevent or control air pollution in conformance with most restrictive regulations of EPA, State and local authorities. Maintain evidence of such design and equipment and make available for inspection by Authority or its designee.

ix. Establish and maintain records of routine maintenance program for internal combustion engine powered vehicles and equipment used on Project. Keep records available for inspection by Authority or its designee.

x. Comply with the requirements of Title 8, California Code of Regulations, concerning handling of asbestos dust.

xi. Implement Fugitive Dust Measures listed in tables 1 and 2 of SCAQMD Rule 403 and perform record keeping in accordance with Sections (e)(1) of said rule. Make records available to Authority or its designee for inspection.

2. Rubbish Control

a. Through all phases of construction, including suspension of Work and until final acceptance of the Project, keep the site of the Work and other areas used by it in a neat and clean condition, and free from an accumulation of rubbish and debris. Dispose of rubbish and waste materials of any nature occurring at the worksite and establish regular intervals of collection and disposal of such materials and waste. Keep CONTRACTOR haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Take care to prevent spillage on haul routes. Remove such spillage immediately and clean the area. Confine equipment and material storage to areas approved by the PROJECT MANAGER. Dispose of rubbish and surplus materials off the construction site, at the CONTRACTOR's expense, in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws, and the requirements of the OSHA Safety and Health Standards for Construction. Include cleanup cost in the CONTRACTOR's Bid.

3. Sanitation

a. Fixed or portable chemical toilets shall be provided for the use of the CONTRACTOR's employees. These accommodations shall be maintained in a neat and sanitary condition. Toilets at construction job sites shall conform to the requirements of Title 8, California Code of Regulations.

b. Wastewater conveyance and disposal shall not be interrupted. Should the CONTRACTOR disrupt existing sewer facilities, sewage shall be conveyed in closed conduits and disposed of in a sanitary sewer system. Sewage shall not be permitted to flow in trenches or be covered by backfill. Establish a regular schedule for collection of sanitary and organic waste. Dispose of wastes and refuse from sanitary facilities provided by the CONTRACTOR or organic material wastes from any other source related to the CONTRACTOR's operations away from the site in a manner satisfactory to the INSPECTOR and in accordance with laws and regulations pertaining thereto. Dispose of such wastes at the CONTRACTOR's expense.

4. Chemicals

The following paragraph does not relieve the CONTRACTOR from its responsibility for obtaining

prior approval from the PROJECT MANAGER for chemical usage when otherwise required.

a. Provide four (4) copies of the MSDS to the PROJECT MANAGER for all chemicals used during Project construction or furnished for Project operation, prior to bringing them on site, whether soil conditioning agents, lubricants, defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, soil conditioning agents, lubricants, reactant, or of other classification, which shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

5. Odor Control

a. The CONTRACTOR shall furnish all labor, materials, and equipment required and shall carry out effective measures wherever and as often as necessary to prevent the discharge of a nuisance odor from its operation into the atmosphere in such quantity as will violate the regulations of any legally constituted authority. During construction, the CONTRACTOR shall notify the PROJECT MANAGER and the INSPECTOR at least forty-eight (48) hours in advance when potential odor-causing activities are scheduled for construction.

6. Noise and Vibration - Comply with requirements of CITY noise ordinances and mitigation specified below.

a. Lighting – Shield worksite lighting to prevent disturbance to adjacent properties.

B. MITIGATION

1. General

a. The CONTRACTOR shall mitigate the adverse environmental impacts associated with the Work of the Contract. The CONTRACTOR shall indemnify and hold harmless the CITY from any and all fines, penalties or damages incurred by the CITY for violation of any environmental mitigation measures or permit caused by the CONTRACTOR's failure to comply with environmental mitigation measures of this Article. The measures that the CONTRACTOR shall take to mitigate environmental impacts include, but are not limited to the following:

b. The CONTRACTOR, a minimum of thirty (30) days prior to beginning Work on each new major activity, shall submit a written plan to the PROJECT MANAGER, detailing how the environmental impacts for the activity shall be mitigated. The plan shall include, at a minimum:

i. Anticipated site conditions;

ii. Equipment to be utilized;

iii. Means and methods of construction;

iv. Impacts likely to occur;

v. Mitigation methods to be employed.

2. Storm Water Pollution Control

a. Comply with the State General Construction Activity Storm Water Permit.

b. Minimum Water Quality Protection Requirements – The Contractor is required to meet the following minimum standards of good housekeeping:

i. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage, or

wind.

ii. Stockpiles of earth and other construction-related materials must be protected from being transported from the site by wind or water.

iii. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil nor the surface waters. All approved toxic storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.

iv. Excess or waste concrete may not be washed into the public way or any drainage system. Provisions shall be made to retain concrete wastes on-site until they can be appropriately disposed of or recycled.

v. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.

vi. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must e stabilized so as to inhibit sediments from being deposited into the public ways. Accidental depositions must be swept immediately and my not be washed down by rain or by any other means.

c. Wet Weather Erosion Control Plan (WWECP) – Pursuant to Section 61.02 of the LAMC, whenever it appears that the construction site will have grading between October 1 and April 15, the Contractor shall submit a WWECP to the Project Manager for approval within 30 days after award of contract or get approval 30 days prior to the beginning of the rainy season, whichever is longer. Note: Guidance on preparing the WWECP can be found in the Development Best Management Practices Handbook – Part A, Construction Activities adopted by the Board of Public Works on August 2, 1999, as authorized by Section 64.72 of the Los Angeles Municipal Code. This handbook can be obtained at cost at the public/permit counters of the Bureau of Engineering.

d. The Contractor shall file a “Notice of Intent” (NOI) with the State Water Resources Control Board to comply with the California General Construction Activity Stormwater Permit (NPDES No. CAS000002) and prepare and implement a Stormwater Pollution Prevention Plan (SWPP). Whenever the CONTRACTOR is required to get any type of permit from the Department of Building and Safety (DBAS), the CONTRACTOR shall show a Waste Discharge Identification Number (WDID) to the DBAS as proof of submittal of the NOI. If the CONTRACTOR does not need any type of permit from the DBAS, the CONTRACTOR shall show the WDID to the PROJECT MANAGER.

3. Noise and Vibration

a. General

i. The Work specified in this Article consists of eliminating excessive noise and vibration generated by construction activities, complying with applicable noise regulations and specifications requirements, monitoring and reporting noise and vibration measurements.

ii. Use equipment with effective noise-suppression devices and employ other noise control measures such as enclosures and noise barriers necessary to meet the noise limits specified and to protect the public. Schedule and conduct operations in a manor that will minimize, to the greatest extent feasible, the disturbance to the public in areas adjacent to the construction activities and to occupants of buildings in the

vicinity of the construction activities.

iii. Noncompliance Corrective Action – If, at any time prior to or during the construction, complaints are received from the public, the PROJECT MANAGER shall direct the CONTRACTOR to undertake immediate corrective action through equipment modification, additional noise abatement equipment or a change in operating procedures.

b. Construction Vibration

i. Ground-borne vibrations from equipment may have the potential of causing an impact to the existing structure. The CONTRACTOR shall mitigate and/or repair any damage caused by vibration.

6. MOBILIZATION

A. GENERAL

Mobilization shall include, but not be limited to, the following items, all as required for the proper performance and completion of the work:

1. Obtaining all permits, insurance, and bonds.
2. Moving onto the job-site all CONTRACTOR's plant and equipment as required.
3. Erecting temporary buildings and other construction facilities.
4. Installing temporary construction power and wiring.
5. Establishing fire protection system for its temporary facilities.
6. Developing construction water supply.
7. Providing field office trailers for the CONTRACTOR AND INSPECTOR, complete with all specified furnishings and utility services, including telephones.
8. Providing connections to onsite sanitary facilities as specified.
9. Providing for potable water facilities as specified. This includes a means by which all on site contractor, subcontractor or supplier personnel can wash their hands with soap.
10. Arranging for and erection of CONTRACTOR's work and storage yards and sheds.
11. Submittal of all required Subcontractor insurance certificates and bonds.
12. Posting all CAL-OSHA required notices and establishment of safety programs.
13. Have the CONTRACTOR's representative at the job site full time.
14. Furnishing of Construction Schedule, Bid Breakdown and Submittal Schedules.

B. TEMPORARY CONSTRUCTION UTILITIES AND WORKSITE FACILITIES

The Contractor shall provide the following worksite facilities, as indicated below:

Yes (1) The Contractor shall provide adequate sanitary conveniences for use of persons employed on the work. These conveniences shall be properly secluded from public observation and maintained in a neat and sanitary condition in the manner and places required by the Project Manager. The use of these conveniences shall be strictly enforced, and they shall be maintained at all times until completion of the work, when they shall be removed from the premised and the area left clean and free from any nuisance. They shall also comply with all applicable laws, ordinances and regulations pertaining to the public health and sanitation of dwelling and camps.

Wastewater shall not be interrupted. Should the Contractor disrupt existing sewer facilities, sewage shall be conveyed in closed conduits and disposed of in a sanitary sewer system.

Sewage shall not be permitted to flow in trenches or be covered by backfill.

Yes (2) The Contractor shall provide the power and light needed for construction until permanent meter installation is completed. The Contractor shall make all necessary arrangements with the City Department of Water and Power; assume all costs; and make and remove all connections to power facilities as necessary for required tests.

Yes (3) The Contractor shall provide the water needed for construction until permanent meter installation is completed. The Contractor shall make all necessary arrangements with the City Department of Water and Power; assume all costs; and make and remove all connections to water facilities as necessary for required tests.

Yes (4) The Contractor shall provide the gas needed for construction until permanent meter installation is completed. The Contractor shall make all necessary arrangements with the Gas Company; assume all costs; and make and remove all connections to gas facilities as necessary for required tests.

Yes (5) The Contractor shall provide a temporary shed on the site for the safe storage of his material and equipment. The floor shall be weathertight with a wood floor above grade. The shed shall be removed upon completion of the work or by order of the General Manager.

Yes (6) The Contractor shall provide an office for the Inspector for the entire period of construction or until the General Manager orders its removal. The office, to be located as the General Manager directs, shall be weathertight and have not less than 100 square feet floor area; screened windows that open in opposite walls; a door with latch set and hasp for padlocking; a built in counter of sufficient size for a full set of job blue prints with a drawer for filing 9" x 12" folders; a stool and a plan rack for drawings; an electric heater, a 12" electric fan and electric lights.

Yes (7) The Contractor shall provide a job telephone for the use of City personnel only. The Contractor shall make all necessary arrangements with the telephone company; assume all costs and pay for all calls. The telephone is to be located so that it is easily accessible from the job office and provided with an outside extension bell.

Yes (8) The Contractor shall maintain temporary drainage to keep excavations, pits and trenches free of water accumulation, by pumping if necessary. The Contractor shall protect against damage caused by water backing up in sewers and drains.

Yes (9) The Contractor shall exercise every reasonable precautions to protect channels, storm drains and bodies of water from pollution; and shall conduct and schedule construction operations so as to minimize or avoid muddying and silting of said channels, drains and waters. Water pollution control work shall consist of constructing any facilities which may be required to prevent, control and abate water pollution.

The Project Manager, authorized representative of the General Manager, in charge of this project is:

Jenny Lim at (213) 485-4730

All correspondence should be addressed to the Project Manager at [Note new address as of 03/29/12]:

Department of Public Works, Bureau of Engineering
Recreation and Cultural Facilities Program
1149 S. Broadway, Suite 830,
Los Angeles, California 90015

7. REMOVAL, CLEANUP, AND DEMOBILIZATION

A. Upon completion of the contracted Work, remove all CONTRACTOR tools, materials and other articles from the CITY's property. Should the CONTRACTOR fail to take prompt action to this end, the CITY at its option and without waiver of such other rights as it may have, on thirty (30) calendar days notice, may treat them as abandoned property. Sweep floors broom clean, clean exterior and interior surfaces and windows and remove rubbish and debris resulting from the contracted Work and maintain the job site in a clean, orderly and safe condition at all times until completion of the physical Work and written Notice of Partial Acceptance. Failure to comply with this requirement shall be grounds for the CITY to assess clean-up costs in the amount of 5% of the mobilization cost.

8. RECORD DRAWINGS

A. Record Drawings are full size drawings (Plans) which are marked up during construction to delineate the actual in-place constructed conditions. Record Drawings shall be provided by the CONTRACTOR for this Project. Requirements for Record Drawings as specified elsewhere shall supplement the requirements specified herein.

B. Record Drawings shall include all changes in the plans including those issued as Change Orders, Plan Clarifications, Addenda, Notice to Bidders, responses to Requests for Information, Jobsite Memos, and any additional details needed for the construction of the Project but not shown on the plans. Substructures encountered while excavating that are left in place shall be located by survey, to the satisfaction of the PROJECT MANAGER, shown, and identified on the Record Drawings. Substructures, including but not limited to concrete structures, electrical conduit and duct banks, drains and sanitary sewer pipelines, process piping, water lines, etc, whose installed location differs from that shown on the original plans shall be precisely located by survey to the satisfaction of the PROJECT MANAGER and recorded on the as-built drawings before backfilling.

C. Mark Record Drawings with red ink or chemical fluid on one (1) set of full size prints to produce a record of the complete installation. Prepare additional drawings that may be required to indicate record conditions on 24" x 36" paper. Additions to Contract Drawings shall employ and use drafting standards, which are consistent with the drafting standards, used in the Contract Drawings.

D. Keep Record Drawings on the job and update during construction and make available for the PROJECT MANAGER'S inspection and copying at all times. The PROJECT MANAGER will review the Record Drawings before submittal of monthly payment requests. If in the opinion of the PROJECT MANAGER, the Record Drawings are not current, approval of the monthly payment may be withheld until the drawings are made current. Submit a signed certification with each monthly payment request stating that the Record Drawings are current and accurate as of the date of the payment request.

E. Where the plans are diagrammatic or lacking precise details, produce dimensioned full size sheets as the Record Drawings. For installations outside of structures, the locations shall be given by coordinates and elevations. Where substructures are encased in concrete, the outside dimensions of the encasement shall also be given.

F. In the case of those drawings which depict the detail requirements for equipment to be assembled and wired in the factory, the Record Drawings shall be updated by indicating those portions which are superseded by final Shop Drawings and by including appropriate reference information describing the Shop Drawings by manufacturer, drawing and revision numbers.

G. At the completion of the Work and after final inspection, copy the Record Drawing (as installed) data, using red ink, onto a new set of high quality prints provided by the CITY. Certify to the completeness and accuracy of the "as installed" information indicated on the prints with its signature. Then deliver as a submittal to the PROJECT MANAGER for review and approval both the field developed prints and the final signed prints as a condition precedent to the CITY'S release of any retained funds.

9. EXCAVATION SHORING, FORMS, AND FALSEWORK

A. Whenever Work under the Contract involves trench excavation five (5) feet or more in depth, or any kind of shoring, design and prepare plans for the required shoring, bracing, and sloping. In addition to the Division 2 specified requirements, submit plans and calculations to the PROJECT MANAGER in advance of excavation to ensure workers' protection from the hazard of caving ground during the excavation. If such plan varies from the shoring system standards established by the Cal-OSHA Construction Safety Orders, the plan shall be prepared by a California registered civil or structural PROJECT MANAGER employed by the CONTRACTOR, and include all costs therefore in the price named in the Contract for completion of the Work as set forth in the Contract Documents. Nothing in this Article shall be deemed to allow the use of a shoring, sloping, or other protective system less effective than that required by the Construction Safety Orders. Nothing in this Article shall be construed to impose liability on the CITY, PROJECT MANAGER, INSPECTOR, or any of their officers, agents, representatives, or employees.

B. Secure approval, in advance, from authorities concerned for the use of any bridges proposed by it for public use. Temporary bridges shall be clearly posted as to load limit, with signs and posting conforming to current requirements set forth in the Traffic Manual published by the California Department of Transportation, covering "signs". This manual shall also apply to the street closures, barricades, detours, lights, and other safety devices required.

C. Comply fully with the requirements of the Cal-OSHA Construction Safety Orders, regarding the design of forms, false work, and shoring for concrete placement, and the inspection of same before placement of concrete. Where the Construction Safety Orders requires the services of a civil PROJECT MANAGER registered in the State of California to approve design calculations and Working Drawings of the false work or shoring system, to inspect such system prior to placement of concrete, employ a registered civil PROJECT MANAGER for these purposes, and all costs therefore shall be included in the price named in the Contract for completion of the Work as set forth in the Contract Documents.

D. No Work under this Article shall start until the PROJECT MANAGER has accepted the plans and the CONTRACTOR has obtained permits required and furnished a copy to the PROJECT MANAGER.

10. SUBMITTALS

A. Furnish a schedule and list of required submittals to the PROJECT MANAGER, in accordance to CONTRACTOR'S CONSTRUCTION SCHEDULE AND REPORTS of these General Requirements, including required submittals by Subcontractors.

B. Wherever called for in these specifications or on the plans, or where required by the PROJECT MANAGER, furnish to the PROJECT MANAGER for review 10 copies of each submittal. The term "submittal" as used herein shall be understood to include detail design calculations, design drawings, Shop Drawings, Working Drawings fabrication and installation drawings, erection drawings, lists, graphs, operating instructions, catalog sheets, data sheets, samples, and similar items. Unless otherwise required, Submit said submittals to the PROJECT MANAGER at a time sufficiently early (see paragraph F. below) to allow review of same by the PROJECT MANAGER and to accommodate the rate of construction progress required under the Contract without delaying the Contract Work and with due regard for the possibility of resubmittals. Submittals shall be in English.

C. Design or Shop Drawings or other submittal shall be accompanied by the standard "CONTRACTOR's SUBMITTAL TRANSMITTAL" form. A submittal not accompanied by such a form, or where all applicable items on the form are not completed, or are incorrectly completed, may be returned, at the PROJECT MANAGER'S discretion, for resubmittal.

D. Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of a submittal of various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates a review of the group or package as a whole. A multiple-page submittal shall be collated into sets, and each set shall be stapled or bound, as appropriate, prior to transmittal to the PROJECT MANAGER.

E. Shop Drawings shall show in detail the size, sections, and dimensions of all the member(s); the arrangement and construction of all connections and joints; all holes, straps, and other fittings required for attaching Work; and other pertinent details. When required, PROJECT ENGINEERING computations shall be submitted. Be responsible for delivering reviewed copies of Shop Drawings to all others whose Work is dependent thereon. Maintain at the site of the Project, a complete file of approved Shop Drawings and manufacturers' data for this Project, at all times.

F. Except as may otherwise be provided herein, the PROJECT MANAGER will make a reasonable attempt to return prints of each submittal to the CONTRACTOR, with its comments noted thereon, within 30 calendar days following their receipt by the PROJECT MANAGER. It is considered reasonable that the

CONTRACTOR shall make a complete and acceptable submittal to the PROJECT MANAGER by the second submission of a submittal item. The CITY reserves the right to withhold moneys due the CONTRACTOR to cover additional costs of the PROJECT MANAGER's review beyond the third submittal. Submittal will be returned to the CONTRACTOR with one of three (3) markings:

G. If three (3) copies of a submittal are returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN/PROCEED," formal revision and resubmission of said submittal will not be required.

H. If three (3) copies of a submittal are returned to the CONTRACTOR marked "MAKE CORRECTIONS NOTED/PROCEED CONDITIONALLY," formal revision and resubmission of said submittal will not be required.

I. If one (1) copy of a submittal is returned to the CONTRACTOR marked "REJECTED-RESUBMIT/DO NOT PROCEED," revise said submittal and resubmit TEN (10) copies of said revised submittal to the PROJECT MANAGER.

J. Work for which Shop Drawings are required shall be performed in accordance with the reviewed and approved copies. Fabrication of an item shall not commence before the PROJECT MANAGER has reviewed the pertinent submittal and returned the copies to the CONTRACTOR marked either "NO EXCEPTIONS TAKEN/PROCEED," or "MAKE CORRECTIONS NOTED/PROCEED CONDITIONALLY." Revisions indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis for claims for extra Work.

K. CONTRACTOR submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR prior to submission to the PROJECT MANAGER. Each submittal shall be dated, signed, and certified by the CONTRACTOR as being correct and in strict conformance with the Contract Documents. No consideration for review by the PROJECT MANAGER of any CONTRACTOR submittal will be made for any items that have not been so certified by the CONTRACTOR. Non-certified submittals will be returned to the CONTRACTOR without action taken by the PROJECT MANAGER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.

L. The PROJECT MANAGER's review of CONTRACTOR submittal shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions and conformance to the specifications. Assume all responsibility and risk for any misfits due to any errors in the submittal. Any fabrication or other Work performed in advance of the receipt of accepted submittals shall be entirely at the CONTRACTOR's risk and expense. Be responsible for the dimensions and the design of adequate connections and details.

11. SUBSTITUTIONS AND "OR EQUAL" SUBMITTAL

A. Make "Or Equal" submittals within thirty (30) calendar days after issuance of Notice-to-Proceed. A request or submittal received after the specified period will be considered as NOT EQUAL to that so specified and will be processed as a substitution described hereinafter.

B. Clearly identify manufacturers' data submitted to the PROJECT MANAGER for review and acceptance each proposed substitute with the corresponding Contract Drawing detail and Specification section. If the PROJECT MANAGER decides to accept for use in the Project a material, process or article which is not the equal of that specified, make substitution in the manner described in Article 52 CHANGES AND EXTRA WORK of the General Conditions, with a credit to the CITY for the difference in value.

C. The PROJECT MANAGER will determine whether the material offered is equivalent to that specified. Any revision to structures, piping, mechanical, electrical, instrumentation, or any other Work made necessary by such substitution must be approved by the PROJECT MANAGER, and the entire cost both direct and indirect of these revisions shall be borne by the CONTRACTOR.

D. Materials, processes, or articles may be requested as a substitution by the CONTRACTOR, in lieu of that

specified, under the following conditions:

1. Submit in writing and in the manner described in SUBMITTAL of these General Requirements.

2. Submit thirty (30) calendar days before starting the Work, as established by the PROJECT MANAGER, so as not to cause any delay in completion of the Project. No other request will be considered after expiration of the period specified, except that in exceptional cases where it is determined to be in the best interest of the CITY, as approved by the PROJECT MANAGER.

3. Agree to pay for all PROJECT ENGINEERING and design services, if required, to make changes and adjustments in material and Work of trades directly or indirectly affected by the substitute, to the satisfaction of the PROJECT MANAGER, at no cost to the CITY.

4. All requests for substitution shall be made through the CONTRACTOR. Submissions by the CONTRACTOR shall imply the CONTRACTOR's approval of such substitution.

5. No requests for substitutions will be considered during the bidding period.

6. Furnish adequate data with each request for approval of a substitute to enable the PROJECT MANAGER to evaluate the proposed substitution.

MATERIALS, EQUIPMENT, AND APPLIANCES

12. SURVEYING

A. DEFINITIONS

1. CONTRACTOR's Surveyor - Shall be a registered (licensed) Land Surveyor or Registered Civil Engineer authorized to practice land surveying by the State of California in compliance with Business and Professions Code Section 8700, *et. Seq*. cited as the Land Surveyor's Act.

2. Construction Stakes - Durable markers that will maintain elevations, station, and offset for the duration of use as reference markers for construction.

3. Surveying - Described in Section 8726 of the Land Surveyor's Act.

4. Survey Manual - City of Los Angeles, Bureau of PROJECT ENGINEERING Manual, Part J – Survey.

B. SURVEY SERVICES

1. The CONTRACTOR's Surveyor shall comply with State Law and the latest edition of the Standard Specifications for Public Works Construction, "Green Book", and its supplement.

   a. The contractor shall employ the Contractor's Surveyor.

   b. All work shall utilize CCS 83, Zone 5, and NAVD 88 control systems.

   c. CONTRACTOR's Surveyor to utilize horizontal & vertical control provided by PROJECT MANAGER and referenced on drawings.

   d. Work shall conform to the lines, elevations, and grades shown on the plans.

   e. CONTRACTOR's Surveyor shall notify the PROJECT MANAGER, in writing, of all material discrepancies between existing survey control and the current Work. Any material discrepancies shall be resolved prior to start of construction.

   f. During progress of construction, CONTRACTOR's Surveyor to provide surveying services as necessary, or as requested by PROJECT MANAGER or INSPECTOR, to assure construction complies with Contract Documents.

g. CONTRACTOR's Surveyor shall fulfill duties of "PROJECT MANAGER" described in Standard Specifications for Public Works Section 2.9, Surveying, except that the City forces shall be notified 7 days prior to the CONTRACTOR disturbing any street centerline control monuments so they can be preserved by City forces.

2. Safety - CONTRACTOR's Surveyor shall conform to recommended safety standards for all Work, as set forth in the latest edition of Work Area Traffic Control Handbook (WATCH) adopted by the City of Los Angeles Board of Public Works. Compliance with the Confined Space Regulations in the California Code or Regulations, Title 8, Section 5157 of the Cal/OSHA Safety Orders is mandatory.

C. CONSTRUCTION SURVEYS:

1. Conform to Survey Manual Part J, Section J 600 of Bureau of PROJECT MANAGER.

2. CONTRACTOR's Surveyor - Provide all reference stakes and form checks necessary for construction and inspection of improvements. Document construction staking in survey field notes as described in Part C.4 in this Article. Staking may include, but is not limited to - removals, joins, rough grade, slope, utilities, storm drain, sewer, curb, walk, paving, wall, tunnels, building stakes and other staking necessary for construction and inspection.

3. Form Checks - CONTRACTOR's Surveyor to check forms where durable points may be disturbed, removed, or is impractical to be used to verify the design location. Record measured location in survey field notes as described in Part C.4 in this Article. Notify PROJECT MANAGER of all variations from plan locations.

4. Staking Interval and Offset Lines - Staking intervals shall be in accordance with Survey Manual, Figure J 615.225A. CONTRACTOR's Surveyor to set stake lines at an offset distance from the improvement to ensure proper grade, station and alignment.

5. Utility Stakes - CONTRACTOR's Surveyor shall provide stakes for utilities, public or private, which require location or relocation unless PROJECT MANAGER states otherwise.

13. SITE INVESTIGATION

A. Before beginning the Work, inspect related and appurtenant Work and report in writing to the PROJECT MANAGER conditions which will prevent proper completion of the Work. Except as provided for in Article 53, DIFFERING SITE CONDITIONS, of the General Conditions, failure to report any such conditions shall constitute acceptance of all site conditions, and required removal, repair, or replacement caused by unsuitable conditions shall be performed by the CONTRACTOR at its sole cost and expense without any adjustment in the Contract Price or extension of the Contract Completion Date.

14. INSPECTION OF THE WORK

A. Whenever the CONTRACTOR intends to carry on the Work of this Contract on a Saturday, Sunday, or holiday, or more than two eight (8) hours a day shifts on Monday through Friday, or any variation in the time of the workday as set forth in the GENERAL CONDITIONS, length of the workday and work week, notification shall be given to the INSPECTOR and the PROJECT MANAGER of such intention at least forty-eight (48) hours in advance so that inspection may be arranged. No Work shall be allowed during these times without the approval of the INSPECTOR and no demolition will be permitted on Saturdays, Sundays, or holidays without the prior approval of the Board. All CITY inspection required by the CONTRACTOR on holidays, weekends and overtime for the sole convenience of the CONTRACTOR shall be accomplished at the sole expense of the CONTRACTOR by issuance of a deductive Change Order.

B. Conduct the Work under the general observation of the PROJECT MANAGER and be subject to inspection by the INSPECTOR to ensure compliance with the requirements of the Contract Documents. Such inspection may include mill, Plant, shop or field inspection, as required. The INSPECTOR shall be

permitted access to all parts of the Work, including Plants where materials or equipment are manufactured or fabricated. Materials and articles furnished by the CONTRACTOR shall be subject to inspection, and no materials or articles shall be used in the Work until they have been inspected and accepted by the INSPECTOR.

C. Do not backfill, bury, cast concrete, hide or otherwise cover Work until it has been inspected by the INSPECTOR, and other Agencies from which a permit is required. Whenever the CONTRACTOR is ready to backfill, bury, cast in concrete, hide, or otherwise cover any Work under the Contract, notify the INSPECTOR not less than forty-eight (48) hours in advance to request inspection before beginning such Work of covering. Failure of the CONTRACTOR to notify the INSPECTOR at least forty-eight (48) hours in advance of such inspections will be cause for the INSPECTOR to require a sufficient delay in the progress of Work to allow time for such inspections and any remedial or corrective Work required, and costs of such delays, including its effect upon other portions of the Work, shall be borne by the CONTRACTOR. Work so covered in the absence of inspection shall be subject to uncovering at the sole expense of the CONTRACTOR. Where uninspected Work cannot be uncovered, such as in concrete cast over reinforcing steel, such Work shall be subject to demolition, removal, and reconstruction under proper inspection, and no additional payment will be allowed therefore.

D. The presence of the PROJECT MANAGER or the INSPECTOR, shall not relieve the CONTRACTOR of the responsibility for the proper execution of the Work in accordance with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty shall not be avoided by any act or omission on the part of the PROJECT MANAGER or the INSPECTOR. If the CONTRACTOR fails to replace any defective or damaged Work or material after reasonable notice, the INSPECTOR may cause such Work or materials to be replaced. The replacement shall be deducted from the amount to be paid to the CONTRACTOR, otherwise the CONTRACTOR shall pay the CITY if there remains insufficient or no amount to be paid by the CITY to the CONTRACTOR.

E. The INSPECTOR will have the right, at all times and places, to reject any articles or materials to be furnished hereunder which, in any respect, fail to meet the requirements of these specifications, regardless of whether the defects in such articles or materials are detected at the point of manufacture or after completion of the Work at the site. If the INSPECTOR, through an oversight or otherwise, has not rejected materials or Work which is defective or which is contrary to the specifications, such material, no matter in what stage or condition of manufacture, delivery, or erection, may be rejected by the INSPECTOR upon discovery. Promptly remove rejected articles or materials from the site of the Work after notification of rejection. Costs of removal and replacement of rejected articles or materials as specified herein shall be borne by the CONTRACTOR.

F. At the completion of Work, after completion of all corrections, a final inspection will be made by the INSPECTOR, the PROJECT MANAGER, and the CONTRACTOR, as applicable. The INSPECTOR will provide a Final Inspection Correction List itemizing all Work necessary to complete the Project satisfactorily.

15. SAMPLING, TESTING AND FABRICATION INSPECTION

A. GENERAL

1. Materials and fabricated articles furnished by the CONTRACTOR may be subject to inspection and testing and no materials or fabricated articles shall be incorporated into the Work until they have been accepted by the INSPECTOR. The CONTRACTOR shall ensure that all items requiring shop inspection are inspected at their source as required by the CONTRACT.

2. Fabrication may be subject to inspection by the INSPECTOR, to ensure strict compliance with the requirements of the Contract Documents. Such inspection may include mill, plant, shop or field inspection, as required. The PROJECT MANAGER or INSPECTOR shall be permitted access to all parts of the Work, including Plants where materials or equipment are manufactured or fabricated. When a third party inspector is approved, meetings may be scheduled with the

PROJECT MANAGER or INSPECTOR at the manufacturing facility to review the progress of the Work and the inspection activities.

3. Fabricate items using Shop Drawings that have been submitted to the PROJECT MANAGER and approved in accordance with SUBMITTALS of the GENERAL REQUIREMENTS. Provide shop inspection on materials and/or equipment so designated on the CONTRACTOR's approved Shop Drawings.

4. Material which is subject to or requires shop inspection and arrives at the job site without inspection by the INSPECTOR will be rejected by the INSPECTOR and shall be removed from the job site by the CONTRACTOR at the CONTRACTOR's sole expense.

B. SAMPLES AND TEST SPECIMENS

1. CONTRACTOR shall obtain, perform and pay for all testing. Testing shall be performed at a certified laboratory approved by the PROJECT MANAGER.

2. Samples and test specimens required under these specifications shall be furnished, prepared for testing, and delivered, to the approved testing laboratory at no cost to the CITY.

3. In addition to any other inspection or quality assurance provisions that may be specified, the PROJECT MANAGER or the INSPECTOR shall have the right to independently select, test, and analyze, at the expense of the CITY, additional test specimens of any or all of the materials to be used. Whenever any portion of the Work fails to meet the requirements of the specifications as shown by the results of independent testing or investigation all costs of such independent inspection and investigation, and all costs of removal, correction, and reconstruction or repair of any such Work shall be borne solely by the CONTRACTOR.

4. When the manufacturer, fabricator, supplier, or subcontractor provides the results of tests from samples taken at the mill, factory, or warehouse, the PROJECT MANAGER or INSPECTOR will accept the test reports provided the following conditions are met:

   a. The Testing Agency was approved by the PROJECT MANAGER or INSPECTOR prior to performing the tests, and that all necessary certifications were valid at the time the tests were performed.

   b. The tests were performed in conformity with the specifications for the specified materials or items.

   c. The reports are made in the form of an affidavit specified hereinafter.

5. Whenever the approved independent testing laboratory or inspector takes samples of materials other than at the site, the deliveries to the site of materials represented by such samples shall be identified as specified for the specific material. The results of such tests shall be reported to the INSPECTOR in the form of affidavits attested to by the testing agency. Such affidavits shall furnish the following information with respect to the material sampled:

   a. Manufacturer's name and brand.

   b. Place of sampling.

   c. Sufficient information to identify the lot, group, bin, or silo from which the samples were taken.

   d. Amount of material in the lot sampled.

   e. Statement that the material has passed the requirements.

   f. Notarized signature and title of the person making the affidavit and the date of execution of the affidavit.

6. THIRD PARTY INSPECTION REQUIREMENTS

   a. The proposed third party inspection and/or testing company must gain approval by the

PROJECT MANAGER after award. Obtain this approval before producing any material or manufacturing any product or equipment. The approved inspection and/or testing agency shall not sublet or assign its Work to any other agency.

b. Comply with requirements as identified in the CONTRACT.

c. The Work and activities of the third party inspection and/or testing agency shall be monitored by the INSPECTOR during meetings to ensure compliance with the Contract Documents.

7. THIRD PARTY TESTING AND INSPECTION LABORATORY APPROVAL PROCEDURES

a. The PROJECT MANAGER will approve third party inspection and/or testing agencies/laboratories.

b. Requests for approval of a third party inspection agency and/or test laboratory shall be in writing from the CONTRACTOR to the PROJECT MANAGER.

c. The letter requesting approval of a third party test laboratory and/or private inspection agency shall contain all of the following information:

i. Complete title of Project.

ii. Project Work order number.

iii. Name of proposed testing laboratory or inspection agency.

iv. Address and telephone number of proposed testing laboratory/inspection agency.

v. Contact person at proposed testing laboratory/inspection agency.

d. The PROJECT MANAGER will notify the CONTRACTOR by letter if the testing laboratory/inspection agency has been approved.

16. GUARANTY/WARRANTY

A. The CONTRACTOR shall and does hereby warrant and guaranty that Work executed under this Contract will be free from defects of materials and workmanship for a period of one (1) year from the date of final acceptance of the Project by the Recreation and Park Commission, except certain specific items of Work, materials and equipment requiring a guaranty or warranty for a greater period of time as hereinafter specified. In the event, that portions of the Work are sufficiently complete to allow use or occupancy by the CITY in the manner and for the purposes intended prior to final completion and acceptance of the Project, the guarantee period for those portions will commence on the date shown on the Statement of Partial Completion.

B. The CONTRACTOR hereby agrees to indemnify and save harmless the CITY, and their officers, agents and employees against and from all claims and liability arising from damage and injury due to said defects. The CONTRACTOR shall repair or replace, at no cost to the CITY, any and all such defective Work and all other Work damaged thereby, which becomes defective during the term of the above-mentioned guaranties and warranties.

C. Within thirty (30) calendar days prior to completion of all Work the CONTRACTOR shall submit to the PROJECT MANAGER original copies of all manufacturers guaranties covering all supplied and installed equipment and, where applicable, systems.

D. In addition to the requirements of Contract Bonds, of the General Conditions, it shall be understood that the Surety for the faithful performance bond, submitted in conformance with the terms of the Contract for this Project, is liable on its bond for all obligations of the CONTRACTOR including guaranty provisions.

E. The CONTRACTOR shall, within twenty-four (24) hours of notice from the PROJECT MANAGER of any Work not in accordance with the requirements of the Contract, or any defects in the Work, commence and

prosecute with due diligence all work necessary to fulfill the terms of this Article and to complete the Work within a period of time as approved by the PROJECT MANAGER. In the event of failure by the CONTRACTOR and/or its surety to respond to the notice or to complete the Work required by this Article within the time specified, the CITY shall proceed to have such Work done at the CONTRACTOR's expense. The CONTRACTOR or its Surety shall promptly reimburse the CITY all direct and indirect cost associated with performing this Work.

17. STORAGE OF MATERIALS AND EQUIPMENT

A. Store and protect materials and equipment in accordance with the manufacturer's instructions, with seals and labels intact and legible. Exercise measures necessary to ensure preservation of the quality, quantity, and fitness of the materials or equipment and perform the manufacturers recommended maintenance of the material or equipment. Absorb any and all cost incurred to store, protect, and maintain the materials and equipment without modification to the Contract Amount.

B. Do not store construction materials in streets, roads, or highways for more than 5 days after unloading. Materials or equipment not installed or used in construction within 5 days after unloading shall be stored elsewhere by the Contractor at its expense unless authorized additional storage time.

C. Do not store construction equipment at the worksite before its actual use on the Work, nor after use for more than 5 days after it is no longer needed.

D. Excavated material, except that which is to be used as backfill in the adjacent trench within three days shall not be stored in public streets unless otherwise permitted. Remove excess material after placing backfill from the site immediately.

PROGRESS OF THE WORK

18. CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK

A. After notification of award and prior to start of any work, the Contractor shall submit its Schedule of Values to the Project Manager for review and approval. Upon approval of the Schedule of Values, and prior to start of any contract work, other than mobilization, the Contractor shall submit its Baseline Schedule to the Project Manager for acceptance. The Baseline Schedule shall be based on the approved Schedule of Values. The approved Schedule of Values work items shall be the basis for the construction elements for the accepted Baseline Schedule and the Monthly Billing items. As a minimum the Baseline Schedule shall indicate the work plan of all specifications sections. The Baseline Schedule shall include, but is not limited to: all items noted on I.2.a. through I.2.f. and I.2.h. through I.2.o. The Baseline Schedule shall recognize the protection, removal, or relocation of utilities and how they affect construction. The Baseline Schedule shall also reflect completion of all work under the Contract within the specified time and in accordance with the Specifications.

Unless otherwise provided, the Contract time shall commence as indicated in the Notice-to-Proceed letter. The Work shall start within 10 days thereafter, and be diligently prosecuted to completion within the time provided in the Specifications or as modified through change order.

Upon acceptance of the Baseline Schedule by the Project Manager, the Contractor shall maintain a copy of the accepted schedule in the jobsite office, recording thereon progress of the work at the end of each calendar week.

B. Methodology: The Baseline Schedule and all Updated Progress/Recovery Construction Schedules (UPRS) shall be in the form of a Critical Path Method schedule showing chronological relationship of all activities of the project. The principles and definitions of the terms used herein shall be as set forth in the Associated General Contractor's publication "As-Planned CPM Schedule - Handbook", latest edition. To the extent there are any conflicts between the Associated General Contractor's publication and the Specifications, the Specifications shall govern. The Contractor shall utilize Primavera Sure-Trak 3.0 or Microsoft Project 2000 as the computer program for formatting the Baseline Schedule, and subsequent updated schedules.

C. The Contractor shall have the right to complete the job in advance of the scheduled completion date and

within the allowable days allotted for the project. In the event that the Contractor elects to finish the project in advance, a Change Order shall be issued to reflect reduced duration and revised completion date. The Contractor shall not be entitled to any additional compensation for early project completion.

D. A schedule showing the Work completed in less than the Contract Time, which has been accepted by Owner and amended by Change Order, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the Work and Contract Substantial Completion. Project Float is a resource available to both City and Contractor. No compensation shall be due to the Contractor for use of this float time by either party.

E. Float Ownership: Neither City nor Contractor owns float. The Project owns the float. As such, liability for delay of any Substantial Completion date rests with the party whose actions, last in time, actually cause delay to a Substantial Completion date.

F. The Contractor shall forward to the General Manager, along with the monthly Request for Payment, the Updated Schedule, referred to in Section B of this Article, indicating the progress of any part of the work not up to Baseline Schedule, stating the existing status, cause of delay, impact of change orders and approximate time of completion.

G. If the Contractor should fall behind the progress schedule by more than one month, the Contractor must provide the General Manager with an Updated Progress/Recovery Schedule (UPRS). Failure to comply with the full requirements of this Article shall be cause for withholding all future progress payments until full compliance. Failure to provide more than 2 consecutive Updated Schedules or UPRS shall constitute grounds for cancellation of the project.

H. The Department reserves the right to request a two-week “look ahead” schedules if the Department determines that the submitted UPRS does not reflect the as-built condition, manpower utilization or sequential progress necessary to fulfill the intent of the UPRS.

I. Network Details:

1. The Schedule shall include time-scaled network diagram, based on working days, as well as tabulations. It shall be constructed to show the order in which the Contractor proposed to carry out the Work, to indicate restrictions of access and to show availability of work areas, and availability and use of manpower, materials and equipment. The Contractor shall utilize the Schedule in planning, scheduling, coordinating, and performing the Work under the Contract (including activities of Subcontractors, equipment venders, and Suppliers). Provide the Project Manager with written confirmation of the concurrence of listed trade Subcontractors and Suppliers with the Schedule. Major trade Subcontractors and Suppliers shall approve the Schedule before they are submitted.

2. The Schedule shall provide the Project Manager and Inspector with a tool to monitor and follow the progress of all phases of the Work. The Schedule submitted to the Project Manager shall comply with all limits imposed by the scope of Work, and with all constraints, restraints or sequences included in the Contact. The degree of detail shall include factors to the satisfaction of the Project Manager, including, but not limited to:

    a. Physical breakdown of the Project including estimated starting and completion dates of activities.

    b. Float Time.

    c. Contract milestones and completion dates, building occupancy date, constraints, restraints, sequences of Work shown in the Contract, the maintenance period and the final completion date. Durations shall be in calendar day.

    d. Type of Work to be performed, and the sequences.

    e. Purchases, submittals, submittal reviews, manufacturing, tests, delivery, and installation activities for all major materials and equipment.

f. Deliveries of City furnished equipment and/or materials in accordance with the dates or schedule windows of such items set forth in the Contractor furnished by the Project Manager, or items to be salvaged and delivered to the City.

g. Preparation, submittal and approval of Shop Drawings and material samples showing a thirty (30) day minimum time specified for the Project Manager's review of normal or routine submittals. A forty (40) day review time for all major submittals and the same time frame shall be allowed for at least one (1) re-submittal on all major submittals.

h. Impact of Change Orders issued to the Contract.

i. Approvals required by regulatory agencies or other third parties.

j. Plans for all subcontract Work.

k. Access to and availability of Work areas including all anticipated shutdowns.

l. Identification of linkage between preceding, concurrent and follow-on Sub- contractors and utilities that are shown on the Plans or called out in the Specifications.

m. Actual tests, submission of test reports, and approval of test results.

n. Training and classes required under the Contract.

o. Pre-Final and Final Inspection punch lists and final cleanup, allow time for preparation of the punch lists.

p. Clearly identify any manpower, material, or equipment restrictions, as well as any activity requiring unusual shift Work, specified overtime, or Work at times other than regular days or hours.

3. Durations of the labor, equipment, and materials required to perform each activity shall be based on a normal work day unless otherwise approved by the Project Manager.

4. Critical or near critical paths resulting from the use of manpower or equipment restraints shall be kept to a minimum. Near critical paths shall be defined as those paths having fifteen (15) working days or less of total float as shown on the accepted Baseline Schedule.

5. Time scale shall show a continuous flow of information from left to right. The critical path shall be clearly and graphically identified on the schedule.

J. SCHEDULE REPORTS

1. The Schedule submitted to the Project Manager shall include the time scaled network diagram. Network diagrams shall be based on early start and early finish dates of activities shown and any related calculations generated by the scheduling program which describes the events and activities depicted.

K. APPROVAL OF BASELINE SCHEDULE

1. Acceptance Process:

2. The Project Manager will accept or reject, in writing, the Contractor's submission within fourteen (14) days after receipt of required information. The Construction Schedule, once accepted, becomes the Baseline Schedule which shall be used for monitoring and evaluating all facets of Contract performance, including, but not limited to: payment progress, changes, and delays.

3. Revise the Schedule, periodically per B, F, G, and H of this Article.

L. REVISIONS TO ACCEPTED BASELINE SCHEDULE

1. No change to the accepted Baseline Schedule shall be made without the prior written approval of the Project Manager.

M. UPDATES TO ACCEPTED BASELINE SCHEDULE AND PROGRESS PAYMENTS

1. Updated Schedules or UPRS:

    a. See Section F of this Article.

    b. The Update Report shall show the activities or portions of activities completed during the reporting period and their total value as the basis for the Contractor's monthly request for payment. Payments made pursuant to Partial Payments of these General Requirements will be based on the total value of such activities completed or partially completed after verification by the Inspector. The report shall state the percentage of the Work actually complete as of the report date.

N. RESPONSIBILITY FOR COMPLETION

1. Whenever it becomes apparent from the Updated Schedule or UPRS that phasing, milestone, constraint, restraint, or Contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:

    a. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of Work.

    b. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog or Work. Contractor shall be responsible for all additional costs associated in having the Inspector present at the job site for all periods in excess of the basic work day.

    c. Reschedule the Work in conformance with the Specification requirements.

2. Before implementing any of the above actions, the Contractor shall notify and obtain written approval from the Project Manager.

3. Under no circumstances will the addition of equipment or construction forces, increasing the working hours or any other method, manner, or procedure to return to the contractually required completion date be considered justification for a Change Order or be treated as acceleration where the need for a UPRS has been caused by the Contractor and/or its Subcontractors or Suppliers, at any tier.

4. The Project Manager may elect to withhold progress payments until the Contractor's progress indicates that the milestone date(s) and/or the Contract completion date will be met.

19. WORK BY CITY OR OTHERS

A. Be responsible for ascertaining the nature and extent of any simultaneous, collateral and essential work by others. The CITY, its employees and contractors, and others, shall have the right to operate within or adjacent to the worksite to perform such Work.

B. The CITY, the CONTRACTOR, and each of such employees, contractors and others, shall coordinate their operations and cooperate to hold interference to a minimum.

C. Include in its Bid all costs involved as a result of coordinating its Work with others. The CONTRACTOR shall not be entitled to additional compensation from the CITY for damages resulting from such simultaneous, collateral and essential Work. The CONTRACTOR's coordinating efforts shall include redeployment of his Work forces to other parts of the Work.

PAYMENT FOR WORK

20. PARTIAL PAYMENTS (Revised as of 02/12/16)

A. Unless otherwise prescribed by law, three (3) working days prior to the last work day of each month, or other such date mutually agreed upon by the CONTRACTOR and the INSPECTOR, the CONTRACTOR shall prepare and submit to the INSPECTOR, an estimate of the cumulative amount and value of acceptable Work performed by the CONTRACTOR at the jobsite up to that date. Said amount shall also include the value of all acceptable materials and equipment for the Contract that have been delivered and

suitably stored but not yet used in the Work, subject to the requirements of PAYMENTS FOR MATERIALS OR EQUIPMENT DELIVERED AND STORED ON THE JOBSITE and PAYMENT FOR MATERIALS OR EQUIPMENT STORED OFF THE JOBSITE of these General Requirements.

B. Payments for undelivered, specifically manufactured equipment to be incorporated into the Work, excluding "off the shelf " or catalog items, will be made when all of the following conditions exist:

1. The equipment must be specifically designated in the Technical Specifications for partial payment prior to delivery.
2. The equipment to be specifically manufactured for the Project could neither be readily utilized on nor diverted to another job, and,
3. A fabrication period of more than six (6) months is anticipated,

C. Upon verification and approval by the INSPECTOR, such estimate shall be processed by the INSPECTOR in accordance with the provisions of the California Public Contracts Code.

D. The CITY may retain a portion of the amount otherwise due to the CONTRACTOR, as follows:

1. Retention of **five percent (5%)** will be held on the original Contract value on each approved payment claim until the amount paid of the original Contract equals fifty percent (50%). The CITY may then, at its sole discretion discontinue further retention on the original Contract value for all subsequently approved payment claims.
2. At any time during the course of the Contract, the CITY may, at its sole discretion, reinstate the **five percent (5%)** retention.
3. Additional deductions will be made from each monthly payment request for amounts due the CITY as follows:
    a. Equipment or materials furnished by the CITY.
    b. Services rendered to the CONTRACTOR by the CITY.
    c. Amounts due the CITY for liquidated damages or penalties under the terms of the Contract.
    d. Amounts required to be deducted by federal, state, or local governmental authority or other provisions of these Contract Documents.

E. From the balance thus determined will be deducted the amount of all previous payments, and the remainder shall constitute the monthly payment due the CONTRACTOR. Within thirty (30) calendar days after receipt of the INSPECTOR's recommendation by the Department of the monthly payment due the CONTRACTOR and subject to the deductions provided, herein, the CITY will pay the amount found due.

F. On lump-sum items the INSPECTOR's estimate of the monthly payment due the CONTRACTOR will not be required to be made by strict measurement, and an approximate estimate will suffice.

G. The monthly payments may be withheld or reduced, for the following reasons:

1. If the CONTRACTOR is not diligently or efficiently complying with the express intent of the Contract.
2. If there are unresolved Notices of Non-Compliance.
3. If Technical Manuals are not submitted.
4. If Record Drawings are not kept up-to-date.
5. If progress photographs are not submitted, and
6. If construction schedules are not submitted in accordance with these General Requirements.
7. The CONTRACTOR shall promptly submit the following in response to requests by the INSPECTOR:

8. Information and records necessary to determine the cost of the Work for purposes of estimating monthly payment.

9. Itemized statements, in a form satisfactory to the INSPECTOR, of the actual cost of all acceptable materials delivered by the CONTRACTOR to the site.

H. The making of any payment to the CONTRACTOR shall not relieve the CONTRACTOR from contractual obligations. These payments shall not be construed as the transfer of ownership of any equipment or materials to the CITY.

I. Responsibility of ownership shall remain with the CONTRACTOR who shall be obligated to store, protect, repair, replace, rebuild or otherwise restore any fully or partially completed Work or structure for which payment has been made. The CONTRACTOR shall replace any materials or equipment required to be provided under the Contract that may be damaged, lost, stolen, or otherwise degraded in any way prior to acceptance of the Work under the Contract.

J. At its own expense, the CONTRACTOR has the option, to substitute for any money being withheld by the CITY, securities equivalent to the amount being withheld. Securities eligible for such substitution are bank or savings and loans certificates of deposit or such securities eligible for investment pursuant to California Government Code. Any such security or securities so substituted for monies withheld, shall be owned by the CONTRACTOR who shall receive earned interest.

K. Such security shall, at the request and expense of the CONTRACTOR, be deposited with CITY or with a State or Federally Chartered Bank as the escrow agent who shall pay such monies to the CONTRACTOR upon notification by the CITY that payment can be made. Such notification will be given at the expiration of sixty (60) calendar days from the date of acceptance of the Work by the Board, or as prescribed by law, provided, however, that there will be a continued retention of necessary securities to cover such amounts as are required by law to be withheld by properly executed and filed notices to stop payment, or as may be authorized by the Contract to be further retained.

L. Any escrow agreement entered into pursuant to this provision shall contain as a minimum, the following provisions - the amount of securities to be deposited; the terms and conditions of conversion to cash in case of the default of the CONTRACTOR; and the termination of the escrow upon completion of the Contract and the other requirements as herein above provided.

21. PAYMENT FOR MOBILIZATION

A. General Mobilization

1. Payment for general mobilization shall be limited to those items of Work described in MOBILIZATION, of these General Requirements.

2. The CONTRACTOR shall submit to the PROJECT MANAGER for approval a breakdown of the amount established for mobilization. The payment for each item of mobilization will be made when that item of mobilization has been completed and as specified below:

3. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is five percent (5%) or more of the original Contract amount, the total amount earned for mobilization may be up to fifty percent (50%) of the Contract item price for mobilization or five percent (5%) of the original Contract amount, whichever is less will be included in the said estimate for payment.

4. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is ten percent (10%) or more of the original Contract amount, the total amount earned for mobilization may be up to seventy-five (75%) of the Contract item price for mobilization or seven point five percent (7.5%) of the original Contract amount, whichever is less will be included in the said estimate for payment.

5. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is twenty percent (20%) or more of the original Contract amount, the total amount earned for mobilization may be up to ninety-five percent (95%) of the Contract item price for

mobilization or nine point five percent (9.5%) of the original Contract amount, whichever is less will be included in the said estimate for payment.

6. When the monthly partial payment estimate of the amount earned, not including the amount earned for mobilization, is fifty percent (50%) or more of the original Contract amount, the total amount earned for mobilization may be up to one hundred percent (100%) of the Contract item price for mobilization or ten percent (10%) of the original Contract amount, whichever is less will be included in the said estimate for payment.

7. After acceptance of the Contract by the BOARD, the amount, if any, of the Contract item price for mobilization in excess of ten percent (10%) of the original Contract amount will be included for payment in the final monthly payment.

8. The Contract lump sum price paid for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the Work involved in mobilization as specified herein.

9. The adjustment provisions in PAYMENT FOR CHANGES AND EXTRA WORK of these General Requirements, and the retention of funds provisions of PARTIAL PAYMENTS of these General Requirements shall not apply to the Contract lump sum item for Mobilization.

10. When other Contract items are adjusted as provided in PAYMENT FOR CHANGES AND EXTRA WORK of these General Requirements, if the costs applicable to such item of Work include mobilization costs, such mobilization costs will be deemed to have been recovered by the CONTRACTOR by the payments made for mobilization and will be excluded from consideration in determining compensation under said Article.

11. When the Contract does not include a Contract pay item for mobilization as specified above, full compensation for any necessary mobilization required shall be considered as included in the prices paid for the various Contract items of Work involved and no additional compensation will be allowed.

22. PAY ITEM DEFINITIONS

This Article describes methods of measurement and payment for lump sum and unit priced items listed on the Schedule of Work and Prices, contained in the Contract Proposal.

A. The Contractor shall not take advantage of any apparent error or omission on the Drawings or Specifications, and the PROJECT MANAGER shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.

B. All portions of the Work are either in an applicable allowance, lump sum, or unit price item listed on the schedule of Work and Prices. Work for which there is not a separate item will be considered incidental to the contract and no additional compensation shall be allowed.

C. ALLOWANCES

1. Fixed allowances may have been allocated to the Schedule of Work and Prices for certain items of work. Requirements for each Allowance Item are specified below or a reference is given to the General Requirements article that describes the work. Allowance item work is to be performed only as directed by the PROJECT MANAGER. Unless otherwise noted, Allowances will be paid on a time and materials basis in accordance with Section C, PARTIAL PAYMENTS of these General Requirements.

2. If allowance items are not executed or are only partially executed or the allowance for any item is not expended or partially expended, then a deductive change order shall be issued for the amount that is not expended. If, however, these items are over expended then an appropriate change order shall be executed in accordance with, PAYMENT FOR CHANGES AND EXTRA WORK, of these General Requirements.

D. LUMP SUM ITEMS:

1. Payment of the lump sum items established in the contractor's Bid under the various line items in the Bid Form shall be full compensation for all labor, materials, and equipment required to furnish, install, construct, and test the Work covered under the lump sum bid item.

2. Payment for the lump sum items established in the Contractor's Bid shall also fully compensate the Contractor for any other work which is not specified or shown, but which is necessary to complete the Work.

3. Payments for Lump Sum Work other than Mobilization will be based upon physical progress for each activity in accordance with the breakdown of the Lump Sum prices agreed to in the Schedule of Values.

E. UNIT PRICE ITEMS:

1. Payment for all work shall be in accordance with the unit price bid items in the schedule of Work and Prices and shall be full compensation for all labor, materials, and equipment required to furnish, install, construct and test the Work covered under the unit price bid item. Work for which there is not a price schedule item will be considered incidental to the Work and no additional compensation shall be allowed.

2. Payment will be made only for the actual quantities of work performed in compliance with the Drawings and Specifications. The Contractor will receive reimbursement equal to the approved quantity times applicable unit price.

23. SCHEDULE OF VALUES

A. The Schedule of Values will be used as a basis for determining progress payments on a lump sum Contract or any designated lump sum bid item. The Schedule of Values shall be a schedule of cost loaded construction activities equal, in total, to the lump sum bid and shall be in such form and sufficient detail to correctly represent a reasonable apportionment of the lump sum. Prior to submitting an invoice for payment, the CONTRACTOR shall have submitted a detailed Schedule of Values and obtained approval from the PROJECT MANAGER.

B. Each lump sum bid item on the Schedule of Work and Prices as set forth in the Bid must be broken down separately. The breakdown of each lump sum bid item must cover the cost of construction required by the plans and specifications for that item. The sum of the values for the construction activities, within a bid item must equal the total amount bid for that item.

C. Each activity in the Schedule of Values shall delineate one construction activity. For example, the placement of concrete between construction joints, the construction of an electrical duct bank or pipeline between points A & B. The costing for each activity should include all costs for the labor and materials or equipment required to complete the activity. For example, concrete construction activities should include all costs for the forming, placing of reinforcement, placing concrete and curing. The cost for pipeline construction activities should include materials, equipment and installation including pipeline supports or thrust blocks. The excavation and backfill for a pipeline or structure may be separate activities. No non-construction activity shall be cost loaded.

24. NOTICE TO WITHHOLD AND/OR STOP NOTICE

A. When a "Notice to Withhold" or "Stop Notice" is served upon the CITY, or the BOARD, pursuant to the lien statutes of the State of California, to withhold sufficient funds from payments to the CONTRACTOR in support of a claim resulting from default by the CONTRACTOR in payment for labor or materials used in prosecution of the Contract, the CITY shall withhold from payment due the CONTRACTOR an amount of money equal to the amount of the claim stated in the "Notice to Withhold" or "Stop Notice," and an additional amount equal to twenty-five percent (25%) of the amount of said claim, to defray the costs of litigation in the event of court action on the claim, for a total withholding of one and one quarter times the stated amount of the claim. At the discretion of the CITY, the CITY may allow the CONTRACTOR to file with the CITY the bond referred to in the Civil Code of the State of California after which said monies will not be withheld on account of such "Notice to Withhold" or "Stop Notice."

B. In the event the Contract is terminated for CONTRACTOR default, any funds due the CONTRACTOR and retained by the CITY in accordance with PARTIAL PAYMENTS of these General Requirements, shall become the property of the CITY to the extent necessary to repay to the CITY any excess in the Contract price above the cost of the Work completed at the time of termination. After issuance of notice to discontinue Work, no further payments will be made to the CONTRACTOR for the Work covered by the notice until completion of Work and final settlement has been made.

25. FINAL PAYMENT

A. Final payment to the CONTRACTOR is made following action by the BOARD that formally adopts the recommendation of the PROJECT MANAGER to accept the Contract.

B. After acceptance of the Work by the BOARD and not more than sixty (60) calendar days after filing Notice of Completion, the CITY will make final payment to the CONTRACTOR of the amount remaining after deducting all prior payments and all amounts to be kept or retained under the provisions of the Contract, including the following items:

1. Liquidated damages, as applicable;

2. Lien claims or Stop Notices filed on behalf of suppliers, Subcontractors, and labor performed in connection with the Project; except, that upon submittal of a Stop Notice Release Bond issued by an approved Surety Company executed in favor of the CONTRACTOR, the CITY will release such portion of the retainage funds to said CONTRACTOR that is being held solely to cover Stop Notice Claims.

3. No claim of the CONTRACTOR under this Article shall be allowed unless the CONTRACTOR has given the required written notice. Nor shall a claim by the CONTRACTOR for an equitable adjustment hereunder be allowed if asserted after final payment under this Contract.

26. CHANGE ORDER REQUESTS

A. The CONTRACTOR's quotations for preliminary change orders for extras, changes, additions, or deletions to the Work as described in Article 52 CHANGES AND EXTRA WORK of the General Conditions shall be submitted to the PROJECT MANAGER, in writing, on the Change Order Cost Quotation Form provided by the PROJECT MANAGER, and in conformance with the requirements of PAYMENT FOR CHANGES AND EXTRA WORK of these General Requirements. Examples of these forms are bound at the end of these General Requirements. The quotation shall be firm for a period of not less than sixty (60) calendar days from the date of receipt of the quotation by the PROJECT MANAGER. Submit its written cost quotation and Time Impact Analysis not later than two (2) weeks after being requested to provide such quotation, unless the PROJECT MANAGER allows more time. Delays in submitting quotations beyond the two (2) weeks set forth herein, which cause a delay in the issuance of a Change Order or a delay to the completion date of the Project, shall not be cause for a claim or a time extension under the Contract.

B. The PROJECT MANAGER's request for quotation on a preliminary change shall not be considered authorization to proceed with the changed Work prior to the issuance of a formal Change Order, unless directed otherwise in writing by the PROJECT MANAGER, nor shall such request constitute justification for a delay to the existing Work or a time extension under the Contract.

27. PAYMENT FOR CHANGES AND EXTRA WORK

Payment to the CONTRACTOR, or credit to the CITY, for any extra, change addition or deletion to the Work under the Contract, or settlement of any claim under the Contract, covered by any Change Order, shall be determined by the methods set forth herein. The PROJECT MANAGER may change the plans and specifications, character of the Work, or quantity of Work provided the total arithmetic dollar value of all such changes, both additive and deductive, does not exceed twenty-five percent (25%) of the Contract price. Should it become necessary to exceed this limitation, the change shall be by written Supplemental Agreement between the CONTRACTOR and the CITY, which shall be executed by a Change Order.

A. LUMP SUM

A total sum for the changed Work may be mutually determined by the PROJECT MANAGER and the CONTRACTOR. The CONTRACTOR shall furnish a breakdown of the costs satisfactory to the PROJECT MANAGER, of the proposed lump sum, in complete accordance with C through J of this Article. Such lump sum costs shall be full and final compensation as described in D of this Article. All cost proposals for lump sum Change Orders shall be presented in accordance with C through J of this Article.

B. COST REIMBURSEMENT (TIME AND MATERIALS) WORK

The costs of all changed Work submitted under the cost reimbursement (time and materials) method shall be formulated in accordance with the provisions of C through J of this Article.

Additionally, if the method or amount of payment cannot be agreed upon prior to the beginning of the Work, the PROJECT MANAGER may issue a unilateral Change Order in the amount determined reasonable by the PROJECT MANAGER for the changed Work and direct the CONTRACTOR to proceed with the changed Work or the PROJECT MANAGER may direct in writing that the Work be done on a cost reimbursement (time and materials) basis, and the CONTRACTOR shall provide all labor, equipment, and materials necessary to complete the Work in a satisfactory manner and within a reasonable period of time. For Work performed, payment shall be made for the documented actual cost, in accordance with the following provisions.

1. Labor, up to and including general foremen, who are directly assigned to the changed Work. Employees identified as superintendents shall not be charged as labor on changed Work, but shall be covered under overhead costs. These costs shall include actual documented payroll costs including wages, payroll taxes as established by law (i.e., FICA, Federal and State Unemployment Taxes), fringe benefits as established by negotiated labor agreements, and any insurance costs (such as Worker's Compensation and General Liability Insurance but shall not include Automobile Liability Insurance, OCIP coverage, or any other insurance costs which are provided for in B.6 below which are currently assessed against labor costs. A detailed breakdown of the subcomponents of labor costs, by all crafts shall be submitted to the PROJECT MANAGER, by the CONTRACTOR and all SUBCONTRACTORS, for approval, as part of the documentation of labor costs, within forty-five (45) days after issuance of the Notice to Proceed. No other subcomponents of labor costs shall be considered, unless approved in writing by the PROJECT MANAGER.

2. Materials - The cost of materials used in performing the changed Work will be the cost, including sales tax, to the purchaser, whether CONTRACTOR, Subcontractor or other forces, from the supplier thereof, except as the following are applicable:

    a. Cash or trade discounts available to the purchaser shall be credited to the CITY notwithstanding the fact that such discounts may not have been taken by the CONTRACTOR.

    b. For materials secured by other than a direct purchase and direct billing to the purchaser, the cost will be deemed to be the price paid to the actual supplier as determined by the PROJECT MANAGER. Markup, except for actual costs incurred in the handling of such materials, will not be allowed.

    c. Payment for materials from sources owned wholly or in part by the purchaser shall not exceed the price paid by the purchaser for similar materials from said sources on Contract items or the current wholesale price for such materials delivered to the job site, whichever price is lower.

    d. If, in the opinion of the PROJECT MANAGER, the cost of materials is excessive, or the CONTRACTOR does not furnish satisfactory evidence of the cost of such materials, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned, delivered to the job site less cash or trade discount. The CITY reserves the right to furnish materials for the Work and no claim shall be made by the CONTRACTOR for costs and profit on such materials.

e. For the purposes of this Article, a "Supplier" is defined as any person or persons, firm or business, who supplies materials, of construction and/or permanent equipment, but who does not perform any portion of the Work of the Contract on site, for the CONTRACTOR, except that labor or labor supervision which may be required by some manufacturers as part of their equipment installation for warranty or other purposes.

3. EQUIPMENT COSTS, including ownership, lease or rental costs, as well as operating costs, for individual equipment units whose replacement value is in excess of $1,000. Transportation and set up costs shall be included, but only if the equipment is imported to the worksite solely to perform Work on the changed Work included in the Change Order and the CONTRACTOR can demonstrate that the changed Work cannot or could not be performed economically with equipment already at the site. Equipment costs shall be determined in accordance with the requirements set forth in H of this Article.

4. SUBCONTRACTOR COSTS, provided that such costs are direct costs to the CONTRACTOR for performing the changed Work as set forth in E of this Article.

5. BOND COSTS on the incremental change in the value of the Contract shall be determined and paid for as set forth in I.1 of this Article.

6. INSURANCE COSTS (other than labor insurance or OCIP coverage) shall be determined and paid for as set forth in I.2 of this Article.

C. GENERAL

1. It is the intent of the CITY to settle all Change Orders full and final at the time the Change Order is issued. Therefore, the following paragraph will be incorporated, in writing, on all Change Orders.

> "The compensation (time and cost) set forth in a Change Order comprises the total compensation due the CONTRACTOR, all Subcontractors, and all Suppliers, for the Work or change defined in the Change Order, including impact on unchanged Work. By signing the Change Order, the CONTRACTOR acknowledges and agrees on its behalf and on the behalf of all Subcontractors, and all Suppliers, that the stipulated compensation includes payment for all Work contained in the Change Order, plus all payment for the interruption of schedules, extended field overhead costs, delay, and all impact, ripple effect or cumulative impact on all other Work under this Contract. The signing of the Change Order indicates that the Change Order constitutes full mutual accord and satisfaction for the change, and that the time and/or cost under the Change Order constitutes the total adjustment to price or time or performance owed the CONTRACTOR, all Subcontractors, and all Suppliers as a result of the change. The CONTRACTOR, on behalf of himself, all Subcontractors, and all Suppliers, agrees to waive all rights, without exception or reservation of any kind whatsoever, to file any further claim related to this Change Order. No further claim or request for adjustment of any type, excepting only bond and insurance cost as set forth in these General Requirements of the Contract Documents for any reasonably foreseeable cause shall arise out of or as a result of this Change Order or the impact of this Change Order on the remainder of the Work under this Contract."

2. Costs which shall not be paid in Change Orders under this Contract include, but are not limited to, interest costs of any type; claim preparation or filing costs; legal expenses; the costs of preparing or reviewing proposed Change Orders or Change Order proposals; lost revenue; lost profits; lost income or earnings; rescheduling costs; costs of idled equipment when such equipment is not at the site or has not yet been employed on the Work; lost earnings or interest on unpaid retainage; claims consulting costs; and the costs of corporate officer or staff visiting the site; any compensation due to the fluctuation of foreign currency conversion or exchange rates; loss of other business; changes in taxes or increased tax rates of any kind or any costs identified as unallowable under the provisions of the Federal Acquisition Regulations.

3. Extensions of time shall be based solely upon the effect of delays to the Work as a whole. Extensions of time shall not be granted for delays to the Work, unless the CONTRACTOR can clearly demonstrate, through analysis of the current updated schedule, that the delay to the Work as a whole arose or will arise from causes other than normal weather, beyond the control and without fault or negligence of the CONTRACTOR, or any Subcontractor, at any tier, and that such delays did or will, in fact, delay the progress of the Work as a whole. The CONTRACTOR shall not be entitled to a time extension unless it submits a Time Impact Analysis which is a calculation of the extent of the delay to the end date of the Work and which shows that the Work has been or will be extended beyond the current Contract completion date. A Time Impact Analysis is an estimating procedure which utilizes the networking techniques (fragnets) and a written analysis of the facts associated with the alleged delay to demonstrate the effect of the alleged delay on the critical path of the schedule. A "fragnet" is defined as a sequence of new activities and/or activity revisions that are proposed to be added to the existing current updated schedule to demonstrate (mathematically and graphically) the influence of the alleged delay on the end date of the Work and shall be the sole method for incorporating delays and impacts into the schedule. The objective of a Time Impact Analysis is to pinpoint, isolate, and quantify all time impact associated with a specific issue and determine its time relationship to past or current delays. Time extensions shall not be allowed for delays to parts of the Work that are not on the critical path of the currently approved monthly updated Project Schedule. Time extensions shall not be granted, nor delay damages of any kind whatsoever paid to the CONTRACTOR, until all available float, slack, or contingency time on the Project is used and the end date of the Work is moved beyond the current, adjusted Contract completion date.

4. The CONTRACTOR'S Cost Breakdowns submitted under the lump sum method described in paragraph A and its Change Order Quotations submitted under the cost reimbursement (time and materials) method described in paragraph B (including without limitation requests for cost reimbursement for delay, disruption, hindrance and interference associated with extras, changes, additions or deletions) shall be itemized in a manner that, with mathematical certainty and without reliance upon probabilities or inferences, segregates the direct, actual reimbursable costs associated with each individual extra, change, addition, deletion and (on an event-by-event basis) each individual delay or disruption event. Such Change Order Cost Quotations shall not be based, in whole or in part, upon any methodology (such as "total cost" or "modified total cost" methodologies) that purports to calculate the CONTRACTOR'S additional costs of performance of the extra, change, addition or deletion (including without limitation the additional costs of delay, disruption or other impact) based on the difference between CONTRACTOR'S total actual Project or line item costs (with or without fee) and its original bid estimate for the Project or any original bid estimate line item. In connection with the foregoing, CONTRACTOR represents and warrants that it has the ability to generate and maintain complete and accurate cost accounting records that will reflect:

    a. The actual costs incurred or saved for each individual item of extra work, change, addition, deletion (including without limitation any costs of associated delay, disruption, interference, hindrance and the cumulative impact of each extra, change, addition, deletion on other parts of the Work); and,

    b. On an event-by-event basis, the effect of each delay or disruption that forms the basis of each request for extension of time, regardless of their scope, number, complexity, cumulative effect, or time of issuance or occurrence.

5. Except as provided in Article 51, COMPENSATION FOR DELAY, DISRUPTION, UNANTICIPATED OVERHEAD of the General Conditions, CONTRACTOR shall have no right to recovery of any compensation, costs, expenses or damages resulting from delay, disruption, interference, or hindrance in the performance of the Work (including without limitation interruption of schedules, excess or extraordinary extended field and indirect overhead costs, loss of productivity and the impact, ripple or cumulative effect on other Work).

6. CONTRACTOR waives any claim or rights and remedies based on abandonment, quantum merit, rescission or other similar legal theory by reason of any of the following circumstances, which the CONTRACTOR acknowledges and agrees are within the reasonable contemplation of the parties:

   a. Extras, changes, additions and deletions to the Work after execution of the CONTRACT and issued from time to time throughout the period of construction, regardless of their scope, number, cumulative value, or complexity, to correct errors, omissions, conflicts, and ambiguities in the Contract Documents, or to implement discretionary changes the scope of Work requested by the CITY;

   b. The issuance and performance of extras, changes, additions and deletions in a manner that is not in sequence with the as-built or as-planned progress of the Work;

   c. Changes due to Differing Site Conditions;

   d. Suspensions of the Work or parts thereof, or limitations on access to portions or all of the Work, for the convenience of CITY or in the interests of the Project;

   e. Delay or disruption to the Work due to failure of the CITY, PROJECT MANAGER or INSPECTOR to timely perform any contractual obligation.

D. OVERHEAD COSTS

To the costs under Paragraphs C.1., C.2., and C.3., above, an added fixed fee to provide compensation for all overhead costs shall be allowed as established in Paragraph E.1 below. This overhead rate is not applicable to the costs under Paragraphs C.4. through C.6. above.

The overhead rates determined in Paragraphs 1 and 2 below shall be applied to all additive and deductive Change Orders, of this Article.

1. GENERAL AND ADMINISTRATIVE OVERHEAD RATE:

   a. An allowance of eight percent (8%) for overhead costs will be allowed to the CONTRACTOR, only when CONTRACTOR uses its own organization to perform a part of the Work under the Change Order based upon the value of labor, material and construction equipment required to accomplish said part of the change Paragraphs C.1., C.2., and C.3.

   b. An allowance of twelve percent (12%) for overhead costs will be allowed to the Subcontractors (at any tier), only when Subcontractors use their own organization to perform a part of the Work under the Change Order, based upon the value of labor, material, and construction equipment required to accomplish said part of the change Paragraphs C.1., C.2.,and C.3.

   c. Overhead percentages shall be considered to include all insurance costs other than specifically mentioned in this Article, all field and office supervisors and assistants, all onsite project administration, security costs, the cost of small tools and consumables, incidental job burdens, and all general home office expenses and no separate allowance will be made therefore. Assistants to field and office supervisors include all clerical, stenographic, and general office help. Incidental job burdens include, but are not necessarily limited to, office equipment and supplies, temporary toilets, telephone and conformance to OSHA requirements. Items such as, but not necessarily limited to, review and coordination, estimating, PROJECT MANAGER, scheduling, and expediting relative to Change Orders, and updating and furnishing Record Drawings to incorporate changes, are associated with field and office supervision and are considered to be included in the CONTRACTOR's overhead percentage set forth herein.

   d. For those Change Orders with both additive and deductive costs, the overhead rate shall be determined by the net amount of the additive and deductive work.

E. SUBCONTRACTOR COSTS

1. Where Work under the Change Order is performed in whole or in part by a Subcontractor, at any

tier, the cost of the Change Order shall include the cost to the Subcontractor. Subcontractor's costs shall be presented in strict accordance with A., B., and C., above, and D. through J. as applicable.

2. An additional fixed fee of six percent (6%) based upon the sum of the costs of all Subcontractors, at any tier, involved in the Work of the Change Order, shall be allowed to the CONTRACTOR for profit and General and Administrative Overhead Costs. An additional fixed fee of six percent (6%) shall be allowed to first tier Subcontractors for profit and General and Administrative Overhead costs for any Work involved in the Change Order that is performed by Sub-subcontractors. No additional fixed fee shall be allowed for Change Order Work performed by Subcontractors to Sub-subcontractors, at any tier.

F. PROFIT

To the costs of C.1., C.2., and C.3., above, plus applicable overhead costs from D.1.a. or D.2.b., if a SUBCONTRACTOR at any tier above, an added fixed fee for Profit shall be allowed as established herein.

1. An allowance of ten percent (10%) for Profit for the party performing the Work under the Change Order, shall be included on all Change Orders that are negotiated full and final in advance of any changed Work being performed.

2. An allowance of five percent (5%) for Profit for the party performing the Work under the Change Order shall be included on all Change Orders where any portion of the Work is performed before the Change Order is executed full and final by both the PROJECT MANAGER and the CONTRACTOR.

3. No added fixed fee for Profit shall be allowed for any cost other than those costs under C.1., C.2., and C.3., of this Article, if Subcontractor at any tier above. No fixed fee for profit shall be allowed on the costs of C.4., C.5., C.6., or F of this Article.

4. On Change Orders with both additive and deductive cost components, the profit allowance on net additive Change Orders shall be based on the Change Order amount after overhead rates have been added. The profit allowance shall be as set forth in Paragraphs 1 and 2 above as applicable. No profit allowance shall be included for net deductive Change Orders.

G. CITY FURNISHED MATERIALS AND EQUIPMENT

The CITY reserves the right to furnish such materials and equipment as it deems expedient, and the CONTRACTOR shall have no claim for profit or overhead on the cost of such materials and equipment.

H. EQUIPMENT COSTS

Full rental costs for rental or leased equipment shall not exceed the rates as set forth in the Rental Rate Blue Book (the Blue Book) published by Dataquest, Inc., Palo Alto, California, as adjusted to the regional area of the Work under this Contract. Owned equipment costs shall not exceed the rates listed in the Cost Reference Guide (the CRG) for Construction Equipment, published by Dataquest, Inc., Palo Alto, California. The most recent published edition in effect at the commencement of actual equipment use shall be used.

1. RENTED OR LEASED EQUIPMENT

a. For equipment rented or leased (including lease with purchase option) in arm's length transactions from outside vendors, the CONTRACTOR shall be paid the actual invoiced, rented or leased rates provided that the invoiced lease or rental rates do not exceed the rates set forth in the Blue Book. Arm's length rental or lease transactions are those in which the firm involved in rental or lease of such equipment is not associated with, owned by, have common management, directorship, facilities, or stockholders with the firm renting the equipment. Submittal by a CONTRACTOR of a rental or leased invoice from the lessor will be prima facie proof of compliance with the above. However, such invoices are not conclusive proof; if questioned, the burden of proof remains with the CONTRACTOR. In no

event shall the leased equipment rate billed to the CITY be at rates exceeding those prescribed in the following table:

Actual Usage (Change Order & Contract Work Combined	Blue Book Payment Category
Less than 8 hours	Hourly Rate
8 or more hours but less than 7 days	Daily Rate
7 or more days but less than 30 days	Weekly Rate
30 calendar days or more	Monthly Rate

b. When in Use:

Actual equipment use time documented by the INSPECTOR or PROJECT MANAGER shall be the basis that the equipment was utilized on the changed Work and paid for under the Change Order. In addition to the lease or rental rate, equipment operating costs shall not exceed the estimated hourly operating rate as set forth in the Blue Book. The hours of operation shall be based upon actual equipment usage on the changed Work as recorded by the INSPECTOR or PROJECT MANAGER. For multiple shift Work sequences, the allowable equipment rate shall not exceed fifty percent (50%) of the base rate, for second or third shifts.

c. When Idle:

Idle equipment is equipment on site and necessary to perform the Work under the change but not in actual use due solely to the impact of the changed Work. Equipment operating costs due to idle time, documented by the INSPECTOR or PROJECT MANAGER, shall be paid at the rate determined in Paragraph I above. Idle time shall include a reasonable time allowance to and from the Project site.

2. OWNED AND OTHER EQUIPMENT

a. Equipment rates for owned equipment or equipment provided in other than arm's length transactions will not exceed the total hourly costs as set forth in the Cost Reference Guide. Adjustments to the listed rates provided for under the section of the Cost Reference entitled "Cost and Production Formulas" shall not be allowed. Except as noted herein below, this equipment hourly rate plus the estimated operating cost per hour from the Cost Reference Guide will be paid for each hour the equipment actually performs Work on the changed Work. Daily records listing the equipment units and their respective operators, identification code, and actual usage on the Work under the Change Order, as certified at the end of each Work day (or work shift if the Work is being performed in multiple work shift sequence) by the INSPECTOR or PROJECT MANAGER shall be the record upon which actual equipment use shall be based. For multiple shift Work sequences, the allowable equipment rate shall not exceed the hourly depreciation and operating costs listed in the Cost Reference Guide, for second or third shifts. It is agreed that this rate shall represent payment in full for all the CONTRACTOR's direct costs.

b. When Idle:

Equipment necessary to be on the site to complete the Work, but not in actual use due solely to the impact of the changed Work, shall not exceed fifty percent (50%) of the hourly rates identified in the "Ownership" column under the heading "Hourly Operating and Overhaul Expenses" set forth in the Cost Reference Guide, provided that its presence and necessity on the site has been documented by the INSPECTOR or PROJECT MANAGER, and further provided that the equipment was idled solely by actions of the CITY. Idle equipment time will only be paid as a function of delays specifically directed or caused by the CITY's actions. In no event shall the idle time claimed in a day for a particular piece of

equipment exceed the normal Work schedule established for the Project - usually eight (8) hours per day or forty (40) hours per week, and excluding Saturdays, Sundays, and holidays. For multiple shift Work sequence, the allowable idle equipment rate shall not exceed fifty percent (50%) of the hourly depreciation costs listed in the Cost Reference Guide, for second or third shifts. It is agreed that this rate shall represent payment in full for all the CONTRACTOR's direct costs.

3. EQUIPMENT HAULAGE AND SET UP COSTS

   a. Documented and actual equipment haulage and set up costs shall be paid for, if applicable as set forth in C of this Article.

4. OTHER EQUIPMENT COST GUIDES

   a. In the event that a piece of equipment used on a Change Order is not listed in the Blue Book or the CRG, costs may be derived from the Associated General CONTRACTOR's of America Equipment Ownership Guide, the Associated Equipment Dealers Guide, or the Equipment Rate Guide published by the U.S. Army Corps of PROJECT MANAGERs as adjusted appropriately for the type of Work and use and the regional area of the Work under this Contract.

I. BONDS AND INSURANCE COSTS

1. Bond premium adjustment, consequent upon the Change Orders issued by the PROJECT MANAGER, shall be paid at the time of completion of the Work and will not be included in individual Change Orders. Additional bond costs on the incremental value of all Change Orders issued under the Contract shall be paid for through issuance of a separate Change Order upon receipt, by the PROJECT MANAGER, or a fully paid invoice from the CONTRACTOR's and Subcontractor's sureties. No allowances for overhead or profit shall be included in such separate Change Order.

2. Insurance costs, other than insurance assessed on labor costs, consequent upon the Change Orders issued by the PROJECT MANAGER, shall be paid for by the PROJECT MANAGER at the time of completion of the Work and will not be included in individual Change Orders. Additional insurance costs on the incremental value of all Change Orders issued under the Contract shall be paid through issuance of a separate Change Order upon receipt of a fully paid invoice from the CONTRACTOR's and Subcontractor's insurance carriers. On Contracts where the duration exceeds 365 calendar days from Notice to Proceed, the CONTRACTOR and its Subcontractors will be allowed to submit such fully paid invoices at the end of every year after issuance of the Notice to Proceed, and again at the end of the Project.

J. RECORDS

1. The CONTRACTOR's records shall make clear the distinction between the direct costs of Work paid for under the Change Order and the costs of the base scope Work under the Contract. Furnish the INSPECTOR with daily report sheets in duplicate of each day's cost reimbursement Work no later than the working day following execution of said Work. The daily report sheets shall itemize the materials and equipment used in the Work. The daily report sheets shall provide for identification and classification of workers; the hourly rates of pay and hours worked; and the size, type, identification number, and hours operated for each piece of equipment. The Daily Report sheets shall itemize the materials used in the Work.

2. Substantiate material charges by copies of vendor's invoices. Submit such invoices with the daily report sheets or, if not available at that time, submit with subsequent daily report sheets. Sign daily report sheets by the CONTRACTOR or his authorized agent and the INSPECTOR at the time of submittal.

3. On a weekly basis submit to the PROJECT MANAGER an approximate accounting of the Contract expended on the cost reimbursement Work to date and an estimate of the Impact to the time of

performance of Work.

28. PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA

A. If the PROJECT MANAGER determines that any price, including profit or fee, negotiated in connection with any Change Order under this contract, or any cost reimbursable under this Contract, was increased because:

1. The CONTRACTOR furnished cost or pricing data which was not accurate, complete, and current as certified in the CONTRACTOR's Certificate of Current cost or Pricing Data;

2. A Subcontractor or prospective Subcontractor furnished cost or pricing data was submitted in support of a subcontract cost estimate furnished by the CONTRACTOR but which was not accurate, complete, and current as of the date certified in the CONTRACTOR's Certificate of Current Cost or Pricing Data.

3. The CONTRACTOR or a Subcontractor or prospective Subcontractor, at any tier, furnished any data not within paragraph 1 or 2 above, which was not accurate as submitted;

then price shall be reduced accordingly and the Contract shall be modified in writing as may be necessary to reflect such reduction. However, any reduction in the Contract price due to defective subcontract data of a perspective Subcontractor, when the subcontract was not subsequently awarded to such Subcontractor, will be limited to the amount (plus applicable overhead and profit allowances) by which the actual subcontract or actual cost to the CONTRACTOR if there was no Subcontract, was less than the prospective subcontract cost estimate submitted by the CONTRACTOR; provided that the actual subcontract price was not affected by defective cost or pricing data.

B. The following certification from the CONTRACTOR is required to be provided on all Change Order quotations or requests for adjustment in excess of $10,000.

1. CERTIFICATION OF CURRENT COST AND PRICING DATA.

2. This is to certify that, to the best of my knowledge and belief, cost or pricing data submitted in writing, or specifically identified in writing if actual submission of the data is impracticable, to the CITY in support of [CONTRACTOR is to insert appropriate identification such as Change Order quotation, proposal quotation, price adjustment, etc.] are accurate, complete, and current as of [CONTRACTOR to insert date].

CONTRACT NO.: _____

PROPOSED CHANGE ORDER NO.: _____

FIRM: _____

NAME: _____

TITLE: _____

DATE: _____

SIGNATURE: _____

29. PAYMENT FOR MATERIALS OR EQUIPMENT DELIVERED AND STORED ON THE JOB

A. Partial payment for materials or equipment delivered to the worksite and stored shall be subject to the following conditions:

1. Payment will not be made for any materials or equipment unless each individual piece of the

material or equipment becomes a permanent part of the Work and has a value of more than $5,000.

2. The material or equipment is required by the specifications, and is specifically manufactured for the Project and could not readily be utilized or diverted to another job.

3. The CONTRACTOR shall provide secure storage facilities as required in STORAGE OF MATERIALS AND EQUIPMENT of these General Requirements.

4. No payment will be made for living or perishable Plant material, or for degradable materials such as rock, sand, cement, or for reinforcing steel, miscellaneous piping, off the shelf and catalog items, and similar items of construction, until they are incorporated into the Work.

5. The payment for the materials or equipment shall not exceed ninety-five percent (95%) of the invoice cost. The amount paid shall not exceed the total amount of the bid item less an amount estimated for installation.

6. Include cost loaded activities for the materials and equipment, for which payment will be requested, in the Schedule of Values. The CONTRACTOR shall provide all documentation necessary to establish the cost of the materials or equipment.

7. Suppliers, fabricators, or manufacturers who intend to furnish materials or equipment to the CITY must file a notice with the CITY in accordance with the State of California lien laws.

8. Each supplier, fabricator or manufacturer shall file a list, with the INSPECTOR, indicating the materials or equipment to be furnished to the Project. They shall also provide a notarized declaration from their company indicating the employees authorized to sign an unconditional release for the company. The persons signing the declaration and the unconditional release shall be identified by name and title.

9. Each request for payment shall include a notarized Unconditional Release, which conforms to the California Civil Code. The release shall be signed by an authorized employee identified in the corporate declaration. The request shall include the suppliers invoice for the materials or equipment.

10. Absorb costs incurred to meet the requirements of this Article without modification to the Contract amount.

30. PAYMENT FOR MATERIALS OR EQUIPMENT STORED OFF THE JOBSITE

A. Partial payment for materials or equipment stored off the jobsite shall be subject to the following conditions:

1. Payment will not be made for any materials or equipment unless each individual piece of the material or equipment becomes a permanent part of the Work and has a value of more than $5,000, unless otherwise approved by the city.

2. The materials or equipment is required by the specifications, and is specifically manufactured for the Project and could not readily be utilized or diverted to another job.

3. No payment will be made for living or perishable Plant material, or for degradable materials such as rock, sand, cement, or for reinforcing steel, miscellaneous piping, off the shelf and catalog items, or similar items, until they are incorporated into the Work.

4. Payment for the materials or equipment stored shall not exceed sixty percent (60%) of the invoice cost of the materials or equipment. Percent of the invoice paid shall be at the discretion of the CITY. The amount paid shall not exceed the total amount of the bid item less an amount estimated for installation.

5. Include cost loaded activities for the materials and equipment, for which payment will be requested, in the Schedule of Values. Provide documentation necessary to establish the cost of the materials or equipment.

6. Suppliers, fabricators, or manufacturers who intend to furnish materials or equipment to the CITY must file a notice with the CITY in accordance with the State of California lien laws.

7. Each supplier, fabricator or manufacturer shall file a list, with the INSPECTOR, indicating the materials or equipment to be furnished to the Project. They shall also provide a notarized declaration from their company indicating the employees authorized to sign an unconditional release for the company. The persons signing the declaration and the unconditional release shall be identified by name and title.

8. Each request for payment shall include a notarized Unconditional Release, which conforms to the California Civil Code. The release shall be signed by an authorized employee identified in the corporate declaration. The request shall include the suppliers invoice for the materials or equipment.

9. Store the materials and equipment as required in STORAGE OF MATERIALS AND EQUIPMENT of these General Requirements, in a bonded warehouse or facility approved by the INSPECTOR. The storage site shall be located within 50 miles of the geographic limits of the CITY. The materials and equipment shall be physically segregated from all other materials or equipment within the facility and shall be identified as being the "PROPERTY OF THE CITY OF LOS ANGELES". Exercise measures necessary to ensure preservation of the quality, quantity, and fitness of such materials or equipment and perform the manufacturers recommended maintenance of the materials or equipment. Inspect the materials and equipment, and submit a monthly written report to the INSPECTOR listing the equipment stored, results of their inspection, and the maintenance performed.

10. Grant the INSPECTOR and the PROJECT MANAGER access to the storage facility at any time and assist the INSPECTOR and the PROJECT MANAGER in conducting a full view, piece by piece, inventory of all such material or equipment.

11. Provide additional insurance necessary to insure the materials or equipment against loss of damage. The insurance provided shall be provided as stated in Article 37, INSURANCE of the General Conditions. The insurance shall cover the material or equipment, while stored at the approved site, while in transit to the project site, while being off-loaded at the site and until the material or equipment is incorporated into the Work and the Contract is accepted by the BOARD.

12. Be responsible for damage to, defects therein, misfabrication thereof, or loss of the materials or equipment.

13. Be responsible for any resulting Project delays or consequential damages as if the CONTRACTOR were the owner of the material or equipment until it is incorporated in the Work and accepted by the CITY.

14. Absorb any and all cost incurred to meet the requirements of this Article without modification in the Contract amount.

15. Present the storage arrangements in writing and sign a Security Agreement, which shall be submitted to the INSPECTOR for approval by the CITY ATTORNEY. This agreement shall set forth the terms of ownership, storage and insurance necessary to insure the material or equipment against damage or loss.

31. PAYMENT FOR PERMITS

See PAYMENT FOR MOBILIZATION of these General Requirements.

32. AUDIT AND ACCESS TO RECORDS

A. Maintain books, records, documents and other evidence directly pertinent to performance of Work under this Contract in accordance with generally accepted accounting principles and practices consistently applied. Also maintain the financial information and data used by the CONTRACTOR in the preparation or support of cost submissions required for this Contract, or any Modifications or claims, and a copy of the cost summary submitted to the CITY. The CITY authorized representatives shall have access, at all times

during normal business hours, to such books, records, documents and other evidence for the purpose of inspection, audit and copying. Provide proper facilities for such access and inspection.

B. Agree to make A through G of this Article applicable to this Contract and Modifications or claims affecting the Contract price. Agree to include A through G of this Article in all his contracts and all tier Subcontracts in excess of $5,000, and to make A through G of this Article applicable to Modifications and claims related to Project performance.

C. Audits conducted under this Article shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or audit agency.

D. Agree to the disclosure of information and reports resulting from access to records under A and B of this Article, to the CITY and affected agencies.

E. Records under A and B of this Article shall be maintained and made available during performance of Work under this Contract until final payment, or until settlement of all disputes, claims, or litigation, whichever occurs later. In addition, those records which relate to any portion of this Contract, to any Modification, to any dispute, to litigation, to the settlement of claims arising out of such performance, or to costs or items to which an audit exception has been taken, shall be maintained and made available until final payment or until final resolution of such dispute, litigation, claim or exception, whichever occurs later.

F. This right of access Article applies to financial records pertaining to this Contract and all Contract Modifications. In addition this right of access applies to all records pertaining to all contracts, contract modifications, and contract amendments:

1. To the extent the records pertain directly to Contract performance;

2. If there is any indication that fraud, gross abuse or corrupt practices may be involved; or

3. If the Contract is terminated for default or for convenience.

G. Access to records is not limited to the required retention periods. The authorized representatives designated in A of this Article shall have access to records at any reasonable time for as long as the records are maintained.

H. Provided that CITY has made demand for access or audit pursuant to this Article, CONTRACTOR's compliance with provisions A through G of this Article shall be a condition precedent to maintenance of any legal action or proceeding by the CONTRACTOR against the CITY and to CONTRACTOR's right to Progress or Final Payment. Without limitation to the foregoing or to any other provisions for withholding set forth in the Contract Documents, CITY shall have the right, in its sole discretion and in addition to any right of withholding of retention, to further withhold from any payment to CONTRACTOR a sum of up to ten percent (10%) of the total amount set forth in CONTRACTOR's current, unpaid Application(s) for Payment, until CONTRACTOR has complied with any outstanding and unsatisfied request by CITY for audits under this Article. Upon CONTRACTOR's compliance with this Article, any monies withheld pursuant to this Paragraph solely due to CONTRACTOR's failure to permit an audit requested by CITY shall be released to CONTRACTOR.

I. CONTRACTOR hereby consents and agrees that any failure by CONTRACTOR to provide access to records as provided in A through G of this Article shall be specifically enforceable by issuance of a preliminary and/or permanent mandatory injunction by a court of competent jurisdiction based on affidavits submitted to such court, without the necessity of oral testimony, to compel CONTRACTOR to permit access and inspection of the records or to require delivery of the records to CITY for inspection.

MISCELLANEOUS

33. INTERFACE/COORDINATION REQUIREMENTS

A. Vehicular and pedestrian traffic adjacent to the laydown area and/or within the jobsite must be maintained. If an existing street in the CONTRACTOR's work area is to be demolished or obstructed, the CONTRACTOR shall be responsible for providing access through or around the effected area, including signs, barricades, and lights, as approved by the PROJECT MANAGER and any local agencies having

jurisdiction over any public access areas. The CONTRACTOR shall follow WATCH standards and City of Los Angeles Department of Transportation Worksite Traffic Control Plans for all traffic, including a minimum traffic lane dimensions for vehicles and pedestrians.

B. The CONTRACTOR shall not park any vehicles, including concrete, hauling and delivery trucks, in any street at any time unless approved by the PROJECT MANAGER. Access must be maintained at all times for emergencies, sampling, equipment operations, maintenance and like items.

C. Before altering any vehicular or pedestrian access, the CONTRACTOR shall notify the PROJECT MANAGER thirty (30) days in advance on forms provided by the PROJECT MANAGER. The CONTRACTOR shall then request the alteration on forms provided by the PROJECT MANAGER. Requests shall include reasons for the alteration, times, boundary limits, special safety measures, proposed traffic rerouting with widths of such route, and a map detailing the above. Such requests shall be submitted to the PROJECT MANAGER not less than fifteen (15) days before the requested date of the access alteration. If any of the information changes, an additional fifteen (15) days may be required after the changes are brought to the attention of the PROJECT MANAGER. Approval when granted, will always be conditional. Final approval of the request, including date and time, will be given three (3) days in advance. The CITY retains the right to ticket and impound vehicles blocking traffic.

34. PROGRESS PHOTOGRAPHS

A. As directed by the PROJECT MANAGER, take a minimum of 4 views of each Project worksite location, at 14 days intervals during the entire period of Contract Work. Take the first photographs before start of construction operations at the jobsite. Take the final photographs when all Contract Work has been completed and accepted by the CITY regardless of time intervals since previous photographs were taken. View locations shall be as directed by the PROJECT MANAGER.

B. Provide 4, 8-inch by 10-inch color prints of each photograph on double weight glossy paper with each monthly progress report. Clearly label each print with the name of the job, view location, date of exposure and CONTRACTOR's name. Photographs and prints shall be of professional quality.

C. Submittal of progress photographs shall be a condition precedent to the making of the monthly payments.

35. COMMUNITY RELATIONS

A. The contractor shall cooperate with the City in conducting a public relations program for the project. The program will provide information to address concerns and complaints and to promote a positive project image. Contractor cooperation shall include the following:

1. The Project Manager shall attend public meetings, when requested by the PROJECT MANAGER.

2. Provide safe access for on-site community meetings and tours, on average twice per month per work site. Tours will be conducted by the PROJECT MANAGER and will be coordinated with the Contractor to limit interference with the work.

3. Do not provide any information directly to the public or news media without approval of the PROJECT MANAGER.

36. PROJECT CLOSEOUT

A. CLOSEOUT TIMETABLE

The CONTRACTOR shall establish dates for equipment testing and acceptance periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the CITY, the PROJECT MANAGER, and their authorized representatives sufficient time to schedule attendance at such activities.

B. FINAL SUBMITTALS

1. The CONTRACTOR, prior to requesting final payment, shall obtain and submit the following items to the PROJECT MANAGER.

a. Written guarantees, where required.

b. Technical manuals and instructions.

c. Maintenance stock items; spare parts; special tools.

d. Completed record drawings.

e. Certificates of inspection and acceptance by local governing agencies having jurisdiction.

f. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

C. FINAL CLEANUP

The CONTRACTOR shall perform all tasks specified in REMOVAL, CLEANUP, AND DEMOBILIZATION of these General Requirements.

D. MAINTENANCE AND GUARANTEE

1. The CONTRACTOR shall make all repairs and replacements promptly upon receipt of written order from the PROJECT MANAGER. If the CONTRACTOR fails to make such repairs or replacements promptly, the PROJECT MANAGER reserves the right to do the work and the CONTRACTOR and his surety shall be liable to the CITY for the cost thereof.

2. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the CONTRACTOR which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work.

E. BOND

1. The CONTRACTOR shall provide a bond to guarantee performance of the provisions contained in Article 31 and Article 37 (Paragraph K) of the General Conditions, Article 24 of these General Requirements, Paragraph D of this Article.

ATTACHMENTS

ATTACHMENT TO GENERAL REQUIREMENTS ARTICLE 27

CHANGE ORDER COST QUOTATION FORM **DATE __/__/20__**

Estimate Summary for Prime CONTRACTOR Total Costs

W.O. _____ C.O. _____ CONTRACT #_____

ESTIMATOR_____P.E._____

	LABOR PER General Requirements 27		
	Journeyman **Supervision**		
	_____ MH **_____ MH**	**$**	
	2) MATERIALS (and Other Taxables)		
	Including Sales Tax	**$**	
	3) EQUIPMENT(Rented, Leased, and/or OWNED)		
	Blue Book and/or CRG, including Sales Tax if applicable	**$**	
SUBTOTAL	**(A) _____ 1) + 2) + 3)**		**$**
	4) G and A OH per General Requirements 27		
	Show calculations on separate sheet	**$**	
SUBTOTAL	**(B)_____ (A) + 4)**		**$**
	5) PROFIT_____% x Line (B)		
	Per General Requirements 27	**$**	
SUBTOTAL	**(C) _____ (B) + 5)**		**$**
	6) SUBCONTRACTS (All Subcontractors)	**$**	
	7) FIXED FEE FOR ALL SUBS 6%		
	Per General Requirements 27	**$**	
SUBTOTAL	**(D) _____ (C + 6) + 7)**		**$**
	8) FIELD OFFICE OVERHEAD:		
	$ _____ X _____ DAYS		
	Exclude if not required	**$**	
	9) SCHEDULING COSTS ($200 Max.)		
	Exclude if not required	**$**	
SUBTOTAL	**(E) _____ (D) + 8) + 9)**		**$**
	10) IMPACT COST, per General Requirements 27		
	Show calculations on separate sheet	**$**	
GRAND TOTAL	**_____ (E) +10)**		**$**

CHANGE ORDER COST QUOTATION FORM

Estimate Summary for Prime CONTRACTOR Total Costs **DATE __/__/20__**

W.O._____ C.O. _____ CONTRACT #_____

ESTIMATOR _____ P.E._____

		LABOR PER General Requirements 27 **Journeyman Supervision** **_____ MH _____ MH**	**$**	
	2)	**MATERIALS (and Other Taxables)** **Including Sales Tax**	**$**	
	3)	**EQUIPMENT(Rented, Leased, and/or OWNED)** **Blue Book and/or CRG, including Sales Tax if applicable**	**$**	
SUBTOTAL	**(A)**	**_____ 1) + 2) + 3)**		**$**
	4)	**G and A OH per General Requirements 27** **Show calculations on separate sheet**	**$**	
SUBTOTAL	**(B)**	**_____ (A) + 4)**		**$**
	5)	**PROFIT _____% x Line (B)** **Per General Requirements 27**	**$**	
SUBTOTAL	**(C)**	**_____ (B) + 5)**		**$**
	6)	**SUBCONTRACTS (ALL SUB-SUBS)**	**$**	
	7)	**FIXED FEE FOR ALL SUB-SUBS 6%** **Per General Requirements 27**	**$**	
SUBTOTAL	**(D)**	**_____ (C + 6) + 7)**		**$**
	8)	**FIELD OFFICE OVERHEAD:** **$ _____ X _____ DAYS** **Exclude if not required**	**$**	
SUBTOTAL	**(E)**	**_____ (D) + 8)**		**$**
		IMPACT COST, per General Requirements 27 **Show calculations on separate sheet**	**$**	
GRAND TOTAL		**FOR SUBCONTRACTOR (E) + 9)** **To Line 6) of Prime CONTRACTOR'S Summary**		**$**

LAS PALMAS SENIOR CENTER
(G1163)

II-1. SUPPLEMENTAL GENERAL REQUIREMENTS
W.O. E1908358

DEPARTMENT OF RECREATION AND PARKS

II-1 SUPPLEMENTARY GENERAL REQUIREMENTS

1.1 GENERAL SCOPE OF WORK:

A. Work in this Contract: All labor, material, and equipment necessary for renovation of the **Las Palmas Senior Center** as noted on the Contract Drawings and in these Specifications (Project Manual) and all other Contract Documents including but not limited to the GENERAL CONDITIONS, GENERAL REQUIREMENTS, City of Los Angeles Department of Building and Safety Soils Report Approval or Correction Letters and Geotechnical Engineering Reports.

B. Contractor shall coordinate with other city vendors who may be performing other work at the site during construction, including but not limited to:
   - DWP water and electrical meter installation and service connections.
   - Sewer and storm drain connection.

C. Contractor shall coordinate with the Department of Building & Safety to schedule and obtain all separate permits, necessary inspections, approvals, and all related fees for the following:
   - Demolition
   - Grading work
   - Electrical, mechanical units, plumbing work
   - Trash enclosure
   - Sewer mainline and connection
   - ADA ramp retaining wall
   - Photovoltaic shade structure

D. Deferred Design Submittals: CONTRACTOR shall be responsible for detailed design, engineering and obtaining permits from Los Angeles Department of Building and Safety and where applicable the Los Angeles City Fire Department for installation of the following items:
   - The photovoltaic shade structure shall be a deferred submittal plan based on the design/performance criteria listed on L801, S303. If an alternative system than the one specified in the plans is used for the photovoltaic shade structure, a supplemental permit and plan check will be required, and all modifications will need approval of structural engineer and Architect of Record. All cost related to the modification and schedule impacts are to be included in base bid.
   - Fire alarm system
   - Storefront systems
   - Mechanical unit rooftop curb and support beam and attachment to structural framing
   - Trellis framing and attachment to steel structure
   - Light poles

E. Contractor will provide a warranty for the minimum of one year on all equipment and workmanship from the date of issuance of the Building and Safety Certificate of Occupancy.

F. Contractor shall provide temporary construction fence at work areas.

G. Contractor to provide equipment and staff for the groundbreaking ceremony.

H. Contractor will only have the identified lots as construction area. Any additional space required for the construction will be the contractor responsibility.

I. Contractor shall install the Department of Recreation and Parks construction signage at the site during construction. Details of the sign will be provided in an addendum.

1.2 CONTRACT PLANS: In addition to provisions noted in the GENERAL CONDITIONS and the GENERAL REQUIREMENTS.

The following are in addition to GENERAL CONDITIONS and GENERAL REQUIREMENTS:
- This Supplementary General Requirements
- Soils Report Approval Letter from the Department of Building and Safety for this project.
- All Geotechnical and Supplementary Geotechnical Engineering Reports, Geotechnical Engineering Division for this project.
- CEQA reports
- Site survey
- Project Specifications. See specifications set.
- Construction Plan Sheets. See plans set.

1.3 PALENTOLOGICAL RESOURCES MONITORING AND TREATMENT PLAN (PRMTP): The prime contractor will provide and implement the requirements specified in the California Environmental Quality Act Notice of Exemption Report, see report for full guidelines including, but not limited to, Paleontological Recommendations Memorandum for the Las Senior Citizen Center Renovation. Paleontological Resources Monitoring and Treatment Plan (PRMTP) must be prepared and implemented prior to any ground disturbance at a depth of greater than 15 feet. The plan should specify the levels and types of mitigation efforts during drilling activities and should also include a description of the professional qualifications required of key staff, communication protocols to be followed during construction, unanticipated discovery protocols, fossil recovery protocols, sampling protocols for microfossils (if required), laboratory procedures, reporting requirements, and curation provisions for any collected fossil specimens.

1.5 GROUNDBREAKING CEREMONY: The groundbreaking ceremony for this project may occur before the Notice-to-Proceed is issued. The contractor shall coordinate with the project manager regarding the ceremony schedule after the award of the contact. The contractor shall prepare, after the award the contract, all submittals for the construction sign and secure all necessary approvals. The contractors shall provide necessary coordination for the groundbreaking ceremony, to occur before or during the construction at a cost not to exceed the amount described in the allowance.

1.6 STORMWATER POLLUTION CONTROL MEASURES FOR CONSTRUCTION ACTIVITIES (APPENDIX A):
This project involves construction activity on less than one acre of disturbed soil. The Contractor must comply with the requirements of Appendix A – Stormwater Pollution Control Measures for Construction Activities, as applicable to sites of less than one acre of disturbed soil.

1.7 A fixed cash allowance has been allocated to each of the following items of the Bid Breakdown (see Bid Proposal). Requirements for each Fixed Cash Allowance Item are referenced below. Overhead and Profit, at the rates listed below, shall be added to the actual invoiced amount.

Bid Item No.	Description	Amount
2.	Allowance for permits	$100,000
3.	Allowance for differing site conditions	$100,000
4.	Allowance for opportunity to partner	$10,000

If these items are not executed, or are only partially executed, or the allowance for any item is not expended or partially expended, then a deductive Change Order shall be issued for the amount that is not expended. If, however, these items are over expended (with ENGINEER'S prior approval), then an appropriate Change Order shall be executed in accordance with the provisions of the GENERAL REQUIREMENTS Section 27 –- CHANGE ORDERS, except for Overhead and Profit wherein the above listed rates shall apply.

1.8 The following supplement modifies the “General Requirements”

- Add Section 01571 “Stormwater Pollution Control Measures for Construction Activities” (Appendix A)
- Add Section 01722 “Surveying” (Appendix A)
- Add Section 01351 “Escrow Bid Documents” (Appendix A)
- Add Section 01116 “Electronic Document Control” (Appendix A)
- Add Section 01115 “Mandatory Provisions” (Appendix A)
- Add Section 01140 “Contractor’s Use of the Premises” (Appendix A)
- Add Section 01212 “Fixed Cash Allowance Items” (Appendix A)
- Add Section 01253 “Differing Site Conditions” (Appendix A)
- Add Section 01311 “Pre-Construction Safety Conference” (Appendix A)
- Add Section 01312 “Project Meetings” (Appendix A)
- Add Section 01321 “Contractor’s Construction Schedule and Reports” (Appendix A)

- Add Section 01322 “Construction Progress Photography” (Appendix A)
- Add Section 01323 “Construction Status Reports” (Appendix A)
- Add Section 01353 “Opportunity to Partner” (Appendix A)
- Add Section 01581 “Project Signs” (Appendix A)
- Add Section 01611 “Guaranty / Warranty” (Appendix A)
- Add Section 01723 “Right of Way” (Appendix A)
- Add Section 01731 “Cutting and Patching” (Appendix A

APPENDIX A

SECTION 01571
STORMWATER POLLUTION CONTROL
MEASURES FOR CONSTRUCTION ACTIVITIES

This project involves construction activity on less than one acre of disturbed soil. The Contractor must comply with the requirements of Appendix A – Stormwater Pollution Control Measures for Construction Activities, as applicable to sites of less than one acre of disturbed soil.

1.1 General: The Contractor shall exercise every reasonable precaution to protect channels, storm drains, and bodies of water from pollution.

A. Conduct and schedule operations to minimize or avoid muddying and silting channels, drains, and waters.

B. As required, obtain permits for erosion and water pollution control from the appropriate jurisdictional agency before starting Work.

C. Provide any necessary water pollution control devices to prevent, control, and abate water pollution, and implement good housekeeping pollution control measures to reduce the discharge of pollutants from work sites to the maximum extent practicable. These water pollution control devices include drains, gutters, slope protection blankets and retention basins and shall be constructed concurrently with other Work at the earliest practicable time.

D. Exercise care in preserving vegetation and protecting property, to avoid disturbing areas beyond the limits of the Work. Promptly repair any damage caused by Contractor operations.

E. Comply with the specific requirements based on acreage of disturbed soil.

F. Penalties: Failure to comply with this Section may result in significant fines and possible imprisonment. The RWQCB or other prosecuting authority may assess fines of up to $32,500 per day for each violation. Should the City be fined or penalized as a result of the Contractor failing to comply with this Section, the Contractor shall reimburse the City for any and all fines, penalties and related costs.

G. Notification and Report: If pollution occurs in the work area for any reason or when the Contractor becomes aware of any violation of this Section, correct the problem and immediately notify the Inspector. In addition, submit a written report to the Engineer within seven (7) calendar days describing the incident and the corrective actions taken. If either the Inspector or Engineer is first to observe pollution or a violation, the Contractor shall also explain in the written report why the Work was inadequately monitored.

H. The provisions of this Section describe minimum compliance and do not preclude other more stringent stormwater pollution control measures that may be required in the Contract.

1.2 Definitions

A. “Construction activity": Operations such as clearing, grading, disturbances to the ground such as stockpiling, or excavation that results in soil disturbances. If construction activity is part of a larger common plan of development, the amount of disturbed soil is the total land area of disturbed soil that results under the common plan.

1.3 Payment: All costs for work required for compliance with this Section shall be included within the Bid Prices.

2.1 **Construction activity - less than one acre of disturbed soil:** Comply with the following minimum water quality protection requirements:

A. Retain eroded sediments and other pollutants on-site and do not allow transportation from the site by sheet flow, swales, area drains, natural drainage, or wind. Control slope and channel erosion by implementing an effective combination of best management practices (BMPs). Such BMPs include scheduling grading during non-rainy seasons, planting and maintaining vegetation on slopes and covering erosion-susceptible slopes.

B. Protect stockpiles of earth and other construction-related materials from being transported from the site by wind or water.

C. Properly store and handle fuels, oils, solvents, and other toxic materials to not contaminate the soil or surface waters, enter the groundwater, or be placed where they may enter a live stream, channel, drain, or other water conveyance facility. Protect all approved toxic storage containers from weather. Clean spills immediately and properly dispose of cleanup materials. Spills shall not be washed into live streams, channels, drains, or other water conveyance facilities.

D. Do not wash excess or waste concrete into the public way or any drainage system. Retain concrete wastes on-site until they can be appropriately disposed of or recycled.

E. Deposit trash and construction-related solid wastes in covered receptacles to prevent contamination of rainwater and dispersal by wind.

F. Do not allow sediments and other materials to be tracked from the site by vehicle traffic. Stabilize construction entrance roadways to inhibit sediments from being deposited onto public ways. Immediately sweep up accidental depositions. Do not allow depositions to be washed away by rain or by any other means.

G. Contain non-stormwater runoff from equipment or vehicle washing and any other activity at the work site.

H. At completion of the Work, clear the worksite of debris and restore to a condition at least equal to or better than prior to construction.

I. When construction activity with grading is likely to occur during the rainy season (October 1 through April 15), prepare a Wet Weather Erosion Control Plan (WWECP) per LAMC Section 61.02. The WWECP must be submitted to the Engineer for approval within thirty (30) calendar days after execution of the Contract.

Guidance on preparing the WWECP can be found in “Development Best Management Practices Handbook - Part A, Construction Activities”, adopted by the Board and as authorized by LAMC Section 64.72. The handbook can be viewed at or obtained at cost at Bureau of Engineering public counters.

J. When working in live streams, these are additional water pollution control requirements.

1. Erect barriers sufficient to prevent muddying or polluting streams.

2. Prior to removing materials from a flowing stream, use a stream bypass or other equivalent means to keep the flow in the stream free of the mud or silt from the removal operations.

3. Avoid transporting materials across live streams. If not possible, the transportation operation must be designed to prevent materials from falling into the stream and cannot muddy the stream.

4. Equipment may not be operated in a live stream or channel unless the Contractor can demonstrate to the Engineer's satisfaction that no other practical alternatives exist. The equipment must be designed to prevent materials from falling into the stream and cannot muddy the stream.

5. Do not allow fresh portland cement or fresh portland cement concrete to enter the water flowing in streams, channels or drains.

6. Do not allow material derived from the Work to be deposited in a live stream, channel or drain.

2.2 **Construction activity - one acre or more of disturbed soil.** In addition to the requirements for Section 2.1 - "Construction activity - less than one acre of disturbed soil", file a Notice of Intent (NOI) with the State Water Resources Control Board and apply for coverage under the State General Construction Activity Stormwater Permit (GCASP) (NPDES No. CAS000002. Comply with all of the requirements of the GCASP, including preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must describe the erosion control practices to be implemented during construction and the selection and implementation of appropriate BMPs to account for site-specific and seasonal conditions. This supercedes the Section 2.1(I) WWECP requirement for describing erosion control practices.

The Waste Discharge Identification Number (WDID) is evidence of NOI submittal. Provide the WDID to the Engineer and other agencies that issued permits for the project (such as the Department of Building & Safety). Guidance with the GCASP, NOI and SWPPP is available in the "Construction Handbook" published by the California Stormwater Quality Association and downloadable from their web site at https://www.casqa.org/resources/bmp-handbooks.

A. Compliance with the GCASP requires:

1. Submitting a NOI to the SWRCB and paying fees prior to start of construction;

2. Preparing the SWPPP before start of construction;

3. Keeping the SWPPP on site, implementing it during construction, and revising it as needed; and

4. Submitting a Notice of Termination with the SWRCB when construction is complete.

B. Implementing the SWPPP requires:

1. Certifying by July 1 of each year that construction activities are in compliance with the GCASP and SWPPP,

2. If there were instances of non-compliance, the Contractor shall submit notifications of non-compliance to the Los Angeles Regional Water Quality Control Board (RWQCB) within 30 calendar days from the time the non-compliance was first identified.

3. If the Contractor, SWRCB, or RWQCB determines that stormwater discharges and/or authorized non-stormwater discharges are causing or contributing to an exceedance of an applicable water quality standard, the Contractor shall:

   a. Implement corrective measures immediately and notify the RWQCB as soon as possible but no later than 48 hours after discovering the discharges. Unless otherwise directed by the RWQCB, follow up the notification with a report within 14 calendar days to the RWQCB. The report must describe: (1) the nature and cause of the water quality standard exceedance; (2) the BMPs currently being implemented; (3) any additional BMPs which will be implemented to prevent or reduce pollutants that are causing or contributing to the exceedance of water quality standards; (4) any maintenance or repair of BMPs; (5) an implementation schedule for corrective actions; and, (6) a description of actions taken to reduce the pollutants causing or contributing to the exceedance.

   b. Immediately revise the SWPPP and monitoring program to incorporate the additional BMPs that have been and will be implemented, the implementation schedule, and any additional monitoring needed.

   c. The Contractor is advised that none of the foregoing prevent the RWQCB from enforcing any provisions of the GCASP while the Contractor prepares and implements the above report.

4. Amending the SWPPP as needed. Sign and date all amendments, attach them directly to the SWPPP and promptly provide copies of all amendments to the Engineer.

5. Ensuring that persons responsible for preparing, implementing, and amending the SWPPP and responsible for permit compliance are appropriately trained. This includes personnel responsible for installing, inspecting, maintaining, and repairing BMPs. Include documentation of their training in the SWPPP.

6. Inspect BMPs before and after each storm and once each 24-hour period during extended storm events to assess BMP effectiveness. Implement BMP repairs or changes as soon as feasible. Document each inspection with a checklist kept with the SWPPP, using forms provided by the SWRCB, RWQCB or equivalent.

7. Develop and implement a sampling and analysis program for pollutants which are not visually detectable in storm water discharges, which are or should be known to occur on the construction site, and which could cause or contribute to an exceedance of water quality objectives in the receiving water.

8. In addition to plans or permits required by local, state, or federal agencies, maintain copies of the GCASP, SWPPP their amendments and their reference documents available for review at the construction site.

9. Retain records/copies of: data used to complete the NOI; the SWPPP and all attachments and amendments; compliance certifications; notifications of non-compliance; training; incidents such as spills or other releases, including photographs as available; sampling and analysis of discharges discovered through visual monitoring; all reports required by the GCASP; BMP inspections and checklists, and maintenance and repair activities; and activity-based BMPs, such as good housekeeping, that have been implemented.

10. After the Work is complete and final acceptance by the City, submit to the Engineer, all records/copies of documents required by the GCASP, including, but not limited to, the records/copies of the documents noted above.

END OF SECTION

SECTION 01722

SURVEYING

1.1 THE REQUIREMENT

The CONTRACTOR shall be responsible for all project survey services. The CONTRACTOR shall include the cost of all survey work in their bid. The CONTRACTOR shall have all surveying performed by a licensed land surveyor or a Civil Engineer registered by the state of California to perform such work. As a matter of distinction the licensed land surveyor or professional engineer performing this work shall be referred to as “the project surveyor”. The CITY EENGINEER reserves the right to verify all survey work performed by the contractor / project surveyor.

CONTRACTOR supplied surveying services shall be in conformance with the California business and professions code, §§ 8700-8805, Chapter 15 “professional land surveyors act,” whereby the CONTRACTOR shall partner with / procure the services of a licensed land surveyor or professional civil engineer registered by the state of California to perform such work.

All survey monumentation shall be in place and all required accessory tie pages shall be filed with the CITY EENGINEER prior to project close out and the release of improvement bonds. After setting final monuments, the “project surveyor” shall notify the Bureau of Engineering’s Survey Division of the placement of the final monuments within five days of the monuments being set.

Valley District Survey Office (818) 374-4660
6262 Van Nuys Blvd. Suite 350
Van Nuys, CA 91401
Email Address: Eng.surdivisionwr@lacity.org

Central District Survey Office (213) 473-0608
555 Ramirez St, Space 250
Los Angeles, CA 90012
Email Address: Eng.surdivisionwr@lacity.org

A. Permanent Survey Control Network Markers

1. All Land Survey work within the City of Los Angeles shall be constrained to the CITY’S Horizontal and Vertical Control Networks. The horizontal control shall be based upon the CITY’S Centerline / Control Lines as noted in the CITY ENGINEER Field Books (C.E.F.B). In accordance with the California Business and Professions Code Section 8771 (b), City Municipal Code and Bureau of Engineering Land Development Standards, all survey monuments within or in near proximity to the project sites, are to be diligently searched for, recovered or re-established and preserved for the duration of the project. Survey monuments, whether horizontal control or benchmarks shall be preserved by the project’s Licensed Land Surveyor or Professional Civil Engineer registered by the State of California to perform such work. Preconstruction and post-construction tie notes must be furnished to the Bureau of Engineering’s Survey Division for review and approval. The tie notes shall note the character of the

monuments recovered or re-established, all recovered centerline ties, method of establishment, measure to at least four centerline ties and centerline data / measure to survey monumentation at adjacent intersections. The vast majority of CITY survey monuments were originally established by the intersection of best fit alignments of the recovered original monumentation and lines of occupation that were captured by the CITY'S Survey Division shortly after the recordation of the original subdivisions (protraction). City survey monuments are to be established by retracing the survey lines run as shown on the CITY ENGINEER Field Books. CITY survey monuments may not be established solely by local evidence (local accessory ties) nor by Global Navigation Satellite System measure. The tie notes shall be of such quality, form and completeness, and shall be on paper of such quality and size as may be necessary to conform to the standardized office records of the CITY ENGINEER. All such notes shall be indexed by the CITY ENGINEER as part of the permanent public records of his office. A post-construction set of tie notes shall be required to memorialize the resetting of any survey monuments (centerline survey monument or accessory curb ties) that has been destroyed during the construction process. The post-construction tie notes shall conform to the same standards and be processed in the same manner as the pre-construction tie notes.

B. Layout of Contracted Work:

1. The CONTRACTOR shall be responsible for the accuracy of all survey work for construction. The CITY ENGINEER reserves the right to verify all survey work done by the CONTRACTOR.

C. Construction Surveying Services

1. Construction Surveys shall conform to Chapter J 600 of the Bureau of Engineering Survey Manual, Part J. This manual may be purchased through the Bureau of Engineering Public Reference Center.

2. The CONTRACTOR shall provide all reference stakes and form checks necessary for construction and inspection of improvements. All construction staking shall be documented in survey field notes. This staking may include but is not limited to: removals, joins, rough grade, slope, utilities, storm drains, sewers, curbs, walks, paving, wall and building stakes; and any other staking necessary for construction and inspection.

D. Reference or Grade Stakes

1. A reference or grade stake shall be set for each grade change or angle point shown on the plan, standard plan, and shop drawing, in addition to the normal staking interval.

E. Form Checks

1. Forms shall be checked when durable points may be disturbed, removed, or are impractical to be used to verify the design location. The measured location shall be recorded in the survey field notes. All variations from the plan location shall be brought to the attention of the ENGINEER.

F. Staking Intervals And Offset Stake Lines

1. All staking intervals shall be in accordance with the Survey Manual, Figures J 615.224A&Am, J 615.225A, and J615.225Am. Stake lines shall be set at an offset distance from the improvement to ensure proper grade, station, and alignment.

G. Utility Stakes

1. The CONTRACTOR shall provide stakes for all utilities, public or private, that require location or relocation, unless otherwise stated.

H. Additional Survey Work

1. The CONTRACTOR may be required to furnish additional survey work, such as profiles, restakes, Change Orders, etc., at the request of the ENGINEER or the INSPECTOR.

I. I. Accuracy

1. The CONTRACTOR shall use appropriate surveying methods to obtain the following standards: For fixed works (i.e. cast-in-place concrete; asphalt pavement, pipes and drains; and other items determined by the ENGINEER) the following survey standards shall be used. The absolute horizontal accuracy, in relationship to the Engineer's control, shall be such that the semimajor axis of its 95% error ellipse is ±0.015 foot or less. The absolute vertical accuracy, in relationship to the Engineer's control, shall be such that its standard deviation is ±0.015 foot or less. The relative horizontal accuracy of survey points within the Project shall be such that the semimajor axis of its 95% error ellipse is ±0.015 foot or less. The relative vertical accuracy of survey points within the Project shall be such that its standard deviation is ±0.015 foot or less.

2. For excavation purposes, the following survey standards shall be used. The absolute horizontal accuracy, in relationship to the Engineer's control, shall be such that the semimajor axis of its 95% error ellipse is ±0.1 foot or less. The absolute vertical accuracy, in relationship to the Engineer's control, shall be such that its standard deviation is ±0.1 foot or less. The relative horizontal accuracy of survey points within the Project shall be such that semimajor axis of the 95% error ellipse is ±0.1 foot or less. The relative vertical accuracy of survey points within the Project shall be such that its standard deviation is ±0.1 foot or less.

J. Survey/Inspector

1. The CONTRACTOR shall provide to the INSPECTOR those measurements and control points necessary to determine the location and conformance to the plan, line, and grade of the improvements necessary for inspection purposes.

K. Survey/Engineer

1. The CONTRACTOR shall provide to the ENGINEER those measurements necessary for the expedient completion of the Project.

L. Survey Plan of Operations

1. Prior to construction, the CONTRACTOR shall submit to the ENGINEER for approval a survey plan describing methods and instrumentation to be used on the Project. The survey plan must be approved prior to any construction.

M. Survey Notes

1. The CONTRACTOR shall supply and keep notes on CITY standard format note sheets in conformance with Chapter J 600 of the Bureau of Engineering Survey Manual, Part J. The ENGINEER may request copies of, and otherwise review, survey notes at any time during the construction phase of the Project. Upon completion of the Project, the original survey notes shall become the property of the CITY and shall be delivered to the ENGINEER

(END OF SECTION)

SECTION 01351
ESCROW BID DOCUMENTS

1.1 THE REQUIREMENT

A. Scope

1. This Article requires that the three (3) low bidders submit, within the specified time after receipt of bids, one (1) copy of all documentary information including, but not limited to, electronic files generated in preparation of bid prices for this project. This material is hereinafter referred to as "Escrow Bid Documents". The Escrow Bid Documents of the CONTRACTOR will be held in escrow for the duration of the Contract.

2. The successful Bidder agrees, as a condition of the award of the Contract, that the Escrow Bid Documents constitute all of the information used in preparation of the Bid, and that no other bid preparation information shall be considered in resolving disputes or claims. The successful bidder also agrees that nothing in the Escrow Bid Documents shall change or modify the terms or conditions of the Contract Documents.

B. Ownership

1. The Escrow Bid Documents are, and shall always remain, the property of the CONTRACTOR, subject to joint review by the CITY and the CONTRACTOR as provided herein. The Escrow Bid Documents are proprietary and secret information belonging to the CONTRACTOR and exempt from the Federal Freedom of Information Act, California Public Records Act, and the Los Angeles CITY Freedom of Information Act.

2. The CITY stipulates and expressly acknowledges that the Escrow Bid Documents, as defined herein, constitute trade secrets. This acknowledgment is based on the CITY'S express understanding that the information contained in the Escrow Bid Documents is not known outside the Bidder's business, is known only to a limited extent and only to a limited number of employees of the Bidder, is safeguarded while in the Bidder's possession, is extremely valuable to the Bidder and could be extremely valuable to the Bidder's competitors by virtue of it reflecting the Bidder's contemplated techniques of construction. The CITY acknowledges that the Bidder expended substantial sums of money in developing the information included in the Escrow Bid Documents and further acknowledges that it would be difficult for a competitor to replicate the information contained therein. The CITY further acknowledges that the Escrow Bid Documents and the information contained therein are made available to the CITY only because such action is an express prerequisite to award of the Contract. The CITY acknowledges that the Escrow Bid Documents include a compilation of information used in the Bidder's business, intended to give the Bidder an opportunity to obtain an advantage over competitors who do not know of or use the contents of the documentation. The CITY further agrees to safeguard the Escrow Bid

3. Documents, and all information contained therein, against disclosure to the fullest extent permitted by law.

C. Purpose

1. The purpose of the Escrow Bid Documents procedure is intended to create a spirit of cooperation in an atmosphere of honesty and candor between the CITY and the CONTRACTOR.

2. Escrow Bid Documents will be used to assist in the negotiation of price adjustments and Change Orders and in the settlement of disputes and claims. They will not be used for pre-award evaluation of the CONTRACTOR'S anticipated methods of construction or to assess the CONTRACTOR'S qualifications for performing the WORK.

D. Format and Contents

1. Bidders may submit Escrow Bid documents in their usual cost estimation format; a standard format is not required. It is not the intention of this Article to cause the Bidder extra work during the preparation of the Bid, but to ensure that the Escrow Bid Documents will be adequate to enable complete understanding and proper interpretation for their intended use. The Escrow Bid Documents shall be in English.

2. It is required that the Escrow Bid Documents clearly itemize the estimated costs of performing the WORK of each Bid item contained in the Bid schedule. Bid items should be separated into sub-items as required to present a complete and detailed cost estimate and allow a detailed cost review. The Escrow Bid Documents shall include all quantity takeoffs, crew, equipment, calculations of rates of production and progress, copies of quotations from Subcontractors and Suppliers, and memoranda, narratives, add/deduct sheets, and all other information used by the Bidder to arrive at the prices contained in the Bid. Estimated costs should be broken down into the Bidder's usual estimate categories such as direct labor, repair labor, equipment ownership and operation, expendable materials, permanent materials, and subcontract cost, as appropriate. Plant and equipment and indirect costs should be detailed in the Bidder's usual format. The CONTRACTOR'S reallocation of indirect costs, contingencies, markup and other items to each bid item shall be identified.

3. All estimates for items of Work that are based in whole or in part upon any baseline statements or information in the Geotechnical Baseline Report (GBR), shall clearly reference the baseline statements used. CONTRCTOR shall have no right to an adjustment in the Contract Price or the Contract Completion Date (due to Differing Site Conditions of the General Conditions) unless such baseline statements have been clearly identified in the Escrow Bid Documents.

4. All cost shall be identified. For bid items amounting to less than $10,000, estimated units costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and subcontracts, as applicable, are included and provided that indirect costs, contingencies, and markups, as applicable, are allocated. Bid documents provided by

5. the CITY need not be included in the Escrow Bid Documents unless needed to comply with the following requirements.

E. Submittal

1. The Escrow Bid Documents shall be submitted to the Board of Recreation and Park Commissioners Office, by the three (3) low Bidders, in sealed containers, within forty-eight (48) hours after the time for receipt of Bids. The containers shall be clearly marked on the outside with the Bidder's name, date of submittal, project name and the words "Escrow Bid Documents".

2. The Escrow Bid Documents shall be accompanied with the certification (a sample is included), signed by an individual authorized by the Bidder to execute Bids, stating that the material in the Escrow Bid Documents constitutes all the documentary information used in preparation of the Bid and that the Bidder has personally examined the contents of the Escrow Bid Documents container and has found that the documents in the container are complete.

BID DOCUMENTATION CERTIFICATION

THE UNDERSIGNED HEREBY CERTIFIES THAT THE BID DOCUMENTATION CONTAINED HEREIN CONSTITUTES ALL OF THE INFORMATION USED IN PREPARATION OF THE BID AND THAT I HAVE PERSONALLY EXAMINED THESE CONTENTS AND HAVE FOUND THAT THIS BID DOCUMENTATION IS COMPLETE.

SIGNATURE: _____

NAME: _____

TITLE: _____

FIRM: _____

DATE: _____

3. Within 14 Calendar days following the receipt of bids, the Escrow Bid Documents of the apparent successful Bidder will be examined, organized and inventoried by representatives of the CITY, together with members of the CONTRACTOR'S staff who are knowledgeable of how the Bid was prepared. This examination is to ensure that the Escrow Bid Documents are legible and complete. It will not constitute approval of proposed construction methods, estimating assumptions, or interpretations of Contract Documents. Examination will not alter any condition or term of the Contract.

4. If all the documentation required in Section D, "Format and Contents", has not been included in the original submittal, additional documentation shall be submitted, at the CITY'S sole discretion, within twenty four (24) hours after the original inventory and examination of the Escrow Bid Documents and prior to award of the Contract. The detailed breakdown of estimated

5. costs shall be reconciled and revised, if appropriate, by agreement between the CONTRACTOR and the CITY before making the award. If the Contract is not awarded to the apparent successful Bidder, the Escrow Bid Documents of the Bidder next to be considered for award shall be processed as described above.

6. Submission of complete Escrow Bid Documents is an essential element of the Bidder's responsiveness and a prerequisite to a Contract award. Failure to provide the necessary Escrow Bid Documents within the forty-eight (48) hour time limit, may render the Bid non-responsive. Escrow Bid Documents of the unsuccessful Bidders will be returned following award of the Contract.

7. If any Bidder's Bid is based on subcontracting any part of the WORK, each Subcontractor, whose total subcontract price exceeds five percent (5%) of the total Contract price bid by the Bidder, shall provide separate Escrow Bid Documents to be included with those of the Bidder. Such documents shall be opened and examined in the same manner and at the same time as the examination described above for the apparent successful Bidder.

8. If the CONTRACTOR wishes to subcontract any portion of the WORK after award, the CITY retains the right to require the CONTRACTOR to submit Escrow Bid Documents from the Subcontractor before the subcontract is approved.

F. Storage

1. The Escrow Bid Documents will be placed in lockable container, with provisions for the Contractor and the City to provide separate locks,, for the life of the Contract, and stored in a mutually agreeable location at or near the jobsite. The cost of storage will be paid by the CITY.

G. Examination

1. The Escrow Bid Documents shall be examined by both the CITY and the CONTRACTOR, at any time deemed necessary by either the CITY or the CONTRACTOR, to assist in the negotiation of price adjustments and Change Orders or the settlement of disputes and claims.

2. Examination of the Escrow Bid Documents is subject to the following conditions:

   a. As trade secrets, the Escrow Bid Documents are proprietary and confidential.

   b. The CITY and the CONTRACTOR shall each designate, in writing to the other party and within ten (10) days after execution of the Contract, representatives who are authorized to examine the Escrow Bid Documents, with the exception of the initial reviewers as specified in section 1.1.E.3 above. No other person shall have access to the Escrow Bid Documents.

c. Access to the Escrow Bid Documents may take place only in the presence of duly designated representatives of both the CITY and the CONTRACTOR.

3. The Escrow Bid Documents at all times remain the property of the CONTRACTOR and the CITY will take all reasonable steps necessary to protect confidentiality.

H. Final Disposition

1. The Escrow Bid Documents will be returned to the CONTRACTOR at such time as the following conditions have been satisfied.

   a. The Contract has been completed.

   b. Final payment has been issued by the CITY.

   c. All litigation has been completed, and a written agreement has been executed between the CITY and the CONTRACTOR that no further litigation will be made.

   d. The Board of Recreation and Park Commissioners.

2. The Escrow Bid Documents will be sealed and promptly returned to the CONTRACTOR by the party in charge of the Escrow Bid Documents. Reproduction of any portion of the Escrow Bid Documents will not be permitted at any time without the written permission of the CONTRACTOR.

(END OF SECTION)

SECTION 01116
ELECTRONIC DOCUMENT CONTROL

USE OF ELECTRONIC DOCUMENT CONTROL SYSTEM

A. The CONTRACTOR shall use the City's cloud-based electronic document control system to submit and receive all construction related documentation on this project. The system used is "e2020" and all costs associated with the use of the software have been paid for by the City. The website address to be used will be provided by the ENGINEER after award of the contract. The CITY will provide training to the CONTRACTOR on the use of the system. As coordinated with other sections of these project specifications, the information to be generated, transmitted and tracked by the e2020 document control system shall include, but not be limited to the following:

1. Correspondence (including Engineer's Communication).

2. Plan Clarifications.

3. Requests for Information (RFI's).

4. Submittals & Shop Drawings.

5. Change Orders.

6. Allowance Orders.

7. Progress Photos.

8. Project Schedules.

9. Meeting Minutes.

10. Permits.

11. Partnering (Issue Resolution Ladder, Charter).

12, Claims Resolution.

13. Building Information Modeling Coordination.

B. When hard copies of drawings or product samples are required to be submitted that cannot be submitted through e2020, the CONTRACTOR shall:

1. Upload a transmittal sheet for the submittal in e2020,

2. Submit six (6) full-size hard copies,

3. Submit one half-sized hard copy (not exceeding 11x17 inches),

4. Transmit electronic files to the ENGINEER in Adobe Acrobat (.PDF) format.

C. The CONTRACTOR shall be responsible for the installation of its own computer system and scanner. In addition, the CONTRACTOR shall be responsible for the procurement of an Internet Service Provider (ISP) with a high-speed broadband internet connection for its own use, as well as the ENGINEER's/INSPECTOR's use at the site offices to access the document control system.

D. At the request of the ENGINEER, the CONTRACTOR must provide a hard copy of approved submittals to the INSPECTOR, at no additional cost to the CITY.

(END OF SECTION)

SECTION 01115
MANDATORY PROVISIONS

1.1 THE REQUIREMENT

A. Any mention in the Divisions of this Project Manual which follow the General Requirements or indication on drawings of articles, materials, operations, or methods requires that the CONTRACTOR provide each item mentioned or indicated, of quality or subject to qualifications noted; perform according to conditions stated, each operation the same prescribed; and provide therefore all necessary labor, equipment, and incidentals, even though such mention of articles, materials, operations, methods, quality, qualifications, or conditions is not expressed in complete sentences.

(END OF SECTION)

SECTION 01140
CONTRACTOR'S USE OF THE PREMISES

1.1 THE REQUIREMENT

A. General

1. This Section applies to all situations in which the CONTRACTOR or his representatives, including but not necessarily limited to, suppliers, Subcontractors, employees and field engineers, who enter upon the CITY'S property.

2. CONTRACTOR shall commence the Contract Work and provide security and protection to existing facility and job site within 5 days from the issuance of Notice-To-Proceed letter, unless noted otherwise.

B. Access to the Job-site

1. As instructed by the ENGINEER, the CONTRACTOR shall restrict CONTRACTOR'S employees to the immediate Work areas on the job-site and limit access beyond the Work limits noted on the Contract Drawings, or as otherwise directed by the ENGINEER.

a. Deliver materials, tools and equipment to the Pershing Square Parking Structure via the 5th Street entrance, as directed by the ENGINEER.

2. CONTRACTOR shall in no way block such entrance(s) to the job-site when Contracted Work occurs at an existing CITY facility. At any time, the CONTRACTOR shall not block any other entrance/exit/fire doors, corridor or lobby door, parking ramps etc. All fire and smoke doors, including the elevator/lobby doors, shall remain in operation at all times. CONTRACTOR shall provide all required exit at all times.

3. Use of such accesses to the job-site will only be for the purpose of parking, delivery and/or removal of materials equipment, tools, vehicles and removal of rubbish and debris, and shall be kept free of obstructions and in a safe condition at all times during extent of Contracted Work.

4. Use existing stairs to transport materials, equipment, supplies and CONTRACTOR'S personnel to the Work areas. Use of such stairs shall be kept clear of materials, equipment, tools and debris and shall not create any hazardous conditions or interfere with use of such stairs by CITY Employees and the Public. Use of stairs to transport materials, equipment or supplies by the CONTRACTOR'S personnel shall be in conformance with the California State OSHA requirements.

5. Use of crane, equipment and/or man lift, catwalk/platform to transport materials, equipment, supplies and the CONTRACTOR'S personnel to the Work area shall be in conformance with the requirements of the local governing agencies. The CONTRACTOR shall furnish the CITY with a duplicate copy of the operating permit of the equipment prior to its use.

6. [If any of the crane, equipment and/or man lift, catwalk platform is attached to the existing structure specified to remain, CONTRACTOR shall provide shop drawings, including the equipment data, the attachment details, structural calculation and erection plans to the ENGINEER for approval.]

7. The ENGINEER may work with RAP to furnish the CONTRACTOR keys to the existing rooms in the building. The CONTRACTOR shall return all temporary and existing keys to the ENGINEER after the completion of the Contract.

8. For existing electrical transformer room or vault room, which are maintained by the Department of Water and Power, the CONTRACTOR shall arrange and obtain the permission for access and to do work from the Department of Water and Power.

9. The CONTRACTOR shall not change any existing occupied room or door key without the approval of the ENGINEER or RAP . The CONTRACTOR shall provide a duplicate key to the ENGINEER for CITY employee access.

C. City Occupation of the Premises

The CITY will occupy the existing premises (structures), but not the area of work during construction operations, except as indicated in the GENERAL REQUIREMENTS Section 01313 – WORK BY CITY OR OTHERS, and in Section 00406 – PARTIAL ACCEPTANCE of the GENERAL CONDITIONS.

D. Contractor's Use of the Premises

1. Do not interfere with Parking Operations of the Pershing Square Parking Structure during Contracted Work operations, as directed by the ENGINEER.

2. Exercise care during Contracted Work operations not to interfere with or damage the existing facilities:

E. Parking

3. Parking: CONTRACTOR will be restricted as to the number of they will be allowed to park on the job-site. Parking shall be coordinated so as not to interfere with work operations, traffic, and/or use of such facilities by others. All vehicles parked on the premises shall be kept locked at all times.

F. Vertical Transportation

1. In lieu of the existing elevator(s), the CONTRACTOR will arrange for other means for vertical transportation of materials, equipment, tools, etc. It shall be the CONTRACTOR'S responsibility to coordinate, arrange and pay for all required permits, license and inspection, etc.

G. Security

1. Restrict the access of all persons entering upon the CITY'S property in connection with the Contracted Work to the Access Route and to the actual site of the work.

2. All employees of the CONTRACTOR who will be engaged in the construction of this project will be screened for proper identification and good behavior. Candidates of good standing will be issued a temporary pass. CONTRACTOR shall furnish the CITY, a list of employees for approval prior to start of this project.

3. In addition to the responsibilities specified in other Sections of these GENERAL REQUIREMENTS, and the GENERAL CONDITIONS, the CONTRACTOR shall be responsible for the security of all its construction equipment, materials, tools, facilities, and vehicles (personal, private, or contractual) while performing the work of this Contract. This requirement shall be effective twenty-four (24) hours per day for the duration of the Contract.

4. CONTRACTOR shall furnish continuous security guard protection between the Work areas. The security personnel shall be equipped with communication equipment such as two-way radio or telephone for emergency contact. CITY'S custodial, maintenance or other personnel shall be allowed access during non-business hours.

5 The CONTRACTOR is responsible for the security of the parking lot or parking area and all CITY property that is stored in the parking lot or area.

H. Protections

1. Required: Where necessary for the safety of the public and the protection of the adjacent street improvements and adjacent properties, provide and maintain adequate protection, fences and gates and barricades to separate Work areas from areas outside the job-site limits. Such protections shall comply with provisions of Section 01120 – INTERFACE / COORDINATION REQUIREMENTS and Section 01721 – MOBILIZATION of the GENERAL REQUIREMENTS, and shall remain in place during extent of this Contract or as otherwise directed by the INSPECTOR.

2. Controlled Work area: All controlled Work areas shall be prepared and protected in accordance with [Section 02230 - ASBESTOS REMOVAL] [Section 02225 - LEAD-BASED PAINT REMOVAL] and all Code requirements.

I. Repair of Damages

1. Required: Repair or replace any damage to the existing facility and equipment located inside or outside the building under CONTRACTOR'S protection.

2. Methods: Repair or replace damaged work with new materials as necessary to restore the damaged areas or surfaces to a condition equal to and matching such conditions existing prior to damage or start of Work of this Contract, to the full satisfaction of the ENGINEER, and at no added cost to the CITY. Submit repair method for approval as required by the ENGINEER.

3. Matching or Existing Work:

   a. Finish of all existing wood, plaster, masonry and/or concrete work to be altered, repaired or patched to match and be flush with adjoining surfaces, subject to the approval of the ENGINEER.

   b. Finish of all new masonry and/or concrete work (to adjoin remaining work) to match and be flush with adjoining surfaces, unless otherwise noted on the Drawings, subject to the approval of the ENGINEER.

J. Interruption of Services

1. CONTRACTOR shall make all provisions to accomplish Contracted Work without undue interference with the CITY operations of the existing facilities on the job-site premises. Any necessary interruptions to existing elevator, plumbing, mechanical and/or electrical facilities shall be done only after 48 hours advance consultation with the ENGINEER and Recreation and parks (RAP) staff, and at such time and duration as instructed by the ENGINEER. CONTRACTOR shall verify existing loading and any possible load increase during construction prior to ordering. Any required new circuit or repair of existing circuit in the CITY'S occupied area to maintain continuous operation shall be done by CONTRACTOR at no additional cost to the CITY.

K. Non-interference With Others

1. CONTRACTOR shall confine Contracted Work operations to the immediate boundaries of the job-site and shall execute work operations in a manner to minimize interference with CITY operations and/or work operations of other CONTRACTORS working on the premises; as directed by the ENGINEER.

2. CONTRACTOR shall provide and maintain adjacent pedestrian and vehicular accesses in accordance with Work area Traffic Control Handbook (W.A.T.C.H.), latest edition, and the California Manual of Uniform Traffic Control Devices (MUTCD).

3. CONTRACTOR shall obtain approval of ENGINEER and local authorities having jurisdiction such as Department of Transportation, Police Department, Bureau of Street Services, etc. prior to any street, alley or sidewalk closure.

L. Underground Service Alert

1. Before commencing any excavation, the CONTRACTOR shall obtain an underground service alert inquiry I.D. Number by calling 1 (800) 422-4133. Two (2) working days shall be allowed after the I.D. Number is obtained and before the excavation work starts so that utility owners can be notified. The I.D. Number must be reported to the Bureau of Contract Administration when calling for inspection. I.D. Numbers will not be given more than ten (10) calendar days prior to starting excavation work.

M. Job Safety

1. CONTRACTOR shall observe all safety rules and regulations of the Los Angeles City Building Code and CAL/OSHA as applicable to the safety of the CONTRACTOR, CONTRACTOR'S personnel and CITY employees during Contracted Work operations and especially during asbestos removal operations.

(END OF SECTION)

SECTION 01212
FIXED CASH ALLOWANCE ITEMS

1.1 THE REQUIREMENT

A. A fixed cash allowance has been allocated to each of the following items of the Bid Breakdown (see Bid Proposal). Requirements for each Fixed Cash Allowance Item are specified in the GENERAL REQUIREMENTS (GR) section referenced below. Overhead and Profit, at the rates listed below, shall be added to the actual invoiced amount.

Bid Item No.	Description	Overhead and Profit
2)	Allowance for Permits (per General Conditions Article 19 AND General Requirements Article 31)	0%
3)	Allowance for Differing Site Conditions (per General Conditions, Article 53)	0%
4)	Allowance for Opportunity to Partner (per Supplementary GR appendix 'A' Section 01353)	0%

B. If these items are not executed, or are only partially executed, or the allowance for any item is not expended or partially expended, then a deductive Change Order shall be issued for the amount that is not expended. If, however, these items are over expended (with ENGINEER'S prior approval), then an appropriate Change Order shall be executed in accordance with the provisions of the GENERAL REQUIREMENTS Section 01254 –- CHANGE ORDERS, except for Overhead and Profit wherein the above listed rates shall apply.

C. The ENGINEER'S AND INSPECTOR'S field office supply allowance is to be used at the ENGINEER'S and/or INSPECTOR'S discretion to purchase office supplies and/or office equipment, perform repairs to field offices or equipment owned or leased by the City, pay field office utility bills, purchase reference documents, etc. The items covered by this allowance are in addition to those required to be furnished by the CONTRACTOR under GR Section 01721-Mobilization. The CONTRACTOR shall be reimbursed the actual invoice amount plus the markup allowed by Section A, above.

(END OF SECTION)

SECTION 01253
DIFFERING SITE CONDITIONS

1.1 THE REQUIREMENT

A. During the course of construction, the CONTRACTOR may encounter existing utilities, structures, etc. that are not shown on the contract drawings or are not specified and which may interfere with or may impact construction activities. In the event of this occurrence, the ENGINEER may direct the CONTRACTOR to proceed with necessary exploratory or corrective work to alleviate the situation. The cost for such directed work shall be paid for under the bid item DIFFERING SITE CONDITIONS of the SCHEDULE OF WORK AND PRICES. Costs shall be calculated in accordance with Section 01254 CHANGE ORDERS, subsection TIME AND MATERIALSWORK, of the GENERAL REQUIREMENTS.

B. If the total cost of the Work directed under the DIFFERING SITE CONDITIONS clause is different from the amount set forth in the SCHEDULE OF WORK AND PRICES, the Contract Price shall be adjusted by a Change Order. The adjustment shall be the difference between the total actual cost and the amount included in the Bid, as either an additional amount due the CONTRACTOR or as a credit to the CITY, as appropriate.

(END OF SECTION)

SECTION 01311
PRE-CONSTRUCTION SAFETY CONFERENCE

1.1 THE REQUIREMENT

A. The CONTRACTOR's Project Manager, Project Engineer, Safety Coordinator and Superintendent(s) shall attend a Pre-Construction Safety Conference conducted by the INSPECTOR and the ENGINEER. The CONTRACTOR will be informed of the date, time, and location of the Pre-Construction Safety Conference by the ENGINEER. The Pre-Construction Safety Conference shall take place within twenty-one (21) calendar days after Notice of Award and prior to the start of any Work at the site. The CONTRACTOR shall select additional personnel from its field staff, vendors, suppliers, and manufacturers, and from every Subcontractor, at any tier, to attend the Pre-Construction Safety Conference.

B. The CONTRACTOR shall provide to the ENGINEER and the INSPECTOR, at the Pre-Construction Safety Conference, the following documents:

1. Injury and Illness Prevention Program (IIPP) which shall address site specific concerns and shall also Include the following, as a minimum:

   a. Occupational Injury and Illness Investigation and Reporting System, including a system for providing all injury reports to the INSPECTOR and the ENGINEER.

   b. Safety Inspection System.

   c. Hazard Communication Program.

   d. Methods of identifying hazards including a procedure for notifying the INSPECTOR and the ENGINEER when a hazard is identified.

   e. Training Documentation System.

   f. Safety Communication and Remediation Procedures.

   g. Making the CONTRACTOR's employees and all Subcontractors and supplier personnel aware of the biological health hazards due to working at a wastewater treatment or a pumping plant. As a minimum, this subject shall be a topic for the CONTRACTOR's weekly safety meetings at least once each quarter. **[See Attachments 01311-A1 through 01311-A4.]**

   h. Other specific safety activities which pertain to the Work.

2. During periods of Pandemic/Epidemic of infectious diseases, as declared by the local and/or State health officials, the Contractor may be required to modify his/her attendance to the Pre-Construction Safety Conference and all other meetings by teleconference.

   Following the guidelines from local and/or State health officials, the Contractor shall modify the IIPP to include these additional requirements:

   i. Personal Protective Equipment (PPE) for all workers.
   ii. Social distancing.
   iii. Hygiene maintenance.
   iv. Quarantine of infected workers and those who have come in contact.
   v. Testing requirements as prescribed by the State/Local health officials.

vi. Any other requirements as prescribed by State/Local health officials as they become available.

i. Additionally, the Contractor shall follow these guidelines as required for construction inspection:
i. Los Angeles Department of Building and Safety Announcement No. 5 “Covid-19 Safety Guidance for Construction Sites”.
ii. Bureau of Contract Administration Job Memorandum “Covid-19 Safety Guidelines for Construction Sites”.

3. Identification of person(s) responsible for safety of this site, who will be assigned to the site during the performance of the work, for the CONTRACTOR and all Subcontractors at any tier.

4. Emergency Action and Fire Prevention Plan.

5. Hazardous Materials Procurement, Storage, Handling, Waste Control and Disposal Procedures.

6. It shall be the CONTRACTOR’s responsibility to assure that all field forces know and obey all safety and emergency procedures to be maintained at the job site. The CONTRACTOR shall further assure that a supervisor is present at all times during any field work who is knowledgeable of and responsible for the enforcement of the CONTRACTOR’s required safety procedures.

(END OF SECTION)

SECTION 01312
PROJECT MEETINGS

PART ONE - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Required to enable orderly review during pre-installation conference and progress of Contracted Work, and to provide for systematic discussion of installation problems and other construction problems arisen, the ENGINEER will conduct project meetings throughout the construction period. Meetings shall conform to the Pre-Construction Scheduling Conference and Project Schedule Review Meeting provisions in Section 01321 – CONTRACTOR'S CONSTRUCTION SCHEDULE AND REPORTS of the GENERAL REQUIREMENTS.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, GENERAL CONDITIONS, DIVISION 1 - GENERAL REQUIREMENTS

2. The CONTRACTOR'S relations with his Subcontractors and materials suppliers, and discussions relative thereto, are the CONTRACTOR'S responsibility and normally are not part of project meetings content.

3. CONTRACTOR'S CONSTRUCTION SCHEDULE AND REPORTS in Section 01321 of the GENERAL REQUIREMENTS.

1.2 SUBMITTALS

A. Conform to provisions of Section 01330 – SHOP DRAWINGS / SUBMITTALS of GENERAL REQUIREMENTS.

B. Agenda Items:

1. To the maximum extent practicable, advise the ENGINEER at least twenty-four (24) hours in advance of project meetings regarding items to be added to the agenda or requesting the cancellation of any Meeting.

C. Minutes:

1. The ENGINEER's Construction Management Team will compile minutes of each project meeting and will furnish one copy to the CONTRACTOR, INSPECTOR, Consultant and all other involved parties.

2. Recipients of copies may make and distribute such other copies as they wish.

3. Special denotation mutually agreed by all parties shall be used in Meeting Minutes to identify old and new business, to distinguished new

discussion/statement made in subsequent meeting from previous meetings, or any revision to any part of the minutes.

1.3 QUALITY ASSURANCE

A. For those persons designated by the CONTRACTOR to attend and participate in project meetings, provide required authority to commit the CONTRACTOR to solutions agreed upon in the project meetings. Refer to provisions indicated in Section 00302 - CONTRACTOR'S REPRESENTATIVE AT THE SITE of the GENERAL CONDITIONS.

PART TWO - PRODUCTS (NOT APPLICABLE)

PART THREE - EXECUTION

3.1 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held weekly or as otherwise directed by the ENGINEER.

B. Coordinate as necessary to establish mutually acceptable schedule for additional meetings.

3.2 MEETING LOCATION

A. The ENGINEER will establish the meeting location. To the maximum extent practicable, meetings will be held in CONTRACTOR'S job office at the Jobsite.

3.3 PRECONSTRUCTION MEETING

A. Preconstruction Meeting will be scheduled to be held within fifteen (15) working days after the City has issued the Notice to Proceed.

1. Provide attendance by authorized representatives of the CONTRACTOR and major Subcontractors.

2. The ENGINEER will advise other interested parties.

B. Minimum Agenda: Data will be distributed and discussed on at least the following items.

1. Organizational arrangement of CONTRACTOR'S forces and personnel, and those of the subcontractors, and materials suppliers.

2. Organizational arrangement of the CITY'S forces and personnel, such as the User's Agency, Project Manager, Consultant, CITY'S Abatement Consultant, Soil Engineer, CITY'S Surveyor, INSPECTOR and other authorized representatives.

3. Channels and procedures for communication.

4. Construction schedule, including sequence of critical work.

5. Contract Documents, including distribution of required copies of original Documents and revisions.

6. Processing of Shop Drawings and other data submitted to the ENGINEER for review.

7. Processing of Bulletin, addenda, field decisions, Requests for Information and Change Orders.

8. Rules and regulations governing performance of the Work.

9. Procedures for site security, Project quality control, housekeeping, and related matters.

10. It is the responsibility of the CONTRACTOR for Job Site Safety & First Aid, however, it shall be on the agenda.

11. Procedures to request air monitoring services, soil inspection, survey, etc. if specified, shall be provided by the CITY.

12. Emergency Information: The name, addresses, telephone and fax numbers of the CONTRACTOR, and Subcontractors, or their representatives, shall be filed with the ENGINEER prior to start of Contracted Work.

3.4 PROJECT MEETINGS

A. Attendance:

1. To the maximum extent practicable, the Project Superintendent and other representatives who have full knowledge of the project and full authority to act for the CONTRACTOR shall represent the CONTRACTOR at Project Meetings throughout the progress of the Work. All representatives must conform to the provisions indicated in Section 00302 - CONTRACTOR'S REPRESENTATIVE AT THE SITE of the GENERAL CONDITIONS.

2. Subcontractors, materials suppliers, and others may be invited to attend these Project Meetings in which their aspect of the Work is involved.

3. CONTRACTOR may not cancel or be absent from any meeting without advanced approval from the ENGINEER. The CONTRACTOR must submit a written request with reason to the ENGINEER twenty-four (24) hours before the scheduled meeting. If approved, the CONTRACTOR shall notify all parties of the cancellation.

B. Minimum Agenda:

1. Review, revise as necessary, and approve minutes of previous meeting.

2. Review progress of the Work since last meeting. Review actual starts and finish dates of activities.

3. Review status (total complete and outstanding) of submittal for approval, Request-for-Information and Change Orders.

4. Identify old and new problems, which impede planned progress**,** identify responsible party for the follow-up actions. Mutually agree to a common solution and date of correction.

5. Develop corrective measures and procedures to regain lost time on the planned schedule.

6. Review Weekly Progress Reports including the forecasts as required in Section 01321 – CONTRACTOR'S CONSTRUCTION SCHEDULE AND REPORTS of the GENERAL REQUIREMENTS.

7. Status of Record drawings and the Record Project Manual.

8. Jobsite Walk-Through. Record all discussion and follow-up actions.

9. Any Jobsite health and/or accident or safety issues.

C. Revisions to Minutes:

1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.

2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.

3. Challenge to minutes shall be settled as priority portion of "old business" at the next regularly scheduled meeting.

3.5 SITE MEETINGS

A. Required when necessary to enable orderly review and discussion of site conditions and problems requiring solution during the progress of the contracted work. Notify the ENGINEER of the need for additional site meetings as early as possible to resolve the problem without any impact to the Project Schedule.

B. Provide necessary labor, tools, and equipment such as shoring, scaffolding, ladder, etc. to gain access to the site.

C. CONTRACTOR or CONTRACTOR'S authorized representative shall be present at all times.

D. All discussion and follow-up actions shall be recorded by ENGINEER and the minutes shall be distributed at the next meeting or at earliest time.

(END OF SECTION)

SECTION 01321
CONTRACTOR'S CONSTRUCTION SCHEDULE AND REPORTS

1. THE REQUIREMENT

A. Progress of the Work

1. It is expressly understood and agreed that the time of beginning, the rate of progress, and the time of completion of the Work are of the essence of this Contract. The Work shall be executed with such progress as required to prevent any delay to other CONTRACTORS that may be working on other contracts at the site, the Contract milestones, and the general completion of the Contract.

B. CONTRACTOR'S Construction Scheduler

1. The CONTRACTOR shall continuously employ or retain the services of a Construction Scheduler. The Construction Scheduler shall have at least three (3) years of verifiable experience as the person primarily responsible for preparing and maintaining detailed project schedules on projects of the same or similar size and nature as this project. The Construction Scheduler is required to attend all meetings pertaining to scheduling and progress of the Work. If the Construction Scheduler leaves employment of the CONTRACTOR, the CONTRACTOR must fulfill the requirements of B.2 a and b within thirty (30) days.

2. Within five (5) calendar days after the Notice of Award the CONTRACTOR shall provide a statement to the ENGINEER with the following:

a. Identification, qualifications, and experience of the CONTRACTOR'S Construction Scheduler and all other members of the CONTRACTOR'S scheduling staff.

b. References of not less than two (2) previous projects on which the CONTRACTOR'S Construction Scheduler has utilized CPM scheduling.

(As used in this Section, "days" mean consecutive calendar days unless otherwise noted.)

The ENGINEER and the INSPECTOR reserve the right to disapprove any scheduling candidate or scheduling system proposed for the project. The ENGINEER and the INSPECTOR reserve the right to remove, without rights to work on the project, any member of the CONTRACTOR'S scheduling staff, that is, in the ENGINEER'S or INSPECTOR'S opinion, incompetent in scheduling.

C. General

1. Schedule Methodology

The scheduling method to be used shall be a Critical Path Method schedule in the form of an activity on node Precedence Diagram Network (PDN) with capabilities of identifying the critical path. The principles and

definitions of the terms used herein shall be as set forth in the Associated General CONTRACTOR'S publication "CPM in Construction", latest edition. To the extent there are any conflicts between the Associated General CONTRACTOR'S publication and the Specifications, the Specifications shall govern.

2. Work Breakdown Structure

   a. The CONTRACTOR shall submit to the ENGINEER for approval, at the Preconstruction Scheduling Conference, the following:

      (1) A Work breakdown structure.

      (2) The associated alphanumeric coding structure to implement the Work breakdown structure.

      (3) The activity identification system for labeling all Work activities.

3. The first code field shall designate the bid item. The second code field shall identify the type of activity. (Types of activities shall be defined as "submittal", "review/approval", "procurement/fabrication", "delivery", and "construction/installation" or "Change Order".) The third code field shall identify which Specification section the activity shall be paid under. The fourth code field shall identify who is responsible to perform the activity (i.e., CONTRACTOR, Subcontractor(s), Supplier, etc.). The fifth code field shall identify the area being worked in or the facility, if appropriate. The sixth code field shall identify the construction phase or project element (if phasing of Work or project elements are identified in the Contract.) All Change Orders and Notices of Non-Compliance shall be included as separate code fields.

4. Scheduling System

   The CONTRACTOR shall use Primavera P6 (or the latest edition) and a hardware system commensurate with the size of the program. This shall be referred to as the Scheduling System. The Scheduling System shall be capable of handling, processing, printing, and plotting data to satisfy all requirements of this Section.

D. Preconstruction Scheduling Conference

1. The ENGINEER will schedule and conduct a Preconstruction Scheduling Conference with the CONTRACTOR'S Project Manager and Construction Scheduler within seven (7) calendar days after Notice of Award, to commence development of the required Schedule. At this meeting, the requirements of this Section, as they apply to the Contract, will be reviewed with the CONTRACTOR. The CONTRACTOR shall be prepared to review and discuss its methodology for developing the Schedule, its proposed sequence of operations, and cost, manpower, and equipment loading methodology.

   The Contractor shall include the effects of adverse weather in the Schedule in terms of working days (wds). The number of wds, Monday through Friday, excluding any day designated as a holiday by the City or

in a Master Labor Agreement binding the Contractor, of normal adverse weather per month is as follows: January-3 wds, February-2 wds, March-3 wds, April-1 wd, October-1 wd, November-2 wds, December-2 wds. Unusually severe weather (see GC 00401 – Unavoidable Delay) is defined as the number of working days over what is normal adverse weather, as defined in the previous sentence. For partial months, the aforementioned numbers shall be prorated and rounded to the nearest whole number. There shall be no extension of time for adverse weather unless the Contractor is prevented from working during the first five (5) hours of a workday with at least sixty percent (60%) of the normal work force on more days per month than listed above. Even if there is unusually severe weather, a non-compensable extension of time will not be granted unless the other conditions required by GC 00401 are met, including negative impact to the critical path and delay beyond the current Contract Completion Date.

E. CONTRACTOR'S Construction Schedule

1. Fifteen (15) calendar days after the Preconstruction Scheduling Conference, the CONTRACTOR shall provide to the ENGINEER an update on the progress in the development of the Contractor's Construction Schedule (the Schedule). The CONTRACTOR shall submit to the ENGINEER the Schedule within thirty (30) calendar days after the Preconstruction Scheduling Conference.

2. The Schedule shall show the sequence and interdependence of activities required for complete performance of the Work, beginning with the date of the Notice to Proceed and concluding with the Contract Completion Date based on the completion time (calendar days) allowed in the Contract.

3. Pursuant to the float sharing requirements of the Contract, the use of float suppression techniques such as preferential sequencing, special lead/lag logic restraints, extended activity times, or imposed dates shall be cause for rejection of the Schedule and any revisions or updates. The use of float time disclosed or implied by the use of alternative float suppression techniques shall be shared as directed by the ENGINEER.

4. If the CONTRACTOR submits a Baseline Schedule showing completion of the Work more than thirty (30) calendar days in advance of the Contract Completion Date, the CONTRACTOR agrees that the ENGINEER may, at no cost to the CITY, decrease the Contract duration by issuance of a Change Order which will change the appropriate Milestone Date(s) and the Contract Completion Date to the completion date reflected on the Schedule. Any approved Schedule, revision, or update having an early completion date shall show the time between the early completion date and the current Contract Completion Date as "project float".

5. The ENGINEER will review and make comments on the Schedule. Meetings will be held between the ENGINEER, the CONTRACTOR, and all Subcontractors and Suppliers whom the CONTRACTOR may desire to invite or whom the ENGINEER may request be present.

6. Comments made by the ENGINEER on the Schedule, during review, will not relieve the CONTRACTOR from compliance with requirements of the Contract Documents. To the extent that there are any conflicts between the approved Schedule and the requirements of the Contract Documents, the Contract Documents shall govern.

7. If requested by the ENGINEER at any time during the project, the CONTRACTOR shall provide highly detailed, a short-term schedule for specific crucial items (work-around, start-up, etc.).

F. Network Details

1. The Schedule shall include time-scaled network diagrams, based on calendar days, as well as computer tabulations. It shall be constructed to show the order in which the CONTRACTOR proposes to carry out the Work, to indicate restrictions of access and to show availability of Work areas, and availability and use of manpower, materials and equipment. The CONTRACTOR shall utilize the Schedule in planning, scheduling, coordinating, and performing the Work under the Contract (including all activities of Subcontractors, equipment vendors, and Suppliers). The CONTRACTOR will provide the ENGINEER with written confirmation of the concurrence of all major trade Subcontractors and Suppliers with the Schedule. (The term "major Subcontractors and Suppliers" as used in this Section, shall include any Subcontractor or Supplier with five (5) percent or more of the value of the Contract.) The logic shall be determined by which activity must be completed before a successor can start; maximum concurrent work; and manpower or equipment constraints which prevent concurrent work.

2. The Schedule shall provide the ENGINEER with a tool to monitor and follow the progress of all phases of the Work. The Schedule submitted to the ENGINEER shall comply with all limits imposed by the scope of Work, with all contractually specified intermediate milestone and completion dates, and with all constraints, restraints or sequences included in the Contract. The degree of detail shall include factors to the satisfaction of the ENGINEER, including, but not limited to:

   a. Physical breakdown of the project.

   b. Contract milestones and completion dates, substantial completion dates, constraints, restraints, sequences of Work shown in the Contract, the planned substantial completion date, and the final completion date.

   c. Type of Work to be performed, the sequences, and the labor trades involved.

   d. All purchases, submittals, submittal reviews, manufacturing, tests, delivery, and installation activities for all major materials and equipment, and a separate list of all major material items or items of equipment for which the CONTRACTOR intends to seek payment prior to installation.

e. Deliveries of CITY furnished equipment and/or materials in accordance with the dates or schedule windows of such items set forth in the Contract or furnished by the ENGINEER, or items to be salvaged and delivered to the CITY.

f. Preparation, submittal and approval of Shop and/or Working Drawings and material samples showing a **Twenty-one (21) workday** minimum time specified for the ENGINEER'S review of normal or routine submittals and a forty five (45) workday review time for all major submittals, so identified in the technical specifications, and the same time frame shall be allowed for at least one (1) resubmittal on all major submittals so identified in the Contract Documents.

g. Approvals required by regulatory agencies or other third parties Including but not limited to notifications to utility companies, and request of services.

h. Plans for all subcontract Work, concrete placement sequence, structural steel, plumbing, heat, ventilation, air conditioning, electrical, etc..

i. Assignment of responsibility for performing specific activities, notifications to utility companies and request of services.

j. Access to and availability of Work areas including all anticipated plant shutdowns, if applicable.

k. Identification of interfaces and dependencies with preceding, concurrent and follow-on CONTRACTORS and utilities as shown on the Plans or called out in the Specifications.

l. Resource loading for cost, manpower, material, and equipment.

m. Actual tests by the CONTRACTOR and the CITY, submission of test reports, and approval of test results.

n. All start up, testing, training, and assistance required under the Contract.

o. Planning for phased or total takeover by the CITY.

p. Punchlist and final cleanup.

q. Identification of any manpower, material, or equipment restrictions, as well as any activity requiring unusual shift work, such as two shifts, six (6) day weeks, specified overtime, or work at times other than regular days or hours, shall be clearly identified in the Schedule.

3. The activities included in the Schedule shall be analyzed in detail to determine activity durations in units of project working days. Durations shall be based on the labor, equipment, and materials required to perform each activity on a normal Workday basis. No on-site activity shall have a duration over fifteen (15) working days except non-construction activities

such as submittals, submittal reviews, procurement and delivery of materials or equipment, and concrete curing. Only on-site construction activities will be shown in their resource loaded state to reflect cost, manpower, materials and equipment except for those activities specifically identified under 1.1F.2d of this Section. The manpower and equipment, by item designation, shall be shown for each construction activity for the network on a tabular listing, and in information furnished in accordance with O and P of this Section.

4. Critical or near critical paths resulting from the use of manpower or equipment restraints shall be kept to a minimum. Near critical paths shall be defined as those paths having fifteen (15) working days or less of total float at the time of initial submission. Restraints related to resource loading must be identified as “For resource loading only”.

5. The estimated cost to perform each work activity shall be noted for each activity in the network on a tabular listing. The sum of the costs assigned to all activities shall equal the Contract value. No activity costs shall be assigned to submittals or submittal reviews. The accepted cost loaded Project Schedule shall constitute the Schedule of Values in accordance with the SCHEDULE OF VALUES / CONTRACT PRICE BREAKDOWN of these GENERAL REQUIREMENTS, from which monthly progress payments will be made in accordance with the provisions of PARTIAL PAYMENTS in these GENERAL REQUIREMENTS. Acceptance of the Cost Loaded Schedule by the CITY does not relieve the CONTRACTOR’S responsibility to submit any cost information or data as requested by the ENGINEER for verification of cost.

6. The network diagram shall be prepared on (E) size sheets (28 inches by 40 inches), shall have a title block in the lower right-hand corner, and a timeline on each page. Exceptions to the size of the network sheets and the use of computer graphics to generate the networks shall be subject to the approval of the ENGINEER.

7. All networks shall be drafted time scaled to show a continuous flow of information from left to right. The primary path(s) of criticality shall be clearly and graphically identified on the network(s).

G. Schedule Reports

1. The Schedule submitted to the ENGINEER shall include the time scaled network diagram. Network diagrams shall be based on early start and early finish dates of activities shown. The network diagrams submitted to the ENGINEER shall also be accompanied by a computer-generated mathematical analysis for each activity included in the Schedule. Such mathematical analysis shall be submitted to the ENGINEER and shall include at a minimum, the following:

   a. A list of all activities sorted by Activity I.D. Number with predecessor and successor activity numbers and descriptions;

   b. Activity number and description.

   c. Activity code(s).

d. Schedule and actual/remaining duration for each activity.

e. Earliest start date (by calendar date).

f. Earliest finish date (by calendar date).

g. Actual start date (by calendar date).

h. Actual finish date (by calendar date).

i. Latest start date (by calendar date).

j. Latest finish date (by calendar date).

k. Float in work days.

l. Monetary value and cost-to-date of each activity.

m. Percentage of activity complete and remaining duration for incomplete activities.

n. Cumulative value of Work completed based on the CONTRACTOR'S reported portion of activities complete and accepted.

o. Imposed constraints.

2. The following printed computer outputs shall be required as part of the Schedule submittal and each revision or update thereafter as a condition precedent to receipt of progress payments:

a. Activity listing sorted by I.D. number showing predecessor and successor activities in numerical order, with original and remaining duration, early start, early completion, late start, late completion and total float.

b. A sublisting of materials and equipment sorted by Specification Section number. The sublisting of materials and equipment shall include the following activities: preparation of Shop Drawings, submittal to the ENGINEER, review by the ENGINEER, and fabrication, testing, and/or delivery of material and equipment which shall be interfaced with the earliest start date that the material or equipment is to be installed on the project.

c. Activity sort(s) by organizational responsibility, including submittals to the ENGINEER for all major items or material and equipment, the number of shifts, crew sizes of each craft and construction equipment to accomplish the activity;

3. Outputs 1 and 2, above, shall show all activities, including restraints, for the duration of the project.

H. Approval Of The Baseline Schedule

1. The Schedule network diagram and computer tabulations, the Cash Flow Projection, and the Manpower and Equipment Requirements Forecast shall be submitted to the ENGINEER for approval on e2020:

   a. The Network Diagram and Master Bar Chart Summary Schedule.

   b. Computer tabulations, Predecessor/Successor Report.

   c. Manpower Requirements.
   d. Cash Flow Projection.
   e. All required reports specified in F and G of this Section.

2. Approval Process:

   a. The ENGINEER shall approve or disapprove, in writing, the CONTRACTOR'S submission within twenty one (21) calendar days after receipt of all required information. The Schedule, once approved, becomes the Baseline Schedule which shall be used for monitoring and evaluating all facets of Contract performance including, but not limited to, progress, changes, and delays.

   b. The CONTRACTOR, the CONTRACTOR'S Construction Scheduler, and those major trade Subcontractors and Suppliers, as required by the ENGINEER, shall be required to participate in all meetings necessary to reach mutual agreement and approval of the Baseline Schedule, the Manpower Requirements Forecast, and the Cash Flow Projection.

   c. The CONTRACTOR shall revise the Baseline Schedule, as required by the ENGINEER, to reflect project construction. If any of the required submissions are returned to the CONTRACTOR for corrections or revisions, they shall be resubmitted along with a new CD and a hard copy listing of each change (Claim Digger report) for approval within seven (7) calendar days after receipt. Resubmittals shall be as required in H.1 and H.2 of this Section. Review and response by the ENGINEER shall be given within seven (7) calendar days after receipt of each new submission.

   d. Should the Baseline Schedule, submitted for approval, show variances from the requirements of the Contract, the CONTRACTOR shall make specific mention of such variations in the letter of transmittal, in order that, if accepted, proper adjustments to the Baseline Schedule can be made. Otherwise, the CONTRACTOR will not be relieved of the responsibility for executing the Work in strict accordance with the requirements of the Contract Documents.

   e. <u>Submittal and approval of the Baseline Schedule, the Manpower Requirements Forecast, the Cash Flow Projection, major trade Subcontractor and Supplier confirmation in writing, or CD(s), within the time prescribed, or revisions thereof within the required time, is a condition precedent to the issuance and payment of progress payments.</u>

f. Failure of the CONTRACTOR to submit the Baseline Schedule, or any required resubmittals, in a timely, accurate manner and in accordance with the requirements of this Section will result in costs to the CITY which are difficult if not impossible to determine; therefore, the CONTRACTOR shall pay the CITY liquidated damages in the amount of $600 per calendar day, for every work day the schedule submittal, revision, or resubmittal is late. This amount shall be subtracted from any monies due and shall be forfeited by the CONTRACTOR.

I. Revisions To Approved Baseline Schedule

1. The CONTRACTOR shall execute the Work in accordance with the approved Baseline Schedule. Out of sequence construction, defined as a change in the Baseline Schedule, requires prior approval of the ENGINEER as defined below.

2. Upon approval of a Time Impact Analysis the change shall be reflected in the next schedule submittal by the CONTRACTOR.

3. No change (except for resubmittals) to the approved Baseline Schedule shall be made without the prior written approval of the ENGINEER. If the CONTRACTOR desires to make a change to the approved Baseline Schedule, the CONTRACTOR shall request permission from the ENGINEER in writing, stating the reasons for the change as well as the specifics, such as revisions to activities, logic, durations, etc. The ENGINEER will provide a response within five (5) calendar days. Actual status and/or forecast dates for revised submittals shall be added without prior acceptance by the ENGINEER. They are still subject to review by the ENGINEER.

4. If the ENGINEER considers a change to the Baseline Schedule to be of a major nature, the ENGINEER may require the CONTRACTOR to revise and submit for acceptance all of the affected portion(s) of the Baseline Schedule including an analysis to show the effect on the entire project. The proposed revision and analysis shall be submitted to the ENGINEER within fifteen (15) calendar days after the ENGINEER notifies the CONTRACTOR the revision is of a major nature. A change will be considered to be of a major nature if the time estimated for an activity or sequence of activities is varied from the original plan to the degree that there is reasonable doubt that the Contract completion date will be met, or if the change impacts the Work of other CONTRACTORS at the Jobsite. Changes to activities having adequate float shall be considered as minor changes, except that an accumulation of minor changes may be considered a major change when such changes affect the Contract completion date. (Activities having adequate float are activities which are not critical after the change is made.).

5. Only upon approval of a change by the ENGINEER shall it be reflected in the next Schedule update submitted by the CONTRACTOR.

J. Updates To Approved Baseline Schedule And Progress Payments

1. Monthly Updates:

   a. All updated or revised Schedules shall be submitted in the same detail as the original submittal, unless modified in writing by the ENGINEER. Written confirmation of the major trade Subcontractors and Suppliers shall be required quarterly.

   b. The initial Schedule update shall be submitted within fourteen (14) calendar days after approval of the Baseline Schedule. The Schedule update shall be cost loaded. Subsequent Schedule updates shall be submitted at the beginning of each month thereafter for the duration of the Contract. The data date shall be the first working day of the month unless otherwise directed by the ENGINEER. The Schedule and computer tabulations shall be reviewed by the CONTRACTOR'S Construction Scheduler at a joint update meeting with the ENGINEER and the INSPECTOR.

2. Monthly Schedule Updates:

   a. The CONTRACTOR shall submit the Monthly Schedule Update to the ENGINEER each month, on a date assigned by the ENGINEER. The proposed Monthly Schedule Update prepared by the CONTRACTOR shall include all information available as of the cutoff date established by the ENGINEER. A detailed list of all proposed schedule changes (logic, duration, status, additions, and deletions) shall be submitted with the update (Claim Digger report). Prior to the monthly update review meeting, the CONTRACTOR shall obtain from his Subcontractors, Suppliers, and staff the necessary information as required to reflect progress to date. A proposed Monthly Schedule Update containing the information set forth below shall be available for review at the meeting.

      (1) For activities started and/or completed during the previous period: Actual start and actual completion dates, and number of shifts used to accomplish the activity.

      (2) For activities begun but not yet complete to date: Remaining duration of the Work, estimated percent complete, and estimated completion date. The schedule shall be calculated using remaining durations and retained logic..

      (3) For activities not yet started: Estimated start dates, revised duration's, and estimated completion dates, as necessary.

      (4) For authorized Change Orders, including Emergency Change Orders, Time and Material Change Orders, and Unilateral Change Orders: Revised and original activities, number of shifts, crew sizes by craft, construction equipment required, cost, and durations, and status of all outstanding Notices of Non-Compliance, where required.

(5) The monthly update of the Network Diagram shall be for the whole project. The previous month's activities shall be reported as they actually took place and designated as complete, if actually completed, on the network diagram update.

(6) The electronic file of the submitted Network Diagrams and the related reports shall constitute a clear record of progress of the Work from Notice to Proceed to final completion.

(7) The monthly submittal to the ENGINEER shall be accompanied by the Schedule Narrative Report. The Schedule Narrative Report shall describe the physical progress during the report period, Plans for continuing the Work during the forthcoming report period, actions planned to correct any negative float predictions, and an explanation of potential delays and/or problems and their estimated impact on performance and the overall project completion date. In addition, alternatives for possible schedule recovery to mitigate any potential delay and/or cost increases shall be included for consideration by the ENGINEER The report shall follow the outline set forth below:

CONTRACTOR'S Schedule Narrative Report Outline:

a) CONTRACTOR'S Transmittal Letter.

b) Description of problem areas.

c) Current and anticipated delays:
   1) -Cause of the delay.
   2) -Corrective action and schedule adjustments to correct the delay.
   3) -Impact of the delay on other activities, milestones, and completion dates.

d) Changes in construction sequences.

e) Pending items and status thereof:
   1) -Permits.
   2) -Change Orders.
   3) -Time extensions.
   4) -Non-Compliance Notices.

f) Contract Completion Date(s) status:
   1) Ahead of schedule and number of working days.
   2) Behind schedule and number of working days.

g) Other project or scheduling concerns including any plant shutdowns, duration of each shutdown,

and analysis of any Work to be performed during the shutdown period.

h) Include reviewed and updated Network Diagram and Reports.

i) Include revised Cost Loading and Cash Flow Information of this Section.

j) Include substantial revisions to manpower and equipment requirements

(8) The CONTRACTOR shall provide to the ENGINEER, the Network Diagram, the Predecessor/Successor Report sorted by activity number, the list of all changes made to the previously approved Schedule, and the Schedule Narrative Report. The data required to provide all other scheduling reports called for in of this Section shall be provided on e2020.

3. The CONTRACTOR'S Construction Scheduler and representatives from major Subcontractors and Suppliers (as requested by the ENGINEER shall attend the monthly update meetings with the above data prepared in advance for each meeting to provide, as of the end of the updating period, a complete and accurate report of the current procurement schedule (in accordance with the requirements of CONSTRUCTION STATUS REPORTS of the GENERAL REQUIREMENTS), construction progress, and a depiction of how the CONTRACTOR plans to continue the Work of the project to meet all Contract Completion Dates. All network changes and status dates agreed to during each update meeting shall be considered as acceptable by all parties unless written notice of exception is given by an objecting party within five (5) calendar days after the update meeting. For major network changes that cannot be agreed to during an update meeting, the CONTRACTOR shall submit, in writing, such revisions for the ENGINEER'S approval prior to inserting such changes into the network. Submissions may be in the form of marked-up networks, fragnets, or schedule abstracts provided they are submitted with a letter of transmittal. The submission and approval procedures for this information shall follow the same timetable described in H.2 of this Section.

4. Predicated on the results of the ENGINEER'S review of Monthly Schedule Update submittals and accompanying reports, the CONTRACTOR may be required to revise the Monthly Schedule Update. Conditions under which a revision will be made are as follows:

a. When a delay in the completion of any Work item or sequence of Work items results in an indicated extension of the project completion or interim milestone dates detailed herein by thirty (30) calendar days.

b. When delays in submittals or deliveries or Work stoppages are encountered which make replanning, rescheduling, or resequencing of the Work necessary.

c. When the schedule does not represent the actual execution and progress of the project.

5. Required revisions of the Monthly Schedule Update are due within five (5) calendar days of notice by the ENGINEER that a revision is required. All revisions and additions to the Schedule are subject to the review of the ENGINEER. No changes (except resubmittal cycles) are to be implemented in the Schedule by the CONTRACTOR without the prior approval of the ENGINEER. When the Monthly Schedule Update or its required revision is approved by the ENGINEER, it then becomes the Current Schedule Update. The Current Schedule Update will be used for the period from which it is approved until its successor is submitted and approved.

6. The Schedule Narrative Report, the updated Project Schedule (networks, and computer computations), the Cash Flow Projection, the updated network diagram, and one (1) copy of the updated CD reflecting the status of the project agreed to at the updating meeting, shall be submitted to the ENGINEER within five (5) calendar days after each updating meeting.

7. The update report shall show the activities or portions of activities completed during the reporting period and their total value as the basis for the CONTRACTOR'S request for partial payment. Payments made pursuant to PARTIAL PAYMENTS of these GENERAL REQUIREMENTS will be based on the total value of such activities completed or partially completed after verification by the INSPECTOR. The report shall state the percentage of the Work actually complete as of the report date. If the project is behind schedule, progress along other paths with negative float shall also be reported.

8. Failure of the CONTRACTOR to submit the Monthly Schedule Updates in a timely, accurate manner and in accordance with the requirements of this Section will result in costs to the CITY which are difficult, if not impossible to determine; therefore, the CONTRACTOR shall pay the CITY liquidated damages in the amount of $600 per calendar day for every work day the submittal is late or not in full compliance with the requirements of this Section. This amount shall be deducted from any monies due, and forfeited by the CONTRACTOR. In addition to the liquidated damages, if the CONTRACTOR fails to submit any of the Monthly Schedule Update deliverables, or to meet any of the other updating requirements, progress payments will be withheld until such time as the required update information is submitted.

K. Weekly Progress Reports

1. Once each week, on a day established by the ENGINEER, the CONTRACTOR shall submit:

a. A progress schedule listing the activities completed and in progress for the previous week and the activities scheduled for the succeeding two (2) weeks. The activity designations shall be consistent with the activity designations in the Current Schedule Update. A bar chart shall be used to display the information in pictorial form. The appropriate schedule activity number shall be listed for each bar.

L. Cost Loading and Cash Flow

1. With the initial Baseline Schedule submittal, each Monthly Schedule Update, and each revision, the CONTRACTOR shall also submit a schedule of cost loading and cash flow to the ENGINEER. There shall be a strict correlation between the sum of individual activity costs and the total values indicated for bid items. That is, each individual activity within the Schedule shall employ a code, which in summary, attaches its cost, if any, to the appropriate bid items. The sum of activity costs within a specific code shall equal the cost of its corresponding bid items and approved Change Orders.

2. Expected payment requests for each month shall be included with proposed updates. The cash flow shall show the net payment requests for each month. The cumulative payment requests to date shall also be shown after deducting retainage and any other monies withheld. The cash flow shall be shown in tabular format and in graphic format.

3. The CONTRACTOR, at the Preconstruction Scheduling Conference, shall explain in detail the procedure to be used to develop the Schedule activity cost loading and cash flow. This procedure is subject to the review and approval of the ENGINEER and the INSPECTOR. Receipt and approval of the Schedule Cost Loading and Cash Flow Summary is a condition precedent to the making of any payments under the Contract. Therefore, failure to submit an acceptable schedule cost loading and cash flow summary shall be cause for withholding any progress payments due or that may become due under this Contract, until such time as an acceptable cost loading and cash flow summary is received.

4. In accordance with the updating procedures, when an activity is deemed substantially complete by the ENGINEER, then such activity will no longer be treated as an activity affecting the critical path or successor activities on the project. The cost of correction of any punchlist items associated with substantially completed activities will be covered by amounts deemed by the ENGINEER and the INSPECTOR to be adequate to cover such costs.

M. Responsibility For Completion

1. Whenever it becomes apparent from the current Monthly Shedule Update that phasing, milestone, constraint, restraint, or Contract Completion Date will not be met, the CONTRACTOR shall submit a plan to recover the delay using some or all of the following remedial actions;

   a. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work and meet the current Contract Completion Date.

   b. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination thereof to eliminate the backlog of Work.

c. Reschedule the Work in conformance with the Specification requirements.

2. Prior to implementing any of the above actions, the CONTRACTOR shall notify the ENGINEER and obtain approval from the ENGINEER. If such actions are approved, the Schedule revisions shall be incorporated by the CONTRACTOR into the Network Diagram before the next Monthly Schedule Update is due.

3. Under no circumstances will the addition of equipment or construction forces, increasing the Working hours or any other method, manner, or procedure to return to the contractually required Contract Completion Date be considered justification for a Change Order or be treated as acceleration where the need for a recovery schedule has been caused by the CONTRACTOR and/or its Subcontractors or Suppliers, at any tier.

4. The ENGINEER may elect to withhold progress payments until the CONTRACTOR'S progress indicates that the milestone date(s) and/or the Contract Completion Date will be met.

N. Schedule Time Extensions

1. When Change Orders or delays are experienced by the CONTRACTOR and a time extension is requested, the CONTRACTOR shall submit to the ENGINEER, a written Time Impact Analysis illustrating the influence of all changes or all delays on the current Contract Completion Date. The Time Impact Analysis shall be based on an As-Built Schedule Analysis approach. The As-Built Schedule that will be created will incorporate all Actual Start and Finish dates, actual durations of activities, and actual sequences of construction. This Time Impact Analysis shall incorporate all delays (including CITY, CONTRACTOR, and Third Party delays without exception) in the time frame they occurred with actual logic ties. The As-Built Schedule data shall be obtained from the most recent accepted Baseline Schedule or Monthly Schedule Update as of the time the Preliminary Change Order, Emergency Change Order, Unilateral Change Order, or Allowance Order was issued to the CONTRACTOR. The As-Built Schedule shall be created as an early start schedule. The As-Built Schedule shall use the original activity durations for all incomplete work and the actual logic driving all activities. All requests for time extensions shall be based upon an analysis of this As-Built Schedule. The critical path will be established and all CITY caused delays on the critical path will be identified. The time extension will be based solely upon the cumulative duration of all CITY and Third Party caused delays (as set forth in UNAVOIDABLE DELAY of the GENERAL CONDITIONS) which are on the critical path. Any time extensions to the project Interim Milestone Dates shall be non-compensable time extensions only.

2. Time extensions will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total or remaining float along the critical path of activities at the time of actual delay, or at the time the Preliminary Change Order, the Emergency Change Order, the Unilateral Change Order, or the Allowance Order was issued to the CONTRACTOR. Float or slack time is not for the exclusive use or benefit of the ENGINEER or the CONTRACTOR but is an expiring resource available to all parties as needed to meet Contract milestones

and the Contract Completion Date. Time extensions shall not be granted nor delay damages paid until;

a. A delay occurs which is beyond the control and without the fault or negligence of the CONTRACTOR and its Subcontractors or Suppliers, at any tier; and

b. Which extends actual performance of the Work beyond the applicable current Contract Completion Date and the most recent date predicted for completion of the project on the approved Monthly Schedule Update, current as of the time of the delay or as of the time of issuance of the Preliminary Change Order, the Emergency Change Order, the Unilateral Change Order, or the Allowance Order was issued to the CONTRACTOR.

3. Each Time Impact Analysis shall be submitted in triplicate, within fifteen (15) calendar days after a delay occurs, or issuance of the Preliminary Change Order, Emergency Change Order, Time and Materials Change Order, or Unilateral Change Order. If the CONTRACTOR does not submit a Time Impact Analysis for a specific Change Order or delay within the specified period of time, the CONTRACTOR shall be deemed to have irrevocably waived any rights to additional time and cost.

4. Since float time within the Schedule is jointly owned, it is acknowledged and agreed by the CONTRACTOR that CITY caused delays on the project may be offset by CITY caused time savings (including, but not limited to: critical path submittals returned in less time than allowed for in the Contract, approval of substitution requests which result in a savings of time along the critical path for the CONTRACTOR, etc.). In such an event the CONTRACTOR shall not be entitled to receive an extension of time or delay damages until all CITY caused time savings are exceeded and the Contract Completion Date is also exceeded.

5. Approval or rejection of each Time Impact Analysis by the ENGINEER shall be made within fifteen (15) calendar days after receipt of each Time Impact Analysis, unless subsequent meetings and negotiations are necessary. Upon approval, a copy of a Time Impact Analysis signed by the ENGINEER shall be returned to the CONTRACTOR for incorporation into the next Monthly Schedule Update.

6. Upon mutual agreement by both parties, fragnets illustrating the influence of Change Orders and delays shall be incorporated into the Schedule during the first update after agreement is reached.

7. In the event the CONTRACTOR does not agree with the decision of the ENGINEER regarding the impact of a change or delay, it shall be resolved in accordance with CLAIMS AND PROTESTS of the GENERAL CONDITIONS.

O. Manpower

The CONTRACTOR shall submit with the initial Baseline Schedule a histogram depicting total project manpower for its own forces and for each of its Subcontractors for each month. The histogram shall be based upon and shall be in substantive agreement with the number of shifts and crew

sizes in the Schedule and shall be updated monthly and submitted with the Monthly progress report. The update shall show actual manpower for each month during the construction period to date and required manpower for both base scope and Change Order Work each month, necessary to complete all remaining activities to insure timely project completion.

P. Construction Equipment

1. The CONTRACTOR shall submit with the initial Baseline Schedule a tabular report listing each major piece of construction equipment for itself and each of its Subcontractors for each month. This major equipment is the equipment that is or will be used at the Worksite. Each major piece of the CONTRACTOR'S and the Subcontractor's equipment shall be separately described, identified, and numbered in the report. The tabular report shall be based upon and in substantive agreement with the number of shifts and crew sizes by craft in the Schedule and shall be updated monthly and submitted with the monthly progress report. The update shall show actual construction equipment for each month during the construction period to date and the required construction equipment for each month necessary to complete all remaining activities including the Change Order Work, on the early finish date.

Q. Submittal Of "As-Built" Schedule

1. As a condition precedent to any release of retention, the last update to the Schedule submitted shall be identified by the CONTRACTOR as the "As-Built Schedule". The "As-Built Schedule" shall reflect the exact manner in which the project was actually constructed (including start and completion dates, activities, sequences, and logic) and shall be signed and certified by the CONTRACTOR'S Project Manager and Construction Scheduler as being a true reflection of the way in which the project was actually constructed.

(END OF SECTION)

SECTION 01322
CONSTRUCTION PROGRESS PHOTOGRAPHY

PART ONE - GENERAL

1.1 SUMMARY

A. Required**:** Provide photographs taken at the Jobsite at the specified stages of Contracted Work in accordance with provisions of this Section.

1. Take three photos from each direction of the project site for each major improvement or other feature as directed by the ENGINEER at thirty (30) day intervals during the period of Contracted Work.

2. Take first photographs just before CONTRACTOR starts any work operations at the Jobsite.

3. Take final photographs when all Contracted Work has been completed, regardless of time interval since previous photographs were taken. These photographs shall be suitable for use in City presentations and publications.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to, GENERAL CONDITIONS, DIVISION 1 - GENERAL REQUIREMENTS and other Sections of the Project Manual.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01330 **–** SHOP DRAWINGS / SUBMITTALS of the GENERAL REQUIREMENTS.

B. Except as otherwise directed by the ENGINEER, submit three color prints of each view.

1.3 QUALITY ASSURANCE

A. Secure the services of a full-time professional photographer who is skilled and experienced in construction photography and whose work samples are acceptable to the ENGINEER.

B. Do not replace the photographer without the ENGINEER'S written approval.

C. Do not permit prints to be issued for any other purpose without specific written approval from the ENGINEER.

D. Photographs and prints to be of professional quality; clear, in focus, with high resolution and sharpness, and with minimum distortion.

PART TWO - PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS

A. Provide **digital files**:

1. In PDF and RAW format

B. Identify the following:

1. Job name and address;

2. Location from which photographed;

3. Date of photograph;

4. Photographer's name and address, and the photograph number.

PART THREE - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHY

A. View Locations: As directed by the ENGINEER**.** Location(s) to provide diversified overall view of the Work from a position that is expected to remain accessible throughout progress of the Contracted Work for added photography.

Continue to take photographs at same view position of the Works to show continuous progress of the Works until the Works are completed or as directed by the ENGINEER**.**

B. Notifications: Notify the **ENGINEER** seven (7) days in advance of proposed day of photography.

C. Weather Conditions: When inclement weather is anticipated, consult with the **ENGINEER** to determine acceptable alternate arrangements.

D. Timing of Photography: To the maximum extent practicable, take photographs at the same time of day throughout progress of the Contracted Work. Timing shall be approved by the ENGINEER**.**

E. On Contract Drawing: Photographer to identify each photograph location or by such other means as acceptable to the ENGINEER, to enable future photographs to be taken from the same location and position.

F. Change of Locations: When so directed by the ENGINEER because of construction, change one or more of the locations inside or outside of the building(s).

(END OF SECTION)

SECTION 01323
CONSTRUCTION STATUS REPORTS

1.1 THE REQUIREMENT

A. Weekly Status Report

During the construction phase of the Work, the CONTRACTOR shall submit weekly written status reports to the ENGINEER and the INSPECTOR. The report shall contain a record of inspections and tests, not performed by CITY forces, for all Work accomplished subsequent to the previous report and shall include the following information:

1. Type of work under way during the time frame of the report (e.g., earthwork, concrete work, structural steel erection, equipment manufacturing, component installation).

2. Inspections and tests, and location of inspections and tests that were made.

3. Results of inspections.

4. Reports of tests performed, including those specified, with the results of the tests, and acceptance criteria, including failures and remedial action to be taken. Test results, including all computations, shall be attached to the report form. Where test results cannot be completed by the time the report is submitted, a notation shall be made that the test was performed, including the approximate expected date that test results will be reported.

5. Report of any nonconforming items/activities. Nonconformance report forms designed solely for this purpose shall be utilized.

6. Results of inspections of material and equipment done upon their arrival at the Jobsite and prior to their incorporation into the Work. This includes, but is not limited to, compliance with approved submittals, damage, and proper storage requirements.

7. Offsite quality control activities.

8. Instructions received from the ENGINEER or INSPECTOR.

9. In all cases, the report must be verified and signed by the CONTRACTOR'S representative. The verification is to contain the statement that all supplies and materials incorporated in the Work are in compliance with the terms of the Contract except where noted.

B. Monthly Procurement and Delivery Status Report

1. The CONTRACTOR shall prepare and submit to the INSPECTOR and the ENGINEER a comprehensive Monthly Procurement and Delivery Status Report covering the procurement and delivery of equipment and materials to the Jobsite. This report shall outline the purchasing status of all

material, equipment and contracts. The purchasing status report shall include the following information:

a. Specification, purchase order, and Contract number;

b. Submittal Number;

c. Item or service description;

d. Required job site date; and

e. Project Delivery Date.

In addition, this report shall contain a three (3) month "Look Ahead Projection" of all factory tests, shipments to be inspected, or any other supplier activity which the CONTRACTOR, the ENGINEER, or the INSPECTOR, has the right to witness and accept. The report shall detail arrangements which are planned for meeting the witnessing and acceptance requirements, and for recording tests passed.

2. The CONTRACTOR shall obtain a submittal schedule for technical data, Shop Drawings, material and test certificates, O&M manuals, spare parts lists, and other submittals, from each supplier. This schedule shall be monitored and updated on a monthly basis and shall be submitted to the INSPECTOR and the ENGINEER with the Monthly Procurement and Delivery Status Report.

C. Miscellaneous Submittals

Required: CONTRACTOR shall prepare a Daily Construction Report recording the following information concerning events at the job-site and submit duplicate copies to the Consultant or ENGINEER at weekly intervals:

1. List of Subcontractors and Sub-Subcontractors at the site**,** types of works and job location.

2. Approximate count of CONTRACTOR'S personnel at the site**,** name, type of work and job location.

3. Construction equipment at the site.

4. High and low temperatures, general weather conditions.

5. Accidents and unusual events.

6. Meetings and significant decisions.

7. Stoppages, delays, shortages, losses.

8. Meter readings and similar recordings.

9. Emergency procedures.

10. Inspection, Orders and requests of governing authorities**,** type of work.

11. Change Orders received, implemented.

12. Services connected, disconnected.

13. Notice of Non-Compliance, Notice-To-Correct, and Job-Memorandum received.

14. Equipment or system tests and start-ups.

15. Preparation of Record Drawings and Project Manual.

16. Equipment or material delivered to site.

17. Partial completions, occupancies

18. Substantial completions authorized.

(END OF SECTION)

SECTION 01353
OPPORTUNITY TO PARTNER

1.1 THE REQUIREMENT

A. The successful bidder will have the opportunity to enter into a cooperative partnership agreement with the CITY for the contract. Participation in Partnering is highly encouraged. Partnering will create a framework for conflict resolution, improved communications, reduced litigation, and cost containment. During the partnering session, all parties will participate in developing an Issue Resolution Ladder, which will help establish and communicate the chain of command in each organization (See Attachment 01353–A1). Each level of the organization is expected to work cooperatively to resolve issues. However, if issues cannot be resolved in a timely manner or are beyond the authority granted that level, each party understands that the issue must be elevated to the next level.

B. The objective of this Partnering agreement would be effective completion of the Work on time and to achieve a standard of quality that would be a source of pride to both the CITY and the CONTRACTOR. Partnering is intended only to establish an environment of cooperation between the parties and will not affect the terms of this contract.

C. The third-party partnering moderator shall be chosen jointly by the Engineer and the Contractor. The City or Contractor may suggest the use of certain moderator; however each party shall have the right to agree or deny the use of the suggested moderator.

(END OF SECTION)

(SEE ATTACHMENT)

ATTACHMENT TO SECTION 01353

Attachments to General Requirements Section 01353 consists of one (1) document, as follows:

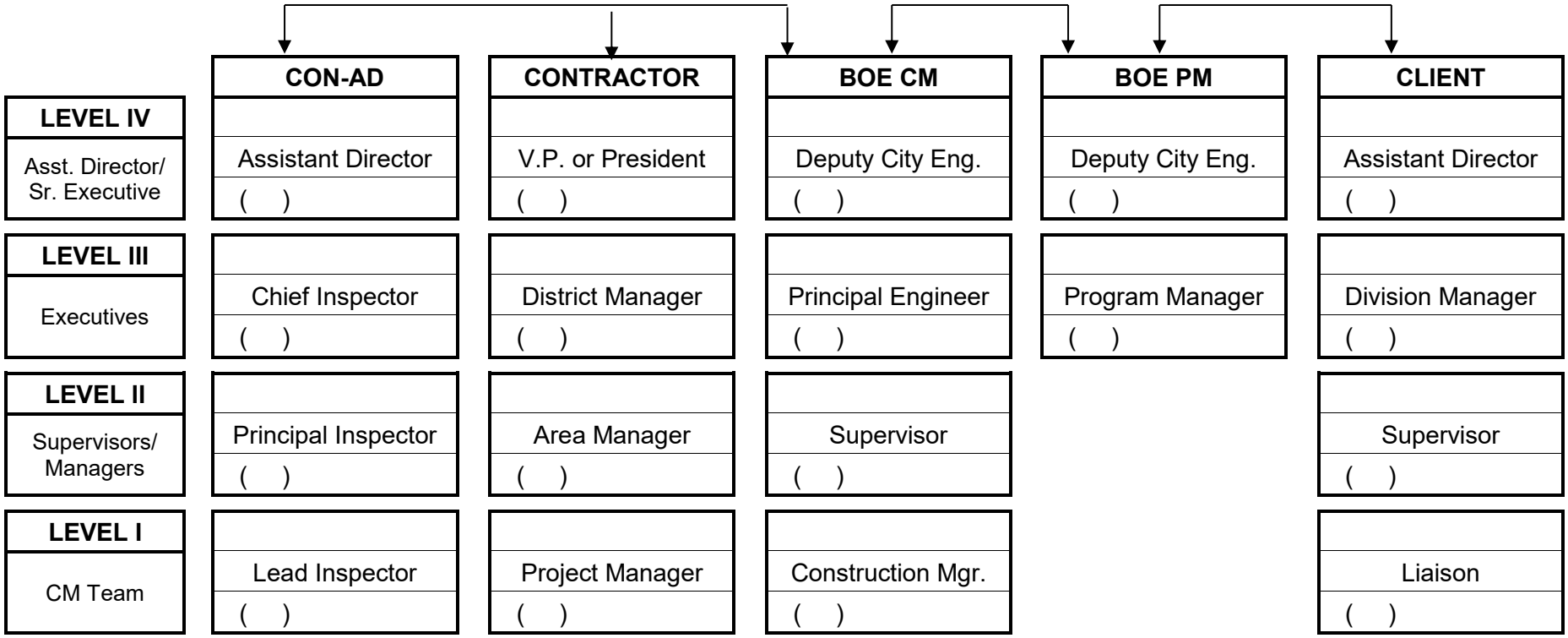
ATTACHMENT NUMBER	TITLE OF ATTACHMENT	NUMBER OF PAGES IN THIS ATTACHMENT
01353-A1	Issue Resolution Ladder – Line Management Form	1

City of Los Angeles, Department of Public Works
Bureaus of Engineering and Contract Administration

Contractor: **{name}**

Project Title: **{title}**

Issue Resolution Ladder – Line Management



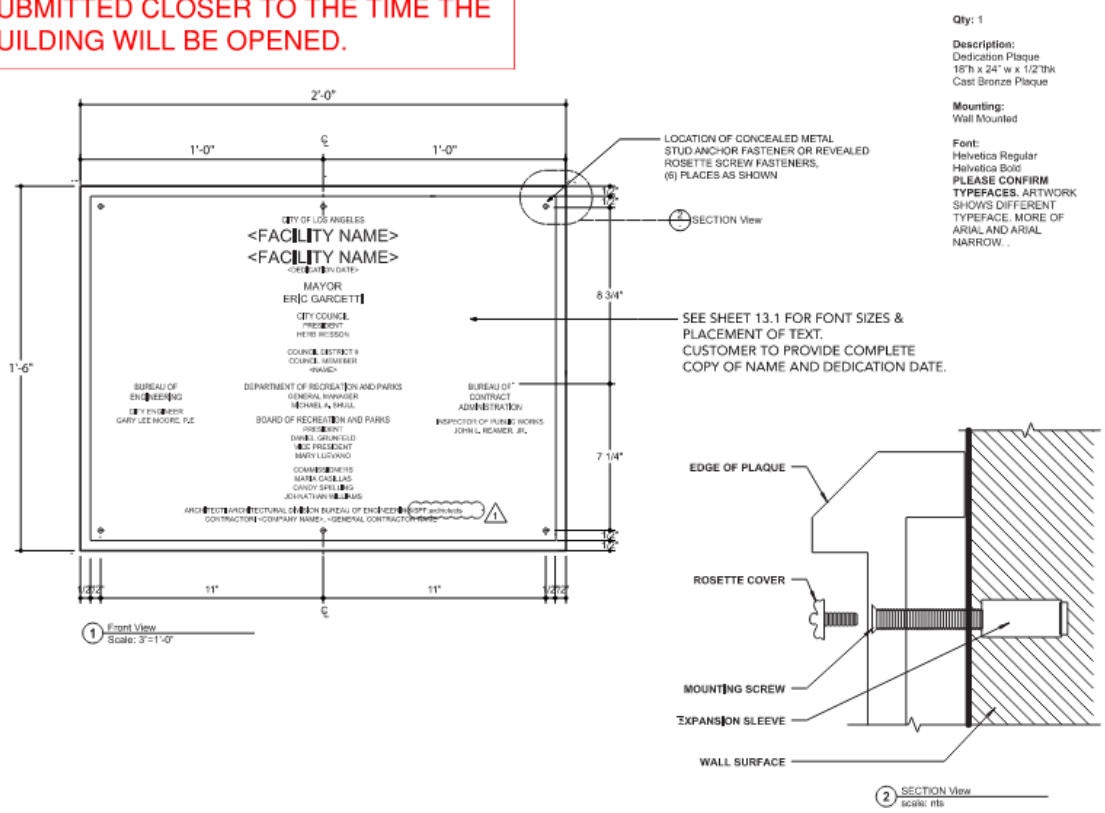
SECTION 01581
PROJECT SIGNS

1.1 THE REQUIREMENT

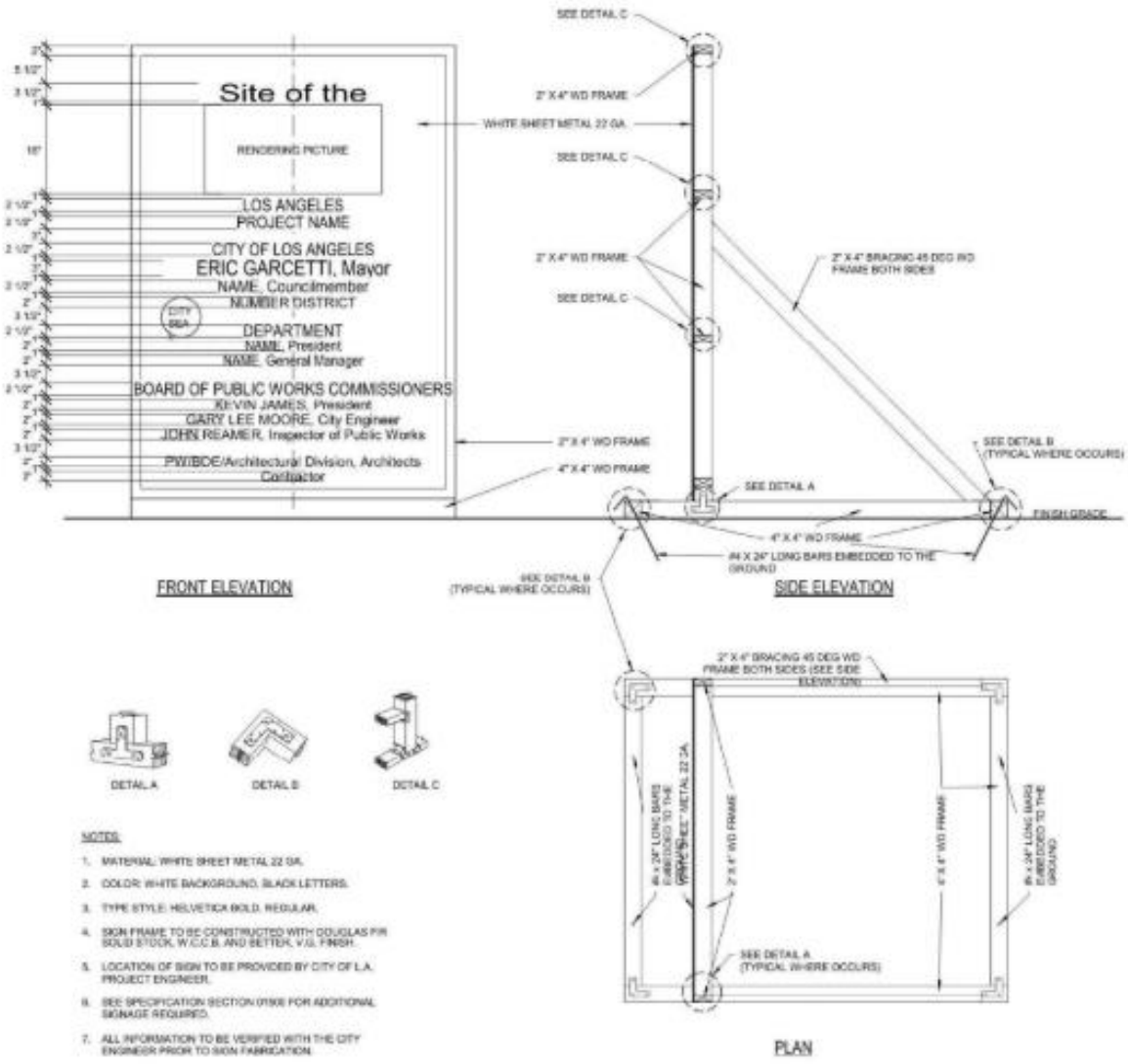
A. The names, addresses and specialties of CONTRACTORS, Subcontractors, architects, or engineers may be displayed on removable signs. The size and location shall be subject to the ENGINEER'S approval, as directed on Sheet EG-15, and Attachment A. Commercial advertising matter shall not be attached to or painted on the surfaces of buildings, fences, canopies, or barricades.

APPENDIX A

THE PLAQUE SUBMITTAL SHOULD BE SUBMITTED CLOSER TO THE TIME THE BUILDING WILL BE OPENED.



BUILDING PLAQUE



CONSTRUCTION SIGN

(END OF SECTION)

SECTION 01611
GUARANTY / WARRANTY

1.1 THE REQUIREMENT

A. The CONTRACTOR shall and does hereby warrant and guaranty that all work executed under this Contract will be free from defects of materials and workmanship for a period of one (1) year from the date of Final Field Acceptance of the project as evidenced by the issuance of a "Statement of Completion" by the Inspector, except for certain specific items of Work, materials and equipment requiring a guaranty or warranty for a greater period of time as may be required elsewhere in the Contract Documents. In the event, however, that portions of the Work are sufficiently complete to allow use or occupancy by the CITY in the manner and for the purposes intended prior to final completion and acceptance of the project, the guarantee period will commence on the date shown on the "Statement of Partial Completion."

B. The CONTRACTOR hereby agrees to indemnify and save harmless the CITY, and their officers, agents and employees against and from all claims and liability arising from damage and injury due to said defects. The CONTRACTOR shall repair or replace, at no cost to the CITY, any and all such defective Work and all other Work damaged thereby, which becomes defective during the term of the above-mentioned guaranties and warranties.

C. Within thirty (30) calendar days prior to completion of all Work, the CONTRACTOR shall submit to the CITY original copies of all manufacturers' product guaranties and warranties covering all supplied and installed equipment and, where applicable, systems.

D. In addition to the requirements of INSURANCE, Contract Bonds, of the GENERAL CONDITIONS, it shall be understood that the Surety for the faithful performance bond, submitted in conformance with the terms of the Contract for this project, is liable on its bond for all obligations of the CONTRACTOR including guaranty provisions. The "Performance Bond" shall remain in effect until the end of the guarantee period.

E. The CONTRACTOR shall, within twenty-four (24) hours of notice from the ENGINEER of any Work not in accordance with the requirements of the Contract, or any defects in the Work, commence and prosecute with due diligence all work necessary to fulfill the terms of this Section and to complete the Work within a period of time as approved by the ENGINEER. The CONTRACTOR shall notify the ENGINEER of the repair schedule before commencing the repairs and notify the ENGINEER to arrange for inspection. The CONTRACTOR shall submit a written report of the defect and methods of correction. In the event of failure by the CONTRACTOR and/or its Surety to respond to the notice or to complete the Work required by this Section within the time specified, the CITY shall proceed to have such Work done at the CONTRACTOR's expense. The CONTRACTOR or its Surety shall promptly reimburse the CITY all direct and indirect cost associated with performing this Work.

F. Repairs, replacements or changes made under the requirements of this Section shall be warranted for the specified guarantee period, but no less than one year, beginning on the date of acceptance of the repairs, replacements or changes.

(END OF SECTION)

SECTION 01723
RIGHT OF WAY

1.1 THE REQUIREMENT

A. The CONTRACTOR shall not allow its employees to use private property for any reason, or to use water or electricity from such property without written permission from the owner. The CONTRACTOR shall provide evidence of such permission, in writing, to the ENGINEER, before entering upon such lands.

(END OF SECTION)

SECTION 1731
CUTTING AND PATCHING

PART ONE - GENERAL

1.1 SUMMARY

A. This Section establishes general requirements pertaining to cutting (including excavating,) coring, fitting, and patching of the Contracted Work in existing or new CITY facilities (structures) required to:

1. Make the several parts fit properly;

2. Uncover work to provide for removal, installing, inspecting, or both, of ill-timed work;

3. Remove and replace work not conforming to requirements of the Contract Documents; and

4. Remove and replace defective work.

B. Related Work:

1. Documents affecting Works of this Contract include, but are not necessarily limited to, the GENERAL CONDITIONS, DIVISION 1 - GENERAL REQUIREMENTS and other Sections of the Project Manual.

2. In addition to other specified requirements, the CONTRACTOR shall, upon the Consultant's or ENGINEER'S request, uncover work to provide for inspection by the Consultant or ENGINEER of uncovered work and remove samples of installed materials for testing.

3. Do not cut or alter Work performed under separate Contracts without the Consultant's or ENGINEER'S written permission.

4. Waterproofing in Section 07 1413

5. Caulking and Joint Sealant in Section 07 9200

6. Plumbing in Division 22.

7. Demolition in Section 01 4100

1.2 SUBMITTALS

A. Request For Consultant's or ENGINEER'S Consent:

1. Prior to cutting which effects structural safety, submit written request to the Consultant or ENGINEER for permission to proceed with cutting.

2. Submit, to the ENGINEER, for approval, the method(s) of cutting and patching, and protection plan for each. Submit structural calculation, prepared by a California State licensed Engineer, as directed by the ENGINEER.

3. [Submit all Shop Drawings or submittals as required by other Sections of the Project Manual. Submit floor and wall covering samples, paint color samples for the repaired area to the ENGINEER for approval.

4. Should conditions of the Work or schedule indicate a required change of materials or methods for cutting and patching, so notify the Consultant or ENGINEER and secure written permission prior to proceeding.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. The safety provisions of applicable laws, building and construction codes shall be observed.

C. Field Mock Up: For each finish surface condition prepare a representative mock-up area which shall be completely cleaned and finished for review by ENGINEER. ENGINEER'S approval shall be obtained before proceeding with additional cutting and patching work.

D. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity.

1. Obtain approval of the cutting and patching proposal before cutting and patching any structural elements.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety-related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching any operating elements.

E. If no deposition of existing details of existing improvements or conditions is made on the Drawings or in the Project Manual, it shall be the CONTRACTOR'S responsibilities to provide necessary site investigations including testing, potholes, exposure, etc. to obtain site information at no additional cost to the CITY. CONTRACTOR shall submit site information as part of the submittal. CONTRACTOR shall repair all potholes, exposures, etc. as part of the Contract.

F. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the ENGINEER'S or Consultant's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory manner.

PART TWO - PRODUCTS

2.1 MATERIALS

A. General**:** Use materials that are identical to existing materials. If identical materials are not available, or existing materials do not meet codes or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials. Submit method of repair including lapping, splicing and joining of new and existing materials.

B. For replacement of items removed, use materials complying with pertinent Sections this Project Manual.

C. All cut concrete shall be provided with steel dowels filled with non-shrink grout prior to patching or placement of new concrete.

PART THREE - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection:

1. Inspect existing conditions, including elements subject to movement or damage prior to the Bid, during cutting, excavating, patching, and backfilling.

2. Identify all existing utilities, protect and maintain service to occupied areas in accordance with GENERAL REQUIREMENTS Section 01140 –- CONTRACTOR'S USE OF THE PREMISES, and GENERAL REQUIREMENTS Section 01711 – SITE INVESTIGATION.

3. Obtain required shear tests for existing concrete

4. Obtain required weldability test on existing steel.

5. Unless specified otherwise, inspect and determine location of existing rebars in masonry and/or concrete walls or flooring prior to cutting.

6. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies:

1. If uncovered conditions are not as anticipated, immediately notify in writing to the Consultant or the ENGINEER and secure needed directions.

2. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION PRIOR TO CUTTING

Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the work. Provide duplicate copy of shoring permit and plan to the ENGINEER prior to start of Contracted Work.

3.3 PERFORMANCE

A. Perform required excavating and backfilling as required under other pertinent Sections of the Project Manual.

1. Perform cutting and demolition by methods, which will prevent damage to other portions of the Contracted Work and provide proper surfaces to receive a proper installation of repair and new work.

2. Perform cutting (excavating) in accordance with recommendations described in Soil Investigation Report. Over cutting (excavating) is prohibited.

3. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes noted in the Technical Sections of the Project Manual.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible, review proposed procedures with the original installer. If CONTRACTOR does not concur with the original installer's recommendations, CONTRACTOR shall notify the ENGINEER and request instructions.

1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Impact tools are not to be used in the building. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces, or spaces.

3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill. Use methods or locations that could avoid cutting the rebars. All cut rebars, approved by the ENGINEER, shall be rounded off any sharp edges and dabbed with a coat of protective coating against rusting.

4. Comply with requirements of applicable Sections of DIVISION 2 where cutting and patching requires excavating and backfilling.

5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls, partitions or floor slabs to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after bypassing and

cutting. No existing service shall be interrupted, in accordance with Section 01140 – CONTRACTOR'S USE OF THE PREMISES of the GENERAL REQUIREMENTS.

6. Unless specified otherwise, all cut floor or roof wooden ledgers and blockings shall be repaired, spliced and installed with approved steel connectors. If necessary, install new double wooden ledgers or blocking without additional cost to the CITY.

7. Unless specified otherwise, all cut ceiling framing members shall be repaired or replaced with new framing members to the satisfaction of the ENGINEER. Re-install all ceiling, mechanical grills, and lighting fixtures affected by the cutting and repairs.

8. Unless specified otherwise, all existing masonry walls shall be removed to the nearest grout joint. All removed masonry units shall be protected, salvaged and reused.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. All existing masonry wall shall be repointed and regrouted to the nearest wythe joint to match existing.

4. Restore all building insulation and fireproofing to match existing thickness and conditions.

5. Restore complete caulking, sealer, waterproofing etc. to achieve maximum performance as required at no additional cost to the CITY.

3.4 CLEANING

Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

3.5 TESTING

Demonstrate by appropriate water testing that repaired roofing, caulking, sealer, waterproofing, etc. are completely water tight and weather tight.

Arrange with local authorized agencies and test all existing utility services, mechanical and plumbing systems, fire and life systems affected by the cutting and patching.

(END OF SECTION)

LAS PALMAS SENIOR CENTER
(G1163)

III. TECHNICAL SPECIFICATIONS

W.O. E1908358

DEPARTMENT OF RECREATION AND PARKS

TECHNICAL SPECIFICATIONS

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ATTACHMENT 'A'

- GEOTECHNICAL REPORT, DATED 4/18/22

-SOILS APPROVAL LETTER , DATED 8/26/23

- REQUEST FOR MODIFICATION, DATED 8/17/23

ATTACHMENT 'B'

- HISTORICAL RESOURCE EVALUATION REPORT, DATED 1/2024

-CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), NOTICE OF EXEMPTION, DATED 12/4/2025

- PALEONTOGICAL RECOMMENDATIONS MEMORANDUM, DATED 6/30/2023

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- HAZARDOUS MATERIAL SURVEY, DATED 6/8/2023

-LEAD OPERATIONS & MAINTENANCE PROGRAM, DATED 6/8/2023

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ATTACHMENT 'D'

- SURVEY CONTROL PLAT, DATED 1/12/2023

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- READ TO ISSUE PLAN CHECK LETTER AND PLOT PLANS

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- RECORD DRAWINGS, 1961, 1963, 1964, 1976, 1979, 1999, 2019

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- LADWP CHANGE OF LOAD SERVICE COMMITMENT, DATED 9/8/2025

END OF DOCUMENT

SECTION 02 22 15

BUILDING DEMOLITION

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish materials, equipment, and labor necessary to perform and complete demolition work called for in the Contract Documents.

B. Demolish and remove from the site, in accordance with this Section but not necessary limited to, the following items so indicated on the Drawings.

1. Remove and dispose of existing structures, foundations and all contents inside except those indicated to be salvaged.

2. Remove and dispose of all existing exterior structures or facilities, concrete walls, paving, plants and shrubs.

3. Remove and dispose of all underground infrastructure, underground piping and conduit.

4. Remove any mechanical equipment and piping containing oil, refrigerant or Freon, container with unused paint product from, and/or container with chemical or solvent of existing facility and dispose them in accordance with code requirements and contract provisions.

5. Remove all utility services in existing structure, terminate and cap all services at the main sources. Maintain and protect utility services serving adjacent locations or utility services specified as protect in place as indicated on the contract Drawings.

6. Provide site clearing and backfill, and compact site to elevations indicated on the contract drawings. Provide all erosion control and site drainage.

7. Install site security fences and gates as indicated on contract drawings.

8. Provide necessary demolition and excavation for the new installations as indicated on contract drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 022210 Clearing, Grubbing and Stripping

B. Section 312310 Earthwork

C. Division 15 Mechanical

D. Division 16 Electrical

1.3 REFERENCE SPECIFICATIONS , CODES, AND STANDARDS

A. Comply with applicable reference specifications as specified in the GENERAL REQUIREMENTS.
B. Comply with Los Angeles Building Code.

1.4 CONTRACTOR SUBMITTALS

A. General: Conform to provisions of the GENERAL REQUIREMENTS and other Sections of the Project Manual as applicable to the following:

1. Demolition Permit.

2. Grading Permit and duplicated copies of hauling plans and bonds as indicated in Section 312310 – EARTHWORK.

3. Demolition Plans and Schedules.

4. A list of all construction equipments or materials intended to be used for the work in this Section.

5. Scaffolding and/or Temporary Support Drawings.

6. Shoring Permit.

7. Solid Resources Management Plan as described in General Requirements.

8. Stormwater Pollution Prevention Plan (SWPPP) as described in Section 312310-EARTHWORK.

B. All shoring drawings, scaffolding drawings, demolition drawings, etc. shall be prepared by a California State licensed Civil or Structural Engineer obtained by the Contractor. The Contractor shall submit the drawings to the City Engineer for reviews. The Contractor shall incorporate all comments and corrections prior to submitting to the governing agencies for approvals. The Contractor shall deliver seven (7) copies of the approved drawings and permits to the City Engineer for record and distribution.

1.5 QUALITY ASSURANCE

A. Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Code and Regulations: Comply with all applicable Government Codes and Regulations including the 2011 Los Angeles City Building Code and Amendments, especially meeting the safety standards and regulations of CAL/OSHA. Provide additional measures, materials and devices as needed or as directed by the City Engineer, the Consultant or the Inspector at no added cost to the City.

C. Shop Inspection: Required for all imported soil at the source in accordance with requirements of GENERAL CONDITIONS.

D. Inspection: All site clearing, grading and compaction shall be done in the presence of the Soil Engineer. Contractor shall notify City Engineer 72 hours prior to clearing operation. Contractor shall also make necessary arrangement and obtain Los Angeles City Dept. of Building and Safety Grading Inspection.

1.6 MISCELLANEOUS GENERAL REQUIREMENTS

A. General: Comply with the followings as noted in other Sections of the Project Manual.

1. Erection and maintenance of shoring, temporary fencing and safety protection.

2. Dust control.

3. Repair of damages.

4. Clearing and removal of rubbish and debris.

B. Notification To Concerned Utilities: Contractor shall notify all utility companies owning conduit and pipes running to and from the City properties and make arrangements for their removal or capping in accordance with instructions from the local governing agencies, and the City Engineer or the Consultant.

1. All inactive or abandoned utilities shall be removed except those indicated to remain or serving adjacent properties. Protect and maintain existing active utilities indicated to remain. Make necessary repair or alteration to existing active utility to allow continuous operation. Contractor shall notify the City Engineer and adjacent properties 14 days in advance prior to start of work. Contractor shall keep all services interruption to minimal.

2. Shall existing active utilities be protected and maintained during the demolition, the Contractor or City (Contractor to verify with City) shall pay for the utility fees.

3. Construction power and water fees shall be paid for by the Contractor.

C. Protection of Adjacent Structures and Site Improvements:

1. Provide temporary construction fences, signs and/or barricades.
2. Protect all existing street, curbs, gutters, signages, traffic meters, sidewalks and adjacent structures on or off the job site as described by the Los Angeles City Dept. of Building and Safety, CAL/OHSA, Standard Specifications for Public Works Construction and Los Angeles City Bureau of Engineering Standard Plans.

D. Scheduling of Work Operations: Submit detailed plans of all demolition operations, removal schedules and procedures for the first 30 days after the Notice-To-Proceed, to the City Engineer within 15 days after the Notice-To-Proceed.

1.7 DELIVERY, STORAGE AND HANDLING

A. Comply with pertinent provisions of General Requirements.

B. Deliver to the City the following salvable materials as directed by the City Engineer of the Consultant. Carefully remove all salvable materials. clean and protect from damage, and neatly stored on the job site for pick-up by the City as directed by the City Engineer or deliver to the City's Facilities as indicated or directed by City Engineer.

C. All materials, equipments, and fixtures except those classified as salvable materials listed above shall become the property of the Contractor and shall be promptly removed from the job site. The City assumes no responsibility or any value for any items removed from the structure(s) or the premises or vandalized during the bidding period.

D. Storage of materials at site is not permitted beyond the brief accumulation awaiting pick-up by removal trucks.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENTS

A. Comply with pertinent provisions of the Project Manual.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed prior to the bid and during the course of construction. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.2 DEMOLITION

A. General:

1. Prior to start of demolition, carefully study the Drawings and the Project Manual.

2. In company with the City Engineer or Consultant Architect, visit the site prior to the bid and later as many times necessary to verify the extent of demolition to be performed under this Contract.

B. Using only the means and equipment approved for this purpose by the governmental agencies having jurisdiction, demolish and completely remove from the job site the existing structures designated to be removed.

1. Shut off, cap, and otherwise protect existing public utility lines in accordance with the contract drawings and the requirements of the public agency or utility having jurisdiction.

2. Completely remove footings, foundations, and above-ground and under-ground construction of all kinds.

3. Perform site clearing and grading operations on entire site to a depth of at least 18 inches below the design subgrade elevation as indicated in Section 022210 – CLEARING, GRUBBING AND STRIPPING and Section 312310 – EARTHWORK.

4. Remove rocks larger than one (1) inch diameter, roots, and debris as described in Section 022210 –CLEARING, GRUBBING AND STRIPPING and Section 312310 – EARTHWORK.

5. If existing soil is not designated for reuse, Contractor shall haul off all excavated soil immediately. Place and compact new imported soil from approved source.

6. Grading: To elevations indicated on contract drawings and to elevations of existing adjoining street surfaces, private property and surfaces immediately adjacent to the job site limits, make all grades in a straight line from any point to any other perimeter.

7. Obtain all necessary compaction tests and inspections from Soil Engineer, and Los Angeles City Dept. of Building and Safety Grading Inspector. Submit test reports to Los Angeles City Dept. of Building and Safety Grading Division. Deliver duplicate copy of certification to the City Engineer for record and final distribution.

8. Provide dewatering and storm water erosion controls in accordance with Section 312310 – EARTHWORK.

8. Provide soil sterilization in accordance with Section 312310 – EARTHWORK.

9. All shorings shall be removed after grading and backfill operations.

C. Use all means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

3.3 CLEAN – UP

A. Comply with applicable provisions specified in Division 1 – GENERAL REQUIREMENTS of the Project Manual.

3.4 OCCUPANCY AND POLLUTION CONTROL

A. Water sprinkling, temporary enclosures, chutes, and other suitable methods shall be used to limit dust and dirt rising and scattering in the air. Comply with government regulations pertaining to environmental protection.

B. Water shall not be used when it creates hazardous or objectionable conditions such as ice, flooding, or pollution.

C. Water contaminated with sediment or hazardous or toxic materials shall not be allowed to run off into the public storm drain system (including street gutters). Such runoff shall be intercepted, collected and disposed of according to existing environmental regulations.

3.5 PROTECTION

A. Safe passage of persons around area of demolition shall be ensured. Operations shall be conducted to prevent damage to adjacent buildings, structures, other facilities, and people.
B. Interior and exterior shoring, bracing, or supports shall be provided to prevent movement, settlement or collapse of structures to be demolished, and to adjacent facilities to remain.
C. Existing landscaping materials, structures, and appurtenances, which are not to be demolished shall be protected and maintained as necessary and in accordance with PROTECTION OF PERSONS AND PROPERTY AND RESTORATION OF EXISTING IMPROVEMENTS of the GENERAL CONDITIONS.
D. The CONTRACTOR shall protect and maintain conduits, drains, sewers, pipes, and wires that are to remain on the property.

3.6 STRUCTURE DEMOLITION

A. Building structures and appurtenances shall be demolished as shown and required to complete work within limitations of governing regulations.
B. Small structures may be removed intact when acceptable to the ENGINEER and approved by authorities having jurisdiction.
C. Demolition shall proceed in a systematic manner, in accordance with permits and approved submittals.
D. Concrete and masonry shall be demolished in sections. Use bracing and shoring to prevent collapse.
E. Demolition equipment shall be dispersed throughout structure and demolished materials removed to prevent excessive loads on supporting walls, floors or framing.
F. In the existing chlorine storage and chlorine feed rooms, remove chlorinators, evaporators, scales, monorails, piping, pipe supports, and related items.

3.7 BELOW-GRADE DEMOLITION

A. Footings, foundation walls, below-grade construction and concrete slabs on grade shall be demolished and removed to a depth which will not interfere with new construction, but not less than 12 inches below existing ground surface or future ground surface, whichever is lower or as indicated on the plans.
B. Below-grade areas and voids resulting from demolition of structures shall be completely filled.
C. All fill and compaction shall be in accordance with Section 312310, "Earthwork."
D. After fill and compaction, surfaces shall be graded to meet adjacent contours and to provide flow to surface drainage structures, or as shown.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. Demolition and removal of debris shall be conducted to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities which shall not be closed or obstructed without permission from the CITY. Alternate routes shall be provided around closed or obstructed traffic ways.
B. Site debris, rubbish, hazardous materials identified in Part 1.1-B herein and other materials resulting from demolition operations shall be removed at the CONTRACTOR's expense. Burning of removed materials from demolished structures shall not be permitted on site.
C. The CITY will provide a list of approved Treatment, Storage and Disposal Facilities (TSDF’s) from which the contractor may select one for disposal of hazardous waste. Prior to disposal, the CONTRACTOR shall submit to the ENGINEER the name of the proposed TSDF that the CONTRACTOR has selected from the approved TSDF list.

D. The CONTRACTOR shall request from the CITY an EPA Generator ID Number. The CITY will provide the number to the CONTRACTOR. This number will be used on all Hazardous Waste Manifests or Shipping Papers used to transport hazardous waste. Copies of all manifests and shipping papers will be provided to the ENGINEER at the time of transport for any Hazardous Waste and completed copies signed by the TSDF will be returned to the ENGINEER within the time frames specified by state and federal regulations.

3.8 PATCHING AND REPAIRING

A. The CONTRACTOR shall provide patching, replacing, repairing, and refinishing of damaged areas involved in demolition as necessary to match the existing adjacent surfaces whether shown or not shown, with materials and procedures approved by the ENGINEER.
B. The CONTRACTOR shall repair all damages caused to adjacent facilities by demolition as directed by the ENGINEER at no cost to the CITY.
C. The CONTRACTOR shall make a detailed inspection after patching and repairing has been completed, and shall carefully remove splattering of mortar from adjoining work (particularly, but not limited to, plumbing fixtures, trim, tile, and finish metal surfaces), and make good any damage caused by such cleaning operations.

3.8 CLEANING

A. During and upon completion of work, the CONTRACTOR shall promptly remove unused tools and equipment, surplus materials, rubbish, debris, and dust and shall leave areas affected by work in a clean, approved condition in accordance with ENVIRONMENTAL CONTROL of the GENERAL REQUIREMENTS.
B. Clean adjacent structures and facilities of dust, dirt, and debris caused by demolition, as directed by the ENGINEER or the INSPECTOR, and return adjacent areas to condition existing prior to start of work.
C. The CONTRACTOR shall remove and legally dispose of demolished materials and debris from the site.
D. The CONTRACTOR shall clean and sweep the street and road daily.

3.9 SALVAGE

A. The CONTRACTOR shall tag all salvageable items. The tag shall indicate what the item is, the location and equipment it was removed from, and the date of removal.
B. The CONTRACTOR shall deliver all salvaged items to the following address upon approval of the ENGINEER.
C. All non-salvageable items shall be removed at the CONTRACTOR's expense.

END OF SECTION

SECTION 02 82 00
ASBESTOS REMOVAL

PART ONE - GENERAL

1.1 SUMMARY

A. Provide all labor, materials, equipment and services to remove asbestos containing materials (ACM) and other hazardous materials as directed by the City Engineer from the Hollywood Sanitation Yard prior to Demolition operations specified in another Section.

B. Related Sections:

1. Documents affecting work of this Section includes, but are not necessarily limited to the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS and Sections in DIVISION 1 - GENERAL REQUIREMENTS of this Project Manual.

2. Building Demolition in Section 02 41 00.

3. Thermal And Moisture Protection in Division 07.

4. Finishes in Division 09.

5. Plumbing in Division 22.

6. Heating, Ventilating, And Air-Conditioning (HVAC) in Division 23.

1.2 WORK REQUIRED

A. General: Removal of asbestos containing materials (ACM) from the existing Hollywood Sanitation Yard, prior to selective demolition, as specified in another Section of Project Manual.

1. A set of existing building record drawings and an Asbestos Removal Survey Report has been prepared by Terra Environmental, and attached to the Project Manual as part of Contract Documents and the information/measurements are approximate and for the Bidder's/Contractor's information only. It is expressly understood that the City will not be responsible for interpretations or conclusions drawn by the Bidder/Contractor as to the nature of or full extent of existing asbestos.

2. It is not possible that all ACM in the existing Hollywood Sanitation Yard was sampled, analyzed and identified by the “Survey.” As destructive testing, e.g., breaking walls to obtain samples of materials contained therein was not performed at every suspected location throughout the survey area. The materials noted in the Asbestos Removal Survey Report are those which were accessible to the "Survey" team and are considered as representative samples for other similar material, or conditions. It will therefore be the responsibility of the Bidder/Contractor to ascertain the nature and extent of asbestos of any suspect material which was not sampled but addressed by the "Survey" report, prepared by the Terra Environmental.

B. Nature of the Work:

1. General: The work required by this Section includes handling of friable and non-

friable ACM which are present prior to demolition operations, cleanup of asbestos-containing debris, and transport and disposal of removed ACM. The Contractor shall provide all equipment and, materials, biological monitoring, site monitoring necessary to protect workers and building or area occupants (general public), from contact with airborne asbestos fibers Contractor agrees to perform this work in accordance with the methods and procedures prescribed by this Section, and in compliance with all applicable rules and regulations, including the following. Where requirements of current rules and regulations require additional action or reporting not explicitly stated hereon, the contractor shall meet the requirements of the rules and regulations:

a. 29 CFR 1926.58
b. T8 CAC, General Industry Safety Orders
c. 4 0 CFR 61, Subparts A & B
d. California Business and Professions Code
e. 40 CFR 763
f. South Coast Air Quality Management District, including Rule 1403 “Asbestos Emissions from Demolition/Renovation Activities”.
g. California Department of Health Services
h. CAL/OSHA

2. Control Area: Confine asbestos control areas for removal of asbestos materials within the building limits, as indicated or noted in the "Survey Report".

3. Title to Materials: Materials resulting from asbestos removal work, except as otherwise indicated shall become property of Contractor. Dispose of ACM properly, as specified in Subsection 3.4 of this Section.

4. Protection of Existing Work to Remain: Perform asbestos removal work without damage to or contamination of adjacent areas or construction. Where such areas, etc., are damaged or contaminated, restore to original condition.

C. Pre-Bid Meeting (Job Walk-Through):

1. A mandatory pre-bid meeting and job walk-through will be held for bidders at times and places directed by the City and noted in the Bid Documents. The Contract Drawings and Project Manuals will be available for reference at this meeting. In addition, the City's representative as well as the Asbestos Abatement Consultant will be available to answer all questions, by the bidders, submitted in writing.

2. Following the meeting, a job walk-through will be conducted. Additional inspection time may be available following the date of this meeting, upon written request. Attendance at the pre-bid meeting by the bidder's representative is required as a condition of acceptance of a bid.

1.3 QUALITY ASSURANCE

A. Contractor's Qualifications: The Contractor or Subcontractor performing the work of this Section shall be capable of demonstrating that they possess the following qualifications:

1. A minimum of two years specializing in the safe removal of ACM, with evidence of having successfully completed projects with requirements similar to this one.

2. Contractor or Subcontractor shall be duly licensed by the State of California in accordance with the provisions of Chapter 9, Division 3, Business and Professions Code, as amended.

3. Registration with Carcinogen Control Unit, CAL/ OSHA.

4. Proof of completion of training for all personnel, regarding work with asbestos.

5. Standard operating procedures and employee protection plans with specific reference to their OSHA medical, exposure monitoring and respirator training programs.

6. References concerning previous jobs and work projects shall be presented, on demand.

7. Documentation of successful completion of three (3) previous asbestos abatement jobs.

8. Contractor is required to carry asbestos abatement insurance in accordance with City requirements.

B. Air Monitoring and Inspection Firm to be provided by the Contractor:

1. Qualifications:

a. The air monitoring and inspection firm shall be completely independent of, and in no way affiliated with the Contractor. The City will select the firm and authorize for its services. The Contractor shall submit the firm for City Engineer's approval. The Contractor shall coordinate and pay for all services. The duties of the air monitoring and inspection firm will be as described in Article 3.5 in this Section.

b. Supervision by an Industrial Hygienist, certified in comprehensive practice by the American Board of Industrial Hygiene, and in the supervision of asbestos abatement projects by an EPA accredited training course. Industrial Hygienist from the Air Monitoring and Inspection Firm obtained by the City shall be considered as authorized City representative.

2. c. Laboratory services accredited by California Department of Health Services, for bulk asbestos analysis.

3.

d. Participation in at least the last 10 rounds of the quality assurance program administered by EPA/RTI for bulk asbestos analysis, with no errors.

e. Demonstration of proficiency in analysis of air samples for asbestos by successful participation in the NIOSH PAT Program.

4. f. Evidence of internal quality assurance program under the supervision of a person who has successfully completed the NIOSH 582 course.

g. Having at least three (3) years experience in asbestos project management.

h. Capable of providing at least four (4) references.

2. Entry to the Site: Representatives of the air monitoring and inspection firm shall have the right of entry to the site work areas, at any time, for purposes of inspection and monitoring.

a. The Contractor shall provide such representatives with appropriate protective clothing and respirators, for inspection and monitoring, if requested.

3. Interpretation: Matters concerning interpretation of standards will be submitted to the appropriate administrative agency for resolution, as necessary. Where require-

ments of these specifications and the referenced documents differ, the more stringent requirements shall apply.

4. Protective Measures: Representatives of the Air Monitoring and Inspection Firm reserve the right to require the Contractor for additional protective measures at any time during the course of the work, to protect workers, City employees and the users of the building. Unless otherwise agreed, such changes in protective measures shall not add to the cost of the Contract.

5. Contractor is responsible to prepare and protect the controlled work area and area immediately adjacent to the controlled work area(s), construct enclosure and hygiene facility, provide necessary ventilation and differential air pressure machines to establish negative pressure within the enclosure, signage, housekeeping, material and equipment to perform the abatement and cleaning upon completion. Contractor shall provide all necessary coordination and cooperation. Contractor is not relieved of the responsibility for any deviation from the code or contract requirements. Contractor shall include a minimum of two (2) days in construction schedule to obtain air monitoring results from the air monitoring and inspection firm.

1.4 SUBMITTALS

5.

A. Asbestos Removal Plan: Prior to start of asbestos work, submit a detailed plan of work procedures to be used in removal and disposal of materials containing asbestos to the City Engineer for review. Contractor shall incorporate all comments and collection prior to submitting to Federal and State governing authorities having jurisdiction. The plan shall be approved by governing authorities prior to start of work. Include in the plan location of asbestos control areas, change rooms, layout of change rooms, sequencing of asbestos work, interface of trades involved in construction, sequencing of asbestos-related work, disposal plan, type of wetting agent and asbestos sealer to be used, and detailed description of method to be employed in order to control pollution and an emergency evacuation plan. Submit evidence of approvals from governing authorities to the City Engineer prior to start of work.

B. Training: Submit certificate, signed by each employee, that employee has received training in proper handling of materials that contain asbestos, understands health implications and risks involved, including illnesses possible from exposure to airborne asbestos fibers; and understands the use and limits of respiratory equipment to be used; and understands results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment.

C. Local Exhaust Equipment (Differential Pressure Air Machines): Submit evidence of conforming to ANSI Z9.2 "Fundamentals Governing the Design and Operation of Local Exhaust Systems" for equipment required to contain asbestos fibers, such a filter, vacuum, and different pressure air machines.

D. Testing Laboratory: Submit name, address, and telephone number of testing laboratory selected for monitoring and inspection to be provided by Contractor of airborne concentrations of Asbestos fibers. Provide certification that persons counting samples have been judged proficient by successful participation in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) Program or have been certified by the American Industrial Hygiene Association.

E. Industrial Hygienist: Submit name, address, and telephone number of Industrial Hygienist selected to direct monitoring and training; and certification that Industrial Hygienist is certified by American Board of Industrial Hygiene.

F. Permits and Notifications: Secure necessary permits in conjunction with asbestos removal, hauling, and disposition and provide timely notification of such actions as may be required by Federal, State, Regional, City and County of Los Angeles Government.

1. Notify Regional Office of United States Environmental Protection Agency (USEPA), and South Coast Air Quality Management District (SCAQMD), and provide copies of notification to City's Representative and State Environment Regulatory Agency at least 10 working days prior to commencement of work.

2. Notify the nearest district office of CAL/OSHA, Division of Occupational Safety and Health, at least 3 working days prior to start of asbestos removal work.

3. Notify the Air Monitoring and Inspection Firm at least 3 working days prior to start of removal work.

4. Contractor shall submit satisfactory proof to the City that required removal/remediation plans and permits have been approved and obtained and are in full force and effective throughout course of work of this Section. Submit four (4) copies of removal/remediation plans to City Engineer.

G. Project Log Book: The Contractor shall maintain a project log book which will be kept-up-to-date and available at the job site and readily for inspection. Upon completion of the work, a copy shall be submitted to the air monitoring and inspection firm for approval. After approved, two copies shall be submitted to the City's representatives. The project log book will contain and conform to the following:

1. Documentation of all Notices and Submittals.

6. Permits.

7. Medical Records-Proof of Employee Physicals.

8. Emergency Notification Data.

9. Sign-in log book, shall be filled out daily:

- Name of person visiting the controlled work area;
- Time entered/exited the controlled work area;
- Affiliation and purpose;
- Description of activity performed;
- Description of daily work performed;
- Any damages to the structure or furnishings;
- Any loss of air pressure differential;
- Any accidents (including minor accidents);
- Results of any air samples collected by the Contractor;
- Signature of Project Superintendent and date;

H. Landfill: Submit written evidence that disposal facility is approved for asbestos disposal by USEPA and State or Local Regulatory Agencies. All disposal or recycling facilities used in this Project shall be located within the California State.

I. Monitoring Results: Submit monitoring results to the City Engineer and Air Monitoring and Inspection Firm within 3 working days. Complete fiber counting and Contractor's Industrial Hygienist's review of results within 16 hours. Contractor's Industrial Hygienist shall notify the Contractor, the City Engineer and the Air Monitoring and Inspection Firm immediately of any exposures to asbestos fibers in excess of acceptable limits.

1. Submit copy of monitoring results for asbestos, including description of work procedure, at time of air monitoring.

J. Air Pressure Differential Recordings: Contractor shall submit air pressure differential recordings for each work day to his/her Industrial Hygienist for review, and then submit to the City Engineer within 24 hours from end of each work day. The Industrial Hygienist shall notify Contractor, the City Engineer and the Air Monitoring and Inspection Firm immediately of any variance in pressure difference which could cause exposure of adjacent unsealed areas to Asbestos fiber concentrations in excess of acceptable time-weighted average (TWA).

K. Hazardous and Non-Hazardous Manifest: Submit in accordance with Sub-Section 3.4.

L. Mini-Enclosure: Provide certification that mini-enclosure is in compliance with all applicable Codes. Submit to the City operating procedure.

1.5 INSURANCE REQUIREMENTS

10.

A. Bidder shall furnish within ten days after notification of pending award, properly completed City Special Endorsement forms or binders of insurance with coverages as set forth in the attached Insurance Requirements sheet. Failure to comply will render the bid non-responsive and no award will be made to the firm.

B. Asbestos Abatement Contractor must provide a certified copy of a General Liability Insurance Policy or other evidence acceptable to the City Attorney showing that the Contractor is insured for work in the asbestos abatement, removal and/or encapsulation field. The actual policy declaration must contain wording that the coverage is for an Asbestos Abatement Contractor and must include coverage for completed operations.

C. Because of the severely limited availability of Asbestos Removal Liability insurance, we are modifying the requirements to allow compliance by any of the following alternatives:

Type of Policy	Coverage	Limits/Aggregate
1973 Comp. General Liability-Occurrence basis	Products/Completed operations	$1,000,000 $2,000,000
1986 Comp. General Liability-Occurrence basis	Products/Completed operations	1,000,000/ $2,000,000
1986 Comp. General Liability-Claims-made basis	Products/Completed operations	$1,000,000/ $2,000,000
Owners and Contractors Protective Liability	Asbestos Removal (City as Named Insured)	$1,000,000
Project Specific General Liability	Products/Completed operations	1,000,000

D. If the contractor has a claims-made basis policy and changes insurance carriers, it is critical that there be no gap in coverage and that a retroactive policy be provided.

1. The foregoing applies only to the Asbestos Removal insurance requirements. All other insurance requirements remain unchanged.

E. Refer to Article 00316 and 00317 - INDEMNIFICATION AND INSURANCE REQUIREMENTS for Construction contract of GENERAL CONDITIONS, for additional information.

PART TWO - PRODUCTS

2.1 EQUIPMENT

A. Respirators: Select respirators from those approved by the National Institute of Occupational Safety and Health, Department of Health and Human Services. The Contractor shall make the respirators and training available to the City Inspection personnel, consultants and others (public) entering the building.

1. Powered Air Purifying Respirators (PAPR) shall be the minimum level of respiratory protection employed during work area preparation, removal and demolition of ACM, and cleanup.

2. Personnel working in areas where removal of demolition of ACM is in progress and where glove bags cannot be utilized shall be provided with Type C supplied air respirators, operated in pressure-demand or continuous flow mode, until such time as personal air monitoring results consistently indicate employee exposures to airborne asbestos to be less than 20 f/cc on an eight hour TWA basis.

B. Protective Clothing: Provide personnel exposed to airborne asbestos fibers with disposable protective whole-body clothing, head coverings, gloves, and foot covering. Provide disposable plastic or rubber gloves to protect hands. Cloth gloves may be worn inside plastic or rubber gloves for comfort, but shall not be used alone. Make sleeves secure at wrists and make foot coverings secure at ankles by use of tape.
11.

C. Decontamination Enclosure Facilities: A decontamination enclosure facility shall be provided by the Contractor for personnel required to wear whole-body protective clothing. These facilities, and their use, shall comply with the requirements of CFR 1926.58(j), as a minimum.

1. The decontamination enclosure systems shall be constructed, affixed and connected in such a manner as not to compromise the air tightness of the containment.

2. Build suitable wood or metal stud frame; or use an existing room or enclosure approved by the City's representatives and air monitoring and inspection firm. Portable, pre-fabricated units may be used if approved by the City's representatives and air monitoring and inspection firm. Approval will be based upon, but not limited to, construction, floor plan, dimensions, materials, sizes, thicknesses, plumbing, electrical outlets, etc.

3. In all cases, access between contaminated and uncontaminated rooms or areas shall be through a decontamination enclosure system. In all cases, access between any two rooms within the decontamination enclosure shall be through an air lock with two curtained doorways.

4. Worker and Visitor Decontamination Enclosure: Construct a worker's and visitor's decontamination enclosure adjoining the work area(s) consisting of three totally enclosed chambers, and equipment room, a shower room and a clean room.

12. a. The equipment room shall be connected to the work area(s) and contained an air lock leading to the shower room. In addition, the equipment room

shall contain a marked receptacle for the discarding of contaminated clothing prior to entering the shower room.

b. The shower room shall be connected to the equipment room and the clean room by an air lock. An additional pan shall be placed below the stall of sufficient size to contain 5 cubic feet of water. If necessary, Contractor shall provide portable hot water heater to supply hot water. The shower(s) shall have sufficient soap, shampoo, and disposable towels at all times.

13.

c. The shower room shall not leak, and the water shall be appropriately filtered and/properly disposed.

14.

d. The clean room shall be connected to the shower room by one air lock, with a curtained doorway leading to any other non-contaminated space within the Worker Decontamination Enclosure.

15.

e. It shall be large enough to provide storage for the worker's street clothes, towels, or any other non-contaminated items.

5. Equipment Decontamination Enclosure: Construct an equipment decontamination enclosure consisting of two totally enclosed chambers, a washroom and a holding area.

16. a. The washroom constituting an airlock shall be connected to the holding area by a curtained doorway.

17. b. The holding area will be connected to any uncontaminated area by a curtained doorway.

18. c. These spaces shall be for the cleaning and decontamination of bagged wastes. In addition, this is preferred ingress and egress point for equipment. All equipment will be thoroughly decontaminated before leaving the decontamination enclosure facility.

19. d. Water in this enclosure shall be collected, filtered, and/or disposed.

20. e. The decontamination enclosure facilities shall be maintained to ensure that the barriers, air locks, and plastic linings are effectively sealed and taped. Repairs shall be undertaken immediately upon discovery of a defect.

21. f. Visually inspect and thoroughly clean the decontamination enclosure system at the beginning and end of each workday.

D. Local Exhaust Systems: Where feasible, each asbestos control area shall be maintained at a minimum pressure differential of 0.02" W.G. relative to adjacent areas by means of a local exhaust system(s) equipped with HEPA filtration. The pressure differential shall be monitored with a manometer.

E. Mini-Enclosure: Provide in accordance with Subsection 1.4(L) and 3.2(E)

F. Air Pressure Differential: Each controlled work area(s) shall be maintained at a minimum air pressure differential of 0.02" W.G. to adjacent areas by means of differential pressure air machines equipped with HEPA filtration. The Contractor will provide a sufficient number of differential pressure air machines to exchange the air within the controlled work area(s) every 15 minutes. The air pressure differential shall be referenced to ambient pressure within the clean room of the decontamination enclosure facilities to the controlled work area. The

number of the machines required for the controlled work area(s) shall be calculated using the following:

1. Cubic feet per minute (cfm) flow rate of the machine at a 75 percent efficiency.

2. Cubic feet (cf) volume of the controlled work area(s) including the above ceiling space.

3. Four air changes per hour.

G. Differential Pressure Air Machine: The Contractor shall verify the efficiency of each differential air machine and the efficiency rating shall be used in the calculations of air exchange within the controlled work area. The differential pressure air machine shall be equipped with three stages of filters, a HEPA filter and two pre-filters.

1. Differential pressure air machines will remain in use until a final clearance has been attained. No removal activities will be allowed without proper air pressure differential.

2.2 CAUTION SIGNS AND LABELS

A. General: Provide signs at approaches to asbestos control areas containing concentrations of airborne asbestos fibers. Locate signs at such distance that personnel may read sign and take necessary protective steps required before entering areas. Provide labels and affix to asbestos materials, scrap, waste, debris, and other products contaminated with asbestos.

1. If required, provide bilingual signs and labels.

2. Signs and labels shall conform with the requirements of 29 CFR 1926.58(k) and 40 CFR 61.

2.3 MATERIALS

A. Plastic Film: 4-mil fire retardant polyethylene for walls; 6-mil fire retardant polyethylene for sealing off corridors and used for chambers; 6-mil double-thickness for floors.

B. Plastic Bags: 6-mil polyethylene, of sufficient size for application.

C. Tape: Duct tape.

D. Runners: Paper, of sufficient width and length to protect floors, from building entrances to work areas.

E. Encapsulant/Asbestos Sealer: Provide EPA-approved asbestos sealer, tinted contrasting color to asbestos surfaces, and suitable to be spray-applied by airless method.

PART THREE - EXECUTION

3.1 GENERAL DESCRIPTION OF OPERATIONS

A. The following categories of asbestos removal work are anticipated: (As per Asbestos Abatement Survey)

1. Completely strip ACM from large items, e.g., chimney, boilers, Storage tanks, H.V.A.C.

equipment prior to dismantling and/or removal.

2. Removing exposed pipes and ducts intact.

3. Removing pipes and ducts within walls or other structures which become exposed during demolition intact.

4. Removing asbestos from acoustic ceiling of basement boiler room.

5. Temporary encapsulation/safing-off of asbestos, to remain.

6. Removing duct insulation.

7. Removing all vinyl asbestos floor tile aircell pipe insulation and pipe insulating cloth tape silver, transit pipe, etc.

8. Removing baseboards and mastic.

9. Removing Asphalt shingle roofing with mastic/built-up roofing/silver paint.

10. Removing asbestos containing Brick and Mortar.

11. Removing asbestos containing Plaster, Stucco, Wall, Ceiling.

12. Removing asbestos containing Window putty

13. Removing asbestos containing fire proofing.

22. 3.2 CONTROLLED WORK AREAS PREPARATION (As Applicable)

A. General: Clearly designate work areas by construction of barriers, posting signs, or using construction tape, as appropriate.

1. Prior to commencing any preparation of the controlled work area(s), the Contractor shall post all required documents, warning signs, and erect any physical barriers in order to secure the work area. The previously described project logbook shall be kept updated and available for review al all times.

2. The Contractor is responsible for the work area(s) security upon establishing, preparing, and maintaining the controlled work area. The responsibility of security extends 24 hours per day. The Contractor may be required to retain a security service.
NOTE: Only authorized visitors will be allowed on the work site.

3. Shut down and lock out existing building HVAC system components to prevent contamination and fiber dispersal to other areas of the building. If the HVAC systems service other areas of the building, the HVAC system should still be shutdown. Provide temporary HVAC as appropriate.

4. Disconnect and lock out existing electrical power in the work areas; provide temporary electrical power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements.

5. The Contractor shall seal all critical barriers including, but not limited to, HVAC supplies and returned; doors and windows/penetration and openings between floors;

vents and exhaust fans; and any other opening. The critical barrier shall be sealed with two layers of plastic sheeting, tape and spray adhesive. Critical barriers between the floors may be sealed with appropriate foam sealant.

6. The Contractor may elect to remove below-ceiling fluorescent light fixtures during the preparation phase to avoid proper decontamination procedures and simplify the controlled work area(s) preparation. The integrity of the ceiling shall be maintained if specified to remain.

7. If specified to be removed, the Contractor shall remove and disposed of all carpet, including pad, prior to initial demolition of the work area. All carpet and pads prior to being discarded shall be HEPA vacuumed, lightly dampen with water and disposed of as construction debris.

8. All moveable items shall be taken from the work areas. Items to be reused shall be decontaminated by HEPA vacuuming and/or wet wiping, as appropriate, and stored at a remote location where directed by the City Engineer, Industrial Hygienist or the Abatement Consultant. Other items shall be sealed in plastic sheeting and consigned for disposal.

9. Gross debris shall be removed from all surfaces and remaining items by HEPA vacuuming and/or wet wiping as appropriate.

B. Initial Preparation to the Controlled Work Area(s):

1. The Contractor shall cover the walls, ceiling and floor with plastic sheeting. All joints and seams of the plastic sheeting shall be overlapped a minimum of 12 inches, glued, and taped together and to existing walls in a manner to prevent and prohibit water and air movement through the covered areas.

   a. Completely enclose and isolate the work areas.

   23. b. Cover all remaining articles with plastic sheeting. Where ACM is located on the wall, ceiling or floor, the plastic sheeting is not required to be placed on that surface.

   c. Cover floors with 2 layers of plastic sheeting extended at a minimum of 12" up walls.

   d. Cover walls with plastic sheeting.

   24. e. A decontamination facility shall be physically connected to the enclosure.

   25. f. Utilize local exhaust ventilation to establish the pressure differential previously specified between the enclosure and adjacent areas.

   26. g. Completely vacated by City Personnel located in such work areas.

2. Areas immediately adjacent to the controlled work area(s), such as corridors or hallways which do not required ACM removal, but are necessary routes to and from controlled work area(s), shall be protected with plastic on floors, walls, and ceiling, same as described herein. Contractor is permitted to provide these plastic enclosed framed-in tunnels in lieu of covering the walls and ceilings with plastic sheeting. Opening from these areas into areas where ACM is removed shall have curtained doorways to minimize fiber release into other areas.

3. The Contractor shall establish emergency fire exits in compliance with applicable fire

codes/regulations. The emergency fire exits shall not be used for entering or exiting the work area, except in case of emergency. The Contractor shall post the necessary abatement warning signs in each of the fire stairwells for two floors below and one floor above the controlled work area(s), or as required by applicable fire code/regulations. All exits shall be marked in bold red lettering "Emergency Exit."

4. The Contractor shall install their communication equipment. Equipment should be operating properly and maintained as such during removal and cleanup operations.

5. The Contractor shall install differential air pressure machines.

C. Demolition to Access ACM: After preparing the controlled work area(s) and establishing environmental controls, selected walls and ceiling will be removed to access the ACM.
27.

1. Contractor's appropriate personnel shall enter the controlled work area(s) with the required personal protection as addressed in the previous Subsection 2.1.

2. The Contractor shall cut and removed the plastic sheeting where the ACM is located behind the walls and ceiling. The plastic sheeting shall be resealed to the walls and ceiling where the plastic sheeting was removed.

3. The Contractor shall access the ACM by demolishing a portion of the wall or ceiling. The wall or ceiling shall be thoroughly wet to limit airborne dust and debris.

4. The debris from the demolished walls or ceilings shall be disposed of as ACM waste, as specified in Subsection 3.4.

5. While accessing the ACM, the Contractor will uncover significantly damaged ACM that will require immediate removal. The damaged ACM shall be saturated with amended water and placed into plastic bags, as specified in Subsection 2.3(B). The Contractor shall HEPA-vacuum the damaged ACM area(s) and wet-wipe all surrounding surfaces.

D. Controlled work areas: where exposed pipes are to be removed intact.
28.

1. Cover floors and remaining items in immediate vicinity of material designated for removal with plastic sheeting of sufficient extent to contain any spills or debris that may result from removal activity, including that which may result from a broken glove bag.

E. Isolated Controlled work areas: where pipes within walls or other structures are to be removed.

1. All such work can be performed within the confines of mini-enclosures.

2. The mini-enclosure shall be constructed of 6 mil plastic sheeting supported by a frame consisting of 2" x 4" lumber, and shall be of a size to accommodate one worker, one HEPA vacuum, and any necessary tools or equipment.

3. The mini-enclosure shall be sealed to the wall from which asbestos-insulated items are to be removed. Where insulated items are to be removed from within or above ceilings, rather than within walls, erect scaffolding to within reaching height of ceiling and prepare the space between the platform and ceiling as a mini-enclosure.

4. Wall and floor surfaces within the mini-enclosure shall be covered with 4-mil and 6-mil plastic sheeting, respectively.

5. The entrance to the mini-enclosure shall consist of two sheets of overlapping plastic sheeting, secured and weighted to form a seal, when not in use.

F. Air Monitoring and Inspection: The firm shall conduct a visual walk through inspection of the controlled work area prior to the beginning of the removal activities.

29.

3.3 REMOVAL PROCEDURES

A. Stripping ACM from Large Items or Ducting:

1. Saturate item with either amended water or a removal encapsulant (BWE 5000, or equivalent) using equipment capable of providing a fine spray mist under low pressure. Do not allow the wetting agent to accumulate in the work area. Obtain and thoroughly evaluate MSDS's on any surfactant, encapsulant, spray glues, spray poly, or any other such materials used. These products, in many cases, have significant health and physical hazards associated with their use. Employing proper procedures and personal protection, as specified by the applicable MSD's, is therefore essential.

2. Strip ACM from item, keeping underlying material saturated with wetting agent, as work progresses.

3. Use removal techniques, methods, and equipment which will not permit the fiber count on any air sample, personal or ambient, during removal operations to exceed 0.1 fibers per cubic centimeters (f/cc) of air. If the fiber count exceeds 0.1 f/cc, the Contractor shall take immediate steps to rectify the situation. This shall include, but not be limited to, cleanup and wipe down of the controlled work area(s). The removal of the insulation shall not recommence until the fiber count is below 0.1 f/cc.

4. Saturated ACM shall be removed in manageable sections. Removed material shall be placed in appropriately labeled 6-mil polyethylene bags, as work progresses. Surrounding areas shall be maintained in a wet condition by periodic spraying, until visible material is cleaned up. Asbestos-containing debris shall not be permitted to accumulate in the work area(s).

5. Containers (6-mil polyethylene bags or drums) shall be sealed when full. Double bagging of waste material is necessary. Bags shall not be overfilled. They shall be securely sealed to prevent accidental opening and leakage, by taping tops of bags in an overhand knot or by taping, in gooseneck fashion. Do not seal bags with wire or cord. Bags may be placed in drums for staging and transportation to the landfill or approved disposal fields. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming, before being placed in clean drums and sealed with locking ring tops.

6. Asbestos containing waste with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) will tear the polyethylene bags and sheeting and shall therefore be placed in drums for disposal.

7. After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residues.

B. Removing Pipe and Fitting Insulation:

1. Seal items either in 2 layers of 6-mil plastic sheeting or in a 12-mil thickness of

spray-applied polyethylene or glove bags.

2. Insulation shall be stripped from small, selected areas, spaced in such manner as to constitute manageable sections of pipe, or dismantlement purposes.

3. All such stripping work shall be performed within the confines of glove bags wherever feasible.

4. Glove bags shall be installed by cutting the sides of the glove bags to fit the pipe from which insulation is to be removed. The glove bags shall be attached to the pipe by folding the open edges together and securely sealing them with tape.

5. All glove bag openings shall be sealed with duct tape. The bottom seam of the glove bag shall also be sealed with duct tape to avoid any mishaps that may result from a defective seam.

6. Thoroughly wet the material to be removed with amended water using a port cut in the glove bag.

7. Strip insulation from the pipe, keeping both underlying layers of material and debris, in the glove bag, saturated with amended water as work progresses.

8. After removing the insulation from the pipe, encapsulate both the bare section of piping and the exposed insulation edges with a bridging encapsulant..

9. After removal and encapsulation have been completed, a vacuum hose from a HEPA filtered vacuum shall be inserted into the glove bag through the port, to recover any air in the bag that may contain asbestos fibers.

10. After removing air from the bag, it should be squeezed tightly, as close to the top as possible, twisted, and sealed with duct tape.

11. The HEPA vacuum can then be removed from the bag and the port sealed with duct tape, after which the bag can be removed from the work area and consigned to disposal.

12. Where stripping work cannot be performed with glove bags, it shall be performed within mini-enclosures built around the section being stripped, and constructed according to the guidelines noted previously. Stripping and encapsulation shall be performed in the same manner as described for glove bags.

13. Upon completion of stripping and any necessary cleanup, pipes and ducts can be cut at bare areas, taken out in sections, and consigned for disposal.

C. Special Considerations: Roofing and seal coat mastic materials, roof penetration and flashing mastic, exterior window caulking, exterior window caulking, vibration joint cloths or Other Matrix-Bonded ACM.

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1. Special precautions need not be taken to remove these materials, provided that removal does not involve physically disrupting the matrix in which the asbestos fibers are bound. Only wet removal methods are allowed.
2. The Contractor may use outdoor procedures as desired in SCAQMD rule 1403, but openings to the building included but not limited to, doors, windows, vents, shall be sealed as critical barriers.

3. Activities which could release asbestos fibers from these materials, such as cutting,

sawing, grinding, or drilling, more than 0.01 f/c.c. of air are specifically prohibited unless permission is granted in writing by the City's representatives.

4. If any of the above activities prove necessary, the affected work area shall be fully isolated, a physically connected decontamination facility provided, and a pressure differential established, as described previously.

5. Any power operated equipment used to remove these materials shall be equipped with HEPA filtered local exhaust ventilation attachments meeting ANSI specifications and ACGIH recommendations for low volume high velocity exhaust systems.

3.4 CLEAN-UP AND DISPOSAL

A. Housekeeping: Maintain surfaces of asbestos control area free of accumulations of asbestos fibers. Restrict spread of dust and debris; keep waste from being distributed over general area. Do not blow down space with compressed air. When asbestos removal is complete, remove asbestos debris from work site, prepare for final clean-up, and visual clearance inspection by Air Monitoring and Inspection Firm shall be requested to certify areas as safe before signs are removed.

B. After final clean up, remove filters on building HVAC system and provide new filters of same type and efficiency. Dispose of removed filters as asbestos-contaminated materials. Inspect affected surfaces for residual asbestos material and accumulated dust. Re-clean areas showing dust or residual asbestos materials. If re-cleaning is required, monitor asbestos airborne concentration after re-cleaning.

C. Final Controlled Work Area(s) Cleanup and Clearance Inspection:

1. The Contractor shall collect all waste, debris, equipment and asbestos-contaminated clothing and place in plastic bags, as specified in Subsection 2.3(B).

2. Clean all surfaces in the controlled work area(s) by using wet-wipe methods or HEPA vacuum.

3. Replace the differential pressure air machine with new secondary filters. Disposed of the used filters as asbestos-containing debris.

4. Request visual clearance inspection by Air Monitoring and Inspection Firm to verify ACM removal and clean up has completed and that no ACM dust or debris is present in the controlled work area.

5. Completion of Removal Procedures of ACM.

6. Adequate cleanup of the controlled work area.

7. Wipe Test.

D. Encapsulation: After the final inspection of the controlled work area, the Contractor encapsulated the entire controlled work area(s) surfaces, plastic sheeting and pipes with two coats of colored encapsulant. The clearance air monitoring shall be requested and performed by the Air Monitoring and Inspection Firm as specified in Subsection 3.5.

E. Disposal of Asbestos: Collect waste, scrape, debris, bags, containers, equipment, and asbestos-contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed impermeable bags. Affix caution label to each bag.

F. Temporary Storage: Store sealed impermeable bags in asbestos waste drums or other suitable closed containers. Place drums into storage area where directed by the City Engineer.

G. Hauling and Disposal: All applicable Federal, State and Local requirements shall be complied with.

1. Contractor shall contact the City to obtain all technical owner information needed to complete all notification, permit and manifest before securing permit or proceeding with any work.

2. Equip workers with appropriate respirators and personal protective equipment when handling asbestos materials and unloading sealed drums at a City licensed disposal site.

3. All dump receipts, trip tickets, or other documentation of disposal shall be delivered to the City's representative.

H. Provide weighing equipment on the site. The Industrial Hygienist and Air Monitoring and Inspection Firm shall verify the weight and the City representative will sign off manifest prior to hauling and disposal.

I. Contractor shall maintain logs of all manifests (hazardous and non-hazardous) and furnish generator's copies of the manifests to the City for process. No progress or final payments will be made by the City until all completed manifest has been received from the treatment, storage or disposal (TSD) facility where the waste has been sent and approved by the City.

3.5 SITE AIR MONITORING AND INSPECTIONS

A. General: Air Monitoring Inspections shall be performed by the Air Monitoring and Inspection Firm provided by the Contractor in each designated work area as described below.

1. All air samples shall be of sufficient volume to establish a detection limit of 0.01 f/cc or lower, based on analysis by NIOSH Method 7400.

B. Prior to Controlled Work Areas Preparation: Inspect the work area(s) for visual accumulations of asbestos-containing debris and perform air monitoring to establish the ambient concentration of airborne asbestos fibers. If the debris found in the controlled work area(s) was suspected cause by falling and airborne of asbestos fiber may have occurred, additional air monitoring shall be performed in each phase outside the controlled work area(s) even it may no visual accumulation of Asbestos-containing debris.

1. These air monitoring results will serve as the criteria for acceptability of all subsequent measurements.

2. Preparation work shall not proceed until the ambient concentration of airborne asbestos fibers has been established, any debris noted by inspection has been effectively removed by the Contractor, and all the affected parties are in agreement that the area in question is satisfactory for preparation.

C. Prior to Asbestos Removal Work: Inspections and air monitoring shall be performed throughout the course of preparation activities of the controlled work area(s) to verify that all requirements are met, and to ensure that these activities do not release asbestos fibers. The inspection shall determine if all appropriate procedures, methods, measures and engineering controls have been addressed. The inspection will address:

1. Observation of the work area.

2. Observation of barriers, air locks, curtained doorways and emergency exits.

3. Observation the decontamination enclosure system.

4. Observation of differential pressure air machine and presence of sufficient air pressure differential.

5. Observation of respirator equipment.

6. Observation to verify that all notices and warnings are posted.

7. Observation to verify the Contractor's workers have proper submittals and the daily logbook is up to date.

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8. Any deficiencies or omissions in work area preparation procedures noted by the City Engineer or the Consultant shall be promptly addressed by the Contractor.

9. Any debris resulting from preparation activities will be effectively cleaned up by the Contractor as quickly as practicable.

10. If air monitoring results indicate airborne asbestos concentrations exceeding the previously established ambient levels at any time during preparation activities, work shall immediately cease until the source of fiber release is identified and the problem corrected.

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D. During Asbestos Removal Work and Cleanup: Air Monitoring Inspections and shall be performed throughout the duration of these activities to verify the continued efficacy of isolation measures, document adherence to procedural requirements, and prevent contamination of adjacent areas.

1. Any departures from Contract Documents, shall be brought to the attention of the Contractor for correction.

2. Any debris noted in adjacent areas will result in cessation of work until the debris is cleaned up, its source identified, and the problem corrected by the Contractor at no added cost to the City.

3. Any increase in airborne asbestos fiber concentrations above previously established ambient levels noted in adjacent areas, shall be dealt with as described above.

E. Final Inspection: At the conclusion of final cleanup, but prior to removal of isolation measures, a final inspection shall be performed to verify that the work agreed upon, has been completed and that no visual asbestos-containing debris is present.

1. Any deficiencies or omissions in removal noted shall be promptly remedied by the Contractor.

2. If asbestos-containing debris is observed, cleanup shall be repeated as many times as necessary to meet the no visual debris criterion.

3. Any such additional work that may prove necessary shall be performed by the Contractor at no additional charge and approved by the City.

F. Clearance Air Monitoring: After the final inspection has been successfully completed, clearance air monitoring shall be performed.

1. The clearance air monitoring will be conducted using aggressive air sampling techniques, such as leaf blowers, fans, or other agitation devices

2. The clearance air monitoring will be conducted and analyzed by transmission electron microscopy (TEM) according to the Interim Transmission Electron Microscopy Analytical Methods published in the Federal Register dated October 30, 1987, EPA 40 CFR Part 763. Air clearance results shall indicate airborne asbestos fiber concentration equal to or below AHERA limits of 70 structures/mm^2.

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3. Additional cleaning cycles shall be provided by the Contractor at no charge, as needed to meet this criterion.

4. Upon receipt of satisfactory clearance of air monitoring results, isolation measures may be removed and the work area released for other construction trades or re-occupancy, as appropriate.

(END OF SECTION)

SECTION 02 83 00
LEAD BASED PAINT REMOVAL

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The Lead-Based Paint (LBP) Abatement Contractor (hereinafter referred to as “Contractor”) is responsible for and shall furnish all labor, material, equipment, and services necessary or required for the removal of the LBP and LBP-containing surfaces from the specified areas of the Las Palmas Senior Center, prior to the “Site Renovation” operations specified in another section.

B. Work under this Section shall include initial floor cleanup, critical barriers and work area(s) preparation, removal of LBP, removal of and LBP-containing surface, final cleanup, and disposal of LBP. With LBP detected on mostly all surfaces in the building, the Contractor shall remove all painted surfaces in the building specified as LBP-containing surfaces, all chipped or flaked paint in the building as specified or noted. The painted surfaces shall include, but not be limited to walls, partitions, columns, ceilings, ceiling tiles, floorings, doors, door frames and jambs, window frames and sills, railings, radiators, painted mechanical equipment and ducts, sheet metal tile roofing, sheet metal cornice and fascia, flagpole, flashing and etc.

C. Contractor shall provide all coordination, equipment, material, medical surveillance, biological monitoring and site monitorings necessary to protect his personnel and building tenants or area occupants while performing other renovation work over existing LBP to remain as listed herein below, including but not necessary limited to, cutting, welding, painting, lath and plastering, gypsum board, etc.

D. Contractor shall furnish all labor, material, equipment and services necessary or required for the removal of the polychlorinated biphenyl (PCB) containing material.

E. Contractor may be directed to remove other lead containing material and/or hazardous material encountered during the abatement and site renovation.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 41 00 Building Demolition.

B. Section 09 91 13 – Exterior Painting

C. Section 09 91 23 - Interior Painting.

C. Section 09 24 00 - Stucco

D. Section 09 29 00 - Gypsum Wallboard

E. Division 22 – Plumbing

F. Division 23 - Heating, Ventilating, And Air-Conditioning (HVAC)

G. Division 26 – Electrical

1.3 WORK REQUIRED

A. **General:** Removal of LBP and LBP-containing surfaces from the existing building, prior to or during Site Renovation, as specified herein and in another Section.

1. A set of existing building record drawings and an Hazardous Material Survey Report has been prepared by Terra Environmental and attached to the Project Manual as part of Contract Documents. The information/measurements are approximate and for the Bidder's/Contractor's information only. It is expressly understood that the City will not be responsible for interpretations or conclusions drawn by the Bidder/Contractor as to the nature of or full extent of the existing lead-based paint.

2. It is not possible that all existing paint in existing Hollywood Sanitation Yard facility was sampled, analyzed and identified by the survey. The paint material noted in the Hazardous Material Survey Report are considered as representative samples for other paint material with similar color and conditions. It will therefore be the responsibility of the Bidder/Contractor to ascertain the nature and extent of the lead-based paint in any suspected area which was not sampled or addressed by the "Survey" report, by the Terra Environmental.

   The Contractor shall remove and dispose of all LBP and LBP-containing surfaces, including area where access is restricted. The floor work areas shall include, but not be limited to the office areas, lobby and shafts, mechanical rooms, restroom, pipe chases, plenums, ceiling, attic/ceiling space, exterior structures, exterior building surface, etc.

3. The Contractor shall determine the route and method of moving the LBP-containing surfaces and debris through the building or project site and include in the detailed plan submitted for City Engineer's approval.

4. The work schedule may include days and/or nights and weekends. Whatever the schedule, noisy operations shall be scheduled during off-hours to avoid disruption of normal building operations and activities.

B. **Nature of the Work:**

1. General: The work required by this Section includes handling, removing, cleanup, transporting, and off-site disposing of removed LBP-containing surfaces and debris. The Contractor shall provide all equipment, material, personnel monitoring; necessary to protect his personnel and building tenants or area occupants (general public), from contact with airborne LBP-containing debris. The Contractor shall perform this work in accordance with the methods and procedures prescribed by this section and in compliance with all applicable rules and regulations described below, but not necessary limited to:

   Code of Federal Regulations (CFR)

   a. 29 CFR 1910.134 Respiratory Protection

   b. 29 CFR 1910.145 Specifications for Accident Prevention Signs and Tags

c.	29 CFR 1926.62	Lead Exposure in Construction
d.	40 CFR 260	Hazardous Waste Management System: General
e.	40 CFR 261	Identification and Listing of Hazardous Waste
f.	40 CFR 262	Standards Applicable to Generator of Hazardous Waste
g.	40 CFR 263	Standards Applicable to Transporter of Hazardous Waste
h.	40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
i.	40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
j.	40 CFR 268	Land Disposal Restrictions
k.	49 CFR 178 & 179	United States Department of Transportation
l.	49 CFR 172 & 173	United States Department of Transportation

California Code of Regulations (CCR)

a.	Title 8, 1532.2	Construction Safety Orders – Lead
b.	Title 8, 5216	General Industry Safety Orders – Lead
c.	Title 8, 5194	Hazard Communications
d.	Title 13	Dept. of Calif. Highway Patrol Regulations
e.	Title 22	Hazardous Waste Handling

American National Standards Institute (ANSI) Publications

a.	ANSI Z9.2	1979 Fundamental Governing the Design and Operation of Local Exhaust Systems
b.	ANSI Z88.2	1980 Practice for Respiratory Protection
c.	ANSI Z86.1	1973 Commodity Specifications for Air

Underwriters' Laboratory Inc. (UL) Publication

a.	UL 586	1990 High Efficiency Particulate Air (HEPA) Filter Units

Any other federal, state, county, and City regulations, codes, and ordinances that are applicable.

2. Controlled Work Area(s): The controlled work area(s) will be the entire specified floor where the LBP containing material**,** LBP-containing surfaces shall be removed. The specified floors will be vacated of City of Los Angeles Employees (City Employees).

3. Title to Construction Debris: Materials and debris resulting from LBP**,** LBP-containing surfaces removal work, unless otherwise indicated shall become the property of the Contractor. The LBP**,** LBP-containing surfaces shall be dispose of properly, as specified in Subsection 3.5.

4. Protection of Existing Work to Remain: The LBP and LBP-containing surfaces removal work shall not damage or contaminate adjacent areas or other ongoing construction work. Areas that are damaged or contaminated by the Contractor shall be restored to original condition by the Contractor.

5. City's Representatives: The City's representatives shall be the responsible party for the required work. The City's representatives shall include, but not be limited to the Project Manager and Construction Manager; the Abatement Consultant for the project, City's Industrial Hygienist and Consultant Architect.

C. **Pre-Bid Meeting (Job-Walk Through)**: A pre-bid meeting and job walk-through will be held for the bidders at times and places directed by the City's representatives and noted in the Bid Documents. The Contract Drawings and Project Manual will be available for reference at this meeting. In addition, the City's representatives will be available to answer all questions by the bidders, submitted in writing.

1.4 QUALITY ASSURANCE

A. Contractor's Qualifications: The Contractor or Subcontractor performing the work of this Section shall submit information demonstrating that they posses the following qualifications:

1. A minimum of 10 years specializing in the safe removal of LBP and LBP-containing surfaces, with evidence of having successfully completed projects with requirements similar to this one.

2. Contractor or Subcontractor shall be duly licensed by the State of California with the provisions of Chapter 9, Division 3, Business and Professions Code, as amended.

3. The Contractor shall carry insurance in accordance with the City's requirements.

4. The Contractor shall be registered with the Carcinogen Control Unit, California Occupational Safety and Health Administration (OSHA).

5. The Contractor shall present proof of personnel's training, in regards to LBP abatement work.

6. The Contractor shall present standard operating procedures and employee protection plans with specific reference to their OSHA medical, exposure monitoring and respirator training programs.

7. The Contractor shall present references on previous jobs and work projects, on demand.

8. The Contractor shall present documentation on three successful completions of lead-based paint removal projects within the last 2 years.

B. Air Monitoring and Inspection Firm to be Provided by the Contractor:

1. Qualifications:

   a. The Air Monitoring and Inspection Firm shall be completely independent of, and in no way affiliated with the Contractor.

   b. The Air Monitoring and Inspection Firm to be provided by the Contractor shall present at least three references.

2. Entry to the Site: Air Monitoring and Inspection Firm and City's representatives shall have the right of entry to the floor work areas, at any time, for purposes of inspection and monitoring.

   a. The Contractor shall provide the appropriate protective clothing for inspection and monitoring and to City's representatives.

3. Interpretation: Matters concerning interpretation of standards will be submitted to all City representatives and to appropriate administrative agency for resolution, as necessary. Where requirements of these specifications and referenced documents differ, the more stringent requirements shall apply.

4. Protective Measures: The Air Monitoring and Inspection Firm and the City's representatives reserve the right to require additional protective measures at any time during the course of the LBP and LBP-containing surfaces removal work, to protect workers, City Employees and users of the building.

1.5 SUBMITTALS

A. Submittals shall meet the requirements set forth in Section 01330 – Shop Drawings/Submittals.

B. LBP and LBP-Containing Surfaces Removal Plan:

1. Prior to the start of LBP and LBP-containing surfaces removal work, the Contractor shall submit a detailed plan of work procedures to be used in removal and disposal of materials containing LBP to the City for reviews. Contractor shall incorporate all comments and corrections prior to submitting to Federal and State governing authorities having jurisdiction for approval. The plan shall be approved by governing authorities prior to start of work. The plan shall include the location and layout of decontamination areas; the sequencing of LBP, LBP-containing surfaces removals; the interface of trades involved in the performance of work; work schedule including work shift time, number of employees, date of start and completion including dates of preparation work, removal, and final clearance dates; methods to be used to assure the safety of building occupants and visitors to the floor; type of wetting agent or encapsulate; disposal plan including location of approved disposal site; and a detailed description of the methods to be employed to control pollution and an emergency evacuation plan. Expand upon the use of portable HEPA-filtered ventilation system, closing out of the building's HVAC system, method of removal to prohibit visible emissions in work area, and packaging of removed asbestos debris. Submit evidence of approvals to the City's representatives prior to start of work.

C. 1. Training**:** The Contractor shall submit certificates, signed by each employee, stating that employee has received training in proper handling of materials that contain LBP understands health implications and risks involved, including illnesses possible from exposure to airborne lead particles; and understands the use and limits of respiratory equipment to be used; and understands results of monitoring of airborne quantities of lead-based paint as related to health and respiratory equipment.

2. All employees must have baseline and post abatement blood lead level screenings results provided to City for review.

D. **Local Exhaust Equipment (Differential Pressure Air Machines):** The Contractor shall submit evidence of conforming to ANSI Z9.2 "Fundamentals Governing the Design and Operation of Local Exhaust Systems" for equipment required to contain HEPA filters in differential pressure air machines for personnel monitoring and site air monitoring.

E. **Permits and Notifications:** The Contractor shall secure the necessary permits in conjunction with LBP and LBP-containing surfaces removal, hauling, and disposition and provide timely notification of such actions as may be required by Federal, State, Regional, City and County of Los Angeles Governments.

1. Notify Regional Office of United States Environmental Protection Agency (USEPA) and South Coast Air Quality Management District (SCAQMD) and provide copies of notification to City's Representative and State Environment Regulatory Agency at least 10 working days prior to start of work.

2. Notify the nearest district office of CAL/OSHA, Division of Occupational Safety and Health, at least 3 working days prior to start of work.

3. Notify the air monitoring and inspection firm at least 3 working days prior to start of work.

4. Satisfactory proof to the City that required notifications and/or remediation plans, have been filed and permits have been obtained and are in full force and effective throughout course of work of this Section.

F. **Project Log Book**: The Contractor shall maintain a project log book, which will be kept up-to-date and available at the job-site. Upon completion of the work, a copy shall be submitted to the Air Monitoring and Inspection Firm for approval. After approval, two copies shall be submitted to the City's representatives. The Project Log Book will contain and conform to the following:

1. Documentation of all Notices and Submittals.

2. Permits.

3. Medical Records - Proof of Personnel's Medical Physicals.

4. Emergency Notification Data.

5. Sign-in log book, shall be filled out daily:

- Name of person visiting the controlled work area;
- Time entered/exited the controlled work area;
- Affiliation and purpose;
- Description of activity performed;

- Description of daily work performed;
- Any damages to the structure or furnishings;
- Any loss of air pressure differential;
- Any accidents (including minor accidents);
- Results of any air samples collected by the Contractor;
- Signature of Project Superintendent and date;

G. **Landfill:** The Contractor shall submit written evidence that the disposal facility is approved for lead disposal by EPA and State or Local Regulatory Agencies, when the LBP waste is characterized as hazardous waste. All disposal or recycling facilities used in this Project shall be located within the State of California.

H. **Monitoring Results:** The Contractor shall submit monitoring results to the City's representatives and the Air Monitoring and Inspection Firm within 3 working days. Complete airborne lead concentration analysis and notify the City's representatives.

I. **Air Pressure Differential Recordings (If Specified to be Responsible for by the Contractor):** The Contractor shall submit air pressure differential recordings for each work to Air Monitoring and Inspection Firm for review, and then submit to the City's representatives within 48 hours from end of each work day. Notify the City's representatives immediately of any variance in pressure differential which could cause exposure of adjacent areas to fiber concentrations in excess of acceptable time-weighted average (TWA).

J. **Hazardous Manifest**: The Contractor shall maintain a log of all manifests (hazardous and non-hazardous). The Contractor shall submit to City Engineer duplicate copies of all logs and generator's copy of the manifest to City Engineer for process. Upon receipt of the completed manifest from the Treatment, Storage or Disposal (TSD) facility where the waste has been sent, the City will make progress payment for the completed abatement work in accordance with **[**Subsection 3.5**]**, regardless the LBP waste characterized as hazardous or non-hazardous waste.

1.6 INSURANCE REQUIREMENTS (FOR LEAD-BASED PAINT REMOVAL)

A. Lead-Based Paint Abatement Contractor must provide a certified copy of a General Liability Insurance Policy or other evidence acceptable to the City Attorney showing that the Contractor is insured for work in the Lead-Based Paint, removal and/or encapsulation field. The actual policy declaration must contain wording that the coverage is for a Lead-Based Paint Abatement Contractor and must include coverage for completed operations.

B. Because of the severely limited availability of Lead-Based Paint Abatement Liability insurance, we are modifying the requirements to allow compliance by any of the following alternatives:

Type of Policy	Coverage	Limits/Aggregate
Comp. General Liability-	Products/Completed	$1,000,000
Occurrence basis	operations	$2,000,000
1986 Comp. General Liability-	Products/Completed	$1,000,000/
Occurrence basis	operations	$2,000,000
1986 Comp. General Liability-	Products/Completed	$1,000,000/
Claims-made basis	operations	$2,000,000

Owners and Contractors Protective Liability	Lead-Based Paint [PCB] Removal (City as Named Insured)	$1,000,000
Project Specific General Liability	Products/Completed operations	$1,000,000**]**

D. If the contractor has a claims-made basis policy and changes insurance carriers, it is critical that there be no gap in coverage and that a retroactive policy be provided.

1. The foregoing applies only to the Lead-Based Paint Removal insurance requirements. All other insurance requirements remain unchanged.

E. Refer to Section 00316 - INDEMNIFICATION and Section 00317 - INSURANCE, GENERAL CONDITIONS, for additional information.

PART TWO - PRODUCTS

2.1 EQUIPMENT

A. **Respirators:** The Contractor shall use respirators from those approved by the National Institute of Occupational Safety and Health, Department of Health and Human Services.

1. Powered Air Purifying Respirators (PAPR) shall be the minimum level of respiratory protection employed during work area(s) removal of LBP**,** LBP-containing surfaces and cleanup.

B. **Protective Clothing:** The Contractor shall provide personnel exposed to airborne lead particles with disposable protective whole-body clothing, including head coverings and foot covering. Make sleeves secured at wrists and make foot coverings secured at ankles. Provide disposable plastic of rubber gloves to protect hands and face shields, vented goggles, or other appropriate protective equipment.

C. **Decontamination Enclosure Facilities:** The Contractor shall provide a decontamination enclosure facility for personnel required to wear whole-body protective clothing and work in the controlled work area. These facilities, and their use, shall comply with the requirements of 29 CFR 1926.62 and CCR Title 8, 1532.1 and CCR Title 22.

1. The decontamination enclosure systems shall be constructed, affixed, and connected in such a manner as not to compromise the airtightness of the containment.

2. Build suitable wood or metal stud frame; or use an existing room or enclosure approved by the City's representatives and Air Monitoring and Inspection Firm. Portable, pre-fabricated units may be used if approved by the City's representatives and Air Monitoring and Inspection Firm. Approval will be based upon, but not limited to, the construction, floor plan, dimensions, materials, sizes, thicknesses, plumbing, electrical outlets, etc.

3. In all cases, access between contaminated and uncontaminated rooms or areas shall be through a decontamination enclosure system. In all cases, access between any two rooms within the decontamination enclosure shall be through an air lock with two curtained doorways.

4. Worker and Visitor Decontamination Enclosure: Construct a workers and visitor's de-

contamination enclosure adjoining the work area(s) consisting of three totally enclosed chambers, an equipment room, a shower room and a clean room.

a. The equipment room shall be connected to the work area(s) and contain an air lock leading to the shower room. In addition, the equipment room shall contain a marked receptacle for the discarding of contaminated clothing prior to entering the shower room.

b. The shower room shall be connected to the equipment room and the clean room by an air lock. An additional pan shall be placed below the stall of sufficient size to contain 5 cubic feet of water. The shower(s) shall be equipped with hot and cold or warm water. If necessary, Contractor shall provide portable hot water heater to supply hot water. The shower(s) shall have sufficient soap, shampoo, and disposable towels at all times.

c. The shower room shall not leak, and the water shall be appropriately filtered and/or properly.

d. The clean room shall be connected to the shower room by one air lock, with a curtained doorway leading to any other non-contaminated space within the Worker Decontamination Enclosure.

e. It shall be large enough to provide storage for the workers street clothes, towels, or any other non-contaminated items.

5. Equipment Decontamination Enclosure: Construct an equipment decontamination enclosure consisting of two totally enclosed chambers, a washroom and a holding area

a. The washroom constituting an air lock shall be connected to the holding area by a curtained doorway.

b. The holding area will be connected to any uncontaminated area by a curtained.

c. These spaces shall be for the cleaning and decontamination of bagged wastes. In addition, this is preferred ingress and egress point for equipment. All equipment will be thoroughly decontaminated before leaving the decontamination enclosure facility.

d. Water in this enclosure shall be collected, filtered, and/or properly disposed.

e. The decontamination enclosure facilities shall be maintained to ensure that the barriers, air locks, and plastic linings are effectively sealed and taped.

f. Repairs shall be undertaken immediately upon discovery of a defect.

g. Visually inspect and thoroughly clean the decontamination enclosure system at the beginning and end of each workday.

6. In all cases, project site (interior and exterior) shall be protected from any contamination. No Lead-Based paint, construction or cleaning water shall be directed toward on-site soil, paving or flooring opening, drain system, and etc. No airborne duct shall be caused or directed to adjacent property.

D. **Air Pressure Differential to be Provided by Contractor:** Each controlled work area(s) shall be maintained at a minimum air pressure differential of 0.02" W.G. to adjacent areas by

means of differential pressure air machines equipped with HEPA filtration. The Contractor will provide a sufficient number of differential pressure air machines to exchange the air within the controlled work area(s) every 15 minutes. The air pressure differential shall be referenced to ambient pressure within the clean room of the decontamination enclosure facilities to the controlled work area.

2. **Differential Pressure Air Machine**: The Contractor shall verify the efficiency of each differential pressure air machine and the efficiency rating shall be used in the calculations of air exchange within the controlled work area. The differential pressure air machine shall be equipped with three stages of filters, a HEPA-filtered and two prefilters.

1. Differential pressure air machines will remain in use until a final clearance has been attained. No removal activities will be allowed without proper air pressure differential.

2.2 CAUTION SIGNS AND LABELS

A. **General:** Provide signs at approaches to LBP and LBP-containing surface removal controlled work areas. Locate signs at such distance that personnel may read sign and take necessary protective steps required before entering the controlled work area. Signs shall be bilingual, English and Spanish.

1. Signs and labels shall conform with the requirements of 29 CFR 1926.62, 40 CFR 260, CCR Title 8, 1532.1 and Title 22.

2.3 MATERIALS

A. **Encapsulant:** EPA-approved asbestos encapsulant, tinted with contrasting color to plastic sheeting surfaces, and suitable to be sprayed-applied by airless sprayer, BWE 5000 or equivalent.

B. **Plastic Sheeting:** Fire-retardant, 6-mil polyurethane plastic used to cover the critical barriers; the controlled work area(s), ceiling and floor; and decontamination enclosure facilities.

C. **Runners:** Paper, of sufficient width and length to protect floors of the building entrances to work area(s).

D. **Spray Adhesive**: 3M spray adhesive.

E. **Tape:** Duct tape.

PART THREE - EXECUTION

3.1 GENERAL

A. The painted surfaces anticipated for the LBP removal and LBP-containing surfaces removal shall include, but not be limited to, walls, partitions, columns, ceiling, ceiling tiles, floorings, doors, door frames and jambs, window frames and sills, stairs, railings, radiators, painted mechanical equipment and duct, sheet metal tile roofing, sheet metal cornice and fascia, flagpole, flashing and etc**.**

3.2 PREPARATION PROCEDURES OF THE CONTROLLED WORK AREA (S)

A. **General Preparation:** To the controlled work area(s) for the removal of LBP and LBP-containing surfaces.

1. Prior to commencing any preparation of the controlled work area(s), the Contractor shall post all required documents, warning signs, and erect any physical barriers in order to secure the work area(s). The previously described project log book shall be kept updated and available for review at all times.

2. The Contractor is responsible for the work area(s) security upon establishing, preparing, and maintaining the controlled work area(s). The responsibility of security extends 24 hours per day. The Contractor may be required to retain a security service. NOTE: Only authorized visitors will be allowed on the work site.

3. The Contractor shall disconnect and lock out existing electric power to the work area(s). Provide temporary electric power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements.

4. The Contractor shall shutdown and isolates HVAC systems to prevent contamination and lead particle dispersal to other areas of the building. If the HVAC systems service other areas of the building, the HVAC system should still be shutdown and those other areas should go without services.

5. The Contractor shall seal all critical barriers including, but not limited to HVAC supplies and returns; doors and windows/penetrations and openings between floors; vents and exhaust fans; and any other opening. The critical barriers shall be sealed with two layers of plastic sheeting, tape and spray adhesive. Critical barriers between the floors, may be sealed with appropriate foam sealant.

6. Unless otherwise specified, the Contractor shall install differential air pressure machines. The number of the machines required for the controlled work area(s) shall be calculated using the following:

    a. Cubic feet per minute (cfm) flow rate of the machine at a 75 percent efficiency.

    b. Cubic feet (cf) volume of the controlled work area(s) including the above ceiling space.

    c. Four air changes per hour.

7. The Contractor shall use operable windows to exhaust the differential pressure air machines to the exterior of the building.

8. Moveable and loose items located in the work area(s) shall be cleaned using HEPA-filtered vacuum equipment and/or wet cleaning methods as appropriate, or shall be removed from the work area(s).

9. The Contractor shall remove and dispose of all carpet including pad, which are located in areas containing LBP prior to initial demolition of the work area. All carpet and pads shall be HEPA-filtered vacuumed and clean of lead based paint by an approved method**.** All carpet and pads prior to being discarded shall be HEPA-filtered vacuumed, lightly dampened with water and disposed of as construction debris.

C. **Additional Preparation**: To the controlled work area(s) for the removal of LBP from surfaces and other renovation work over existing LBP.

1. The Contractor shall contain the LBP-containing surface inside a controlled work area by either building containment around the LBP-containing surface or building containment and relocating the surface inside it. The containment shall have the walls, ceilings and floors covered with plastic sheeting. All joints and seams of the plastic sheeting shall be overlapped a minimum of 12 inches, glued, and taped together and to existing walls in a manner to prevent and prohibit water and air movement through the covered areas.

2. All project site (interior and exterior) shall be protected from any contamination in accordance with Subsection 2.1 (c)6.

3. The Contractor shall install the required differential air pressure machine, as previously described, inside the controlled work area(s).

4. If water is used to remove the LBP from surfaces, the Contractor shall construct a water capturing device. The water shall be collected, filtered and/or properly disposed.

5. The Contractor shall establish emergency fire exits in compliance with applicable fire codes/regulations. The emergency fire exits shall not be used for entering or exiting the work area, except in case of emergency. The Contractor shall post the necessary abatement warning signs in each of the fire stairwells for two floors below and one floor above the controlled work area(s), or as required by applicable fire codes/regulations. All exits shall be marked in bold red lettering "Emergency Exit."

6. The Contractor shall install their communication equipment. Equipment should be operating properly and maintained as such during removal and cleanup operations.

3.3 REMOVAL PROCEDURES OF LBP-CONTAINING SURFACES

A. Prior to beginning the removal and other renovation work activities, the Air Monitoring and Inspection Firm shall conduct a visual walk-through inspection of the controlled work area(s), as specified in Subsection 3.7.

B. The Contractor's appropriate personnel shall enter the controlled work area(s) with the required personal protection, specified in Subsection 2.1.

C. The Contractor shall saturate the LBP-containing surfaces with encapsulation or amended water, designed to prevent airborne lead particles.

D. The Contractor shall remove the LBP-containing surfaces or perform renovation work

over existing LBP preventing airborne dust and debris in accordance with detailed plan submitted by the Contractor.

E. The debris from the LBP-containing surfaces shall be placed into wheel-dumpsters, saturated with more encapsulation/amended water in the equipment decontamination enclosure, and wheel the dumpster and saturated debris to a trash dumpster outside the building. Any surfaces containing LBP may be disposed of as standard construction debris if this LBP containing surface debris such as plaster, gypsum board, wood material, etc is evaluated and characterized as to lead content and concentration as per CCR Title 22, Chapter 11, Article 3.

F. The LBP chips, flakes, dust, and debris must be collected and placed into 55-gallon, heavy duty type "17H" Open Head, non-leaking, polyurethane-lined steel drums, as per 49 CFR 173, 178, and 179.

3.4 REMOVAL PROCEDURES OF LBP FROM SURFACES

A. Prior to beginning the removal and other renovation work activities, the Air Monitoring and Inspection Firm shall conduct a visual walk-through inspection of the controlled work area, as specified in Subsection 3.

B. The Contractor shall use LBP removal procedures, which prevents airborne dust and debris, approved by the City Engineer. The Contractor may elect to use chemical strippers, HEPA-filtered vacuum blasting or sanding, and/or heat blower guns with the approval of the City Engineer.

C. The removed LBP chips, flakes, dust, and debris must be evaluated and characterized as to lead content and concentration, as per CCR Title 22, Chapter 11, Article 3. The LBP chips, flakes, dust and debris must be collected and placed into 55-gallon, heavy duty type "17H" open head, non-leaking, polyurethane-lined steel drums, as per 49 CFR 173, 178, and 179.

3.5 CLEANUP OF CONTROLLED WORK AREA (S) AND DISPOSAL PROCEDURES OF LBP WASTE

A. **Housekeeping:** Upon removal of LBP and LBP-containing surfaces or other renovation work, the following cleanup procedures, unless otherwise specified in detailed plans, shall commence:

1. Once the LBP chips, flakes, dust, and debris have been collected and placed into the specified steel drums, the Contractor shall HEPA-filtered vacuum and wet wipe all surfaces inside the controlled work area(s).

2. Request visual clearance inspection by Air Monitoring and Inspection Firm. Criteria for visual clearance inspection shall include:

    a. Completion of removal of LBP and LBP-containing surfaces.
    b. Adequate cleanup of the controlled work area.

B. **Hauling and Disposal:** All applicable Federal, State, and Local requirements shall be complied with.

1. The Contractor shall contact the City to obtain all technical information needed to complete all notification, permit and manifest before securing permit to proceeding with any work.

2. The Air Monitoring and Inspection Firm shall verify the number of steel drums and the City's representatives will sign the manifest prior to hauling and disposal of the LBP hazardous or nonhazardous waste. No progress or final payment will be made until all completed manifests have been received and approved by the City.

3. All dump receipts, trip tickets, or other documentation of disposal shall be delivered to the City's representative.

4. All shipping will be in accordance with Title 49, CFR Part 172, 173, 178 and 179.

5. All respiratory requirements specified herein shall be complied with.

3.6 HANDLING AND DISPOSAL OF LEAD-CONTAINING ELECTRICAL WIRING

A. As specified in Contract Documents, the Contractor shall identify the locations of the lead-containing electrical wiring, making sure the power to the wire has been shut off.

B. The Contractor shall pressure-cut the wire or remove the wire in one piece. No abrasive cutting or sanding of the wire shall be conducted.

C. During removal, the Contractor shall wind up the wire and place it in polyurethane plastic-lined steel drums, as specified in Subsection 3.3(F).

D. The wire must be evaluated and characterized as to lead content as per CCR Title 22, Chapter 11, Article 3.

E. The hauling and disposal shall comply with all applicable Federal, State, and Local requirements and with Subsection 3.5(B).

3.7 SITE AIR MONITORING AND INSPECTIONS

A. **General:** Air monitoring and inspections shall be performed by the Air Monitoring and Inspection Firm in the controlled work areas as described below:

1. All air samples shall be of sufficient volume to establish a detection limit of micrograms of lead per cubic meter of air (ug/m^3) and provided by the Contractor.

B. **Prior to Removal Procedures of the LBP and LBP-Containing Surfaces and Other Renovation Work:** Air monitoring and inspections shall be performed throughout the course of the controlled work area(s) preparation, to verify that all specifications are met, and to ensure that the preparation activities do not release airborne lead particles. The inspection shall determine if all appropriate procedures, methods, measures and engineering controls have been addressed. The inspection will address:

1. Observation of the work area.

2. Observation of barriers, air locks, curtained doorways and emergency exits.

3. Observation of the decontamination enclosure system.

4. Observation of differential pressure air machines and presence of sufficient air pressure differential.

5. Observation of respirator equipment.

6. Observation to verify that all notices and warnings are posted.

7. Observations to verify the Contractor's workers have proper submittals and the project log book is up-to-date.

8. Any deficient or omissions in the controlled work area(s) preparation procedures noted by routine inspections or the City's representative shall be promptly addressed by the Contractor.

9. Any debris resulting from preparation procedures will be effectively cleaned up by the Contractor immediately.

C. **Final Inspections of the Controlled Work Area(s):** At the conclusion of the controlled work area(s) cleanup, a final inspection shall be performed to verify the removal and cleanup of LBP and LBP-containing surfaces have been completed and that no LBP chips, flakes, dust, or debris is present in the controlled work area.

D. **Clearance Air Monitoring of the Controlled Work Area(s):** After final inspection has been successfully completed, clearance air sampling shall be performed by the Contractor:

1. The clearance air sampling will be conducted using aggressive air sampling techniques, such as leaf blowers, fans, or other air agitation devices.

2. The clearance air sampling will be conducted to analyze the airborne lead particle inside the controlled work area(s). Air sampling clearance results shall indicate airborne lead particle concentrations are equal to or below 3 ug/m^3.

1. Additional cleaning tasks and air clearance sampling shall be provided by the Contractor at no additional cost to the City, as needed to meet the above criterion.

4. Upon receipt of satisfactory clearance of air sampling results, isolation measures may be removed and the controlled work area(s) released for other construction trades.

(END OF SECTION)

SECTION 03 10 00
CONCRETE FORMWORK

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all materials for concrete formwork, bracing, shoring, and supports and shall design and construct all falsework and scaffolding, all in accordance with the provisions of the Contract Documents.

B. DEFINITIONS

1. Exposed Concrete: All concrete that is visible in the finished work, including concrete to be painted.

2. Unexposed Concrete: All other concrete that is concealed in the finished work, including plastered surfaces and attic and utility spaces.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [02220] Earthwork.

B. Section [03200] Reinforcement Steel.

C. Section [03230] Unbonded Post-Tensioning.

D. Section [03290] Joints in Concrete.

E. Section [03300] [03310] Cast-in-Place Concrete.

F. Section [03313] Lightweight Structural Concrete.

G. Section [03315] Grout.

H. Section [03331] Cast-In-Place Architectural Concrete.

I. Section [03370] Concrete Curing.

J. Section [05300] Metal Decking and Open-Web Steel Joists.

K. Section [07900] Joint Sealants.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Comply with the reference standards and Standard Specifications as specified in the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards, as applicable:

1. <u>Government Standards:</u>

PS 1	U.S. Product Standard for Concrete Forms, Class I
PS 20	American Lumber Softwood Standard
CSS	Caltrans Standard Specifications

2. Commercial Standards:

ACI 347	Recommended Practice for Concrete Formwork
ACI 117	Standard Tolerances for Concrete Construction and Materials

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. Falsework Calculations and Drawings: The CONTRACTOR shall comply with all the latest applicable Sections of the Division of Industrial Safety, Construction Safety Orders. In addition, formwork/falsework must be designed, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that might be applied to the formwork. Drawings and plans, including all revisions for the jack layout, formwork (including shoring equipment), working decks, and scaffolds, must be available at the jobsite. All shoring equipment (including equipment used in reshoring operations) must be inspected prior to erection to determine that the equipment meets the requirements specified in the formwork drawings. Plans and Calculations shall be prepared and signed by a Civil Engineer, registered in the State of California. A copy of the falsework plan or shoring layout shall be available on the job site at all times. The Engineer who designed the falsework or vertical shoring shall personally inspect such work and provide a written certification that the work conforms to the design.

   Scaffolding Calculations and Drawings: Scaffolding shall be defined in accordance with and shall conform to the Construction Safety Orders of the Division of Industrial Safety. If scaffolding is constructed for this project over or adjacent to traffic, or suspended from the traveled way, the Contractor shall submit to the Engineer working drawings for scaffolding systems. The scaffolding manufacturer's name, address, and phone number shall be shown on the working drawings. The working drawings, details and calculations for the scaffolding shall be stamped and signed by an engineer who is registered as a Civil Engineer in the State of California. In addition, prior to submitting the working drawings to the Engineer, the working drawings shall be stamped and signed by an independent reviewer who is registered as a Civil Engineer in the State of California. The independent reviewer shall not be employed by the same entity preparing the working drawings.

2. The CONTRACTOR shall, in accordance with the requirements in GENERAL REQUIREMENTS file with the City detailed plans of the falsework and scaffolding proposed to be used. Such plans and calculations shall be in sufficient detail to indicate the general layout, pattern layout, dimensioned to precisely locate grooves, form panel jointing, and similar features. The submittal shall also include sizes of members, anticipated stresses, grade of materials to be used, and typical soil conditions.

   a. Form Release Compound

   b. Form Ties and Spreaders

   c. Installation Instructions

1.5 QUALITY ASSURANCE

A. Tolerances: The variation from established grade or lines shall not exceed 1/4-inch in 10 feet and there shall be no offsets or visible waviness in the finished surface. All other tolerances shall be within the tolerances specified in ACI 117, unless noted otherwise.

B. Laborers: Use adequate number of skilled laborers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

C. Prior to construction of formwork for concrete beams and slabs above grade, Contractor shall conduct a meeting at the site to determine and define all cambers required for the project. ENGINEER, Contractor and Contractor's formwork installer shall be in attendance at this meeting.

D. Engage a licensed surveyor to verify that work is within specified tolerances. Surveyor shall report in writing to the ENGINEER, with copy to Contractor, certifying work as acceptable or indicating deviations from allowable tolerances.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials for forms in timely manner to ensure uninterrupted progress.

B. Store materials by methods that prevent damage and permit ready access for inspection and identification.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Except as otherwise expressly accepted by the ENGINEER, all lumber brought on the job site for use as forms, shoring, or bracing shall be new material. All forms shall be smooth surface forms and shall be of the following materials:

Walls	-	Steel or plywood panel
Columns	-	Steel, plywood or fiber glass
Roof, floor, deck and soffit	-	Plywood, Steel Panels
All other work	-	Steel panels, plywood or tongue and groove lumber

2.2 FORM AND FALSEWORK MATERIALS

A. Materials for concrete forms, formwork, and falsework shall conform to the following requirements:

1. Lumber shall be Douglas Fir or Southern Pine, construction grade or better, in conformance with U.S. Product Standard PS20.

2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1 for Concrete Forms, Class I, and shall be edge sealed.

3. Form materials shall be metal, wood, plywood, or other material approved by the ENGINEER that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade shown. Metal forms shall be an approved type that will accomplish such results.

Forms for exposed exterior concrete surfaces shall be American Plywood Association (APA) High Density Overlay (HDO) Plyform Class I Ext. 48" X 96" X 3/4" minimum thickness.

Forms for other concrete surfaces shall be American Plywood Association (APA) Douglas Fir B-B Plyform Class I Exterior PS 1, 3/4-inch minimum thickness.

4. Coated Form Plywood: For exposed painted concrete, plastic overlaid plywood of grade specified above, factory coated with a form coating and release agent equal to “Noxcrete”.

5. Tube forms: [Sonoco “Seamless Sonotubes”, Alton Building Products “Sleek Seamless Standard Wall”], or equal, type leaving no marks in concrete, 1-piece lengths for full required height.

B. Unless otherwise shown, exterior corners in exposed concrete members shall be provided with 3/4-inch chamfers. Re-entrant corners in concrete members shall not have fillets unless otherwise shown.

C. Forms and falsework to support the roof and elevated floor slabs shall be designed for the total dead load, and a minimum construction live load of 30 psf .

D. Forms proposed for use at bridges shall comply with Caltrans Standard Specification Section 51.

2.3 FORM TIES

A. Form ties with integral waterstops shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed 1-1/2-inches; and all such fasteners shall be such as to leave holes of regular shape for reaming.

B. Form ties for water-retaining structures shall have integral waterstops. Removable taper ties may be used except for water bearing structures, when approved by the ENGINEER. A preformed neoprene or polyurethane tapered plug sized to seat at the center of the wall shall be inserted in the hole left by the removal of the taper tie.

2.4. FORM RELEASE COMPOUND

A. Form release compound shall be non-staining clear coating free from oil, silicone, wax, and not grain-raising, Use [“Nox-crete Form coating” by Nox Crete, “Formshield” by Euclid Chemical Company, “Burke Bio Release” by Edoco, or “Cast-Off” by Sonneborn], or an approved equal. Where form liners are used, provide form compound recommended by form liner manufacturer. However, regardless of product use, provide form compound that is VOC compliant for the area used.

2.5 EARTH FORMS

Unless otherwise indicated or required, concrete for footings and pile caps may be placed directly against vertical excavated surfaces, provided the material will stand without caving, that minimum reinforcing steel clearances are maintained, and suitable provisions are taken to prevent raveling of top edges or sloughing of loose material from walls of excavation. Sides of excavation shall be made with a neat cut and the width made as indicated. Concrete which is exposed to view on exterior shall be formed to maintained depth of 6 inches below finished grade.

PART 3 -- EXECUTION

3.1 GENERAL

A. Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. The CONTRACTOR shall assume full responsibility for the adequate design of all forms, and any forms which are unsafe or inadequate in any respect shall promptly be removed from the WORK and replaced at the CONTRACTOR's expense. A sufficient number of forms of each kind shall be provided to permit the required rate of progress to be maintained. The design and inspection of concrete forms, falsework, and shoring shall comply with applicable local, state and Federal regulations. Plumb and string lines shall be properly installed before concrete placement and shall be maintained during placement. Such lines shall be used by CONTRACTOR's personnel and by the INSPECTOR and shall be in sufficient number and properly installed. During concrete placement, the CONTRACTOR shall continually monitor plumb and string line form positions and immediately correct deficiencies.

B. Concrete forms shall conform to the shape, lines, and dimensions of members as called for on the Drawings, and shall be substantial, free from surface defects, and sufficiently tight to prevent leakage. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly-placed concrete. If adequate foundation for shores cannot be secured, trussed supports shall be provided.

C. Camber: Place suitable jacks, wedges, or similar means to induce camber and to correct settlement in forms before and during concrete placing. Camber shall be as determined in pre-installation meeting specified above. In general, formwork shall be capable of accommodating camber of 1/8" per 10' of span plus 1/4".

3.2 FORM DESIGN

A. All forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. Suitable and effective means shall be provided on all forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Plywood, 3/4-inch and greater in thickness, may be fastened directly to studding if the studs are spaced close enough to prevent visible deflection marks in the concrete. The forms shall be tight so as to prevent the loss of water, cement and fines during placing and vibrating of the concrete. Specifically, the bottom of wall forms that rest on concrete footings or slabs shall be provided with a gasket to prevent loss of fines and paste during placement and vibration of concrete. Such gasket may be a 1- to 1-1/2-inch diameter polyethylene rod held in position to the underside of the wall form. Adequate clean-out holes shall be provided at the bottom of each lift of forms. The size, number, and location of such clean-outs shall be as acceptable to the INSPECTOR.

B. Actual form design shall conform to ACI 347.

C. For concrete mixes characterized as self-consolidating concrete, high performance concrete, or known to contain components that can potentially extend the plastic state of the concrete, the forms shall be designed to sustain the resulting hydrostatic pressure for the total pour height or pressure head for that day of pour, whichever is more. For such mixes, appropriate set-time tests shall be conducted in preparation of the mix design and this information made available to the form designer.

D. Forms proposed for use at bridges shall comply with Caltrans Standard Specification Section 51-1.

3.3 CONSTRUCTION

A. Vertical Surfaces: All vertical surfaces of concrete members shall be formed, except where placement of

the concrete against the ground is shown. Not less than 1-inch of concrete shall be added to the thickness of the concrete member as shown where concrete is permitted to be placed against trimmed ground in lieu of forms. Such permission will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.

B. Construction Joints: Concrete construction joints will not be permitted at locations other than those shown or specified, except as may be acceptable to the ENGINEER. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.

C. Provide for openings, offsets, keyways, recesses, moldings, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts and other features as required. Fill form joints to produce smooth surfaces, intersections, and arrises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.

D. Set embedded piping and rough hardware in forms to be embedded in concrete in a manner so that the required strength of the structure will not be reduced.

E. Apply form release compound on formwork in accordance with manufacturer's instructions prior to placing of reinforcing steel, anchorages, and embedded items.

F. Construct forms suitable for removal without hammering or prying against and damaging the concrete.

G. Openings in Forms: Provide as required to facilitate cleaning and inspection. Close such openings immediately after cleaning and before placement of concrete. Provide air relief holes in formed top surfaces of concrete elements as required.

H. Form Ties:

1. Embedded Ties: Holes left by the removal of form tie cones shall be clean and rough before being filled with mortar as specified for "Finish of Concrete Surfaces" in Section [03300] [03310], "Cast-in-Place Concrete". Wire ties for holding forms will not be permitted. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. The use of snap-ties which cause spalling of the concrete upon form stripping or tie removal will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1-inch back from the formed face or faces of the concrete.

2. Removable Ties: Where taper ties are approved for use in non water bearing structures, the larger end of the taper tie shall be on the wet side of walls in water retaining structures. After the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink grout for water bearing and below-grade walls. The hole shall be completely filled with non-shrink or regular cement grout for above-grade walls which are dry on both sides. Exposed faces of walls shall have the outer 2-inches of the exposed face filled with a cement grout which shall match the color and texture of the surrounding wall surface.

I. Coordination:

1. Provide slots, openings, chases, recesses, grounds, nailers and screeds required by other trades and subsequent work.

2. Ensure that conduit, pipes, sleeves, anchors, hangers and ties are secured in forms before concrete is placed.

3.4 REUSE OF FORMS

Forms may be reused only if in good condition and only if acceptable to the INSPECTOR. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on all exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view. In the case of forms for the inside wall surfaces of water retaining structures, unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the INSPECTOR.

3.5 REMOVAL OF FORMS

Careful procedures for the removal of forms shall be strictly followed, and this work shall be done with care so as to avoid damage the concrete. No heavy loading on green concrete will be permitted. The period of time for formwork removal shall be in accordance with ACI 318, Chapter 6 and Section 303-1.4 of Standard Specifications and as follows:

1. Do not remove formwork until concrete has attained sufficient strength to support its own weight and all superimposed loads including construction loads and to permit form and falsework removal with complete safety.

2. In the case of concrete members subject to bending stresses, where the member relies upon forms for vertical support, forms shall remain in place until test cylinders attain a minimum comprehensive strength of 75 percent of the 28-day strength specified in Section [03300] [03310], "Cast in-Place Concrete", provided, that no forms shall be disturbed or removed under individual panel or unit before the concrete in the adjacent panel or unit has attained 75 percent of the specified 28-day strength and has been in place for a minimum of 7 days.

3. Forms for roofs and elevated slabs shall remain in place a minimum of 10 days after concrete has been placed.

4. Forms for all vertical walls and columns shall remain in place at least 3 days after the concrete has been placed.

5. Formwork removal shall also be subject to the curing requirements of section [3300] [3370] of these specifications and as authorized by the ENGINEER.

6. Reshore structural members as specified below because of design requirements or construction conditions to permit successive construction.

The time required to establish said strength shall be determined by the ENGINEER based on test cylinders made for this purpose from the concrete placed and in accordance with ACI 318 and the curing requirements of section [3300] [3370]. If the time so determined is more than the minimum time specified above, then that time shall be used as the minimum length of time. Forms for all parts of the WORK not specifically mentioned herein shall remain in place for periods of time as determined by the ENGINEER.

3.6 FORMWORK TOLERANCES

A. Deflection: Limit deflection of forming surfaces from concrete pressure to L/240.

B. Finish Lines: Position formwork to maintain hardened concrete finish lines within following permissible deviations.

1. Variation from Plumb:

In 10'-0"	1/4” max.
In any story or 20'-0"	3/8” max.
In 40'-0" or more	3/4” max.

C. Building Lines: Variation of linear building lines from established position in plan and related position of columns, walls and partitions:

1. In any bay or 10'-0" maximum	1/2”
2. In 40'-0" or more	1”

D. Slab Openings: Variations in size and location of sleeves and slab openings shall not exceed 1/4"

3.7 MAINTENANCE OF FORMS

Forms shall be maintained at all times in good condition, particularly as to size, shape, strength, rigidity, tightness, and smoothness of surface. Forms, when in place, shall conform to the established alignment and grades. Before concrete is placed, the forms shall be thoroughly cleaned. The form surfaces shall be treated with a nonstaining mineral oil or other lubricant acceptable to the ENGINEER. Any excess lubricant shall be satisfactorily removed before placing the concrete. Where field oiling of forms is required, the CONTRACTOR shall perform the oiling at least two weeks in advance of their use. Care shall be exercised to keep oil off the surfaces of steel reinforcement and other metal items to be embedded in concrete.

3.8 FALSEWORK

A. The CONTRACTOR shall be responsible for the design, engineering, construction, maintenance, and safety of all falsework, including staging, walkways, forms, ladders, and similar appurtenances, which shall equal or exceed the applicable requirements of the provisions of the OSHA Safety and Health Standards for Construction, the requirements of the Construction Safety Orders of the California Division of Industrial Safety, and the requirements specified herein.

B. All falsework shall be designed and constructed to provide the necessary rigidity and to support the loads. Falsework for the support of a superstructure shall be designed to support the loads that would be imposed if the entire superstructure were placed at one time.

C. Falsework shall be placed upon a solid footing, safe against undermining, and protected from softening. When the falsework is supported on timber piles, the maximum calculated pile loading shall not exceed 20 tons. When falsework is supported on any portion of the structure which is already constructed, the load imposed by the falsework shall be spread, distributed, and braced in such a way as to avoid any possibility of damage to the structure.

D. Reshoring:

1. Minimum reshoring with falsework shall consist of not less than half the full required falsework added under the last placed floor over which full falsework is to be placed for the next floor above. Leave reshoring in place for at least 10 days after the floor above is placed, but in no case remove falsework until the next concrete placing has attained a compressive strength equal to 75% of that required for

the 28 days age as determined by controlled test cylinders.

2. Maintain a form and falsework removal record.

E. Falsework proposed for use at bridges shall comply with Caltrans Standard Specification Section 51.

END OF SECTION

SECTION 03 20 00
REINFORCEMENT STEEL

PART 1 -- GENERAL

1.1 THE REQUIREMENT

The CONTRACTOR shall furnish, fabricate, and place all concrete reinforcement steel, welded wire fabric, couplers, and concrete inserts for use in reinforced concrete and masonry construction and shall perform all appurtenant work, including all the wires, clips, supports, chairs, spacers, and other accessories, all in accordance with the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [03100] Concrete Formwork.

B. Section [03230] Unbonded Post-Tensioning.

C. Section [03290] Joints in Concrete.

D. Section [03300] [03310] Cast-in-Place Concrete.

E. Section [03313] Lightweight Structural Concrete.

F. Section [03331] Cast-In-Place Architectural Concrete.

G. Section [04230] Reinforced Hollow Unit Masonry.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

Comply with the reference standards of the GENERAL REQUIREMENTS.

Comply with the current provisions of the following Codes and Standards, as applicable:

1. Commercial Standards:

ACI 315	Details and Detailing of Concrete Reinforcement.
ACI 318	Building Code Requirements for Reinforced Concrete.
ACI 350	Code Requirements for Environmental Engineering Concrete Structures.
ACI 530	Building Code Requirements & Specifications for Masonry Structures
WRI	Manual of Standard Practice for Welded Wire Fabric
AWS D1.4	Structural Welding Code - Reinforcing Steel
ASTM A185	Specification for Welded Steel Wire Fabric For Concrete Reinforcement.

ASTM A497	Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
ASTM A615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
ASTM A706	Low-alloy Deformed Steel Bars for Concrete Reinforcement
ASTM A775	Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Specification for Epoxy-Coated Steel Wire Reinforcement
CRSI	Manual of Standard Practice
CRSI	Recommended Practice for Placing Bar Supports, Specifications and Nomenclature
CRSI	Recommended Practice for Placing Reinforcing Bars

2. Government Standards:

CSS	Caltrans Standard Specifications
GWP	Global Warming Potential (maximum acceptable carbon emission limits, established by the California Department of General Services)

1.4 CONTRACTOR SUBMITTALS

General Requirements

1. Submittal shall be made in accordance with the GENERAL REQUIREMENTS (GR).

2. Buy Clean California Act.

   a. For project specifications that include GR Section 1601, Buy Clean California Act, bidders shall submit current Environmental Product Declarations (EPDs) for each type of reinforcing steel material (A615, A706) from the originating mill used in the project as well as corresponding mill certifications. When material comes from different mills, an EPD and mill certification will be required for each mill from which the material has been obtained.

   b. An EPD must conform to the following:
      1) Shall be facility-specific manufacturer/mill EPD.
      2) Be independently verified in accordance with ISO 14025 (Type III).
      3) Be developed according to the guidelines of the applicable Product Category Rule (PCR), as identified by the Department of General Services, State of California.
      4) Have a valid date that has not expired.
      5) Shall not exceed the Global Warming Potential (GWP) limit as required by GR Section 1601.

   c. EPD shall be submitted concurrently with the product's submittal for review and approval.

   d. Specified epoxy-coated or other specified coated reinforcing steel are exempt from having an associated EPD.

The following submittals and specific information shall be provided.

1. The CONTRACTOR shall furnish Bill of Materials for rebar, including separate total weights in pounds for plain and epoxy coated reinforcing steel, as well as shop bending diagrams, placing lists, splice lengths and location, and drawings of all reinforcement steel prior to fabrication in accordance with GENERAL REQUIREMENTS, **[**only if the reinforcing details differ from that shown on the plans**]**.

2. Details of the concrete reinforcement steel and concrete inserts shall be submitted by the CONTRACTOR at the earliest possible date after receipt by the CONTRACTOR of the Notice to Proceed. Said details of reinforcement steel for fabrication and erection shall conform to ACI 315 and the requirements specified and shown. The shop bending diagrams shall show the actual lengths of bars, to the nearest inch measured to the intersection of the extensions (tangents for bars of circular cross section) of the outside surface. The shop drawings shall include bar placement diagrams which clearly indicate the dimensions of each bar splice.

3. Where mechanical couplers are required or permitted to splice reinforcement steel, the CONTRACTOR shall submit Los Angeles City Department of Building and Safety (LADBS) Research Report approval and manufacturer's literature which contains instructions and recommendations for installation for each type of coupler used; certified test reports which verify the load capacity of each type and size of coupler used; and shop drawings which show the location of each coupler with details of how it is to be installed in the formwork.

4. If reinforcement steel is required or permitted to be spliced by welding at any location, the CONTRACTOR shall submit mill test reports which shall contain the information necessary for the determination of the carbon equivalent as specified in AWS D1.4. The CONTRACTOR shall submit a written welding procedure for each type of weld for each size of bar which is to be spliced by welding; merely a statement that AWS procedures will be followed is not acceptable.

1.5 QUALITY ASSURANCE

A. All reinforcing steel fabrication shall be performed in a LADBS licensed fabricator shop for rebar.

B. The CONTRACTOR shall make provisions for sampling reinforcing steel delivered to the job site. Two sampling bars, cut from different bars and 3 feet in length for bar sizes # 3 through # 5 and 5 feet in length for bars sizes # 6 and larger, shall be taken from each **[**10**]** tons or fraction thereof, of each size and heat number delivered to the job site. When the name of the manufacturer, heat identification number, or chemical analysis is not known, the sampling interval shall be each **[**2.5**]** tons or fraction thereof, of each bar size and heat number. Tests shall consist of 2 bent tests and 2 tensile tests. Costs of initial tests will be paid by the CITY. Additional tests due to material failing initial tests shall be paid by the CONTRACTOR.

C. If reinforcement steel is welded at any location, the CONTRACTOR shall submit certifications of procedure qualifications for each welding procedure used and certification of welder qualifications, for each welding procedure, and for each welder performing the work. Such certification and qualifications shall be as required by the Los Angeles Department of Building and Safety.

D. The CONTRACTOR shall provide samples of each type of weld used in the work in a quantity and of dimensions adequate for testing. At the discretion of the INSPECTOR, radiographic testing of direct butt welds will be performed. The CONTRACTOR shall provide assistance necessary to facilitate testing. The CONTRACTOR shall repair any weld which fails to meet the requirements of AWS D1.4. The costs of testing will be paid by the CITY; except, the costs of all tests which fail to meet specified requirements shall be paid by the CONTRACTOR.

E. The CONTRACTOR shall provide to the INSPECTOR written identification of reinforcement steel by

manufacturer's heat number and mil certification, and the fabricator's release number and type from the point of fabrication to the place of final incorporation of the rebar into the work.

1.6 MARKING AND SHIPPING

A. Tag bundled bars with identification, and transport and store so as not to damage any material. Use metal tags indicating size, length and other marking shown on placement drawings. Maintain tags after bundles are broken.

PART 2 -- PRODUCTS

2.1 REINFORCEMENT STEEL

All reinforcement steel for all cast-in-place reinforced concrete construction shall conform to the following requirements:

1. Bar reinforcement shall conform to the requirements of ASTM A615, Grade 60 Billet Steel Reinforcement with supplementary requirement S-1, and ASTM A706 for rebars subject to welding, or as otherwise shown.

2. Bar reinforcement for wall boundary elements, special moment frames, or when subject to welding, shall conform to ASTM A706, unless noted otherwise.

3. Welded wire fabric reinforcement shall conform to the requirements of ASTM A185 , or ASTM A497 and the details shown; provided, that welded wire fabric with longitudinal wire of W9.5 size wire shall be either furnished in flat sheets or in rolls with a core diameter of not less than 10 inches; and provided further, that welded wire fabric with longitudinal wires larger than W9.5 size shall be furnished in flat sheets only.

4. Spiral reinforcement may be cold-drawn steel wire conforming to the requirements of ASTM A82, when approved by the ENGINEER.

5. All reinforcements shall be shop fabricated. Bending of reinforcing in the field will not be allowed.

6. Epoxy coated reinforcing steel shall conform to the requirements of ASTM A775 and A884, and shall be used where indicated on the drawing.

7. Reinforcement with any of the following defects will not be acceptable and be immediately removed from the site:

    a. Bar lengths, depths, and/or bends exceeding the specified fabrication tolerances.

    b. Bends or kinks not shown on the Drawings

    c. Bars with reduced cross-section due to excessive rusting or other cause.

Accessories:

1. Accessories shall include all necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement. Slab bolsters shall

have gray plastic-coated legs.

2. Concrete blocks (dobies), used to support and position reinforcement steel, shall have the same or higher compressive strength as specified for the concrete in which it is located. Where the concrete blocks are used on concrete surfaces exposed to view, the color and texture of the concrete blocks shall match that required for the finished surface. Wire ties shall be embedded in concrete block bar supports.

3. Use bar supports complying with CRSI recommendations, unless otherwise shown on the Contract Drawings.

4. Do not use wood, brick, or other non-complying material.

5. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

6. For exposed-to-view completed concrete surfaces, where legs of supports are in contact with forms, provide supports with either hot-dip galvanized or plastic-protected legs. CONTRACTOR's selection subject to the ENGINEER's approval.

2.2 MECHANICAL COUPLERS

A. Mechanical couplers shall comply with the applicable Department of Building and Safety's Research Report. Location of the Mechanical Couplers shall be approved by the ENGINEER. The couplers shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcement bars being spliced at each splice. CONTRACTOR to provide the required number of couplers and bars for testing in accordance with the Report

B. Where the type of coupler used is composed of more than one component, all components required for a complete splice shall be supplied. This shall apply to all mechanical splices, including those splices intended for future connections.

C. The reinforcement steel and coupler used shall be compatible for obtaining the required strength of the connection. Clearance and coverage requirements shall be maintained at all times.

D. Couplers which are located at a joint face shall be a type which can be set either flush or recessed from the face as shown. The couplers shall be sealed during concrete placement to completely eliminate concrete or cement paste from entering. After the concrete is placed, couplers intended for future connections shall be plugged and sealed to prevent any contact with water or other corrosive materials. Threaded couplers shall be plugged with plastic plugs which have an O-ring seal.

E. Hot-forged sleeve-type couplers shall not be used.

2.3 WELDED SPLICES

A. Welded splices shall be provided where shown and where approved by the ENGINEER. All welded splices of reinforcement steel shall develop a tensile strength which exceeds 125 percent of the yield strength of the reinforcement bars which are connected. Provide two samples of each bar size for testing. When welding is to be done in the field, provide field prepared samples. Preparation shall be made by welder actually preparing the production run.

B. All materials required to conform the welded splices to the requirements of AWS D1.4 shall be provided.

C. All welding shall be performed by City of Los Angeles certified welders. All shop welding shall be performed at shops of a City of Los Angeles approved fabricator.

PART 3 -- EXECUTION

3.1 GENERAL

A. All reinforcement steel, welded wire fabric, couplers, and accessories shall be fabricated, and placed in accordance with the requirements of the City of Los Angeles Building Code, CRSI Recommended Practices and Manual, and WRI, and the supplementary requirements specified herein.

3.2 FABRICATION

A. General: Reinforcement steel shall be accurately formed to the dimensions and shapes shown, and the fabricating details shall be prepared in accordance with ACI 315 and ACI 318 or ACI 530 (as applicable), except as modified by the Drawings. Bars shall be bent cold.

B. The CONTRACTOR shall fabricate reinforcement bars for structures in accordance with bending diagrams, placing lists, and placing drawings. Said drawings, diagrams, and lists shall be prepared by the CONTRACTOR as specified under GENERAL REQUIREMENTS.

C. Fabricating Tolerances: Bars used for concrete reinforcement shall meet the following requirements for fabricating tolerances:

Sheared length: ± 1 inch

Depth of truss bars: + 0, - 1/2 inch

Stirrups, ties, and spirals: ± 1/2 inch

All other bends: ± 1 inch

3.3 PLACING

A. Placing: Reinforcement steel shall be accurately positioned as shown, and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at intersections. All reinforcement steel shall be supported using approved accessories and chairs which are strong and rigid enough to prevent any displacement of the reinforcement steel and shall comply with the applicable Department of Building and Safety's Research Report. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used, in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. All concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks. Use care not to damage vapor barriers where they occur.

B. The portions of all accessories in contact with the formwork shall be made of concrete, plastic, or steel coated with a 1/8-inch minimum thickness of plastic which extends at least 1/2-inch from the concrete surface. Plastic shall be gray in color.

C. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.

D. Bars additional to those shown which may be found necessary or desirable by the CONTRACTOR for the purpose of securing reinforcement in position shall be provided by the CONTRACTOR at its own expense.

E. Placing Tolerances: Unless otherwise specified, reinforcement placing tolerances shall be within the limits specified in Section 7.5 of ACI 318 except where in conflict with the requirements of the City of Los Angeles Building Code.

F. Bars may be moved as necessary to avoid interference with other reinforcement steel, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be reviewed and accepted by the ENGINEER.

G. Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters having gray, plastic-coated standard type legs as specified in Paragraph B herein. Slab bolsters shall be spaced not less than 30 inches on centers, shall extend continuously across the entire width of the reinforcement mat, and shall support the reinforcement mat in the plane shown.

H. Welded wire fabric placed over the ground shall be supported on wired concrete blocks (dobies) spaced not more than 3 feet on centers in any direction. The construction practice of placing welded wire fabric on the ground and hooking into place in the freshly placed concrete shall not be used.

3.4 SPACING OF BARS

A. Spacing of reinforcement shall comply with ACI 318 requirements.

B. Spacing of bars on bridge structures shall conform to the requirements in CSS Section 52-1.

3.5 SPLICING

A. General: Reinforcement bar splices shall only be used at locations shown. When it is necessary to splice reinforcement at points other than where shown, the character of the splice and location shall be as acceptable to the ENGINEER.

B. Splices of Reinforcement: The length of lap for reinforcement bars, unless otherwise shown shall be in accordance with ACI 318, Section 12.15.1 for a class B splice. Stagger splices in horizontal wall bars at least 48” longitudinal in alternate bars and opposite faces.

C. Laps of welded wire fabric shall be in accordance with the ACI 318. Adjoining sheets shall be securely tied together with No. 14 tie wire, one tie for each 2 running feet. Wires shall be staggered and tied in such a manner that they cannot slip.

D. Splices in column spiral reinforcement, when necessary, shall be made by welding or by a lap of 1-1/2 turns.

E. Field welding of bars: In accordance with the approved submittal. Continuous inspection required.

F. Mechanical couplers: Install in accordance with the approved submittal.

G. Bending or Straightening: Reinforcement shall not be straightened or rebent in a manner which will injure the material. Bars with kinks or bends not shown shall not be used. All bars shall be bent cold, unless otherwise permitted by the ENGINEER. No bars partially embedded in concrete shall be field-bent except as shown or specifically permitted by the ENGINEER.

H. Splicing of reinforcement on bridge structures shall conform to CSS Section 52-1.

3.6 CLEANING AND PROTECTION

The surfaces of all reinforcement steel and other metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar and other foreign substances immediately before the concrete is placed. Where there is delay in depositing concrete, reinforcement shall be re-inspected and, if necessary recleaned. Bars with reduced cross-section due to excessive rusting or other cause will not be acceptable for use and shall be replaced by the CONTRACTOR at no additional cost to the CITY.

3.7 FIELD QUALITY CONTROL

A. Inspection: Secure inspection and acceptance from INSPECTOR before concrete is placed. Make arrangements in advance for geotechnical inspection of foundations, continuous inspection as required, and/or structural observation by the designated registered design professional prior to concrete placement.

END OF SECTION

SECTION 03 25 00
CONCRETE ACCESSORIES

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies to install all concrete accessories to complete the Work including cast-in-place anchor bolts (also known as anchor rods), epoxy grouted anchor bolts or dowels and, expansion or adhesive anchors, in accordance with the requirements of the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [03300] [03310] Cast-in-Place Concrete.

B. Section [03315] Grout.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Comply with the reference standards and Standard Specifications of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Commercial Standards:

AISC Code of Standard Practice for Steel Buildings and Bridges

AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings

ASTM A 36 Specifications for Carbon Structural Steel

ASTM A 153	Specifications for Zinc Coating (Hot Dip) on Iron and Steel Hardware
ASTM A 193	Specifications for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service
ASTM A 194	Specifications for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A 307	Specifications for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
ASTM A 449	Specifications for Quenched and Tempered Steel Bolts and Studs
ASTM A 615	Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

ASTM B 633	Specifications for Electrodeposited Coatings of Zinc on Iron and Steel
ASTM B 695	Specifications for Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM F 436	Specifications for Hardened Steel Washers
ASTM F 1554	Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. High Strength Anchor Bolts: The CONTRACTOR shall provide mill certificates and certified compliance with ASTM [F 1554; A 449 with F 436].

2. The CONTRACTOR shall submit shop drawings for all welded or fabricated items for use as anchors.

3. The CONTRACTOR shall submit catalog cuts and manufacturer's recommendations, with applicable City of Los Angeles Research Reports, for all expansion and adhesive anchors, and anti-seize thread lubricants.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Anchor Size: Anchor size shall be as specified or shown on plans.

B. Anchor Material:

1. Water-containment or sanitary structures, immersion service, or exposed exterior locations: Stainless steel.

2. Other locations: Galvanized steel as permitted by the corresponding ASTM except as listed in the contract drawings.

C. Anchor Length: Sufficient to extend through the nut(s) and not more than 1/4 inch beyond the nut when exposed while meeting the required embedment as indicated on the contract drawings or as required by the associated Los Angeles Department of Building and Safety's Research Report.

2.2 ANCHOR GRADES

A. Anchor Bolts and Nuts:

1. High Strength: ASTM [F 1554 Grade 105; A 449], galvanized. Provide with corresponding galvanized hardened washers.

2. Stainless steel: ASTM A 193 and A 194, Type 316N, Grade 8MN.

3. Unspecified: ASTM [F 1554 Grade 36; A 36 or A 307], galvanized.

4. Galvanizing: [Hot dipped as required per ASTM F 1554; 1.25 ounces per square foot per ASTM A 153 or B 633; When protected from the atmosphere, moisture and sewage gases, ASTM B 695 is also acceptable].

5. Other Coatings: [None; As specified in the contract drawings].

B. Flat Washers: Same material and finish as nut and bolt. For high strength bolts, use ASTM [F 1554; F 436].

C. Anti-Seize Thread Lubricant for use with stainless steel anchors:

1. [Jet-Lube "Nikal"]
2. [Never-Seez "Pure Nickel Special"]
3. [Permatex "Nickel Anti-Seize"]
4. Or an approved equal.

D. Reinforcing Steel Dowels: ASTM A 615, Grade 60. Same diameter as spliced rebar, or #4 minimum.

E. Expansion and Adhesive Anchors: Use only anchor types and styles with Research Report approval by the Los Angeles Department of Building and Safety.

1. [Simpson Strong-tie “Wedge All”]
2. [Hilti "Kwik-Bolt II"]
3. [Phillips "Red Head"]
4. Or an approved equal.

PART 3 -- EXECUTION

3.1 PROJECT CONDITIONS

A. Examine the areas and conditions under which the work will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until detrimental conditions are corrected.

3.2 CAST-IN-PLACE ANCHOR BOLTS

A. Provide templates or other means to ensure accurate placement. Provide sufficient threads to allow for a nut to be placed on the concrete side of the template.

B. Anchor bolts shall be clean and free of all coatings which may impair bonding with concrete.

C. Provide two nuts and a washer with each anchor bolt. Provide an additional locknut when indicated on the Drawings.

D. High Strength Bolts: Install such that ASTM Grade markings are visible after casting into concrete.

3.3 EPOXY-GROUTED ANCHOR BOLTS OR DOWELS

A. Provide templates or other means to ensure accurate placement.

B. Anchor bolts or dowels shall be clean and free of all coatings which may impair bonding with epoxy.

C. Provide two nuts and a washer with each anchor bolt. Provide an additional locknut when indicated on the Drawings.

D. High Strength Bolts: Install such that ASTM Grade markings are visible after casting into concrete.

E. Do not disturb bolt or dowel until epoxy grout has cured and reached full strength.

3.4 EXPANSION AND ADHESIVE ANCHORS: Install per Los Angeles Department of Building and Safety Approved Research Report and manufacturer's recommendations, whichever is more restrictive. Provide nuts and washers of same material and finish as anchor body.

3.5 **STAINLESS STEEL ANCHORS**. After installation of stainless steel anchor bolts or expansion anchors, lubricate threads before fastening.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all materials for concrete in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished concrete, in accordance with the requirements of the Contract Documents.

B. The following types of concrete shall be covered in this Section:

1. Structural Concrete: Concrete to be used in all cases except where noted otherwise in the Contract Documents.

2. Sitework Concrete: Concrete to be used for curbs, gutters, sidewalks, pavements, fence and guard post embedment, and underground duct bank encasement unless otherwise shown.

3. Lean Concrete: Concrete to be used for thrust blocks, pipe trench cut-off blocks and cradles, where the preceding items are detailed on the Drawings as unreinforced. Concrete to be used as protective cover for dowels intended for future connection.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [03100] Concrete Formwork

B. Section [03200] Reinforcement Steel

C. Section [03250] Concrete Accessories

D. Section [03290] Joints in Concrete

E. Section [03315] Grout

F. Section [03331] Cast-In-Place Architectural Concrete

G. Section [03370] Concrete Curing

H. Section [03520] Lightweight Insulating Concrete Deck

I. Section [07900] Joint Sealants

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Comply with the reference standards and the Standard Specifications of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Commercial Standards:

ACI 117	Specification for Tolerances for Concrete Construction and Materials
ACI 301	Specifications for Structural Concrete
ACI 305.1	Specification for Hot Weather Concreting
ACI 306.1	Standard Specification for Cold Weather Concreting
ACI 318	Building Code Requirements for Structural Concrete
ACI 347R	Guide to Formwork for Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures
ASTM C 31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C 33	Standard Specification for Concrete Aggregates
ASTM C 39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 40	Standard Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C 42	Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C 88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C 94	Standard Specification for Ready-Mixed Concrete
ASTM C 109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in Cube Specimens)
ASTM C 117	Standard Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C 131	Standard Test Method for Resistance to Degradation of Small-Sized Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C 150	Standard Specification for Portland Cement
ASTM C 157	Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

ASTM C 192	Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C 289	Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
ASTM C 311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
ASTM C 494	Standard Specification for Chemical Admixtures for Concrete
ASTM C 595	Standard Specification for Blended Hydraulic Cements
ASTM C 618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C 989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C 1116	Standard Specification for Fiber-Reinforced Concrete
ASTM C 1157	Standard Performance Specification for Hydraulic Cement
ASTM C 1240	Standard Specification for Silica Fume Used in Cementitious Mixtures
ASTM C 1550	Standard Test Method for Flexural Toughness of Fiber Reinforced Concrete (Using Centrally Loaded Round Panel)
ASTM C 1579	Standard Test Method for Evaluating Plastic Shrinkage Cracking of Restrained Fiber Reinforced Concrete (Using a Steel Form Insert)
ASTM C 1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM C 1603	Standard Test Method for Measurement of Solids in Water-Suggest you add as it relates to ASTM C1602
ASTM C 1609	Standard Test Method for Flexural Performance of Fiber-Reinforced Concrete (Using Beam With Third-Point Loading)
ASTM D 2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate

2. Government Standards:

CSS	Caltrans Standard Specifications
GWP	Global Warming Potential (maximum acceptable carbon emission limits, established by the California Department of General Services)

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. Mix Designs: Prior to beginning the WORK, the CONTRACTOR shall submit to the ENGINEER, for review, and acceptance, preliminary concrete mix designs for each class and type of concrete specified herein. The mix designs shall be designed by an independent testing laboratory acceptable to the ENGINEER. All costs related to such mix design shall be borne by the CONTRACTOR.

Each concrete mix submittal shall contain the following information, as applicable:

a. Location and purpose of the mix.
b. Slump on which the design is based.
c. Total gallons of water per cubic yard, and the water/cementitious materials ratio (w/cm).
d. Brand, type, composition and quantity of cement.
e. Brand type, composition and quantity of fly ash, slag cement, silica fume.
f. Specific Gravity, source and gradation of each aggregate.
g. Ratio of fine to total aggregate per cubic yard.
h. Weight (surface dry) of each aggregate per cubic yard.
i. Brand, type, and ASTM designation, active chemical ingredients and quantity of each admixture.
j. Copy of the Building and Safety Research Report Approval or ICC approved ESR Report for each concrete admixture.
k. Air content.
l. Compressive strength based on 7-day and 28-day compression tests, including standard deviation calculations, corroborative data (if applicable), and required average comprehensive strength per ACI 318.
m. Time of initial and final set.
n. Certification stamp and signature by a Civil or Structural engineer registered in the State of California, experienced in concrete mix design.
o. Certificate of Compliance for Cement.
p. Concrete pour sequence.
q. Buy Clean California Act
    1.) For project specifications that include GR Section 1601, Buy Clean California Act, bidders shall submit current Environmental Product Declarations (EPDs) for each concrete mix design, from the originating ready-mix plant used in the project. When material comes from different plants, an EPD will be required for each plant from which the material will be obtained.
    [*Until further notice, EDPs for concrete are currently solely voluntary. However, the City strongly encourages Contractors to inquire about and submit EDPs their Ready Mix Suppliers*]
    2.) An EPD must conform to the following:
        a) Shall be facility-specific manufacturer/plant EPD.
        b) Be independently verified in accordance with ISO 14025 (Type III).
        c) Be developed according to the guidelines of the applicable Product Category Rule (PCR), as identified by the Department of General Services, State of California.
        d) Have a valid date that has not expired.
        e) Shall not exceed the Global Warming Potential (GWP) as required by GR Section 1601.

    3.) EPD shall be submitted concurrently with each mix submittal for review and approval.

2. Certified Delivery Tickets: Where ready-mix concrete is used, the CONTRACTOR shall provide certified weighmaster delivery tickets at the time of delivery of each load of concrete. Each certificate shall show the public weighmaster's signature, and the total quantities, by weight of cement, sand, each class of aggregate, admixtures, and the amounts of water in the aggregate and added at the batching plant as well as the amount of water allowed to be added at the site for the specific design mix. Each certificate shall, in addition, state the mix number, total yield in cubic yards, and the time of day, to the nearest minute, corresponding to when the batch was dispatched, when it left the plant, when it arrived at the job, the time that unloading began, and the time that unloading was finished.

3. When a water reducing admixture is to be used, the CONTRACTOR shall furnish mix designs for concrete both with and without the admixture.

4. The CONTRACTOR shall furnish a Certificate of Compliance signed by the supplier identifying the type of fly ash and stating that the fly ash complies with ASTM C 618 and these Specifications, together with all supporting test data prior to the use of the fly ash the sample represents. The supporting data shall also contain test results confirming that the fly ash in combination with the cement and water to be used meets all strength requirements and is compatible with air-entraining agents and other admixtures.

5. The CONTRACTOR shall submit to the ENGINEER for review the design mix for fly ash concrete together with the design mix for Portland cement (non-fly ash) concrete as specified in this Section.

1.5 QUALITY ASSURANCE

A. Laborers: Use adequate number of skilled laborers who are thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. Compliance with Regulations: All materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous substances in construction products.

C. Concrete Manufacturer: Furnish concrete from licensed commercial ready-mix concrete plants conforming to ASTM C94 and approved by City of Los Angeles Department of Building and Safety. Requirements herein govern when exceeding ASTM C94.

D. Continuous Inspection: Construct structural concrete exceeding 2,500 psi compressive strength under continuous inspection of DEPUTY INSPECTOR. Obtain inspection and approval of forms and reinforcing by CONTRACTOR’s Independent Testing/Inspection Laboratory three (3) working days before placing structural concrete in order to be verified by ENGINEER.

E. Tests on component materials and for compressive strength and shrinkage of concrete will be performed as specified herein. Test for determining slump will be in accordance with the requirements of ASTM C 143.

F. The cost of all laboratory tests on cement, aggregates, and concrete compressive strength, will be borne by the CITY. However, the CONTRACTOR shall be responsible for all other required tests, and shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications.

G. Concrete for testing shall be supplied by the CONTRACTOR at no cost to the CITY, and the CONTRACTOR shall provide assistance and facilities to the INSPECTOR in obtaining samples, and disposal and cleanup of excess material. **[**The CONTRACTOR shall provide the test cylinders, as described in item 1.5.H, to the INSPECTOR for the required testing.**]**

H. Field Compression Tests:

1. Compression test specimens will be taken during construction from the first placement of each concrete mix used and at intervals thereafter as selected by the INSPECTOR to insure continued compliance with these specifications. Each set of test specimens will be a minimum of 4 cylinders.

2. Compression test specimens for concrete shall be made in accordance with ASTM C 31. Specimens shall be 6-inch diameter by 12-inch high cylinders.

3. Compression tests shall be performed in accordance with ASTM C 39. Two 6”x12” test cylinders will be tested at 7 days as necessary and two at 28 days. Any remaining cylinders will be held to verify test results, if needed.

I. Evaluation and acceptance of Compressive Strength Concrete shall be based on the following criteria:

1. Concrete shall be sampled and tested in accordance with the ASTM standards stated in Subsection 1.3.B.1.

2. Acceptance of concrete placed shall be based on 28-day compressive strength test results. A 28-day compressive strength test shall consist of the average compressive strength of two 6”x12” concrete test cylinders fabricated from a single load of fresh concrete except that, if a cylinder should show evidence of improper handling, molding, or testing, said cylinder shall be discarded and the compressive strength test shall then consist of the remaining cylinder.

3. Concrete compressive strength tests representing concrete poured-in-place, shall attain the 28-day compressive strength specified in the specifications or as shown on the plans.

4. In-place concrete represented by a compressive cylinder strength test failing to meet the specified 28-day compressive strength shall be removed from the work at no cost to the CITY. Also, the CONTRACTOR shall at its own expense make any corrective changes in the mix deemed necessary by the ENGINEER. The changes in the mix proportions or placement procedures shall be approved by the ENGINEER prior to the placement of any additional concrete subsequent to a failing compressive strength test.

5. As an alternative to the removal of concrete represented by a failed cylinder compressive strength test and subject to the approval of the ENGINEER, the concrete represented by the failed compressive strength cylinder test or tests may be cored in place. The corings shall be completed no later than 10 days from notification of failure by the ENGINEER. The cores shall be taken by the CONTRACTOR in the presence of the INSPECTOR and tested at the CONTRACTOR's expense in accordance with ASTM C 42 by a certified laboratory acceptable to the INSPECTOR. The cores shall be 4 inch diameter (min.) unless otherwise directed by the ENGINEER. At least three cores shall be taken in each area represented by a failed 28-day concrete compressive strength cylinder test. Unless otherwise directed by the ENGINEER, the cores shall be tested wet following a 40-hour submergence. If each core tests at least 85 percent of the specified 28-day compressive strength or greater, the concrete represented may be accepted provided the CONTRACTOR accepts the payment provisions stated below. Concrete represented by failing core tests shall not be paid for and shall be removed by the CONTRACTOR from the work at no cost to the CITY.

6. Payment to the CONTRACTOR for concrete accepted by the ENGINEER based on core test results but represented by failing compressive cylinder test results shall be reduced as follows:

a. When the result of a single compressive cylinder strength test is less than the specified 28-day compressive strength but 95 percent or more of the 28-day compressive strength, the CONTRACTOR shall pay the CITY **[$15]** per cubic yard for each in-place cubic yard of concrete

represented by the deficient compressive strength cylinder test as determined by the actual sampling interval; and.

b. When the result of a single compressive strength cylinder test is less than 95 percent of the specified 28-day compressive strength but is acceptable based on core test results taken in accordance with Subsection 1.5.I.5, the CONTRACTOR shall pay the CITY **[$20]** per cubic yard for each in-place cubic yard of concrete represented by the deficient compressive strength cylinder test as determined by the actual sampling interval.

J. Shrinkage Tests:

1. Drying shrinkage tests shall be provided by the CONTRACTOR for the trial batch specified in the Paragraph in Part 2 entitled "Trial Batch and Laboratory Tests," and during construction to insure continued compliance with these Specifications.

2. Drying shrinkage specimens shall be 4-inch by 4-inch by 11-inch prisms with an effective gage length of 10 inches, fabricated, cured, dried and measured in accordance with ASTM C 157 modified as follows: specimens shall be removed from molds at an age of 23 ±1 hours after trial batching, shall be placed immediately in water at 70 degrees F ±3 degrees F for at least 30 minutes, and shall be measured within 30 minutes thereafter to determine original length and then submerged in saturated lime water at 73 degrees F ±3 degrees F. Measurement to determine expansion expressed as a percentage of original length shall be made at age 7 days. This length at age 7 days shall be the base length for drying shrinkage calculations ("0" days drying age). Specimens then shall be stored immediately in a humidity control room maintained at 73 degrees F ±3 degrees F and 50 percent ±4 percent relative humidity for the remainder of the test. Measurements to determine shrinkage expressed as percentage of base length shall be made and reported separately for 7, 14, 21, and 28 days of drying after 7 days of moist curing.

3. The drying shrinkage deformation of each specimen shall be computed as the difference between the base length (at "0" days drying age) and the length after drying at each test age. The average drying shrinkage deformation of the specimens shall be computed to the nearest 0.0001 at each test age. If the drying shrinkage of any specimen departs from the average of that test age by more than 0.0004-inch, the results obtained from that specimen shall be disregarded. Results of the shrinkage test shall be reported to the nearest 0.001 percent of shrinkage. Compression test specimens shall be taken in each case from the same concrete used for preparing drying shrinkage specimens. These tests shall be considered a part of the normal compression tests for the project. Allowable shrinkage limitations shall be as specified in Part 2, herein.

K. Construction Tolerances: The CONTRACTOR shall set and maintain concrete forms and perform finishing operations so as to ensure that the completed work is within the tolerances specified in Section [03100] “Concrete Formwork”. Surface defects and irregularities are defined as finishes and are to be distinguished from tolerances.

L. For each class of fly ash, all testing and sampling procedures shall conform with these Specifications and ASTM C 311, including the restriction that one sample weighing 4 pounds shall be taken from at least each 200 tons of fly ash supplied.

M. Separate storage facilities shall be provided for fly ash and other supplementary cementitious materials (SCM). All SCM shall be stored in such a manner as to permit ready access for the purpose of inspection and sampling and suitably protected against contamination or moisture. Should any SCM show evidence of contamination or moisture or be otherwise unsuitable, the INSPECTOR may reject it and require that it be removed from the site. Each SCM used in concrete for this project shall be from the same source.

PART 2 -- PRODUCTS

2.1 CONCRETE MATERIALS

A. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Only one brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. All cement shall be used in the sequence of receipt of shipments.

B. All materials furnished for the work shall comply with the requirements of ACI 301, as applicable. For bridge structures, materials for concrete shall conform to Section 90-2 to 90-4 of CSS.

C. Storage of materials shall conform to the requirements of ACI 301.

D. Materials for concrete shall conform to the Standard Specifications and the following requirements.

1. Concurrent with strength design criteria, concrete shall also be proportioned to provide the requisite durability to satisfy the exposure conditions imposed by either environment and/or service. Durability, in this context, refers to the ability of the concrete to resist deterioration from the environment or service in which it is placed. Concrete proportioned in accordance with ACI 318, or ACI 350 for sanitary structures, chapter 4, Durability Requirements, will meet this criteria.

2. Cementitious Materials:

   a. Portland Cement shall conform to ASTM C 150, Type [II] [I/II] [III] [V] or ASTM C595 Type IL.

   b. Blended Cement shall conform to ASTM C595, Type IL, Moderate Sulfate Resistant (MS) or High Suflate Resistant (HS).

   c. Supplementary Cementitious Materials:
      i. Fly ash shall conform to ASTM C 618, Class F or C.
      ii. Slag cement shall conform to ASTM C 989, Grade 100 or 120.
      iii. Silica fume shall conform to ASTM C 1240, and shall be MASTER BUILDERS SOLUTIONS Corporation's
      MasterLife SF100, GCP Applied Technologies (formerly W. R. Grace) F10KD, or approved equal.
      iv. Metakaolin shall conform to ASTM C 618, Class N, and shall be MASTER BUILDERS SOLUTIONS' Kaolin's (part of MASTER BUILDERS SOLUTIONS Corporation) MetaMax, GCP Applied Technologies (formerly W. R. Grace) HRMK 100, or approved equal.

3. Aggregates shall be obtained from pits acceptable to the INSPECTOR, shall be non-reactive, and shall conform to ASTM C 33. Lightweight sand for fine aggregate will not be permitted.

   a. When tested in accordance with ASTM C 289, the ratio of silica released to reduction in alkalinity shall not exceed 1.0.

   b. When tested in accordance with ASTM C 40, the fine aggregate shall produce a color in the supernatant liquid no darker than the reference standard color solution.

   c. When tested in accordance with ASTM C 131, the coarse aggregate shall show a loss not exceeding 42 percent after 500 revolutions, or 10.5 percent after 100 revolutions.

   d. When tested in accordance with ASTM C 88, the loss resulting after five cycles shall not exceed 10 percent for fine or coarse aggregate when using sodium sulfate.

e. When tested in accordance with ASTM C 117, materials finer than No. 200 sieve shall not exceed 1% for gravel, and 1.5% for crushed aggregate.

f. When tested in accordance with ASTM D 2419, the California sand equivalent values operating range shall not be below 71%.

4. Ready-mixed concrete shall conform to the requirements of ASTM C 94.

5. Water for mixing shall conform to the SSPWC, Section 201-1.2.3, "Water". The use of qualifying recycled water is encouraged.

6. Admixtures: The ENGINEER may require the use of admixtures or the CONTRACTOR may propose to use admixtures to control the set, effect water reduction, increase workability or enhance durability. In either case, the addition of an admixture shall be at the CONTRACTOR's expense. The use and continued use of an admixture shall be approved by the ENGINEER. Admixtures specified herein, other than calcium chloride, shall conform to the requirements of ASTM C 494 or other standards specified in this Section. The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used. Admixtures shall contain no free chloride ions, be non-toxic after 30 days, and shall be compatible with and made by the same manufacturer as the air entraining admixture.

   These admixtures shall not be used in greater doses than those recommended by the manufacturer or permitted by the ENGINEER. The permitted dosage of the admixture shall not exceed that which will result in an increase in the drying shrinkage of the concrete in excess of 20 percent when used in precast or prestressed concrete, or 10 percent when used in any other structural concrete. The strength of concrete containing the admixture in the amount proposed shall, at the age of 48 hours and longer be not less than that of similar concrete without the admixture. The admixture shall not adversely affect the specified air content, unless permitted by the ENGINEER.

   a. Set controlling admixture shall be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently over 80 degrees F, a set retarding admixture conforming to ASTM C 494, Type B or D, such as **[Sika Corporation's Plastiment], [MASTER BUILDERS SOLUTIONS Corporation's MasterSet R Series or MasterSet DELVO Series],** GCP applied Technologies (formerly W. R. Grace), Recover or Daratard 17 or an approved equal shall be used. Where the air temperature at the time of placement is expected to be consistently under 40 degrees F, a set accelerating admixture conforming to ASTM C 494 Type C or E, such as **[Sika Corporation's Plastocrete 161FL], [MASTER BUILDERS SOLUTIONS Corporation's MasterSet AC 534 or MasterSet FP 20],** GCP applied Technologies (formerly W. R. Grace), Daraset 400 or Polarset or an approved equal shall be used.

   b. Normal and mid-range water reducing admixtures shall conform to ASTM C 494, Type A, and shall be MASTER BUILDERS SOLUTIONS Corporation's MasterPozzolith Series, MasterPolyheed series, GCP applied Technologies (formerly W. R. Grace), ADVA series, Zyla series, WRDA series or approved equal. The quantity of admixture used and the method of mixing shall be in accordance with the manufacturer's instructions and recommendations.

   c. High range water reducer shall conform to ASTM C 494, Type F or G.

      If the high range water reducing admixture is added to the concrete at the batch plant, it shall be, **[ADVA series ADVA 190, ADVA 198, ADVA 140M as manufactured by GCP Applied Technologies (formerly W. R. Grace) [MasterRheobuild 1000, MasterGlenium Series, or PS 1466 as manufactured by MASTER BUILDERS SOLUTIONS Corporation];** or an approved

equal**.** High range water reducer shall be added to the concrete after all other ingredients have been mixed and initial slump has been verified.

If the high range water reducer is added to the concrete at the job site, it shall be used in conjunction with a normal water reducer and shall be **[MasterPozzolith 700 or MasterPozzolith 322 and MasterGlenium 7500 or MasterGlenium 3030, as manufactured by MASTER BUILDERS SOLUTIONS Corporation]; ADVA series ADVA 190, ADVA 198, ADVA 140M and Zyla Series, Zyla 625 or WRDA series, WRDA 64 as manufactured by GCP Applied technologies (formerly W. R. Grace);** or an approved equal. Concrete shall have a slump of 3-inches ± 1/2-inch prior to adding the high range water reducing admixture at the job site. Slump shall not exceed 9 inches for concrete after addition of high-range water-reducing admixture. The high range water reducing admixture shall be accurately measured and pressure injected into the mixer as a single dose by an experienced technician. A standby system shall be provided and tested prior to each day's operation of the job site system.

Concrete shall be mixed at mixing speed for a minimum of 30 mixer revolutions after the addition of the high range water reducer.

d. **[**Concrete Waterproofing Admixture: **[Xypex Concentrate Admix C-1000 (standard set time) or C-2000 (extended set time), or MASTER BUILDERS SOLUTIONS Corporation's MasterLife 300D]**, **or Penetron Corp. Penetron SB,** or approved equal that shall be of the cementitious crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete. Use of waterproofing admixture shall be at locations specified per the contract drawings and shall follow all manufacturer recommendations for quantity and preparation.**]**

e. Air-entraining admixture meeting the requirements of ASTM C 260, such as **MASTER BUILDERS SOLUTIONS Corporation's MasterAir Series** or, **GCP Applied Technologies (formerly W. R. Grace Daravair or Darex series,** approved equal, shall be used. Sufficient air-entraining agent shall be used to provide a total air content of 3 to 4 percent; provided that, when the mean daily temperature in the vicinity of the worksite falls below 40 degrees F for more than one day, the total air content provided shall be 5 to 6 percent. The CITY reserves the right, at any time, to sample and test the air-entraining agent received on the job by the CONTRACTOR. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement.

f. Workability-retaining admixture shall conform to ASTM C 494, Type S, shall retain concrete workability without affecting time of setting or early age strength development, and shall be MASTER BUILDERS SOLUTIONS Corporation's MasterSure Z60, GCP Applied Technologies (formerly W. R. Grace) ADVA XT2, or approved equal.

g. Corrosion-inhibiting admixture shall be a nominal 30 percent solution of calcium nitrite or an amine/ester-based organic corrosion-inhibiting admixture, and shall be MASTER BUILDERS SOLUTIONS Corporation's MasterLife CI 30, MasterLife CI 222, GCP Applied Technologies (formerly W. R. Grace) DCI series**,** or approved equal.

h. Shrinkage-reducing admixture shall conform to ASTM C 494, Type S, and shall be MASTER BUILDERS SOLUTIONS Corporation's MasterLife SRA 20, MasterLife CRA 007, GCP Applied Technologies (formerly W. R. Grace) Eclipse series, or approved equal.

i. Alkali-silica reaction inhibiting admixture shall conform to ASTM C 494, Type S, shall

contain a nominal lithium nitrate content of 30 percent, and shall be MASTER BUILDERS SOLUTIONS Corporation's
MasterLife ASR 30, GCP Applied Technologies (formerly W. R. Grace) RASIR, or approved equal.

j. Calcium Chloride: Except as otherwise provided herein, calcium chloride will not be permitted to be used in concrete.

7. Fibers:

a. Microsynthetic fibers shall conform to ASTM C 1116, **Type III and** shall provide a minimum crack reduction ratio (CRR) of [40] [__| percent when tested in accordance with ASTM C 1579, and shall be MASTER BUILDERS SOLUTIONS Corporation's MasterFiber F Series, MasterFiber M Series, GCP Applied Technologies (formerly W. R. Grace) Grace Fibers, Grace Microfibers, or approved equal.

b. Macrosynthetic fibers shall conform to ASTM C 1116, shall have an equivalent flexural strength ratio ($R_{e,3}$) of [__] percent when tested in accordance with ASTM C 1609, [shall have a toughness of [__] Joules when tested in accordance with ASTM C 1550], and shall be MASTER BUILDERS SOLUTIONS Corporation's MasterFiber MAC Series, GCP Applied Technologies (formerly W. R. Grace) STRUX series or approved equal

2.2 CURING MATERIALS

A. Materials for curing concrete shall conform to Section [03370] "Curing Concrete", Part 2.

2.3 NON-WATERSTOP JOINT MATERIALS

A. Materials for non-waterstop joints in concrete shall conform to Section [03290] "Joints In Concrete", Part 2.

2.4 MISCELLANEOUS MATERIALS

A. Floor sealer/hardener shall be a colorless, aqueous solution of zinc and/or magnesium fluorosilicate or of sodium silicate, and shall be as manufactured by **[MASTER BUILDERS SOLUTIONS Corporation], [W.R. Grace Co.],** or an approved equal. The solution shall be delivered ready for use in the manufacturer's original sealed containers. Each gallon of the fluorosilicate solution shall contain not less than 2 pounds of crystals.

B. Dampproofing agent shall be an asphalt emulsion, such as **[MasterSeal 610, MasterSeal 614 or MasterSeal 615 (formerly Hydrocide 600, Hydrocide 700 & Hydrocide 700B) by MASTER BUILDERS SOLUTIONS Corporation],** GCP Applied Technologies (formerly W. R. Grace) Darapel, **[Flintkote C-13-E Foundation Coating],** or an approved equal.

C. Epoxy adhesives shall be per the following products for the applications specified:

2c For bonding freshly-mixed, plastic concrete to hardened concrete, **[Sikadur Hi-Mod Epoxy Adhesive, as manufactured by Sika Corporation]; [MasterEmaco ADH 326 (formerly Concresive Liquid LPL) as manufactured by MASTER BUILDERS SOLUTIONS Corporation];** or an approved equal.

3c For bonding hardened concrete or masonry to steel, **[MasterEmaco ADH 327RS (formerly Concresive Paste SPL)], [Colma-Dur Gel], [Sikadur Hi-Mod Gel],** or an approved equal.

D. Drypack: Field mixture of 1 part Portland cement to 2 parts fine aggregate mixed to a damp consistency such that a ball molded in the hands will stick together and hold its shape. At CONTRACTOR's option, the specified admixture may be added for increased workability at lower water/cement ratio. In lieu of field mixing, CONTRACTOR may use factory mixed drypack material, such as **[MASTER BUILDERS SOLUTIONS Corporation "MasterFlow 100" or Euclid "Euco Dry Pack Grout"]**, or an approved equal.

E. Expansion Joint Filler: Asphalt impregnated fiber or non-extruding foam type, conforming to ASTM D994 and D1751, or D1752.

F. Construction Joint Materials: **["Key-Kold", "Kwik-Joint"]** of profiles indicated, or an approved equal.

G. Bonding Agent: **["Weld-Crete", manufactured by Larsen Products Co. or "MasterEmaco ADH" Series (formerly Concresive Series), as manufactured by MASTER BUILDERS SOLUTIONS Corporation]**, or an approved equal.

H. Integral Color Concrete: As specified in Section [03331]

I. For bridge structures, prestressing concrete materials shall comply with CSS Section 50.

J. For bridge structures, epoxy adhesives shall comply with CSS Section 95-2.

2.5 CONCRETE DESIGN REQUIREMENTS

A. General: Concrete shall be composed of cement, SCM, admixtures, aggregates and water. These materials shall be of the qualities specified. The exact proportions in which these materials are to be used for different parts of the work will be determined during the trial batch. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage and, where deposited in forms, to have good consolidation properties and maximum smoothness of surface. Mix designs with more than 41 percent of sand of the total weight of fine and coarse aggregate shall not be used. The aggregate gradations shall be formulated to provide fresh concrete that will not promote rock pockets around reinforcing steel or embedded items. The proportions shall be changed whenever necessary or desirable to meet the required results at no additional cost to the CITY. All changes shall be subject to review by the ENGINEER.

B. W/cm and Compressive Strength: The minimum compressive strength and cement content of concrete shall be not less than that specified in the following tabulation.

Type of Work	Min. 28-Day Compressive Strength (psi)	Aggregate Gradation	Cement per cu yd (sacks)	Max w/cm (by weight)
Structural Concrete *				
a. Sanitary Structures:	4,000	C	7.0	0.45
b. Other Structures **:	3,250	C	6.0	0.54 **
Sitework concrete:	2,500	C	5.5	0.50
Lean concrete:	2,000	C	4.8	0.71

Note: One sack of cement equals 94 lb.
* Use "B" Aggregate gradation when placing conditions permit.
** For Slabs on grade, maximum w/cm shall be 0.45.

C Adjustments to Mix Design: The mixes used shall be changed whenever such change is necessary or desirable to secure the required strength, density, workability, and surface finish and the CONTRACTOR shall be entitled to no additional compensation because of such changes.

D. Fly ash/pozzolan may be used per requirements of the Standard Specifications, when approved by the ENGINEER as a partial cement replacement in concrete as follows:

4c Fly ash shall replace not more than 20 percent by weight of the Portland cement in the design mix. The design mix shall contain a minimum of 7 sacks of cement per cubic yard before the replacement is made.

5c Fly ash for hydraulic/liquid containing structures shall be Class F fly ash only. Fly ash for all other structures shall be Class C or F fly ash.

2.6 CONSISTENCY

The quantity of water entering into a batch of concrete shall be just sufficient, with a normal mixing period, to produce a concrete which can be worked properly into place without segregation, and which can be compacted by the vibratory methods herein specified to give the desired density, impermeability and smoothness of surface. Subject to the w/c ratio requirements of section 2.5, the quantity of water shall be changed as necessary, with variations in the nature or moisture content of the aggregates, to maintain uniform production of a desired consistency. The consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C 143. The slumps shall be as follows:

Part of Work	Slump (in)
With high range water reducer added	9-inches max
Other work	per Standard Specifications

2.7 TRIAL BATCH AND LABORATORY TESTS

A. Before placing any concrete, a Department of Building and Safety certified testing laboratory approved by the ENGINEER shall prepare, within 30 calendar days after the date of the Notice to Proceed, a trial batch of each concrete mix, based on the preliminary concrete mixes submitted by the CONTRACTOR. During the trial batch the aggregate proportions may be adjusted by the testing laboratory using the two coarse aggregate size ranges to obtain the required properties. If one size range produces an acceptable mix, a second size range need not be used. Such adjustments shall be considered refinements to the mix design and shall not be the basis for extra compensation to the CONTRACTOR. All concrete shall conform to the requirements of this Section, whether the aggregate proportions are from the CONTRACTOR's preliminary mix design, or whether the proportions have been adjusted during the trial batch process. The trial batch shall be prepared using the aggregates, cement and admixture proposed for the project. The trial batch materials shall be of a quantity such that the testing laboratory can obtain 3 drying shrinkage, and 10 compression test specimens from each batch. The cost of not more than 3 laboratory trial batch tests for each specified concrete strength shall be borne by the CONTRACTOR. Any additional trial batch testing required shall be performed at the expense of the CONTRACTOR.

The trial batch procedure may be waived when test data of prior performance of the proposed mix design, performed by a Department of Building and Safety certified testing laboratory, is presented by the CONTRACTOR and approved by the ENGINEER.

The requirements of this section may be waived for concrete mixes specified by the Class per the Standard Specifications.

B. The determination of compressive strength will be made by testing 6-inch diameter by 12-inch high cylinders; made, cured and tested in accordance with ASTM C 192 and ASTM C 39. Five compression test cylinders shall be tested at 7 days and 5 at 28 days. The average compressive strength for the 5 cylinders tested at 28 days for any given trial batch shall not be less than the appropriate sections of ACI 318 of the specified compressive strength.

C. A sieve analysis of the combined aggregate for each trial batch shall be performed according to the requirements of ASTM C 136. Values shall be given for percent passing each sieve.

2.8 SHRINKAGE LIMITATION

A. The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21-day drying age or at 28-day drying age shall be 0.036 percent or 0.042 percent, respectively. The CONTRACTOR shall only use a mix design for construction that has first met the trial batch shrinkage requirements. Testing for shrinkage but be performed as one of the first items of work.

B. **[**The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 25 percent. The CONTRACTOR may conduct additional C157 testing of the mix design identified in 2.8.A using field prepared samples, following the instructions of ASTM C172 and establish a shrinkage correlation between field and laboratory casted samples. However, such testing must be performed soon after a mix design has been accepted by the ENGINEER. Number of samples, preparation, storage, and testing to be approved by the ENGINEER.

C. If the required shrinkage limitation is not met during construction, the CONTRACTOR shall take any or all of the following actions, at no additional cost to the CITY, for securing the specified shrinkage requirements. These actions may include changing the source or aggregates, cement and/or admixtures; reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage.**]**

2.9 MEASUREMENT OF CEMENT AND AGGREGATE

The amount of cement and of each separate size of aggregate entering into each batch of concrete shall be determined by direct weighing equipment furnished by the CONTRACTOR and acceptable to the ENGINEER; provided that, where batches are so proportioned as to contain an integral number of conventional sacks of cement, and the cement is delivered at the mixer in the original unbroken sacks, the weight of the cement contained in each sack may be taken without weighing as 94 pounds.

2.10 MEASUREMENT OF WATER

The quantity of water entering the mixer shall be measured by a suitable water meter or other measuring device of a type acceptable to the ENGINEER and capable of measuring the water in variable amounts within a tolerance of one percent. The water feed control mechanism shall be capable of being locked in position so as to deliver constantly any specified amount of water to each batch of concrete, and the meter shall include a set-back register with a readily visible vertical face and double hands indicating in cubic feet and decimals thereof. A positive quick-acting valve shall be used for a cut-off in the water line to the mixer. The operating mechanism must be such that leakage will not occur when the valves are closed

2.11 READY-MIXED CONCRETE

A. At the CONTRACTOR's option, ready-mixed concrete may be used meeting the requirements as to materials, batching, mixing, transporting, and placing as specified herein and in accordance with ASTM C 94, including the following supplementary requirements.

B. Ready-mixed concrete shall be delivered to the site of the work, and discharge shall be completed within 90 minutes after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever is first. In hot weather, or under conditions contributing to quick stiffening of the concrete, the ready-mixed concrete shall be discharged before the temperature of the concrete exceeds 90 degrees F.

C. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the re-settable, recording type, and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.

D. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. All materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolution of mixing.

E. Truck mixers and their operation shall be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than 2-inches when the specified slump is more than 3-inches, the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. All mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.

F. Each batch of ready-mixed concrete delivered at the job site shall be accompanied by a certified weighmaster delivery ticket furnished to the INSPECTOR in accordance with the Paragraph in Part 1 entitled "Certified Delivery Tickets".

G. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the INSPECTOR.

H. Mixing and Transporting of concrete for bridge structures shall comply with Section 90-6 of CSS.

2.12 PRESTRESSING CONCRETE

A. Prestressing of concrete for bridge structures shall comply with Section 50 of CSS.

2.13 CONCRETE BARRIER

A. Concrete barrier materials shall comply with Section 83-2.02 of CSS.

PART 3 -- EXECUTION

3.1 PROPORTIONING AND MIXING

A. Proportioning: Proportioning of the concrete mix shall conform to the requirements of Chapter 3 "Proportioning" of ACI 301; provided that the maximum slump for any concrete shall not exceed 4-inches except when the use of high range water reducer is permitted which increases the maximum slump to 8-inches. Proportioning for bridge structures shall comply with Section 90-5 of the CSS.

B. Mixing: Mixing of concrete shall conform to the requirements of Chapter 7 of said ACI 301 Specifications and SSPWC. Whichever is most stringent shall apply.

C. Slump: Maximum slumps shall be as specified herein in Section 2.6.

D. Retempering: Retempering of concrete or mortar which has partially hardened will not be permitted.

3.2 PREPARATION OF SURFACES FOR CONCRETING

A. General: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce adsorption and to help maintain concrete workability. Earth surfaces shall be thoroughly wetted by sprinkling, 24 hours prior to the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud, and debris at the time of placing concrete.

B. Vapor Barrier: Install under interior floor slabs on grade. Lap joints 6" in the direction of concrete spreading and tape seal. Seal the joints at walls and around penetrations with tape. Cover barrier with 2" layer of clean damp sand.

C. Screeds: Set screeds at walls and maximum 8’ centers between. Set to provide level floor. Check with an instrument level, transit, or laser during placing operation to maintain level floor.

D. Screeds Over Vapor Barrier: Use weighted pad or cradle type screeds and do not drive stakes through the vapor barrier. Check with an instrument level, transit, or laser.

E. Metal Floor Decking: Verify that decking joints are sealed and there are no openings or voids that will permit concrete leakage.

F. Expansion Joint Filler: Install where slabs abut buildings and elsewhere as indicated. Install full depth of concrete with top level with finished surface of concrete.

G. Joints in Concrete: Concrete surfaces upon or against which concrete is to be placed, where the placement of the old concrete has been stopped or interrupted so that, as determined by the ENGINEER, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bond. Except where the Drawings call for joint surfaces to be coated, the joint surfaces shall be cleaned of all laitance, loose or defective concrete, and foreign material. Such cleaning shall be accomplished by sandblasting followed by thorough washing. All pools of water shall be removed from the surface of construction joints before the new concrete is placed.

H. After the surfaces have been prepared all approximately horizontal construction joints shall be covered with a layer of mortar approximately two-inch thick, or as shown on the plans. The mortar shall have the same proportions of cement and sand as the regular concrete mixture. The water-cement ratio of the mortar in place shall not exceed that of the concrete to be placed upon it, and the consistency of the mortar shall be suitable for placing and working in the manner hereinafter specified. The mortar shall be spread uniformly and shall be worked thoroughly into all irregularities of the surface. Wire brooms shall be used where possible to scrub the mortar into the surface. Concrete shall be placed immediately upon the fresh

mortar. When casting deep walls (more than 6 feet high) over slabs or footings, in lieu of the two-inch thick mortar, a 6-inch lift of a rich pea gravel mix with the same water-cement ratio as the wall concrete shall be placed and spread uniformly. Wall concrete shall follow immediately and shall be placed upon the fresh pea gravel mix.

I. Embedded Items: No concrete shall be placed until all formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and ACCEPTED by the INSPECTOR at least 24 hours before placement of concrete. All surfaces of forms and embedded items that have become encrusted with dried grout from concrete previously placed shall be cleaned of all such grout before the surrounding or adjacent concrete is placed.

J. Conduits and Sleeves:

1. Locate so as not to reduce the strength of construction. Do not place pipes, except conduits in a slab of less than 3-1/2" thickness.

2. In supported concrete slabs, do not bury conduit having any outside diameter greater than 33% of the thickness of the slab. Increase slab thickness locally to meet this requirement.

3. Do not place conduit between the bottom of reinforcing steel and the bottom of supported slab.

4. In placing conduits at slabs on earth, place below the reinforcement, and encase in concrete by increasing thickness of the slab locally to at least 3" of concrete around the conduit on all sides.

K. All inserts or other embedded items shall conform to the requirements herein.

L. All reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms where shown or by shop drawings and shall be acceptable to the INSPECTOR before any concrete is placed. Accuracy of placement is the responsibility of the CONTRACTOR.

M. Where concrete is to be cast against old concrete, (greater than 60 days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by sand-blasting, exposing the aggregate. In concrete shear-walls, suspended slabs and roof slabs, the interface surface at construction joints shall be roughened to a full amplitude of one quarter inch. The hardened surface shall be cleaned of all latent foreign material and washed clean, prior to the application of an epoxy bonding agent.

N. Concrete shall not be placed in any structure until all water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the work. Concrete shall not be deposited underwater nor shall the CONTRACTOR allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, will be subject to the review of the ENGINEER.

O. Corrosion Protection: Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported prior to placement of concrete that there will be a minimum of 2-inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement will not be permitted.

P. Openings for pipes, inserts for pipe hangers and brackets, and the setting of anchors shall, where practicable, be provided for during the placing of concrete.

Q. Anchor bolts shall be accurately set, and shall be maintained in position by templates while being embedded in concrete.

R. Cleaning: The surfaces of all metalwork to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed.

3.3 HANDLING, TRANSPORTING, AND PLACING

A. General: Do not place concrete during rain or adverse weather conditions without means to prevent all damage. Conform to requirements specified hereinafter whenever concrete placement is required during cold or hot weather. Placing of concrete shall conform to the applicable requirements of ACI 301 and the requirements of this Section.

B. Non-Conforming Work or Materials: Concrete which upon or before placing is found not to conform to the requirements specified herein shall be rejected and immediately removed from the work. Concrete which is not placed in accordance with these Specifications, or which is of inferior quality, shall be removed and replaced by and at the expense of the CONTRACTOR.

C. Concrete shall not be placed except in the presence of duly authorized representative of the INSPECTOR. The CONTRACTOR shall notify the INSPECTOR in writing at least 48 hours in advance of placement of any concrete.

D. Placement in Wall Forms: Concrete shall not be dropped through reinforcement steel or into any deep form, whether reinforcement is present or not, causing separation of the coarse aggregate from the mortar on account of repeatedly hitting rods or the sides of the form as it falls, nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, some means such as the use of hoppers and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. In no case shall the free fall of concrete exceed 4 feet below the ends of ducts, chutes, or buggies. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6 feet in horizontal direction. Concrete in forms shall be deposited in uniform horizontal layers not deeper than 2 feet; and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still soft. The rate of placing concrete in forms shall not exceed 5 feet of vertical rise per hour.

E. Casting New Concrete Against Old: An approved epoxy adhesive bonding agent shall be applied to the old surfaces according to the manufacturer's written recommendations. This provision shall not apply to joints where waterstop is installed, see Section [03290], "Joints in Concrete".

F. Conveyor Belts and Chutes: All ends of chutes, hopper gates, and all other points of concrete discharge throughout the CONTRACTOR'S conveying, hoisting and placing system shall be so designed and arranged that concrete passing from them will not fall separated into whatever receptacle immediately receives it. Conveyor belts, if used, shall be of a type acceptable to the ENGINEER. Chutes longer than 50 feet will not be permitted. Minimum slopes of chutes shall be such that concrete of the specified consistency will readily flow in them. If a conveyor belt is used, it shall be wiped clean by a device operated in such a manner that none of the mortar adhering to the belt will be wasted. All conveyor belts and chutes shall be covered. Sufficient illumination shall be provided in the interior of all forms so that the concrete at the places of deposit is visible from the deck or runway.

G. Placement in Slabs: Concrete placed in sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the pour. As the work progresses, the concrete shall be vibrated and carefully worked around the slab reinforcement, and the surface of the slab shall be screeded in an up-slope direction.

H. Temperature of Concrete: The temperature of concrete when it is being placed shall be not more than 90 degrees F nor less than 40 degrees F in moderate weather, and not less than 50 degrees F in weather during which the mean daily temperature drops below 40 degrees F. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the specified minimum temperature. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the CONTRACTOR shall employ effective means, such as precooling of aggregates and mixing water using ice or placing at night, as necessary to maintain the temperature of the concrete, as it is placed, below 90 degrees F. The CONTRACTOR shall be entitled to no additional compensation on account of the foregoing requirements.

I. Cold Weather Placement:

1. Earth foundations shall be free from frost or ice when concrete is placed upon or against them. Fly ash concrete shall not be placed when the air temperature falls below 50 degrees F.

2. Normal Concrete: When the temperature is below 40 degrees F, the temperature of the concrete placed in the forms shall be at least 60 degrees F. When the temperature is below 30 degrees F, the temperature of the concrete as mixed shall be 65°F. In all cases, when the daily average temperature is below 40 degrees F, the concrete shall be kept at 55 degrees F for the 72 hours, and then allowed to drop uniformly to the air temperature over the next 24 hours. Concrete temperature shall be measured by placing a thermometer 2" below the top of the concrete being placed.

3. Air-entrained concrete shall be kept at the above temperature for 27 hours and above freezing for an additional 72 hours.

4. No calcium chloride shall be used to accelerate hardening of concrete. CONTRACTOR to certify that any additive used does not contain calcium chloride.

5. If low temperature accelerating admixture is proposed, adjust concrete mix as required and obtain approval of the ENGINEER.

6. All concrete materials, reinforcement, forming materials and ground with which concrete is to come in contact shall be free of frost.

7. The covering or other protection used in connection with the curing shall remain in place and intact for at least 24 hours.

8. The work shall be protected from the elements, flowing water, and defacements of any nature during the construction operations.

9. Conform to the provisions of ACI 306.1, except as modified herein.

J. Hot Weather Placement:

Conform to ACI 305.1 and the following requirements:

1. Take extra care to reduce the temperature of the concrete being placed, and to prevent rapid drying of newly placed concrete. When the outdoor ambient temperature is more than 90 degrees F, shade the fresh concrete as soon as possible after placing, use an evaporation reducer or fogging to minimize rapid drying. and start curing as soon as the surface of the fresh concrete is sufficiently hard to permit it without damage.

2. Concrete placement temperatures shall be controlled by the CONTRACTOR and shall not be limited to:

a. Shading and cooling the aggregate;

b. Avoiding use of hot cement;

c. Cooling mixing water by additions of ice;

d. Insulating water supply lines and tanks; and

e. Insulating mixer drums or cooling them with sprays or wet burlap.

K. Cast-in-place concrete shall be homogeneous throughout the structural element. The methods used to place shall prevent segregation. Placement of concrete for bridge structures shall conform to Section 51-1 of the CSS.

3.4 PUMPING OF CONCRETE

A. General: If the pumped concrete does not produce satisfactory end results, the CONTRACTOR shall discontinue the pumping operation and proceed with the placing of concrete using conventional methods.

B. Pumping Equipment: The pumping equipment must have 2 cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, the CONTRACTOR may have a standby pump on the site during pumping.

C. The minimum diameter of the hose (conduits) shall be 4-inches.

D. Pumping equipment and hoses (conduits) that are not functioning properly, shall be replaced.

E. Aluminum conduits for conveying the concrete will not be permitted.

F. Gradation of coarse aggregates shall conform to ASTM C 33 and shall be as close to the middle range as possible.

G. Gradation of fine aggregate shall conform to ASTM C 33, with 15 to 30 percent passing the number 50 screen and 5 to 10 percent passing the number 100 screen. The fineness modulus of sand used shall not be over 3.00.

H. Field Control: Concrete samples for slump per ASTM C 143 and test cylinders per ASTM C 31 and C 39.

3.5 ORDER OF PLACING CONCRETE

A. The order of placing concrete in all parts of the work shall be acceptable to the ENGINEER. In order to minimize the effects of shrinkage, the concrete shall be placed in units as bounded by construction joints shown. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured at least 7 days before the contiguous unit or units are placed, except that the corner sections of vertical walls shall not be placed until the 2 adjacent wall panels have cured at least 14 days.

B. The surface of the concrete shall be level whenever a run of concrete is stopped. To insure a level, straight joint on the exposed surface of walls, a wood strip at least 3/4-inch thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 1/2-inch above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed and any irregularities in the edge formed by the strip shall be leveled with a trowel and all laitance shall be removed.

3.6 TAMPING AND VIBRATING

A. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling all corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete during placement. Vibrators shall be high speed power vibrators (8,000 to 10,000 rpm) of an immersion type in sufficient number and with (at least one) standby units as required.

B. Operation of Vibrators: Do not horizontally transport concrete in forms with vibrators nor allow vibrators to contact forms or reinforcing. Push vibrators vertically into the preceding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set. Vibrate at intervals not exceeding two-thirds the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes segregation. Use and type of vibrators shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".

C. Correction of Segregation: Before placing next layer of concrete, and at the top of last placement for vertical elements, remove concrete containing excess water or fine aggregate or showing deficiency of coarse aggregate and fill the space with compacted concrete of correct proportions.

D. Care shall be used in placing concrete around waterstops. The concrete shall be carefully worked by rodding and vibrating to make sure that all air and rock pockets have been eliminated. Where flat-strip type waterstops are placed horizontally, the concrete shall be worked under the waterstops by hand, making sure that all air and rock pockets have been eliminated. Concrete surrounding the waterstops shall be given additional vibration, over and above that used for adjacent concrete placement to assure complete embedment of the waterstops in the concrete.

E. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against all surfaces. Subsequent layers of concrete shall not be placed until the layers previously placed have been worked thoroughly as specified. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the results herein specified within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall be kept from contact with the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

3.7 FINISHING CONCRETE SURFACES

A. General: Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions shown are defined as tolerances and are specified in Part 1, herein. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.

B. Formed Surfaces: Formed surfaces for all structures other than building structures and bridge decks, shall be finished per Section 303-1.9 of Standard Specifications. Concrete for bridge decks shall be finished per CSS Section 51-1.17. Concrete for building and retaining wall structures shall be finished per architectural finish as specified hereon, or as shown on Drawings.

C. Finishing of Formed Surfaces (As Applicable):

1. General: After removal of forms, give the concrete surfaces one or more of the finishes specified below where so indicated on the Contract Drawings. Revise the finishes as needed to secure the approval of the ENGINEER.

2. As-Cast Finish:

   a. Rough Form Finish:

      1.) Leave surfaces with the texture imparted by forms, except patch tie holes and defects.

      2.) Remove fins exceeding 3-inch in height.

   b. Smooth Form Finish:

      1.) Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces, with number of seams kept to a practical minimum and in a uniform and orderly pattern.

      2.) Patch tie holes and defects.

      3.) Remove fins completely.

3. Rubbed Finishes:

   a. Provide these finishes only where specifically called for, and then only on a "Smooth Form Finish" base as described above.

   b. Smooth Rubbed Finish:

      1.) Produce on newly hardened concrete no later than the day following form removal.

      2.) Wet the surfaces, and rub with carborundum brick or other abrasive until uniform color and texture are produced.

      3.) Do not use a cement grout other than the cement paste drawn from the concrete itself by the rubbing process.

   c. Smooth Steel-Trowel Finish: To be applied to all interior floor slabs that will receive resilient floor covering or carpeting. To produce a smooth surface free from defects and blemishes, employ at least two separate troweling operations in which long-handle Fresno Trowels will not be permitted; use of mechanical trowels of approved type permissible only in first troweling; hand-troweling required after initial operation; no dry cement or cement-sand mixtures to be sprinkled on surfaces to absorb moisture or stiffen the concrete; no water to be used in troweling operations.

   d. Grout Cleaned Finish:

      1.) Do not start cleaning operations until all contiguous surfaces to be cleaned are completed and accessible.

      2.) Do not permit cleaning as the work progresses.

      3.) Mix one (1) part Portland cement and one-half (1/2) part fine sand with sufficient water to produce a grout having the consistency of thick paint.

      4.) Substitute white Portland cement for part of the gray portland cement as required to produce a color matching the color of surrounding concrete, as determined by a trial patch.

5.) Wet the surface of the concrete sufficiently to prevent absorption of water from the grout, and apply the grout uniformly with brushes or spray gun.

6.) Immediately after applying the grout, scrub the surface vigorously with a cork float or stone to coat the surface and fill all air bubbles and holes.

7.) While the grout is still plastic, remove all excess grout by working the surface with a rubber float, sack, or other means.

8.) After the surface whites from drying (about 30 minutes at normal temperatures), rub vigorously with clean burlap.

9.) Keep the surface damp for at least 36 hours after final rubbing.

e. Cork Floated Finish:

1.) Remove forms at an early stage, and no later than three days after placement of concrete.

2.) Remove ties.

3.) Remove burrs and fins.

4.) Mix one (1) part Portland cement and one (1) part fine sand with sufficient water to produce a stiff mortar.

5.) Dampen the wall surface.

6.) Apply mortar with a firm rubber float or with a trowel, filling all surface voids.

7.) Compress mortar into voids using a slow-speed grinder or stone.

8.) If the mortar surface dries too rapidly to permit proper compacting and finishing, apply a small amount of water with a fog sprayer.

9.) Produce the final texture with a cork float using a swirling motion.

4. Unspecified Finish: If the finish or formed surfaces is not specifically called out elsewhere in the Contract Documents, provide the following finishes as applicable.

a. Rough Form Finish: For all concrete surfaces not exposed to public view.

b. Smooth Form Finish: For all concrete surfaces exposed to public view.

D. Finishing unformed top surfaces of slabs, floors, walls, and curbs (As Applicable):

1. Definition of Finishing Tolerances:

a. "Class A": True plane within 1/8" in ten feet as determined by a ten-foot straightedge placed anywhere on the slab in any direction.

b. "Class B": True plane within 3" in ten feet as determined by a ten-foot straightedge placed any where on the slab in any direction.

c. "Class C": True plane within 3" in two feet as determined by a two-foot straightedge placed

anywhere on the slab in any direction.

2. Scratched Finish: After the concrete has been placed, consolidated, struck off, and leveled to a "Class C" tolerance, roughen the surface with stiff brushes or rakes before the final set.

3. Floated Finish:

   a. After the concrete has been placed, consolidated, struck off, and leveled, do not work the concrete further until ready for floating.

   b. Begin floating when the water sheen has disappeared and when the surface has stiffened sufficiently to permit the floating operation.

   c. During or after the first floating operation, check the planeness of the surface with a ten-foot straightedge applied at not less than two different angles.

   d. Cut down high spots and fill low spots, and produce a surface with a Class B tolerance throughout.

   e. Refloat the slab immediately to produce a uniform sandy texture.

4. Troweled Finish:

   a. Provide a floated finish as described above, followed by a power troweling and then a hand troweling.

      1.) Produce initial surface relatively free from defects, but which still may show some trowel marks.

      2.) Provide hand troweling when a ringing sound is produced as the trowel is moved over the surface.

      3.) Thoroughly consolidate surface by hand troweling.

   b. Provide a finished surface essentially free from trowel marks, uniform in texture and appearance, and in a plane of Class A tolerance.

      1.) For concrete on metal deck, "Class B" true plane tolerance is acceptable.

      2.) On surfaces intended to support floor coverings, use grinding or other means as necessary to remove all defects of such magnitude as would show through the floor covering.

5. Broom Finish:

   a. Provide a floated finish as described above.

   b. While the surface is still plastic, provide a textured finish by drawing a fiber bristle broom uniformly over the surface.

   c. Unless otherwise directed by the ENGINEER, provide the texturing in one direction only.

   d. Provide "light", "medium", or "coarse" texturing as directed by the ENGINEER or otherwise called for on the Contract Drawings.

6. Exposed Aggregate Finish:

a. Provide a floated finish as described above.

b. While the surface is still plastic, embed an approved aggregate uniformly into the surface by light tamping.

c. Provide complete coverage to the depth of a single stone.

d. Float the surface until the embedded stone is fully coated with mortar and the surface has been brought to a true plane with "Class B" tolerance.

e. After the matrix has hardened sufficiently to prevent dislodgement of aggregate, begin exposure.

1.) Allow copious quantities of water, without force, to flow over the surface of the concrete while the matrix encasing the aggregate is removed by brushing with a fine bristle brush.

2.) Continue this operation until the aggregate is uniformly exposed, but not dislodged.

f. An approved chemical retarder may be used and sprayed onto the freshly floated surface to extend the working time for exposure of aggregate.

7. Unspecified Finish: If the finish of slab surfaces is not specifically called for elsewhere in the Contract Documents, provide the following finishes as applicable:

a. Scratched Finish: For surfaces scheduled to receive bond-applied cementitious applications.

b. Floated Finish: For surfaces intended to receive roofing.

c. Troweled Finish:

1.) For floors intended as walking surfaces.

2.) Floors scheduled to receive floor coverings or waterproof membrane.

3.) Parking areas.

d. Broom Finish: Garage Ramps.

e. Non-Slip Finish:

1.) Exterior platforms, steps and landings and slabs over underground fuel storage tanks.

2.) Interior and exterior pedestrian ramps.

f. Light Sand Blast Finish: For exterior walking surfaces.

E. Slab Surfaces-Testing: Test with a 10-foot straight-edge to detect high and low spots; maximum 3-inch in 10-feet permitted; deviations to be eliminated, surfaces to be approved by the ENGINEER; make any necessary corrections as directed by the ENGINEER.

F. Soda and Acid Wash:

1. Concrete surfaces to receive plaster, paint or other finish and which have been formed by oil-coated forms, scrub with a solution of one and one-half (1-1/2) lbs. caustic soda to one gallon of water.

2. On surfaces where smooth wood or waste molds have been used, scrub with a solution of 20% muriatic acid or hydrochloric acid.

3. After the surfaces have been scrubbed, wash with clean water as soon as possible.

G. Surface finish for bridge structures, other than bridge decks, shall comply with Section 51-1.18 of CSS.

3.8 CURING AND DAMPPROOFING

Curing and Dampproofing shall conform to Section [03370] "Curing Concrete", Part 3.

3.9 PROTECTION

The CONTRACTOR shall protect all concrete against injury until final acceptance by the CITY. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. The CONTRACTOR shall provide such protection while the concrete is still plastic and whenever such precipitation is imminent or occurring. Immediately following the first frost in the fall, the CONTRACTOR shall be prepared to protect all concrete against freezing. After the first frost, and until the mean daily temperature in the vicinity of the worksite falls below 40 degrees F for more than one day, the concrete shall be maintained at a temperature not lower than 50 degrees F for at least 72 hours after it is placed.

The CONTRACTOR shall protect all concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the CITY. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, or which becomes defective at any time prior to the final acceptance of the completed work, or which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete at the CONTRACTOR'S expense.

3.10 TREATMENT OF SURFACE DEFECTS

A. As soon as forms are removed, all exposed surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the ENGINEER. In no case will extensive patching of honeycombed concrete be permitted. Concrete containing minor voids, holes, honeycombing, or similar depression defects shall be repaired as specified herein. Concrete containing extensive voids, holes, honeycombing, or similar depression defects, shall be completely removed and replaced. All repairs and replacements herein specified shall be promptly executed by the CONTRACTOR at its own expense.

B. Defective surfaces to be repaired shall be cut back from true line a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of all laitance or soft material, and not less than 1/32-inch depth of the surface film from all hard portions, by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces under repair will remain moist, but not so wet as to overcome the suction upon which a good bond depends. The material used for repair purposes shall consist of a mixture of one sack of cement to 3 cubic feet of sand. For exposed walls, the cement shall contain such a proportion of Atlas white Portland cement as is required to make the color of the patch match the color of the surrounding concrete.

C. Holes left by tie-rod cones shall be reamed so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired in an approved manner with non-shrink grout. Holes left by form-tying devices having a rectangular cross-section, and other imperfections having a depth greater than their least surface dimension, shall not be reamed but shall be repaired in an approved manner with non-shrink grout.

D. All repairs shall be built up and shaped in such a manner that the completed work will conform to the requirements of this Section, as applicable, using approved methods which will not disturb the bond, cause sagging, or cause horizontal fractures. Surfaces of said repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.

E. Prior to filling any structure with water, all cracks that may have developed shall be repaired to the satisfaction of the ENGINEER. This repair method shall be done on the water bearing face of members. Prior to backfilling, faces of members in contact with fill, which are not covered with a waterproofing membrane, shall also have cracks repaired as specified herein.

3.11 PRESTRESSING CONCRETE

Prestressing concrete for bridge structures shall comply with CSS Section 50.

3.12 CONCRETE BARRIER

Concrete barrier construction shall comply with Section 83-2.02 of CSS.

END OF SECTION

SECTION 03 31 00

CAST IN PLACE CONCRETE (MINOR)

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, joints and finishes.

B. The CONTRACTOR shall furnish all materials for concrete in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished concrete, in accordance with the requirements of the Contract Documents.

C. The following types of concrete shall be covered in this Section:

1. Sitework Concrete: Concrete to be used for curbs, gutters, sidewalks, pavements, fence and post embedment, or as otherwise shown.

1.2 RELATED WORK ELSEWHERE

A. SECTION [033000] Cast In Place Concrete (Structural)

1.3 SUBMITTALS

A. Concrete Mix designs: Prior to beginning the WORK, the CONTRACTOR shall submit to the ENGINEER, for review, and acceptance, preliminary concrete mix designs for each class and type of concrete specified herein. The mix designs shall be designed by an independent testing laboratory acceptable to the ENGINEER. All costs related to such mix design shall be borne by the CONTRACTOR. Each concrete mix submittal shall contain the following information, as applicable:

1. Location and purpose of the mix.
2. Slump on which the design is based.
3. Total gallons of water per cubic yard, and the water/cementitious materials ratio (w/cm).
4. Brand, type, composition and quantity of cement.
5. Brand type, composition and quantity of fly ash, slag cement, silica fume.
6. Specific Gravity, source and gradation of each aggregate.
7. Compressive strength based on 7-day and 28-day compression tests, including standard deviation calculations, corroborative data (if applicable), and required average comprehensive strength per ACI 318.
8. Certification stamp and signature by a Civil or Structural engineer registered in the State of California, experienced in concrete mix design.
9. Certificate of Compliance for Cement.
10. Concrete pour sequence.

11. Buy Clean California Act
    a. For project specifications that include GR Section 1601, Buy Clean California Act, bidders shall submit current Environmental Product Declarations (EPDs) for: each concrete mix design, from the originating ready-mix plant used in the project. When material comes from different plants, an EPD will be required for each plant from which the material will be obtained.
    b. An EPD must conform to the following:
        1) Shall be facility-specific manufacturer/plant EPD.
        2) Be independently verified in accordance with ISO 14025 (Type III).
        3) Be developed according to the guidelines of the applicable Product Category Rule (PCR), as identified by the Department of General Services, State of California.
        4) Have a valid date that has not expired.
        5) Shall not exceed the Global Warming Potential (GWP) as required by GR Section 1601.
    c. EPD shall be submitted concurrently with each mix submittal for review and approval.

B. Material information: for each of the following, as provided by manufacturers:
    1. Admixtures. Provide a copy of the Building and Safety Research Report Approval for each concrete admixture.
    2. Form release agents.
    3. Joint filler products.

C. Load tickets: in addition to the CONTRACTOR's copy, deliver a legible copy of each load ticket from the producer to the BCA inspector. Load ticket shall state quantities of all material in each load and shall be signed by weigh master. The BCA inspector shall record on each copy, the slump and location where placed on the job. Maintain tickets at jobsite.

D. Material test reports: for the following, from a qualified testing agency:
    1. Aggregates: include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

1.4 QUALITY ASSURANCE

A. Installer qualifications: CONTRACTOR shall employ on the project an installer qualified as ACI-Certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Quality control: do not commence placement of concrete until mix designs have been reviewed and approved by the PROJECT MANAGER or ENGINEER, and until copies are at the jobsite.

C. Batch plant inspections: required for all structural concrete. Inspection shall be by a CITY BCA material control inspector. The CONTRACTOR shall notify the inspector at least 24 hours in advance of mixing time. The BCA materials inspector shall be present at the beginning of each day of batching and shall perform the following:

    1. Check plant and equipment quality.
    2. Check identity of materials.
    3. Check aggregate grading, characteristics, and water content.
    4. Verify mix designs being used.

5. Check proportioning and loading of concrete materials.
6. Issue certifications of quality and quantity of materials as batched.
7. After verification of above, return to the jobsite for placement inspection.

D. Continuous placement inspection: required for all structural concrete and to be performed by an LADBS certified deputy inspector approved by the PROJECT MANAGER. The BCA inspector shall perform the following procedures:

1. Verify condition and adequacy of forms and reinforcement placement.
2. Ensure that concrete is of required quality and consistency.
3. Ensure that all requirements and conditions of concrete placement are met.
4. Make slump tests and secure cylinders.
5. Provide written reports at regular intervals reporting concrete practices.

E. Mockups: provide approx. 4-foot by 4-foot mockups to adequately portray the specified finishes, reveals, formwork, joints, etc. For each concrete finish indicated on the plans and listed below for the ENGINEER's approval prior to commencing concrete work. CONTRACTOR shall continue to construct mock-ups until an approved mock-up for each specified finish is produced at no additional cost to the CITY. Acceptable mock-ups shall be made the job standard for each finish, and workmanship. Protect accepted mock-ups from damage until completion and acceptance of the work represented by the mock-ups. Remove mock-up panel(s) from the site at completion of the project, unless otherwise instructed by PROJECT MANAGER.

1. Specified finishes to be mocked up:

a. Concrete paving: medium broom finish, unless otherwise noted.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Steel reinforcement: deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

1.6 FIELD CONDITIONS

A. Hot-weather placement: comply with ACI301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS

A. Cementitious materials:

1. Portland Cement: all cement shall be Type II, low alkali Portland Cement conforming to ASTM C150 (201-1.2).

2. Fly ash: ASTM C618, class F.

B. Normal-weight aggregates: the aggregates for all concrete construction shall be fractured face aggregates obtained from a quarry that is certified non-reactive by an approved testing laboratory as approved by the Bureau of Contract Administration, (201-1.2.2). Unless otherwise noted.

1. Maximum coarse-aggregate size: 3/4-inch nominal.

C. Water: ASTM C94/C94m and potable.

2.2 CONCRETE MIXTURES

A. Concrete specified by class: placed concrete shall be Class 520-C-2500, maximum 4-inch slump unless otherwise noted on Contract Drawings. Pumped concrete shall be Class 560-E-2500, maximum 6-inch slump unless otherwise noted on Contract Drawings. A complete delivery receipt shall be required for each truckload of concrete delivered. The receipt shall be given to the BCA Inspector, (201-1.1.2).

1. Minimum compressive strength: 2,500 PSI at 28 days.

2. Slump limit: 4-inches, plus or minus 1-inch.

2.1 CONCRETE MIXING

A. Ready-mixed concrete: measure, batch, mix, and deliver concrete according to ASTM C94/C94m and ASTM C1116/C1116m and furnish batch ticket information to BCA inspector.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

2.2 CONCRETE JOINT MATERIALS

A. Expansion joint material: expansion joint material shall be min. 3/8-inch-thick closed-cell, polyethylene low resistance joint filler, by Celltex Ltd., or approved equal.

B. End of pour joints: end of pour joints shall be min. 3/8-inch-thick closed-cell, polyethylene low resistance joint filler, by Celltex Ltd., or approved equal.

C. Joint urethane sealant: expansion and isolation joint sealant material shall be a urethane elastomeric sealant for concrete pavement shall be Sikaflex®-1A
By Sika Corporation, or an approved equal, (201-3). Color to match concrete.

PART 3 – EXECUTION

3.1 STEEL REINFORCEMENT INSTALLATION

A. General: comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Securely fasten steel reinforcement and wire ties against shifting during concrete placement. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.2 JOINTS IN CONCRETE

A. General: construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction joints: install so strength and appearance of concrete are not impaired, at locations indicated or as approved by ENGINEER.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.

2. Form keyed joints where indicated. Embed keys at least 1-1/2 inches into concrete.

3. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible

C. Contraction joints in slabs-on-grade: form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at minimum **one-fourth** of the concrete thickness as follows:

1. Tooled joints: form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8-inch. Repeat tooling of contraction joints after applying surface finishes. Eliminate tool marks on concrete surfaces.

2. Saw-cut joints: form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation joints in slabs-on-grade: after removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating not less than 1/2-inch or more than 1-inch below finished concrete surface where joint sealants are indicated.

E. Doweled expansion joints: shall be placed against previously constructed concrete structures or as indicated in the plans (303-5.4.2) and the applicable details. Install dowel bars and support assemblies at joints where indicated. Lubricate one-half of dowel length to prevent concrete bonding to one side of joint. Install per details.

3.3 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Deposit concrete continuously in such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures.

2. Maintain reinforcement in position on chairs during concrete placement.

3. Screed slab surfaces with a straight-edge and strike off to correct elevations.

4. Slope surfaces uniformly to drains where required, and as indicated on Contract Drawings.

3.4 FINISHING FLOORS AND SLABS

A. General: comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Rotary float finish: consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture. Apply rotary float finish only to surfaces indicated.

C. Broom finish: apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen the trafficked surface with fiber-bristle broom perpendicular to main traffic route. Match finish(es) in approved mock-up for each finish type.

3.5 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Repairs and filling: fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the work.

B. Curbs: provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded per details.

C. Equipment bases and foundations:

1. Verify locations, sizes, depths, and height above finish and of concrete bases with approved equipment provided and Contract Drawings.

2. Minimum compressive strength for bases and foundations shall be 4,500 PSI at 28 days unless otherwise noted. See structural plans and details.

3. Prior to pouring concrete, place and secure all anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.6 CONCRETE PROTECTION AND CURING

A. General: protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 301 for hot-weather protection during curing. Cure formed concrete according to ACI 308.1.

B. Exposed un-formed surfaces: begin curing slabs, sidewalks, driveway approaches, walkways and other exposed surfaces immediately after finishing concrete.

3.7 JOINT SEALING

A. For expansion and isolation joints in concrete: remove dirt, debris, saw cuttings, curing compounds, etc. From joints; leave contact faces of joints clean and dry.

B. Install approved joint sealer according to manufacturer's written instructions and applicable details.

3.8 CONCRETE SURFACE REPAIRS

A. Defective concrete: repair and patch defective areas when directed by BCA Inspector. Remove and replace concrete that cannot be repaired and patched to ENGINEER's approval.

B. Repairing un-formed surfaces: test un-formed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, pop-outs, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

2. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out to the nearest control joints and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

3. Repair random cracks and single holes 1-inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

3.9 FIELD QUALITY CONTROL

A. Special inspections: engage a LADBS Deputy Special Inspector and qualified testing to perform field tests and inspections and prepare test reports when required by Codes or Contract Drawings.

B. Required inspections. BCA Inspector shall inspect the following prior to concrete placement:

1. Steel reinforcement placement.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.

C. Samples: BCA Inspector will select and take samples for testing during the course of the work as considered necessary. Cost of testing will be paid for by the CITY.

D. Rejected materials: CONTRACTOR shall remove off the site all concrete below specified strength.

E. Cost of removal and retesting: CONTRACTOR shall pay for full cost of removal of rejected concrete and its replacement with concrete if specified strength and retesting.

END OF SECTION 03 31 00

SECTION 03 31 50
GROUT

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all materials for grout in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished grout, in accordance with the requirements of the Contract Documents.

B. All grouts shall be City of Los Angeles approved product. The CONTRACTOR shall submit a copy of the Los Angeles Research Report with submittals.

C. The following types of grout shall be covered in this Section:

1. Non-Shrink Grout: This type of grout is to be used wherever grout is shown in the Contract Documents, unless another type is specifically referenced.

2. Cement Grout

3. Epoxy Grout

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [03250] Concrete Accessories.

B. Section [03300] [03310] Cast-in-Place Concrete.

C. Section [03400] Precast Concrete.

D. Section [03740] Concrete Repair.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Comply with the reference standards of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Commercial Standards:

CRD-C 621 Corps of Engineers Specification for Non-shrink Grout

ASTM C 109	Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in or 50-mm Cube Specimens)
ASTM C 531	Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical- Resistant Mortars, Grouts, and Monolithic Surfacings

ASTM C 579	Test Methods for Compressive Strength of Chemical-Resistant Mortars and Monolithic Surfacings
ASTM C 827	Test Method for Early Volume Change of Cementitious Mixtures
ASTM C 1107	Standard Specification for Packaged dry hydraulic cement grout (non-shrink)
ASTM D 696	Test Method for Coefficient of Linear Thermal Expansion of Plastics

2. Other Government Standards:

CSS	Caltrans Standard Specifications.

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. The CONTRACTOR shall submit certified test results verifying the compressive strength, shrinkage, and expansion requirements specified herein; and manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of non-shrink and epoxy grout used in the work.

1.5 QUALITY ASSURANCE

A. Field Tests:

1. Compression test specimens will be taken during construction from the first placement of each type of grout, and at intervals thereafter as selected by the ENGINEER to insure continued compliance with these specifications. The specimens will be made by the INSPECTOR

2. Compression tests and fabrication of specimens for cement grout and non-shrink grout will be performed as specified in ASTM C 109 at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at 7 days, 28 days, and each additional time period as appropriate.

3. Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C 579, Method B, at intervals during construction as selected by the ENGINEER. A set of three specimens will be made for testing at 7 days, and each earlier time period as appropriate.

4. All grout, already placed, which fails to meet the requirements of these specifications, is subject to removal and replacement at the cost of the CONTRACTOR.

5. The cost of all laboratory tests on grout will be borne by the CITY, but the CONTRACTOR shall assist the INSPECTOR in obtaining specimens for testing. However, the CONTRACTOR shall be charged for the cost of any additional tests and investigation on work performed which does not meet the specifications. The CONTRACTOR shall supply all materials necessary for fabricating and containing the test specimens.

B. Construction Tolerances: Construction tolerances shall be as specified in the Section [03300] [03310], "Cast-in-Place Concrete," except as modified herein and elsewhere in the Contract Documents.

C. The grout used in post-tensioned prestressing systems of bridge structures, shall comply with CSS Section 50-1.09.

PART 2 -- PRODUCTS

2.1 CEMENT GROUT

A. Cement Grout: Cement grout shall be composed of one part cement, three parts sand, and the minimum amount of water necessary for the mixture to flow under its own weight. Where needed to match the color of adjacent concrete, white Portland cement shall be blended with regular cement as needed. In addition, where needed, an approved admixture may be added to increase workability at a low water/cement ratio. The minimum compressive strength at 28 days shall be 4000 psi.

B. Cement grout materials shall be as specified in Section [03300] [03310], "Cast-in-Place Concrete".

2.2 PREPACKAGED GROUTS

A. Non-Shrink Grout:

1. Non-shrink grout shall be a prepackaged, inorganic, non-gas-liberating when tested in accordance with C1107, non-metallic, cement-based grout requiring only the addition of water. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout specified herein shall be that recommended by the manufacturer for the particular application.

2. Class A non-shrink grouts shall have a minimum 28 day compressive strength of 5,000 psi; shall have no shrinkage (0.0 percent) and a maximum 4.0 percent expansion in the plastic state when tested in accordance with ASTM C 827; and shall have no shrinkage (0.0 percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.

3. Class B non-shrink grouts shall have a minimum 28 day compressive strength of 5,000 psi and shall meet the requirements of CRD C 621.

4. Application:

a. Class A non-shrink grout shall be used for the repair of all holes and defects in concrete members which are water bearing or in contact with soil or other fill material, grouting under all equipment base plates, and at all locations where grout is specified in the contract documents; except, for those applications for Class B non-shrink grout and epoxy grout specified herein. Class A non-shrink grout may be used in place of Class B non-shrink grout for all applications.

b. Class B non-shrink grout shall be used for the repair of all holes and defects in concrete members which are not water-bearing and not in contact with soil or other fill material, grouting under all base plates for structural steel members, and grouting railing posts in place.

B. Epoxy Grout:

1. Epoxy grout shall be a pourable, non-shrink, 100 percent solids system. The epoxy grout system shall have three components: resin, hardener, and specially blended aggregate, all premeasured and prepackaged. The resin component shall not contain any non-reactive diluents. Resins containing butyl glycidyl ether (BGE) or other highly volatile and hazardous reactive diluents are not acceptable. Variation of component ratios is not permitted unless specifically recommended by the

manufacturer. Manufacturer's instructions shall be printed on each container in which the materials are packaged.

2. The chemical formulation of the epoxy grout shall be that recommended by the manufacturer for the particular application.

3. The mixed epoxy grout system shall have a minimum working life of 45 minutes at 75 degrees F.

4. The epoxy grout shall develop a compressive strength of 5,000 psi in 24 hours and 10,000 psi in seven days when tested in accordance with ASTM C 579, Method B. There shall be no shrinkage (0.0 percent) and a maximum 4.0 percent expansion when tested in accordance with ASTM C 827.

5. The epoxy grout shall exhibit a minimum effective bearing area of 95 percent. This shall be determined by a test consisting of filling a 2-inch diameter by 4-inch high metal cylinder mold covered with a glass plate coated with a release agent. A weight shall be placed on the glass plate. At 24 hours after casting, the weight and plate shall be removed and the area in plan of all voids measured. The surface of the grout shall be probed with a sharp instrument to locate all voids.

6. The peak exotherm of a 2-inch diameter by 4-inch high cylinder shall not exceed 95 degrees F when tested with 75 degree F material at laboratory temperature. The epoxy grout shall exhibit a maximum thermal coefficient of 30 x 10^{-6} inches/inch/degree F when tested according to ASTM C 531 or ASTM D 696.

7. The CONTRACTOR shall demonstrate the ability of the epoxy grout system to completely fill the size and depth of the intended hole, blockout, or area before the system is submitted for consideration by the ENGINEER.

8. Application: Epoxy grout shall be used to embed all anchor bolts and reinforcing steel required to be set in grout, and for all other applications required in the Contract Documents.

2.3 CURING MATERIALS

Curing materials shall be as specified in Section [03300] [03310], "Cast-in-Place Concrete" for cement grout and as recommended by the manufacturer of prepackaged grouts.

2.4 CONSISTENCY

The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as specified herein for the particular application.

2.5 MEASUREMENT OF INGREDIENTS

A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.

B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

C. Measurement of ingredients for grout used in prestressing systems of bridge structures shall conform to Section 50-1.09 of the CSS.

PART 3 -- EXECUTION

3.1 GENERAL

A. All surface preparation, curing, and protection of cement grout shall be as specified in Section [03300] [03310], "Cast-in-Place Concrete". The finish of the grout surface shall match that of the adjacent concrete.

B. The manufacturer of Class A non-shrink grout and epoxy grout shall provide on-site technical assistance upon request. All costs related to this requirement shall be borne by the CONTRACTOR.

C. All mixing, surface preparation, handling, placing, consolidation, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

D. Application of grout used in prestressing systems of bridge structures shall conform to Section 50-1.09 of the CSS.

3.2 CONSOLIDATION

Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

END OF SECTION

SECTION 03 37 00

CONCRETE CURING

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The Contractor shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the work as indicated on the Drawings and specified herein.

B. This section covers the work necessary for the concrete curing requirements.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [03100] Concrete Formwork.

B. Section [03300] [03310] Cast-In-Place Concrete.

C. Section [03331] Cast-In-Place Architectural Concrete.

D. Section [03360] Pneumatically-Placed Concrete.

E. Section [03400] Precast Concrete.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with the reference standards and Standard Specifications of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards, as applicable.

1. Federal Specifications:

   UU-B-790A (Int.Amd. 1) Building Paper, Vegetable Fiber (Kraft, Waterproofed, Waterproofed, water Repellant and Fire Resistant)

2. Commercial Standards:

ACI 308	Standard Practice for Curing Concrete
ASTM C 156	Test Method for Water Retention by Concrete Curing Materials
ASTM C 171	Specifications for Sheet Materials for Concrete Curing
ASTM C 309	Specifications for Liquid Membrane-Forming Compounds for Curing Concrete

3. Government Standards:

CSS	Caltrans Standard Specifications

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

1.5 QUALITY ASSURANCE

A. Quality Control Data:

1. Curing Compound: Manufacturer's Certification of Compliance, to include statement that product meets ASTM C 309**,** additional permeability requirement, and coverage.

2. Retardant For Exposed Aggregate Finish on Formed Surface: Manufacturer's Certification of Compliance including statement that product is suitable for and will meet job requirements.

3. Curing method, procedures and method of application to be used shall be in compliance with the requirements as specified herein.

PART 2 -- PRODUCTS

2.1 CURING MATERIALS

A. Materials for curing concrete as specified herein shall conform to the Standard Specifications and the following requirements:

1. Polyethylene sheet for use as concrete curing blanket shall be white and conform to ASTM C 171. The loss of moisture when determined in accordance with the requirements of ASTM C 156 shall not exceed 0.055 grams per square centimeter of surface.

2. Polyethylene-coated waterproof paper sheeting for use as concrete curing blanket shall consist of white polyethylene sheeting free of visible defects, uniform in appearance, having a nominal thickness of 2 mils and permanently bonded to waterproof paper conforming to the requirements of Federal Specification UU-B-790A (Int. Amd. 1). The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 gram per square centimeter of surface.

3. Polyethylene-coated burlap for use as concrete curing blanket shall conform to ASTM C 171. The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 grams per square centimeter of surface.

4. Curing mats for use in Curing Method 6 as specified herein, shall be heavy shag rugs or carpets or cotton mats quilted at 4-inches on center. Curing mats shall weigh a minimum of 12 ounces per square yard when dry.

5. Evaporation retardant shall be a material such as **[Confilm as manufactured by Masterbuilders, Cleveland, OH]; [ ];** or an approved equal**.**

B. Curing Compound:

1. Curing compound shall consist of a liquid which, when applied to fresh concrete by means of a spray gun, will form an impervious membrane over the exposed surfaces of the concrete.

2. The membrane may be either asphaltic or paraffin derivatives to which other waterproofing materials may have been added. Concrete curing compounds shall be designated by type as follows:

   Type 1 – Clear or translucent without dye

   Type 1-D - Clear or translucent with red fugitive dye

   Type 2 - White pigmented

   Type 3 - Light gray pigmented

   Type 4 - Black pigmented

3. Provide curing compound meeting requirements of ASTM C 309, with additional requirement that permeability not exceed 0.039 gm/square cm/72 hours, when tested in accordance with ASTM C 156 standards.

4. Provide evaporation retardant where required to prevent rapid evaporation of water from fresh exposed concrete.

5. When pigmented curing compounds are used, at the time of use, the compound shall be thoroughly mixed, with the pigment uniformly dispensed throughout the mixture.

6. Unless otherwise specified, Type 1-D curing compound shall be used, except that Type 2 shall be used for the top surface of bridge decks.

2.2 FLOOR HARDENER (SURFACE-APPLIED)

A. Floor hardener shall be a colorless, aqueous solution of zinc and/or magnesium fluosilicate.

B. Each gallon of fluosilicate solution shall contain minimum of 2 pounds of crystals.

C. All hardeners shall be furnished by the CONTRACTOR and shall be delivered ready mixed in sealed original containers bearing the manufacturer's name and product identification.

PART 3 -- EXECUTION

3.1 CURING OF CONCRETE

The top surface of highway bridge decks shall be cured by both the curing compound method, and by the water method except that the curing compound shall be either Pigmented Curing Compound-Chlorinated Rubber Base Type (State Specification 8030-71D-04), or Pigmented Curing Compound Chlorinated Rubber Base white or Tinted (State Specification 8030-71D-05), or as directed by the Engineer.

3.2 CURING AND DAMPPROOFING METHODS

General: All concrete shall be cured for not less than 10 days after placing, in accordance with the methods specified herein for the different parts of the work, and described in detail in the following paragraphs. Curing concrete for bridge structures shall comply with Section 90-7 of the CSS.

Surface to be Cured or Dampproofed (except bridge structures)	Method
Unstripped forms	1
Wall sections with forms removed	6
Construction joints between footings and walls, and between floor slab and columns	2
Encasement concrete and thrust blocks	3
All concrete surfaces not specifically provided for elsewhere in this Paragraph	4
Floor slabs on grade	5
Roof and slabs not on grade	6
Floor slabs to be covered with resilient flooring	8
Exterior buried surfaces of roof slabs and basement walls	7
All liquid and water retaining structures	2

Method 1: Wooden forms shall be wetted immediately after concrete has been placed and shall be kept wet with water until removed. If steel forms are used the exposed concrete surfaces shall be kept continuously wet until the forms are removed. If forms are removed within 10 days of placing the concrete, curing shall be continued in accordance with Method 6, herein.

Method 2: The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.

Method 3: The surface shall be covered with moist earth not less than 4 hours, nor more than 24 hours, after the concrete is placed. Earthwork operations that may damage the concrete shall not begin until at least 7 days after placement of concrete.

Method 4: The surface shall be sprayed with a liquid curing compound.

1 Curing compound shall be applied in 2 coats according to the manufacturer's printed instructions. The direction of application of the second coat shall be perpendicular to the first. The second coat shall be applied when the first coat is dry to touch, but not to exceed 4 hours. Each coat shall be applied at a rate not more than 200 square feet per gallon and in such a manner as to cover the surface with a uniform film which will seal thoroughly.

2 Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the curing period. The CONTRACTOR shall maintain and monitor the curing compound membrane for a minimum of 10 days. Should the seal be damaged or broken before the expiration of this curing period, the break shall be repaired immediately by the application of additional curing compound over the damaged portion.

3 Wherever curing compound may have been applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, said compound shall be entirely removed by wet sandblasting just prior to the placing of new concrete.

4 Application of the curing compound to the concrete shall commence as soon as the finished surface of the concrete reaches a uniformly damp appearance with no free water on the surface. Curing compound shall also be applied no later than 2 hours after removal of forms from contact with formed surfaces or after the placement of concrete on the subgrade. At any point, the application rate shall be within 50 square feet per gallon of the nominal rate and the average application rate shall be within 25 square feet per gallon of the nominal rate specified when tested in accordance with California Test 535.

5 Repairs required to be made to formed surfaces shall be made within the said 2-hour period; provided, however, that any such repairs which cannot be made within the said 2-hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be wet-sandblasted to remove the curing compound, following which repairs shall be made as specified herein.

6 At the time of use, pigmented curing compounds shall be maintained in a thoroughly mixed condition. Containers of curing compound shall remain air-tight when not in use.

7 The CONTRACTOR shall apply curing compound in the presence of the INSPECTOR. Curing compound shall be applied to form a continuous and uniform membrane.

Method 5: Immediately after the concrete has been screeded, it shall be treated with a liquid evaporation retardant. The retardant shall be used again after each work operation as necessary to prevent drying shrinkage cracks.

1. Immediately after each square foot of the concrete has been finished, it shall be given a coat of curing compound in accordance with Method 4, herein. Not less than one hour nor more than 4 hours after the coat of curing compound has been applied, the surface shall be wetted with water delivered through a fog nozzle, and concrete-curing blankets shall be placed on the slabs. The curing blankets shall be polyethylene sheet, polyethylene-coated waterproof paper sheeting or polyethylene-coated burlap. The blankets shall be laid with the edges butted together and with the joints between strips sealed with 2-inch wide strips of sealing tape or with edges lapped not less than 3-inches and fastened together with a waterproof cement to form a continuous watertight joint.

2. The curing blankets shall be left in place during the 10-day curing period and shall not be removed until after concrete for adjacent work has been placed. Should the curing blankets become torn or otherwise ineffective, the CONTRACTOR shall replace damaged sections. During the first 3 days of the curing period, no traffic of any nature and no depositing, temporary or otherwise, of any materials shall be permitted on the curing blankets. During the remainder of the curing period, foot traffic and temporary depositing of materials that impose light pressure will be permitted only on top of plywood sheets 5/8-inch minimum thickness, laid over the curing blanket. The CONTRACTOR shall add water under the curing blanket as often as necessary to maintain damp concrete surfaces at all times.

Method 6: Concrete slabs shall be treated with an evaporation retardant as specified in Method 5. The concrete shall be kept continuously wet by the application of water for a minimum period of at least 10 consecutive days beginning immediately after the concrete has been placed or forms removed. Heavy curing mats shall be used as a curing medium to retain the moisture during the curing period. The curing medium shall be weighted or otherwise held in place to prevent being dislodged by wind or any other causes. Until the concrete surface is covered with the curing medium the entire surface shall be kept damp by applying water using nozzles that atomize the flow so that the surface is not marred or washed. The curing blankets and concrete shall be kept continuously wet by the use of sprinklers or other means both during and after normal working hours. Immediately after the application of water has terminated at the end of the curing period, the curing medium shall

be removed and curing compound immediately applied in accordance with Method 4, herein. The CONTRACTOR shall dispose of excess water from the curing operation to avoid damage to the work.

Method 7:

1. Method 6 shall be used for curing.

2. Immediately after completion of curing the surface shall be sprayed with a dampproofing agent consisting of an asphalt emulsion. Application shall be in 2 coats. The first coat shall be diluted to 1/2 strength by the addition of water and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon of dilute solution. The second coat shall consist of an application of the specified material, undiluted, and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon. Dampproofing material shall be as specified herein.

3. As soon as the asphalt emulsion, applied as specified herein, has taken an initial set, the entire area thus coated shall be coated with whitewash. Any formula for mixing the whitewash may be used which produces a uniformly coated white surface and which so remains until placing of the backfill. Should the whitewash fail to remain on the surface until the backfill is placed, the CONTRACTOR shall apply additional whitewash.

Method 8: Floor slabs to be covered with resilient flooring shall be coated with an asphaltic membrane curing compound such as **[Hunt's Process Black]**, or an approved equal.

3.3 EVAPORATION RETARDANT APPLICATION PROTECTION

A. Spray onto surface of fresh concrete immediately after screeding to react with surface moisture.

B. Reapply after smoothing surface with a bull float to ensure continuous, compacted monomolecular layer until final finishing is completed.

C. After finishing, apply water curing as specified.

3.4 CURING AND PROTECTION IN COLD WEATHER

A. Concrete shall not be placed during cold weather where conditions would require procedures as specified in ACI 306.

B. The Engineer, at his option, may allow cold weather placement of concrete if an extended period of cold weather is anticipated.

C. Water curing of concrete may be reduced to 6 days during periods when the mean daily temperature in the vicinity of the worksite is less than 40 degrees F; provided that, during the prescribed period of water curing, when temperatures are such that concrete surfaces may freeze, water curing shall be temporarily discontinued.

D. Concrete cured by an application of curing compound will require no additional protection from freezing if the protection at 50 degrees F for 72 hours is obtained by means of approved insulation in contact with the forms or concrete surfaces; otherwise, the concrete shall be protected against freezing temperatures for 72 hours immediately following 72 hours protection at 50 degrees F. Concrete cured by water curing shall be protected against freezing temperatures for 3 days immediately following the 72 hours of protection at 50 degrees F.

E. Discontinuance of protection against freezing temperatures shall be such that the drop in temperature of any portion of the concrete will be gradual and will not exceed 40 degrees F in 24 hours. In the spring, when the mean daily temperature rises above 40 degrees F for more than 3 successive days, the specified 72-hour protection at a temperature not lower than 50 degrees F may be discontinued for as long as the mean daily temperature remains above 40 degrees F; provided, that the concrete shall be protected against freezing temperatures for not less than 48 hours after placement.

F. Where artificial heat is employed, special care shall be taken to prevent the concrete from drying. Use of unvented heaters will be permitted only when unformed surfaces of concrete adjacent to the heaters are protected for the first 24 hours from an excessive carbon dioxide atmosphere by application of curing compound; provided, that the use of curing compound for such surfaces is otherwise permitted by these Specifications.

3.5 CLEAR HARDENER APPLICATION (SURFACE APPLIED)

A. Before application, thoroughly cure floors to receive hardener for minimum 28 days, keep clean, unpainted, free from membrane curing compounds, and dry with all work above them completed.

B. Do not use curing compounds where floor hardeners are specified. Use water curing only.

C. Apply hardener evenly, using three coats, allowing 24 hours between coats as follows:

1. First Coat: 1/3 strength, second coat 1/2 strength, and third coat 2/3 strength, mix with water.

2. Apply each coat so as to remain wet on surface for 15 minutes.

3. Apply approved hardeners in accordance with manufacturer's instructions.

4. After final coat is completed and dry, remove surplus hardener from surface by scrubbing and mopping with water.

END OF SECTION

SECTION 03 37 40
CONCRETE REPAIR

PART 1 -- GENERAL

1.1 THE REQUIREMENT

This section covers the work, including materials, testing, and workmanship necessary to structurally repair cracks and damaged surface areas (or spalls) in the existing concrete of the structures stated herein. Cracks shall be repaired by the injection of an epoxy resin adhesive. Spalls shall be repaired using an epoxy mortar as specified. Cracks and spalls requiring repair will be field located and identified by the ENGINEER prior to the start of the work in that area. Some cracks regardless of size may not be designated by the ENGINEER for repair.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 321313 Site Concrete Work.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with the reference standards of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards.

1. Commercial Standards:

ASTM C 579	Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes
ASTM D 482	Standard Test Method for Ash from Petroleum Products
ASTM D 638	Standard Test Method for Tensile Properties of Plastics
ASTM D 648	Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
ASTM D 664	Test Method for Acid Number of Petroleum Products by Potentiometric Titration
ASTM D 695	Standard Test Method for Compressive Properties of Rigid Plastics
ASTM D 790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM C 881	Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C 882	Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear

ASTM D 1652	Standard Test Methods for Epoxy Content of Epoxy Resins
AASHTO T 237	Testing Epoxy Resin Adhesive

2. Government Standards:

CSS	Caltrans Standard Specifications.

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The CONTRACTOR shall submit certified test results verifying the compressive strength, shrinkage, and expansion requirements specified herein; and manufacturer's literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of non-shrink and epoxy grout used in the work.

C. The CONTRACTOR shall submit detailed written description of the epoxy injection procedures, including desired injection pressures, the proposed procedures when a crack appears to be taking no epoxy or the epoxy does not exude from the adjacent port, and the proposed procedures if the desired injection pressures cannot be attained or the crack appears to be taking an excessive amount of epoxy.

D. The CONTRACTOR shall prepare mock-ups at locations in the job site where directed by the ENGINEER. The approved mock- ups will be used as data for comparison of works installed under this Section and for acceptance or rejection of same work. The mock-ups shall remain on site during the construction

E. The CONTRACTOR shall submit the following:

1. Previous Experience Information

2. Certificates, Test Reports

3. Qualifications of Applicators

4. Epoxy Manufacturer's Certification and Approval of Applicator

5. Technical Data on Adhesives, Grouts, and Related Items Including Manufacturer Application Recommendations or Requirements

6. Mix design for concrete spall repair

7. Qualified Testing Laboratory

1.5 QUALITY ASSURANCE

A. The following quality control test and certificate is required under this Specification:

1. Test Requirements: Compression tests and fabrication of specimens for epoxy grout will be performed as specified in ASTM C 579, Method B, at intervals during

construction as selected by the ENGINEER but no less than after every 200 sq.ft of applied grout. A set of three specimens will be made for testing at 7 days, and each earlier time period as appropriate. Tests shall be conducted by a qualified testing laboratory approved by the City of Los Angeles and acceptable to the ENGINEER at the CONTRACTOR's expense.

2. Certification and Test Report: Manufacturer shall certify that every batch of material supplied meets the Specifications and shall furnish copies of actual test reports on each batch.

B. Labor: Use adequate number of skilled works who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for the proper performance of the work of this Section.

C. Epoxy injection work shall be performed by "qualified applicators" approved by the Los Angeles City Department of Building and Safety. The qualified applicators shall be certified by the epoxy manufacturer. CONTRACTOR shall arrange for certification meeting with Los Angeles City Department of Building and Safety Inspector, work demonstration, pre-construction meeting and shall comply with all other requirements.

D. Tests: Execute tests as required by Chapter 17, Chapter 21 (Section 2103), and Chapter 35 of the Los Angeles City Building Code and whenever the INSPECTOR or ENGINEER detects evidence of materials or work failing to meet the contract requirements. Perform all such tests as instructed by the INSPECTOR or ENGINEER at CONTRACTOR's expense.

E. Samples: Take samples and make tests of materials as required by INSPECTOR prior to and during construction operations.

F. Continuous (Deputy) Inspections: As noted on the Drawings to be provided in the field by the CITY. CONTRACTOR shall include in the construction schedule and notify the INSPECTOR and request for inspections 14 days in advance.

1.6 PACKAGING, LABELING, STORAGE

A. Packaging: The adhesive material shall be packaged in new, sealed containers. Each container will be clearly labeled.

B. Label Information: The label shall include, in a clear and distinct manner, the following information:

1. Manufacturer name.

2. Product name and lot number.

3. ANSI Hazard Classification and appropriate recommended ANSI precautions for handling.

4. Mix ratio by volume.

C. Storage: The adhesive shall be stored at ambient temperatures between 32 and 120 degrees F. If stored at temperatures outside these limits, the adhesive material shall be tested at the CONTRACTOR's expense prior to use to determine if the adhesive material meets the requirements of this Specification.

PART 2 -- PRODUCTS

2.1 GENERAL

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired only. Products of other manufacturers will be considered in accordance with the GENERAL REQUIREMENTS.

B. Like items of materials provided hereunder shall be the end products of one manufacturer in order to achieve structural compatibility, singular responsibility, and standardization for appearance, maintenance, and replacement.

C. Epoxy products shall be as manufactured by Sika Corp., Lyndhurst, NJ; or an approved equal, meeting the requirements specified hereinafter.

2.2 CRACK WIDTH

Large cracks are defined as being wider than 0.015 inch. Small cracks are defined as cracks with width equal to 0.015 inch or less.

2.3 ADHESIVE FOR INJECTION

A. Unless otherwise specified hereon, the epoxy adhesive used for injection for concrete structures shall comply with the following material specification. For non-sanitary structures, in lieu of the requirements of this section, the CONTRACTOR may submit Los Angeles Department of Building and Safety approved Research Reports on products intended for use, subject to review and approval by the ENGINEER.

1. This Specification defines a two-component structural epoxy adhesive to be processed through continuous positive displacement in-line metering and in-line mixing equipment for injection into cracks or other voids in concrete structures for bonding or grouting. Batch mix pumps shall not be allowed.

2. Properties of the two-component epoxy adhesive:

a. Part A shall be a blend of modified epoxy resins:

		Specification Requirements	
	Test Method	Large Cracks	Small Cracks**
Color	Visual	Clear Amber Liquid	Light Amber Liquid
Viscosity @ 40 ± 3 deg F, cps	Brookfield RVT Spindle No. 4 @ 20 rpm	6,000-8,000	
Viscosity @ 77 ± 3 deg F, cps	Brookfield RVT Spindle No. 4 @ 20 rpm	400-700	375 cps max. @ 50 rpm
Epoxide Equivalent Weight	ASTM D 1652* See Appendix C	160-176	
Ash Content, %	ASTM D 482	1 max.	

* Method modified to use perchloric acid in acetic acid.
** The specified requirements for the epoxy blend for small cracks shall meet the requirements for large cracks except as shown.

b. Part B shall be a modified amine curing agent:

		Specification Requirements	
	Test Method	Large Cracks	Small Cracks**
Color	Visual	Black Liquid	Dark Amber Liquid
Viscosity @ 40, ± 3 deg F, cps	Brookfield RVT Spindle No. 4 @ 20 rpm	700-1,400	
Viscosity @ 77, ± 3 deg F, cps	Brookfield RVT Spindle No. 2 @ 20 rpm	105-240	150 cps max. Using Spindle No. 1 @ 50 rpm
Amine Value, mg KOH/g	ASTM D 664*	490-560	
Ash Content, %	ASTM D 482	1 max.	

* Method modified to use perchloric acid in acetic acid.
** The specified requirements for the epoxy blend for small cracks shall meet the requirements for large cracks except as shown.

3. Properties of the Uncured Adhesive: When mixed in the mix ratio specified on the label on the adhesive, containers shall be:

		Specification Requirements	
	Test Method	Large Cracks	Small Cracks**
Pot Life (60-gram mass) @ 77 ± 4 deg F	(As hereinafter specified)	13-25 minutes minimum	15-30 minutes minimum
Pot Life (60-gram mass) @100 ± 3 deg F	(As hereinafter specified)	5 minutes minimum	N/A
Viscosity @ 40, ± 3 deg F	Brookfield RVT Spindle No. 4 @ 20 rpm	4,400 cps	600 cps
Viscosity @ 75-77 deg F	Brookfield RVT Spindle No. 2 @ 20 rpm	375-350 cps	175-140 cps

4. Properties of the Adhesive: When cured for 7 days at 77 ∀ 3 degrees F and conditioned at test temperature 12 hours prior to test, unless otherwise specified, shall be:

		Specification Requirements	
	Test Method	Large Cracks	Small Cracks**
Ultimate Tensile Strength, psi	ASTM D 638	8,000 min.	5,000 min.
Tensile Elongation @ Break, %	ASTM D 638	4.2 max.	3.0 max.
Flexural Strength, psi	ASTM D 790	10,000 min.	10,000 min.

Flexural Modulus, psi	ASTM D 790	$5.5x10^5$ min.	$4.5x10^5$ min.
Compressive Yield Strength, psi	ASTM D 695*	15,000 min.	12,000 min.
Compressive Modulus psi	ASTM D 695*	$4.0x10^5$ min.	$2x10^5$ min.
Heat Deflection Temperature	ASTM D 648*	127 deg F min.	140 deg F min.
Slant Shear Strength (5,000 psi Compressive Strength Conc.)	AASHTO T 237**		
Cured 3 days @ 40 40 deg F – Wet Conc.		3,500 psi min.	
Cured 1 day @ 77 deg F - Dry Conc.		5,000 psi min.	
Cured 3 days @ 77 deg ± 3 deg F		5,000 psi min.	

* Test specimens must be cured in a manner such that the peak exothermic temperature of the adhesive does not exceed 100 degrees F.

** See referenced specifications for method of preparation of test specimens.

B. Epoxy for injection shall conform to ASTM C 881, and shall be Los Angeles City Department of Building and Safety approved epoxy. The epoxy shall be Sikadur 35 Hi-Mod LV or Sikadur 52, manufactured by Sika Corporation, or an approved equal.

C. The epoxy adhesive used for injection of bridge concrete structures shall comply with CSS Section 95.

2.4 POT LIFE TEST

Pot life test for components A and B, as described in Section 2.3, shall conform to the following:

A. Condition both A and B Components (as defined in Section 2.3) to required temperature.

B. Measure components in ratio of Component B as stated on the manufacturer's label into a 2 ounce (fluid) paper cup.

C. Start stopwatch immediately and mix the components for 60 seconds using a wooden tongue depressor and taking care to scrape the sides and bottom of cup periodically.

D. Probe the mixture once with the tongue depressor every 30 seconds, starting 2 minutes prior to the minimum specified pot life.

E. The time at which a soft stringy mass forms in the center of the cup is the pot life.

2.5 FABRICATION OF SLANT SHEAR SPECIMENS

Fabrication of slant shear specimens for testing bond of injectable adhesives to wet concrete at 40 degrees F, as required by Section 2.3, shall conform to the following:

A. Scope: This method of test is intended for the preparation of diagonal concrete mortar blocks used in determining the slant shear strength of low viscosity injectable adhesives according to AASHTO T 237 when the concrete is wet.

B. Materials:

1. Diagonal concrete mortar blocks prepared in accordance with AASHTO Test Method T 237 and cured to produce a mortar with compressive strength of 5,000 psi or greater.

2. Paraffin wax.

3. Masking Tape: 3/4-inch wide.

4. Suitable 20-mil thick shim stock.

C. Preparation:

1. Place a 20-mil shim between the diagonal faces of two blocks and align them so that the ends and sides are square. Bind the block in this position with masking tape covering the gap between the blocks. Leave only enough of the gap between the blocks on one face uncovered for the removal of the shim and the application of the adhesive. Paint melted paraffin wax over the masking tape. A shallow dam may be built up around the opening using paraffin wax or modeling clay to help retain the adhesive.

2. Apply a suitable capping compound to each end of the specimen to produce smooth surfaces perpendicular to the longitudinal axis of the block.

3. Remove the shim stock from the gap opening. Soak the specimen in water at 40 degrees, ∀3 degrees F for at least 24 hours.

4. After soaking, remove the specimen and shake the water from the surface and out of the crack.

5. Prepare the liquid adhesive. Within 5 minutes after removing specimen from water, start to flow adhesive into the crack so that no air bubbles are entrapped. Place specimen in 40 ∀ 3 degrees F ambient for curing within 15 minutes after it has been removed from water for bonding. At no time during the 15 minutes should the specimen be exposed to an environment above 77 degrees F.

6. Cure the specimen for 72 ∀4 hours at 40 ∀ 3 degrees F.

2.6 SURFACE SEAL

A. Physical Properties: The material used as a surface seal must have adequate strength and adhesion to confine the injection adhesive in the crack being repaired until the injected adhesive has cured. The surface seal material shall have adequate strength to hold the injection fittings firmly in place and to resist injection pressures adequately to prevent leakage during injection.

B. Appearance: After the injection adhesive has cured, the surface seal must be capable of being removed.

C. Epoxy paste sealer for caulking cracks and installing injection port devices. The epoxy paste sealer shall be Sikadur 33, manufactured by Sika Corporation, or an approved equal.

2.7 EQUIPMENT FOR METERING, MIXING, AND INJECTING

A. Type: The equipment used to meter and mix the two injection adhesive components and to inject the mixed adhesive into the crack shall be portable, positive displacement type pumps with in-line metering. The equipment used shall be manufactured by the epoxy manufacturer and/or approved in writing by the epoxy manufacturer. Pumps shall have interlocks to provide positive ratio control of exact proportions of the two components at the nozzle. The pumps shall be electric or air powered.

B. Discharge Pressure: The injection equipment shall have automatic pressure controls and the capability of discharging the mixed adhesive at pressures up to 200 psi, +5 percent, and maintaining that pressure.

C. Automatic Shutoff Control:

6. The injection equipment shall be equipped with sensors on both the Component A and B reservoirs that will automatically stop the machine when only one component is being pumped to the mixing head.

7. CONTRACTOR shall provide a standby injection pump of the same ratio, setting forth each primary injection pump used on the project. Each material of different mix ratio shall have its own primary injection pump as well as standby backup pump.

8. All pumps of dual resin system epoxy resins shall be manufactured by the epoxy resin suppliers or shall be approved in writing by the epoxy resin manufacturer so as to immediately compensate for any changes in resins.

D. Pressure Check Test:

1. Method: The mixing head of the injection equipment shall be disconnected and the two adhesive component delivery lines shall be attached to the pressure check device. The pressure check device shall consist of two independent valved nozzles capable of controlling

flow rate and pressure by opening or closing the valve. There shall be a pressure gauge capable of sensing the pressure buildup behind each valve. The valves on the pressure check device shall be closed and the equipment operated until the gauge pressure on each line reads 160 psi. The pumps shall be stopped and the gauge pressure shall not drop below 150 psi within 3 minutes.

2. Frequency of Pressure Check Test: The pressure check test shall be run for each injection equipment unit, as a minimum, at the beginning and at the end of every day that the unit is used in the work of crack repair to verify. A pressure test shall also be run at the start of any injection work when the equipment has been out of use for more than 45 minutes at any time during the day.

2.8 EPOXY MORTAR REPAIR

A. The manufacturer shall certify, in writing, its applicability in bonding to damp concrete surfaces and to the uses intended in this project. Submit applicable City of Los Angeles Department of Building and Safety Research Report for ENGINEER's review and approval.

B. The mixed two-component epoxy binder shall be gray in color. Epoxy bonding agent shall conform to ASTM C 882 and shall be Los Angeles City Department of Building and Safety approved epoxy. The epoxy shall be Sika Armatic 110 EpoCem manufactured by Sika Corporation, or an approved equal. The cure temperature, pot life, and workability shall be compatible for intended use. The minimum density of the mortar shall be 130 pounds per cubic foot.

C. The mortar mix design shall be Concresive 1470 mortar, Adhesive Owenering Co., San Carlos, CA; Sika Top, 123 Plus, for hand-applied method, manufactured by Sika Corporation, Sika Top 111 Plus, for form and pour method, manufactured by Sika Corporation, or an approved equal. The actual mix design shall be submitted by the manufacturer using the specified resin, Sand #1 and Sand #2, or a pre-engineered sand blended especially for stated products by the manufacturer.

D. The aggregate used shall be the following or an approved equal:

Sand	Designation	Source
#1E-I	#16	(Martin Marietta, Emmett, Idaho Plant)
#2 Clayton Q	#720	(Martin Marietta, Clayton Plant, Garnavillo, Iowa)

E. Anti-Corrosion Coating for reinforcement shall conform to ASTM C 882 and shall be Los Angeles City Department of Building and Safety approved. The coating shall be Sika Armatic 110 EpoCem, manufactured by Sika Corporation, or an approved equal.

F. The finished repair shall have a color which matches the surrounding concrete's color as best as possible.

G. Submit technical data (physical and chemical properties) available on the repair agent for review. Also submit data (client name, location, and description of work) on at least two similar jobs that the applicator has used the surface repair agent in the last 2 years.

2.9 EPOXY FOR BRIDGE STRUCTURES

Epoxy used for bridge structures shall conform to Section 95 of the CSS.

PART 3 -- EXECUTION

3.1 QUALIFICATIONS OF ADHESIVE APPLICATORS

A. All adhesive injection shall be performed by an applicator who has demonstrated the capability to inject concrete cracks, repairing them to the quality specified.

B. All applicators shall submit evidence of experience in injecting concrete cracks with epoxy resin.

C. Evidence of experience shall include a complete list of adhesive injection work accomplished in the last 3 years for at least 10,000 lineal feet of crack injection experience including the following information:

1. Name of Owner.
2. Name of person to contact and telephone number.
3. Address of completed work.
4. Lineal footage of crack injection repair.
5. Type of structure.
6. Description of work including materials and equipment used.

D. Epoxy injection shall be performed by a licensed certified applicator of the manufacturer of the epoxy meeting these Specifications and the applicator shall be approved by the epoxy manufacturer.

E. The applicator shall submit to the ENGINEER a statement in addition to applicator's previous experience in performing comparable work, business and technical organization and plant available to be used in performing work; along with proposed technique, material, and equipment for review prior to startup.

3.2 WORKMAN'S QUALIFICATION

A. The applicator's foreman engaged in the epoxy injection process shall have satisfactorily completed a program of instruction in the methods of restoring concrete structures utilizing the specific epoxy injection process indicated. The curriculum shall include theory on the nature and causes of cracking in concrete, methods for permanently repairing damaged concrete structures, the technical aspects of correct material selection and use, and the operation, maintenance, and troubleshooting of equipment. Foreman must prove certification and approval of the manufacturer.

B. Superintendent shall have at least 3 years' experience in injection work consisting of a minimum of 5,000 LF of crack injection in the last 3 years.

C. Any technician operating the injection pump shall have at least 1 year's experience consisting of a minimum of 3,000 LF of crack injection.

D. Equipment, material, and training must originate from same source.

E. Qualification of an applicator may be denied, and will be based upon the aforementioned evidence of experience along with any additional investigational information acquired by the ENGINEER.

3.3 PROPORTIONING THE ADHESIVE COMPONENTS

A. Ratio Tolerance: The equipment shall have the capability of maintaining the mix ratio for the injection adhesive prescribed by the manufacturer of the adhesive within a tolerance of ±5 percent by volume at any discharge pressure up to 160 psi.

B. Tests for Proper Ratio:

1. Method:

a. The mixing head of the injection equipment shall be disconnected and the two adhesive components shall be pumped simultaneously through the ratio check device. The ratio check device shall consist of two independent valved nozzles capable of controlling flow rate and back pressure by opening or closing the valve to restrict material flow. There shall be a pressure gauge capable of sensing the back pressure behind each valve. The discharge pressure shall be adjusted to 160 psi for both adhesive components. Both adhesive components shall be simultaneously discharged into separate calibrated containers. The amounts discharged into the calibrated containers simultaneously during the same time period shall be compared to determine the mix ratio.

b. After the test has been completed at a 160 psi discharge pressure, the procedure shall be repeated for 0 psi discharge pressure.

2. Frequency of Test for Proper Ratio: The ratio test shall be run for each injection unit at the beginning of every day, and at the beginning of every work period wherever an hour break has occurred, and at the end of every day that unit is used in the work of crack repair.

3.4 PROOF OF RATIO AND PRESSURE CHECK

A. At all times during the course of the work, the CONTRACTOR must keep complete and accurate records available to the ENGINEER of the ratio check tests.

B. In addition, the ENGINEER at any time without prior notification of the CONTRACTOR, may request the CONTRACTOR to conduct the tests described in the presence of the ENGINEER or the INSPECTOR.

3.5 CRACK REPAIR PROCEDURE

A. Initial Condition (for Sanitary Structures): Each water-holding structure to be repaired will be drained by the plant staff on a schedule to allow the work to proceed in that one structure and at the same time to keep the remainder of the plant in operation. All cleaning and the amount of cleaning shall be the responsibility of the CONTRACTOR.

B. Repair Procedures: Cracks 0.005 inch or wider that are designated by the CITY to be injected shall be cleaned and pressure injected with epoxy as specified. All spalled areas or areas with damaged surface, after being designated by the ENGINEER to be repaired, shall be repaired with epoxy grout as specified herein. Some cracks and damaged areas may be excluded from repair by the ENGINEER. Repair only those specifically identified by the ENGINEER.

C. Crack Preparation:

1. The licensed applicator shall be responsible for crack preparation. All cracks must be free from loose matter such as dirt or laitance and free from oil, grease, salt, or any other contaminants. Cracks shall be cleaned in accordance with the instructions of the injection adhesive manufacturer. The manufacturer's written instructions shall govern.

2. Examine the areas and conditions at the job site under which work of the Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until detrimental conditions are corrected. Coordinate with other trades as required to assure proper and adequate provisions in the work of those trades for interface with the work of this section.

3. Surfaces adjacent to cracks or other areas of application shall be cleaned of dirt, dust, grease, oil, efflorescence, or other foreign matter detrimental to bond of epoxy injection surface seal system. Acids and corrosives shall not be permitted for cleaning, unless neutralized. If necessary, cracks shall receive three-step acid flushing technique.

D. Crack Sealing: A surface seal adhesive as specified shall be applied to the face of the crack to be repaired prior to adhesive injection. The surface seal shall seal the crack and not allow injection adhesive to escape. The seal shall be applied in accordance with the instructions of the surface seal manufacturer.

E. Backfilled Walls: At locations where walls have backfill on one side and where it will not be possible to excavate and seal both crack surfaces, and where cracks extend entirely through the wall, entry ports as specified below shall be spaced closer together in addition to adjusting injecting pressure so that only a minimum amount of injection adhesive is lost to the soil.

F. Entry Ports: Openings in the surface seal shall be established along the crack for the purpose of adhesive entry. The distance between entry ports shall be determined by the adhesive applicator and, in general, shall be spaced approximately equal to the thickness of the concrete member. The spacing of ports may be increased or decreased as required to insure maximum penetration of the injection epoxy. For through cracks, CONTRACTOR shall seal both sides of cracked member. The repair work for each through crack shall be paid for as a single crack. Special consideration to entry port location must be given when cracks occur in a backfilled wall to ensure minimum adhesive is lost to the soil.

G. Injection: The injection of the adhesive into each crack shall begin at the entry port at the lowest port along a radial crack and at the end of a circumferential or horizontal crack. Injection shall continue at the first port until the injection adhesive begins to flow out of the port at the next highest elevation. The first port shall be plugged and injection started at the second port until the adhesive flows from the next port. The entire crack shall be injected with the same sequence. It is required that a manufacturer’s representative or factory trained qualified applicators with past experience be present on the job at all times.

Injection at the last port shall continue for approximately one minute after the rise in gauge pressure. Once injection has been started on a crack, it shall be continued and uninterrupted until the crack has been completely injected.

H. Finishing:

1. After the injection adhesive has cured, the surface seal shall be removed. The face of the crack shall be finished flush with the adjacent concrete. There shall be no indentations or protrusions caused by placement of entry ports.

2. When cracks are completely filled, epoxy adhesive shall be cured for sufficient time to allow removal of surface seal without any draining or runback of epoxy material from cracks.

3. Surface seal material and injection adhesive runs or spills shall be removed from concrete surfaces.

4. Finish Coating: Provide new plaster or paint system over concrete surface to match existing adjacent surface and to conform with requirements as specified.

3.6 TESTING OF INJECTION REPAIR

A. Initial Cores: The CONTRACTOR shall obtain three 4-inch diameter initial core samples in the first 100 lineal feet of crack repaired and one core for each 500 lineal feet thereafter. The cores shall be for full crack depth and taken from locations as selected by the ENGINEER. If any reinforcing steel is contacted during the core drilling, the CONTRACTOR shall cease drilling and relocate the core drill to clear the reinforcing steel. Additionally, the CONTRACTOR shall provide, at no additional expense to the CITY the following labor, materials, and services required for core sampling and testing as directed by the ENGINEER including, but not limited to:

1 Preparation, handling, storage, and transportation of epoxy injection concrete core test specimens as directed by the ENGINEER.

2 Providing suitable containers for the storage, curing, and transportation of test specimens.

3 Providing suitable storage for supply of test equipment and other items required for sampling and testing.

B. Initial cores will be tested to determine degree of epoxy penetration and bond strength.

C. Testing of initial core samples will be performed by the ENGINEER at the CITY's expense.

D. Additional cores, called verification cores, required as indicated in G. Evaluation and Acceptance of Tests, specified hereinafter, will be tested by the CITY.

E. Methods of Testing Initial and Verifying Cores:

1 Penetration: Visual examination.

2 Bond Strength/Compression Test: Concrete failure prior to adhesive failure.

F. Test Requirements:

1 Penetration: A minimum of 90 percent of the crack shall be full of epoxy adhesive.

2 Bond Strength: Concrete failure before adhesive failure, or 6,500 psi with no failure of either concrete or adhesive.

G. Evaluation and Acceptance of Tests:

1 If the initial cores pass tests as specified above, epoxy adhesive injection work at the area represented by the cores will be accepted.

2 If initial cores fail either by lack of penetration or bond strength, the work shall not proceed further until the area represented by the cores are reinjected and retested for acceptance.

3 After rework of areas represented by failed initial cores is complete, the CONTRACTOR shall obtain verifying cores, the number and location to be determined by the ENGINEER. Verifying cores shall be tested in accordance with Paragraphs E and F for compliance.

H. Correction of Work As Result of Testing: Upon notification from the ENGINEER, refill initial and verifying core holes in accordance with requirements specified hereinafter.

I. Repair of Core Holes: The CONTRACTOR shall fill the core holes with an epoxy grout tamped and rodded in place to form a dense fill, and finish the surface to blend with the adjacent concrete. The epoxy grout and placement techniques shall be accepted by the ENGINEER and as specified herein.

3.7 CONCRETE SPALL REPAIR

A. The following types of areas are known to require repair:

1. Spalled wall surfaces designated by the ENGINEER.

2. Spalled slab surfaces designated by the ENGINEER.

3. Other specific areas shown on contract drawings.

B. Surface Preparation: The CONTRACTOR shall be responsible for preparing the surfaces of damaged concrete in accordance with the repair adhesive manufacturer's recommendations. The area shall be chipped to remove all loose materials and materials that would prevent bond. The edges shall be left sharp and square with the adjacent concrete surfaces.

C. Application: All concrete spall repair adhesive shall be applied in strict conformance with manufacturer's instructions.

D. Avoid having a joint between new material and old materials right at the planes of the reinforcing steel. Expose the steel completely or at least ¾ inch all around and encase them fully in a new concrete patch.

E. After chipping of the existing concrete has been completed, all reinforcing bars shall be completely exposed or at lease ¾ inch all around, thoroughly cleaned of rust or other deleterious substances by power wire brushing, sandblasting, or other approved means. All remaining fines or dust shall be removed from the chipped surfaces by air jet or vacuum. If an air jet is used, care shall be taken to insure that no oil is in the air system. A suitable oil trap shall be in service during the air cleaning

F. Before applying the concrete patch/repair mortar; all cracks, exposed damaged or rusted reinforcing steel within the spalled areas shall be cleaned and repaired. All damaged reinforcing steel shall be removed and welded with new. When corrosion has occurred due to presence of chlorides, the reinforcing steel should be high-pressure washed with clean water after mechanical cleaning. Prime all reinforcing steel by using approved anti-corrosion coating per Subsection 2.8.E herein.

G. The existing concrete surface to be patched must be clean and dry before applying the epoxy bonding agent. The epoxy to be used for bonding the concrete patches shall conform to Subsection 2.8.B herein.

Evaluate moisture content for concrete by determining if moisture will collect at bond lines between existing concrete surface and epoxy bonding agent before epoxy had cured, this may be accomplished by taping a 4'x4' polyethylene sheet to concrete surface. If moisture collects on underside of polyethylene sheet before epoxy would cure, then allow concrete to dry sufficiently to prevent the possibility of moisture between old concrete and new epoxy.

H. A uniform coat of the epoxy bonding agent and anti-corrosion coating shall be applied to entire chipped areas of the existing concrete and all exposed surfaces of both existing and new reinforcing steel. When the epoxy becomes dry before the concrete patch/repair mortar has been applied, the epoxy shall be completely removed and re-applied.

After the concrete patches/repair mortars have cured for a minimum time of 3 days, the CONTRACTOR shall remove the forms, any irregularities or departures from a plane surface by grinding, rubbing with a carborundum stone or other means approved by the ENGINEER.

I. Color and Finish: The finished surface repair shall have a color that matches best as possible the surrounding concrete. Repaired surface finish shall be roughened to a degree to match surrounding concrete.

3.8 PAYMENTS

A. Crack Repairs:

1. CONTRACTOR shall submit contract bid price for crack repair with estimated quantity specified in the SCHEDULE OF WORK AND PRICES of the Bid Proposal. During the course of construction or selective demolition, additional cracks in the concrete surface or beneath concrete spall may be encountered/observed and require proper repair. All repair locations shall be determined in the field by the ENGINEER. All crack repairs shall be measured in length.

2. Item Payment: CONTRACTOR shall include all incidental costs, for complete crack repairs including the removal and repair of plaster coating/paint, cleaning, scaffolding, material and equipment, additional mobilization, delays, field office salaries and expenses, profit and overhead costs for all SUBCONTRACTORS and CONTRACTOR. An adjustment in payment shall be made based upon the increase and decrease in quantity and the contract bid unit price submitted, with no additional overhead and profit allowance.

B. Spall Repairs:

1. CONTRACTOR shall submit contract bid price for the spall repair with estimated quantity specified, in the SCHEDULE OF WORK AND PRICES of the Bid Proposal. During the course of construction or selective demolition, additional spalled concrete may be encountered/observed and required proper repair. All repair locations shall be determined in the field by the ENGINEER. All spalled concrete repair shall be measured in square footage and considered as separate payment from the surface or internal cracks repair.

2. Item Payment: CONTRACTOR shall include all incidental cost for complete spall repair including the demolition, cleaning, replaster, repainting, rebar repairs, scaffolding, material and equipment, additional mobilization, delays, field office salary and expenses, profit and overhead, profit and overhead costs for all SUBCONTRACTORS and CONTRACTOR. An adjustment in payment shall be made based upon the increase and decrease in quantity and the Contract Bid Unit Price submitted, with no addition overhead and profit mark-up or

overhead and profit allowance.

C. Inspection Hole - Concrete Core Test:

1. Contractor shall submit contract bid price for concrete core test with estimated quantity specified in the SCHEDULE OF WORK AND PRICES of the bid proposal. All concrete core test locations shall be determined in the field by ENGINEER or the INSPECTOR after completion of concrete crack repair. The concrete core test shall be performed in accordance with these Specifications and the direction of the ENGINEER.

2. Item Payment: CONTRACTOR shall include all incidental costs, for complete core sampling, drypacking, extra set up and repair when reinforcing steel in encountered, cleaning, scaffolding, material and equipment, additional mobilization, delays, field office salary and expenses, profit and overhead cost for all SUBCONTRACTORS and CONTRACTORS. An adjustment in payment will be made based upon the increase or decrease in quantity and the contract bid unit price submitted, with no additional overhead and profit mark-up or overhead and profit allowance.

END OF SECTION

SECTION 04 23 00

REINFORCED HOLLOW UNIT MASONRY

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the reinforced hollow unit masonry work as indicated on the Drawings and specified herein.

B. The CONTRACTOR alone shall be fully responsible for the design, strength, safety and adequacy of all shoring, bracing and all methods of construction, and for the strength, consistency, finish and general quality of masonry.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [03200] Reinforcement Steel

B. Section [3300] [3310] Cast-in-Place Concrete

C. Section [09905] Architectural Paint Finishes

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with the applicable reference specifications as specified in the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards:

1. Commercial Standards:

MSJC Code	Masonry Standards Joint Committee's Building Code Requirements and Specifications for Masonry Structures
ASTM C 33	Standard Specification for Concrete Aggregates
ASTM C 67	Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
ASTM C 90	Standard Specification for Loadbearing Concrete Masonry Units
ASTM C 140	Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
ASTM C 144	Standard Specification for Aggregate for Masonry Mortar
ASTM C 150	Standard Specification for Portland Cement
ASTM C 207	Standard Specification for Hydrated Lime for Masonry Purposes

ASTM C 331	Standard Specification for Lightweight Aggregates for Concrete Masonry Units
ASTM C 404	Standard Specification for Aggregates for Masonry Grout
ASTM C 476	Standard Specification for Grout for Masonry
ASTM C 652	Specification for Hollow Brick (Hollow Masonry Unit Made from Clay or Shale)
ASTM C 744	Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units
ASTM C 1314	Standard Test Method for Compressive Strength of Masonry Prisms

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided.

1. Manufacturer's Literature: Submit information illustrating the horizontal joint reinforcement and preformed control joint materials proposed for use.

2. Sample Panel: Lay up a sample panel for each type of masonry at the site to show the approved bond and method of finishing joints. Sample panels shall be at least 4-feet high and at least 4-feet long, and shall remain intact after approval until acceptance of the permanent masonry work and then shall be removed by the CONTRACTOR. The accepted sample panels shall serve as a basis of color, texture, and workmanship for acceptance of the permanent construction.

3. Bar Reinforcement Submittal shall include placing plans, wall elevations, bending diagrams, cutting lists, and other information so as to completely and unambiguously define and establish the location, spacing, size, length, bending, shape, splicing, and all other pertinent information as required. Drawings shall show grades of reinforcing steel. Wall reinforcing shall be detailed on wall elevations, each Shop Drawing shall show splice length for every size and type of bar used.

4. Manufacturer's Certificate: Provide manufacturer's certificate(s) for the masonry units specified herein, before delivering concrete block units to the jobsite.

1.5 QUALITY ASSURANCE

A. Tolerances for concrete block masonry:

1. Walls shall be plumb and straight and in level courses. Walls that are not plumb and straight shall be removed and reconstructed. The maximum permissible variation from plumb of the wall and corner, or of a line of joints in the wall shall be 1/16-inch per foot of height, 1/4" in 10'; 3/8" in any story or 20' maximum; or 1/2" in 40'.

2. Maximum variation from level or indicated elevations: 1/4" in any bay or 20'; 1/2" in 40'.

3. The maximum permissible variation from a horizontal line along the base of the wall or for lines of horizontal joints shall be 1/16-inch per block, 1/4-inch per 50-feet of wall with proportionately

greater tolerance for longer walls up to 2-inch in the total length of wall.

Interior surfaces shall be maintained in the plane described above and the dimension tolerances of the units shall be taken up on exterior surfaces.

1.6 HANDLING

A. Ship, handle and store concrete blocks to avoid chipping, cracking or damaging them. Concrete block with spalled corners may be used provided the damaged corners are concealed in the finished work. Do not use damaged concrete block at exposed locations.

B. Store concrete blocks in a dry, well ventilated space, under cover and off the ground, to prevent their getting wet.

PART 2 -- PRODUCTS

2.1 MASONRY UNITS

A. General:

1. At the time of delivery to the work site the units shall conform to the physical requirements specified herein. Units shall be of size shown on Drawings. Provide or cut special shapes for corners, jambs, lintels, and other areas shown or required. Special units shall match color and texture of standard units. Where masonry units are placed so that the end of a unit is exposed, such as at a corner or intersection, the end of that block shall have the surface to match the color or texture of the sides of the other units.

2. All units shall match color and texture of standard unit samples. Units shall be sound, dry, clean, free of cracks, and shall have reached the specified moisture content and compressive strength prior to placing in the structure.

3. Where units are to be used in exposed wall construction, the face or faces that are to be exposed shall be free of chips, cracks, discoloration, or other defects when viewed from 10 feet, except that not more than 5 percent of the units may have slight cracks or small chips not larger than 1 inch in any dimension. Vertical cells to be grouted in all units covered under this Specification shall have vertical alignment sufficient to maintain a clear, unobstructed continuous vertical cell measuring not less than 2-inch by 3-inch.

4. The color of the units shall be **[uniformly grey]** and the surface shall be **[fine-textured]** on all exposed surfaces.

B. Hollow Concrete Masonry Units (CMU):

1. Hollow concrete masonry units shall be normal weight, ASTM C90, Type **[I,]** in accordance with the latest City of Los Angeles Building Code.

2. The manufacturer shall certify that the masonry units meet all requirements of the latest City of Los Angeles Building Code, including the moisture content and linear shrinkage requirements for **[**intermediate**], [**humid**] [**arid**]** conditions.

C. Glazed Concrete Masonry Units (GCMU):

1. All glazed concrete masonry units shall meet the same requirements as hollow concrete units.

2. Glazed masonry units shall be medium weight, plane face type, smooth satin-gloss finish, externally heat-polymerized, cast-on facing conforming to ASTM C744, with no telegraphing of texture or color. Unit sizes to be as indicated on Drawings. Color shall be as scheduled on Drawings. The GCMU shall be **[Astra-Glaze-SW+, as manufactured by Trenwyth Industries, Inc., Phoenix, AZ]**, or an approved equal.

3. Edges of glaze at exposed face to be 1/16-inch thick with lip returned about 1/4-inch into joint at perimeter. Glazed facing to be 1/8-inch thick.

4. Mortar: Manufacturer's standard matching color, pigmented mortar with water-repellant additive.

D. Hollow Brick Units:

1. Hollow brick units shall be of clay or shale, conforming to ASTM C652, Grade I **[SW,] [MW,]** Type **[HBX, HBS]** and shall conform to the requirements of the latest City of Los Angeles Building Code.

2. Color and texture of hollow brick units shall be as specified herein or otherwise indicated on the contract drawings and each unit shall match approved samples.

2.2 CEMENT

A. Portland Cement: All cement to be used or furnished shall be ASTM C150 Type II low alkali portland cement conforming to the latest City of Los Angeles Building Code.

B. Masonry Cement: The use of masonry cement is not permitted.

C. Mortar Cement: All mortar cement to be used or furnished shall conform to the latest City of Los Angeles Building Code.

D. The CONTRACTOR shall furnish a Certificate of Compliance signed by the manufacturer identifying the cement and stating that the cement complies with these requirements. Supporting test data shall be furnished when requested by the ENGINEER or the INSPECTOR.

E. Cement shall be delivered in original unopened bags that shall be plainly marked with the manufacturer=s name or brand, cement type, weight, and ASTM Designation.

F. All cement delivered to the job site shall be stored in a manner to protect against contamination or moisture. Should any cement become contaminated or otherwise become unsuitable for use, the INSPECTOR may reject it and require that it be immediately removed from the site.

G. Unidentifiable bags shall be immediately removed from the site and shall not be incorporated into the work.

H. All cement used on this project for any individual structure shall be of the same brand and type unless otherwise accepted in writing by the ENGINEER. Cement shall be stored in such a manner as to permit ready access for the purpose of inspection and sampling, and suitably protected against contamination or moisture. Should any cement delivered show evidence of contamination or be otherwise unsuitable, the INSPECTOR may reject it and require that it be removed from the site.

2.3 LIME

A. Hydrated lime for masonry purposes shall conform to the requirements of the latest City of Los Angeles Building Code.

B. Lime putty shall be made from Type S hydrated lime and shall conform to ASTM C207. Putty made from Type S shall have a plasticity figure of not less than 200 when tested commencing within 30 minutes after mixing with water.

C. The CONTRACTOR shall furnish Manufacturer=s Certification identifying the lime and stating that the lime complies with these requirements.

2.4 AGGREGATES

A. Hollow Concrete Units: Aggregates for hollow concrete units shall conform to ASTM C33 and ASTM C331 or shall be blended from aggregates conforming to these Specifications. Use the same type or types of aggregate throughout the project unless otherwise indicated or written permission is received from the ENGINEER. Aggregates used for the project shall produce concrete with a dry density of **[**105 pounds per cubic foot or less.**] [**105 to 125 pounds per cubic foot.**] [**125 pounds per cubic foot or more.**]**

B. Mortar: Aggregate for mortar shall conform to ASTM C144.

C. Grout: Aggregate for grout shall conform to ASTM C404.

2.5 WATER

A. Water shall not contain deleterious substances. Water shall not contain an amount of impurities that will cause a change in the time of setting of portland cement of more than 25 percent nor a reduction in relative mortar strength at 7 and 28 days of more than 10 percent compared to results obtained with distilled water.

B. Water shall not contain more than 1,000 ppm of chlorides calculated as Cl, nor more than 1,000 ppm of sulfates calculated as SO_4.

2.6 MORTAR

A. Mortar shall conform to the latest City of Los Angeles Building Code.

B. Mortar shall be “Type M” and consist of a mixture of cementitious materials and aggregate to which sufficient water and approved additives, if any, have been added to achieve a workable, plastic consistency.

C. Mortar shall be proportioned in accordance with the latest City of Los Angeles Building Code. Mortar shall attain a minimum compressive strength of 2,500 psi in 28 days.

D. Mix mortar by placing one-half of water and aggregate in a power operated mixer, then add cement, lime, admixture (when approved), and the remainder of aggregate and water. Mix mortar mechanically for not less than three minutes after all ingredients have been placed in the mixer.

E. All mortar incorporated in this project shall be tested in accordance with the latest City of Los Angeles Building Code.

2.7 MORTAR ADMIXTURE

A. Additives and admixtures to mortar shall not be used unless approved in writing by the ENGINEER.

B. When approved for use, mortar admixture shall be **[Hydrophobe 31, manufactured by W.R. Grace and Company];** or an approved equal.

C. Quantity of admixture per mortar batch shall be in accordance with manufacturer's recommendations and as approved by the ENGINEER.

D. Coloring pigments are to be only in quantities approved by the ENGINEER. Color shall be as selected by the ENGINEER.

2.8 GROUT

A. Grout shall conform to the latest City of Los Angeles Building Code.

B. Grout shall consist of a mixture of cementitious materials and aggregate to which water has been added such that the mixture will flow without segregation of its constituents. Use pea gravel in grout spaces where least cell or wythe dimension is 4-inches or more.

C. Grout shall have a minimum compressive strength of 2,000 pounds per square inch.

D. Water content of grout shall be adjusted to provide proper workability and to enable the proposed placement under existing field conditions, without segregation. Slump to range between 8 and 10 inches. Field adjustment of water content shall be approved by the INSPECTOR.

E. Grout mixture shall be proportioned in accordance with the latest City of Los Angeles Building Code and approved by the ENGINEER.

F. Mix grout by placing one-half of water and aggregate in a power operated mixer, then add cement, lime, admixture, and the remainder of aggregate and water. Mix grout mechanically for not less than three minutes after all ingredients have been placed in the mixer.

2.9 GROUT ADMIXTURE

A. Grout admixture shall be **[Sika Grout Aid, Type II, manufactured by Sika Chemical Corporation]; [Grout Aid GA-II, manufactured by concrete Emulsions]**; or an approved equal.

B. Antifreeze liquid, chloride salts or other such substances shall not be used in mortar or grout.

C. Air-entraining substances shall not be used in grout unless tests are conducted to determine compliance with the latest City of Los Angeles Building Code.

D. For coloring grout, only pure mineral oxide, carbon black or synthetic colors may be used as approved by the ENGINEER. Carbon black shall be limited to a maximum of 3 percent of the weight of the cement.

2.10 JOINT REINFORCEMENT

A. Prefabricated joint reinforcement for masonry wall shall have at least one cross wire of at least No. 9 gage steel for each 2 square feet of wall area. The vertical spacing of the joint reinforcement shall not exceed 16

inches. The longitudinal wires shall be thoroughly embedded in the bed joint mortar. The joint reinforcement shall engage all wythes.

B. Wire joint reinforcement used as principal reinforcement in hollow unit construction shall be continuous between supports unless splices are made by lapping in accordance with the latest City of Los Angeles Building Code.

C. Side wires shall be deformed and shall conform to the latest City of Los Angeles Building Code.

2.11 PREFORMED CONTROL JOINT

A. Joint material shall be a solid rubber extrusion such as **[regular Rapid Control Joint, manufactured by Dur-O-Wall National Company, Cedar Rapids, IA]; [Sonneborn Control Joint, manufactured by Sonneborn-Contech Company, Oakland, CA]**; or an approved equal.

2.12 CLEANING AGENT:

Concrete block cleaner shall be **["Sure Klean No. 600 Detergent" by PROSOCO, Inc.], ["Doex Chemical Cleaner" by National Chemsearch Corp.]**, or an approved equal.

PART 3 -- EXECUTION

3.1 GENERAL

A. Masonry shall be constructed according to the provisions of this section.

B. Masonry materials shall be stored so that at the time of use the materials are clean and structurally suitable for the intended use. Materials shall be stored in a manner such that deterioration or intrusion of foreign materials is prevented and that the material will be capable of meeting applicable requirements at the time of mixing.

C. All metal reinforcement shall be free from loose rust and other coatings that would inhibit reinforcing bond, unless otherwise indicated.

D. Concrete masonry units shall not be wetted unless otherwise approved in writing by the ENGINEER.

E. Where no bond pattern is shown, the wall shall be laid up in straight uniform course with regular running bond with alternate header joints in vertical alignment.

F. Mortar or grout mixed at the jobsite shall be mixed in a mechanical mixer. Hand mixing of small amounts of mortar is permitted with approval of the INSPECTOR. Dry mixes for mortar and grout which are blended in the factory and mixed at the jobsite shall be mixed in mechanical mixers until workable, but not to exceed 10 minutes.

G. Where stack bond is indicated on the Plans, approved metal ties shall be provided horizontally at **[**24**] [**16**]** inches on centers (maximum)

H. Mortar may not be retempered. Mortar or grout which has hardened or stiffened due to hydration of the cement shall not be used.

I. In no case shall mortar be used more than two and one-half hours after water has been added to the dry ingredients at the job site.

J. In no case shall grout be used more than one and one-half hours after water has been added to the dry ingredients at the job site.

K. All concrete masonry block shall be laid in running bond.

L. All concrete masonry block shall be reinforced and anchored in the manner indicated on the contract drawings and as herein specified.

M. Hollow unit masonry shall cure for a minimum of 24 hours prior to grouting.

N. Saw cut concrete block neatly and accurately as necessary to provide openings for the work of other trades, with diamond or abrasive saws to produce straight, sharp edges without spalling or other defects, and of sizes required to maintain uniform joint widths.

O. If it is necessary to move a concrete block after it has been once set in place, remove the unit, clean it and set it in fresh mortar.

3.2 WEATHER CONDITIONS

A. Protect the tops of walls at all times. Cover the tops of walls with waterproof paper when rain is imminent and work is discontinued.

B. Protect masonry construction from loss of moisture during the curing period when ambient air temperature of 90 degrees F (37 degrees C) or greater exists and when relative humidity is less than 50 percent. Use light fog spray nozzles to cure the mortar when these conditions exist. Provide a demonstration of the fog spray nozzles prior to starting the work.

3.3 LAYING REINFORCED MASONRY UNITS

A. General:

1. Masonry construction shall conform to the latest City of Los Angeles Building Code as supplemented by these Specifications.

2. All masonry shall be laid to a line.

3. All exposed edges of masonry shall be free of broken corners, chips edges, chipped faces, discoloration, or other defects.

B. Wall Units:

1. Masonry units shall be cut or clipped as necessary to provide openings and to accommodate embedded items.

2. Wall anchors shall be securely embedded in mortar and fully grouted.

3. Glazed Concrete Masonry Units: Single-faced units may be installed through the wall where walls or partitions are indicated to have glazed masonry unit finish on one side only. The facing shall be used for dimensional and plane reference in the installation. Where glazed masonry unit finish is indicated

on both sides of a wall or partition, coved bases shall be of two-unit construction or two-faced units installed through the wall. Except as otherwise specified, coved bases shall be flush with finished surfaces above.

4. Door and window frames shall be maintained plumb and true.

5. Masonry shall be built tightly against interior door frames.

6. Care shall be taken at corners and jambs to maintain uniformity of appearance and to insure that only whole, undamaged units are used.

7. All masonry walls shall be laid in running bond.

8. Stack bond shall not be permitted unless indicated on the contract drawings.

9. In running bond, care shall be taken to lay out the work so that vertical joints in alternate courses lie in the same vertical lines midway between the vertical joints in adjacent courses to provide a regular and uniform joint pattern.

10. Lintels shall be provided over all openings of width greater than the length of the masonry unit.

11. Lintels shall be of the type and size indicated on the contract drawings or required for the span and approved by the ENGINEER.

12. Lintels shall bear on grout filled cells of hollow units.

13. Bullnose units shall be provided at all corners, around recessed door openings and where otherwise indicated on the drawings.

14. Square corners shall be provided at flush door and window openings.

15. Toothing of masonry units is not permitted

16. A 1" wide isolation joint shall be provided at all locations where masonry walls abut concrete walls or columns.

17. Isolation joints shall be filled with approved compressible joint filler and caulked on each face.

18. The minimum embedment depth of anchor bolts shall be in accordance with the latest City of Los Angeles Building Code unless otherwise indicated on the contract drawings.

3.4 BUILT-IN ITEMS

1. Door frames; window frames; HVAC connectors, registers, vents and sleeves; flashing; conduit and pipe sleeves; anchors; ties; bolts; hangers; or any other item to be placed in or through the wall shall be accurately set and securely held in the masonry work as indicated on the contract drawings or as accepted by the INSPECTOR.

2. Core drilling and/or saw curing of completed masonry walls is prohibited unless each location is approved in writing by the ENGINEER prior to cutting.

3. Core drilling and/or saw cutting required by changes to the contract shall be approved in writing by the ENGINEER prior to commencing the work.

4. All items passing through masonry walls shall be sleeved. Sleeves shall be accurately set and securely held in a manner acceptable to the INSPECTOR.

5. Sleeves provided for piping passing through masonry walls shall be placed no closer than three pipe diameters apart center to center.

3.5 EMBEDDED CONDUITS

A. Electrical or instrumentation conduits shall not be placed in any cell containing reinforcement unless approved in writing by the ENGINEER.

B. Placing of water piping in any cell containing reinforcement is prohibited.

3.6 MORTAR PREPARATION

A. The method of measurement of all mortar ingredients shall be accurate and shall insure definite and uniform proportions. The method of field measurement of ingredients shall be as approved by the INSPECTOR.

B. Mortar shall be machine mixed for a minimum of five (5) minutes and shall be used within 90 minutes of mixing.

C. No remixing of mortar more than 90 minutes old with additional water, cement, or other materials is permitted.

D. Retempering of mortar is not permitted.

3.7 MORTAR JOINTS

A. The initial bed joint thickness shall not be less than 1/4" or more than 1".

B. Subsequent bed joints shall not be less than 1/4" or more than 5/8" thick.

C. All head and bed joints shall be filled solidly with mortar for a distance in from the face of the unit not less than the thickness of the shell.

D. Tooling of joints shall be regulated so that the mortar for each wall space is of uniform size and appearance.

E. Head joints of open-end units with beveled ends that are to be fully grouted need not be mortared. The beveled ends shall form a grout key which permits grout within 5/8" of the face of the Unit. The units shall be tightly butted to prevent leakage of grout.

F. All solid masonry units and hollow units with horizontal cells shall be laid on a full bed of mortar.

G. All collar joints in multi-wythe masonry shall be completely filled.

H. All exposed mortar joints, except joints which are to be raked, shall be tooled to a smooth uniform surface and finished free of voids using a rounded tool.

I. Mortar joints specified or indicated to be caulked shall be raked to a depth of 2".

J. For Glazed Concrete Masonry units, rake mortar from all joints to a depth of 2", fill all joints flush with the glazed surface using an approved silicone sealant and tool the joints slightly concave. Color of sealant shall be as approved by the ENGINEER in writing prior to commencement of work.

3.8 REINFORCING

A. General:

1. All concrete block masonry shall be bonded and reinforced by continuous joint reinforcement spaced not more than 16 inches apart vertically. The joint reinforcement shall have one longitudinal rod at each face shell of the masonry unit.

2. All walls shall be reinforced with both vertical and horizontal reinforcement.

3. Reinforcement shall be placed as indicated on the Drawings and per approved placement drawings.

4. All reinforcing bars, except joint reinforcement, shall be completely embedded in mortar or grout and have a minimum cover, including the masonry unit, of at least 2". The minimum grout space between reinforcing steel and masonry shall be ½".

5. Unless noted otherwise on Drawings, all splices of reinforcement and wall dowels shall be lapped a minimum of 48 bar diameters. Separate spliced bars by one bar diameter or wire them together.

6. All wall dowels shall be placed and securely fastened prior to placement of concrete for the foundation.

7. The size, number, and location of the wall dowels shall match the vertical wall reinforcing as shown on the contract drawings.

8. All dowels for wall reinforcement shall be cast into in the foundation slab. Drilling and grouting of wall dowels shall not be permitted unless approved in writing by the ENGINEER.

9. Any variation from the reinforcement shown on the contract drawings shall be approved in writing by the ENGINEER prior to commencement of work.

10. When a dowel does not line up with a vertical core, do not slope more than one horizontal in six vertical. Grout dowels in a core in vertical alignment, even though it is a cell adjacent to the vertical wall reinforcing.

B. JOINT REINFORCEMENT

1. Sections of joint reinforcement shall have ends lapped a minimum of 8" and wired together at cross wires.

2. Joint reinforcement shall be lapped full width and wired together at corners and intersections, or prefabricated corners and tees shall be used.

3. Widths of joint reinforcement (side rod to side rod) shall be approximately 2 inches less than the nominal overall thickness of the wall in which it is placed. All joint reinforcement, when placed, shall be fully embedded in mortar.

4. Except where bond beams are specified or otherwise indicated on the contract drawings, the top three courses of all masonry walls, including backup, shall have continuous joint reinforcement placed in each joint (8 inches center to center).

5. Joint reinforcement shall be terminated at expansion joints and control joints.

6. Openings in all masonry walls shall have joint reinforcement placed in the two courses immediately above lintels.

C. WALL REINFORCEMENT

1. All walls shall be reinforced with both vertical and horizontal reinforcement.

2. Vertical wall reinforcement shall be provided continuously from support to support at each corner, at each side of any opening, and at the ends of walls.

3. Horizontal wall reinforcement shall be provided at the bottom and top of wall openings and shall extend not less that 24 inches or 48 bar diameters (whichever is greater) past the opening.

4. Horizontal reinforcement shall be provided continuously at structurally connected roof and floor levels, at the tops of walls, at the bottom of walls or in the top of foundations when doweled in walls, and at a maximum spacing of 4 feet, unless otherwise indicated on the contract drawings.

5. Reinforcement shall be of the size and number indicated on the contract drawings.

6. Reinforcement shall be secured against displacement prior to grouting by wire positioners or other approved devices at intervals not to exceed 200 bar diameters.

7. Approved dovetail anchors shall be used at the joint between abutting masonry walls and concrete columns or walls. Dovetail anchors shall be 16 inches long and be spaced no more than 16 inches on center the height of the wall.

8. Dovetail anchors shall also be placed in each bond beam and in the courses above and below the bond beam.

D. COLUMN AND PILASTER REINFORCEMENT

1. The minimum spacing of column ties shall be 4 inches on center for the full column height, unless otherwise indicated on the contract drawings.

2. Column ties shall terminate with a minimum 135 degree bend and with a six-bar diameter extension, but not less than 4 inch extension that engages the longitudinal column reinforcement and projects into the interior of the column.

3.9 GROUTING

A. Proportioning of grout shall be in accordance with the latest City of Los Angeles Building Code.

B. General:

1. Grout masonry shall be constructed in such a manner that all elements of the masonry act together

as a structural element.

2. Prior to grouting, the grout space shall be clean so that all spaces to be filled with grout do not contain mortar projections greater than 2 inch, mortar droppings, or other foreign material. Keep vertical cells free of mortar droppings and in vertical alignment to maintain continuous, unobstructed cells not less than 4" x 4" when coarse grout is used, and 2" x 3" for all other conditions.

3. Grout shall be placed so that all spaces designated to be grouted shall be filled with grout and the grout is confined to those specified spaces.

4. Grout materials and water content shall be controlled to provide fluidity for placement without segregation of the materials and shall be mixed thoroughly.

5. The grouting of any section of wall shall be completed in one day with no interruptions greater than one hour.

6. Between group pours, a horizontal construction joint shall be formed by stopping at the same elevation and with the grout stopping a minimum of 1-1/2 inches below a mortar joint, except at the top of the wall. Where bond beams occur, the grout pour shall be stopped a minimum of 2 inch below the top of the masonry.

7. Cleanouts shall be provided for all grout pours over five feet in height. There shall be no exceptions.

8. Cleanouts shall be provided in the bottom course at every vertical bar but shall not be spaced more than 32 inches on center for solidly grouted masonry.

9. Cleanouts shall be sealed and approved by the INSPECTOR after inspection and before grouting.

10. Units may be laid to the full height of the grout pour and grout shall be placed in a continuous pour in grout lifts not exceeding 4 feet.

11. Any placement of grout in lifts exceeding 4 feet must be approved in writing by the ENGINEER.

12. All cells and spaces containing reinforcement shall be filled with grout.

13. Walls which are to be solid grouted shall have vertical grout barriers spaced not more than 30 feet apart extending the full height of the wall.

14. Grouting of beams over openings shall be done in one continuous operation.

15. All bolts, anchors, etc. inserted in the wall shall be solidly grouted in place, so that there is a minimum of 1" of grout between the bolts and the side of the concrete block masonry cell wall.

16. Spaces around metal door frames, windows, and other build-in items shall be filled solidly with grout.

17. Grout shall not be handled nor pumped utilizing aluminum equipment.

18. Grout shall be consolidated at time of pouring by use of a vibrator. Puddling is not permitted.

C. Low-lift Grouting Requirements:

1. Unless otherwise accepted by the ENGINEER prior to the start of the masonry work, all grouting shall be low-lift grouting.

2. When grouting is stopped for 1 hour or longer, horizontal construction joints shall be formed by stopping the pour of grout 2-inch below the top of the uppermost unit. Horizontal steel shall be fully embedded by grout in an uninterrupted pour.

3. Grout pour shall be limited to a maximum height of 4-feet. The wall shall not be constructed more than one course above the top of the grout pour prior to placing the grout.

4. The grout shall be thoroughly consolidated with an internal "pencil" type vibrator to consolidate and reduce the amount of air voids. After waiting sufficient time to permit the grout to become plastic, but before it has taken any set, the grout shall be reconsolidated. The waiting period will vary depending upon weather conditions and block absorption rates, but under "normal" weather conditions with average masonry units, the waiting period should be between 30 to 60 minutes.

D. High-Lift Grouting Requirements:

1. Permission to high-lift grout shall be at the discretion of the ENGINEER and shall be approved by the ENGINEER in writing prior to commencement of construction. The CONTRACTOR is responsible to pay for all necessary extra inspection costs required by the latest City of Los Angeles Building Code.

2. For walls that are grouted solid, the first course shall be an inverted bond beam unit to allow for cleaning.

3. Approved grout pours shall be limited to 12 foot heights with lifts not exceeding 4 feet.

4. Each lift of grout shall be consolidated with an internal vibrator. Puddling is not permitted.

3.10 JOINTS AND BONDING

A. Clean concrete bearing surfaces and remove all laitance by steel brushing or sandblasting to expose the coarse aggregates before laying the first course of concrete block masonry.

B. Lay concrete block masonry in straight and uniform courses in a running bond pattern. Lay the starting joint on concrete bearing surfaces with full mortar coverage, except that area where grout occurs shall be free from mortar so that grout will contact the bearing surface.

C. Mortar joints shall be straight, clean and of a uniform width (approximately 3/8"). Strike joints flush where concrete block masonry will have an elastomeric coating applied on it; tool all other joints with a rounded jointing tool to produce concave joints well bonded to the block.

D. Tool joints with a rounded bar when the mortar has partially set but still sufficiently plastic to bond. Rake out joints which are not tight at the time of tooling, point and then retool.

E. Horizontal joints shall have full mortar coverage on face shells.

F. Butter head joints well for the full width of the face shell and shove these joints tightly so that the mortar bonds well to both concrete block.

G. Provide vertical contraction joints at a spacing not to exceed 30 feet on center in all block masonry walls.

3.11 CLEANING

A. Thoroughly clean all surfaces or excess mortar, grout spillage, dirt, and other foreign substances immediately upon their discovery.

B. After completion of construction, all wall surfaces shall be cleaned using a stone and sealed unless the walls are to be painted. Clean exposed concrete block surfaces with one of the specified cleaners used in strict accordance with the manufacturer's printed instructions. Take all necessary precautions to avoid staining the concrete block and adjacent surfaces. Cover sills and top course of unfinished work with waterproof coverings and tie securely in place to prevent its accidental displacement. Prepare walls for sealing and painting in accordance with Section [09905] “Architectural Paint Finishes”.

C. Where necessary to maintain a consistent finish, damaged or discolored face shells shall be replaced after grout has been placed and cured and before cleaning. Face shell replacement shall be done under inspection and approval of the INSPECTOR.

3.12 PROTECTION

A. At the end of each day's work, tops of walls shall be covered with building paper or by other means that will protect the walls from becoming excessively wet.

B. Dampen (but don't saturate) the surface of the concrete block masonry with a light fog spray when the atmosphere is excessively dry and keep it damp for approximately three days to permit the mortar to thoroughly cure.

3.13 TEMPORARY BRACING

A. Provide all shores and bracing required for this work. Construct shoring and bracing to required shapes and sizes, capable of supporting and sustaining the loads to which they will be subjected without failure or deflection. Leave shores and bracing in place until concrete block masonry can safely carry all required live and dead loads.

B. Brace concrete block masonry walls adequately to withstand all forces they will be subjected to during construction. Walls are not designed to be self supporting for lateral loads, including wind, until attached to floor and roof elements.

3.14 TESTING AND INSPECTION

A. Inspect adjacent construction and make sure that all conditions detrimental to the proper and timely execution of this work have been corrected before proceeding.

B. Shear Walls and Bearing Walls: Inspection required during preparation of masonry wall prisms, sampling and placing of all masonry units, placement of reinforcement, inspection of grout space, immediately prior to closing of cleanouts, and during all grouting operations.

C. The INSPECTOR will gather masonry unit samples for testing and make all mortar, grout, and prism samples for testing. The CONTRACTOR shall provide assistance as required in gathering materials and making, protecting and transporting samples.

D. All sampling and testing will be as authorized by the INSPECTOR.

E. All masonry units will be tested in accordance with ASTM C140 (Sampling and Testing Concrete Masonry Units) from samples collected from units delivered to the jobsite.

F. Reinforcement will be sampled and tested by the INSPECTOR in accordance with the latest City of Los Angeles Building Code.

G. Joint reinforcement will be sampled and tested by the Inspector in accordance with the latest City of Los Angeles Building Code.

H. All brick delivered to the jobsite will be sampled and tested by the INSPECTOR in accordance with ASTM C67 (Sampling and Testing Brick).

I. Mortar samples will be prepared by the INSPECTOR and tested in accordance with the latest City of Los Angeles Building Code. Each grout test specimen shall exhibit a minimum ultimate compressive strength of 2,000 pounds per square inch at 28 days.

J. Masonry Prism tests shall be conducted for all concrete masonry construction.

1. Masonry prisms shall be constructed and tested in accordance with ASTM C1314.

2. Compressive strength of prisms shall be based on tests at 28 days.

3. The calculated compressive strength of masonry prisms per ASTM C1314, shall equal or exceed **[**3,000 psi**] [**specified value listed on Drawings**]**.

4. The CONTRACTOR shall construct masonry prisms when requested by the INSPECTOR in accordance with the following schedule:

   a. One set of five prisms shall be built and tested prior to start of construction.

   b. During construction, one set of three prisms shall be built and tested for each 5,000 square feet of wall area, but not less than one set of three prisms for the project.

5. Masonry prisms shall be built of the same material as to be used in the structure.

6. The moisture content of the units at the time of laying, consistency of mortar and workmanship shall be the same as will be used in the structure.

END OF SECTION

SECTION 05 05 15

ALUMINUM FINISHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Anodized finishes for all exterior and interior exposed aluminum surfaces not scheduled for any other finishes.

1.2 INTENT

A. It is the intent for the base bid of these Specifications that all exposed aluminum surfaces, scheduled and/or specified to be anodized.

B. To the extent feasible, process all aluminum surfaces to receive the anodized finish in the same plant to achieve a uniform appearance in color, texture and sheen between the aluminum components after finishing.

C. Use all material to be anodized from the same mill, produced in the same heat-lot.

D. The Architect recognizes that minor differences in appearance, due to different alloys used for extrusions, plates and sheets, will occur. However, these differences shall be minimized as much as possible during the anodizing process and by selecting adjacent materials for the least possible contrast in color, texture and sheen.

E. To this end, samples showing the full range of color, texture and sheen must be approved prior to production and finishing of the aluminum components for the Project by the Architect. Samples shall incorporate welded joints to show the color range to be expected at welds. These samples shall be delivered to the job site in sufficient quantity and size for the Architect's review. Samples shall be protected and remain at the job site until no longer needed.

1.3 REFERENCES

A. AAMA 609 and 610-02, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

B. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.

C. ASTM B 117, Standard Practice for Operating Salt Spray (Fog) Apparatus.

D. ASTM B 137, Standard Test Method for of Weight of Mass per Unit Area on Anodically Coated Aluminum.

E. ASTM B 244, Standard Test Method for Measurement of Thickness of Anodic Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments.

F. ASTM B 457, Standard Test Method for Measurement of Measurement of Impedance of Anodic Coatings on Aluminum.

G. ASTM B 580, Standard Specification for Anodic Oxide Coatings on Aluminum.

H. ASTM D 523, Standard Test Method for Specular Gloss.

I. ISO 3210, Anodizing of Aluminum and Its Alloys – Assessment of Quality of Sealed Anodic Oxide Coatings by Measurement of the Loss of Mass After Immersion in Phosphoric-Chromic Acid Solution.

J. AATCC Test Method 173: Calculations of Small Color Differences for Acceptability.

1.4 SUBMITTALS

A. General Requirements.

B. Data: Manufacturer's quality control measures and anodizing methods.

C. Samples: As specified above and specified in Specification Sections in Divisions 5, 8 and 10.

D. Test reports: Applicator’s reports of tests performed in accordance with the Source Quality Control Article of this Section.

1.5 QUALITY ASSURANCE

A. Anodizer’s qualifications: Subject to the Architect’s approval.

B. Anodizer’s quality control/assurance program: Prior to starting anodizing, submit an outline of the anodizer’s quality control/assurance program. Include methodology to be used for color and reflectivity control on each façade.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For aluminum extrusions, plates and sheets, refer to the appropriate Sections and the following which takes precedence.

B. Aluminum sheets shall be “Anodizing Quality Guaranteed Plate,” alloy 5052, temper H-32.

C. Welding wire: Non heat-treated alloy 5356.

PART 3 - EXECUTION

3.1 ANODIZING

A. Metal preparation and pretreatment:

1. Clean aluminum surfaces to remove all foreign matters in a nonetching solution.

2. Mechanical finish to achieve a specular (AA M11) reflective smooth finish.

3. Etch in sodium hydroxide (AA C22).

B. Anodizing: Batch process, Architectural Class I, coating complying with AAMA 611 and these Specifications.

1. Anodic thickness: 0.0007-inch minimum.

2. Anodic film color: Clear (transparent).

3. Seal anodized surfaces with nickel acetate.

C. Anodized surfaces shall be uniform in thickness and color (within the range accepted during sample submittal), smooth and free from powdery areas, blemishes in the coating that might impair the serviceability or detract from the general appearance of the member when viewed from 5-foot away under normal lighting conditions, and shall match the approved sampl

3.2 QUALITY CONTROL

A. Conduct the following tests in accordance with AAMA 611.

1. Coating thickness.

2. Coating weight and apparent density.

3. Color uniformity.

4. Gloss uniformity.

5. Seal test.

6. Craze resistance.

7. Weatherring.

8. Corrosion resistance.

9. Abrasion resistance.

B. Anodized components that do not comply with Specification requirements or do not match approved samples shall be returned to the fabricator/anodizer for refinishing, and replaced with satisfactory components.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall provide all labor, tools, material, and equipment necessary so as to furnish, fabricate, and install, the structural steel framing and all appurtenant metal parts required for permanent connection of the structural steel, complete, all in accordance with the requirements of the Contract Documents. The CONTRACTOR shall also design all temporary construction braces and sequences of erection. **[**Additional elements shall include:**]**

[1. Not Used**]**

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. The WORK of the following Sections or Divisions applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section **[**03250**]** Concrete Accessories

2. Section **[**03315**]** Grout

[3. Masonry work in Division 4**]**

[4. Section [05210] Open-Web Steel Joists**]**

[5. Section [05300] Metal Deck**]**

[6. Section [05400] Cold Formed Light Metal Framing**]**

7. Section **[**05500**]** Miscellaneous Metalwork

[8. Section [05510] Metal Stairs**]**

[9. Section [06100] Wood Framing**]**

[10. Section [07250] Sprayed-on Fireproofing**]**

[11. Section [07830] Roof Hatch**]**

12. Section **[**09800**]** Protective Coating

[13. Section [09900] Painting**]**

B. Associated products furnished but installed under other sections:

1. Anchors for casting into concrete

2. Anchors for embedding into masonry

3. Loose bearing plates to receive Structural Steel

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with reference standards and Standard Specifications of the GENERAL REQUIREMENTS.

B. Comply with the following American Institute of Steel Construction (AISC) references, as applicable:

1. AISC 303-**[**16**]**, "Code of Standard Practice for Steel Buildings and Bridges."

2. AISC "Steel Construction Manual", **[**fifteenth Edition**]**

3. ANSI/AISC 360-**[**16**]**, "Specification for Structural Steel Buildings"

4. ANSI/AISC 341-**[**16**]** " Seismic Provisions for Structural Steel Buildings" and including the "Commentary"

5. ANSI/AISC 358-**[**16**]** "Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications"

C. Comply with the current provisions of the following American Welding Society (AWS) Codes and Specifications, as applicable:

1.	AWS B2.1	Specification for Welding Procedure and Performance Qualification
2.	AWS D1.1	Structural Welding Code – Steel
[3.	AWS D1.8	Structural Welding Code – Seismic Supplement**]**

D. Comply with the current references of the American Society for Nondestructive Testing, Inc.

1.	SNT TC-1A	Recommended Practice – Personnel Qualification and Certification in Nondestructive Testing.
2.	ANSI/ASNT CP-189	Standard for the Qualification and Certification of Nondestructive Testing Personnel.

E. Comply with the Research Council on Structural Connections (RCSC) "Specification for Structural Joints Using ASTM A325 or A490 Bolts", as applicable.

F. Comply with the current provisions of the following Codes and Standards, as applicable:

1. American Society of Testing & Materials (ASTM)

ASTM A36	Standard Specification for Carbon Structural Steel
ASTM A53	Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
ASTM A108	Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM A167 Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

ASTM A193 Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications

ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service

ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

ASTM A354 Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.

ASTM A370 Standard Test Methods and Definitions for Mechanical Testing of Steel Products.

ASTM A490 Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength. **[**"Conform to -08a or later revisions when Zinc coating is required"**]**

ASTM A496 Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement

ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

ASTM A563 Standard Specification for Carbon and Alloy Steel Nuts

ASTM A572 Standard Specification for High Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality.

ASTM A992 Standard Specification Steel for Structural Shapes For Use in Building Framing

ASTM E709 Standard Guide For Magnetic Particle Testing

ASTM F436 Standard Specification for Hardened Steel Washers

ASTM F959 Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners

ASTM F1554 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

ASTM F1852 Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

ASTM F2280 Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 150 ksi Minimum Tensile Strength

2. Government Standards:

City of Los Angeles, Department of Building and Safety (LADBS) applicable Information Bulletins

[City of Los Angeles, Department of Building and Safety, "Standard Quality Assurance Plan for Steel Moment Frames"**]**

CSS Caltrans Standard Specifications

GWP Global Warming Potential (maximum acceptable carbon emission limits, established by the California Department of General Services)

3. Trade Standards and References:

SP-1 "Solvent Cleaning", by the Steel Structures Painting Council, SSPC (also known as The Society of Protective Coatings).

SP-2 "Hand Tool Cleaning" by the Steel Structures Painting Council, SSPC.

SP-3 "Power Tool Cleaning", by the Steel Structures Painting Council, SSPC.

1.4 CONTRACTOR SUBMITTALS

A. General Requirements

1. Submittals shall be made in accordance with the GENERAL REQUIREMENTS (GR), and include the items indicated herein, and prepared in advance of fabrication, erection, and before incorporated into the work, for review and acceptance by the ENGINEER.
2. Buy Clean California Act.
   a. For project specifications that include GR Section 1601, Buy Clean California Act, bidders shall submit current Environmental Product Declarations (EPDs) for each of the following structural steel: hot-rolled sections, hollow structural sections, and plates, from the originating mill used in the project as well as the corresponding mill certifications. When material comes from different mills, an EPD and mill certification will be required for each mill from which the material has been obtained.
   b. An EPD must conform to the following:
      1) Shall be facility-specific manufacturer/mill EPD.
      2) Be independently verified in accordance with ISO 14025 (Type III).
      3) Be developed according to the guidelines of the applicable Product Category Rule (PCR), as identified by the Department of General Services, State of California.
      4) Have a valid date that has not expired.
      5) Shall not exceed the Global Warming Potential (GWP) limit as required by GR Section 1601.
   c. EPD shall be submitted concurrently with the product's submittal for review and approval.

B. Certifications and Proof of Qualifications from the following:

1. Fabricator and erector: All structural steel fabrication shall be performed in a Los Angeles Department of Building and Safety (LADBS) licensed fabricator shop for structural steel
2. Shop and field welders: All welding shall be performed by welders certified by LADBS for structural steel.
3. Testing laboratory and technician conducting any of the required tests

4. Non-destructive testing (NDT) technician

5. Shear connector manufacturer authorization for each Installer/Operator

C. Product Data:

1. Submit fabricator's or manufacturer's certification, specifications, recommended installation instructions, laboratory test reports, and all other data required to prove compliance with these specification requirements for the following items.

   a. Structural steel, including certified copies of mill test reports covering chemical and physical properties.

   b. High strength bolts, including nuts and washers, and RCSC related specification.

   c. Unfinished bolts and nuts

   d. Shear connectors and corresponding welding equipment approval by LADBS

   e. Structural steel primer paints and finish coatings

2. Shop drawings shall include Bill of Material with total weight of all fabricated steel, all shop and erection details showing all members and their connections, shear connectors, anchor bolt layouts, schedules for fabrication procedures, and diagrams showing the sequence of erection. In addition, the following requirements shall be met:

   a. Members and connections for any portion of the structure not shown on the contract drawings shall be detailed by the fabricator and indicated on the shop drawings.

   b. Include details of cuts, connections, camber, holes, and other pertinent data, as well as items needed for other work; list types of paints and finish coatings, which are compatible.

   c. All welds shall be indicated by standard welding symbols of the AWS. Show location, size, type, and length of welds. Clearly distinguish between shop and field welds.

   d. All bolts and corresponding holes shall be called out. Show location, size, type, and identify pretensioned and slip-critical high strength bolted connections including the amount of tensioning required.

   e. For connections containing a combination of bolts and welds, indicate sequence of installation between the two connector types.

   f. Shop drawings shall show reference marks and cross references to drawings.

   g. Fabricator shall be responsible for correct interpretation of the contract drawings and shall call to the ENGINEER's attention any discrepancies found.

   h. No deviation shall be made from the contract drawings without prior approval of the ENGINEER in writing.

   i. Provide setting drawings, templates and directions for installing anchor bolts and other required anchors.

   j. Identify locations of welded and/or bolted connections which require necessary testing.

   k. All framing shop drawings shall include final flooring, roofing, parapet and any other relevant

elevations.

D. The CONTRACTOR shall submit an erection plan for the structural steel framing that includes drawings and procedures. This erection plan shall conform to the requirements of the AISC "Code of Standard Practice for Steel Building and Bridges". The erection plan shall include shoring and bracing drawings and describe all necessary temporary supports, including the sequence of installation and removal. Submittal shall be prepared and signed by a California licensed civil or structural engineer and be in accordance with Cal OSHA regulations.

E. Test Reports: Submit reports of tests conducted on shop and field welds and bolted connections, including data on type of tests conducted and test results.

F. Welding procedure specifications and welding procedure qualification tests, including those for weld repair, shall be submitted to and approved by the ENGINEER, in triplicate.

G. Documentation and information required in relevant AISC references, including Appendix Q and W of "Seismic Provisions for Steel Buildings.

1.5 QUALITY ASSURANCE

A. Qualifications

1. Fabricator: Company specializing in the fabrication of the work in this Section shall have a minimum 5-year documented experience. Fabricator shall be a City of Los Angeles Department of Building & Safety (LADBS) licensed/certified Fabricator Shop. When work involves high strength steel, fabricator shall also show proof of compliance with LADBS Information Bulletin P/BC 2008-032 or latest revisions.

2. All welders, **[**including, excluding**]** shop welders, shall be City of Los Angeles Department of Building & Safety (LADBS) certified welders, in the classification of the work being performed.

3. Erector: Company specializing in the installation of the work of this Section shall have a minimum 5-years documented experience.

4. Technicians performing non-destructive testing (NDT) shall be Certified Level II Technicians in accordance with the American Society for Non-destructive Testing (ASNT)'s references. Certification shall be for the particular NDT being performed.

B. Inspection:

1. Quality Control is the responsibility of the CONTRACTOR for its forces and those of its Subcontractors. Inspection will be provided by the City in accordance with "INSPECTION OF THE WORK" of the GENERAL REQUIREMENTS.

2. Schedule and coordinate with the INSPECTOR all necessary tests, special inspection, and overall general quality assurance inspection.

3. Inspection by Others: Schedule and coordinate all necessary tests, inspections, and quality control services with the authorities having jurisdiction, including the Department of Building and Safety and notify the INSPECTOR that such activity is taking place.

4. If, after fabrication and inspection, the work of this Section is found to be defective and to require re-inspection, cost of such re-inspection will be paid by the CONTRACTOR.

5. Provide labor, equipment, and facilities needed to move and handle the materials to be inspected.

6. Provide access for the testing agencies and inspectors to locations where structural steel work is being fabricated or produced, so that required testing and inspection may be accomplished.

C. Shop Inspection, Fabrication and Tests.

1. Quality Control is the responsibility of the CONTRACTOR for its forces and those of its Fabricators/Subcontractors. As a minimum, conform to Section 8 of AISC's Code of Standard Practice, and when high strength steel is required in the work, conform to LADBS Information Bulletin P/BC 2008-032 or latest revision.

2. Shop Inspection shall be in accordance with "SAMPLING, TESTING AND FABRICATION INSPECTION" of the GENERAL REQUIREMENTS. The CONTRACTOR shall furnish all facilities for the inspection of materials and workmanship in the shop and the INSPECTOR shall be allowed free access to the necessary parts of the work. The INSPECTOR shall have the authority to reject any materials or work not meeting the requirements of these Specifications. Approval of the work by the INSPECTOR, however, shall not relieve the CONTRACTOR of the responsibility of providing a fabricated structure that is in accordance with the drawings and specifications.

3. High-strength bolts shall be installed and verified using the procedure(s) indicated in the Contract Documents, as set forth in the current "Specification for Structural Joints Using ASTM A325 or A490 Bolts".

4. **[**Structural Steel Material Testing:

a. Except where specified otherwise, the City's **[**Standards Laboratory; selected testing laboratory**]** will pick up specimens and make required tests in accordance with the GENERAL REQUIREMENTS and this Section. This is in addition to any and all requirements performed by the Mill/Fabricator to prepare the material's mill certification.

b. Test specimens shall be furnished by the steel fabricator at no additional cost, and shall be selected by the INSPECTOR from the heat of material being supplied.

c. Each specimen shall be machined by the CONTRACTOR to dimensions required by ASTM A370.

d. Cost of procuring, making, preparing and machining test specimens shall be considered to be included in CONTRACTOR'S bid.

e. If structural steel can be identified by heat or melt number, and if accompanied by mill analysis and test reports, not less than one tension and one bent test will be made for each ten tons or fractional part thereof.

f. If structural steel cannot be identified, it shall not be permitted on the project. Structural steel shall not be erected without any test results and their acceptance by the ENGINEER.

g. If steel pipe can be identified by heat or melt numbers, or manufacturer's name, not less than one tension test and one bent test will be made for each ten tons or fractional part thereof.

h. If a test specimen fails to comply with the specified requirements, not less than two (2) tension and two (2) bent test will be made for each five tons or fractional part thereof of that heat of material.

i. Additional tests may be required when deemed necessary by the ENGINEER.**]**

5. Fabrication of high strength steel shall conform to LADBS requirements as stipulated in Information Bulletin P/BC 2008-032 or latest revision, except field welding is permitted when specifically shown on the Contract Drawings.

6. Welding Inspection:

   a. Except where specified otherwise, the City shall provide Deputy Inspector's visual inspection of welded work. However, where third-party inspection is required, the CONTRACTOR shall perform welding and obtain welding inspection by a qualified inspector from a testing laboratory approved by the INSPECTOR and the Los Angeles City Department of Building and Safety.

   b. Inspect every layer of weld for quality, penetration, and conformity with the design requirements.

   c. When the CONTRACTOR retains the services of a qualified welding inspector, that inspector shall submit a signed report to the ENGINEER and the INSPECTOR, verifying that:
      i. The welding is adequate and was performed in conformity with design requirements.
      ii. Adequate testing methods have been used to determine the quality of the welding.

   d. Welded connections shall be inspected for conformance with the requirements of AWS D1.1 and these specifications.

   e. CONTRACTOR shall provide all equipment for tests specified at no cost to the City.

   f. Welded headed anchors / shear connectors shall be visually inspected by qualified personnel as per AWS D1.1. See LADBS Information Bulletin P/BC 2017-046, "Composite Steel Concrete Construction" for additional requirements, including bend test of shear connectors.

7. Non-destructive testing of shop welds shall include, but not be limited to, the following:

   a. **[**Thirty**]** percent of full penetration welds shall be ultrasonically or radiographically tested by a qualified NDT technician per AWS D1.1 and as noted herein. However, when approved by the ENGINEER, the non-destructive testing rate for an individual welder or welding operator may be reduced to 10 percent, provided the reject rate is demonstrated to be 5 percent or less of the welds tested for the welds or welding operator. Perform all tests in the presence of the INSPECTOR.
      i. Exception: For elements/connections that are part of the seismic load resisting system, the CONTRACTOR shall conform to more stringent requirements and increased percentage of testing as noted in the referenced documents including LADBS, "Standard Quality Assurance Plan for Steel Moment Frames" and AISC "Seismic Provisions For Steel Buildings" at no additional cost to the City.

   b. **[**Ten**]** percent of partial penetration, fillet, plug, and slot welds, shall be tested using magnetic particle method by qualified NDT technicians per AWS D1.1. Magnetic particle testing shall be in accordance with ASTM E709. If more than twenty percent of the tested welds fail the test, additional welds as determined by the ENGINEER, shall be tested. Perform in the presence of the INSPECTOR.
      i. Exception: For elements/connections that are part of the seismic load resisting system, the CONTRACTOR shall conform to more stringent requirements and increased percentage of testing as noted in the referenced documents including LADBS, "Standard Quality Assurance Plan for Steel Moment Frames" and AISC "Seismic

Provisions For Steel Buildings" at no additional cost to the City.

c. The CONTRACTOR shall notify the ENGINEER of any non-destructive testing failure result in writing prior to repair. Repair method to be approved by the ENGINEER prior to undertaking the repair.

d. The costs of all tests **[**, with the exception of the ultrasonic testing conducted by the City,**]** specified herein shall be borne by the CONTRACTOR.

8. Welds that are required by the INSPECTOR to be corrected or redone shall be retested as directed, at the CONTRACTOR's expense, and to the satisfaction of the ENGINEER and the INSPECTOR.

9. Fabrication of structural steel for bridge structures shall conform to the appropriate subsections of Section 55-3 of the CSS.

D. Field Inspection, Installation, and Tests

1. Quality Control is the responsibility of the CONTRACTOR for its forces and those of its Subcontractors. The ENGINEER and the INSPECTOR reserve the right to inspect the work at all times. The CONTRACTOR shall provide temporary ladders, steps, scaffolding, planking, etc., necessary for safe access to the work to be inspected.

2. The Contractor shall arrange and pay for such additional tests and inspections of field work as are required by the Building Code and governing authorities and will prepare test reports for the ENGINEER's review and acceptance.

3. The testing agency will conduct and interpret the tests, and will state in each report whether the inspected work complies with requirements, specifically stating all deviations that exist.

4. Field inspection may include, but not be limited to, the following:

a. Inspection of erection steel work for conformance with this specification and the drawings.

b. Inspection of high strength bolted connections in accordance with "Specification for Structural Joints Using ASTM F3125 A325 or A490 Bolts", including pre-installation verification (Section 7), installation (Section 8), and Inspection (Section 9).

c. Verification of welding procedures specification, welding procedures, and qualifications of welding operators, welders and tackers in accordance with AWS D1.1.

d. Visual inspection of field welds and field welded headed anchors\shear connectors in accordance with AWS D1.1 and LADBS, including the bend test.

5. Non-destructive testing of field welds shall include, but not be limited to, the following:

a. **[**Thirty**]** percent of full penetration welds shall be fully ultrasonically or radiographically tested by qualified NDT personnel as per AWS D1.1. If more than ten percent of the tested welds fail the test, additional welds as determined by the ENGINEER, shall be tested.

i. Exception: For elements/connections that are part of the seismic load resisting system, the CONTRACTOR shall conform to more stringent requirements and increased percentage of testing as noted in the referenced documents including LADBS, "Standard Quality Assurance Plan for Steel Moment Frames" and AISC "Seismic Provisions For Steel Buildings" at no additional cost to the City.

b. **[**Ten**]** percent of partial penetration, fillet, plug, and slot welds, shall be tested using magnetic particle method by qualified NDT personnel as per AWS D1.1. Magnetic particle testing shall be in accordance with ASTM E709. If more than twenty percent of the tested welds fail the test, additional welds as determined by the ENGINEER, shall be tested.
   i. Exception: For elements/connections that are part of the seismic load resisting system, the CONTRACTOR shall conform to more stringent requirements and increased percentage of testing as noted in the referenced documents including LADBS, "Standard Quality Assurance Plan for Steel Moment Frames" and AISC "Seismic Provisions For Steel Buildings" at no additional cost to the City.

c. The CONTRACTOR shall notify the ENGINEER of any non-destructive testing failure result in writing prior to repair. Repair method to be approved by the ENGINEER prior to undertaking the repair.

6. The testing agency will conduct and interpret the tests, and will state in each report whether the inspected work complies with requirements, specifically stating all deviations there from.

7. The costs of all tests **[**, with the exception of the ultrasonic testing conducted by the City,**]** specified herein shall be borne by the CONTRACTOR.

8. Welds that are required by the INSPECTOR to be corrected or redone shall be retested as directed, at the CONTRACTOR's expense, and to the satisfaction of the ENGINEER and the INSPECTOR.

E. Structural Observation: The **[**Engineer / Architect**]** of Record or its designee shall perform the structural observation as stipulated in the Contract Documents and as required by LADBS. Upon completion of the observation of each designated stage of construction or element, the observer shall prepare, sign, and seal the necessary report and submit it to the building official. A copy shall also be provided to the ENGINEER and INSPECTOR. The CONTRACTOR shall submit a written request to the ENGINEER indicating the need for structural observation at least 48 hours before the observation is needed.

PART 2 -- PRODUCTS

2.1 MATERIALS

A. General: New tested and fabricated stock complying with applicable grades and standards hereinafter referenced. Unless noted otherwise, the material specification noted hereon shall apply. No dual rated steel shall be allowed in this project.

B. Plates and Bars: Per ASTM A36 and ASTM A572 Grade 50

C. Channels and Angles: Per ASTM A36

D. W-Shapes: Per ASTM A992

E. Hollow Structural Sections (HSS): Per ASTM A500, Grade C, structural tubing.

F. Steel Pipe: Per ASTM A53, Type E or S, Grade B

1. Weight Class: As indicated
2. Finish: Black, except where indicated to be galvanized.

G. Stainless steel shapes and plates: Per ASTM A167, Type 316L

H. E70 - T4 weld metal shall not be used for any welds. All welds indicated in members and connections of the seismic load resisting system shall be made with filler metal with a Charpy V-Notch toughness of 20 ft-pounds minimum at zero degrees Fahrenheit. See AISC Seismic Provisions and Contract Drawings for additional requirements.

I. Structural steel shall be cleaned and coated with a shop paint primer; except, that primer shall be omitted for members to be covered with galvanized coating or fireproofed with no further coating.

J. All structural members shall be furnished full length without splices unless otherwise noted or approved by the ENGINEER.

K. Primer: Approved primer indicated in Section [09800], “Protective Coating”

L. Paint: Approved paint indicated in Section [09900], “Painting”

M. Teflon Base Plates: Reinforced Teflon, pre-bonded to steel plates and combined with neoprene bearing pad and having a static friction coefficient of maximum 6 percent, as manufactured by **[**Fluorocarbon Company of Anaheim or equal**]**.

N. Non-Shrink Grout: Approved non-shrink grout in accordance with Section [03315], “Grout”. Minimum compressive strength shall be 3,000 psi in 7 days.

O. **[**Open-Web Steel Joists: In accordance with Section 05210**]**

P. Galvanizing: Per A123 or A153 and in accordance with Section [05500], “Miscellaneous Metal Works”.

Q. Galvanizing Repair Material: Per Section [05500], “Miscellaneous Metal Works”

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-strength Bolts, Nuts, and Washers: Per ASTM A325, Type 1, heavy hex steel structural bolts; ASTM A563 heavy hex carbon steel nuts; and ASTM F436 hardened carbon steel washer.

1. Finish: Plain, except where indicated otherwise
2. Direct-Tension Indicators: Per ASTM F959, Type 325, compressible-washer-type.

B. Tension-Control, High-Strength Bolt-Nut-Washer Assembly: ASTM F1852, Type1, heavy hex head steel structural bolts with splined ends; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers. Only manufacturer applied lubricant is permitted.

1. Location: As substitutes where A325, Type 1, plain bolts are specified, when approved by the ENGINEER.
2. Finish: Plain, unless noted otherwise.
3. Quality Assurance: Meet pre-installation verification, installation, and inspection requirements of RCSC specifications.

C. High-Strength Bolts, Nuts, and Washers: Per ASTM A490, Type 1, heavy hex steel structural bolts; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers, plain. Locations as indicated on Drawings.

1. Direct-Tension Indicators: Per ASTM F959, Type 490, compressible-washer-type, plain
2. [blank]

D. Tension-Control, High-Strength Bolt-Nut-Washer Assembly: ASTM F2280, Type 1, heavy hex head steel structural bolts with splined ends; ASTM A563 heavy hex carbon-steel nuts; and ASTM F436 hardened carbon-steel washers. Only manufacturer applied lubricant is permitted.

1. Location: As substitutes where A490, Type 1, plain bolts are specified, when approved by the ENGINEER.
2. Finish: Plain
3. Quality Assurance: Meet pre-installation verification, installation, and inspection requirements of RCSC specifications.

E. Machine bolts with nuts and washers: Per ASTM A307; hot dip galvanize per A153 not less than 1.25 oz per square foot; use self locking nuts or lock washers with plain nuts. Locations as indicated on Drawings.

F. Bolts and washers to connect dissimilar metals: Per ASTM A193 and A194, Type 316 stainless steel

G. Shear Connectors: ASTM A108, Grade 1015 through 1020, headed-stud type, threaded type, cold-finished carbon steel; ASTM A496, deformed bar anchor; conform to AWS D1.1, Type B.

1. Location of each type: As indicated on the Contract Drawings

H. Unheaded Anchor Rods: ASTM F1554, Grade 36.

1. See Specification 03250 for related information.
2. Configuration: Hooked, unless noted otherwise.
3. Nuts: ASTM A563 hex carbon steel
4. Plate washers: ASTM A36 carbon steel
5. Washers: ASTM F436 hardened carbon steel
6. Finish: Plain

I. Headed Anchor Rods: ASTM F1554, Grade 36, straight, unless noted otherwise.

1. Nuts: ASTM A563 hex carbon steel.
2. Plate Washers: ASTM A36 carbon steel
3. Washers: ASTM F436 hardened carbon steel
4. Finish: Plain.

J. Threaded Rods: ASTM A36

1. Nuts: ASTM A563 hex carbon steel.
2. Washers: ASTM F436 hardened carbon steel
3. Finish: Plain.

K. Adhesive concrete anchors and/or anchor rods shall use stainless steel anchor rods/assemblies conforming to the requirements of Section **[**03250**]** and associated current City of Los Angeles Research Report.

L. Eye Bolts and Nuts: ASTM A108, Grade 1030, cold-finished carbon steel

M. Sleeve Nuts: ASTM A108, Grade 1018, cold-finished carbon steel.

PART 3 -- EXECUTION

3.1 GENERAL

A. Surface Conditions: The CONTRACTOR shall examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until detrimental conditions are corrected.

B. Measurement: The CONTRACTOR shall verify all dimensions, grades, elevations, job conditions, and shall make any field measurements necessary and shall be fully responsible for accuracy and layout of work. The CONTRACTOR shall review the Drawings and any discrepancies shall be reported to the ENGINEER for clarification prior to starting fabrication and erection.

C. Pre-Fabrication And Pre-Erection Conference: Coordinate and arrange for pre-fabrication and pre-erection conferences with the fabricator or manufacturer, INSPECTOR and ENGINEER as required by the Code Requirements and LADBS. Do not proceed with any work prior to the conferences taking place.

3.2 FABRICATION

A. General:

1. Workmanship: In accordance with AISC Specification, Code of Standard Practice, applicable AISC references, with modifications and additional requirements specified here in, as indicated on the Drawings, and as indicated on the shop drawings.

2. Safety Precautions: Conform to latest edition of ANSI/AWS Z49.1, “Safety in Welding and Cutting and Allied Processes”. The Contractor shall determine the applicability of any regulatory limitation prior to use.

B. Shop Fabrication and Assembly of Structural Steel:

1. Fabricate items of structural steel in accordance with AISC specifications, and as indicated on the approved Shop Drawings. Fabrication and assembly shall be done in the shop to the greatest extent possible.

2. Properly mark and match-mark materials for field assembly and for identification as to location for which intended.

3. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

4. Where finishing is required, complete the assembly, including welding of units, before start of finishing operations.

5. Provide finish surfaces of members exposed in the final structure free from markings, burrs, and other defects.

6. Joints and intersections to be accurately made, tightly fitted, true to plane and accurately fastened.

7. Camber structural steel where indicated.

8. Care shall be taken so over grinding does not occur. The maximum reduction of the base metal thickness, as delivered, shall not be more than 1/32-in or 5% of the element/member thickness, whichever is less. Welds shall not be over ground so as to reduce their effective throat size below what is called for on the drawings.

C. **[**Architecturally Exposed Structural Steel (AESS)

1. Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for steel identified as AESS.

2. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, and roughness.

3. Remove blemishes by filling or grinding and sanding or by welding and grinding and sanding, before cleaning, treating, and shop priming.

4. Fabrication to be performed at LADBS approved fabrication facility.

5. Remove backing bars or runoff tabs, back gouge, and grind and sand steel smooth.

6. Verify that weld sizes, fabrication sequence, and equipment used for AESS will limit distortions to allowable tolerance. Prevent weld show-through on exposed steel surfaces.

a. Grind butt welds flush.

b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds**]**

D. Thermal Cutting: When permitted, perform thermal cutting by machine to the greatest extent possible.

E. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

F. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

G. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 1, "Solvent Cleaning".

H. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors per AWS D1.1 and the manufacturer's written instructions.

I. Bases and Bearing Plates: Shop weld to columns and to members which are attached to concrete.

3.3 CONNECTIONS

1. Method: **[**Bolted**]** or **[**welded**] [**as indicated on the Drawings**]**.

2. Provide bolts and washers of types and sized required for completion of shop fabrication or field erection.

3. Unless otherwise indicated on the drawings, minimum beam framing connections shall be in accordance with AISC "Steel Construction Manual", have a minimum of two ¾-inch diameter high strength bolts, and be able to develop full strength of members joined.

4. Unless otherwise indicated on the drawings, double-angle members shall be connected together in accordance with AISC Specifications, with a ¾-in diameter, high-strength bolt and a filler plate or welded filler plate.

5. Column ends shall be square and milled to have full bearing at splices and at end plates.

6. The CONTRACTOR shall notify the INSPECTOR to make arrangements to inspect high strength bolted connections and welded connections and to perform testing and prepare test reports. This

inspection shall be in addition to the inspection specified in subsections 1.5 of this specification.

7. High Strength Bolted Construction:

   a. Install high strength threaded fasteners in accordance with RCSC Specifications.

   b. **[**Use ASTM A325 bolts, with slip critical connections and Type A surface, unless noted otherwise, except for handrails, ladders, and girt connections.**]**

   c. CONTRACTOR shall provide all equipment for testing of bolted connections as required by Code or Contract Documents at no additional cost to the City.

3.4 WELDED CONSTRUCTION:

A. Comply with all AWS Referenced Documents and this Contract for procedures, appearance, and quality of welds and welders, methods used in correcting welding work, and the following:

1. Shop welding to be done by a fabricator licensed by LADBS.

2. All **[shop and]** field welders shall be LADBS certified.

3. Repair welds only after a repair is deemed an acceptable remedy by the ENGINEER using methods also approved by the ENGINEER prior to performing the repair. Cost of repairs to be borne by the CONTRACTOR.

4. Assemble and weld built-up sections by methods which will produce true alignment of axes without warp.

5. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations. CONTRACTOR shall furnish shop drawing prepared by a California Licensed Civil or Structural Engineer.

B. Stainless steel welding shall conform to the details and standards of workmanship of this specification and AWS D1.1, except that the prequalified welds for carbon steel are not applicable to stainless steel. Welders and weld procedures for stainless steel shall be specifically qualified per AWS B2.1 for the type of stainless steel to be welded and LADBS. Welders and weld procedures for welding of stainless steel to carbon steel shall be qualified per AWS B2.1 and LADBS.

C. Unless otherwise shown, all butt and bevel welds shall be complete penetration.

3.5 HOLES FOR OTHER WORK

A. Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on the Shop Drawings.

B. Provide threaded nuts welded to framing, and other specialty items as shown, to receive other work

C. Cut, drill, or punch bolt holes perpendicular to metal surfaces.

D. Do not thermally cut holes or enlarge holes by burning.

E. Drill holes in bearing plates.

3.6 SHOP PAINT PRIMER

A. General:

1. Apply shop paint primer to structural steel work in accordance with Section [09800], “Protective Coating”.

2. Shop prime steel surfaces except for the following:

a. Surfaces embedded in concrete or mortar. However, extend priming of partially embedded members to a depth of 2-inches.

b. Surfaces to be welded and high-strength bolted with slip-critical connections. Such areas shall be primed and finish coated after connection is made and inspected. See Figure C-3.1 of RSCS Specification for illustration of bolted connection requirements.

c. Surfaces to receive sprayed-on-fireproofing.

d. Galvanized surfaces.

3. Apply one coat of primer and two coats of paint to surfaces which are inaccessible after assembly or erection. Change color of the second coat to distinguish it from the first.

B. Surface Preparation:

1. After inspection and before shipping, clean steel work to be painted.

2. Remove loose rust, loose mill scale, and spatter, slag, and flux deposits.

3. Clean and prepare the steel in accordance with the following specifications and standards:

a. SSPC – SP2: “Hand Tool Cleaning”
b. SSPC – SP3: “Power Tool Cleaning,” where needed.

C. Priming:

1. Immediately after surface preparation, apply structural steel primer paint in accordance with the manufacturer’s written instruction and at a rate to provide a uniform dry film thickness of not less than 3.0 mils.

2. Use painting methods which will result in full coverage of joints, corners, edges, and exposed surfaces.

D. Galvanizing:

1. Hot-Dip Galvanizing: Galvanize structural steel members conforming to ASTM A123. Provide minimum 2.0 oz/sq.ft. of galvanized coating.

2. Fill vent holes and grind smooth after galvanizing.

3. Exposed **[**miscellaneous steel**] [**structural and miscellaneous steel**]** not otherwise protected shall be galvanized.

3.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

C. Load structural members in such a manner that they may be transported and unloaded without being excessively stressed, deformed, or otherwise damaged. This includes protection of coating from chipping

and scratches.

D. Protect structural steel members and packaged materials from corrosion and deterioration. Material shall be stored in a dry area and shall not be placed in direct contact with the ground. Do not place materials on the structure in a manner that might cause distortion or damage to the members or the supporting structures. Repair or replace damaged materials or structures as directed.

3.8 ERECTION

A. The CONTRACTOR shall comply with the AISC Specifications and Code of Standard Practice, and with specified requirements.

B. High-strength bolts shall be installed per the Specification for Structural Joints using ASTM A325 or ASTM A490 and this section.

C. Anchor Bolts:

1. Provide as indicated on the Contract Drawings; anchor bolts and other connectors required for securing structural steel to foundation and other in-place work

2. Provide templates and other devices necessary for presetting bolts and other anchors to accurate locations in concrete or masonry construction.

3. Contractor shall arrange and pay for all testing for anchor bolts or dowels as required by the Codes and Standards.

4. For dynamically loaded structures or where vibrations are being induced into the structure/anchor bolts, provide structurally conforming lock nuts, structural nuts with lock washers, or a chemical thread seizing compound, such as "Loctite" or equal, as approved b the ENGINEER.

D. Splices:

1. Splice members only where indicated, and with the approval of the ENGINEER.

2. For splices not indicated, submit structural calculations prepared and signed by a California registered Civil or Structural Engineer.

E. Surveys:

1. Establish permanent benchmarks necessary for accurate erection of structural steel.

2. Check elevations of concrete surfaces, and locations of anchor bolts and similar items, before erection proceeds.

F. Temporary Shoring:

1. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.

2. Provide temporary guy lines to achieve proper alignments of the structure as erection proceeds.

3. Remove temporary connections and members when permanent members are in place and the final connections have been made.

G. Not Used

3.9 SETTING BASES AND BEARING PLATES

A. Prior to the placement of non-shrink grout beneath base and bearing plates, the bottom surface of the plates shall be cleaned of all bond-reducing materials, and concrete and masonry bearing surfaces shall also be cleaned of all bond-reducing materials and roughened to improve bonding.

B. Set loose and attached base plates and bearing plates for structural members on wedges, leveling nuts, or other adjustable devices.

C. Tighten the anchor bolts after the supported members have been positioned and plumbed.

D. Do not remove wedges or shims but, if they are protruding, cut off flush with the edge of the base or bearing plates to assure that no voids remain.

E. Grouting of base plates shall be done with non-shrink grout, of flowable consistency, as specified in Section [03315] "Grout". Grouting shall be completed prior to placing loads on the structure.

F. Finish exposed surfaces, protect installed materials, and allow grout to cure in strict compliance with the manufacturers' recommendations and acceptance requirements by the ENGINEER.

3.10 FIELD ASSEMBLY

A. Set structural frames accurately to the lines and elevations indicated. Align and adjust the various members to form a part of a complete frame or structure before permanently fastening. Clean the bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

B. Level and plumb individual members of the structure within specified AISC tolerances. CONTRACTOR shall provide and install all temporary bracing necessary to carry construction loads until the structure has been completed.

C. Establish required leveling and plumbing measurements at the main operating temperature of the structure, making allowances for the difference between temperature at time of erection and the mean temperature at which the structure will be when completed and in service.

D. Comply with AISC Specifications and Code of Standard Practice for bearing, adequacy of temporary connections, alignment, and the removal of paint on surfaces adjacent to welds.

E. No driven nail or fastener, core holes or other attachments shall be made or allowed on any steel members without the written approval by the ENGINEER.

3.11 TESTING AND INSPECTION

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A. Quality Control is the responsibility of the CONTRACTOR for its forces and those of its Subcontractors. Schedule and coordinate with the INSPECTOR all necessary tests, special inspection, and overall general quality assurance inspection both in the shop and in the field.

B. Inspection by Others: Schedule and coordinate all necessary tests, inspections, and quality control services with the authorities having jurisdiction, including the Department of Building and Safety and notify the INSPECTOR that such inspections are taking place.

3.12 MISFITS AT BOLTED CONNECTIONS

A. Where misfits in erection bolting are encountered, the CONTRACTOR shall immediately notify the ENGINEER. The CONTRACTOR shall submit a method to remedy the misfit for review by the ENGINEER. The ENGINEER will determine whether the remedy is acceptable or if the members must be refabricated. Methods of remedy for consideration by the ENGINEER may include, but are not limited to, the following:

1. Ream holes that must be enlarged to admit bolts and use oversized bolts.

2. Plug-weld misaligned holes and redrill holes to admit standard size bolts.

3. Drill additional holes in the connection, conforming with AISC Standards for bolt spacing and end and edge distances, and add additional bolts.

4. Reject the improperly fabricated member and fabricate a new member to ensure proper fit.

B. Mis-sized or misaligned holes in members shall not be enlarged by burning or by the use of drift pins.

3.13 MISFITS AT ANCHOR BOLTS

A. Where misalignment between anchor bolts and bolt holes in steel members are encountered, the ENGINEER shall be immediately notified. The CONTRACTOR shall submit a method to remedy the misalignment for review by the ENGINEER.

3.14 GAS CUTTING

A. Do not use gas cutting torches in the field for correcting fabrication errors in the structural framing, except on secondary members which are not under stress and will be concealed in the finished structure and when approved by the ENGINEER. Finish gas-cut sections equal to a sheared appearance.

3.15 TOUCHUP PAINTING

A. Immediately after erection, clean field welds, bolted connections, and abraded areas of the shop paint primer. Apply touchup paint primer by brush or spray which is the same thickness and material as that used for the shop paint. Galvanized surfaces which have been field welded or damaged shall be repaired in accordance with Section [05500] "Miscellaneous Metalwork."

3.16 FIELD PAINTING

A. General:

1. Prepare surfaces in a manner appropriate to the condition, and as approved by the ENGINEER.

2. Clean spots and surfaces where primer coats have been removed, damaged, or burned off, and clean field bolts and other field connections not concealed in the finished work.

3. Remove dirt, oil, and grease.

4. Apply a spot coat of the approved primer.

5. Do not apply paint to wet, damp, oily, or improperly prepared surfaces.

B. Notify the ENGINEER when the work of this Section is ready to receive field painting. Lapse time between surface areas if necessary at no additional cost to the City.

C. Schedule for inspection and secure approval from the ENGINEER prior to field painting.

D. Using spray or brush, as recommended by the manufacturer of the approved paint material, fill all joints and corners and cover the surfaces with a smooth unbroken film of at least 1.5 dry mils thickness.

E. Apply two coats to all surfaces of steel which will be in accessible for painting, after fabrication and erection.

* * * *

SECTION 05 30 00
METAL DECK

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the work as indicated on the Drawings and specified herein.

B. This section covers the work necessary to fabricate, deliver and install, complete, the steel deck over steel floor/roof framing system. . .

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section [05120] Structural Steel
B. Section [07250] Sprayed-On Fireproofing
C. Section [09800] Protective Coating
D. Section [09905] Architectural Paint Finishes

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with the reference specifications of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards.

1. Material Specifications:

ASTM A653	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A1008	Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable

2. Reference Codes and Standards:

AISI	North American Specification for the Design of Cold-Formed Steel Structural Members
AWS D1.1	Structural Welding Code - Steel
AWS D1.3	Structural Welding Code - Sheet Steel
SDI	Manual of Construction with Steel Deck – Second Edition
SSPC	SSPC - Paint 15

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided, as applicable.

1. Product research reports in compliance with the Los Angeles Department of Building and Safety requirements, erection drawings, and shop drawings signed and stamped by a Civil or Structural Engineer registered in the State of California.

2 Shop and erection drawings shall include, but not be limited to, the following:

a. Plan view layout and section of deck and supporting members, with overall dimensions, and all opening sizes and locations.

b. Flashing, closure plates, and other accessory materials.

c.. Fabrication and erection details, indicating the construction loads and type of shoring.

d. Size and location of all mechanical and electrical equipment supported by the roof system which may affect the design or fabrication.

1.5 QUALITY ASSURANCE

A. The CONTRACTOR shall use skilled workers who are thoroughly trained and experienced in the necessary crafts and completely familiar with the specified requirements and methods needed for the proper performance of the Work of this Section.

1. Fabricator must be a licensed fabricator by the Los Angeles City Department of Building and Safety.

2. All welders must be certified by the Los Angeles City Department of Building and Safety.

B. Fire-Resistive Construction: When the materials of this Section are used as part of an assembly **[**indicated on the Drawings**]** in which fire-resistive construction ratings are required, provide the required approvals by the Los Angeles City Department of Building and Safety. for the fire-proofing product to be used.

1.6 INSPECTIONS

A. Shop: Required for all shop-fabricated items.

B. Field:

1. Perform all floor and roof deck welding under periodic inspection of Registered Deputy Inspector at the CITY's cost, except for instances of re-work, re-testing, and re-inspection, the costs of which shall be borne by the CONTRACTOR. CONTRACTOR shall provide testing equipment for all testing required by Code or Contract at no cost to the CITY.

[2. Provide continuous inspection of Registered Deputy Inspector for the placement of the concrete fill.**]**

1.7 HANDLING AND STORING MATERIALS

A. Storage and Handling: Take every precaution to avoid damage and to keep surfaces clean and free from dirt and stains. Provide materials with adequate protection, as required, to prevent corrosion, deformation

and other damage during shipment and handling at job-site.

B. Place deck bundles on the building frame near a main supporting beam at a column or wall. Do not place bundles on unbolted or partially welded frames, or unattached or unbridged joists.

C. Do not use steel deck as a working platform and do not store or place other material or equipment on deck until the deck is permanently attached in position and/or the concrete fill is placed and has reached the required strength. Care must be taken before and during placing operations not to allow heavy concentrated loads on the steel deck. When buggies are used to deliver the concrete, the runways shall be planked to avoid damaging the deck. Replace all damaged deck with new material.

1.6 VARIATION OF DIMENSIONS

A. Uncoated thickness of steel deck shall not be less than 95% of the design thickness.
B. Deck panel length shall be within plus or minus ½ inch of specified length.

PART 2 -- MATERIAL

2.1 STEEL DECK

A. Deliver materials to the job site in original packages with the manufacturer's labels attached.

B. The deck type, profile and thickness (gauge) shall be as shown on the Drawings.

C. Steel deck shall conform with the American Iron and Steel Institute (AISI) “North American Specification for the Design of Cold-Formed Steel Structural Members”, with appropriate steel fiber stress limitations and appropriate dead and/or live load deflection limitations.

D. Galvanized steel deck shall be formed from steel sheets conforming to ASTM A 653. The steel shall have received, before being formed, a metal protective coating of zinc conforming to ASTM A 653 light commercial coating, G90.

[E. Non-Galvanized steel deck shall be formed from steel sheets conforming to ASTM A 1008.**]**

F. All materials shall be new and free from defects impairing strength, durability, and appearance.

G. Flashings and Closures: Provide for various locations at penetrations and perimeters using galvanized steel and gasketing as recommended by the manufacturer **[**and shown on Drawings and reviewed Shop/Erection Drawings**]**. Galvanized steel flashings and closures shall be [16] gage thick.

H. General Accessories:

1. Provide accessories specifically designed to be used with the steel deck units supplied to the work, and as normal to uses shown on the Drawings.

2. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the CONTRACTOR subject to the approval of the ENGINEER.

3. Provide ridge, valley plates, flat plates at change of deck direction and sump pans **[**as shown on Drawings**]** to provide a finished surface for the application of roof insulation and roof covering.

4. Provide closures as necessary to support roofing insulation where ribs of deck are parallel to edges of insulation at roof perimeters.

[I. Accessories for Composite Steel Deck:

1. Provide sheet metal cell closures and Z-closures for open ends of all cell raceways, ribs and sides of deck at columns, walls, and openings **[**shown on the Drawings**]**.

2. Provide sheet steel cover plates as required to close panel ends conditions where panels change direction or abut, and as required to retain concrete fill at edges of steel deck.**]**

[J. Related Materials: (As Applicable)

1. Paint primer (for uncoated steel deck): Rust-Oleum Corp. "X-60 Bare Metal Red Primer".**]**

PART 3 -- EXECUTION

3.1 MEASUREMENTS

A. The CONTRACTOR shall verify all dimensions given on the Drawings and shall make such field measurements as are necessary to properly lay out the work.

B. The CONTRACTOR shall be fully responsible for accuracy of all measurements and layout of the work.

3.2 INSTALLATION OF STEEL DECK

A. The steel deck shall be installed at right angles to the supporting members unless shown otherwise, and shall be installed according to the manufacturer's recommendations, the details shown, and the approved shop drawings.

B. Steel deck shall be cut and fitted around openings shown on Drawings. No holes shall be punched through the steel deck during installation. Sheets shall extend over a minimum of three spans where possible. End laps shall be a minimum of 2 inches and shall be staggered. Deck ends over supports shall be installed with a minimum end bearing of 1-1/2 inches. The CONTRACTOR shall furnish and install all closure plates and accessories.

C. The finished steel deck shall be free from buckles and irregularities. All welding and other connections necessary to provide a complete and satisfactory installation shall be detailed on the shop drawings.

D. Steel deck shall be securely fastened to the steel supporting members by arc spot puddle welds, fillet welds of equal strength, or mechanical fasteners, as shown on the Drawings. Prior to laying the decking over the supporting members, CONTRACTOR shall verify all deck support member elevations with those shown on Drawings. Report deviations of supporting members elevations from required elevations to the INSPECTOR before deck is fastened to the supporting structure.

1. Mechanical fasteners, either powder actuated, pneumatically driven or screws, shall be permitted in lieu of welding to fasten deck to supporting framing if fasteners meet all project service requirements. When the fasteners are powder actuated or pneumatically driven, the load value per fastener used to determine the maximum fastener spacing shall be based on a minimum structural support thickness of not less than 1/8 inch and on the fastener providing a minimum 5/16 inch diameter bearing surface (fastener head

size). When the structural support thickness is less than 1/8 inch, powder actuated or pneumatically driven fasteners shall not be used, but screws are acceptable.

2. For deck units with spans greater than five feet, side laps and perimeter edges of units between span supports shall be fastened at intervals not exceeding 36 inches on center, using one of the following methods:

    a. #10 self drilling screws.
    b. Crimp or button punch.
    c. Arc puddle welds with minimum 5/8-inch visible outer diameter, or minimum 1-inch long fillet weld.

E. The CONTRACTOR shall qualify all welders and welding procedures in accordance with the latest edition of AWS D1.3, Structural Welding Code - Sheet Steel. Notify the INSPECTOR in advance of welder and welding procedure qualification so that INSPECTOR may witness qualification. Submit to the INSPECTOR, for review and approval, all welding procedures and welder qualification records using forms provided in the appendix to AWS D1.3 welding code prior to any production welding.

F. All welds are to be slagged.

3.3 ERECTION REQUIREMENTS

A. Handling and Erection: Handling and erection shall be in accordance with the latest edition of Steel Deck Institute's "SDI Manual of Construction with Steel Deck" and the following:

1. Care shall be exercised at all times to avoid damage through careless handling during unloading, storing, and erecting.

2. Place the steel deck on the supporting framework and adjust to final position before being permanently fastened. Bring each unit to proper bearing on the supporting beams. Place the steel deck units in straight alignment for the entire length of run and with minimum of space between ends of abutting units. Fasten the units to the steel framework at ends of units and at intermediate supports by welds not less than 3/4-inch width of the steel deck unit. Where two units abut, fasten each unit to the steel framing. Make welds free of sharp points or edges. Welded metal shall penetrate all layers of deck material at end laps and side joints and have good fusion to the support members. Fastening at supports shall be at all edge ribs, plus a sufficient number of interior ribs to limit the maximum spacing between adjacent points of attachments to **[**18 inches**]**, side laps of individual sheets must be fastened together between supports for spans greater than **[**5 feet**]**, the fastener spacing shall not exceed **[**3 feet**].**

3. Field welding shall not damage the joists and the steel deck. The total length of weld at any one point on cold-formed members whose yield strength has been attained by cold working and whose as-formed strength is used in the design shall not exceed 50 percent of the overall developed width of the cold-formed section.

[4. Fasten pour stops and girder fillers to supporting structure according to the Drawings and manufacturer's recommendations.**] [**Fasten column closures, cell closures, and Z-closures to deck to provide tight fitting closures at open ends of ribs and sides of deck.**] [**Fasten cell closures at changes of direction of deck units unless indicated otherwise.**]**

5. Except due to inclement weather, once installation of a section of steel deck has been started, it shall be continued and uninterrupted until the entire section has been permanently attached in position.

6. Inspect the deck for tears, dents, or other damage that may prevent the deck from acting as a tight and substantial form or that would impair structural capability. Repair tears, dents or other damage with the directions of the ENGINEER.

7. Clean off any deterioration or material in accordance with manufacturer's recommendations prior to concrete topping or sprayed-on fire proofing operations.

B. Completion: All units shall be in place, properly and completely anchored and approved before any finishes are applied. Any damaged units (steel joists and/or steel deck) for which in the opinion of the ENGINEER, suitable and adequate repairs cannot be made, will be rejected, whether or not delivered or erected; and whole, approved replacement units shall be provided, by the CONTRACTOR, at no additional cost to the CITY.

3.4 TREATMENT OF DAMGAGED COATINGS

A. Paint/Fireproofing – Submit for approval materials and methods to be utilized for the re-application of coating to areas that were damaged during final construction. Re-apply coatings in an approved manner.

B. Galvanized Coating – For the metal decking and appurtenances thereto, areas of galvanized membrane that are damaged during normal installation process (such as by cutting, drilling and/or welding), need not be repaired, unless otherwise noted.

Where the damage to the galvanized membrane is not normal to the field installation or is specified to be repaired, submit for approval materials and methods to be utilized for the repairs. Damage caused by CONTRACTOR's negligence will typically require repair by the "hot stick" or other metalizing method.

3.5 FINISH PAINTING

A. Finish painting of all exposed steel deck and steel joists shall be as indicated on the Finish Schedule on the Drawings and as specified in Section [09905], "Architectural Paint Finish".

* * * * * *

SECTION 05 50 00

METAL FABRICATIONS

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes:
   1. Steel framing and supports for ceiling-hung toilet compartments.
   2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   3. Steel framing and supports for mechanical equipment, rooftop HVAC units and other equipment not specifically specified in other sections.
   4. Elevator machine beams (Safety beam).
   5. Steel shapes for supporting elevator door sills.
   6. Shelf angles.
   7. Metal ladders.
   8. Elevator pit sump covers.
   9. Miscellaneous steel trim including steel angle corner guards.
   10. Metal bollards.
   11. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section include the following:

   1. Loose steel lintels.
   2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
   3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Requirements:

   1. Section 03300 “Cast-in-Place Concrete” for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
   2. Section 05120 “Structural Steel Framing.”

D. Leadership in Energy & Environmental Design (LEED) Version 4 (v4), United States Green Building Council:

   1. LEED v4 BD+C: New Construction and Major Renovations.

1.2 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Nonslip aggregates and nonslip-aggregate surface finishes.
2. Paint products.
3. Grout.

A. LEED v4 Submittals:

1. MR Credit: Building Product Disclosure and Optimization – Sourcing of Raw Materials:
    a. Product data or manufacturer's certificate indicating percentages by weight of postconsumer and preconsumer recycled content for metal fabrications fabricated from steel.
        i) Include vendor invoices stating costs of products having recycled content.

B. Include statement indicating location of manufacturer and point of extraction, harvest, or recovery for each raw material used in regionally extracted and manufactured materials. Indicate distance to Project and fraction by weight of each regionally manufactured material that is regionally extracted.

C. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of material fabrications and their connections. Show anchorage and accessory items. Provide shop drawing for the following:

1. Steel framing and supports for ceiling-hung toilet compartments.
2. Steel framing and supports or applications where framing and supports are not specified in other Sections.
3. Elevator machine beams.
4. Steel shapes for supporting elevator door sills.
5. Metal ladders.
6. Elevator pit sump covers.
7. Miscellaneous steel trim including steel angle corner guards.
8. Metal bollards.

D. Delegated-Design Submittal: For ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Research/Evaluation Reports: For post-installed anchors, from ICC-ES and/or City of Los Angeles Building Research Section (BRS).

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 – PRODUCTS

2.1 LEED v4 REQUIREMENTS

A. Recycled Content of Metal Fabrications of Steel: Recycled content as defined in ISO 14021, with postconsumer recycled content plus one-half of preconsumer recycled content equal to not less than ***[25]*** percent.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design ladder.

B. Structural Performance of Aluminum Ladder: Aluminum ladders shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connection, and other detrimental effects. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer preconsumer recycled content not less than 25 percent.

C. Steel Plates, Shapes, and Bars: ASTM A 36/A36M.

D. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304.

E. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.

F. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing

G. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

H. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.

1. Size of Channels: 1-5/8 by 1-5/8 inches.
2. Material: Galvanized steel, ASTM A 653/A 653M, commercial steel, Type B, with G90 coating; 0.108-inch nominal thickness.

I. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.
2. Provide stainless-steel fasteners for fastening stainless steel.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.

C. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 325, Type 3; with hex nuts, ASTM A 563; and, where indicated, flat washers.

D. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F 593; with hex nuts, ASTM F 594; and, where indicated, flat washers; Alloy Group 1 (A1).

E. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563 (ASTM A 563M0; and, where indicated, flat washers. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

F. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

G. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

H. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 5 633 or ASTM F 1941 (ASTM F 1941M), Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations and Where Stainless Steel is indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

I. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches (41 by 22 mm) by length indicated with anchor straps or studs not less than 3 inches (75 mm) long at not more than 8 inches 9200 mm) o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

2.5 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 09 91 13 “Exterior Painting,” Section 09 91 23 “Interior Painting,” and Section 09 96 00 “High-Performance Coatings.”

B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

F. Concrete: Comply with requirements in Section 03 30 00 “Cast-in-Place Concrete” for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 4,000 psi (27 MPa).

2.6 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only s necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches (3.2 by 38 mm), with a minimum 6-inch (150-mm) embedment and 2-inch (50-mm) hook, not less than 8 inches (200 mm) from ends and corners of units and 24 inches (600 mm) o.c., unless otherwise indicated.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes and profiles indicated and as necessary to receive adjacent construction.

1. Fabricate units from slotted channel framing where indicated.
2. Furnish inserts for units installed after concrete is places.

C. Galvanize miscellaneous framing and supports where indicated.

2.8 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch (19-mm) bolts, spaced not more than 6 inches (150 mm) from ends and 24 inches (600 mm) o.c., unless otherwise indicated.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize shelf angles located in exterior walls.

D. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.9 METAL LADDERS

A. General:

1. Comply with AISI A14.3.
2. For elevator pit ladder, comply with ASME A17.1/CSA B44.

B. Steel Ladders:

1. Space siderails as indicated.
2. Siderails: Continuous, 3/8-by-2 inch steel flat bars, with eased edges.
3. Rungs: 1-inch (25-mm) diameter steel bars.
4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.

5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
6. Provide hinged and lockable security door as indicated.
7. Support each ladder at top and bottom and not more than 60 inches (1500 mm) o.c. with welded or bolted steel brackets.

2.10 ELEVATOR PIT SUMP COVERS

A. Fabricate from welded or pressure-locked steel bar grating. Limit openings in gratings to no more than 1/2 inch (12 mm) in least dimension.

B. Provide steel angle supports as indicated.

2.11 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize exterior miscellaneous steel trim.

2.12 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe.

2.13 LOOSE BEARINGS AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanized plates.

2.14 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single length for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicted.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches (200 mm) unless otherwise indicated.

C. Galvanize loose steel lintels located in exterior walls.

2.15 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, or items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.16 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.17 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicted to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No.3, “Commercial Blast Cleaning.”

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, “Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel,” for shop painting. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for ceiling hung toilet partitions securely to, and rigidly brace from, building structure.

3.3 INSTALLING METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing. Do not fill removable bollards with concrete.
B. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches (75 mm) above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

C. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION

SECTION 05 52 00
HANDRAILS AND RAILINGS

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to complete the work as indicated on the Drawings and specified herein.

B. This section covers the work necessary to furnish and install handrails and railings, complete.

1.2. ELATED WORK SPECIFIED ELSEWHERE

A. Section [03300] [03310] Cast-in-Place Concrete

B. Section [05500] Miscellaneous Metalwork

C. Section [09800] Protective Coating

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with the reference specifications of the GENERAL REQUIREMENTS.

B. Comply with the current provisions of the following Codes and Standards.

1. Government Standards:

Cal/OSHA California Occupational Safety and Health Standards.

2. Trade Standards:

Aluminum Association (AA) publications, as referenced herein.

3. Manufacturer's Standards: In addition to the standards listed above, the railings and their installation shall be in accordance with the manufacturer's published recommendations and specifications.

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. The following submittals and specific information shall be provided:

1. Shop Drawings: **[Railing supplier's shop drawings on the railing system.]**

2. Calculations: Engineering calculations shall be submitted for review. Engineering calculations shall include (but not be limited to) railings, handrail brackets, brackets, support flanges, and fasteners or anchors.

1.5 QUALITY ASSURANCE (Not Used)

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials: Manufactured materials shall be delivered in original, unbroken packages, containers, or bundles bearing the label of the manufacturer.

B. Storage: All materials shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

PART 2 -- PRODUCTS

2.1 ALUMINUM HANDRAIL SYSTEMS

A. General: Aluminum handrail systems or components shall be fabricated as shown or shall be an ENGINEER-accepted prefabricated/pre-engineered system or component by one fabricator/manufacturer that meet the submittal requirements as stated in **SUBMITTALS** of the General Requirements. Manufacturers who may meet these specified requirements are: **[Specify a California Manufacture;]** Alumaguard, a division of Bettinger West, Inc., Denver, CO; or Thompson Fabricating Co., Birmingham, AL; or approved equal. These systems shall meet the allowable load and deflection criteria.

B. Pipe:

1. All rails, posts, and formed elbows shall be fabricated from extruded Alloy 6105-T5 with a minimum tensile strength of 38,000 psi and a minimum yield strength of 35,000 psi, and with special close tolerance for tight fit and excellent appearance. All other aluminum parts shall be fabricated from 6063-T6 or 6061-T6 extruded aluminum of adequate strength for all loads.

2. Round tube and round picket railings shall be **[sleeve] [side]** mounted unless otherwise shown. Posts shall be not less than 1-1/2-inch diameter, Schedule 40 pipe or 1-1/2-inch x 2-inches oval section. The posts shall be evenly spaced at not less than 4-feet nor more than 6-feet on centers. Field conditions may require some adjustment of spacing. Pickets shall be not less than 5/8-inch OD pickets, spaced at 4-1/2-inches on center; or 3/4-inch OD pickets, spaced at **[6]- [8]**-inches on centers. Top rails and railings shall be not less than 1-1/2-inch OD pipe or 2-inch oval section. Rails may be type with bottom enclosures. Bottom rails shall be not less than 1-1/2-inch OD pipe or 1-7/8-inch diameter extrusion with bottom enclosures. The top railings shall be as long as possible and the post shall not project through the top rails. Toeboard of picket rails shall be a specially extruded, snap-in bottom rail enclosure with toeboard or special extruded centered toeboard that is screw applied to bottom of the bottom rail.

C. Fittings:

1. All fittings shall be as shown or shall be one of the following types: A one-piece aluminum extrusion machined to final shape and attached to the handrail post with either concealed welds or a stainless steel fastener. A one-piece connector of aluminum or stainless steel, either welded or attached to the handrail post with stainless steel fasteners and designed to be completely covered when the handrail is connected. All fitting surfaces designed to be exposed to view after installation is complete will match the handrail metal alloy, surface, shape, and anodized finish and shall be the continuous diameter type for smooth appearance and to permit continuous sliding of the hands.

2. The handrail post bolted baseplate connector shall be fabricated as shown on the Drawings or equivalent molded or extruded meeting all of the appearance and strength requirements. The baseplate shown shall conform to ASTM A 167, Type 304 stainless steel with a minimum yield strength of 30,000 psi. The insert shown shall be fabricated from stainless steel pipe with a minimum wall thickness of 0.145-inch and with a minimum yield strength of 50,000 psi. The insert dimensions shall meet the required tolerances shown on the Drawings. Furnish test data to show that the yield strength

of the material in the as-delivered pipe equals or exceeds 50,000 psi. Inserts using stainless steel with minimum yield strengths less than 50,000 psi shall have thicker walls to develop equal strength.

3. The handrail wall brackets, aluminum, round top, similar to **[Specify a California Manufacturer and Catalogue Number;] [R & B Wagner No. 1767;] [Julius Blum No. 384A;]** or equal; clear anodized and meeting all the dimensional wall/railing clearance requirements of national, state, and local standards, regulations, and codes, including OSHA.

D. Additional Specific Fabrications:

1. The handrail gate shall meet all the safety requirements of the national, state, and local standards, regulations, and code requirements that specifically apply to this project, including OSHA. The gate shall be fabricated using 6063-T6 extruded aluminum, and as otherwise shown on the Drawings. Gate hardware shall meet all specified requirements. Manufacturers who may provide hardware meeting these Specifications are: **[Craneveyor Corp., South El Monte, CA]; [Julius Blum & Co., Inc. Carlstadt, NJ]; [Thompson Fabricating Co., Birmingham, AL]**; or approved equal. Provide test reports to show that all gate hardware meets minimum safety strength requirements for handrails and guard rails.

2. The handrail picket panels and clamps shall be fabricated using solid bar 6063, 6105, or 6061 extruded aluminum as shown on the Drawings with finishes specified. All fasteners shall be stainless steel.

3. Toeboards and accessories shall be fabricated as shown on the Drawings, or shall be molded or extruded by a handrail manufacturer providing equivalent appearance, strength, and safety properties to that shown, using 6063 or 6061 aluminum with finishes as specified, meeting all applicable state, federal, and Los Angeles Building Code requirements. All fasteners shall be stainless steel. Provide expansion and contraction connections between each post as shown or equivalent.

E. Embedded Items: All metal anchorages to be embedded in concrete shall be furnished and installed under this section and shall be as shown on the Drawings or as specified herein.

F. Finishes:

1. All exposed aluminum shall be clear anodized in accordance with the Aluminum Association AA-M32-C22-A41. All exposed prefabricated handrail and toeboard handrail, picket panel, and toeboard components, except stainless steel fasteners, shall be anodized after fabrication.

2. All complete rails, modules, and components shall be cushion wrapped to prevent them from being scratched and dented during shipment, storage, and installation. Wrapping shall be left intact, insofar as possible, until the railing is completely installed.

2.2 GALVANIZED STEEL HANDRAILS

A. General: Galvanized steel handrails shall be fabricated by one fabricator.

B. Steel railings materials shall be in conformance with the SSPWC section 206-5.1.

C. Piping: 2-inch NPS with a 2.375-inch outside diameter and a 0.154-inch wall thickness minimum for all rails and posts.

D. Fittings:

1. All handrail fitting components; flanges, wall brackets, anchor plates, and similar accessories shall be hot-dip galvanized after fabrication. All anchor bolts and fasteners shall be stainless steel.

2. The handrail post bolted baseplate connector shall be fabricated from carbon steel meeting the

minimum requirements herein specified and as shown on the Drawings. The insert shall be fabricated from pipe with a minimum wall thickness of 0.20-inch or from solid rod. Hot-dip galvanize assembly after fabrication, and provide surface preparation on insert for proper fit into post.

3. The handrail wall brackets shall be malleable iron, round top, similar to **[Specify a California Manufacturer and Catalogue Number;] [R & B Wagner No. 1765;] [Julius Blum No. 1382;]** or equal; galvanized, meeting all the dimensional wall/railing clearance requirements of national, state, and local standards, regulations, and codes, including OSHA.

E. Additional Specific Fabrications:

1. The handrail gate shall meet all the safety requirements of the national, state, and local standards, regulations, and code requirements that specifically apply to this project, including OSHA. The gate shall be fabricated using steel as specified hereinbefore for piping and as otherwise shown on the Drawings. Hot-dip galvanize after fabrication. Gate hardware shall be manufactured of Type 304 stainless steel. The hardware shall be similar in function and operation to Craneveyor Corp., South El Monte, CA, gate hinges with spring No. C4370b, gate latch No. C4369, and gate stop No. C4368; Julius Blum & Co., Inc., Carlstadt, NJ, Connectorail System, gate hinges with spring No. 782/3 with gate latch and stop No. 784; or approved equal.

2. The handrail picket panels and clamps shall be fabricated using solid bar steel meeting the minimum requirements herein specified and as shown on the Drawings. Hot-dip galvanize after fabrication. All fasteners shall be stainless steel.

3. Toeboards and accessories shall be fabricated as shown on the Drawings, using A 36 steel. Hot-dip galvanize after fabrication. All fasteners shall be stainless steel.

F. Embedded Items: All metal anchorages to be embedded in concrete shall be furnished and installed under Section [05500], "Miscellaneous Metalwork".

G. Galvanizing:

1. General: Zinc used for galvanizing shall be grade Prime Western conforming to ASTM B 6. Except as otherwise specified, materials shall be galvanized by the hot-dip, mechanical or electro-depositing process.

2. Requirements of Coating: The minimum weight of coating and other requirements shall be 2.0 ounces per square foot of surface area. The weight of coating shall be determined in accordance with ASTM A90, modified to determine the coating of each surface separately. All surfaces, when tested separately, shall meet the minimum requirement.

3. Galvanize in accordance with ASTM A 123 and A 386 after fabrication. The workmanship of zinc coating shall be in conformance with the SSPWC Section 210-3.3.

4. Test Coupon: Test coupons for determining the quantity and quality of the galvanizing shall be in conformance with the SSPWC Section 210-3.4.

2.3 ANCHOR BOLTS, FASTENERS, CONCRETE ANCHORS

A. Miscellaneous Fasteners:

1. Type 316 stainless steel elastic locknuts; Type 316 stainless steel flat washers; molded nylon flat washers; round head machine screws ((RHMS); Type 316 stainless steel, all as supplied by [**McMaster-Carr Supply Company, Los Angeles, CA]; [ ]** or equal.

2. Stainless steel bolts and nuts for bolting handrail to metal beams, unless otherwise shown, shall be ASTM A 193 and A 194, Type 316 with a minimum yield strength for bolts of 95,000 psi.

3. Anchor bolts, Type 316 stainless steel anchor bolt with a minimum yield strength of 30,000 psi, 5/8-inch minimum diameter with hex nuts, or size as shown.

4. Wedge anchors for exterior use and for interior use shall be 304 or 316 stainless steel, 3/4-inch diameter by 5-inch **[HILTI Kwik-Bolt, stud type, manufactured by HILTI, Inc., Stamford, CT]; [Wej-It]**, stainless steel bolts, 3/4-inch by 5-inch, completely assembled, manufactured by **[Wej-It Corporation, Broomfield, CO]**; or equal.

5. Wedge anchors have been limited to 5-inch lengths for use in 6-inch slab and wall thicknesses. Where anchors are to be used in thicker section, larger anchor lengths may be used. Load values for tension pullout with special inspection shall be 3,900 pounds minimum. Special inspection is required.

6. Concrete anchors in other sizes and quantity when used shall be based upon approved test reports with special inspection where required. Submit calculations and test data for review prior to use. Satisfy all applicable codes.

PART 3 -- EXECUTION

3.1 FABRICATION OF ALUMINUM HANDRAIL SYSTEMS

A. The work shall be performed according to approved shop drawings by workmen experienced in the fabrication and erection of aluminum railing systems of the type and quality specified. See the Drawings for other requirements.

B. Handrail post to be bolted to metal or concrete shall be furnished longer than needed and field cut to exact dimensions required to satisfy any vertical variations on the actual structure, or in lieu of field cutting provide an approved fitting containing provisions for vertical adjustment. The Detail Drawings require field fit-up. Shims or grout under baseplates shall not be used. Misfits shall be rejected.

C. The aluminum handrail system shall be completely free of all burrs, nicks, and sharp edges when the installation is complete. Welding shall not be permitted.

D. Coat ends of aluminum posts to be set in grout or concrete as specified in Section [09800], "Protective Coating".

E. The railing shall be erected in the field without cutting, drilling, welding, or tapping unless specifically approved by the ENGINEER.

F. No exposed welds, rivets, or screws shall be permitted unless specifically detailed on the plans.

G. Field welding of aluminum connections shall not be permitted. Welded connections shall be permitted only where indicated on the Contract drawing and on the approved shop drawings.

H. Welding shall conform to the SSPWC Section 304-2.1.2.

I. Railing panels shall be in conformance with SSPWC Section 304-2.1.2

J. For structures on curves, either horizontal or vertical, the railing shall conform to the SSPWC Section 304-2.1.2.

K. Completed aluminum railing units shall be anodized after fabrication and in conformance with the SSPWC Section 304-2.1.2.

3.2 FABRICATION OF GALVANIZED STEEL HANDRAIL SYSTEMS

A. Handrail post to be bolted to metal or concrete shall be furnished longer than needed and field cut to exact dimensions required to satisfy any vertical variations on the actual structure. The Detail Drawings require field fit-up. Shims or grout under baseplates shall not be used.

B. Cut pipe square within 2 degrees and to lengths within 1/8-inch.

C. Remove burrs from cut edges.

D. Form elbow bends and wall returns to uniform radius, free from buckles and twists, with finished surfaces smooth.

E. Close exposed ends of steel pipe by welding 3/16-inch thick steel plate in place or use prefabricated fittings.

F. Welding:

1. Miter and cope intersections of posts and rails within 2 degrees, fit to within 0.02-inch (0.5 mm) and weld all around.

2. Thoroughly fuse without undercutting or overlap.

3. Remove splatter, grind exposed welds to blend, and contour surfaces to match those adjacent.

G. Provide explosion prevention holes at closed ends of pipes.

H. Form and assemble joints which will be exposed to the weather so as to exclude water.

I. Repair of Defective Work: Remove defective work and replace with material that meets Specification requirements.

J. Repair of Damaged Zinc Coating: Zinc coating which has been field or shop cut, burned by welding, abraded, or otherwise damaged to such extent as to expose the base metal, shall be repaired and recoated by one of the following methods:

1. Hot-Dip Process: The damaged areas shall be thoroughly stripped and cleaned and a coating of zinc shall be applied by the hot-dip process.

2. Metalizing Process: The damaged area shall be thoroughly cleaned by blasting with sharp sand or steel grit. The blasted area shall lap the undamaged zinc coating at least 1/2-inch. Zinc wire containing not less than 99.98 percent zinc shall be used in the metalizing operation. A zinc coating shall be applied to the damaged area with a metalizing gun to a thickness of not less than 0.005-inch on the damaged area, and shall taper to zero thickness at the edge of the blasted undamaged section.

3. Zinc Oxide-Zinc Dust Paint: The damaged area shall be thoroughly cleaned by wire brushing and all traces of welding flux and loose or cracked zinc coating removed prior to painting. The cleaned area shall be painted with two coats of zinc oxide-zinc dust paint conforming to the requirements of Military Specifications MIL-P-15145. The paint shall be properly compounded with a suitable vehicle in the ratio of one part oxide to four parts zinc dust by weight.

4. Proprietary Materials: Proprietary materials used to repair small areas shall be in conformance with the SSPWC Section 210-3.5.4.

3.3 INSTALLATION

A. Assembly/installation of handrail system shall be performed in strict accordance with manufacturer's written recommendations for installation and the details shown.

B. The railing shall be erected in conformance with the SSPWC Section 304-2.1.3.

C. The railing installation shall be in conformance with the SSPWC Section 304-2.1.3.

D. After erecting the railing, any abrasions or exposed steel shall be repaired as specified.

E. Protection from Entrapped Water: All exterior installations and interior installations subject to high humidity shall have provisions made to drain water from the railing system. When posts are mounted in concrete or when bends or elbows occur at low points, weep holes of 1/4-inch diameter shall be drilled at the lowest possible elevations, one hole per post or rail. Hole shall be drilled in the plane of the rail.

F. Expansion Joints:

1. Provide at intervals of not more than 24-feet on centers and at structural joints as hereinafter specified.

2. Provide slip joint with internal sleeve extending 2-inches beyond each side of joint. Provide slip joint gap of 0.2-inch to allow for expansion.

3. Fasten to one side using either adhesive or two blind rivets, set at 120 degrees and 240 degrees interval from top of pipe.

4. Locate joints within 12-inches of posts. Locate expansion joints in rails to also coincide with expansion joints in the structural walls and floors that support the railings.

G. Setting Posts:

1. Embedded:

a. Clean dust and foreign matter from sleeves or blockouts.

b. Moisten interior of hole and surrounding surface with clean water. Install Category II-B non-metallic grout as specified in Section [03315], "Grout".

c. Brace railing until grout sets.

2. Surface Mounted:

a. The post bolted baseplate connectors shall sit solidly on concrete, stair stringer, or other material as shown on the Drawings. The use of shims, wedges, grout, etc. for handrail post alignment or any other reason will not be permitted.

b. The handrail posts shall be furnished longer than needed and then accurately measured in the field for correct length, cut and secured to the post baseplate connector as shown on the Drawings.

H. Posts and Rails:

1. Set posts plumb and aligned to within 1/8-inch in 12-feet.

2. Set rails horizontal or parallel to rake of steps to within 1/8-inch in 12-feet.

3. Posts and rails shall be all in the same plane. There shall be no projections or irregularities to present a hazard or prevent a user from sliding his hand continuously along the top rail.

I. Handrail Wall Brackets: Support wall rails on brackets, spaced not more than 6-feet on centers. Provide in-wall anchor backplates on solid blocking on stud walls.

J. Toeboard: Toeboards shall be accurately measured in the field for correct length (after handrail post installation), cut and secured to posts as shown on the Drawings. Provide toeboards at all handrails except where concrete curbs are furnished.

K. Handrail Gate: The handrail gate shall be installed to meet safety requirements.

L. Cleaning:

1. Wash thoroughly using clean water and soap. Rinse with clean water.

2. Do not use acid solution, steel wool, or other harsh abrasive.

3. If stain remains after washing, restore in accordance with recommendations of manufacturer, or replace handrails with an acceptable finish.

3.4 CLEANUP

A. Upon completion of installing the handrails and railings, clean up all waste materials and debris resulting from this operation and dispose of such waste materials and debris off the site.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Rooftop equipment bases and support curbs.
3. Wood blocking and nailers.
4. Wood furring.
5. Wood sleepers.
6. Utility shelving.
7. Plywood backing panels.

B. Related Requirements: Section 06 16 00 "Sheathing" for sheathing.

1.2 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal or greater size but less than 5 inches nominal size in least dimension.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

B. Sustainable Design Submittals:

1. Product Certificates: For regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each regional material.

2. Chain-of-Custody Certificates: For certified wood products. Include statement of costs.
3. Chain-of-Custody Qualification Data: For manufacturer and vendor.
4. Product Data: For installation adhesives, indicating VOC content.
5. Laboratory Test Reports: For installation adhesives, indicating compliance with requirements for low-emitting materials.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.
3. Power-driven fasteners.
4. Post-installed anchors.
5. Metal framing anchors.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

B. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

C. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Regional Materials: Dimension lumber, except treated materials, shall be manufactured within 100 miles (160 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles (160 km) of Project site.

B. Certified Wood: Lumber and plywood shall be certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001 and FSC STD-40-004.

C. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

D. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood blocking, and similar concealed members in contact with masonry or concrete.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Treatment shall not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Application: Treat items indicated on Drawings, and the following:

1. Concealed blocking.
2. Wood cants, nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.
3. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.
5. Furring.
6. Grounds.
7. Utility shelving.

B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Western woods; WCLIB or WWPA.

C. Utility Shelving: Lumber with 15 percent maximum moisture content of any of the following species and grades:

1. Eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
2. Mixed southern pine or southern pine No. 2 grade; SPIB.
3. Hem-fir or hem-fir (north), Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
4. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

D. Concealed Boards: 15 percent maximum moisture content of any of the following species and grades:

1. Mixed southern pine or southern pine, No. 3 grade; SPIB.

2. Hem-fir or hem-fir (north), Standard or No. 3 Common grade; NLGA, WCLIB, or WWPA.
3. Spruce-pine-fir (south) or spruce-pine-fir, Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
4. Western woods, Standard or No. 3 Common grade; WCLIB or WWPA.

E. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

F. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

G. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.5 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, C-C Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Screws for Fastening to Metal Framing: ASTM C 1002, length as recommended by screw manufacturer for material being fastened.

D. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC193 as appropriate for the substrate.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.7 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Cleveland Steel Specialty Co.

2. KC Metals Products, Inc.
3. Phoenix Metal Products, Inc.
4. Simpson Strong-Tie Co., Inc.
5. USP Structural Connectors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 coating designation. Use for interior locations unless otherwise indicated.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick. Use for wood-preservative-treated lumber and where indicated.

D. Stainless-Steel Sheet: ASTM A 666, Type 304. Use for exterior locations and where indicated.

2.8 MISCELLANEOUS MATERIALS

A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate nailers, blocking,and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to substrate; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Do not splice structural members between supports unless otherwise indicated.

F. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.

G. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

I. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

J. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
2. ICC-ES evaluation report for fastener.

K. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal-size furring horizontally at 24 inches o.c.

C. Furring to Receive Gypsum Board: Install 1-by-2-inch nominal-size furring vertically at 16 inches o.c.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 06 11 05
MISCELLANEOUS CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Wood nailers and blockings, and plywood sheathing.

2. Rough hardware.

B. Related work:

1. Glue-laminated beams for locker room benches: Division 6.

2. Plywood backboards for electrical and telephone equipment: Division 26.

1.2 REFERENCES

A. APA (American Plywood Association; 1990): Form A400Q - Permanent Wood Foundation Guide to Design and Construction.

B. AWPA (American Wood Preservers' Association; 1996):

1. C2, Lumber, Timbers, Bridge Ties, Mine Ties - Preservative Treatment by Pressure Processes.

2. C20, Structural Lumber - Fire-Retardant Treatment by Pressure Processes.

3. C27, Plywood - Fire-Retardant Treatment by Pressure Processes.

C. NFPA (National Forest Products Association; 1997), Permanent Wood Foundation System - Design, Fabrication, Installation Manual.

D. ACQ-94, ACQ Preserve Quality Control Standard for all products treated with ACQ.

E. CBC.

1.3 SUBMITTALS

A. Wood treatment data: Submit treatment manufacturer's instructions for proper use of each type of treated material.

B. Pressure treatment: Submit the following,

1. For each type specified, include certification by treating plant stating chemicals and process used, net amount of preservative retained and conformance with applicable standards.

2. For water-borne preservatives, include statement that moisture content of treated materials was reduced to a maximum of 19 percent prior to shipment to project site.

1.4 HANDLING

A. Procedure: In accordance with AWPA recommendations for storage and protection of pressure-treated wood.

B. Do not store materials in wet or damp areas.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Nailers and blockings:

1. No. 1 or No. 2 grade Douglas fir, S4S, seasoned to moisture content of 19 percent maximum and stamped S-Dry, graded in compliance with WCLIB Grading Rules.

2. If specifications for pressure treatment state the maximum percentages of moisture content at the time of treatment, comply with those requirements in lieu of the above.

B. Plywood: Softwood plywood APA, Exterior Grade, C-C Plugged.

C. Rough hardware:

1. General: Use Type 316 stainless steel fasteners complying with G185 to attach pressure-treated wood.

2. For fastening lumber-to-lumber: Cement-coated or annular threaded nails of sufficient length to penetrate a minimum of 1-1/4-inch into adjoining members, or stove or lag bolts used with washers.

3. For fastening plywood-to-lumber: Ring shank or annular threaded nails; 8d for 1/2-inch plywood and 10d for 3/4-inch plywood.

4. For fastening plywood or lumber to steel: Minimum #10 galvanized full threaded screws driven thru 5/8-inch diameter steel washers.

5. For fastening plywood or lumber to concrete or masonry: Corrosion-resistant drilled expansion type anchors or power-driven anchors by Hilti Fastening Systems, Molly Division of USM Corp., Redhead, or equal, capable of resisting a withdrawal force of 400 lb. each without failure.

2.2 TREATMENT OF LUMBER AND PLYWOOD

A. Preservative treatment by pressure process: AWPA C2 (lumber) and AWPA C9 (plywood), except that lumber not in contact with the ground and continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).

1. Kiln-dry material after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.

2. Mark each treated item with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

3. Treatment of wood nailers used in conjunction with built-up roofing shall be compatible with the roofing bitumen; oil-based preservatives are not acceptable.

B. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing and flashings.

2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

2.3 FIRE-RETARDANT TREATED WOOD

A. General: Where fire-retardant-treated materials are indicated, provide materials that comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL, US Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D 5664, for lumber and ASTM D 5516, for plywood.

C. Use treatment that does not promote corrosion of metal fasteners.

D. Use Exterior type for exterior locations.

E. Use Interior Type A High Temperature (HT).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions and measurements affecting the work of this Section at site.

B. Correct conditions detrimental to the proper and timely completion of this work before proceeding with installation.

3.2 INSTALLATION

A. Subdrill holes in pieces where splitting may occur; size holes slightly smaller than diameter of nail.

B. Do not drive nails closer to edge of lumber than 1/4 length.

C. Remove lumber split in nailing and replace with sound members.

D. Make joints accurately and neatly, square, flush and tight.

E. Install wood screws and lag bolts with complete penetration to head. Bore lead holes equal to root diameter of the screw or bolt. Drive flush or recess with nailer face.

F. Use pressure-treated wood where required by Code and as specified above.

G. Use fire-treated wood where required for blockings and nailers located in metal-framed walls, partitions and ceilings.

H. Provide nailers and blockings where indicated and required.

1. Template and drill to match anchor bolts in steel members, concrete and masonry.

2. Where materials are applied over flush nailer surfaces, use carriage bolts with heads drawn flush into top of nailer or blockings, or counterbore holes to recess washers and heads of nuts.

3.3 ANCHORAGE

A. Fastening lumber or plywood to lumber:

1. Space nails a maximum of 12 inches o.c. and stagger across face of piece. Locate fastener also within 3 inches of each end of piece.

2. Drive nail heads flush with wood surfaces. Nails shall penetrate adjoining piece a minimum of 1-1/4-inch.

B. Fastening lumber or plywood to concrete or to masonry:

1. Space expansion type anchors or power-driven anchors a maximum of 36 inches o.c. and stagger if lumber is more than 5 inches wide.

2. Make expansion type anchors or power-driven anchors heads flat or countersunk flush with surface, but not countersunk more than 1/3 the thickness of piece to be fastened.

3. Anchor withdrawal resistance shall be a minimum of 400 lb. per anchor, or number of fasteners increased accordingly from that specified. Minimum penetration of 1-1/2-inch into concrete or masonry.

C. Fastening lumber or plywood to steel:

1. Space screws a maximum of 24 inches o.c. and stagger if lumber is more than 5 inches wide.

2. Drive screw heads flush with face of plywood or lumber.

3. Anchor shall penetrate a minimum of 1/4 inch through the steel.

3.4 CLEAN-UP

A. Comply with the requirements of Division One.

B. Do not bury wood of any type on the jobsite.

END OF SECTION

SECTION 06 16 00

SHEATHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Wall sheathing.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
   2. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5516.
   3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
   4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.03 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:
   1. Fire-retardant-treated plywood.

1.04 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory.".

2.02 WALL SHEATHING

A. Plywood Wall Sheathing: Exterior, Structural I sheathing.
   1. Span Rating: Not less than 16/0.
   2. Nominal Thickness: Not less than 1/2 inch (13 mm).

B. Glass-Mat Gypsum Wall Sheathing: ASTM C 1177/1177M.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. CertainTeed Corporation; GlasRoc.
      b. G-P Gypsum Corporation; Dens-Glass Gold.
      c. National Gypsum Company; Gold Bond e(2)XP.
      d. Temple-Inland Inc.; GreenGlass.
      e. United States Gypsum Co.; Securock.
      f. Approved equal.
   2. Type and Thickness: Type X, 5/8 inch (15.9 mm) thick.
   3. Size: 48 by 96 inches (1219 by 2438 mm).

2.03 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
   1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
   1. For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

F. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.
   1. For steel framing less than 0.0329 inch (0.835 mm) thick, use screws that comply with ASTM C 1002.
   2. For steel framing from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick, use screws that comply with ASTM C 954.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   2. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

D. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.02 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:
   1. Wall Sheathing:
      a. Screw to cold-formed metal framing.
      b. Space panels 1/8 inch (3 mm) apart at edges and ends.

3.03 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.
   1. Fasten gypsum sheathing to cold-formed metal framing with screws.
   2. Install boards with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
   3. Install boards with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent boards without forcing. Abut ends of boards over centers of studs, and stagger end joints of adjacent boards not less than one stud spacing. Attach boards at perimeter and within field of board to each steel stud.
   1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.

2. For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

D. Vertical Installation: Install board vertical edges centered over studs. Abut ends and edges of each board with those of adjacent boards. Attach boards at perimeter and within field of board to each stud.
   1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of boards.
   2. For sheathing under stucco cladding, boards may be initially tacked in place with screws if overlying self-furring metal lath is screw-attached through sheathing to studs immediately after sheathing is installed.

END OF SECTION

SECTION 06 40 23

INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Wood storage doors and trim.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product, including panel products, hardware and accessories, and finishing materials and processes.
   1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
   1. Show locations and sizes of furring and blocking, including concealed blocking and reinforcement specified in other Sections.
   2. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
   3. Apply WI Certified Compliance Program label to Shop Drawings.

C. Samples for Initial Selection: Shop-applied transparent finishes.

D. Samples for Verification:
   1. Lumber and panel products with shop-applied opaque finish, 5 inches (125 mm) wide by 12 inches (300 mm) long for lumber and 8 by 10 inches (200 by 250 mm) for panels, for each finish system and color, with exposed surface finished.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For the following:
   1. Composite wood products.

C. Woodwork Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a licensee of WI's Certified Compliance Program.

B. Installer Qualifications: Fabricator of products.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.06 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.07 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.01 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural woodwork indicated for construction, finishes, installation, and other requirements.
   1. Provide labels from WI certification program indicating that woodwork, including installation, complies with requirements of grades specified.
   2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

2.02 WOODWORK FOR TRANSPARENT FINISH

A. Grade: Custom.

B. Regional Materials: Woodwork for transparent finish shall be manufactured within 500 miles (800 km) of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.

C. Certified Wood: Woodwork for transparent finish shall be produced from wood certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship," and FSC STD-40-004, "FSC Standard for Chain of Custody Certification."

D. Door Front Interface Style: Flush inset.

E. Wood for Exposed Surfaces:
   1. Species: As indicated.
   2. Cut: Plain sliced/plain sawn.
   3. Grain Direction: Vertical.
   4. Matching of Veneer Leaves: Book match.
   5. Veneer Matching within Panel Face: Balance match.
   6. Veneer Matching within Room: Provide veneers in each room or other space from a single flitch with doorsmatched in a sequenced set with continuous match where veneers are interrupted perpendicular to the grain.

F. Semiexposed Surfaces: Provide surface materials indicated below:
   1. Door Surfaces: Same species and cut indicated for exposed surfaces.

2.03 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
   1. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
   1. Recycled Content of Medium-Density Fiberboard and Particleboard: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 30 percent.
   2. Composite Wood Products: Provide composite wood and agri-fiber products without added urea-formaldehyde resins complying with Cal-GREEN Table 5.504.4.5 - Formaldehyde Limit requirements.
   3. Softwood Plywood: DOC PS 1.
   4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

2.04 HARDWARE AND ACCESSORIES

A. Semiconcealed Hinges: BHMA A156.9, B01302, 170 degrees of opening.

B. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.

C. Door Locks: BHMA A156.11, E07121.

D. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
   1. Satin Stainless Steel: BHMA 630.

E. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.05 MISCELLANEOUS MATERIALS

A. Furring and Blocking: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives and Sealants: Only use adhesives and sealants that meet or do not exceed the VOC limits of the CURRENT requirements of South Coast Air Quality Management District (SCAQMD) Rule No. 1168, Cal-GREEN Table 5.504.4.1 Adhesive VOC Limit, and Cal GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

D. Current requirement refers to the date on which the materials are installed in the building.

E. Adhesive for Bonding Edges: Hot-melt adhesive.

2.06 FABRICATION

A. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:

B. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
   1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.

2.07 SHOP FINISHING

A. General: Finish architectural woodwork at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork.

C. Transparent Finish:
   1. Grade: Same as item to be finished.
   2. Finish: System - 12, water-based polyurethane.
   3. Staining: None required.
   4. Sheen: Match floor.

PART 3 - EXECUTION

3.01 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.02 INSTALLATION

A. Grade: Install woodwork to comply with same grade as item to be installed.

B. Assemble woodwork and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install woodwork level, plumb, true, and straight. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor woodwork to blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
   1. For shop finished items use filler matching finish of items being installed.

F. Install without distortion so doors fit openings properly and are accurately aligned. Adjust hardware to center doors in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   1. Install woodwork with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
   2. Maintain veneer sequence matching of woodwork with transparent finish.

G. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
   1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are applied in shop.

3.03 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork , where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION

SECTION 06 41 16

PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic-laminate-faced architectural cabinets.
2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.

B. Related Requirements: Section 06 10 53 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets and concealed within other construction before cabinet installation.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product, including panel products, high-pressure decorative laminate, adhesive for bonding plastic laminate, and cabinet hardware and accessories.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Show details full size.
2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
3. Show locations and sizes of cutouts and holes for items installed in architectural plastic-laminate cabinets.
4. Apply WI Certified Compliance Program label to Shop Drawings.

C. Samples for Verification:

1. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish, with one sample applied to core material and specified edge material applied to one edge.
2. Thermoset decorative panels, 8 by 10 inches, for each color, pattern, and surface finish, with edge banding on one edge.
3. Corner pieces as follows:

a. Cabinet-front frame joints between stiles and rails, as well as exposed end pieces, 18 inches high by 18 inches wide by 6 inches deep.
b. Miter joints for standing trim.

4. Exposed cabinet hardware and accessories, one unit for each type and finish.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For the following:

1. Composite wood and agrifiber products.
2. Thermoset decorative panels.
3. High-pressure decorative laminate.
4. Adhesives.

C. Woodwork Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a licensee of WI's Certified Compliance Program.

B. Installer Qualifications: Licensee of WI's Certified Compliance Program.

C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of typical plastic-laminate cabinets as directed by Architect.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed in installation areas. If cabinets must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.

1. Provide labels and certificates from WI certification program indicating that woodwork, including installation, complies with requirements of grades specified.
2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

B. Grade: Custom.

C. Certified Wood: Wood products shall be certified as "FSC Pure" or "FSC Mixed Credit" according to FSC STD-01-001 and FSC STD-40-004.

D. Type of Construction: Frameless.

E. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.

F. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.

G. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Abet Laminati Inc.
2. Formica Corporation.
3. Lamin-Art, Inc.
4. Pionite; a Panolam Industries International, Inc. brand.
5. Wilsonart LLC.

H. Laminate Cladding for Exposed Surfaces:

1. Horizontal Surfaces: Grade HGS.

2. Postformed Surfaces: Grade HGP.
3. Vertical Surfaces: Grade VGS.
4. Edges: Grade HGS.
5. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels.

I. Materials for Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS.

   a. Edges of Plastic-Laminate Shelves: PVC edge banding, 0.12 inch thick, matching laminate in color, pattern, and finish.
   b. Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
   c. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.

2. Drawer Sides and Backs: Thermoset decorative panels with PVC or polyester edge banding.
3. Drawer Bottoms: Thermoset decorative panels.

J. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

K. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

L. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As indicated by laminate manufacturer's designations.
2. Match Architect's sample.
3. As selected by Architect from laminate manufacturer's full range .

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated. Wood Moisture Content: 5 to 10 percent.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated. Recycled Content of MDF and Particleboard: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 30 percent.

C. Composite Wood Products: Products shall be made using ultra-low-emitting formaldehyde resins as defined in the California Air Resources Board's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" or shall be made with no added formaldehyde.

1. Medium-Density Fiberboard: ANSI A208.2, Grade 130.
2. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.

3. Particleboard: Straw-based particleboard complying with requirements in ANSI A208.1, Grade M-2, except for density. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. Environ Biocomposites Manufacturing LLC.
   b. Sorm Incorporated.

4. Softwood Plywood: DOC PS 1.
5. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 08 71 11 "Door Hardware (Descriptive Specification)."

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening, self-closing.

C. Wire Pulls: Back mounted, solid, 4 inches long, 5/16 inch in diameter.

D. Catches: Magnetic catches, BHMA A156.9, B03141.

E. Shelf Rests: BHMA A156.9, B04013; metal.

F. Drawer Slides: BHMA A156.9.

G. Door Locks: BHMA A156.11, E07121.

H. Drawer Locks: BHMA A156.11, E07041.

I. Door and Drawer Silencers: BHMA A156.16, L03011.

J. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated. Satin Stainless Steel: BHMA 630.

K. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesives: Use adhesives that meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

D. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.5 FABRICATION

A. Fabricate cabinets to dimensions, profiles, and details indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.

B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required.

3.2 INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.

C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork. Use filler matching finish of items being installed.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with toggle bolts through metal backing or metal framing behind wall finish.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION

SECTION 06 61 16

SOLID SURFACING FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Provide solid surfacing fabrications including but not limited to following:

1. millwork counter tops with sinks and full height backsplashes.

B. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

1. Provision of plastic-laminate-clad architectural cabinets: Section 06 41 16, Architectural Cabinets
2. Provision of elastomeric joint sealants: Section 07 92 00, Joint Sealants.
3. Provision of tile work: Section 09 30 00, Tiling.
4. Provision of plumbing and plumbing fixtures: Division 22, Plumbing

1.02 REFERENCES

A. Abbreviations and Acronyms:
1. MDF: Medium Density Fiberboard.
2. SCAQMD: South Coast Air Quality Management District; www.aqmd.gov.
3. VOC: Volatile Organic Compound.

B. Definitions:

1. Solid Surface: Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

C. Reference Standards:

1.	ANSI/NPA A208.2-09	- Medium Density Fiberboard (MDF) For Interior Applications
2.	ASTM C920-14a	- Standard Specification for Elastomeric Joint Sealants
3.	ASTM D638-10	- Standard Test Method for Tensile Properties of Plastics
4.	ASTM D785-08	- Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials
5.	ASTM D790-10	- Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
6.	ASTM D5420-10	- Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)
7.	ASTM E84-14	- Standard Test Method for Surface Burning Characteristics of Building Materials
8.	ASTM E228-11	- Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer
9.	ASTM G21-13	- Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
10.	ASTM G22-76(96)	- Standard Practice for Determining Resistance of Plastics to Bacteria
11.	ASTM G155-13	- Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
12.	CSA B45.5-11/ IAPMO Z124-2011	- Plastic Plumbing Fixtures
13.	NFPA 255-06	- Standard Method of Test of Surface Burning Characteristics of Building Materials
14.	NSF/ANSI 51-07	- Food Equipment Materials
15.	SCAQMD Rule 1168	- Adhesive and Sealant Applications (amended January 2005)
16.	UL 723	- Standard for Test for Surface Burning Characteristics of Building Materials
17.	UL Environment/ GREENGUARD UL 2818	- Standard for Chemical Emissions for Building Materials, - Finishes and Furnishings, Section 7.1
18.	UL Environment/ GREENGUARD UL 2818	- Gold Standard for Chemical Emissions for Building Materials, - Finishes and Furnishings, Section 7.1 and 7.2
19.	UL 2824	- GREENGUARD Certification Program, Method for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers

ADMINISTRATIVE REQUIREMENTS

1.03 SUBMITTALS

A. Product Data: Indicate Product description including solid surface sheets, sinks, bowls and illustrating full range of standard colors, fabrication information and compliance with specified performance requirements. Submit Product data with resistance to list of chemicals.

B. Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 01 30 00. Indicate plans, sections, dimensions, component sizes, edge details, thermosetting requirements, fabrication details, attachment provisions, sizes of furring, blocking, including concealed blocking and coordination requirements with adjacent work. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacles and other items installed in solid surface.

C. Coordination Drawings: Submit coordination drawings indicating plumbing and miscellaneous steel work indicating locations of wall rated or non-rated, blocking requirements, locations and recessed wall items and similar items.

D. Samples: Submit samples in accordance with Section 01 30 00. Submit minimum 6" x 6" samples. Cut sample and seam together for representation of inconspicuous seam. Indicate full range of color and pattern variation. Approved samples will be retained as standards for work.

1.04 CLOSEOUT SUBMITTALS

A. Operational and Maintenance Data:

1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in Project closeout documents.
2. Provide a commercial care and maintenance kit and video. Review maintenance procedures and warranty details with Owner upon completion.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

B. Mock-Ups:

1. Prior to final approval of Shop Drawings, erect 1 full size mock-up of each component at Project site demonstrating quality of materials and execution for Architect review.
2. Should mock-up not be approved, rework or remake until approval is secured. Remove rejected units from Project site.
3. Approved mock-up will be used as standard for acceptance of subsequent work.
4. Approved mock-ups may remain as part of finished work.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery and Acceptance Requirements: Deliver no components to Project site until areas are ready for installation.

B. Storage and Handling Requirements:

1. Store components indoors prior to installation.
2. Handle materials to prevent damage to finished surfaces.

1.07 WARRANTY

A. Manufacturer Warranty: Provide manufacturer's standard warranty for material only for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Architect and at no expense to Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

1. Corian® by DuPont; www.corian.com
2. Samsung Chemical USA; www.staron.com
3. Wilsonart Contract; www.wilsonartcontract.com

2.02 MATERIALS

A. Description:

B. Sustainability Characteristics: Provide Products meeting following LEED® performance criteria:

C. Performance/Design Criteria:

	Property	Requirement (min or max)		Test Procedure
1.	Solid Surface Based Products:			
a.	Tensile Strength	6000 psi min		ASTM D638
b.	Tensile Modulus	1.5 x 10^6 psi min		ASTM D638
c.	Tensile Elongation	0.4% min.		ASTM D638
d.	Flexural Strength	10000 psi min		ASTM D790
e.	Flexural Modulus	1.2 x 10^6 psi min		ASTM D790
f.	Hardness	>85-Rockwell "M" scale min.		ASTM D785
g.	Thermal Expansion	2.2 x 10^{-5} in./in./°F		ASTM E228
h.	Fungi and Bacteria	Does not support microbial growth		ASTM G21 & G22
i.	Microbial Resistance	Highly resistant to mold growth		UL 2824
j.	Ball Impact	No fracture - 1/2 lb. Ball: 6 mm slab - 36" drop 12 mm slab - 144" drop		NEMA LD 3, Method 3.8
k.	Weatherability	ΔE*94<5 in 1,000 hrs		ASTM G155
l.	Flammability			ASTM E84, NFPA 255 & UL 723
		All Colors		
		6 mm	**12 mm**	
m.	Flame Spread	<25	<25	
n.	Smoke Developed	<25	<25	
o.	Class	A	A	NFPA 101®, Life Safety Code

D. Solid Surface Material:

D. Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction; meeting following criteria:

E. Flammability: Class 1 and A when tested to UL 723.

F. Sink/Bowl Mounting Hardware: Manufacturer's approved bowl clips, brass inserts and fasteners for attachment of undermount sinks/bowls.

2.03 COMPONENTS

A. Counter Perimeter Frame: Ensure 1/2" thick, moisture resistant cores for counter tops in wet areas having sinks with waterproof adhesive, Fir or Poplar plywood, veneer core only.

1. Fabricate joints between components using manufacturer's standard joint adhesive. Ensure joints are inconspicuous in appearance and without voids. Attach 50 mm (2") wide reinforcing strip of solid polymer material under each joint.
2. Provide holes and cutouts for plumbing and bath accessories as indicated on Drawings.
3. Rout and finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.

4. Finish: Ensure surfaces have uniform finish:

    a. Matte, with a 60° gloss rating of 5 - 20.

5. Fabrication Tolerances:

    a. Variation in Component Size: +/-1/8".
    b. Location of Openings: +/-1/8" from indicated location.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:

1. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.
2. Verify actual site dimensions and location of adjacent materials prior to commencing work.
3. Examine cabinets upon which counter tops are to be installed. Verify cabinets are level to within 1/8" in 10' - 0".
4. Notify Architect in writing of any conditions which would be detrimental to installation.

B. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.02 INSTALLATION

A. Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.

B. Fabricate field joints using manufacturer's recommended adhesive, with joints being inconspicuous in finished work. Exposed joints/seams are not permitted. Keep components and hands clean when making joints. Reinforce field joints as specified herein. Cut and finish component edges with clean, sharp returns.

C. Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer’s written recommendations using adhesive in color to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.

D. Install countertops with no more than 1/8" sag, bow or other variation from a straight line.

E. Adhere undermount/submount/bevel mount sinks/bowls to countertops using manufacturer's recommended adhesive and mounting hardware.

F. Seal between wall and components with joint sealant as specified herein and in Section 07 92 00, as applicable.

G. Provide backsplashes and endsplashes as indicated on Drawings. Adhere to countertops using a standard color-coordinated silicone sealant. Adhere applied sidesplashes to countertops using a standard color-matched silicone sealant. Provide coved backsplashes and sidesplashes at walls and adjacent millwork. Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on reviewed Shop Drawings. Adhere to countertops using manufacturer’s standard color-coordinated joint adhesive.

H. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Completion of the Work.

I. Coordinate connections of plumbing fixtures with Division 23 Mechanical. Make plumbing connections to sinks in accordance with Division 22 Plumbing.

3.03 REPAIR

A. Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer’s “Technical Bulletins”.

3.04 SITE QUALITY CONTROL

A. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Architect at no cost to Owner.

3.05 CLEANING

A. Remove excess adhesive and sealant from visible surfaces.

B. Clean surfaces in accordance with manufacturer's "Care and Maintenance Instructions".

3.06 PROTECTION

A. Provide protective coverings to prevent physical damage or staining following installation for duration of Project.

B. Protect surfaces from damage until date of Substantial Completion of the Work.

END OF SECTION

SECTION 07 21 00

THERMAL INSULATION

GENERAL

1.01 SUMMARY

A. Section Includes:

1. Glass-fiber blanket.
2. Mineral-wool board.
3. Loose-fill insulation.

B. Related Requirements:

1. Section 07 54 23 "Thermoplastic Polyolefin (TPO) Roofing" for insulation specified as part of roofing construction.
2. Section 09 29 00 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

1.02 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PRODUCTS

1.04 GLASS-FIBER BLANKET

A. PERFORMANCE REQUIREMENTS:
1. Provide 5-1/2” thick insulation with a minimum R-value of 21.

B. Insulation shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than35 percent.

D. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

E. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. CertainTeed Corporation.
2. Guardian Building Products, Inc.
3. Johns Manville; a Berkshire Hathaway company.
4. Knauf Insulation.
5. Owens Corning.

1.05 MINERAL-WOOL BOARD

A. PERFORMANCE REQUIREMENTS:
1. Provide 4” thick insulation with a minimum R-value of 16.8.

B. Insulation shall comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Mineral-Wool Board, Types IA and IB, Unfaced: ASTM C 612, Types IA and IB; with maximum flame-spread and smoke-developed indexes of 15 and zero, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics. Nominal density of 4 lb/cu. ft..

D. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Industrial Insulation Group, LLC (IIG-LLC).
2. Roxul Inc.
3. Thermafiber, Inc.; an Owens Corning company.

1.06 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AGM Industries, Inc.
2. Gemco.

C. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.

D. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AGM Industries, Inc.
2. Gemco.

E. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations: Ceiling plenums.

F. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch between face of insulation and substrate to which anchor is attached.

G. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following: Gemco.

H. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.

I. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AGM Industries, Inc.
2. Gemco.

1.07 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C 764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E 84.
2. Spray Polyurethane Foam Insulation: ASTM C 1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates. Adhesives shall have a VOC content of 70 g/L or less.

EXECUTION

1.08 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

1.09 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

1.10 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials: Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.

1.11 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

PART 2 - END OF SECTION

SECTION 07 25 05

WEATHER BARRIERS

PART 1 - **GENERAL**

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements sections, apply to this Section.

1.02 SUMMARY

A. Furnish and install weather barriers as indicated on the drawings and specified including the following, as applicable:

1. Building wrap.
2. Flexible flashing.
3. Drainage material.

B. Subject to compliance with specified requirements, black colored weather barriers shall be the product of one of the following manufacturers:

1. DuPont
2. GCP Applied Technologies
3. Dow
4. RAVEN
5. Or Equal

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For building wrap, include data on air and water-vapor permeance based on testing according to referenced standards.

B. Shop Drawings: Show details of building wrap at terminations, openings, and penetrations. Show details of flexible flashing applications.

1.04 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.01 WATER-RESISTIVE BARRIER

A. Building Wrap: ASTM E 1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E 84; UV stabilized; and acceptable to authorities having jurisdiction.

1. Color: Black. Weather resistive barriers visible behind rainscreen cladding reveals must be black in color.

2. Water-Vapor Permeance: Not less than 75 perms per ASTM E 96/E 96M, Desiccant Method (Procedure A).

3. Air Permeance: Not more than 0.004 cfm/sq. ft. at 0.3-inch wg when tested according to ASTM E 2178.

4. Allowable UV Exposure Time: Not less than three months.

5. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.02 FLEXIBLE FLASHING

A. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

1. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

B. Rubberized-Asphalt Flashing: Composite, self-adhesive, flashing product consisting of a pliable, rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

1. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

C. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.

D. Nails and Staples: Product recommended in writing by flexible flashing manufacturer and complying with ASTM F 1667.

2.03 DRAINAGE MATERIAL

A. Drainage Material: Product shall maintain a continuous open space between water-resistive barrier and exterior cladding to create a drainage plane and shall be used under cladding, portland cement plaster and adhered masonry veneer.

1. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

PART 3 - EXECUTION

3.01 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing immediately after sheathing is installed.

B. Cover sheathing with water-resistive barrier as follows:

1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.

2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.

C. Building Wrap: Comply with manufacturer's written instructions and warranty requirements.

1. Seal seams, edges, fasteners, and penetrations with tape.

2. Extend into jambs of openings and seal corners with tape.

3.02 FLEXIBLE FLASHING INSTALLATION

A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.

1. Prime substrates as recommended by flashing manufacturer.

2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.

3. Lap flashing over water-resistive barrier at bottom and sides of openings.

4. Lap water-resistive barrier over flashing at heads of openings.

5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

3.03 DRAINAGE MATERIAL INSTALLATION

A. Install drainage material over building wrap and flashing to comply with manufacturer's written instructions.

END OF SECTION

SECTION 07 54 19

POLYVINYL-CHLORIDE (PVC) ROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Adhered polyvinyl-chloride (PVC) roofing system.
2. Roof insulation.

B. Comply with CAL-Green VOC requirements for single ply roof adhesives.

C. Related Requirements:
1. Section 061053 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Section 061600 "Sheathing" for wood-based, structural-use roof deck panels.
3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
4. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.02 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.03 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

B. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's

representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. LEED Submittals: Provide special submittals conforming to Section 018113 - Sustainable Design Requirements for the following:
1. LEED Credit MR Cost Data: Provide special materials cost data breakdown data.
2. Product Data for Credit SS 7.2: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirement.
3. Product Data for Credit IEQ 4.1: For adhesives and sealants used inside the weatherproofing system, documentation including printed statement of VOC content.
4. Laboratory Test Reports for Credit IEQ 4.1: For adhesives and sealant**s** used inside the weatherproofing system, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:
1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.
3. Roof plan showing orientation of steel roof deck and orientation of roofing, fastening spacings, and patterns for mechanically fastened roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

D. Samples for Verification: For the following products:
1. Sheet roofing, of color required.
2. Walkway pads or rolls, of color required.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
1. Submit evidence of compliance with performance requirements.

C. Product Test Reports: For components of roofing system, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Research/Evaluation Reports: For components of roofing system, from ICC-ES.

E. Field quality-control reports.

F. Sample Warranties: For manufacturer's special warranties.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Global approved for roofing system identical to that used for this Project. Use only a Manufacturer certified ISO 14001: 2004 and RC 14001: 2008 responsible care.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.09 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Provide no dollar limit (NDL) warranty and Non-Prorated for full replacement cost of completed installation signed by manufacturer and applicator guaranteeing against water infiltration and defects of materials and workmanship for period of 20 years from date of Substantial Completion. Warranty shall not exclude ponding water and no time limited shall be assigned for any such ponding water during the warranty period

B. Provide material required for warranty including penetrations, terminations, flashings, sealants, roof sheathing board, membrane, insulation, adhesives, and fasteners. Defects include (but are not limited to) unadhered membrane and flashings, moisture blisters, open seams, and weld scuffs.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation and fasteners for roofing system from same manufacturer as membrane roofing.
   1. No “Private Label” or third party manufactured membranes are to be installed. The roofing system is to be manufactured directly by roofing system provider/supplier with the same basic formulation in use for past 20 years minimum to match the term of the warranty

2.02 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.
   1. Accelerated Weathering: Roofing system shall withstand 10,000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
   2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746, ASTM 5602 or ASTM D 4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Performance Requirements:
   1. Provide roofing system to comply with ANSI/SPRI *Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems* and ANSI/SPRI *Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners*.

D. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a built-up roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
   1. Fire/Windstorm Classification: Class 1A-90.
   2. Hail-Resistance Rating: MH.

E. Solar Reflectance Index: Not less than 104 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

F. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

G. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.83 and an emissivity of not less than0.90 when tested according to CRRC-1.

H. California Title 24 Part 6: Roof membrane (not post installation applied finish) must comply with current minimum 3-year aged solar reflectance of 0.55 and a minimum thermal emittance of 0.75

I. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.03 PVC ROOFING

A. PVC Sheet: ASTM D 4434/D 4434M, Type II, glass fiber reinforced, with a clear lacquer coating and a non-woven 9 oz./sq.yd. polyester fleece backed.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Sika Sarnafil; S327 Energy Smart Roof Membrane Engineered or a comparable product by one of the following:
      a. Johns Manville; a Berkshire Hathaway company.
      b. Durolast Corporation.
      c. IB Roofing Systems.
      d. Seaman Corporation.
   2. Thickness: 72 mils minimum.
   3. Color: Sandstone ES

2.04 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.
   1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.
   2. Adhesives Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
      a. Adhesives shall meet VOC and chemical component limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Cal GREEN Table 5.504.4.1 Adhesive VOC Limit requirements.
      b. Sealants shall meet VOC and chemical component limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Cal-GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as PVC sheet.

C. Bonding Adhesive: Manufacturer's standard, water based.
   1. Basis of Design: Sarnacol 2121.

D. Metal Termination and Batten Bars: Manufacturer's standard, predrilled aluminum bars, approximately 1 inch by 0.125 inches thick; with anchors.
   1. Basis of Design: Sarnastop

E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.

F. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.05 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by PVC roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Global-approved roof insulation.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 3, felt or glass-fiber mat facer on both major surfaces.
   1. Zero ozone depletion potential (ODP) from blowing agent.
   2. Long Term Thermal Resistance (LTTR) R-value based on ASTM C1303: 6 per inch, regardless of published values.
   3. Thickness: 5.2 inches thick; R=30 in two layers with joints offset.
   4. Facers: Both faces finished with fiberglass mat facers.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.
   1. R Value: LTTR value of R30, average.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.06 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.

C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
   1. VOC compliant, two component low rise polyurethane adhesive.
   2. Product: Sarnacol 2163 VC Adhesive.

D. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Georgia-Pacific Building Products;Dens Deck Prime.
      b. United States Gypsum Company; Securock Gypsum Fiber Roof Board.

2.07 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.
   1. A polyester reinforced, 0.096 inch (96 mil/2.4 mm), weldable membrane with surface embossment.
      a. Basis of Design: SarnaTred-V.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.03 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.04 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
   1. Fasten insulation with cover board in a single operation according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.
   2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.
   1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.

3.05 MECHANICALLY FASTENED ROOFING INSTALLATION

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.
   1. Install sheet according to ASTM D 5082.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Remove broken, delaminated, wet or damaged insulation boards and provide new.

D. Basis of Design: Sarnacol 2121 Adhesive (or approved equal)

E. Pour Sarnacol 2121 adhesive out of the pail and spread using notched ¼ inch x ¼ inch x ¼ inch rubber squeegees. Apply the 2121 adhesive at a rate of 1 1/2 gallons/100 square feet. No adhesive is applied to the back of the membrane or to seam areas.

F. Unroll the PVC membrane immediately into the wet 2121 adhesive. Adjacent rolls overlap previous rolls by 3 inches. This process is repeated throughout the roof area. Immediately after application into adhesive, press each roll firmly into place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. Do not allow adhesive to skin-over or surface-dry prior to installation of membrane.

G. Weld PVC membrane coverstrips at all seams that do not have a factory selvage edge.

H. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

I. Mechanically fasten roofing with termination bars securely at terminations, penetrations, and perimeter of roofing.

J. Apply roofing with side laps shingled with slope of roof deck where possible.

K. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions to ensure a watertight seam installation.
   1. Test lap edges with probe to verify seam weld continuity.
   2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
   3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

L. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.06 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings.

3.07 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate and adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.08 FIELD QUALITY CONTROL

A. Request site attendance of roofing manufacturer technical representative during various stages of installation of roof assembly.

B. Manufacturer's Field Services:
   1. Provide inspection to ascertain specified material and workmanship quality is being maintained and for purposes of warranty verification.
   2. Perform final inspection after roof completion.
   3. Field Reports: Submit summary of Project site observations, instructions and monitoring activities.

C. Site Tests and Inspections:
   1. Inspect cooled seams with probe or similar device to ensure welds are consistent.
   2. Correct defective seams.

D. Correct identified defects or irregularities.

3.09 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.10 DEMONSTRATION

A. Provide maintenance documents and personal instruction for the facilities staff and other interested parties at a single pre-determined mutually convenient time. The instruction shall include the following topics:
   1. Access restriction and precautions
   2. Avoiding Mechanical Damage
   3. Potential Contaminants and rectification
   4. Cleaning
   5. Emergency repairs
   6. Procedures for permanent repairs and alterations

END OF SECTION

SECTION 07 54 23

THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered thermoplastic polyolefin (TPO) roofing system.
2. Vapor retarder.
3. Roof insulation.

B. Related Requirements:

1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
2. Section 07 21 00 "Thermal Insulation" for insulation beneath the roof deck.
3. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
4. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.3 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.

8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Test Reports: For roof materials, documentation indicating that roof materials comply with Solar Reflectance Index requirements.
2. Product Data: For adhesives and sealants, indicating VOC content.
3. Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:

1. Base flashings and membrane terminations.
2. Tapered insulation, including slopes.
3. Roof plan showing orientation of steel roof deck and orientation of roofing, fastening spacings, and patterns for mechanically fastened roofing.
4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

D. Samples for Verification: For the following products:

1. Sheet roofing, of color required.
2. Walkway pads or rolls, of color required.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article. Submit evidence of compliance with performance requirements.

C. Product Test Reports: For components of roofing system, tests performed by manufacturer and witnessed by a qualified testing agency.

D. Research/Evaluation Reports: For components of roofing system, from ICC-ES.

E. Field quality-control reports.

F. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Provide no dollar limit (NDL) warranty and Non-Prorated for full replacement cost of completed installation signed by manufacturer and applicator guaranteeing against water infiltration and defects of materials and workmanship for period of 20 years from date of Substantial Completion. Warranty shall not exclude ponding water and no time limited shall be assigned for any such ponding water during the warranty period. Provide material required for warranty including penetrations, terminations, flashings, sealants, roof sheathing board, membrane, insulation, adhesives, and fasteners. Defects include (but are not limited to) unadhered membrane and flashings, moisture blisters, open seams, and weld scuffs. Special warranty includes roofing, base flashings, roof insulation, fasteners, cover boards, substrate board, roofing accessories, and other components of roofing system.

B. Special Project Warranty: Submit roofing Installer's warranty, on warranty form acceptable to Owner, signed by Installer, covering the Work of this Section, including all components of roofing system such as roofing, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders, roof pavers, and walkway products, for the following warranty period: Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Product: Roofing system design is based on Firestone Building Products UltraPly TPO Roof System. Subject to compliance with requirements, provide indicated system, or comparable system manufactured by one of the following:

1. Carlisle SynTec Incorporated.
2. GAF Materials Corporation.
3. GenFlex Roofing Systems.
4. Johns Manville; a Berkshire Hathaway company.

B. Source Limitations: Obtain components including roof insulation for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. FM Global Listing: Roofing, base flashings, and component materials shall comply with requirements in FM Global 4450 or FM Global 4470 as part of a built-up roofing system, and shall be listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

1. Fire/Windstorm Classification: Class 1A-90.
2. Hail-Resistance Rating: MH.

D. Solar Reflectance Index (SRI): Three-year-aged SRI not less than 64 or initial SRI not less than 82 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

E. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

F. Energy Performance: Roofing system shall have an initial solar reflectance of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

G. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

H. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

I. R-Value: Provide minimum R-value R-19 at thinnest portion of roofing assembly.

2.3 TPO ROOFING

A. Fabric-Reinforced TPO Sheet: ASTM D 6878, internally fabric- or scrim-reinforced, uniform, flexible TPO sheet.

1. Thickness: 60 mils, nominal.
2. Exposed Face Color: White.

2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

1. Adhesives and sealants shall comply with the following limits for VOC content:

a. Plastic Foam Adhesives: 50 g/L.
b. Gypsum Board and Panel Adhesives: 50 g/L.
c. Multipurpose Construction Adhesives: 70 g/L.
d. Fiberglass Adhesives: 80 g/L.
e. Contact Adhesives: 80 g/L.
f. PVC Welding Compounds: 510 g/L.
g. Other Adhesives: 250 g/L.

h. Single-Ply Roof Membrane Sealants: 450 g/L.
i. Nonmembrane Roof Sealants: 300 g/L.
j. Sealant Primers for Nonporous Substrates: 250 g/L.
k. Sealant Primers for Porous Substrates: 775 g/L.

2. Adhesives and sealants shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils thick, minimum, of same color as TPO sheet.

C. Bonding Adhesive: Manufacturer's standard, water based.

D. Slip Sheet: Manufacturer's standard, of thickness required for application.

E. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

F. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.

G. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.

H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 VAPOR RETARDER

A. Polyethylene Film: ASTM D 4397, 6 mils thick, minimum, with maximum permeance rating of 0.13 perm.

1. Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.
2. Adhesive: Manufacturer's standard lap adhesive, FM Global approved for vapor-retarder application.

B. Glass-Fiber Felts: ASTM D 2178, Type IV, asphalt impregnated.

2.6 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 3, felt or glass-fiber mat facer on both major surfaces. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Carlisle SynTec Incorporated.
2. Firestone Building Products.
3. GAF Materials Corporation.
4. Johns Manville; a Berkshire Hathaway company.
5. Rmax, Inc.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.

D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.7 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing.

B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows: Full-spread spray-applied, low-rise, two-component urethane adhesive.

C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick, factory primed. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. CertainTeed Corporation.
2. Georgia-Pacific Building Products.
3. National Gypsum Company.
4. United States Gypsum Company.

2.8 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 05 31 00 "Steel Decking."

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.

3.4 VAPOR-RETARDER INSTALLATION

A. Polyethylene Film: Loosely lay polyethylene-film vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches and 6 inches, respectively. Continuously seal side and end laps with tape or adhesive.

B. Laminate Sheet: Loosely lay laminate-sheet vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches and 6 inches, respectively. Continuously seal side and end laps with tape.

C. Self-Adhering-Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering-sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 inches and 6 inches, respectively. Seal laps by rolling.

D. Built-Up Vapor Retarder: Install two glass-fiber felt plies lapping each felt 19 inches over preceding felt. Embed each felt in a solid mopping of hot roofing asphalt. Glaze coat completed surface with hot roofing asphalt. Apply hot roofing asphalt within plus or minus 25 deg F of equiviscous temperature.

E. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.5 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.

D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows: Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.

1. Fasten cover boards according to requirements in FM Global's "RoofNav" for specified Windstorm Resistance Classification.
2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

I. Install slip sheet over cover board and immediately beneath roofing.

3.6 ADHERED ROOFING INSTALLATION

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

C. Accurately align roofing, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer, and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

E. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.

F. Apply roofing with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.7 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components, and to furnish reports to Architect. Electric Field Vector Mapping (EFVM): Testing agency shall survey entire roof area for potential leaks using electric field vector mapping (EFVM).

B. Flood Testing: Flood test each roofing area for leaks, according to recommendations in ASTM D 5957, after completing roofing and flashing but before overlying construction is placed. Install temporary containment assemblies, plug or dam drains, and flood with potable water.

1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and not exceeding a depth of 4 inches. Maintain 2 inches of clearance from top of base flashing.
2. Flood each area for 48 hours.
3. After flood testing, repair leaks, repeat flood tests, and make further repairs until roofing and flashing installations are watertight.

C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.10 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Manufactured reglets with counterflashing.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed wall sheet metal fabrications.
5. Formed equipment support flashing.

1.02 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

B. Shop Drawings: For sheet metal flashing and trim.
1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Verification: For each type of exposed finish.
   1. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches (300 mm) long and in required profile. Include fasteners and other exposed accessories.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For each type of coping and roof edge flashing that is SPRI ES-1 tested.

C. Product Test Reports: For each product, for tests performed by a qualified testing agency.

D. Sample Warranty: For special warranty.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.07 QUALITY ASSURANCE

A. Manufacturers – Roof edge fascia system is to be provided by the single ply roofing system manufacturer and warranted as an integral part of the NDL roof system warranty.

B. Other Metal Flashings Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
   1. For copings that are SPRI ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
   1. Build mockup of typical roof edge, including built-in gutter, fascia, and fascia trim, approximately 10 feet (3.0 m) long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.09 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
      a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
      b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
      c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
   2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. FM Approvals Listing: Manufacture and install copings roof edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-240. Identify materials with name of fabricator and design approved by FM Approvals.

D. SPRI Wind Design Standard: Manufacture and install copings and roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure:
   1. Design Pressure: As indicated on Drawings.

E. Recycled Content of Steel-Sheet Flashing and Trim: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.02 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B 209 (ASTM B 209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
   1. As-Milled Finish: Mill.
   2. Exposed Coil-Coated Finish:
      a. Three-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   3. Color: As selected by Architect from manufacturer's full range.

4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

C. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, dead soft, fully annealed; with smooth, flat surface.
   1. Finish: Mill phosphatized for field painting.

D. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet according to ASTM A 653/A 653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A 755/A 755M.
   1. Surface: Smooth, flat and mill phosphatized for field painting and with manufacturer's standard clear acrylic coating on both sides.
   2. Exposed Coil-Coated Finish:
      a. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   3. Color: As selected by Architect from manufacturer's full range.
   4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

2.03 UNDERLAYMENT MATERIALS

A. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. (0.16 kg/sq. m)minimum.

C. Roof edge fascia system is to be installed over high temperate self-adhesive waterproofing and PVC roof membrane flashing.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
   1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
      a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
      b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
      c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
   2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
   3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
   4. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

C. Solder:
   1. For Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.

2. For Zinc-Coated (Galvanized) Steel: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight. Sealants shall meet VOC and chemical component limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Cal-GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

H. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.

I. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.05 MANUFACTURED SHEET METAL FLASHING AND TRIM

A. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide Fry Reglet Corporation or comparable product by one of the following:
      a. Hickman, W. P. Company.
      b. Keystone Flashing Company, Inc.
   2. Material: Galvanized steel, 0.022 inch (0.56 mm) thick.
   3. Surface-Mounted Type: Provide Type SM with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
   4. Stucco Type: Provide Type STX or Type ST with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
   5. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching Type CO reglet to concrete forms, and guides to ensure alignment of reglet section ends.
   6. Masonry Type: Provide Type MA with offset top flange for embedment in masonry mortar joint.
   7. Accessories:
      a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
      b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
   8. Finish: With manufacturer's standard color coating.

2.06 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry,

metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard and by FM Global Property Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

H. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

I. Do not use graphite pencils to mark metal surfaces.

2.07 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Built-in Gutters: Fabricate to cross section required, with riveted and soldered joints, complete with end pieces, outlet tubes, and other special accessories as required. Fabricate in minimum 96-inch- (2400-mm-) long sections. Fabricate expansion joints and accessories from same metal as gutters unless otherwise indicated.

1. Fabricate gutters with built-in expansion joints and gutter-end expansion joints at walls.
2. Accessories: Wire-ball downspout strainer.
3. Fabricate from the Following Materials:
   a. Stainless Steel: 0.016 inch (0.40 mm) thick.

2.08 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop) and Fascia Cap:

1. Custom One Piece Fascia provided by the single ply roofing system manufacturer and included within the roofing system manufacturers roof system warranty. Fabricate in minimum 96-inch- (2400-mm-) long, on straight areas and 60 inches on radiused areas, but not exceeding 12-foot- (3.6-m-) long sections. Provide smooth radiused curves faceted

finished are not acceptable. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Provide factory mitered interior and exterior corners.
2. Joint Style: Overlapped, 4 inches (100 mm) wide.
3. Fabricate from the Following Materials:
   a. a. Prefinished Coil Coated Fluoropolymer Finished Aluminum: 0.050 inch (1.27 mm) thick.

B. Copings: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, solder or weld watertight. Shop fabricate interior and exterior corners.
1. Coping Profile: As indicated on Drawings.
2. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, exposed cover plate.
3. Fabricate from the Following Materials:
   a. Aluminum: 0.050 inch (1.27 mm) thick.

C. Roof-to-Roof Edge-Flashing (Gravel-Stop) Transition Roof-to-Roof Edge-Flashing (Gravel-Stop) and Fascia-Cap Transition Expansion-Joint Cover: Fabricate from the following materials: Provide factory formed interior and exterior corners as part of the fascia system.
1. Aluminum: 0.050 inch (1.27 mm) thick.
2. Galvanized Steel: 0.034 inch (0.86 mm) thick.

D. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
1. Galvanized Steel: 0.028 inch (0.71 mm) thick.

E. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
1. Galvanized Steel: 0.022 inch (0.56 mm) thick.

F. Flashing Receivers: Fabricate from the following materials:
1. Aluminum: 0.032 inch (0.81 mm) thick.

G. Roof-Penetration Flashing: Fabricate from the following materials:
1. Galvanized Steel: 0.028 inch (0.71 mm) thick.

H. Roof-Drain Flashing: Fabricate from the following materials:
1. Stainless Steel: 0.016 inch (0.40 mm) thick.

2.09 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:
1. Stainless Steel: 0.019 inch (0.48 mm) thick.
2. Galvanized Steel: 0.028 inch (0.71 mm) thick.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
   1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
   2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
   3. Space cleats not more than 12 inches (300 mm) apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
   4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
   5. Torch cutting of sheet metal flashing and trim is not permitted.
   6. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
   1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
   1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
   2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.
   1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).
   2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work.
   1. Do not solder metallic-coated steel sheet.
   2. Do not use torches for soldering.
   3. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

4. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.03 ROOF-DRAINAGE SYSTEM INSTALLATION

A. General: Install sheet metal roof-drainage items to produce complete roof-drainage system according to cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Built-in Gutters: Join sections with riveted and soldered joints. Provide for thermal expansion. Slope to downspouts. Provide end closures and seal watertight with sealant.
1. Install underlayment layer in built-in gutter trough and extend to drip edge at eaves and under underlayment on roof sheathing. Lap sides minimum of 2 inches (50 mm) over underlying course. Lap ends minimum of 4 inches (100 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with roofing nails. Install slip sheet over underlayment.
2. Anchor and loosely lock back edge of gutter to continuous cleat.
3. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet (15.24 m) apart. Install expansion-joint caps.

3.04 ROOF FLASHING INSTALLATION

A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches (100 mm) over base flashing. Lap counterflashing joints minimum of 4 inches (100 mm). Secure in waterproof manner per manufacturers installation instructions

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

3.05 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.06 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.07 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 72 00

ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Roof hatches.

B. Related Sections:

1. Section 05 50 00 "Metal Fabrications" for metal vertical ladders, ships' ladders, and stairs for access to roof hatches.
2. Section 07 62 00 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.

1.2 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For roof accessories. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

C. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

B. Sample Warranties: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 ROOF HATCH

A. Roof Hatches: Metal roof-hatch units with lids and insulated double-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, integral metal cant, and integrally formed deck-mounting flange at perimeter bottom. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Acudor Products, Inc.
2. Babcock-Davis.
3. Bilco Company (The).
4. Bristolite Daylighting Systems, Inc.
5. Dur-Red Products.
6. JL Industries, Inc.; a division of the Activar Construction Products Group.
7. Milcor; Commercial Products Group of Hart & Cooley, Inc.
8. Williams Bros. Corporation of America (The).

B. Type and Size: Single-leaf lid, 30 by 36 inches.

C. Loads: Minimum 40-lbf/sq. ft. external live load and 20-lbf/sq. ft. internal uplift load.

D. Hatch Material: Zinc-coated (galvanized) steel sheet.

1. Thickness: Manufacturer's standard thickness for hatch size indicated.
2. Finish: Mill phosphatized.

E. Construction:

1. Insulation: Glass-fiber board. R-Value: 12.0 according to ASTM C 1363.
2. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
3. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
4. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
5. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
6. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.

7. Sloping Roofs: Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is tapered to accommodate roof slope so that top surfaces of perimeter curb are level. Equip hatch with water diverter or cricket on side that obstructs water flow.

F. Hardware: Spring operators, hold-open arm, stainless-steel spring latch with turn handles, stainless-steel butt- or pintle-type hinge system, and padlock hasps inside and outside.

G. Safety Railing System: Roof-hatch manufacturer's standard system including rails, clamps, fasteners, safety barrier at railing opening, and accessories required for a complete installation; attached to roof hatch and complying with 29 CFR 1910.23 requirements and authorities having jurisdiction.

1. Height: 42 inches above finished roof deck.
2. Posts and Rails: Galvanized-steel pipe, 1-1/4 inches in diameter or galvanized-steel tube, 1-5/8 inches in diameter.
3. Flat Bar: Galvanized steel, 2 inches high by 3/8 inch thick.
4. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
5. Chain Passway Barrier: Galvanized proof coil chain with quick link on fixed end.
6. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
7. Post and Rail Tops and Ends: Weather resistant, closed or plugged with prefabricated end fittings.
8. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
9. Fabricate joints exposed to weather to be watertight.
10. Fasteners: Manufacturer's standard, finished to match railing system.
11. Finish: Manufacturer's standard. Color: Match Architect's sample.

H. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.

1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
2. Height: 42 inches above finished roof deck.
3. Material: Steel tube.
4. Post: 1-5/8-inch- diameter pipe.
5. Finish: Manufacturer's standard baked enamel or powder coat. Color: As selected by Architect from manufacturer's full range.

2.3 METAL MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation and mill phosphatized for field painting where indicated. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester-backer finish consisting of prime coat and wash coat, with a minimum total dry film thickness of 0.5 mil.

B. Steel Shapes: ASTM A 36/A 36M, hot-dip galvanized according to ASTM A 123/A 123M unless otherwise indicated.

C. Steel Tube: ASTM A 500/A 500M, round tube.

D. Galvanized-Steel Tube: ASTM A 500/A 500M, round tube, hot-dip galvanized according to ASTM A 123/A 123M.

E. Steel Pipe: ASTM A 53/A 53M, galvanized.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Glass-Fiber Board Insulation: ASTM C 726, nominal density of 3 lb/cu. ft., thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F, thickness as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

D. Security Grilles: 3/4-inch diameter, ASTM A 1011/A 1011M steel bars spaced 6 inches o.c. in one direction and 12 inches o.c. in the other; factory finished as follows:

1. Surface Preparation: Remove mill scale and rust, if any, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
2. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment.
3. Shop Primer: Manufacturer's or fabricator's standard, fast-curing, lead- and chromate-free, universal primer; selected for resistance to normal atmospheric corrosion, for compatibility with substrate and field-applied finish paint system indicated, and for capability to provide a sound foundation for field-applied topcoats under prolonged exposure.

E. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

F. Underlayment:

1. Felt: ASTM D 226/D 226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
2. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
3. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A 153/A 153M or ASTM F 2329.

G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

H. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

I. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

J. Asphalt Roofing Cement: ASTM D 4586/D 4586M, asbestos free, of consistency required for application.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Roof-Hatch Installation:

1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
2. Attach ladder-assist post according to manufacturer's written instructions.

D. Seal joints with elastomeric sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780/A 780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 09 91 13 "Exterior Painting."

C. Clean exposed surfaces according to manufacturer's written instructions.

D. Clean off excess sealants.

E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Nonstaining silicone joint sealants.
   2. Urethane joint sealants.
   3. Mildew-resistant joint sealants.
   4. Latex joint sealants.

B. This Project is a registered US Green Building Council “LEED” project.
   1. Adhesives and sealants shall meet or exceed the VOC and chemical component limits of SCAQMD Rule 1168, Cal-GREEN Table 5.504.4.1 Adhesive VOC Limit, and Cal-GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

1.02 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:
   1. Joint-sealant application, joint location, and designation.
   2. Joint-sealant manufacturer and product name.
   3. Joint-sealant formulation.
   4. Joint-sealant color.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.

C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
   1. Joint-sealant location and designation.
   2. Manufacturer and product name.
   3. Type of substrate material.
   4. Proposed test.
   5. Number of samples required.

D. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

E. Field-Adhesion-Test Reports: For each sealant application tested.

F. Sample Warranties: For special warranties.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.
   1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.05 PRECONSTRUCTION TESTING

A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
   1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
   2. Conduct field tests for each kind of sealant and joint substrate.
   3. Notify Architect seven days in advance of dates and times when test joints will be erected.
   4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
      a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
         1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
   5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
   6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.06 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
   2. When joint substrates are wet.
   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
   4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.07 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
   1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
   2. Disintegration of joint substrates from causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.01 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:
   1. Adhesives and sealants shall meet or exceed the VOC and chemical component limits of SCAQMD Rule 1168, Cal-GREEN Table 5.504.4.1 Adhesive VOC Limit, and Cal-GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

C. Colors of Exposed Joint Sealants: As selected by City Engineer from manufacturer’s full color range.

2.02 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT,M, G, A, O .
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Dow Corning Corporation; 795.
      b. GE Construction Sealants; SilPruf NB.
      c. Tremco Incorporated; Spectrem 2.

2.03 URETHANE JOINT SEALANTS

A. Urethane: Single-component, traffic- and nontraffic-use, plus 25 percent and minus 25 percent movement capability, , urethane joint sealant; ASTM C 920, Type S, Grade P, Class 25, Use T, M, O.

1. Products: Subject to compliance with requirements, provide one of the following:
    a. Pecora Corporation; NR 201.
    b. Sika Corporation U.S.; Sikaflex 15 LM.
    c. Tremco Incorporated; Vulkem 45.

2.04 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT, M, G, A, O.
    1. Products: Subject to compliance with requirements, provide one of the following:
        a. Dow Corning Corporation; 786-M White.
        b. GE Construction Sealants; SCS1700 Sanitary.
        c. Tremco Incorporated; Tremsil 200.

2.05 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
    1. Products: Subject to compliance with requirements, provide one of the following:
        a. Pecora Corporation; AC-20.
        b. Sonneborn Building Products; Sonolac.
        c. Tremco Incorporated; Tremflex 834.

2.06 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.07 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include, but are not limited to the following:
      a. Concrete.
      b. Masonry.
      c. Unglazed surfaces of ceramic tile.
      d. Exterior insulation and finish systems.
      e. Cement Plastering
   3. Remove laitance and form-release agents from concrete.
   4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include, but are not limited to the following:
      a. Metal.
      b. Glass.
      c. Porcelain enamel.
      d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses in each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
   1. Remove excess sealant from surfaces adjacent to joints.
   2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
   3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
   4. Provide flush joint profile at locations indicated on Drawings according to Figure 8B in ASTM C 1193.
   5. Provide recessed joint configuration of recess depth and at locations indicated on Drawings according to Figure 8C in ASTM C 1193.
      a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.04 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
   1. Perform under observation of City Engineer and manufacturer’s technical representative.
   2. Extent of Testing: Test completed and cured sealant joints as follows:
      a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
      b. Perform one test for each 1000 feet (300 m) of joint length thereafter or one test per each floor per elevation.
   3. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
      a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
   4. Inspect tested joints and report on the following:
      a. Whether sealants filled joint cavities and are free of voids.
      b. Whether sealant dimensions and configurations comply with specified requirements.
      c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

5. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
6. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.05 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.06 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes hollow-metal work.

B. Related Requirements: Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.3 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, core descriptions, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

C. Samples for Verification:

1. For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches.

2. For "Doors" and "Frames" subparagraphs below, prepare Samples approximately 12 by 12 inches to demonstrate compliance with requirements for quality of materials and construction:

   a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
   b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.

D. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal work vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Amweld International, LLC.
2. Ceco Door; ASSA ABLOY.
3. Curries Company; ASSA ABLOY.
4. Fleming Door Products Ltd.; Assa Abloy Group Company.
5. Karpen Steel Custom Doors & Frames.
6. Mesker Door Inc.
7. Republic Doors and Frames.
8. Steelcraft; an Allegion brand.

B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

C. Recycled Content of Hollow-Metal Steel Products: Recycled content as defined in ISO 14021, with postconsumer recycled content plus one-half of preconsumer recycled content equal to not less than ***[25]*** percent.

2.2 HOLLOW-METAL DOORS AND FRAMES, GENERAL

2.3 INTERIOR DOORS AND FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.

1. Physical Performance: Level B according to SDI A250.4.
2. Doors:

    a. Type: As indicated in the Door and Frame Schedule.
    b. Thickness: 1-3/4 inches.
    c. Face: Metallic-coated, cold-rolled steel sheet, minimum thickness of 0.042 inch.
    d. Edge Construction: Model 2, Seamless.
    e. Core: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core at manufacturer's discretion.

3. Frames:

    a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch.
    b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
    c. Construction: Full profile welded.

4. Exposed Finish: Prime.

2.4 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3..

1. Physical Performance: Level A according to SDI A250.4.
2. Doors:

    a. Type: As indicated in the Door and Frame Schedule.
    b. Thickness: 1-3/4 inches
    c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
    d. Edge Construction: Model 2, Seamless.
    e. Core: Polystyrene. Thermal-Rated Doors: Provide doors fabricated with thermal-resistance value (R-value) of not less than 2.1 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

3. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 coating.
b. Construction: Full profile welded.

4. Exposed Finish: Prime.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, minimum thickness of 0.042 inch, and as follows: Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.6 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

E. Frame Anchors: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

F. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

G. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

H. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

I. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

J. Glazing: Comply with requirements in Section 08 80 00 "Glazing."

K. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Vertical Edges for Single-Acting Doors: Bevel edges 1/8 inch in 2 inches.
2. Top Edge Closures: Close top edges of doors with inverted closures, except provide flush closures at exterior doors of same material as face sheets.
3. Bottom Edge Closures: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets.
4. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Sidelite Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
4. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
5. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Masonry Type: Locate anchors not more than 16 inches from top and bottom of frame. Space anchors not more than 32 inches o.c., to match coursing, and as follows:

        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.

    b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.

3) Five anchors per jamb from 90 to 96 inches high.
4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.

c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

6. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
7. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6 and BHMA A156.115 for preparation of hollow-metal work for hardware.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow-metal work.
5. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

2.9 ACCESSORIES

A. Louvers: Provide louvers for interior doors, where indicated, which comply with SDI 111C, with blades or baffles formed of 0.020-inch-thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame. Sightproof Louver: Stationary louvers constructed with inverted-V or inverted-Y blades.

B. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.

B. Hollow-Metal Frames: Install hollow-metal frames for doors, transoms, sidelites, borrowed lites, and other openings, of size and profile indicated. Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. At fire-rated openings, install frames according to NFPA 80.
    b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    c. Install frames with removable stops located on secure side of opening.
    d. Install door silencers in frames before grouting.
    e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    f. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    g. Field apply bituminous coating to backs of frames that will be filled with grout containing antifreezing agents.

2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.

5. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary. Non-Fire-Rated Steel Doors:

1. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
2. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
3. At Bottom of Door: 3/4 inch plus or minus 1/32 inch.
4. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing" and with hollow-metal manufacturer's written instructions. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

D. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

SECTION 08 31 13

ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes access doors and frames for walls and ceilings. Provide and install all access doors in walls and ceilings, whether shown on the Drawings or not, where required for access to Fire/Life Safety and/or MEP devices, valves and equipment. The door size must be appropriate for clear access, and the locations must be shown on Coordination Drawings as approved by the architect before installation.

B. Related Requirements: Section 07 72 00 "Roof Accessories" for roof hatches.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details material descriptions, dimensions of individual components and profiles, and finishes.

A. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Detail fabrication and installation of access doors and frames for each type of substrate.

B. Samples: For each type of access door and frame and for each finish specified, complete assembly minimum 6 by 6 inches in size.

C. Product Schedule: For access doors and frames.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Babcock-Davis.
b. JL Industries, Inc.; a division of the Activar Construction Products Group.
c. Karp Associates, Inc.
d. Lane-Aire Manufacturing Corp.
e. Larsens Manufacturing Company.
f. Milcor; Commercial Products Group of Hart & Cooley, Inc.
g. Nystrom, Inc.

2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Wall.
4. Door Size: As required to facilitate convenient access to concealed devices or equipment for maintenance or replacement.

5. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch, 16 gage, factory primed.
6. Frame Material: Same material, thickness, and finish as door.
7. Latch and Lock: Cam latch, screwdriver operated.

B. Flush Access Doors with Concealed Flanges:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Acudor Products, Inc.
    b. Babcock-Davis.
    c. JL Industries, Inc.; a division of the Activar Construction Products Group.
    d. Karp Associates, Inc.
    e. Lane-Aire Manufacturing Corp.
    f. Larsens Manufacturing Company.
    g. Milcor; Commercial Products Group of Hart & Cooley, Inc.
    h. Nystrom, Inc.

2. Description: Face of door flush with frame; with concealed flange for gypsum board installation and concealed hinge.
3. Locations: Wall and ceiling.
4. Door Size: As required to facilitate convenient access to concealed devices or equipment for maintenance or replacement.
5. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch, 16 gage factory primed.
6. Frame Material: Same material and thickness as door.

C. Latch and Lock: Cam latch, screwdriver operated. Exterior Flush Access Doors:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Babcock-Davis.
    b. JL Industries, Inc.; a division of the Activar Construction Products Group.
    c. Karp Associates, Inc.
    d. Larsens Manufacturing Company.
    e. Nystrom, Inc.

2. Description: Weatherproof assembly, with face of door fit flush with frame and with exposed frame. Include extruded door gaskets and minimum 2-inch-thick fiberglass insulation.
3. Locations: Wall.
4. Door Size: As required to facilitate convenient access to concealed devices or equipment for maintenance or replacement.
5. Stainless-Steel Sheet for Door: Nominal 0.062 inch, 16 gage, No. 4 finish.
6. Frame Material: Same material, thickness, and finish as door.
7. Latch and Lock: Cam latch operated by key.

2.2 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 or A60 metallic coating.

D. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.

E. Frame Anchors: Same material as door face.

F. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

2.3 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.

D. Latch and Lock Hardware:

1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
2. Keys: Furnish two keys per lock and key all locks alike.

2.4 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

E. Stainless-Steel Finishes:

1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
2. Polished Finish: No. 4 finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.

a. Run grain of directional finishes with long dimension of each piece.
b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

3.2 Proceed with installation only after unsatisfactory conditions have been corrected. INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION

SECTION 08 41 13

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior storefront framing.
2. Exterior manual-swing entrance doors and door-frame units.
3. Delegated design responsibility for engineering of framing and entrance systems.

B. Related Requirements: Refer to requirements in Section 08 44 13 “Glazed Aluminum Curtain Walls” to integrate work of this Section with that of Section 08 44 13. A single manufacturer shall provide products for work of both Sections.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each vertical-to-horizontal intersection of aluminumframed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12inch lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

F. Delegated-Design Submittal: Provide structural design of complete system, including all components. Comply with performance requirements and design criteria. Prepare Shop Drawings, design calculations, and other structural data. Engineer licensed in State of California shall perform engineering analysis, and seal and sign documentation. When required by jurisdiction having authority, submit engineering data and obtain separate permit for Work.

G. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installe and field testing agency.

B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency or a qualified testing agency.

D. Quality-Control Program: Developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C 1401. Include periodic quality-control reports.

E. Source quality-control reports.

F. Field quality-control reports.

G. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Testing Agency Qualifications: Qualified according to ASTM E 699 for testing indicated.

C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they

relate to sightlines, to one another, and to adjoining construction. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 MOCKUPS

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockup of typical wall area as directed by Architect.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Water penetration through fixed glazing and framing areas.
e. Failure of operating components.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - <u>PRODUCTS</u>

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a California registered, professional engineer, to design aluminumframed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units. C. Structural Loads:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

D. Deflection of Framing Members: At design wind pressure, as follows:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.
3. Cantilever Deflection: Where framing members overhang an anchor point, as follows: Perpendicular to Plane of Wall: No greater than 1/240 of clear span plus 1/4 inch for spans greater than 11 feet 8-1/4 inches or 1/175 times span, for spans less than 11 feet 8-1/4 inches.

E. Structural: Test according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds. F.

Air Infiltration: Test according to ASTM E 283 for infiltration as follows:

1. Fixed Framing and Glass Area: Maximum air leakage of 0.06 cfm/sq. ft. at a static-airpressure differential of 6.24 lbf/sq. ft.
2. Entrance Doors:

a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.

G. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows: No evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 12 lbf/sq. ft.

H. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:

1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 12 lbf/sq. ft.
2. Maximum Water Leakage: No uncontrolled water penetrating assemblies or water appearing on assemblies' normally exposed interior surfaces from sources other than condensation. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.

I. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to 2013 CBC.

J. Energy Performance: Certify and label energy performance according to NFRC as follows:

1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.59 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
2. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating of no less than 51 as determined according to NFRC 500.

K. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows. Outdoor-Indoor Transmission Class: Minimum 26.

L. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes: Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 MANUFACTURERS

A. Basis of Design Product: Subject to compliance with requirements, provide Arcadia, Inc., TC470 Thermal Series storefront system, or a comparable system manufactured by one of the acceptable manufacturers.

B. Acceptable Manufacturers: Subject to compliance with requirements, acceptable manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. EFCO Corporation.
2. Kawneer North America; an Alcoa company.
3. Oldcastle Building Envelope.
4. Pittco Architectural Metals, Inc.
5. Tubelite Inc.
6. U.S. Aluminum; a brand of C.R. Laurence.

C. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, and accessories, from single manufacturer. Systems specified in this Section and in Section 08 44 13 “Glazed Aluminum Curtain Walls” shall be obtained from the same manufacturer. Mixing products from different manufacturers is not acceptable.

2.3 FRAMING

A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: As indicated.
4. Finish: High-performance organic finish.
5. Fabrication Method: Field-fabricated stick system.

B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components. D. Materials:

1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
   a. Sheet and Plate: ASTM B 209.
   b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
   c. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
   d. Structural Profiles: ASTM B 308/B 308M.

2. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.
   a. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
   b. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.
   c. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.

2.4 ENTRANCE DOOR SYSTEMS

A. Basis of Design Entrance Doors: Subject to compliance with requirements, provide Arcadia, Inc., WS512 Series wide stile entrance doors, or a comparable product manufactured by one of the acceptable manufacturers. Standard glazed entrance doors for manual-swing operation.

1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch- thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
2. Door Design: Wide stile; 5-inch nominal width.
3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets. Provide nonremovable glazing stops on outside of door.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 08 71 00 "Door Hardware."

B. Weather Stripping: Manufacturer's standard replaceable components. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.

C. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

D. Silencers: BHMA A156.16, Grade 1.

E. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

2.6 GLAZING

A. Glazing: Comply with Section 08 80 00 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers. C. Glazing Sealants: As recommended by manufacturer.

D. Weather-seal Sealants: ASTM C 920 for Type S; Grade NS; Class 25; Uses NT, G, A, and O; chemically curing silicone formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended storefront manufacturers for this use. Color: As selected by Architect for manufacturer’s full range.

2.7 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer. Concrete and Masonry Inserts: Hot-dip galvanized castiron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.

C. Concealed Flashing: Dead-soft, 0.018-inch-thick stainless steel, ASTM A 240/A 240M of type recommended by manufacturer.

D. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

2.8 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.

3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Storefront Framing: Fabricate components for assembly using shear-block system.

F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At exterior doors, provide compression weather stripping at fixed stops.
2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.9 ALUMINUM FINISHES

A. Anodic coating conforming with AA-M12C22A41 (Class I Anodize)

a. Anodize finish color shall be colornordic, selected from manufacturer’s standard colors

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.3 INSTALLATION A.

General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated. B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed as specified in Section 07 92 00 "Joint Sealants" to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Section 08 80 00 "Glazing."

G. Install weatherseal sealant according to Section 07 92 00 "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

H. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.

3.4 ERECTION TOLERANCES

A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.

b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.

4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum framed entrances and storefronts. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested according to AAMA 501.2 and shall not evidence water penetration.

1. Perform a minimum of three tests in areas as directed by Architect.
2. Perform tests in each test area as directed by Architect. Perform at least three tests, prior to 10, 35, and 70 percent completion.

C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION

SECTION 08 71 00
FINISH HARDWARE

PART ONE - GENERAL

1.1 DESCRIPTION

A. Section Includes:

1. Door Hardware for Hollow Metal Doors.
2. Door Hardware for wood doors.
3. Door Hardware for other doors indicated.
4. Keyed Cylinders as indicated

B. Related Sections:

1. Section 06400 - Architectural Woodwork.
2. Section 08110 - Metal Doors and Frames.
3. Section 16721 - Fire/Life-Safety Alarm System.

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Toilet accessories, including grab bars.
4. Rough hardware.

1.2 QUALITY ASSURANCE

A. Regulatory Requirements**:**

1. Conform to the Los Angeles City Building Code and applicable Amendments and to the State of California, Title 24 California Building Code, Latest Edition and California State, Architectural Barriers Law (CAL/ABL) and Americans With Disabilities Act (ADA).

2. Conform to the U.L. Standards of the Underwriter's Laboratories, Inc.

3. Conform to the American National Standards Institute (A.N.S.I.)**,** A115-IG (Installation Guide for Doors and Hardware).

4. Conform to Steel Door Institute (SDI).

B. Substitutions: Requests shall be in accordance with requirements of the GENERAL CONDITIONS of the Project Manual. Finish hardware substitutions will not be accepted without written approval of the Project Manager or Inspector. Substituted hardware without City approval shall be removed and replaced with specified hardware, at no added cost to the City.

C. Manufacture: Unless specified otherwise each type of finish hardware used throughout the work shall be of the same make or manufacture although several may be indicated as equal product complying with requirements.

D. Hardware Supplier: Supplier must be a recognized building hardware supplier who has been furnishing hardware in the projects vicinity for a period of not less than two years. Supplier must be or employ an experienced Hardware Consultant who is available, at reasonable times during the course of the work, for consultation about the projects hardware requirements to the Project Manager or Inspector at no additional cost to the City**.**

E. **Pre Scheduled Conferences:** Prior to final approval of the submittals and installation of the cylinders and keys, the Contractor and Hardware Supplier shall meet in the field with the Project Manager or Inspector, its authorized representative to finalize all finish hardware information, the keying schedules and keying requirements, and obtain final instructions in writing**.**

1.3 SUBMITTALS

A. Comply with pertinent provisions of Article 10 - SUBMITTALS of DIVISION 1 - GENERAL REQUIREMENTS of the Project Manual.

B. Product Data:

1. Finish Hardware Schedule: Submit 7 copies, include Door and Hardware numbers, the manufacturer's name and product number, quantity, materials, inside and outside finish code, function, hand of door, door thickness, any non-standard latch or strike, fire rating, locations cross-referenced to floor plans and door schedule with an index of doors designating every item needed for each opening; all security and fire alarm interface and etc. Include manufacturer's installation instructions, all hardware elevations and backing support details. Coordinate and provide a list of hardware to be installed by door and door frame manufacturers.
   Project Manager or Inspector will return and will not review any submittal requiring coordination with others submittals until such other submits or required information is received by the Project Manager or Inspector.

2. Finish Hardware Floor Plans: Submit 7 copies of the floor plans which shall identify all opening and door locations, door type and door index, location of fire rated wall, thickness of wall and door frame, locations of door jamb and hinges, directions of door swing, keying schedule, door sign details, etc.

3. Product Data: Submit 7 copies of catalog cuts, descriptions and numbers marked for each item to be furnished. Submit with hardware schedule.

C. Templates: Mortise hardware shall be made to a template. Submit a complete template list showing references and data for each template. Furnish templates to other trades in a timely manner to assure orderly progress of the Work.

D. Samples: Submit for review, to the Project Manager or Inspector, physical sample of any finished hardware item proposed for use. Such items shall not be used in the work until review is completed.

E. Product Certification and Guarantee: Submit products certification signed by the manufactured certifying that the products to be furnished complying with the extended guaranty requirements. Upon completion manufacturer shall provide the Project Manager or Inspector the written guarantee for the extended guarantee specified.

F. When deemed necessary for product evaluation, Project Manager or Inspector may require submittal of full size standard production units for review.

1.4 TEMPORARY CYLINDERS

A. During construction period of Contract, Contractor shall employ temporary construction cylinders with temporary construction keys on door locks in the project to maintain necessary building security. Temporary construction keys shall be furnished in construction master key system.

B. Contractor and Hardware Supplier shall meet in prescheduled conference with the Project

Manager or Inspector and its authorized representative to finalize the Keying Schedules and requirements, and obtain final instructions in writing. On completion of the project, the Contractor shall collect all the construction keys and remove the construction cores from the lock cylinders and turn over the temporary construction keys and cores to the Project Manager or Inspector and/or its authorized representable. The Contractor shall install cylinder locks and keys in accordance with Final Keying Schedule approved by the Engineer**.**

1.5 COORDINATION

A. Deliver templates or physical samples of finish hardware to manufacturers of interfacing items such as doors and frames in a timely manner to insure orderly progress of the work.

1.6 PRODUCT HANDLING

A. Packaging: Individually package each hardware item complete with proper fastenings and appurtenances, clearly marked on outside of package with item identity and its specific location in the work.

B. Checking:

1. Check door thickness, details of trim; clearances for hinges, strikes, closers, fasteners and fire rating requirements before preparing "Hardware List".

2. Check kinds and quantities of delivered hardware to verify conditions, completeness and conformance to contract provisions and arrange for replacements or corrections of shortages and errors.

C. Storage at the Job-site**:** Contractor shall store hardware in a safe approved place at the job-site where directed by the Project Manager or Inspector to prevent loss or damage until installation.

1.7 GUARANTEES

A. All hardware shall be guaranteed for a period specified below from date of acceptance of the work, conforming to provisions of Article 16 – GUARANTY/WARRANTY of the GENERAL REQUIREMENTS. Correct defects in materials and workmanship and operation occurring during the guarantee period to the complete satisfaction of the City at no added cost to the City. Submit guaranty certification for review prior to start of work.

B.
1. Door Closer: 5 years except electronic closers, two years
2. Exit Devices: 3 years
3. Hinges: 10 years
4. All other Hardware: Two years.

1.8 CLEAN-UP

A. In addition to the requirements noted in Article 7 – REMOVAL, CLEAN UP AND DEMOBILIZATION in the GENERAL REQUIREMENTS, Contractor upon completion of the work of this Section shall remove all oil, grease or other soiling from exposed surfaces of finish hardware and shall remove all cartons, wrapping and other debris resulting from work herein and shall leave the building in a neat, clean and acceptable condition to the approval of the Project Manager or Inspector.

1.9 KEYING

A.. Lock manufacturer shall ship all master keys and grandmaster keys via registered mail to

the address directed by the Project Manager or Inspector. Properly identify all keys as to the Project Name and Key location(s). Provide duplicate copy of key listing to the Project Manager or Inspector.

B. Provide keyed construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.

C. Cylinders, removable and interchangeable core system: Best [Peaks], or approved equal, small format 7-pin, as directed by the Project Manager or Inspector.

D. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "DO NOT DUPLICATE." Release permanent keys to the Project Manager or Inspector or the Inspector only.

E. Furnish keys in the following quantities:
1 each Grand Masterkeys
4 each Masterkeys
2 each Change keys each keyed core
15 each Construction masterkeys
1 each Control keys

F. The Owner, or the Project Manager or Inspector, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.

G. Keying Schedule: Arrange for a keying meeting, and programming meeting with Project Manager or Inspector, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Project Manager or Inspector.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 1, and this Section paragraph 1.2 B.

Item:	Manufacturer:	Approved:
Hinges	Stanley	Hager, McKinney
Locksets & Cylinders	Best	
Exit Devices	Precision	Von Duprin, Sargent
Pulls	Don Jo	Rockwood, Trimco
Closers	Stanley	Norton 7500, LCN 4041
Stops	Don Jo	Trimco, Rockwood
Overhead Stops	ABH	Rixson, Glynn Johnson
Flatgoods	Don Jo	Trimco, Rockwood
Thresholds & Gasketing	Pemko	Reese, Zero

2.2 MATERIALS:

A. Hinges:

1. Template screw hole locations
2. Minimum of 2 permanently lubricated non-detachable bearings
3. Equip with easily seated, non-rising pins
4. Sufficient size to allow 180-degree swing of door
5. Furnish hinges with five knuckles and flush [concealed] bearings
6. Provide hinge type as listed in schedule.
7. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
8. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
9. UL10B listed for Fire
10. UL10B listed for Fire

B. Mortise Type Locks and Latches:
1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C
2. Fit ANSI A115.1 door preparation
3. Functions and design as indicated in the hardware groups
4. One-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
5. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
6. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
7. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
8. Provide sufficient curved strike lip to protect door trim
9. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
10. Lock shall have self-aligning, thru-bolted trim
11. Levers to operate a roller bearing spindle hub mechanism
12. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
13. Spindle to be designed to prevent forced entry from attacking of lever
14. Provide locksets with 7-pin removable and interchangeable core cylinders
15. Each lever to have independent spring mechanism controlling it
16. Core face must be the same finish as the lockset

C. Exit Devices shall:
1. Tested and approved by BHMA for ANSI 156.3, Grade 1
2. Provide a deadlocking latchbolt
3. Non-fire rated exit devices shall have cylinder dogging.
4. Touchpad shall be “T” style
5. Exposed components shall be of architectural metals and finishes.
6. Lever design shall match lockset lever design
7. Provide strikes as required by application.
8. Fire exit devices to be listed for UL10C
9. UL listed for Accident Hazard
10. Provide vandal resistant or breakaway trim

D. Door Closers shall:
1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified
3. Closer shall have extra-duty arms and knuckles
4. Conform to ANSI 117.1
5. Maximum 2 7/16 inch case projection with non-ferrous cover
6. Separate adjusting valves for closing and latching speed, and backcheck
7. Provide adapter plates, Ex-bolts, shim spacers and blade stop spacers as required by frame and door conditions

8. Full rack and pinion type closer with 1½“ minimum bore
9. Mount closers on non-public side of door, unless otherwise noted in specification
10. Closers shall be non-handed, non-sized and multi-sized.

E. Kickplates: Provide with four beveled edges, 8 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish pan-head countersunk screws to match finish.

F. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.

G. Key Control: Provide one wall mounted key cabinet complete with hooks, index and tags.

H. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

2.3 FINISH:

A. Designations used in Schedule of Finish Hardware - 3.5, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products

B. Powder coat door closers to match other hardware, unless otherwise noted.

C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
1. Recommended Locations for Builder’s Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
2. NWWDA Industry Standard I.S.1.7, Hardware Locations for Wood Flush Doors.

3.3 INSTALLATION:

A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

B. Conform to local governing agency security ordinance.

C. ADA Standard: Conform to ANSI A117.1 for positioning requirements for disabled.

D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use “Riv-Nuts” or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

A. Contractor/Installer Field Services: After installation is complete, Contractor shall inspect completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.

1. Check and adjust closers to ensure proper operation.
   a. Adjust closer to complete full closing cycle in less than 4 to 6 seconds without abrupt change of speed between "Sweep" and "Latch" speeds.
   b. Adjust "Backcheck" according to manufacturer's instructions.
   c. Set exterior doors closers to have 5 lbs maximum pressure to open, interior non-rated at 5 lbs, rated openings at 12lbs

2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
   a. Verify levers are free from binding.
   b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.

3. Report findings, in writing, to the Architect and Hardware Supplier outlining corrective actions and recommendations.

3.5 SCHEDULE OF FINISH HARDWARE:

Manufacturer List

Code	Name
AB	ABH Manufacturing Inc.
BE	Best Access Systems
DJ	Don-Jo
LC	LCN Closers
NA	National Guard
RS	Reese Enterprises Inc.
ST	Stanley
TR	Trimco
VO	Von Duprin

Option List

Code	Description
CD	CYLINDER DOGGING
B3E	BEVELLED 3 SIDES
DEL	DELAYED ACTION
4040-18PA	Drop Plate (other plating)
30 SHOE SUPPORT	CUSH SHOE SUPPORT-PAINTED FINISHES

Finish List

Code	Description
AL	Aluminum
626	Satin Chromium Plated
630	Satin Stainless Steel
GRAY	Gray

Hardware Sets

HW 01 **D100, D101, D113, D114**

	Hinges	CB1961R	630	STA
1 Ea.	Exit Device	98NL-OP	626	VON
1 Ea.	Electrified Lever Trim	ETDLSIG/26DV99	626	ALA
1 Ea.	Cylinder to Suit Device	Per Specification	---	---
1 Ea.	Closer	4040XP-H-EDA	689	LCN
1 Ea.	Door Stop	Per Specification	---	---
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 02 **D102, D103, D116, D117**

1 Ea.	Cylinder to Suit Locking Device	Per Specifications	---	---

Note: Balance of hardware by manufacturer.

HW 03 **D105, D109, D110, D111, D151, D152**

	Hinges	CB1961R	630	STA
1 Ea.	Electrified Lockset	DL4100IC/26D	626	ALA
1 Ea.	Cylinder to Suit Device	Per Specification	---	---
1 Ea.	Deadlock	ICCL 600	626	CAL
1 Ea.	Closer	4040XP-CNS	689	LCN
1 Ea.	Lock Astragal (at outswing doors)	ULP-211	626	DON
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 04 **D106, D112, D140, D142, D144**

	Hinges	CB1900R	652	STA
1 Ea.	Electrified Lockset	DL4100IC/26D	626	ALA
1 Ea.	Closer	4040XP REG or EDA (as required)	689	LCN
1 Ea.	Door Stop	Per Specification	---	---
3 Ea.	Silencer	1608/1609	---	DON

HW 4A **D120**

	Hinges	CB1900R	652	STA
1 Ea.	Electrified Lockset	DL4100IC/26D	626	ALA
1 Ea.	Closer	4040XP REG or EDA (as required)	689	LCN
1 Ea.	Door Stop	Per Specification	---	---
1 Ea.	Gasketing	797B @ Head & Jambs	---	REE

HW 05 **D107, D118**

	Hinges	CB1961R	630	STA
1 Ea.	Electrified Lockset	DL4100IC/26D	626	ALA
1 Ea.	Cylinder to Suit Device	Per Specification	---	---
1 Ea.	Deadlock	ICCL 600	626	CAL
1 Ea.	Closer	4040XP - EDA	689	LCN
1 Ea.	Lock Astragal (at outswing doors)	ULP-211	630	DON
1 Ea.	Door Stop	Per Specification	---	---
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 06 **D108, D138, D141, D143, D145**

	Hinges	CB1900R	652	STA
1 Ea.	Storeroom Lockset	93K7D	626	BES
1 Ea.	Closer	4040XP REG or EDA (as required)	689	LCN
1 Ea.	Door Stop	Per Specification	---	---
3 Ea.	Silencer	1608/1609	---	DON

HW 07 **D121, D122, D123, D137, D147**

2 Ea.	Floor Closer /Pivot Set	SCPH27NHO Series	626	RIX
	Intermediate Pivot(s)	M19	626	RIX
1 Ea.	Exit Device	98EO	626	VON
1 Ea.	Exit Device	98NL-OP	626	VON
1 Ea.	Key Removable Mullion	KR4954	689	VON
1 Ea.	Electrified Lever Trim	ETDLSIG/26DV99	626	ALA
1 Ea.	Cylinder To Suit Mullion	Per Specification	---	---
1 Ea.	Cylinder to Suit Device	Per Specification	---	---
2 Ea.	Door Stop	Per Specification	---	---
1 Ea.	Threshold	To Suit Sill Condition	719	REE

Note: Alum/ Glass Doors - Perimeter, meeting stile and door bottom seals by door manufacturer.

HW 08 **D124, D126**

	Hinges	CB1961R	630	STA
1 Ea.	Classroom Deadlock- ADA Turn	48H7R	626	BES
1 Ea.	Closer	4040XP CNS	689	LCN
1 Ea.	Push Plate	71	630	DON
1 Ea.	Pull Plate	7115	630	DON
1 Ea.	Kick Plate	Per Specification	630	DON
1 Ea.	Mop Plate	Per Specification	630	DON
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 09 **D125, D136**

	Hinges	CB1961R	630	STA
1 Ea.	Classroom Deadlock- ADA Turn	48H7R	626	BES
1 Ea.	Flush Cup Pull	1848	630	DON
1 Ea.	OH Concealed Stop	3024	630	DON
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 10 **D127, D129, D133, D148, D149, D150, D153, D154**

	Hinges	CB1961R	630	STA
1 Ea.	Storeroom Lockset	93K7D x 3/4-inch Latchbolt 7/8" LTC	626	BES
2 Ea.	Closer	4040XP CNS	689	LCN
2 Ea.	Flush Bolt	1555	626	DON
1 Ea.	DP Strike	1570	626	DON
1 Ea.	Overlapping Astragal	By Door Manufacturer	600	---
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
2 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 11 **D132, D135, D155,D156**

	Hinges	CB1961R	630	STA
1 Ea.	Storeroom Lockset	93K7D	626	BES
1 Ea.	Closer	4040XP EDA	689	LCN
1 Ea.	Door Stop	Per Specification	---	---

1 Ea.	Lock Astragal (at outswing doors)	ULP-211	630	DON
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 12 **D139**

	Hinges	CB1900R	652	STA
1 Ea.	Privacy Lockset	93K0L	626	BES
1 Ea.	Closer	4040XP REG or EDA (as required)	689	LCN
1 Ea.	Door Stop	Per Specification	---	---
1 Ea.	Kick Plate	Per Specification	630	DON
1 Ea.	Mop Plate	Per Specification	630	DON
3 Ea.	Silencer	1608/1609	---	DON

HW 13 **D146**

	Hinges	CB1961R	630	STA
1 Ea.	Classroom Lockset	93K7R	626	BES
1 Ea.	Closer	4040XP REG or EDA (as required)	689	LCN
1 Ea.	Door Stop	Per Specification	---	---
1 Ea.	Lock Astragal (at outswing doors)	ULP-211	630	DON
1 Ea.	Overhead Rain Drip	R201C	628	REE
1 Ea.	Threshold	To Suit Sill Condition	719	REE
1 Ea.	Door Sweep	354C	628	REE
1 Set	Weatherstrip	655A x 657A	719	REE

HW 14 **D157**

1 Ea.	Floor Closer /Pivot Set	SCPH27NHO Series
	Intermediate Pivot(s)	M19
1 Ea.	Exit Device	98EO
2 Ea.	Door Stop	Per Specification
1 Ea.	Threshold	To Suit Sill Condition

Note: Alum/ Glass Doors - Perimeter, meeting stile and door bottom seals by door manufacturer. Match finishes provided in HW Set 07.

END OF SECTION

SECTION 08 80 00
GLASS GLAZING

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish all tools, equipment, materials, and supplies and shall perform all labor required to provide glass and glazing as indicated on the Drawings and specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. The WORK of the following Sections or Divisions applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.

1. Section 07 92 00 Joint Sealants.

2. Section 08 41 13 Aluminum Entrances and Storefronts.

3. Section 10 28 00 Toilet and Bath Accessories.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with reference standards and Standard Specifications of the GENERAL REQUIREMENTS.

B. Comply with the following American Institute of Steel Construction (AISC) references, as applicable:

1. Federal Specifications:
   a. DD-G-451DGlass, Float or plate, Sheet, Figured(Flat for Glazing, Mirrors and Other Uses.)

   b. DD-G-1403CGlass, Float, Sheet, Figured, Coated (Heat-Strengthened and Tempered.)

   c. TT-S-001543ASealing Compound, Silicone Rubber Base (For Calking, Sealing and Glazing in Buildings and Other Structures.)

2. Commercial Standards:
   a. ASTM C 1036 - Standard Specification for Flat Glass.

   b. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.

   c. ASTM C 1172 – Standard Specification for Laminated Architectural Flat Glass.

   d. ASTM C 1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.

   e. ASTM E 1886 - Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.

f. ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

g. CPSC 16CFR-1201 - Safety Standard for Architectural Glazing Materials.

h. GANA Glazing Manual.

i. GANA Laminated Glazing Reference Manual

j. ASTM D 2287Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds.

k. ANSI Z 97.1Glazing Materials used in Buildings, Safety Performance Specifications and Methods of Test.

3. Trade Standards:
   a. "Glazing Manual" and "Glazing Sealing Systems Manual."

   b. "Glazing Specifications for Sealed Insulating Glass Units" by the Sealed Insulating Glass Manufacturers Association (SIGMA).

4. Manufacturers' Standards: In addition to the standards listed above, the glass, calking materials, and their installation, shall be in accordance with the manufacturer's published recommendations and specifications.

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with the GENERAL REQUIREMENTS.

B. Manufacturer's Data:

1. A complete materials list showing all items proposed to be furnished and installed under this Section.

2. Sufficient data to demonstrate that all such materials meet or exceed the specified quality requirements with an analysis of each size, type, position and location of the glazing.

3. For information only, submit two copies of manufacturer's specifications, recommendations and installation instructions for each type of glazing sealant and compound, gasket and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown including, but not limited to, manufacturer's certification that safety glass complies with ANSI Z97.1. Show by transmittal that one copy of each recommendation and instruction has been distributed to the glazier.

C. Buy Clean California Act

1. For project specifications that include GR Section 1601, Buy Clean California Act, bidders shall submit current Environmental Product Declarations (EPDs) for “Flat Glass” from the originating producer. When products are being secured from different producers, an EPD will be required for each specific product from each producer.

2. An EPD must conform to the following:

a. Shall be facility-specific manufacturer/mill EPD. However, industry-average EPDs may also be permitted when indicated as such per GR Section 1601.
b. Be independently verified in accordance with ISO 14025 (Type III).
c. Be developed according to the guidelines of the applicable Product Category Rule (PCR), as identified by the Department of General Services, State of California.
d. Have a valid date that has not expired.
e. Shall not exceed the maximum Global Warming Potential (GWP) limit as required by GR Section 1601.

3. EPD shall be submitted concurrently with the product's submittal for review and approval.

D. Samples: Submit samples of the following:

1. Tinted vision glass, 12-inches by 12-inches

2. Glazing Material: Submit three 12-inch long samples of each color required for each type of glazing sealant or gasket exposed to view. Install sample between two strips of material similar to or representative of channel surfaces where sealant or gasket will be used, held apart to represent typical joint widths.
Samples will be reviewed by ENGINEER for color and texture only. Compliance with all other requirements is the exclusive responsibility of the CONTRACTOR.

3. Glazing Gaskets: Two 12-inch by 12-inch corner pieces with vulcanized corner joints for each shape, section, kind, configuration, and hardness of compression seal gaskets, also glazing tapes, spacer blocks, and spacer backing materials.

4. Sealant: Two cured sealant beads for each color required for sealant in exposed joints with samples of backing materials.

E. Glass Certificate and Analysis: Submit four copies each of:

1. Certificate: A letter, signed by the glass manufacturer, stating that he has reviewed project glazing details, glass types and glass thicknesses and that he finds them suitable for intended purposes in accordance with his published literature and requirements of the Contract Documents.

2. Analysis for Exterior Glass: The glass manufacturer's certificate shall be accompanied by wind load, stress and deflection, and thermal stress analyses. Wind load analysis shall show the maximum wind load that each piece of glass can withstand with a failure probability no greater than eight lights per thousand at specified wind loads and in compliance with specified deflection limitations.

F. Sealant and Structural Silicone Data: Submit four copies each of:

1. Certificate: A letter signed by the sealant manufacturer stating that he has reviewed all sealant details, tested all contact surfaces and finds them suitable for their intended purpose and proposed sealant is compatible with surfaces it contacts, will adhere satisfactorily to bonding surfaces, and will not stain surfaces it will contact. Also, provide surface preparation and primer requirements, if any, based on testing of actual project substrates.

2. Test Reports:

a. Sealant manufacturer's certification as to compatibility, adhesion sufficiency, and nonstaining shall be accompanied by actual test results on production substrates

performed in accordance with applicable ASTM procedures and shall include the following based upon tests performed on production run materials:

b. Adhesion test data to production samples of metal and glass, tested in accordance with ASTM C 794, establishing adhesion over the temperature range **[as described under the performance criteria section of this Specification.]**

c. Compatibility statement that the materials in contact with the sealant such as gaskets, spacers, setting blocks, including seals in insulating glass units and laminate sheet in safety glass, are compatible with the sealant after 21 days' exposure to ultraviolet, 2,0004,000 (microwatt ultraviolet radiation).

d. Stress statement that, when exposed to the specified wind load, the stress on the silicone sealant does not exceed 20 psi to provide a safety factor of not less than 2.5.

G. Shop Drawings: Submit shop drawings showing glazing methods.

1.5 QUALITY ASSURANCE

A. Water Test: After nominal cure of exterior glazing sealants which are exposed to the weather, test for water leaks. Flood the joint exposure with water directed from a 3/4-inch garden hose held perpendicular to wall face, 2-feet from the joint, connected to a water system with 30 psi minimum normal water pressure. Move stream of water along joint at an approximate rate of 20-feet per minute.

B. Test Sample: Test approximately 5% of total glazing system, in locations which are typical of every joint condition and which can be inspected easily for leakage on opposite face. Conduct tests in the presence of the ENGINEER, who will determine the actual period of exposure to water from the hose, based upon the extent of observed leakage or lack thereof.

C. Repair Leaks: Repair glazing installation at leaks or, if leakage is excessive (uncontrolled), replace glazing sealants as directed.

D. Additional Testing: Whenever nature of observed leakage indicates the possibility of inadequate glazing joint bond strength, ENGINEER may direct that additional testing be performed at a time when joints have been fully cured, followed by natural exposure through both extreme temperatures, and returned to the range of temperature in which it is feasible to conduct testing. Repair or replace all deficient and defective work as required or directed.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Glass: All materials shall be new of the types specified. Glass shall conform to the applicable requirements of Fed. Spec. DD-G-451 and DD-G-1403.

1. Primary and fabricated glass shall be products of a single manufacturer and shall be certified by him as suitable for intended use. Glass shall bear the manufacturer's labels and be accompanied by manufacturer's glazing instructions where applicable.

2. Glass thickness and temper shall not be less than as recommended by the manufacturers to resist heat breakage, meet structural loading requirements and provide visual uniformity federal selection of glass thickness and temper shall take into consideration that glass must meet

requirements of federal and state safety building code enforcement agencies. Glass thicknesses, where indicated, were included for design purposes and shall be minimum requirement.

3. Glass, except as noted otherwise, shall be product of Vitro Architectural Glass, Guardian Glass, or approved equal. Where type is not indicated on drawings, glass shall be designed by the CONTRACTOR to meet the criteria specified in the sections governing the work.

4. The manufacturer's names, item numbers, or trade names given, where used, indicate general design and/or color tint only and are not restrictive. Items of similar design by other manufacturers and meeting specified requirements and of equal overall quality may be submitted for approval except that all tinted glass and all insulated glass units shall be by the same manufacturer.

5. All glass furnished under this Contract shall comply with provisions of the Safety Standard for Architectural Glazing Materials (16 CFR 1201) and, in addition, to all glazing requirements of state and local safety and building codes, ordinances, and regulations.

6. Identify all glass, components of [aluminum] frames, and all boxing containing [aluminum] sections for frames with the labels of the manufacturer.

7. Keep label on glass until the final cleaning. Label on wire glass shall indicate that glass is for use in fire-rated construction.

8. Glass shall conform to color and physical properties (e.g., light transmission, shading coefficient, insulation values, etc.) published by manufacturers for the glass given as examples.

B. Schedule:

Class Type: Clear Panel - Solar Control Low-E Clear Insulating Glass

Total System Thickness: 1”
Outdoor lite: float glass, sputter coated on second surface
Indoor lite: clear (transparent) float glass
Low e coating on second surface
Outdoor appearance: clear
Insulating Unit Construction: 1/4” (6mm) glass + 1/2” (13mm) air space + 1/4” (6mm) glass

Description:

Visible Light Transmittance	U-Value Winter	U-Value Summer	SHGC	Shading Coefficient	Outdoor Visible Light Reflectance
64%	0.28	0.26	0.27	0.32	13%

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Vitro Architectural Glass (basis of design) Solarban 70 (2) Clear
2. Guardian Glass

C. Elastomeric Sealants and Seals:

1. Colors: Provide in color selected by ENGINEER where exposed. Wherever material is not exposed to view, provide manufacturer's standard color which has the best overall performance characteristics for the application shown.

2. Hardness: Hardnesses shown and specified are intended to indicate the general range necessary for overall performance. Consult the glass manufacturer's technical representative to determine the actual hardness recommended for the conditions of installation and use. Information concerning anticipated glass movement and glazing channel width and depth shall be determined by the criteria for the curtain wall for exterior glazing.

   Except as otherwise recommended, provide glazing materials within the following ranges of hardness (Shore A, fully cured, at 75 degrees F):

   a. 15 to 35 for elastomeric compounds and tapes used with rigid stops and frames for large glass sizes (in excess of 100 united inches). Provide material sufficiently hard to withstand impact of moving sash and doors. 25 to 50 for rubberlike curing compounds used with rigid stops and frames for medium and small glass sizes (less than 100 united inches). Provide materials sufficiently hard to withstand impact of moving sash and doors.

   b. 35 to 60 for molded gaskets used with rigid stops and frames, depending upon strength needed for application or insertion of units.

   c. 75 to 80 for structural gaskets (not supported by stops).

   d. Nonelastomeric Compounds: (Shore A not applicable.) 2 to 12 mm penetration for 5.0 seconds of penetrometer needle on nominally cured compound (ASTM D 2541).

3. Compatibility: Before purchase of the specified glazing materials, investigate compatibility with the channel surfaces, joint fillers and other materials in the glazing channel. Provide only materials (manufacturer's recommended variation of the specified materials) which are known to be fully compatible with the actual installation condition, as shown by manufacturer's published data or certification or by test.

4. Type: Provide size and shape of gaskets and preformed glazing units as shown or, if not shown, as recommended by the manufacturer, either in his published data or upon consultation with his technical representative.

5. One-Component Elastomeric Glazing Sealants:

   a. Use only nonacid-type silicone rubber glazing sealant.

   b. One-part nonacid-type silicone rubber elastomeric sealant, complying with FS TT-S1543, Class A, nonsag, certified by manufacturer for glazing.

   c. Products/Manufacturers: Provide one of the following, or equal:

      1) 780 Building Sealant, Dow Corning Corp.

      2) Silicone Sealant 1300, General Electric Co.

3) 862 Silicon Arch. Sealant, Pecora Corp.

6. Preformed Elastomeric Glazing Sealants:

a. Butyl Rubber Glazing Tape:

1) A partially vulcanized, self-adhesive, nonstaining, elastomeric butyl rubber tape, recommended by the manufacturer for waterproof construction when compressed 35% in dynamically moving joints; not less than 98% solids; no deterioration for 3,000 hour test in Atlas Weatherometer.

b. Manufacturers: Provide one of the following, or equal:

1) Intercostal Corp., "Inco lastic 7500".

2) Protective Treatments, Inc., "PTI 606".

D. Miscellaneous Glazing Materials:

1. Channel Cleaner: Use the type of compound recommended by the sealant manufacturer for the channel surfaces to be cleaned.

2. Channel Primer/Sealer: Provide the type of primer or sealer recommended by the sealant manufacturer for application of his sealant to the channel surfaces.

3. Setting Blocks: Neoprene or other resilient blocks of 80 to 90 Shore A durometer hardness, tested for compatibility with specified glazing sealants. Shims, if required, shall be of same material as setting blocks. Shims for centering insulating glass units in rabbet for wet glazing shall be 40-50 durometer and placed in the rabbet on all four sides indoors and out. Shims shall be continuous or at least 4-inches long, placed on 18- to 24-inch centers with at least 1/8inch bite on the glazing unit edges. Setting blocks (and shims, if any) shall be full width of setting channel and not less than 0.1-inch per square foot of glass with a minimum length of 4inches.

4. Spacers and Edge Blocks: Black, dense, heat-cured silicone rubber of 60 to 70 Shore A durometer hardness, unless otherwise specified by the glass manufacturer, adhesively backed on one face only, tested for compatibility with specified glazing sealants. Size blocks to allow 1/8-inch clearance between block and edge of glass.

5. Compressible Filler Rod: Closed-cell or waterproof-jacketed foam of polyethylene, butyl rubber, neoprene, polyurethane or vinyl, tested for compatibility with specified glazing sealants, of 5 to 10 psi compression strength (25% deflection), as recommended by sealant manufacturers for use in glazing channel to prevent sealant from exuding from the channel.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection:

1. General: Prior to installation of the work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence. Verify that glazing may be performed in strict accordance with the approved design and the referenced standards.

2. Framing System: Elements which directly support the glass shall be square, in plane, and free of glazing obstructions. Provide rigid four-side support at design wind loads by limiting deflection and rotational forces on the glass. Sill members shall be rigid and securely supported to properly support the weight of the unit. (Limit deflection with setting blocks in their proper position.) The framing system shall be watertight and weeped to prevent water accumulation detrimental to long-term performance of the glass.

3. Glazing Rabbet: The rabbet shall be sized to meet the minimum clearances recommended by the glass manufacturer.

4. Weep Holes: Make sure that accumulated water or moisture cannot remain in the glazing rabbet for prolonged periods of time. Drain or weep the sill of each opening to the outdoors at least three points using 3/8-inch diameter weep holes or the equivalent dimension. Locate one weep at the center of the span and one each between the jamb and setting block.

5. Weather Conditions: Do not proceed with installation of glass or sealants under adverse weather conditions or when temperatures are below or above manufacturer's recommended limitations for installation. Wherever channel action is affected by ambient temperature variations, install glazing sealants only when temperatures are in the middle third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation or compression and bond stress will not be excessive at extremely low or high temperatures. Coordinate time schedule with CONTRACTOR to avoid delay of project.

6. Statement of Noncompliance: Wherever it is necessary to proceed with the installation of glazing sealants or compounds under conditions which do not fully comply with the requirements (because of time schedule or other reasons which the CONTRACTOR determines to be crucial to the project), prepare a written statement for the CITY'S record (with copies to the CONTRACTOR and ENGINEER) indicating the nature of the noncompliance, the reasons for proceeding, the extra or precautionary measures taken to ensure the best possible work, and the names of the individuals concurring with the decision to proceed with the glazing work.

B. Performance Requirements:

1. Watertight and airtight installation of each piece of glass is required. Each installation must withstand normal temperature changes, wind loading, without failure of any kind, including loss or breakage or glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.

2. Protect glass from edge damage at all times during handling, installation and operation of the building. Glass breakage during the guarantee period will be considered a form of faulty material or workmanship (resulting from edge damage) unless known to result from vandalism or other causes not related to materials and workmanship.

3. Glazing channel dimensions shall provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. Single glass panes shall have no less than 3/8-inch bite. The glazier shall be responsible for correct glass size for each opening, within the tolerances and necessary dimensions established.

C. Discrepancies: Do not commence installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General and Standards:

1. Comply with combined recommendations of the "Gazing Manual" by Glass Association of North America (GANA),[AAMA,] glass manufacturer, and manufacturer of sealants and other materials used in glazing, except where more stringent requirements are shown or specified and except where glass manufacturers' technical representatives direct otherwise.

2. Unify appearance of each series of lights by setting each piece to match others as nearly as possible. Inspect each piece and set with pattern, draw and bow oriented in the same direction as other pieces.

3. Inspect each piece of glass immediately before installation and eliminate pieces which have observable edge damage or face imperfections.

4. Cut and install colored (tinted) glass as recommended in "Technical Services Report No. 104B" by PPG Industries, or similar report by other glass manufacturer.

5. Cut and install reflective glass as recommended by LOF or manufacturer of glass.

B. Preparation of Substrate:

1. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.

2. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.

C. Glass Setting:

1. Items to be glazed may be shop-glazed or field-glazed, with glass of the quality and thickness specified.

2. Distortion: Cut and install glass with the visible lines or waves running in the horizontal direction.

3. Glazing shall be in accordance with the manufacturer's approved instructions.

4. All lights shall be free of edge shells, cracks, runs, surface scratches or excessive surface draw marks or visual distortion.

5. All glass shall be set free of warping, twisting or movement other than may be due to normal thermal expansion. Any lights which are cracked, chipped, or scratched during installation shall be removed and replaced with undamaged units.

6. Units shall be delivered to and handled at the site by methods which will prevent strain, distortion, or other damage.

7. Setting Blocks:

a. Provide two blocks (80-90 durometer) at quarter points but the nearest edge of the setting block should be no closer than 6-inches to the corner of the glass. The width of the setting block should be equal to or greater than the thickness of the glass unit it supports.

b. Chairs (risers): Where glazing rabbets are exceptionally deep, [aluminum] or other material may be used to elevate the (80-90 durometer) setting block. Where chairs are used, they shall be sized properly and fixed in position so they cannot shift during glazing or in service and the setting block shall be securely fastened to the chair.

8. In no case shall glazed units be identified by paper adhered to the glass or by use of soap or cleaning powder for markings. Identification shall only be by flags or markers attached to the framing members and held away from the glass.

9. Positioning Glass in Wet Seal: Set vision glass from inside the building. Position glass in glazing rabbet to maintain specified edge clearances and glass bite at perimeter on all four sides. Maintain position of glass in rabbet and provide the required sealant thickness on both sides of glass. Whenever glass dimensions are larger than 50 united inches, provide setting blocks at the sill and spacer shims on all four sides; locate setting blocks one quarter way in from each jamb edge of glass. Where setting blocks and spacer shims are required, set into a glazing sealant. They may be buttered with the sealant and they shall then be mechanically locked in position. Sealant shall be allowed to firmly set prior to installation of glass.

10. Setting Methods: Apply glazing sealant, glazing tape, and gaskets uniformly with accurately formed corners and bevels. Remove excess compound from glass and sash. Use only recommended thinners, cleaners, and solvents. Do not cut or dilute glazing compounds or sealants. Strip surplus angle to shed water and provide clean sight lines. Secure stop beads in place with suitable fastenings. Do not apply sealant at temperatures lower than 40 degrees

F or on a damp, dirty, or dusty surface. After glazing, fix sash so it cannot be operated until compound or sealant has set. The following setting methods shall be used as indicated and where shown on the approved shop drawings.

Type I: Compression gasket glazing, using compression gaskets both sides of glass and adjustable or snap-on interior stops shall be used unless otherwise indicated. Install gaskets in accordance with manufacturer's instructions.

Type II: Sealant glazing, using glazing sealant to completely fill the channel on edges and on both sides of glass.

Type III: Sealant and tape glazing, using glazing sealant for a cap bead above glazing tape against fixed exterior stops and glazing tape full height against removable interior stops.

Type IV: Sealant and tape glazing, using glazing sealant full height against removable exterior stops with heel bead or glazing sealant and glazing tape full height against fixed interior stops.

Type V: Tape, sealant, and compound glazing, using glazing tape full height against removable exterior stops with heal bead or glazing sealant and glazing tape full height against fixed interior stops.

Type VI: Tape, sealant, and gasket glazing, using glazing tape full height against fixed exterior stops, glazing sealant as a heel-bead at edge of glass, and preformed vision strip gasket against removable interior snap-on stops.

Type VII: Lock-strip gasket glazing, using lock-strip glazing gaskets. Install gaskets in accordance with manufacturer's instructions using special tools and lubricants.

D. Sealant Glazing:

1. Install setting blocks of proper size at quarter points of sill rabbet but not closer than 6-inches from corner. Set blocks in thin course of the heal-bead compound, if any.

2. Provide spacers inside and out, and of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing. Provide 1/8-inch minimum lap of spacers on glass, and use thickness equal to sealant width, except with butyl rubber sealant tape, use thickness 1/32-inch less than final compressed thickness of tape.

3. Voids and Filler Rods: Prevent exudation of sealant or compound by installing filler rods in the channel at the heel or jambs and heads or by forming voids. Do not leave voids in the sill channels. In general, filler rods or voids are required for glazing insulating glass more than 1/2inch thick and for laminated or tinted glass larger than 75 united inches and for other glass more than 9/32-inch thick or larger than 120 united inches.

4. Force sealants into channel to eliminate air pockets and voids (other than expansion voids) and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

5. Tool exposed surfaces of glazing sealants and compounds to provide a substantial "wash" away from the glass.

6. When installing processed glass, exercise extreme care to avoid contact of glazing materials with processed surfaces except where concealed in the glazing channel. Use masking tape to ensure limitation of compounds to the channel area.

7. Clean and trim excess glazing materials from the glass and stops or frames promptly after installation, and eliminate stains and discolorations.

E. Gaskets and Tapes:

1. Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in the glazing system.

2. Where wedge-shaped gaskets are driven into one side of the channel to pressurize the sealant or gasket on the opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when subjected to dynamic movement. Anchor gasket to stop with matching ribs.

3.3 PROTECTION OF GLAZING

A. Instruction: The glazier shall advise the CONTRACTOR of procedures required for the protection of glass and glazing sealants and compounds during the construction period, so that they will be without deterioration of damage (other than normal weathering) at the time of CITY's acceptance.

B. Precautions: Take all necessary precautions and provisions required to prevent glass damage resulting from the alkaline wash from grout, green concrete surfaces, and similar sources of possible damage.

C. Protect glass from breakage immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surfaces of glass.

D. Remove and replace glass which is broken, chipped, cracked, abraded, or damaged in other ways (including natural causes, accidents, and vandalism) during the construction period.

3.4 CLEANING GLASS

A. Maintain glass in a reasonably clean condition during construction, so that dirt accumulation will not cause damage by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other surfaces below.

B. Wash and polish glass on both faces not more than 4 days prior to CITY's acceptance of work in each area, removing manufacturer's adhesive label at this time. Comply with glass manufacturer's recommendations for cleaning.

3.5 CLEANUP

A. Upon completion of installation of glass and glazing work, cleanup all waste materials and debris resulting from this operation and dispose of such waste materials and debris off the site.

END SECTION

SECTION 08 83 00

MIRRORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes the following types of silvered flat glass mirrors: Annealed monolithic glass mirrors.

B. Related Requirements:

1. Section 08 81 00 "Glazing" for glass with reflective coatings used for vision and spandrel lites.
2. Section 10 28 00 "Toilet, Bath, and Laundry Accessories" for metal-framed mirrors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Mirrors. Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.

B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.

C. Samples: For each type of the following:

1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.
2. Mirror Clips: Full size.
3. Mirror Trim: 12 inches long.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of mirror and mirror mastic.

C. Preconstruction Test Reports: From mirror manufacturer indicating that mirror mastic was tested for compatibility and adhesion with mirror backing and substrates on which mirrors are installed.

D. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For mirrors to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.6 PRECONSTRUCTION TESTING

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect mirrors according to mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Binswanger Mirror; a division of Vitro America, Inc.
2. Gardner Glass, Inc.
3. Guardian Industries Corp.; SunGuard.
4. Walker Glass Co., Ltd.

B. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.

C. Source Limitations for Mirror Accessories: Obtain mirror glazing accessories from single source.

2.2 SILVERED FLAT GLASS MIRRORS

A. Mirrors, General: ASTM C 1503; manufactured using copper-free, low-lead mirror coating process.

B. Annealed Monolithic Glass Mirrors: Mirror Glazing Quality, clear. Nominal Thickness: 6.0 mm.

2.3 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Laurence, C. R. Co., Inc.
    b. Macco Adhesives.
    c. Palmer Products Corporation.
    d. Pecora Corporation.
    e. Royal Adhesives & Sealants.
    f. Sommer & Maca Industries, Inc.

2. Adhesives shall have a VOC content of 70 g/L or less.

2.4 MIRROR HARDWARE

A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.

1. Bottom Trim: J-channels formed with front leg and back leg not less than 3/8 and 7/8 inch in height, respectively, and a thickness of not less than 0.04 inch. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Andscot Company, Inc.
    b. Laurence, C. R. Co., Inc.
    c. Stylmark, Inc.

2. Top Trim: J-channels formed with front leg and back leg not less than 5/8 and 1 inch in height, respectively, and a thickness of not less than 0.04 inch. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Andscot Company, Inc.
    b. Laurence, C. R. Co., Inc.

c. Stylmark, Inc.

3. Finish: Clear bright anodized.

B. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

C. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors. Provide galvanized anchors and inserts for applications on inside face of exterior walls and where indicated.

2.5 FABRICATION

A. Fabricate mirrors in the shop to greatest extent possible.

B. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts so they fit closely around penetrations in mirrors.

C. Mirror Edge Treatment: Flat polished.

1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
2. Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.

C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

A. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

3.3 INSTALLATION

A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images. GANA Publications: "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."

B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.

C. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.

1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.
2. Install mastic as follows:

a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.

3.4 CLEANING AND PROTECTION

A. Protect mirrors from breakage and contaminating substances resulting from construction operations.

B. Do not permit edges of mirrors to be exposed to standing water.

C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.

D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer.

END OF SECTION

SECTION 08 91 19

FIXED LOUVERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Fixed, extruded-aluminum louvers.

B. Related Requirements: Section 08 11 13 "Hollow Metal Doors and Frames" for louvers in hollow-metal doors.

1.2 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Horizontal Louver: Louver with horizontal blades (i.e., the axes of the blades are horizontal).

C. Vertical Louver: Louver with vertical blades (i.e., the axes of the blades are vertical).

D. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show weep paths, gaskets, flashing, sealant, and other means of preventing water intrusion.
2. Show mullion profiles and locations.

C. Samples: For each type of metal finish required.

D. Delegated-Design Submittal: For louvers indicated to comply with structural and seismic performance requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

B. Windborne-debris-impact-resistance test reports.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following: AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural and seismic performance requirements and design criteria indicated.

B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building. Wind Loads: Determine loads based on pressures as indicated on Drawings.

C. Seismic Performance: Louvers, including attachments to other construction, shall withstand the effects of earthquake motions determined according to 2013 CBC.

D. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

F. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED, EXTRUDED-ALUMINUM LOUVERS

A. Horizontal, Drainable-Blade Louver:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Air Balance Inc.; a division of MESTEK, Inc.
    b. Airolite Company, LLC (The).
    c. Carnes Company.
    d. Construction Specialties, Inc.
    e. Greenheck Fan Corporation.
    f. Nystrom, Inc.
    g. Ruskin Company.

2. Louver Depth: 4 inches.
3. Frame and Blade Nominal Thickness: Not less than 0.080 inch.
4. Mullion Type: Exposed.
5. Louver Performance Ratings:

    a. Free Area: Not less than 7.0 sq. ft. for 48-inch-wide by 48-inch-high louver.
    b. Point of Beginning Water Penetration: Not less than 900 fpm.
    c. Air Performance: Not more than 0.10-inch wg static pressure drop at 700-fpm free-area intake velocity.
    d. Air Performance: Not more than 0.15-inch wg static pressure drop at 900-fpm free-area exhaust velocity.

6. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.4 LOUVER SCREENS

A. General: Provide screen at each exterior louver.

1. Screen Location for Fixed Louvers: Interior face.
2. Screening Type: Bird screening except where insect screening is indicated.

B. Secure screen frames to louver frames with stainless-steel machine screws, spaced a maximum of 6 inches from each corner and at 12 inches o.c.

C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.

1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
2. Finish: Same finish as louver frames to which louver screens are attached.
3. Type: Rewirable frames with a driven spline or insert.

D. Louver Screening for Aluminum Louvers:

1. Bird Screening: Aluminum, 1/2-inch-square mesh, 0.063-inch wire.
2. Insect Screening: Aluminum, 18-by-16 mesh, 0.012-inch wire.

2.5 BLANK-OFF PANELS

A. Uninsulated, Blank-Off Panels: Metal sheet attached to back of louver.

1. Aluminum sheet for aluminum louvers, not less than 0.050-inch nominal thickness.
2. Panel Finish: Same finish applied to louvers.
3. Attach blank-off panels with sheet metal screws.

2.6 MATERIALS

A. Aluminum Extrusions: ASTM B 221, Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit unit installation conditions.

1. Use hex-head or Phillips pan-head screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.

D. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed for masonry, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.7 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints. Frame Type: Channel unless otherwise indicated.

D. Include supports, anchorages, and accessories required for complete assembly.

2.8 ALUMINUM FINISHES

A. Finish louvers after assembly.

B. High-Performance Organic Finish: Three-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Color and Gloss: Match Architect's sample.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Protect unpainted galvanized and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 92 00 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION

SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Non-load-bearing steel framing systems for interior gypsum board assemblies.
2. Suspension systems for interior gypsum ceilings, soffits, and grid systems.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.03 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For firestop tracks, from ICC-ES.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated, according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.02 FRAMING SYSTEMS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal unless otherwise indicated.
2. Protective Coating: ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.

C. Studs and Runners: ASTM C 645.
1. Steel Studs and Runners:
a. Minimum Base-Metal Thickness: 0.027 inch (0.68 mm).
b. Depth: As indicated on Drawings.

D. Slip-Type Head Joints: Where indicated, provide the following:
1. Single Long-Leg Runner System: ASTM C 645 top runner with 2-inch- (51-mm-) deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches (305 mm) of the top of studs to provide lateral bracing.

E. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
   1. Products: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Fire Trak Corp.; Fire Trak System.
      b. Grace Construction Products; FlameSafe FlowTrak System.
      c. Metal-Lite, Inc.; The System.

F. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
   1. Minimum Base-Metal Thickness: 0.033 inch (0.84 mm).

G. Cold-Rolled Channel Bridging: Steel, 0.053-inch (1.34-mm) minimum base-metal thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
   1. Depth: 1-1/2 inches (38 mm).
   2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.

H. Hat-Shaped, Rigid Furring Channels: ASTM C 645.
   1. Minimum Base-Metal Thickness: 0.018 inch (0.45 mm).
   2. Depth: 7/8 inch (22.2 mm).

I. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.
   1. Configuration: Asymmetrical.

J. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.
   1. Depth: 3/4 inch (19 mm).
   2. Furring Brackets: Adjustable, corrugated-edge type of steel sheet with minimum uncoated-steel thickness of 0.033 inch (0.8 mm).
   3. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

K. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 7/8 inch (22 mm), minimum uncoated-metal thickness of 0.018 inch (0.45 mm), and depth required to fit insulation thickness indicated.

2.03 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

B. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.

C. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.053 inch (1.34 mm) and minimum 1/2-inch- (13-mm-) wide flanges.
   1. Depth: 1-1/2 inches (38 mm).

D. Furring Channels (Furring Members):
   1. Cold-Rolled Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
   2. Steel Studs and Runners: ASTM C 645.
      a. Minimum Base-Metal Thickness: 0.018 inch (0.45 mm) unless noted otherwise.
      b. Depth: As indicated on Drawings.
   3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22 mm) deep.

a. Minimum Base-Metal Thickness: 0.018 inch (0.45 mm).

2.04 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.
1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide the following:
1. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.03 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754.
1. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C 1063 that apply to framing installation.
2. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.04 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Single-Layer Application: 16 inches (406 mm) o.c. unless otherwise indicated.
2. Multilayer Application: 16 inches (406 mm) o.c. unless otherwise indicated.
3. Tile Backing Panels: 16 inches (406 mm) o.c. unless otherwise indicated.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
   1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
   2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
      a. Install two studs at each jamb unless otherwise indicated.
      b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
      c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
   3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
   4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
      a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
   5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
   6. Curved Partitions:
      a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
      b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches (150 mm) o.c.

E. Direct Furring: Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

F. Z-Furring Members:
   1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-furring members spaced 24 inches (610 mm) o.c.
   2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
   3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.05 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
   1. Hangers: 48 inches (1219 mm) o.c.
   2. Carrying Channels (Main Runners): 48 inches (1219 mm) o.c.

3. Furring Channels (Furring Members): 16 inches (406 mm) o.c.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:
   1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
      a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
   2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
      a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
   3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
   4. Do not attach hangers to steel roof deck.
   5. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION

SECTION 09 24 00

CEMENT PLASTERING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Exterior portland cement plasterwork (stucco) on metal lath and unit masonry.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations and installation of control and expansion joints including plans, elevations, sections, details of components, and attachments to other work.

C. Samples for Initial Selection: For each type of factory-prepared finish coat indicated.

D. Samples for Verification: For each type of factory-prepared colored textured finish coat indicated; 12 by 12 inches (305 by 305 mm), and prepared on rigid backing.

1.03 QUALITY ASSURANCE

A. Fire-Resistance Ratings: Where indicated, provide portland cement plaster assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

B. Mockups: Before plastering, install mockups of at least 100 sq. ft. (9.3 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for each type of finish indicated.
   2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Preinstallation Conference: Conduct conference at Project site.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes.

1.05 PROJECT CONDITIONS

A. Comply with ASTM C 926 requirements.

B. Interior Plasterwork: Maintain room temperatures at greater than 40 deg F (4.4 deg C) for at least 48 hours before plaster application, and continuously during and after application.
   1. Avoid conditions that result in plaster drying out during curing period. Distribute heat evenly; prevent concentrated or uneven heat on plaster.
   2. Ventilate building spaces as required to remove water in excess of that required for hydrating plaster in a manner that prevents drafts of air from contacting surfaces during plaster application and until plaster is dry.

C. Exterior Plasterwork:

1. Apply and cure plaster to prevent plaster drying out during curing period. Use procedures required by climatic conditions, including moist curing, providing coverings, and providing barriers to deflect sunlight and wind.
2. Apply plaster when ambient temperature is greater than 40 deg F (4.4 deg C).
3. Protect plaster coats from freezing for not less than 48 hours after set of plaster coat has occurred.

D. Factory-Prepared Finishes: Comply with manufacturer's written recommendations for environmental conditions for applying finishes.

PART 2 - PRODUCTS

2.01 METAL LATH

A. Expanded-Metal Lath: ASTM C 847 with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
   b. CEMCO.
   c. Clark Western Building Systems.
   d. Dietrich Metal Framing; a Worthington Industries company.
   e. MarinoWARE.
   f. Phillips Manufacturing Co.
   g. Prior approved equal.
2. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
3. Diamond-Mesh Lath: Self-furring, 3.4 lb/sq. yd. (1.8 kg/sq. m).

2.02 ACCESSORIES

A. General: Comply with ASTM C 1063 and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

B. Building Paper: Grade D, 60 minute water resistance minimum, ASTM D779 equal to 60 Minute Super Jumbo Tex, Fortifiber Corporation, Los Angeles, CA.

C. Metal Accessories:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Alabama Metal Industries Corporation; a Gibraltar Industries company.
   b. CEMCO.
   c. Clark Western Building Systems.
   d. Dietrich Metal Framing; a Worthington Industries company.
   e. Flannery, Inc.
   f. MarinoWARE.
   g. Phillips Manufacturing Co.
   h. Prior approved equal.
2. Foundation Weep Screed: Fabricated from hot-dip galvanized-steel sheet, ASTM A 653/A 653M, G60 (Z180) zinc coating.
3. Cornerite: Fabricated from metal lath with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
4. External-Corner Reinforcement: Fabricated from metal lath with ASTM A 653/A 653M, G60 (Z180), hot-dip galvanized zinc coating.
5. Cornerbeads: Fabricated from zinc or zinc-coated (galvanized) steel.
   a. Small nose cornerbead with expanded flanges; use unless otherwise indicated.
6. Casing Beads: Fabricated from zinc-coated (galvanized) steel; square-edged style; with expanded flanges.

7. Control Joints: Fabricated from zinc-coated (galvanized) steel; one-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
8. Expansion Joints: Fabricated from zinc-coated (galvanized) steel; folded pair of unperforated screeds in M-shaped configuration; with expanded flanges.
9. Two-Piece Expansion Joints: Fabricated from zinc-coated (galvanized) steel; formed to produce slip-joint and square-edged reveal that is adjustable from 1/4 to 5/8 inch (6.34 to 16 mm) wide; with perforated flanges.
10. Chanel Screed: Extruded aluminum, 6063, with chemical conversion coating.
    a. Depth: 3/4-inches.
    b. Width: 2-inches
    c. Product:
        1) Fry Reglet Corporation, Chanel Screed, PCS-75-200
        2) Or approved equal.
11. F Reveal: Extruded aluminum, 6063, with chemical conversion coating.
    a. Depth: 7/8-inches.
    b. Width: 2-inches
    c. Product:
        1) Fry Reglet Corporation
        2) Or approved equal.
12. Soffit Vent: Clear anodized aluminum.
    a. Depth: 7/8-inches.
    b. Width: 2-inches
    c. Product:
        1) Flannery Inc.
        2) Or approved equal.

2.03 MISCELLANEOUS MATERIALS

A. Water for Mixing: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in portland cement plaster.

C. Bonding Compound: ASTM C 932.

D. Steel Drill Screws: For metal-to-metal fastening, ASTM C 1002 or ASTM C 954, as required by thickness of metal being fastened; with pan head that is suitable for application; in lengths required to achieve penetration through joined materials of no fewer than three exposed threads.

E. Fasteners for Attaching Metal Lath to Substrates: Complying with ASTM C 1063.

F. Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter, unless otherwise indicated.

2.04 PLASTER MATERIALS

A. Portland Cement: ASTM C 150, Type I, II or III, or air entrained equivalents as required.

B. Lime: ASTM C 206, Type S.

C. Ready-Mixed Plaster: Mill-mixed portland cement, aggregates, coloring agents, and proprietary ingredients.
1. Basis-of-Design Product: PAREX Inc.; PARREX Fiber 47 Armourwall or a comparable product of one of the following:
    a. California Stucco Products Corp.; Conventional Portland Cement Stucco.
    b. El Rey Stucco Company, Inc., a brand of ParexLaHabra, Inc.; Premium Stucco Finish.
    c. LaHabra, a brand of ParexLaHabra, Inc.; Exterior Stucco Color Coat.

2. Color: Match Architect's sample.

D. Acrylic-Based Finish Coatings: Factory-mixed acrylic-emulsion coating systems formulated with colorfast mineral pigments and fine aggregates; for use over cement plaster base coats. Include manufacturer's recommended primers and sealing topcoats for acrylic-based finishes.
1. Basis-of-Design Product: Subject to compliance with requirements, provide PAREX Inc.; PARREX 121 Dry Base Coat with Skim Coat.
2. Color: Grey Smooth Finish.

2.05 PLASTER MIXES

A. General: Comply with ASTM C 926 for applications indicated.
1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m) of cementitious materials.

B. Ready-Mixed Plaster: For ready-mixed base and scratch coat plasters, comply with manufacturer's written instructions.

C. Factory-Prepared Finish-Coat Mixes: For ready-mixed finish-coat plasters, with acrylic admixture, comply with manufacturer's written instructions.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect adjacent work from soiling, spattering, moisture deterioration, and other harmful effects caused by plastering.

B. Prepare solid substrates for plaster that are smooth or that do not have the suction capability required to bond with plaster according to ASTM C 926.

3.03 INSTALLING BUILDING PAPER

A. Weather Lap Sheets 2 inches.

B. Lap Sheet 6 inches at Ends.

C. Attach to sheathing in accordance with sheathing manufacturer’s recommendations to prevent leaks and sheathing deterioration.

D. Provide 2 overlapping layers under plaster.

3.04 INSTALLING METAL LATH

A. Expanded-Metal Lath: Install according to ASTM C 1063.
1. Partition Framing and Vertical Furring: Install flat diamond-mesh lath.
2. Flat-Ceiling and Horizontal Framing: Install flat diamond-mesh 3/8-inch (9.5-mm) rib lath lath.
3. On Solid Surfaces, Not Otherwise Furred: Install self-furring, diamond-mesh lath.

3.05 INSTALLING ACCESSORIES

A. Install according to ASTM C 1063 and at locations indicated on Drawings.

B. Reinforcement for External Corners:
   1. Install lath-type, external-corner reinforcement at exterior locations.
   2. Install cornerbead at exterior locations.

C. Control Joints: Install control joints at locations indicated on Drawings.
   1. As required to delineate plasterwork into areas (panels) of the following maximum sizes:
      a. Vertical Surfaces: 144 sq. ft. (13.4 sq. m).
      b. Horizontal and other Nonvertical Surfaces: 100 sq. ft. (9.3 sq. m).
   2. At distances between control joints of not greater than 18 feet (5.5 m) o.c.
   3. As required to delineate plasterwork into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
   4. Where control joints occur in surface of construction directly behind plaster.
   5. Where plasterwork areas change dimensions, to delineate rectangular-shaped areas (panels) and to relieve the stress that occurs at the corner formed by the dimension change.

3.06 PLASTER APPLICATION

A. General: Comply with ASTM C 926.
   1. Do not deviate more than plus or minus 1/4 inch in 10 feet (6.4 mm in 3 m) from a true plane in finished plaster surfaces, as measured by a 10-foot (3-m) straightedge placed on surface.
   2. Finish plaster flush with metal frames and other built-in metal items or accessories that act as a plaster ground unless otherwise indicated. Where casing bead does not terminate plaster at metal frame, cut base coat free from metal frame before plaster sets and groove finish coat at junctures with metal.
   3. Provide plaster surfaces that are ready to receive field-applied finishes indicated.

3.07 PLASTER APPLICATION ON LATH

A. Scratch Coat:
   1. Apply first coat with sufficient material and pressure to form full keys through, and to embed into, metal lath.
   2. Provide sufficient depth of material over metal lath to allow for scratching of surface.
   3. Bring surface to true even plane by rodding; fill surface defects and scratches.
   4. As soon as first coat has become firm, scratch entire surface in one direction only to provide mechanical bond with second coat.
   5. On vertical surfaces, scratch horizontally.

B. Brown Coat:
   1. Begin second coat application after 48 moist cure of scratch coat.
   2. Apply second coat with sufficient material and pressure to ensure tight contact with scratch coat.
   3. Bring surface to true even plane by rodding; fill surface defects and scratches.
   4. Pause and allow plaster to achieve proper moisture content so that necessary reconsolidation of plaster can be achieved. Determine correct time for floating by placing a finishing trowel against surface; trowel should not stick to unworked plaster.
   5. Float surface and leave uniformly rough to provide bond for finish coat.
   6. Moist cure brown coat for 48 hours.
   7. Allow scratch and brown coats to set for 7 to 10 days before application of basecoat, mesh, and finish coat.

C. Bonding Compound: Apply on unit masonry plaster bases.

D. Walls; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork, on masonry; 3/4-inch (19-mm) thickness.
   1. Portland cement mixes.

E. Ceilings; Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork; 1/2 inch (13 mm) thick.
   1. Portland cement mixes.

F. Skim Coat: Apply skim coat approximately 1/16th of an inch thick with steel trowel to a smooth and uniform consistency.

G. Finish Coat:
   1. Provide tools and techniques as required to achieve specified finish.
   2. Apply finish coat with sufficient pressure and material to ensure tight contact with, and complete coverage of, brown coat.
   3. Bring to required plaster thickness; Finish coat not less than 1/16 inch (1.6 mm).
   4. Finish surface to uniform float uniform texture finish to match accepted sample.

H. Plaster Finish Coats: Apply to provide steel troweled finish to match Architect's sample.

I. Moist Curing:
   1. Follow procedures for each coat as recommended by ASTM C926 and PCA and as required based on environmental conditions.
   2. Prevent premature dry-out.

J. Concealed Exterior Plasterwork: Where plaster application will be used as a base for adhered finishes, omit finish coat.

3.08 PLASTER REPAIRS

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

3.09 PROTECTION

A. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not indicated to be plastered. Repair floors, walls, and other surfaces stained, marred, or otherwise damaged during plastering.

END OF SECTION

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Interior gypsum board.
   2. Tile backing panels.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For the following products:
   1. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.

1.03 QUALITY ASSURANCE

A. Mockups: Before beginning gypsum board installation, install mockups of at least 100 sq. ft. (9 sq. m) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Install mockups for the following:
      a. Each level of gypsum board finish indicated for use in exposed locations.
      b. Each texture finish indicated.
   2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
   3. Simulate finished lighting conditions for review of mockups.
   4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.04 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.05 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
   2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.02 GYPSUM BOARD, GENERAL

A. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content 10 percent maximum.

B. Regional Materials: Gypsum panel products shall be manufactured within 500 miles (800 km) of Project site.

C. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.03 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. CertainTeed Corp.
   2. Georgia-Pacific Gypsum LLC.
   3. National Gypsum Company.
   4. USG Corporation.

B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
   1. Thickness: 5/8 inch (15.9 mm).
   2. Long Edges: Tapered.

C. Moisture- and Mold-Resistant Gypsum Board: ASTM C 1396/C 1396M. With moisture- and mold-resistant core and paper surfaces.
   1. Core: 5/8 inch (15.9 mm), Type X.
   2. Long Edges: Tapered.
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
   4. Surface paper: 100% recycled content moisture/mold/mildew resistant paper on front, back, and long edges.
   5. Locations: Toilet and Locker Rooms, non-tile areas.
   6. Products: Subject to compliance with requirements, provide one of the following:
      a. CertainTeed Corp; Proroc Moisture And Mold Resistant With M2tech
      b. National Gypsum Company; XP Wallboard
      c. USG Corporation; Sheetrock Brand Mold Tough

2.04 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 and ASTM C 1288 or 1325, with manufacturer's standard edges.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Custom Building Products; Wonderboard.
      b. National Gypsum Company, Permabase Cement Board.
      c. USG Corporation; DUROCK Cement Board.
   2. Thickness: 5/8 inch (15.9 mm).
   3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.05 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.
   1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
   2. Shapes:
      a. Cornerbead.
      b. LC-Bead: J-shaped; exposed long flange receives joint compound.
      c. L-Bead: L-shaped; exposed long flange receives joint compound.
      d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
      e. Expansion (control) joint.
      f. Curved-Edge Cornerbead: With notched or flexible flanges.

2.06 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:
   1. Interior Gypsum Board: Paper.
   2. Tile Backing Panels: Polymer coated fiberglass mesh as recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
   1. Board manufacturer's standard ready-mixed joint compounds low-VOC joint compounds with no detectable amounts of crystalline silica based on NIOSH Method 7500.
   2. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
   3. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
   4. Fill Coat: For second coat, use drying-type, all-purpose compound.
   5. Finish Coat: For third coat, use drying-type, all-purpose compound.
   6. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.

D. Joint Compound for Tile Backing Panels:
   1. Cementitious Backer Units: As recommended by backer unit manufacturer.

2.07 SURFACING MATERIAL

A. Flat latex basecoat for use on surfaces located in areas of intense lighting and indicated to receive a Level 4 finish. Basecoat is in addition to primer and finish coating specified in Section 099000.
   1. Products: Subject to compliance with requirements, provide one of the following products:
      a. “Builders Solution System Interior Latex Primer/Surfacer”, A63W100; Sherwin Williams.
      b. “SHEETROCK First Coat”; USG Corporation.

2.08 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
   1. Adhesives and sealants shall meet or exceed the VOC and chemical component limits of SCAQMD Rule 1168, Cal-GREEN Table 5.504.4.1 Adhesive VOC Limit, and Cal GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
   1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
   1. Thickness to match wall stud depth unless noted otherwise.
   2. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
   3. Recycled Content of Blankets: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.
   4. Use formaldehyde free materials where available.
   5. Acceptable Mineral Fiber Products:
      a. FBX 450, Fibrex, Westmont, IL.
      b. Thermafiber Sound Attenuation Fire Blankets, Thermafiber LLC, Wabash, LLC
   6. Acceptable Glass Fiber Products:
      a. Sound Attenuation Batts, Owens Corning, Toledo, OH.
      b. Sound Control Batts, CertainTeed Corporation, Valley Forge, PA.
      c. Sound Control Batts, Johns Manville, Denver, CO.

E. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
      b. Grabber Construction Products; Acoustical Sealant GSC.
      c. Pecora Corporation, BA-98 Acoustical Sealant.
      d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
      e. Tremco, Inc., Acoustical Sealant.
      f. USG Corporation; SHEETROCK Acoustical Sealant.
   2. Sealants shall meet VOC and chemical component limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Cal-GREEN Table 5.504.4.2 Sealant VOC Limit requirements.

F. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
   1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
   2. Fit gypsum panels around ducts, pipes, and conduits.
   3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.03 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:
   1. Wallboard Type: As indicated on Drawings.
   2. Type X: As indicated on Drawings.
   3. Flexible Type: As indicated on Drawings.
   4. Ceiling Type: Ceiling surfaces.
   5. Moisture- and Mold-Resistant Type: As indicated on Drawings.

B. Single-Layer Application:
   1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
   2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
      a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
      b. At stairwells high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
   3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
   4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
   1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.

2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners.

D. Curved Surfaces:
1. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch- (300-mm-) long straight sections at ends of curves and tangent to them.
2. For double-layer construction, fasten base layer to studs with screws 16 inches (400 mm) o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches (300 mm) o.c.

3.04 APPLYING TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A108.11, at locations indicated to receive tile.

B. Water-Resistant Backing Board: Install where indicated with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.

C. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.05 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints at locations indicated on Drawings and according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.
4. U-Bead: Use where indicated.
5. Curved-Edge Cornerbead: Use at curved openings.

3.06 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Fire-rated, sound-rated, and smoke-rated assemblies in ceiling plenums and concealed areas.
3. Level 3: Areas where gypsum board used as a tile substrate.

4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    a. Finish gypsum board in areas of intense lighting shall receive one coat of specified base coat/surfacer to entire surface at manufacturer's recommended coverage rate or mil thickness.
5. Level 5: Where indicated on Drawings.

E. Cementitious Backer Units: Finish according to manufacturer's written instructions.

3.07 APPLYING TEXTURE FINISHES

A. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.

3.08 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 09 30 00

TILING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Ceramic tile.
2. Stone thresholds.
3. Waterproof membrane.
4. Crack isolation membrane.

1.02 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size plus joint width indicated.

D. Face Size: Actual tile size, excluding spacer lugs.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

C. Samples for Initial Selection: For each type of grout indicated. Include Samples of accessories involving color selection.

D. Samples for Verification:
1. Full-size units of each type and composition of tile and for each color and finish required.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 24 inches (600 mm) square, but not fewer than 4 tiles. Use grout of type and in color or colors approved for completed Work.
3. Full-size units of each type of trim and accessory for each color and finish required.
4. Stone thresholds in 6-inch (150-mm) lengths.
5. Metal edge strips in 6-inch (150-mm) lengths.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

C. Product Certificates: For each type of product, signed by product manufacturer.

D. Material Test Reports: For each tile-setting and -grouting product.

1.05 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish one full, properly packaged box of each tile color, type and size, identified by room or area.
   2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.06 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
   1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
   1. Stone thresholds.
   2. Waterproof membrane.
   3. Crack isolation membrane.
   4. Metal edge strips.

D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup of each type of tile installation.
   2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion and approved by City Engineer.

E. Preinstallation Conference: Conduct conference at Project site.
   1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.
   2. Require attendance of installation material manufacturer, tile supplier, tile installer and installers of related work. Review installation procedures and coordination required with related work.
   3. Review tile and installation material compatibility.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store liquid materials in unopened containers and protected from freezing.

1.08 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.01 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
   1. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.02 TILE PRODUCTS

A. Tile: Refer to "Materials List" on Drawing Sheet A703.

2.03 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
   1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.

B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 12 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.
   1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.04 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch (0.76-mm) nominal thickness.
   1. Basis-of-Design Product: The design is based on the product named. Subject to compliance with requirements, provide either the named product or a prior approved product by one of the other manufacturers specified.
      a. Noble Company (The); Nobleseal TS.
      b. Prior approved equal.

2.05 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch (0.76-mm) nominal thickness.
   1. Basis-of-Design Product: The design is based on the product named. Subject to compliance with requirements, provide either the named product or a prior approved product by one of the other manufacturers specified.
      a. Noble Company (The); Nobleseal TS.
      b. Prior approved equal.

2.06 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02; at exterior showers.
   1. Portland Cement: ASTM C150, Type I, from one source only, non-staining and non-air-entraining.
   2. Mortar Sand: ASTM C144, free of deleterious materials, well graded.
   3. Setting Bed Sand: ASTM C136, 100 percent passing No. 4 sieve.
   4. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030-inch (0.76-mm) nominal thickness.
   5. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C 847.
      a. Base Metal and Finish for Exterior Applications: Zinc-coated (galvanized) steel sheet.
      b. Configuration over Solid Surfaces: Self furring.
      c. Weight: 3.4 lb/sq. yd. (1.8 kg/sq. m).
   6. Latex Additive: Manufacturer's standard water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.
   7. Acceptable Products:
      a. Laticrete 3701 Mortar Admix with Laticrete 226 Thick Bed Mortar Mix, Laticrete International
      b. Planicrete AC, Mapei Corporation, Garland, TX.
      c. CustomCrete Latex Mortar Admix, Custom Building Products, Seal Beach, CA

B. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Custom Building Products, MegaFlex Crack Prevention Mortar.
      b. Laticrete International, Inc., Laticrete 4237 Mortar Admix with Laticrete 211 Crete Filler.
      c. MAPEI Corporation, Kerabond and Keralastic
   2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1.

2.07 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10, composed of white or gray cement and white or colored aggregate as required to produce color indicated.

B. Standard Cement Grout: ANSI A118.6.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Custom Building Products, a. Laticrete 1500 Sanded Grout with Laticrete 1776 Grout Admix
      b. Laticrete International, Inc., Laticrete 4237 Mortar Admix with Laticrete 211 Crete Filler.
      c. MAPEI Corporation, Kerabond and Keralastic

C. Grout for Pregrouted Tile Sheets: Same product used in factory to pregrout tile sheets.

2.08 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Section 079200 "Joint Sealants."

1. Vertical Surfaces: Silicone—Sanitary.
2. Horizontal Surfaces: Urethane—Traffic-Bearing.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

C. Adhesives & Sealants (including grouts): Only use adhesives and sealants (grouts) in the interior of the building that meet or do not exceed the VOC limits of the CURRENT requirements of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 on the interior of the building.
1. Adhesives and sealants shall meet the more stringent VOC and chemical component limits of SCAQMD Rule 1168, Cal-GREEN Table 5.504.4.1 Adhesive VOC Limit, and Cal GREEN Table 5.504.4.2 Sealant VOC Limit requirements.
2. Use sealers that comply with the more stringent VOC limits of the current requirements of South Coast Air Quality Management District (SCAQMD) Rule No. 1113 and Cal GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.

2.09 MISCELLANEOUS MATERIALS

A. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

B. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
1. Use sealers that comply the more stringent VOC limits of the current requirements of South Coast Air Quality Management District (SCAQMD) Rule No. 1113 and Cal GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Aqua Mix. Grout Sealer.
   b. AO Tile and Grout Sealer
   c. Bostik, Inc.; Instant Pro Grout Sealer.
   d. C-Cure; Penetrating Sealer 978.
   e. Laticrete 190 Grout Sealer.
   f. Miracle Sealants Grout Sealer.

2.10 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax,

oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
   a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
   b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.03 TILE INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
   1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
      a. Exterior tile floors and walls.
      b. Tile floors in wet areas.
      c. Tile swimming pool decks.
      d. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
   1. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.

2. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Quarry Tile: 1/4 inch (6.35 mm).
2. Glazed Wall Tile: 1/16 inch (1.6 mm).

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

I. Grout Sealer: Apply grout sealer to cementitious grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.04 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.05 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

B. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.06 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.07 TILE INSTALLATION SCHEDULE

A. Interior Floor Installations:
   1. Tile Installation F122: Thin-set mortar on waterproof membrane; TCA F122.
      a. Tile Type: Quarry.
      b. Thin-Set Mortar: Latex- portland cement mortar.
      c. Grout: Polymer-modified sanded grout.

B. Interior Wall Installations:
   1. Tile Installation W243: Thin-set mortar on gypsum board; TCA W243.
      a. Tile Type: Glazed ceramic.
      b. Thin-Set Mortar: Latex-modified dry-set portland cement mortar.
      c. Grout: Polymer-modified sanded grout.
   2. Tile Installation W244C: Thin-set mortar on cementitious backer units underlayment waterproofing membrane; TCA W244C.
      a. Tile Type: Glazed ceramic.
      b. Thin-Set Mortar: Latex-modified dry-set portland cement mortar.
      c. Grout: Polymer-modified sanded grout.
      d. Location: Interior shower, with waterproofing membrane, toilet rooms without waterproofing membrane.

C. Exterior Shower Installations:
   1. Tile Installation W241: Cement mortar bed (thickset); TCA W241 and ANSI A108.1B.
      a. Tile Type: Glazed ceramic.
      b. Thin-Set Mortar for Cured-Bed Method: Latex-modified dry-set portland cement mortar.
      c. Grout: Polymer-modified sanded grout.
      d. Location: Exterior shower.

END OF SECTION

SECTION 09 51 00

ALUMINUM BATTENS

PART 1 - GENERAL

1.01 RELATED SECTIONS

A. Section 09 22 16 - Non Structural Framing
B. Section 09 20 00 (09250) - Plaster and Gypsum Board
C. Division 23 - HVAC Air Distribution
D. Division 26 - Electrical

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)
    1. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.
    2. ASTM D 958 - Practice for Determining Temperatures of Standard ASTM Molds for Test Specimens of Plastics.
    3. ASTM E2768-11 – Standard Test Method for Extended Duration Surface Burning Characteristics for Building Materials (30 min Tunnel Test). Results: Zero Flame Spread, Smoke Developed Index of 5. Meets criteria for Class A fire rating.
    4. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.
    5. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method (NRC).
    6. ASTM E1477 - Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers (LRV).
B. UL & Underwriters Laboratories of Canada (UL/ULC)
    1. UL 723, Standard Method of Test for Surface Burning Characteristics of Building Materials.
    2. CAN/ULC S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
    3. CAN/ULC S114, Standard Test Method for determination of non-combustibility in building materials.
C. American Architectural Manufacturers Association (AAMA)
    1. AAMA 2605 Voluntary Specification, Performance requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
    2. AAMA 2604 - Voluntary Specification, Performance requirements and Test Procedures for High Performing Organic Coatings on Aluminum Extrusions and Panels.
    3. AAMA 2603 - Voluntary Specification, Performance requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
D. International Code Council Evaluation Service (ICC-ES)
    1. ICC-ES Evaluation Report

1.03 SUBMITTALS

A. Product data: submit manufacturer's printed product literature, specifications and data sheet.
B. Submit duplicate 1-⅝” X 2-inch X 6 inch (41mm X 50.8mm X 150mm) samples of cladding material, of color and profile specified.
C. Shop drawings to indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, metal furring, and related work.
D. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.
E. LEED Submittal Data: Manufacturer’s product data for each product specified in this section per ecoscorecard.com.
F. Submit manufacturer’s installation instructions.

1.04 LEED

A. Category - Material & Resources
    1. MR Credit 2.1, 2.2 - Construction Waste Management Divert 50% or 75% from disposal.
B. Category – Indoor Environment Quality
    1. EQ Credit 4.1 to 4.6 – Low Emitting Materials.
C. Category – Innovation and Design Process
    1. ID Credit – Biophilic Design.

1.05 WARRANTY

A. Provide a written guarantee, signed and issued in the name of the owner, covering the metal cladding/cladding material for 15 (fifteen) years from the date of Substantial Completion.
B. The manufacturer's warranty is limited to replacement of defective material only, rather than installation of the same. Faulty installation shall be corrected by the installing contractor. The warranty required herein is the sole remedy against the manufacturer and there are no other implied warranties. In any event, the manufacturer shall not be liable for incidentals or consequential damages.

PART 2 - PRODUCTS

2.01 ALUMINUM CLADDING AND COMPONENTS

A. 1-⅝” X 2 inch (41mm X 51mm) Link & Lock Batten extruded aluminum 6063-T5
    1. Finish coating: powder coated finish.
    2. Color: color selected by Owner’s Representative.
    3. Gloss: 30 ± 5.
    4. Thickness: 1/16 inch (1.65mm) base metal thickness.
    5. Profile: 1-⅝” X 2 inch (41mm X 51mm), 24 ft (7315.2mm) batten.

2.02 ACCESSORIES

A. Batten End Caps with matching powder-coated finish.

B. Attachment Clips: Mounting Clips and End Mounts that are shipped loose for field installation.

2.03 MANUFACTURERS

A. Longboard Architectural Products #120 - 1777 Clearbrook Rd.
Abbotsford, BC, Canada V2T 5X5
info@longboardproducts.com
1.800.604.0343

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install battens in accordance with manufacturer's written instructions.
B. Attach battens in a manner not restricting thermal movement.

3.02 CLEANING

A. Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Resilient base.
   2. Resilient stair accessories.

1.02 ACTION SUBMITTALS

A. Samples: For each exposed product and for each color and texture specified, not less than 12 inches (300 mm) long.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long.

D. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.03 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain each type, color, and pattern of resilient base products from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.

B. Installer Qualifications: Acceptable to manufacturer with experience on at least 5 projects of similar nature in past 5 years.

C. Regulatory Requirements:
   1. Comply with local regulations controlling use of volatile organic compounds for installation products.
   2. Slip resistance: ASTM D2047, minimum static coefficient of friction; 0.6 for floors, 0.8 for ramps.

D. Certifications:
   1. Manufacturer’s certification that products furnished for project meet or exceed specified requirements.
   2. Installer Certification: Manufacturer’s certification attesting that Installer is trained and approved for application of materials.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following time periods:
   1. 48 hours before installation.
   2. During installation.
   3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. FloorScore Compliance: Resilient base and stair accessories shall comply with requirements of FloorScore certification.

2.02 THERMOSET-RUBBER BASE

A. Manufacturers: Refer to "Material List" on Drawing Sheet A703.

B. Product Standard: ASTM F 1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
   1. Style and Location:
      a. Style A, Straight: Provide in areas with carpet.
      b. Style B, Cove: Provide in areas with resilient flooring.

C. Thickness: 0.125 inch (3.2 mm).

D. Height: 4 inches (102 mm).

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors: As selected by City Engineer from manufacturer’s standard palette.

2.03 RUBBER MOLDING ACCESSORY

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Roppe Corporation, USA.

2. Mercer Products Co., Inc.
3. Macklanburg-Duncan.
4. Johnsonite.
5. Or approved equal.

B. Description:
1. Rubber stair-tread nosing
2. Reducer strip for resilient flooring
3. Joiner for tile and carpet.

C. Profile and Dimensions: As indicated.

D. Locations: Provide rubber molding accessories in areas indicated.

E. Colors: As selected by Architect.

2.04 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
1. Adhesives shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
2. Adhesives shall meet VOC and chemical component limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Cal GREEN Table 5.504.4.1 Adhesive VOC Limit requirements.

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until they are the same temperature as the space where they are to be installed.
1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.03 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:
1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.
   a. Form without producing discoloration (whitening) at bends.
2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.
   a. Miter or cope corners to minimize open joints.

3.04 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Stair Accessories:
1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
2. Tightly adhere to substrates throughout length of each piece.
3. For treads installed as separate, equal-length units, install to produce a flush joint between units.

C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.05 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:
   1. Remove adhesive and other blemishes from exposed surfaces.
   2. Sweep and vacuum horizontal surfaces thoroughly.
   3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

SECTION 09 65 19.23

RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Resilient tile flooring with special seam adhesive and applied rubber base.

2. Resilient static-dissipative vinyl tile flooring. B. Related

Requirements:

1. Division 01 - General Requirements.
2. Section 03 30 00 - Cast-in-Place Concrete.
3. Section 09 65 13 - Rubber Base.Resilient Base and Accessories

1.2 DEFINITIONS

A. Pop-up: A pop-up is defined as any surface deviation or looseness of substrate that is equal to or greater than 1/64 (0.015625) inch above the concrete floor level, regardless of the size.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's published technical data describing materials, construction and recommended installation procedures. Submit technical data and installation instructions for each adhesive material. Submit list and Product Data of recommended finish materials.

B. Low VOC product

C. Recommendations for maintenance, care and cleaning.

D. Samples: Submit 5 full size tile samples of each selected color and pattern

E. Installer's Experience Qualifications: Submit list of not less than five projects, extending over period of not less than five years, indicating installer's experience record. Submit letter from manufacturer indicating manufacturer's approval for installer of the products.

F. Extra Materials: Furnish standard manufacturer tile size in quantity equal to 5 percent of amount installed for each color and pattern.

1.4 QUALITY ASSURANCE

A. Qualifications of Installer: Minimum five years experience in successfully installing the specified products or similar flooring materials.

B. Comply with the following as a minimum requirement:

1. Materials shall be compliant with requirements of CBC Chapter 11B and ADAAG.
2. ASTM D 2047 – 11: Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring System as Measured by the James Machine.
3. ASTM E 84:Class A Flame Spread Rating of 25 or less.

4. ASTM E 648 (NFPA 253) Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I

4 .ASTM F 710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.

5. ASTM E 662 (NFPA 258) (Smoke Generation) Maximum Specific Optical Density of 450 or less

6. ASTM F 1066 – Class 2: Vinyl Composition Floor Tile, through pattern.

7. ASTM F 1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

8. ASTM F 1913: Sheet Vinyl Floor Covering Without Backing.

9. Fire Test Data: ASTM E 648, NFPA 253, ASTM E 662, NFPA 258.

10. Moisture Testing: ASTM F1869.

11. Slip Resistance: Provide floor surfaces with minimum static coefficient of friction of 0.60, measured in accordance with ASTM D2047.

C. Pre-Installation Conference: Arrange an on-site meeting with a manufacturer's representative after cleaning has been performed and flooring is ready to be installed. Contractor and Inspector shall be present for the conference. Inspect all required areas and conditions. Make final preparation requirements as recommended by the manufacturer's representative.

1.5 DELIVERY, STORAGE AND HANDLING

A. Comply with 01150 Storage of Materials and Equipment.

B. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

C. Deliver materials in good condition to the jobsite in the manufacturer's original unopened containers that bear the name and brand of the manufacturer, project identification, and shipping and handling instructions.

D. Store materials in a clean, dry, enclosed space off the ground, protected from harmful weather conditions and at temperature and humidity conditions recommended by the manufacturer. Protect adhesives from freezing. Store flooring, adhesives, and accessories in the spaces where they will be installed for at least 48 hours before beginning installation.

1.6 PROJECT CONDITIONS

A. Ventilation and Temperature: Verify areas that are to receive new flooring are ventilated to remove fumes from installation materials, and areas are within temperature range recommended by the various material manufactures for Project site installation conditions.

B. Maintain a minimum temperature in the spaces to receive the flooring and accessories of 65ºF (18ºC) and a maximum temperature of 85ºF (29ºC) for at least 48 hours before, during, and for not less than 48 hours after installation. Thereafter, maintain a minimum temperature of 55ºF (13ºC) in areas where work is completed. Protect all materials from the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances.

1.7 WARRANTY

A. Manufacturer shall provide five year material warranty from date of purchase

B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Armstrong Contract Interiors.

B. Azrock.

C. Congoleum.

D. Johnsonite.

E. Or Approved qual.

2..2 RESILENT TILE FLOORING

A. Description: A layered construction consisting of a tough, clear, rigid vinyl wear layer protecting a high-fidelity print layer on a solid vinyl backing. Protected by a diamondinfused UV-cured polyurethane finish, the wear surface is embossed with different textures to enhance each of the printed visuals. Colors are insoluble in water and resistant to cleaning agents and light.

B. Reference specification - ASTM F 1700, “Standard Specification for Solid Vinyl Tile", Class III, Type B – Embossed Surface. Meets requirements for size, squareness, thickness, thickness of wear layer, residual indentation, resistance to chemicals, resistance to light and resistance to heat.

C. Pattern and Color: See finish schedule
D. Size: See finish schedule
E. Wear layer thickness: min. 20 mil
F. Thickness: min. 3 mm

G. Miscellaneous Shapes: Provide miscellaneous moldings as follows and as required to complete the installation. Catalog numbers are those of Mercer. Colors shall be as selected by Architect from manufacturer’s standard colors.

1. Corner Guards, No. 695 Junior Corner Guard.
2. Utility Moldings: No. 655 Utility Molding.
3. Tile Reducer: No. 633, 1/8 inch size. H. Floor Sealer: Provide one of the following:

1. Super Polymer 85, manufactured by Maintex.
2. Butcher’s Mainstay Floor Finish, manufactured by Waxie Stationary Supply.
3. Polymer L. A. manufactured by Alkot Industries.
4. Equal.

I. Slip – resistance: Minimum coefficient of friction 0.6 per ASTM D2047.

PART 3 - EXECUTION

3.1 COORDINATION

A. Coordinate with related Work to assure level, smooth, and clean finish surfaces to receive floor tile.

3.2 EXAMINATION

A. Field verify dimensions and other conditions affecting the Work of this section before commencing the Work of this section.

B. Before the Work of this section is started, examine surfaces to receive resilient sheet vinyl flooring and correct deficiencies before starting the Work of this section.

3.3 PREPARATION

A. Concrete Slabs:

1. Do not start preparation until concrete floor slabs are at least 90 days old.

2. Leveling: Check subfloors for level, and make floor slabs true to level and plane within a tolerance of 1/8 inch in 10 feet. Test floor areas both ways with a 10-foot straightedge and repair high and low areas exceeding allowable tolerance. Pop ups shall be hammered out and floor filled with a cementitious leveling compound. Remove high areas by power sanding, stone rubbing or grinding, chipping off and filling with leveling compound, or equivalent method. Fill low areas with leveling compound. Repair and level the surfaces having abrupt changes in plane, such as trowel marks or ridges, whether or not within the allowable tolerance. Clean areas where repairs are performed.

3. Cleaning: After leveling, if required, clean substrates of deleterious substances and foreign matter.

4. Cracks or Depressions: Fill voids with cementitious leveling compound of the type recommended by flooring manufacturer for the specific conditions.

5. Moisture Testing: Test new and old concrete slabs for adequate dryness. Testing shall conform to ASTM F 1869, and the following. Minimum testing requirements are three calcium chloride tests for the first 1,000 square feet of floor area, and one for each additional 1,000 square feet or fraction thereof.

   Unless more stringent requirements are recommended by flooring manufacturer, maximum allowable moisture release at time of flooring installation shall be three pounds per 24 hours per 1,000 square feet. Provide report of test as specified above. For each test, perform the following steps:

   a. Weigh the sealed dish of crystals immediately prior to exposure. Record starting weight, date, and time.

   b. Open kit and set crystal dish on clean concrete surface. Immediately install plastic dome over the dish. Confirm the dome is gasketed to the concrete and is airtight.

   c. Leave test to absorb moisture for 60 to 72 hours. Maintain room temperature above 55 degrees F for duration of test.

   d. After exposure, remove and discard housing. Replace dish lid and tape shut. Weigh the sample within one hour of removal from floor.

   e. Compute the vapor emission in pounds, indicate location of test and vapor emission on report.

f. Delay application of flooring until sub-floors are sufficiently dry, or perform remedial measures as recommended by flooring materials manufacturer.

6. Priming: Prime concrete floor slabs installed directly on grade and other slabs if recommended by flooring manufacturer.

7. Sweep floors and vacuum sanding dust.

3.4 INSTALLATION OF SHEET FLOORING

A. Install flooring wall to wall before the installation of floor-set cabinets, casework, furniture, equipment, movable partitions, etc. Extend flooring into toe spaces, door recesses, closets, and similar openings as shown on the drawings.

B. If required, install flooring on pan-type floor access covers. Maintain continuity of color and pattern within pieces of flooring installed on these covers. Adhere flooring to the subfloor around covers and to covers.

C. Scribe, cut, and fit to permanent fixtures, columns, walls, partitions, pipes, outlets, and built-in furniture and cabinets.

D. Roll with a 100-lb. (45.36 kilogram) roller in the field areas. Refer to specific rolling instructions of the flooring manufacturer.

E. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe the recommended adhesive trowel notching, open times, and working times.

3.6 CLEANING

A. Keep flooring surfaces clean as installation progresses.

B. Clean flooring when sufficiently seated and remove foreign substances.

C. Finish sheet vinyl flooring with two coats of floor finish installed in accordance with manufacturers instruction. Do not buff unless specifically required. Provide the manufacturers recommended drying time for each coat.

D. Clean adjacent surfaces of adhesive or other materials. Replace damaged or defective Work.

3.7 CLEAN UP

A. Remove rubbish, debris and waste material and legally dispose off the Project site.

3.8 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 91 13

EXTERIOR PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes surface preparation and field painting of exposed items and surfaces.
   1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
   1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

1.02 DEFINITIONS

A. Conform to PDCA Glossary for interpretation of terms used in this Section except as modified below.

B. Exposed Surfaces: Surfaces of products, assemblies, and components visible from any angle after final installation. Includes internal surfaces visible when operable doors, panels or drawers are open, and surfaces visible behind registers, grilles, or louvers.

C. Concealed Surfaces: Surfaces permanently hidden from view in finished construction and which are only visible after removal or disassembly of part or all of product or assembly.

D. Inaccessible Spaces: Spaces not intended for human use.

E. Sheen: Degree of luster as measured with specular gloss meter in accordance with ASTM D523:
   1. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees.
   2. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees..
   3. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
   4. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees.
   5. Gloss Level 5: 35 to 70 units at 60 degrees.
   6. Gloss Level 6: 70 to 85 units at 60 degrees.
   7. Gloss Level 7: More than 85 units at 60 degrees.

F. System DFT: Dry film thickness of entire coating system unless otherwise noted.

1.03 SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.
   1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
   2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

B. Samples for Verification: Submit 3 samples for each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

C. LEED Submittals: Provide special submittals conforming to Section 018113 - Sustainable Design Requirements for the following:
   1. LEED Credit MR Cost Data: Provide special materials cost data breakdown data.
   2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.
      a. Include statement indicating location of manufacturer and point of extraction, harvest, or recovery for each raw material used in regionally extracted and manufactured materials. Indicate distance to Project and fraction by weight of each regionally manufactured material that is regionally extracted.
   3. Product Data for Credit EQ 4.2: For paints and coatings, including printed statement of VOC content.
   4. Laboratory Test Reports for Credit EQ 4.2: For paints and coatings, documentation indicating that they meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats.

1.05 FIELD SAMPLES

A. Sample Installation: Duplicate finishes of approved coating system samples on wall surfaces and other interior and exterior components selected by Architect.

B. Provide full-coat finish on at least 100 sq ft of surface until required color, sheen, and texture are obtained. Simulate finished lighting conditions for review of in-place work.

C. Request review by City Engineer of first finished room, space, or item for each coating system for color, texture, quality, and workmanship

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
   1. Product name or title of material.
   2. Product description (generic classification or binder type).
   3. Manufacturer's stock number and date of manufacture.
   4. Contents by volume, for pigment and vehicle constituents.
   5. Thinning instructions.
   6. Application instructions.
   7. Color name and number.
   8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
   1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.07 PROJECT CONDITIONS

A. Environmental Conditions: Comply with more restrictive of following or manufacturer's requirements under which systems can be applied.
   1. Provide continuous ventilation during application of coatings to exhaust hazardous fumes.
   2. Provide heating necessary to maintain surface and ambient temperatures within specified limits.
   3. Maintain temperature and humidity conditions for minimum 24 hours before, during, and 48 hours after application of finishes, unless longer times are required by manufacturer.
   4. Do not permit wide variations in ambient temperatures which might result in condensation on freshly coated surfaces.
   5. Provide illumination of not less than 80 footcandles measured mid-height at substrate surface during application of coatings.
   6. Apply water reducible coatings only when ambient and surface temperatures are between 50 degrees F and 90 degrees F.
   7. Apply solvent reducible coatings only when ambient and surface temperatures are between 45 degrees F and 90 degrees F.
   8. Do not apply coatings under any of following conditions:
      a. When surfaces are damp or wet.
      b. During snow, rain, fog, or mist.
      c. When relative humidity is less than 20 percent or exceeds 85 percent.
      d. When temperature is less than 5 degrees F above dew point.
      e. When dust may be generated before coatings have dried.
      f. In direct sunlight.
      g. When wind velocity is above 20 mph.
   9. Application of coatings may continue during inclement weather provided work areas and surfaces to be coated are enclosed and specified environmental conditions are maintained.

1.08 WARRANTY

A. Warrant installation to be free from defects in material and workmanship for 5 years.

B. Repair or replace defects occurring during warranty period.

C. Defects include but are not limited to pinholes, crazing or cracking, loss of adhesion to substrate, deficient thickness, improper materials and workmanship.

1.09 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
   1. Quantity: Furnish Owner with 1 gallon extra paint materials for each type, sheen or color used.

PART 2 - PRODUCTS

2.01 COATING MATERIALS - GENERAL

A. Coatings:
   1. Ready-mixed, factory tinted, best professional grade produced by manufacturer.
   2. Use manufacturer’s appropriate base materials to achieve required colors.
   3. Fully grind pigments to maintain soft paste consistency in vehicle.
   4. Capable of being dispersed into uniform, homogeneous mixture.
   5. Possess good flowing and brushing properties.
   6. Capable of drying or curing free of streaks or sags, and yielding specified finish.
   7. VOC content of field applied coatings shall comply with local governing authorities.

B. Paint Maximum Product Emissions Limits: Top coat and primer interior paints must meet or not exceed the VOC (Volatile Organic Compounds) limits of the current requirements of Green Seal Standards GS-11 - Paints in the building, and Cal-GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.

C. Cal-GREEN Requirements for typical paint coatings:
   1. Primers, Sealers, and Undercoaters: 100 grams per liter of product minus water
   2. Flats: 50 grams per liter of product minus water
   3. Non-flats: 100 grams per liter of product minus water
   4. Non-flat High Gloss: 150 grams per liter of product minus water

2.02 MANUFACTURERS

A. Manufacturers' Names: Subject to compliance with requirements, provide products by one of the manufactures listed below.
   1. Benjamin Moore and Company
   2. Dunn Edwards Corporation.
   3. Glidden Professional.
   4. Sherwin-Williams Co.
   5. Tnemec.
   6. Vista Paint Corporation.
   7. Prior approved equal.

2.03 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
   1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: As selected by Architect or as noted on Contract Drawings.

2.04 EXTERIOR PRIMERS

A. Exterior Concrete and Masonry Primer: Factory-formulated alkali-resistant acrylic-latex primer for exterior application.
   1. Benjamin Moore and Company: XXXX Applied at a dry film thickness of not less than x.x mil.
   2. Dunn-Edwards Corporation; ESPR00 Eff-Stop Premium Interior / Exterior 100% Acrylic Masonry Primer / Sealer: Applied at a dry film thickness of not less than 1.5 mils.
   3. Glidden Professional; GP6001 Hydrosealer Primer Sealer: Applied at a dry film thickness of not less than 1.4 mils
   4. Sherwin-Williams; Loxon Concrete & Masonry Primer A24W08300: Applied at a dry film thickness of not less than 3.0 mils
   5. Tnemec; Series 180 W.B. Tneme-Crete. Applied at a dry film thickness rate of not less than 3.0 mils.
   6. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

B. Exterior Gypsum Soffit Board Primer: Factory-formulated alkyd- or alkali-resistant acrylic-latex primer for exterior application.

1. Dunn-Edwards Corporation; UGPR00-1 Ultra-Grip Premium, Ultra-Low VOC, Interior / Exterior Acrylic Multi-Surface Primer: Applied at a dry film thickness of not less than 1.5 mils.
2. Glidden Professional; 3210 Gripper Interior/Exterior Primer Sealer: Applied at a dry film thickness of not less than 1.8 mils
3. Sherwin-Williams; : Exterior Latex Wood Primer, B42W0841Applied at a dry film thickness of not less than 1.4 mils
4. Tnemec; Series 180 W.B. Tneme-Crete. Applied at a dry film thickness rate of not less than 4.0 mils.
5. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

C. Exterior Ferrous-Metal Primer: Factory-formulated rust-inhibitive metal primer for exterior application.
1. Dunn-Edwards Corporation; BRPR00-1 Bloc-Rust Premium, Interior / Exterior, Red Oxide or White, Waterborne Alkyd Rust Preventative Metal Primer: Applied at a dry film thickness of not less than 2.0 mils
2. Glidden Professional; 4160-XXXX Devguard Multi-Purpose Tank & Structural Primer. Applied at a dry film thickness of not less than 2.0 mils
3. Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 milsIf a waterbased primer is desired, use S-W Pro Industrial ProCryl Universal Acrylic Primer, B66W310. Applied at a dry film thickness of not less than 3.0 mils.
4. Tnemec;Series 115 Uni-Bond DF. Applied at a dry film thickness rate of not less than 3.0 mils DFT.
5. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

D. Exterior Galvanized Metal Primer: Factory-formulated galvanized metal primer for exterior application.
1. Dunn-Edwards Corporation; UGPR00-1 Ultra-Grip Premium, Ultra-Low VOC, Interior / Exterior Acrylic Multi-Surface Primer: Applied at a dry film thickness of not less than 1.5 mils.
2. Glidden Professional; 4020-XXXX Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish: Applied at a dry film thickness of not less than 2.2 mils
3. Glidden Professional; 4160-XXXX Devguard Multi-Purpose Tank & Structural Primer: Applied at a dry film thickness of not less than 2.0 mils
4. Sherwin-Williams; S-W Pro Industrial ProCryl Universal Acrylic Primer, B66W310. Applied at a dry film thickness of not less than 3.0 mils.
5. Tnemec:
    a. Under Acrylics: Series 115 Uni-Bond DF; Applied at a dry film thickness rate of not less than 3.0 mils.
    b. Under Urethane: Series L69 H.B. Epoxoline II; Applied at a dry film thickness rate of not less than 3.0 mils.
6. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

E. Exterior Aluminum Primer under Acrylic Finishes: Factory-formulated acrylic-based metal primer for exterior application.
1. Benjamin Moore and Company: XXXX Applied at a dry film thickness of not less than x.x mil.
2. Dunn-Edwards Corporation; UGPR00-1 Ultra-Grip Premium, Ultra-Low VOC, Interior / Exterior Acrylic Multi-Surface Primer: Applied at a dry film thickness of not less than 1.5 mils.
3. Glidden Professional; 4020-XXXX Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish: Applied at a dry film thickness of not less than 2.2 mils
4. Glidden Professional; 4160-XXXX Devguard Multi-Purpose Tank & Structural Primer: Applied at a dry film thickness of not less than 2.0 mils
5. Sherwin-Williams; S-W Pro Industrial ProCryl Universal Acrylic Primer, B66W310. Applied at a dry film thickness of not less than 3.0 mils.
6. Tnemec; Series 115 Uni-Bond DF; Applied at a dry film thickness rate of not less that 3.0 mils.
7. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

F. Exterior Aluminum Primer under Alkyd Finishes: Factory-formulated acrylic-based metal primer for exterior application.
   1. Dunn-Edwards Corporation; UGPR00-1 Ultra-Grip Premium, Ultra-Low VOC, Interior / Exterior Acrylic Multi-Surface Primer: Applied at a dry film thickness of not less than 1.5 mils.
   2. Glidden Professional; 4020-XXXX Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish: Applied at a dry film thickness of not less than 2.2 mils
   3. Sherwin-Williams S-W Pro Industrial ProCryl Universal Acrylic Primer, B66W310Applied at a dry film thickness of not less than XXX mils .Applied at a dry film thickness of not less than 3.0 mils.
   4. Tnemec; Series 115 Uni-Bond DF; Applied at a dry film thickness rate of not less than 3.0 mils.
   5. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

G. Exterior Concrete Block Filler: Factory-formulated interior and exterior concrete block filler. PDCA Level 2
   1. Dunn-Edwards Corporation; SBSL00 Smooth Blocfil Select, Interior / Exterior Concrete Block Filler.
   2. Glidden Professional;
   3. Sherwin-Williams: Prep-Rite Block Filler B25W25.
   4. Tnemec; Series 130 Envirofill
   5. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

2.05 EXTERIOR FINISH COATS

A. Exterior Low-Luster Acrylic Paint: Factory-formulated low-sheen (eggshell) acrylic-latex paint for exterior application.
   1. Dunn-Edwards Corporation; SSHL40 Spartashield Exterior, Ultra-Low VOC, 100% Acrylic Low Sheen Paint: Applied at a dry film thickness of not less than 1.5 mils.
   2. Glidden Professional; 2412-XXXX Dulux Professional Exterior 100 Percent Acrylic Satin Finish: Applied at a dry film thickness of not less than 1.4 mils
   3. Sherwin-Williams; A-100 Exterior Latex Satin A82 Series: Applied at a dry film thickness of not less than 1.5 mils
   4. Tnemec; Series 1029 Enduratone; Applied at a dry film thickness rate of not less than 2.0 mils.
   5. Vista Paint Corporation: 4600 Uniprime II at a dry film thickness of not less than 2.0 mil.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
   1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
   2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
   1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.02 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or

impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
   a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
   b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
   a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3.
   b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
   c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
10. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer over metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

D. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

E. Mechanical items to be painted include, but are not limited to, the following:
1. Uninsulated metal piping.
2. Uninsulated plastic piping.
3. Pipe hangers and supports.
4. Tanks that do not have factory-applied final finishes.
5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

F. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

G. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

H. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

I. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
   1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
   1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.06 EXTERIOR PAINT SCHEDULE

A. Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry): Provide the following finish systems over exterior concrete, stucco, and brick masonry substrates:
   1. Low-Luster Acrylic Finish: Two finish coats over a primer.
      a. Primer: Exterior concrete and masonry primer.
      b. Finish Coats: Exterior low-luster acrylic paint.

B. Concrete Unit Masonry: Provide the following finish systems over exterior concrete unit masonry:
   1. Low-Luster Acrylic Finish: Two finish coats over block filler.
      a. Block Filler: Concrete unit masonry block filler.
      b. Finish Coats: Exterior low-luster acrylic paint.

C. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
   1. Semigloss Acrylic-Enamel Finish: Two finish coats over a rust-inhibitive primer.
      a. Primer: Exterior ferrous-metal primer.
      b. Finish Coats: Exterior semigloss acrylic enamel.

D. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:
   1. Semigloss Acrylic-Enamel Finish: Two finish coats over a galvanized metal primer.
      a. Primer: Exterior galvanized metal primer.
      b. Finish Coats: Exterior semigloss acrylic enamel.

END OF SECTION

SECTION 09 91 23

INTERIOR PAINTING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes surface preparation and field painting of exposed items and surfaces.
   1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.
   1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

1.02 DEFINITIONS

A. Conform to PDCA Glossary for interpretation of terms used in this Section except as modified below.

B. Exposed Surfaces: Surfaces of products, assemblies, and components visible from any angle after final installation. Includes internal surfaces visible when operable doors, panels or drawers are open, and surfaces visible behind registers, grilles, or louvers.

C. Concealed Surfaces: Surfaces permanently hidden from view in finished construction and which are only visible after removal or disassembly of part or all of product or assembly. D. Inaccessible Spaces: Spaces not intended for human use.

E. Sheen: Degree of luster as measured with specular gloss meter in accordance with ASTM D523:
   1. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees.
   2. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees..
   3. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
   4. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees.
   5. Gloss Level 5: 35 to 70 units at 60 degrees.
   6. Gloss Level 6: 70 to 85 units at 60 degrees.
   7. Gloss Level 7: More than 85 units at 60 degrees.

F. System DFT: Dry film thickness of entire coating system unless otherwise noted. 1.03

SUBMITTALS

A. Product Data: For each paint system indicated. Include block fillers and primers.
   1. Material List: An inclusive list of required coating materials. Indicate each material and cross reference specific coating, finish system, application, and location of application areas. Identify each material by manufacturer's catalog number and general classification.
   2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

B. Samples for Verification: Submit 3 samples for each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain primers for each coating system from the same manufacturer as the finish coats.

1.05 FIELD SAMPLES

A. Sample Installation: Duplicate finishes of approved coating system samples on wall surfaces and other interior and exterior components selected by City Engineer.

B. Provide full-coat finish on at least 100 sq ft of surface until required color, sheen, and texture are obtained. Simulate finished lighting conditions for review of in-place work.

C. Request review by Project Manager or Architect of first finished room, space, or item for each coating system for color, texture, quality, and workmanship

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

1.07 PROJECT CONDITIONS

A. Environmental Conditions: Comply with more restrictive of following or manufacturer's requirements under which systems can be applied.
1. Provide continuous ventilation during application of coatings to exhaust hazardous fumes.
2. Provide heating necessary to maintain surface and ambient temperatures within specified limits.
3. Maintain temperature and humidity conditions for minimum 24 hours before, during, and 48 hours after application of finishes, unless longer times are required by manufacturer.
4. Do not permit wide variations in ambient temperatures which might result in condensation on freshly coated surfaces.
5. Provide illumination of not less than 80 footcandles measured mid-height at substrate surface during application of coatings.
6. Apply water reducible coatings only when ambient and surface temperatures are between 50 degrees F and 90 degrees F.
7. Apply solvent reducible coatings only when ambient and surface temperatures are between 45 degrees F and 90 degrees F.

8. Do not apply coatings under any of following conditions:
   a. When surfaces are damp or wet.
   b. During snow, rain, fog, or mist.
   c. When relative humidity is less than 20 percent or exceeds 85 percent.
   d. When temperature is less than 5 degrees F above dew point.
   e. When dust may be generated before coatings have dried. f. In direct sunlight.
   g. When wind velocity is above 20 mph.
9. Application of coatings may continue during inclement weather provided work areas and surfaces to be coated are enclosed and specified environmental conditions are maintained.

1.08 WARRANTY

A. Warrant installation to be free from defects in material and workmanship for 5 years.

B. Repair or replace defects occurring during warranty period.

C. Defects include but are not limited to pinholes, crazing or cracking, loss of adhesion to substrate, deficient thickness, improper materials and workmanship.

1.09 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
   1. Quantity: Furnish Owner with 1 gallon extra paint materials for each type, sheen or color used.

PART 2 - PRODUCTS

2.01 COATING MATERIALS - GENERAL

A. Coatings:
   1. Ready-mixed, factory tinted, best professional grade produced by manufacturer.
   2. Use manufacturer's appropriate base materials to achieve required colors.
   3. Fully grind pigments to maintain soft paste consistency in vehicle.
   4. Capable of being dispersed into uniform, homogeneous mixture.
   5. Possess good flowing and brushing properties.
   6. Capable of drying or curing free of streaks or sags, and yielding specified finish.
   7. VOC content of field applied coatings shall comply with local governing authorities.

B. Paint Maximum Product Emissions Limits: Top coat and primer interior paints must meet or not exceed the VOC (Volatile Organic Compounds) limits of the current requirements of Green Seal Standards GS-11 - Paints in the building, and Cal-GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.

C. Cal-GREEN Requirements for typical paint coatings:
   1. Primers, Sealers, and Undercoaters: 100 grams per liter of product minus water
   2. Flats: 50 grams per liter of product minus water
   3. Non-flats: 100 grams per liter of product minus water
   4. Non-flat High Gloss: 150 grams per liter of product minus water

2.02 MANUFACTURERS

A. Manufacturers' Names: Subject to compliance with requirements, provide products by one of the manufactures listed below.

B. Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
1. Dunn Edwards Corporation.
2. Glidden Professional.
3. Sherwin-Williams Co.
4. Vista Paint Corporation
5. Prior approved equal.

2.03 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: As selected by Project Manager or as noted on the Drawings.

2.04 INTERIOR PRIMERS

A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.
1. Dunn-Edwards Corporation; VNSL00-1 Vinylastic Select Low Odor / Zero VOC Interior Wall Sealer: Applied at a dry film thickness of not less that 1.5 mils.
2. Glidden Professional; 1030-1200 PVA Interior Primer Sealer General Purpose Wall Primer: Applied at a dry film thickness of not less than 1.2 mils
3. Kelly-Moore; 971 Acry-Prime Interior Latex Primer/Sealer: Applied at a dry film thickness of not less than 1.6 mils
4. Sherwin-Williams; S-W ProMar 200 Zero VOC Primer, B28W02600. Applied at a dry film thickness of not less than 1.0 mil.
5. Vista Paint Corporation: 5001 V-Pro Zero VOC Primer Applied at a dry film thickness of not less than 1.2 mil.

B. Interior Ferrous-Metal Primer: Factory-formulated quick-drying rust-inhibitive alkyd-based metal primer.
1. Dunn-Edwards Corporation; BRPR00-1 Bloc-Rust Premium, Ultra Low VOC, Interior / Exterior, Red Oxide or White, Waterborne Alkyd Rust Preventative Metal Primer: Applied at a dry film thickness of not less than 2.0 mils.
2. Dunn-Edwards Corporation; ULDM00 Ultrashield, Low Odor / Zero VOC, Interior / Exterior DTM Gray Primer: Applied at a dry film thickness of not less than 2.0 mils.
3. Glidden Professional; 4020-XXXX Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish: Applied at a dry film thickness of not less than 2.2 mils
4. Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1: Applied at a dry film thickness of not less than 3.0 mils
5. Vista Paint Corporation: 9600 Protec Metal Primer Applied at a dry film thickness of not less than 2.0 mil.

C. Interior Zinc-Coated Metal Primer: Factory-formulated galvanized metal primer.
1. Dunn-Edwards Corporation; UGSL00-1 Ultra-Grip Select, Low Odor / Zero VOC, Interior / Exterior Acrylic Multi-Surface Primer: Applied at a dry film thickness of not less than 1.5 mils.

2. Glidden Professional 4020-XXXX Devflex DTM Flat Interior/Exterior Waterborne Primer & Finish: Applied at a dry film thickness of not less than 2.2 mils
3. Sherwin-Williams: Pro-Cryl universal primer/finish, B66-310. Applied at a dry film thickness of not less than 3.0 mils.
4. Sherwin-Williams; S-W DTM acrylic primer/finish, B66W1. Applied at a dry film thickness of not less than 3.0 mils.
5. Vista Paint Corporation: 4800 Metal Pro Primer Applied at a dry film thickness of not less than 1.2 mil.

D. Interior Concrete Block Filler: Factory-formulated interior and exterior concrete block filler. PDCA Level 2

1. Dunn-Edwards Corporation; SBSL00 Smooth Blocfil Select, Interior / Exterior Concrete Block Filler:
2. Sherwin-Williams: Prep-Rite Block Filler B25W25.
3. Vista Paint Corporation: 040 Block Kote Applied at a dry film thickness of not less than 8.4 mil. 2.05 INTERIOR FINISH COATS

A. Interior Low-Luster Acrylic Enamel: Factory-formulated eggshell acrylic-latex interior enamel.
1. Dunn-Edwards Corporation; SZRO20 Spartazero Low Odor / Zero VOC Interior Velvet Paint: Applied at a dry film thickness of not less than 1.5 mils.
2. Dunn-Edwards Corporation; SZRO30 Spartazero Low Odor / Zero VOC Interior Eggshell Paint: Applied at a dry film thickness of not less than 1.5 mils.
3. Glidden Professional; GP9300 Lifemaster No VOC Acrylic Eggshell Interior Wall & Trim Enamel: Applied at a dry film thickness of not less than 1.4 mils
4. Sherwin-Williams; S-W ProMar 200 Zero VOC EgShel, B20W02651. Applied at a dry film thickness of not less than 1.6 mil.
5. Vista Paint Corporation: 5300 V-Pro Eggshell Applied at a dry film thickness of not less than 1.8 mil.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.02 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.
1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Provide barrier coats over incompatible primers or remove and reprime.
2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineralfiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces if moisture content exceeds that permitted in manufacturer's written instructions.
3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3.
b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
4. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
10. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
   2. Omit primer over metal surfaces that have been shop primed and touchup painted.
   3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
   4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
   1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
   2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
   3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:
   1. Uninsulated metal piping.
   2. Uninsulated plastic piping.
   3. Pipe hangers and supports.
   4. Tanks that do not have factory-applied final finishes.
   5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
   6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
   7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

G. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.06 INTERIOR PAINT SCHEDULE

A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.
   a. Primer: Interior gypsum board primer.
   b. Finish Coats: Interior semigloss acrylic enamel.
   c. Finish Coats: Interior full-gloss acrylic enamel.

B. Ferrous Metal: Provide the following finish systems over ferrous metal:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.
   a. Primer: Interior ferrous-metal primer.
   b. Finish Coats: Interior semigloss acrylic enamel.

C. Zinc-Coated Metal: Provide the following finish systems over interior zinc-coated metal surfaces:

1. Low-Luster Acrylic-Enamel Finish: Two finish coats over a primer.
   a. Primer: Interior zinc-coated metal primer.
   b. Finish Coats: Interior low-luster acrylic enamel.

D. All-Service Jacket over Insulation: Provide the following finish system on cotton or canvas insulation covering:

1. Flat Acrylic Finish: Two finish coats. Add fungicidal agent to render fabric mildew proof.
   a. Finish Coats: Interior flat latex-emulsion size.

END OF SECTION

SECTION 09 96 23

GRAFFITI-RESISTANT COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Masonry anti-graffiti coating applied to locations above grade, vertical, as indicated on the drawings.

1.02 SYSTEM DESCRIPTION

A. Performance Requirements: The application shall leave the finished surfaces uniform in graffiti repellent and not alter the natural color and texture of the masonry units.

1.03 SUBMITTALS

A. General: Submit following items under provisions of Division 01.

B. Product Data: Submit product data for coatings.

C. Samples: Submit 12 by 24 inch samples on each type of substrate indicated to receive repellent treatment with specified coating applied at required rate to half of each sample.

D. Submit following Informational Submittals:
1. Qualification Data: Applicator's qualification data.
2. Manufacturer's instructions.

E. Applicator Qualifications: Submit qualifications of applicator.
1. Certification stating applicator is experienced in the application of the specified products.
2. List of recently completed graffiti resistant coatings projects, including project name and location, names of Owner and Architect, and description of products used, substrates, applicable local environmental regulations, and application procedures.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications:
1. Experienced in the application of the specified products.
2. Employs persons trained for the application of the specified products.

B. Pre-Application Meeting: Convene a pre-application meeting at project site before the start of application of graffiti resistant coatings. Require attendance of parties directly affecting work of this section, including the Contractor, Architect, applicator, and manufacturer representative. Review environmental regulations, test panel procedures, protection of surrounding areas and non-masonry surfaces, surface preparation, application, field quality control, final cleaning, and coordination with other work.

1.05 ENVIRONMENTAL REGULATIONS

A. Comply with applicable federal, state, and local environmental regulations.

1.06 TEST PANELS

A. Before performing coating work, including bulk purchase and delivery of products, prepare a small application in an unobtrusive location and in a manner approved by City Engineer to demonstrate the final effect (visual, physical, and chemical) of planned application.
   1. Provide 100 square foot sample of coating for Architect's review.

B. Apply graffiti resistant coatings to test panels in accordance with manufacturer's written instructions. Allow 48 hours or until test panels are thoroughly dry before evaluating final appearance and results. Do not begin full-scale application until test panels are inspected and approved by the Architect.

C. Test Panel Requirements:
   1. Size: Minimum 100 square foot, or as determined by the Architect.

D. Retain and protect test panels approved by the Architect in undisturbed condition during the work of this section, to be used as a standard for judging the graffiti resistant coating work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling: Store containers upright in a cool, dry, well ventilated place, above 50 degrees F. Store away from all other chemicals and potential sources of contamination. Keep lights, fire, sparks, and heat away from containers. Do not drop containers or slide across sharp objects. Keep containers tightly closed when not in use. Store and handle materials in accordance with manufacturer's written instructions.

1.08 PROJECT CONDITIONS

A. Temperature Limitations:
   1. Do not apply at surface and air temperatures below 40 deg F or above 100 deg F, unless otherwise indicated by manufacturer's written instructions.
   2. Do not apply when surface and air temperatures are not expected to remain above 40 deg F for a minimum of 8 hours after application, unless otherwise indicated by manufacturer's written instructions.

B. Do not apply under windy conditions such that graffiti resistant coating may be blown to surfaces not intended to be treated.

C. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.

D. Do not apply earlier than 24 hours after rain or if rain is predicted for a period of 8 hours after application, unless otherwise indicated by manufacturer's written instructions.

1.09 WARRANTY

A. Manufacturer’s warranty: Warrant coating against water penetration through treated surfaces, peeling, cracking, discoloration and other defects of the coating caused by faulty materials and workmanship for 5 years after Substantial Completion.

B. Repair coating defects and failures during the warranty period, at no additional cost to the City.

1.10 MAINTENANCE

A. Extra materials: Furnish the City with a 5-gallon container of cleaner to be used for graffiti removal, properly identified by material and substrate, and packaged for future maintenance or replacement.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Provide one of the following Products:
   1. Monochem Permashield Premium Graffiti Control System, Monopole Inc., Los Angeles, CA. (required for use on fiber cement board panels)
   2. Graffiti Solution System, American Polymer Corporation, Sandy, UT.
   3. Siloseal WB, L&M Construction Chemicals, Omaha, NE.
   4. Protectosil Antigraffiti, Degussa Corp., Parsippany, NJ.
   5. Dur A Pell GS, Chemprobe Coating Systems, Subsidiary Tnemec, Kansas City, MO.

B. Graffiti Resistant Coating:
   1. Permanent (non-sacrificial), low viscosity, gloss-free, nearly invisible, non-yellowing, breathable, VOC compliant liquid that impregnates plaster and masonry surfaces to form a stain resistant barrier that allows the easy removal of graffiti from surfaces without staining.
   2. Mixing: Proper proportions as required by manufacturer for Project conditions for horizontal and vertical surfaces.
   3. Coats: Minimum of 2 coats; additional coats may be required on porous surfaces.
   4. Location: Coatings over plaster and painted metals.
   5. Acceptable Products and Manufacturers:

C. Paint Maximum Product Emissions Limits: Top coat and primer interior paints must meet current requirements for VOC (Volatile Organic Compounds) limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1113 and Cal-GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Specify actions required to determine that conditions are acceptable to receive the specified graffiti resistant coatings.

B. Verify by examination that surfaces are acceptable to receive the specified graffiti resistant coatings. Notify the Architect if surfaces are not acceptable to receive the specified products.

C. Verify that surfaces are clean, dry, dust free, and free of efflorescence, oil or other matter detrimental to coating application.

D. Verify that joint sealant work in adjoining surfaces is complete.

3.02 SURFACE PREPARATION

A. Clean all dirt, dust, oil, grease, and other contaminants from surfaces that interfere with penetration or performance of graffiti resistant coatings. Use appropriate masonry or concrete cleaners approved by the graffiti resistant coating manufacturer where necessary. Rinse thoroughly using pressure water spray to remove cleaner residues. Allow surfaces to dry completely before application of graffiti resistant coatings.

B. Repair, patch, and fill all cracks, voids, defects, and damaged areas in surface as approved by the Architect. Allow repair materials to cure completely before application of graffiti resistant coatings.

C. Apply specified sealants and caulking and allow to cure completely before application of graffiti resistant coatings.

D. Seal all open joints.

E. Allow new masonry and concrete construction and repointed surfaces to cure completely before application of graffiti resistant coatings.

F. Allow surfaces to dry sufficiently after washing in accordance with manufacturer's directions.

G. Protect adjacent surfaces from overspray or drift.

3.03 APPLICATION OF GRAFFITI CONTROL COATINGS

A. Apply graffiti resistant coatings to substrates in accordance with manufacturer's written instructions, environmental regulations, and application procedures determined from test panel results approved by the Architect.

B. Consult manufacturer's written instructions for information on application equipment to be used and precautions to be taken with the specified products.

C. Mix per manufactures instructions.

D. Start coating application in presence of coating manufacturer's technical representative.

3.04 APPLICATION OF SACRIFICIAL COATINGS

A. Apply coating using low pressure airless sprayer or roller in number of coats and at rate indicated by manufacturer to obtain penetration and full coverage.

B. Do not dilute or alter material as packaged.

C. Site tests: The City may employ a testing agency to test applied coating for compliance with specified requirements.
   1. The City will pay test costs, except when testing discloses the coating tested does not comply with these Specifications.
   2. In the event testing shows that the coating is deficient, apply additional coating at no cost to the City.
   3. Contractor shall pay for re-testing until the application demonstrates compliance with specified requirements.

D. Manufacturer’s field services: Promptly repair unsatisfactory conditions disclosed by the manufacturer's visits to the site, to the satisfaction of the City Engineer, and have the corrected areas re-inspected by the manufacturer before work starts or resumes in affected areas.

3.05 FIELD QUALITY CONTROL

A. Examination: Examine the graffiti resistant coating work with the Contractor, Architect, applicator, and manufacturer's representative, and compare with test panel results approved by the Architect. Determine if the substrates are suitably protected by the graffiti resistant coatings.
   1. Site tests: The City may employ a testing agency to test applied coating for compliance with specified requirements.
   2. The City will pay test costs, except when testing discloses the coating tested does not comply with these Specifications.
   3. In the event testing shows that the coating is deficient, apply additional coating at no cost to the City.

4. Contractor shall pay for re-testing until the application demonstrates compliance with specified requirements

B. Manufacturer's Field Services: Provide the services of a manufacturer's authorized field representative to verify specified products are used, and protection, surface preparation, and application of graffiti resistant coatings are in accordance with the manufacturer's written instructions and the test panel results approved by the Architect.

3.06 FINAL CLEANING

A. Clean site of unused graffiti resistant coatings, residues, rinse water, wastes, and effluent in accordance with environmental regulations.

B. Remove and dispose of materials used to protect surrounding areas and non-masonry surfaces, following completion of the work of this section.

C. Repair, restore, or replace to the satisfaction of the Architect, materials, landscaping, and non-masonry surfaces damaged by exposure to graffiti resistant coatings.

D. Clean spillage, overspray, or drift from adjacent surfaces; remove immediately in accordance with manufacturer's instructions.

END OF SECTION

SECTION 10 14 16

PLAQUES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes plaques.

B. Related Requirements: Section 10 14 23 "Panel Signage" for signs, with or without frames that are made of materials other than solid metal.

1.2 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For plaques.

1. Include fabrication and installation details and attachments to other work.
2. Show plaque mounting heights, locations of supplementary supports to be provided by others, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each plaque at least half size.

C. Samples for Verification: For each type of plaque showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Plaques: Full-size Sample.
2. Exposed Accessories: Full-size Sample of each accessory type.

D. Plaque Schedule: Use same designations specified or indicated on Drawings or in a plaque or sign schedule.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For plaques to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of plaques that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and 2013 CBC for signs.

2.2 PLAQUES

A. Cast Plaque: Plaque with background texture, border, and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. A.R.K. Ramos.
b. ACE Sign Systems, Inc.
c. Erie Landmark Company; a division of Paul W. Zimmerman Foundries.
d. Metal Arts.
e. Metallic Arts.

2. Plaque Material: Cast bronze.
3. Plaque Thickness: 0.25 inch.
4. Finishes:

a. Integral Metal Finish: As selected by Architect from full range of industry finishes.
b. Overcoat: Manufacturer's standard baked-on clear coating.

5. Background Texture: As selected by Architect from manufacturer's full range.
6. Integrally Cast Border Style: As indicated.
7. Mounting: As indicated.
8. Text and Typeface: Accessible raised characters and Braille typeface as selected by Architect from manufacturer's full range and variable content as scheduled. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 MATERIALS

A. Cast Aluminum: ASTM B 584, alloy recommended by manufacturer and finisher for finish indicated.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of plaques, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish nonferrous-metal devices unless otherwise indicated.
3. Exposed Metal-Fastener Components, General: Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
4. Plaque Mounting Fasteners: Through Fasteners: Exposed metal fasteners matching plaque finish, with type of head indicated, installed in predrilled holes.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.5 FABRICATION

A. General: Provide manufacturer's standard plaques according to requirements indicated.

1. Preassemble plaques in the shop to greatest extent possible. Disassemble plaques only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
5. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match plaque finish.
6. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of plaque work.

B. Verify that plaque-support surfaces are within tolerances to accommodate plaques without gaps or irregularities between backs of plaques and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install plaques using mounting methods indicated and according to manufacturer's written instructions.

1. Install plaques level, plumb, true to line, and at locations and heights indicated, with plaque surfaces free of distortion and other defects in appearance.
2. Install plaques so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that plaque surfaces are clean and free of materials or debris that would impair installation.

B. Mounting Methods: Through Fasteners: Drill holes in substrate using predrilled holes in plaque as template. Countersink holes in plaque if required. Place plaque in position and flush to surface. Install through fasteners and tighten.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed plaques and plaques that do not comply with specified requirements. Replace plaques with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as plaques are installed.

C. On completion of installation, clean exposed surfaces of plaques according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain plaques in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION

SECTION 10 14 19

DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Cutout dimensional characters.

1.02 COORDINATION

A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For dimensional letter signs.
1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.

C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
1. Include representative Samples of available typestyles and graphic symbols.

D. Samples for Verification: For each type of sign assembly showing all components and with the required finishes, in manufacturer's standard size unless otherwise indicated and as follows:
1. Dimensional Characters: Full-size Sample of dimensional character.
2. Exposed Accessories: Full-size Sample of each accessory type.
3. Number of Samples: Five.

E. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of products.

1.07 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.01 DIMENSIONAL CHARACTERS

A. Cutout Characters: Characters with uniform faces; square-cut, smooth edges; precisely formed lines and profiles; and as follows:
   1. Basis-of-Design Product: Subject to compliance with requirements, provide ASI Sign Systems, Inc., or comparable product by one of the following:
      a. ACE Sign Systems, Inc.
      b. APCO Graphics, Inc.
      c. A. R. K. Ramos Signage Systems.
      d. ASI Sign Systems, Inc.
      e. Charleston Industries, Inc.
      f. Diskey Sign Company.
      g. Gemini Incorporated.
      h. InPro Corporation.
      i. Metal Arts; Division of L & H Mfg. Co.
      j. Metallic Arts.
      k. Nelson-Harkins Industries.
      l. Southwell Company (The).
      m. Steel Art Company.
   2. Character Material: Sheet or plate aluminum.
   3. Character Height: 4 inches and 6 inches as indicated on Drawings.
   4. Thickness: 1/2-inch.
   5. Finishes:
      a. Integral Aluminum Finish: Clear anodized.
   6. Mounting: Concealed aluminum studs and silicone adhesive with threaded studs.
   7. Typeface: Arial.

2.02 DIMENSIONAL CHARACTER MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

2.03 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
   1. Use concealed fasteners and anchors unless indicated to be exposed.
   2. For exterior exposure, furnish nonferrous-metal devices unless otherwise indicated.
   3. Exposed Metal-Fastener Components, General:
      a. Fabricated from same basic metal and finish of fastened metal unless otherwise indicated.
      b. Fastener Heads: For nonstructural connections, use flathead oval countersunk screws and bolts with Allen-head slots unless otherwise indicated.
   4. Sign Mounting Fasteners:
      a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
      b. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.
      c. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, installed in predrilled holes.

B. Adhesives: As recommended by sign manufacturer and with a VOC content of 70 g/L or less for adhesives used inside the weatherproofing system and applied on-site when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Adhesives shall meet VOC and chemical component limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1168 and Cal GREEN Table 5.504.4.1 Adhesive VOC Limit requirements.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.04 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
   1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
   2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
   3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
   4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
   5. Internally brace signs for stability and for securing fasteners.
   6. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

B. Brackets: Fabricate brackets, fittings, and hardware for bracket-mounted signs to suit sign construction and mounting conditions indicated. Modify manufacturer's standard brackets as required.
   1. Aluminum Brackets: Factory finish brackets with baked-enamel or powder-coat finish to match sign-background color color unless otherwise indicated.

2.05 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Anodic Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Verify that electrical service is correctly sized and located to accommodate signs.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
   1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
   3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:
   1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
      a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
      b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
   2. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
      a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
      b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate, and install washers and nuts on stud ends projecting through opposite side of surface, and tighten.
   3. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
   4. Back Bar and Brackets: Remove loose debris from substrate surface and install backbar or bracket supports in position so that signage is correctly located and aligned.
   5. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
   6. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.03 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION

SECTION 10 14 23

PANEL SIGNAGE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Room-identification signs.

1.02 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.03 COORDINATION

A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For panel signs.
   1. Include fabrication and installation details and attachments to other work.
   2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
   3. Show message list, typestyles, graphic elements, and layout for each sign at full size.

C. Samples for Initial Selection: Submit 5 samples for each type of sign assembly, exposed component, and exposed finish.
   1. Include representative Samples of available typestyles and graphic symbols.

D. Samples for Verification: Submit 5 samples for each type of sign assembly showing all components and with the required finishes, in manufacturer's standard size unless otherwise indicated and as follows:
   1. Room-Identification Signs: Full-size Sample.

E. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.06 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of products.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for signs.

2.02 SIGNS

A. Basis-of-Design Product: Subject to compliance with requirements, provide ASI Sign Systems, Inc. or comparable product by one of the following:
   1. Ace Sign Systems, Inc.
   2. Advance Corporation; Braille-Tac Division.
   3. Allen Industries, Inc.
   4. Allen Markings International.
   5. APCO Graphics, Inc.
   6. ASE, Inc.
   7. Best Sign Systems Inc.
   8. Bunting Graphics, Inc.
   9. Clarke Systems.
   10. Diskey Sign Company.
   11. Fossil Industries, Inc.
   12. InPro Corporation.
   13. Mohawk Sign Systems.
   14. Nelson-Harkins Industries.
   15. Poblocki Sign Company, LLC.
   16. Seton Identification Products.
   17. Supersine Company (The); Division of Stamp-Rite, Inc.
   18. Vista System.
   19. Vomar Products, Inc.

B. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
   1. Basis-of-Design Product: Horizon Wall Mounted.
   2. Laminated-Sheet Sign: Photopolymer face sheet with raised graphics laminated to aluminum backing sheet to produce composite sheet.
      a. Composite-Sheet Thickness: Manufacturer's standard for size of sign.
      b. Subsurface Graphics: Slide-in changeable insert.
      c. Color(s): As selected by Architect from manufacturer's full range.
   3. Frame: Aluminum.
      a. Frame Depth: Convex-curved frame to receive removable face sheet and changeable subsurface graphics 4-inches by 10-inches.
      b. Profile: Square.
      c. Corner Condition in Elevation: Square.
      d. Finish and Color: As indicated on Drawings.
   4. Mounting: Manufacturer's standard method for substrates indicated Surface mounted to wall with two-face tape.
   5. Text and Typeface: As indicated on Drawings.

2.03 SIGN MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

D. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.
   1. Paint Maximum Product Emissions Limits: Top coat and primer interior paints must meet current requirements for VOC (Volatile Organic Compounds) limits of South Coast Air Quality Management District (SCAQMD) Rule No. 1113 and Cal GREEN Table 5.504.4.3 for VOC Content Limits for Architectural Coatings.
   2. Cal-GREEN Requirements for typical paint coatings:
      a. Primers, Sealers, and Undercoaters: 100 grams per liter of product minus water
      b. Flats: 50 grams per liter of product minus water
      c. Non-flats: 100 grams per liter of product minus water
      d. Non-flat High Gloss: 150 grams per liter of product minus water

2.04 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
   1. Use concealed fasteners and anchors unless indicated to be exposed.

B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.

2.05 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
   1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
   2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
   3. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.

B. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
   1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Subsequent changeable inserts are by Owner Furnish two blank inserts for each sign for Owner's use.
   2. For frame to hold changeable sign panel, fabricate frame without burrs or constrictions that inhibit function. Furnish initial sign panel. Subsequent changeable sign panels are by Owner.

2.06 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Verify that anchor inserts are correctly sized and located to accommodate signs.

D. Verify that electrical service is correctly sized and located to accommodate signs.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
   1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Install signs so they do not protrude or obstruct according to the accessibility standard.
   3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
   4. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Room-Identification Signs: Install in locations on walls as indicated and according to accessibility standard.

C. Mounting Methods:
   1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
      a. Tamper proof screws.
      b. Silicone adhesive.

3.03 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION

SECTION 10 21 13.17

PHENOLIC-CORE TOILET COMPARTMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Phenolic-core toilet compartments configured as shower dividers, dressing compartments, toilet enclosures and urinal screens.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

B. Shop Drawings: For toilet compartments.
   1. Include plans, elevations, sections, details, and attachment details.
   2. Show locations of cutouts for compartment-mounted toilet accessories.
   3. Show locations of centerlines of toilet fixtures.
   4. Show locations of floor drains.
   5. Show overhead support or bracing locations.

C. Samples for Verification: Submit 5 samples each of the following products, in manufacturer's standard sizes unless otherwise indicated:
   1. Each type of material, color, and finish required for toilet compartments, prepared on 3-inch- (152-mm-) square Samples of same thickness and material indicated for Work.
   2. Each type of hardware and accessory.

D. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

1.03 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of toilet compartment.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.05 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Flame-Spread Index: 75 or less.
   2. Smoke-Developed Index: 450 or less.

B. Recycled Content of Phenolic-Core Panel: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 20 percent.

C. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible.

2.02 PHENOLIC-CORE TOILET COMPARMENTS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick DuraLine Series 1080 or comparable product by one of the following:
   1. Accurate Partitions Corporation.
   2. All American Metal Corp.
   3. Ampco, Inc.
   4. Bradley Corporation; Mills Partitions.
   5. Flush Metal Partition Corp.
   6. General Partitions Mfg. Corp.
   7. Global Steel Products Corp.
   8. Knickerbocker Partition Corporation.
   9. Marlite.
   10. Metpar Corp.
   11. Scranton Products.
   12. Approved equal.

B. Toilet-Enclosure Style: Floor Anchored.

C. Urinal-Screen Style: Wall hung.

D. Door, Panel, and Pilaster Construction: Solid phenolic-core panel material with melamine facing on both sides fused to substrate during panel manufacture (not separately laminated), and with eased and polished edges. Provide minimum 3/4-inch- (19-mm-) thick doors and pilasters and minimum 1/2-inch- (13-mm-) thick panels.

E. Pilaster Shoes: Formed from stainless-steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, finished to match hardware.

F. Brackets (Fittings):
   1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

G. Phenolic-Panel Finish:
   1. Facing Sheet Finish: One color and pattern in each room.
   2. Color and Pattern: As indicated by manufacturer's designations S-431 Willow Grey, with manufacturer's standard through-color core matching face sheet.
   3. Edge Color: Manufacturer's standard black.

2.03 HARDWARE AND ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard operating hardware and accessories.
   1. Material: Stainless steel.
   2. Hinges: Manufacturer's standard continuous, spring-loaded type, allowing emergency access by lifting door.
   3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
   4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
   5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors.
   6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.

B. Hardware and Accessories: Manufacturer's heavy-duty operating hardware and accessories.
   1. Hinges: Manufacturer's minimum 0.062-inch- (1.59-mm-) thick stainless-steel continuous, spring-loaded type, allowing emergency access by lifting door. Mount with through-bolts.
   2. Latch and Keeper: Manufacturer's heavy-duty surface-mounted cast-stainless-steel latch unit designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through-bolts.
   3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless-steel hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories. Mount with through-bolts.
   4. Door Bumper: Manufacturer's heavy-duty rubber-tipped cast-stainless-steel bumper at out-swinging doors. Mount with through-bolts.
   5. Door Pull: Manufacturer's heavy-duty cast-stainless-steel pull at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through-bolts.

C. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

D. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless-steel, hot-dip galvanized-steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.04 MATERIALS

A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M).

B. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.

C. Stainless-Steel Castings: ASTM A 743/A 743M.

2.05 FABRICATION

A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.

B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

C. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide out-swinging doors with a minimum 32-inch- (813-mm-) wide clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
   1. Confirm location and adequacy of blocking and supports required for installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
   1. Maximum Clearances:
      a. Pilasters and Panels: 1/2 inch (13 mm).
      b. Panels and Walls: 1 inch (25 mm).
   2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
      a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
      b. Align brackets at pilasters with brackets at walls.

B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.03 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging

doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION

SECTION 10 44 13

FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Fire-protection cabinets for the following:
   1. Portable fire extinguishers.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.

B. Shop Drawings: For fire-protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: For each type of exposed finish required.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples 6 by 6 inches (150 by 150 mm) square.

E. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function. Use same designations indicated on Drawings.

1.03 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.04 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.01 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. JL Industries, Inc.; a division of the Activar Construction Products Group.
      b. Larsens Manufacturing Company.
      c. Potter Roemer LLC.

B. Cabinet Construction: Nonrated.

C. Cabinet Material: Stainless-steel sheet.

D. Recessed Cabinet:
   1. Trimless with Concealed Flange: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame and door, without overlapping trim attached to cabinet. Provide recessed flange, of same material as box, attached to box to act as drywall bead.

E. Cabinet Trim Material: Stainless-steel sheet.

F. Door Material: Stainless-steel sheet.

G. Door Style: Center glass panel with frame.

H. Door Glazing: Break glass.

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
   1. Provide manufacturer's standard.
   2. Provide manufacturer's standard hinge permitting door to open 180 degrees.

J. Accessories:
   1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
   2. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
   3. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
   4. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
      a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
         1) Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by City Engineer. Individual press-on letters.

K. Materials:
   1. Stainless Steel: ASTM A 666, Type 304.
      a. Finish: No. 4 directional satin finish.
   2. Tempered Break Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick.

2.02 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
   1. Weld joints and grind smooth.
   2. Provide factory-drilled mounting holes.
   3. Prepare doors and frames to receive locks.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
   1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
   2. Fabricate door frames of one-piece construction with edges flanged.
   3. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.03 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.03 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
   1. Fire-Protection Cabinets: 54 inches (1372 mm) above finished floor to top of cabinet.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
   1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
   2. Provide inside latch and lock for break-glass panels.
   3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.

3.04 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 10 44 16

FIRE EXTINGUISHERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes portable, fire extinguishers and mounting brackets for fire extinguishers.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function.

1.03 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.04 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
   1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.02 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. JL Industries, Inc.; a division of the Activar Construction Products Group.
      b. Larsens Manufacturing Company.
      c. Potter Roemer LLC.
      d. Prior approved equal.
   2. Valves: Nickel-plated, polished-brass body.
   3. Handles and Levers: Stainless steel.

4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb (2.3-kg) nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.03 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. JL Industries, Inc.; a division of the Activar Construction Products Group.
b. Larsens Manufacturing Company.
c. Potter Roemer LLC.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
a. Orientation: Vertical.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.
1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
1. Mounting Brackets: 54 inches (1372 mm) above finished floor to top of fire extinguisher.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION

SECTION 11 31 00

APPLIANCES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cooking appliances.
2. Refrigeration appliances.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

B. Sustainable Design Submittals: Product Data: For indicated products, indicating compliance with requirements for ENERGY STAR product labeling.

C. Product Schedule: For appliances. Use same designations indicated on Drawings.

1.03 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Product Certificates: For each type of appliance.

C. Field quality-control reports.

D. Sample Warranties: For manufacturers' special warranties.

1.04 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each appliance to include in operation and maintenance manuals.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Maintains, within 50 miles of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

1.06 WARRANTY

A. Special Warranties: Manufacturer agrees to repair or replace appliances or components that fail in materials or workmanship within specified warranty period. Warranty Period: Two years from date of Substantial Completion.

B. Microwave Oven: Full warranty, including parts and labor, for on-site service on the magnetron tube. Warranty Period: Two years from date of Substantial Completion.

C. Refrigerator/Freezer, Sealed System: Full warranty, including parts and labor, for on-site service on the product.

1. Warranty Period for Sealed Refrigeration System: Two years from date of Substantial Completion.
2. Warranty Period for Other Components: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain residential appliance from single manufacturer.

2.02 PERFORMANCE REQUIREMENTS

A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Accessibility: Where appliances are indicated to comply with accessibility requirements, comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and 2013 CBC.

2.03 MICROWAVE OVENS

A. Microwave Oven:

1. Basis of Design Product: Subject to compliance with requirements, provide Viking Model RVM320 microwave oven, or equal.
2. Mounting: Undercabinet.
3. Type: Conventional.
4. Capacity: 2.0 cu. ft.
5. Oven Door: Door with observation window and pushbutton latch release.
6. Microwave Power Rating: Manufacturer's standard. Convection Element Power Rating: Manufacturer's standard.
7. Electric Power Supply: 120 V, 60 Hz, 1 phase, 15 A.
8. Controls: Digital panel controls and timer display.
9. Other Features: Turntable.
10. Material: Stainless steel.

2.04 REFRIGERATOR/FREEZERS

A. Refrigerator/Freezer: Comply with AHAM HRF-1.

1. Basis of Design Product: Subject to compliance with requirements, provide Viking Model RVRF336 refrigerator, or equal
2. Type: Freestanding.
3. ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.
4. Front Panel(s): Stainless steel.
5. Appliance Color/Finish: Stainless steel.

2.05 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of appliances.

B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install appliances according to manufacturer's written instructions.

B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.

C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

3.03 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
3. Operational Test: After installation, start units to confirm proper operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.

B. An appliance will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.04 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain appliances.

END OF SECTION

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Piping materials and installation instructions common to most piping systems.
   2. Transition fittings.
   3. Dielectric fittings.
   4. Mechanical sleeve seals.
   5. Sleeves.
   6. Escutcheons.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.4 SUBMITTALS

A. Product Data: Submit brochures for the following materials to the Architect in accordance with the provisions of Division 1 of these specifications.
   1. Transition fittings.
   2. Dielectric fittings.
   3. Mechanical sleeve seals.
   4. Escutcheons.

1.5 QUALITY ASSURANCE

A. Codes and Standards:
   1. All governing Codes, Ordinances and Agencies, in accordance with the provisions of Division 1 of these specifications.

B. Warranty: In accordance with the provisions of Division 1 of these specifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress

of construction, to allow for plumbing installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Section 22 11 19 "Domestic Water Piping Specialties."

1.8 SERVICE CONNECTIONS

A. Water: To water meter as shown on drawings. Contractor shall arrange for installation of the water meter and vault by LA Department of Water and Power and shall pay all fees and charges. Water for construction shall be separately arranged for and paid for by the contractor.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Division 15 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
   1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
      a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
      b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
   2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated.

2.4 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
   1. Manufacturers:
      a. Cascade Waterworks Mfg. Co.
      b. Dresser Industries, Inc.; DMD Div.
      c. JCM Industries.
   2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
   3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.
   4. Aboveground Pressure Piping: Pipe fitting.

B. Plastic-to-Metal Transition Fittings: PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
   1. Manufacturers:
      a. Eslon Thermoplastics, or equal.

C. Plastic-to-Metal Transition Adaptors: One-piece fitting with manufacturer's SDR 11 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
   1. Manufacturers:
      a. Thompson Plastics, Inc., or equal.

D. Plastic-to-Metal Transition Unions: MSS SP-107, PVC four-part union. Include brass end, solvent-cement-joint end, rubber O-ring, and union nut.
   1. Manufacturers:
      a. NIBCO INC., or equal.

2.5 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
   1. Manufacturers:
      a. Epco Sales, Inc.
      b. Watts Industries, Inc.; Water Products Div.
      c. Zurn Industries, Inc.; Wilkins Div.

D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
   1. Manufacturers:
      a. Epco Sales, Inc.
      b. Watts Industries, Inc.; Water Products Div.

E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
   1. Manufacturers:
      a. Advance Products & Systems, Inc.
      b. Calpico, Inc.
      c. Pipeline Seal and Insulator, Inc.
   2. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.

F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
   1. Manufacturers:
      a. Calpico, Inc.
      b. Lochinvar Corp.

G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.
   1. Manufacturers:
      a. Precision Plumbing Products, Inc.
      b. Sioux Chief Manufacturing Co., Inc.
      c. Victaulic Co. of America.

2.6 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
   1. Manufacturers:

a. Calpico, Inc.
b. Metraflex Co.
c. Thunderline “Line-Seal”.

2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
3. Pressure Plates: Stainless steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.7 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
1. Underdeck Clamp: Clamping ring with set screws.

E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe: ASTM D 1785, Schedule 40.

G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.8 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening. Polished chrome-plated with set screw.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as closely as practical to routing indicated on plans.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:
    a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
    b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
    c. Insulated Piping: One-piece, stamped-steel type with spring clips.
    d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    e. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated finish.
    f. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
    g. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.

M. Sleeves are not required for core-drilled holes.

N. Permanent sleeves are not required for holes formed by removable PE sleeves.

O. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
1. Cut sleeves to length for mounting flush with both surfaces.
    a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below
    floor slab as required to secure clamping ring if ring is specified.
2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
3. Install sleeves that are large enough to provide 1/2 inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
    a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
    b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
    c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing.
    Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 07 Section 07 62 00 "Sheet Metal Flashing and Trim" for flashing.
        1) Seal space outside of sleeve fittings with grout.
4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint.

Q. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Install steel pipe for sleeves smaller than 6 inches in diameter.
2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

R. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with approved firestop materials, equal to Hilti.

T. Verify final equipment locations for roughing-in.

U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.2 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end.
Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.3 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:
1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.4 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.5 PAINTING

A. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.6 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Section 05 50 00 "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

C. Field Welding: Comply with AWS D1.1.

3.7 ERECTION OF WOOD SUPPORTS AND ANCHORAGES

A. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.

B. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.

C. Attach to substrates as required to support applied loads.

END OF SECTION

SECTION 22 05 19

METERS AND GAGES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. METERS AND GAGES FOR PLUMBING PIPING consists of furnishing transportation, labor, materials, and equipment to furnish and install the following meters and gages for mechanical systems:
   1. Thermometers
   2. Gages
   3. Test plugs

1.2 RELATED WORK

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1of these specifications.

B. DOMESTIC WATER PIPING Section 22 11 16

C. COMMON WORK RESULTS FOR PLUMBING Section 22 05 00

1.3 REFERENCES

A. American Society of Mechanical Engineers (ASME)

1.4 QUALITY ASSURANCE

A. Codes and Standards:
   1. All governing Code, Ordinance and Agencies, in accordance with the provisions of Division 1 of these specifications.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated; include performance curves.

B. Product Certificates: For each type of thermometer, gauge, flowmeter and thermal-energy meter, signed by product manufacturer.

C. Operation and Maintenance Data: For flowmeters and thermal-energy meters to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 METAL-CASE, LIQUID-IN-GLASS THERMOMETERS

A. Manufacturers:
   1. Palmer - Wahl Instruments Inc.
   2. Weiss Instruments, Inc.
   3. Trerice, H.O. Co.

B. Case: Die-cast aluminum or brass, 7 inches long.

C. Tube: Red or blue reading, mercury or organic-liquid filled, with magnifying lens.

D. Tube Background: Satin-faced, nonreflective aluminum with permanently etched scale markings.

E. Window: Glass.

F. Connector: Adjustable type, 180 degrees in vertical plane, 360 degrees in horizontal plane, with locking device.

G. Stem: Copper-plated steel, aluminum, or brass for thermowell installation and of length to suit installation.

H. Accuracy: Plus or minus 1 percent of range or plus or minus 1 scale division to maximum of 1.5 percent of range.

2.2 PRESSURE GAGES

A. Manufacturers:
1. Palmer – Wahl Instruments Inc.
2. Trerice, H. O. Co.
3 Weksler Instruments Operating Unit; Dresser Industries; Instrument Div.

B. Direct-Mounting, Dial-Type Pressure Gages: Indicating-dial type complying with ASME B40.100.
1. Case: Liquid-filled type, drawn steel or cast aluminum, 6-inch diameter.
2. Pressure-Element Assembly: Bourdon tube, unless otherwise indicated.
3. Pressure Connection: Brass, NPS 1/4, bottom-outlet type unless back-outlet type is indicated.
4. Movement: Mechanical, with link to pressure element and connection to pointer.
5. Dial: Satin-faced, nonreflective aluminum with permanently etched scale markings.
6. Pointer: Red or other dark-color metal.
7. Window: Glass.
8. Ring: Metal.
9. Accuracy: Grade B, plus or minus 2 percent of middle half scale.
10. Vacuum-Pressure Range: 30-inch Hg of vacuum to 15 psig of pressure.
11. Range for Fluids under Pressure: Two times operating pressure.

C. Pressure-Gage Fittings:
1. Valves: NPS 1/4 brass or stainless-steel needle type.
2. Syphons: NPS 1/4 coil of brass tubing with threaded ends.
3. Snubbers: ASME B40.5, NPS 1/4 brass bushing with corrosion-resistant, porous-metal disc of material suitable for system fluid and working pressure.

2.3 TEST PLUGS

A. Manufacturers:
1. Flow Design, Inc.
2. MG Piping Products Co.
3. Watts Industries, Inc.; Water Products Div.

B. Description: Corrosion-resistant brass or stainless-steel body with core inserts and gasketed and threaded cap, with extended stem for units to be installed in insulated piping.

C. Minimum Pressure and Temperature Rating: 500 psig at 200 deg F.

D. Core Inserts: One or two self-sealing rubber valves.
1. Insert material for air, water, oil, or gas service at 20 to 200 degrees F shall be CR.
2. Insert material for air or water service at minus 30 to plus 275 degrees F shall be EPDM.

PART 3 – EXECUTION

3.1 THERMOMETER APPLICATIONS

A. Install liquid-in-glass thermometers in the following locations:
1. Outlet of each domestic water heater.
2. Each domestic hot water return pipe.

B. Provide the following temperature ranges for thermometers:
1. Domestic Hot Water: 30 to 180 degrees F, with 2-degree scale divisions.

3.2 GAGE APPLICATIONS

A. Install dry-case-type pressure gages for discharge of each pressure-reducing valve.

3.3 INSTALLATIONS

A. Install direct-mounting thermometers and adjust vertical and tilted positions.

B. Install direct-mounting pressure gages in piping tees with pressure gage located on pipe at most readable position.

C. Install test plugs in tees in piping.

3.4 CONNECTIONS

A. Install meters and gages adjacent to machines and equipment to allow service and maintenance for meters, gages, machines, and equipment.

3.5 ADJUSTING

A. Adjust faces of thermometers and gages to proper angle for best visibility.

END OF SECTION

SECTION 22 05 23

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. GENERAL-DUTY VALVES FOR PLUMBING PIPING consists of furnishing transportation, labor, materials, and equipment to furnish and install the following general-duty valves:
   1. Ball valves.
   2. Check valves.
   3. Gate valves.

1.2 RELATED WORK

A. Drawings and general provision of the Contract, including General and Supplementary Conditions and Division 1 of these specifications.

B. COMMON WORK RESULTS FOR PLUMBING Section 22 05 00

1.3 REFERENCES

A. American Society of Mechanical Engineers (ASME)

B. American Water Works Association (AWWA)

1.4 SUBMITTALS

A. Product Data: For each type of valve indicated. Include body, seating, and trim materials; valve design; pressure and temperature classifications; end connections; arrangement; dimensions; and required clearances. Include list indicating valve and its application. Include rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories.

1.5 QUALITY ASSURANCE

A. Codes and Standards:
   1. All governing Codes, Ordinance and Agencies, in accordance with the provisions of Division 1 of these specifications.

B. ASME Compliance:
   1. ASME B16.10 and ASME B16.34 for ferrous valved dimensions and design criteria.
   2. ASME B31.9 for building service piping valves.

C. NSF Compliance: NSF 61-G for valve materials for potable-water service.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:
   1. Protect internal parts against rust and corrosion.
   2. Protect threads, flange faces, grooves, and weld ends.
   3. Set gate valves closed to prevent rattling.
   4. Set ball and plug valves open to minimize exposure of functional surfaces.
   5. Block check valves in either closed or open position.

B. Use the following precautions during storage:
   1. Maintain valve end protection.
   2. Store valves indoors and maintain at higher than ambient dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

PART 2 - PRODUCTS

2.1 VALVES, GENERAL

A. Refer to Valve Applications Article in this Section for applications of valves.

B. Bronze valves shall be made with dezincification-resistant materials.
   1. Valves for potable water must comply with California Lead Free Law.
   2. Lead free refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content ≤ 0.25%. Source: California Health Safety Code (116875).
   3. All valves must be 3rd party certified.

C. Bronze Valves: NPS 2 and smaller with threaded ends, unless otherwise indicated.

D. Ferrous Valves: NPS 2-1/2" and larger with flanged ends, unless otherwise indicated.

E. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream pipe, unless otherwise indicated.

G. Valve Actuator Types:
   1. Handwheel: For valves other than quarter-turn types.
   2. Handlever: For quarter-turn valves NPS 6 and smaller, except plug valves.

H. Valves in Insulated Piping: With 2-inch stem extensions and the following features:
   1. Gate Valves: With rising stem.
   2. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeves that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.

I. Valve-End Connections:
   1. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
   2. Solder Joint: With sockets according to ASME B16.18.
   3. Threaded: With threads according to ASME B1.20.1.

J. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRONZE BALL VALVES

A. Manufacturers:
   1. Two-Piece, Full-Port, Bronze Ball Valves:
      a. Conbraco Industries, Inc.; Apollo Div.
      b. NIBCO INC., Model T-685-80-66-LF

B. Two-Piece, Bronze Ball Valves: Dezincification resistant lead free bronze body with full-port, stainless steel ball and trim; TFE seats; and 600-psig minimum cold working pressure rating and blowout-proof stem.

2.3 BRONZE CHECK VALVES

A. Manufacturers:
   1. Type 4, Bronze, Swing Check Valves with Nonmetallic TFE Disc:
      a. Milwaukee Valve Company.
      b. NIBCO INC., Model T-413-Y-LF

B. Bronze Check Valves, General: MSS SP-80.

C. Type 4, Class 125, Bronze, Swing Check Valves: Dezincification resistant lead free bronze body with nonmetallic disc and bronze seat.

2.4 BRONZE GATE VALVES

A. Manufacturers:
   1. Type 1, Bronze, Rising-Stem Gate Valves:
      a. Milwaukee Valve Company.
      b. NIBCO INC., Model T-111-LF
      c. Red-White Valve Corp.
      d. Watts Industries, Inc.; Water Products Div.

B. Bronze Gate Valves, General: MSS SP-80, with ferrous-alloy handwheel.

C. Type 1, Class 125, Bronze Gate Valves: Lead free bronze body with rising stem and bronze solid wedge.

2.5 CAST-IRON GATE VALVES

A. Manufacturers:
   1. Type I, Cast-Iron, Nonrising-Stem Gate Valves:
      a. Grinnell Corporation.
      b. Milwaukee Valve Company.
      c. NIBCO INC., Model F-619-RW

B. Cast-Iron Gate Valves, General: MSS SP-70, Type I.

C. Class 125, NRS, Bronze-Mounted, Cast-Iron Gate Valves: Ductile body with ductile iron trim, nonrising stem, and resilient-wedge.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine piping system for compliance with requirements for installation tolerances and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

C. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

D. Examine threads on valve and mating pipe for form and cleanliness.

E. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

F. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE APPLICATIONS

A. Refer to piping Sections for specific valve applications. If valve applications are not indicated, use the following:
   1. Shutoff Service: Ball, or gate valves.
   2. Throttling Service: Ball valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP class or CWP ratings may be substituted.

C. Domestic Water Piping: Use the following types of valves:
   1. Ball Valves, NPS 2 and Smaller: Two-piece, 600-psig CWP rating, copper alloy.
   2. Swing Check Valves, NPS 2 and Smaller: Type 4, Class 125, bronze.
   3. Swing Check Valves, NPS 2-1/2 and Larger: Type II, Class 125, gray iron.
   4. Spring-Loaded, Lift-Disc Check Valves, NPS 2 and Smaller: Type IV, Class 125 minimum.
   5. Gate Valves, NPS 2-1/2 and Larger: Type I, Class 125, OS&Y, bronze-mounted cast iron.

3.3 VALVE INSTALLATION

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

C. Locate valves for easy access and provide separate support where necessary.

D. Install valves in horizontal piping with stem at or above center of pipe.

E. Install valves in position to allow full stem movement.

F. Install check valves for proper direction of flow and as follows:
   1. Swing Check Valves: In horizontal position with hinge pin level.
   2. Lift Check Valves: With stem upright and plumb.

3.4 JOINT CONSTRUCTION

A. Refer to Division 22 Section "Common Work Results for Plumbing" for basic piping joint construction.

B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

3.5 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

END OF SECTION

SECTION 22 05 29

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Hangers and supports for plumbing piping and equipment consists of furnishing transportation, labor, materials and equipment to furnish and install the following:
   1. Steel pipe hangers and supports.
   2. Trapeze pipe hangers.
   3. Metal framing systems.
   4. Thermal-hanger shield inserts.
   5. Fastener systems.
   6. Pipe stands.
   7. Pipe positioning systems.
   8. Equipment supports.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 General Requirements Sections, apply to this Section.

B. Related Sections include the following:
   1. Section 05 50 00 "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
   2. Section 21 00 00 "Wet Pipe Fire-Suppression Systems" for pipe hangers for fire-suppression piping.
   3. Section 22 05 48 "Noise, Vibration and Seismic Controls for Plumbing Piping and Equipment" for vibration isolation devices.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Steel pipe hangers and supports.
   2. Thermal-hanger shield inserts.
   3. Powder-actuated fastener systems.
   4. Pipe positioning systems.

B. Welding certificates.

1.6 QUALITY ASSURANCE

A. Welding: Welding shall be performed only by qualified welders, and shall comply with ASME Boiler Construction Code, ANSI Code and State of California requirements.

B. Codes and Standards:
   1. All governing codes, ordinances and agencies, in accordance with the provisions of Division 1 of these specifications.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Manufacturers:
   1. B-Line Systems, Inc.; a division of Cooper Industries.
   2. ERICO/Michigan Hanger Co.
   3. Hilti Inc.
   4. Tolco Inc.

C. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

2.3 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

2.4 METAL FRAMING SYSTEMS

A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.

B. Manufacturers:
   1. B-Line Systems, Inc.; a division of Cooper Industries.
   2. ERICO/Michigan Hanger Co.; ERISTRUT Div.
   3. Hilti Inc.
   4. Tolco Inc.
   5. Unistrut Corp.; Tyco International, Ltd.

C. Coatings: Manufacturer's standard finish unless bare metal surfaces are indicated.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.5 THERMAL-HANGER SHIELD INSERTS

A. Description: 100-psig- minimum, compressive-strength insulation insert encased in sheet metal shield.

B. Manufacturers:

1. ERICO/Michigan Hanger Co.
2. Pipe Shields, Inc.

C. Insulation-Insert Material for Cold Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass with vapor barrier.

D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate or ASTM C 552, Type II cellular glass.

E. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

F. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

G. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.6 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
1. Manufacturers:
a. Hilti, Inc.
b. ITW Ramset/Red Head.
c. Powers Fasteners.

B. Mechanical-Expansion Anchors: Insert-wedge-type stainless steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
1. Manufacturers:
a. B-Line Systems, Inc.; a division of Cooper Industries.
b. Hilti, Inc.
c. ITW Ramset/Red Head.
d. Powers Fasteners.

2.7 PIPE STAND FABRICATION

A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion-resistant components to support roof-mounted piping.

B. Compact Pipe Stand: One-piece plastic unit with integral-rod-roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
1. Manufacturers:
a. ERICO/Michigan Hanger Co.
b. MIRO Industries.

C. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural-steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

2.8 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, system of metal brackets, clips, and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.

B. Manufacturers:
1. C & S Mfg. Corp.
2. HOLDRITE Corp.; Hubbard Enterprises.
3. Samco Stamping, Inc.

2.9 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.10 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use padded hangers for piping that is subject to scratching.

F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
2. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24, if little or no insulation is required.
3. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
4. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS 3/4 to NPS 8.
5. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
6. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3.
7. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30.
8. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
9. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.
10. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
11. Adjustable, Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes, NPS 2-1/2 to NPS 36, if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.
12. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from 2 rods if longitudinal movement caused by expansion and contraction might occur.
13. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20, from single rod if horizontal movement caused by expansion and contraction might occur.
14. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
15. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24, if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
16. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS 30, if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.

G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.

H. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
   2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
   3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
   4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
   5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

I. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
   2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
   3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
   4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
   5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
   6. C-Clamps (MSS Type 23): For structural shapes.
   7. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
   8. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
   9. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I- beams for heavy loads, with link extensions.
   10. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
   11. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
      a. Light (MSS Type 31): 750 lb.
      b. Medium (MSS Type 32): 1500 lb.
      c. Heavy (MSS Type 33): 3000 lb.
   12. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
   13. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
   14. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
   2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
   3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
   2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
   3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.

4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from hanger.
6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from base support.
7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from trapeze support.
8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include
   the following types:
   a. Horizontal (MSS Type 54): Mounted horizontally.
   b. Vertical (MSS Type 55): Mounted vertically.
   c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.

L. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.

M. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.

N. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

O. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

3.2 HANGER AND SUPPORT INSTALLATION

A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported.
   Weld steel according to AWS D1.1.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.

D. Fiberglass Strut System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled fiberglass struts.

E. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

F. Fastener System Installation:
1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder- actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

G. Pipe Stand Installation:
1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount

on smooth roof surface. Do not penetrate roof membrane.

2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. Refer to Division Section 07 72 00 "Roof Accessories" for curbs.

H. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. Refer to Division 22 Section 22 40 00 "Plumbing Fixtures" for plumbing fixtures.

I. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

J. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

K. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

L. Install lateral bracing with pipe hangers and supports to prevent swaying.

M. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

N. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

O. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9 (for building services piping) are not exceeded.

P. Insulated Piping: Comply with the following:

1. Attach clamps and spacers to piping.
   a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
   b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
   c. Do not exceed pipe stress limits according to ASME B31.9 for building services piping.
2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
4. Shield Dimensions for Pipe: Not less than the following:
   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
   b. NPS 4: 12 inches long and 0.06 inch thick.
   c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
   d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
   e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
5. Pipes NPS 8 and Larger: Include wood inserts.
6. Insert Material: Length at least as long as protective shield.
7. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make smooth bearing surface.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
   1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 22 05 48

NOISE, VIBRATION AND SEISMIC CONTROL OF PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Noise, vibration and seismic control of plumbing piping and equipment consists of furnishing transportation, labor, materials, and equipment to furnish and install the following:
   1. Isolators
   2. Seismic Restraints

1.2 RELATED DOCUMENTS

A. Drawings and General provisions of the Contract, including General and Supplementary Conditions and Division 1 of these specifications.

1.3 DESCRIPTION

A. Work Included: Isolation of domestic hot and cold water lines, circulation pumps, and water heaters.

1.4 QUALITY ASSURANCE

A. Codes and Standards
   1. All governing Codes, Ordinances and Agencies in accordance with the provisions of Division 1 of these specifications.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 VIBRATION ISOLATORS

A. Type A: Neoprene pad. Waffle, ribbed, or other forms. Typically 1/4 to 5/16 inch thick.
Durometers of 40 to 65. Static deflections from 0.01 to 0.07 inches. Nominal design 40 durometer for 0.05 inches static deflection. Provide steel load distribution plates. Size of pad to be specified by isolator supplier based on load per pot. Mason W and WM, Vibrex R, or equivalent.

B. Type D: Is a molded neoprene element enclosed by a ductile housing. The isolator may be utilized in compression, shear or tension. The isolator shall provide seismic restraint in any direction up to 1.0g. The isolator shall be Mason Industries "BR" or approved equal.

C. Type I: Spring hangers. Steel spring with neoprene cap in steel hanger frame. Static deflection range 1.2 to 2.0 inches nominal. Designed to preclude contact of hanger rods with frame (30 degree misalignment.) Mason 30, Vibex RMSA, or equivalent.

D. Type T: Trisolators. Sheet metal sleeve with felt insert to be installed at attachment points of hangers or piping. Semco, Elcen, Elmdor/Stoneman or equivalent shop- fabricated device.

E. Vibration Isolation for Domestic Hot and Cold Water Plumbing Lines.
   1. Riser Support: 0.06 inch deflection Type A neoprene pads with load- distribution pads under riser clamps.
   2. Horizontal Piping: Minimum 3/8 inch felt between pipe and clevis hanger.
   3. Miscellaneous Attachments: Trisolators.

4. Seismic Restraints: Suspended piping - cables as required by code.
5. Vibration Isolation: Isolate plumbing lines within the vicinity of pumps. Plumbing line isolators shall have a static deflection equal to that of the pump isolation.

F. Vibration Isolation for Water Heaters:
1. 0.06 inch deflection Type A neoprene pads.

G. Seismic Restraints: Suspended piping cables as required by Code.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Vibration Isolation: In accordance with the manufacturer's directions.

B. Seismic Restraint: In accordance with the requirements of all applicable Code and Standards, and manufacturers recommendations.

END OF SECTION

SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Identification for plumbing piping and equipment consists of furnishing transportation, labor, materials, and equipment to furnish and install the following:
   1. Pipe labels.
   2. Valve tags.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 General Requirements Sections, apply to this Section.

B. Section 22 05 00 “Common Work Results for Plumbing”

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

1.4 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

1.5 QUALITY ASSURANCE

A. Codes and Standards:
   1. All governing codes, ordinances and agencies, in accordance with the provisions of Division 1 of these specifications.

PART 2 - PRODUCTS

2.1 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
   1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
   2. Lettering Size: At least 1-1/2 inches high.

2.2 VALVE TAGS

A. Valve Tags: Provide a valve tag consisting of a 2 in. dia., 20 ga. brass disk for each valve with 1/2 in. letters identifying service designation. Fasten tags in place with continuous chain around valve stem.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 PIPE LABEL INSTALLATION

A. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
   1. Near each valve and control device.
   2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
   3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
   4. At access doors, manholes, and similar access points that permit view of concealed piping.
   5. Near major equipment items and other points of origination and termination.
   6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
   7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

B. Pipe Label Color Schedule:
   1. Domestic Water Piping:
      a. Background Color: Yellow.
      b. Letter Color: Black.
   2. Sanitary Waste and Storm Drainage Piping:
      a. Background Color: Green.
      b. Letter Color: White.

3.3 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units.

END OF SECTION

SECTION 22 07 19

PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PLUMBING PIPING INSULATION consists of furnishing transportation, labor, materials, and equipment to furnish and install piping insulation including preformed, rigid and flexible pipe insulation; field-applied jackets; accessories and attachments; and sealing compounds.

1.2 RELATED WORK

A. Section 22 05 00 “Common Work Results for Plumbing.”

B. Section 22 05 29 “Hangers and Supports for Plumbing Piping and Equipment.”

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM International)

1.4 SUBMITTALS

A. Product Data: Identify thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.

1.5 QUALITY ASSURANCE

A. Insulation Installed Indoors: Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.

B. Insulation Installed Outdoors: Flame-spread rating of 75 or less, and smoke-developed rating of 150 or less.

C. Codes and Standards:
   1. All governing Codes, Ordinances and agencies, in accordance with the provisions of Division 1 of these specifications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Ship insulation materials in containers marked by manufacturer with appropriate ASTM specification designation, type and grade, and maximum use temperature.

1.7 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Section 22 05 29.

B. Coordinate clearance requirements with piping Installer for insulation application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Glass Fiber Insulation:
   1. Johns-Manville
   2. Pittsburgh-Corning Corporation

B. Closed-Cell Phenolic-Foam Insulation:
   1. Kooltherm Insulation Products, Ltd.

2.2 INSULATION MATERIALS

A. Glass Fiber Insulation: Inorganic, foamed or cellulated glass, annealed, rigid, hermetically sealed cells, incombustible.
   1. Preformed Pipe Insulation, without Jacket: Comply with ASTM C552, Type II, Class 1.
   2. Preformed Pipe Insulation, with Jacket: Comply with ASTM C552, Type II, Class 2.
   3. Closed-Cell Phenolic-Foam Insulation: Preformed pipe insulation of rigid, expanded, closed-cell structure. Comply with ASTM C1126, Type III, Grade 1.

B. Prefabricated Thermal Insulating Fitting Covers: Comply with ASTM C450 for dimensions used in preforming insulation to cover valves, elbows, tees, and flanges.

2.3 FIELD-APPLIED JACKETS

A. General: ASTM C921, Type 1, unless otherwise indicated.

B. Foil and Paper Jacket: Laminated, glass-fiber-reinforced, flame-retardant kraft paper and aluminum foil.

C. PVC Jacket: High-impact, ultraviolet-resistant PVC; 20 mils thick; roll stock ready for shop or field cutting and forming.
   1. Adhesive: As recommended by insulation material manufacturer.
   2. PVC Jacket Color: Color-code piping jackets based on materials contained within the piping system.
   3. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories for the disabled.
   4. Adhesive: As recommended by insulation material manufacturer.

D. Standard PVC Fitting Covers: Factory-fabricated fitting covers manufactured from 20-mil- thick, high- impact, ultraviolet-resistant PVC.
   1. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories for the disabled.
   2. Adhesive: As recommended by insulation material manufacturer.

E. Aluminum Jacket: Factory cut and rolled to indicated sizes. Comply with ASTM B209, 3003 alloy, H- 14 temper.
   1. Finish and Thickness: Smooth finish, 0.010 inch thick.
   2. Moisture Barrier: 1-mil- thick, heat-bonded polyethylene and kraft paper.
   3. Elbows: Preformed, 45- and 90-degree, short- and long-radius elbows; same material, finish, and thickness as jacket.

2.4 ACCESSORIES AND ATTACHMENTS

A. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8 ounces per square yard.
   1. Tape Width: 4 inches.

B. Bands: 3/4 inch wide, in one of the following materials compatible with jacket:
   1. Stainless Steel: ASTM A666, Type 304; 0.020 inch thick.
   2. Galvanized Steel: 0.005 inch thick.
   3. Aluminum: 0.007 inch thick.
   4. Brass: 0.010 inch thick.
   5. Nickel-Copper Alloy: 0.005 inch thick.

C. Wire: 0.080-inch, nickel-copper alloy; 0.062-inch, soft-annealed, stainless steel; or 0.062-inch, soft- annealed, galvanized steel.

2.5 VAPOR RETARDERS

A. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry pipe and fitting surfaces. Remove materials that will adversely affect insulation application.

3.3 GENERAL APPLICATION REQUIREMENTS

A. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.

B. Refer to schedules at the end of this Section for materials, forms, jackets, and thicknesses required for each piping system.

C. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Apply insulation with longitudinal seams at top and bottom of horizontal pipe runs.

E. Apply multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.

H. Keep insulation materials dry during application and finishing.

I. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.

J. Apply insulation with the least number of joints practical.

K. Apply insulation over fittings, valves, and specialties, with continuous thermal and vapor-retarder integrity, unless otherwise indicated. Refer to special instructions for applying insulation over fittings, valves, and specialties.

L. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor-retarder mastic.
   1. Apply insulation continuously through hangers and around anchor attachments.
   2. For insulation application where vapor retarders are indicated, extend insulation on anchor legs at least 12 inches from point of attachment to pipe and taper insulation ends. Seal tapered ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.
   3. Install insert materials and apply insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by the insulation material manufacturer.
   4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect the jacket from tear or puncture by the hanger, support, and shield.

M. Insulation Terminations: For insulation application where vapor retarders are indicated, taper insulation ends. Seal tapered ends with a compound recommended by the insulation material

manufacturer to maintain vapor retarder.

N. Apply adhesives and mastics at the manufacturer's recommended coverage rate.

O. Apply insulation with integral jackets as follows:
   1. Pull jacket tight and smooth.
   2. Circumferential Joints: Cover with 3-inch wide strips, of same material as insulation jacket.
      Secure strips with adhesive and outward clinching staples along both edges of strip and spaced 4 inches on center.
   3. Longitudinal Seams: Overlap jacket seams at least 1-1/2 inches. Apply insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches on center.
      a. Exception: Do not staple longitudinal laps on insulation having a vapor retarder.
   4. Vapor-Retarder Mastics: Where vapor retarders are indicated, apply mastic on seams and joints and at ends adjacent to flanges, unions, valves, and fittings.
   5. At penetrations in jackets for thermometers and pressure gages, fill and seal voids with vapor- retarder mastic.

P. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
   1. Seal penetrations with vapor-retarder mastic.
   2. Apply insulation for exterior applications tightly joined to interior insulation ends.
   3. Extend metal jacket of exterior insulation outside roof flashing at least 2 inches below top of roof flashing.
   4. Seal metal jacket to roof flashing with vapor-retarder mastic.

Q. Exterior Wall Penetrations: For penetrations of below-grade exterior walls, terminate insulation flush with mechanical sleeve seal. Seal terminations with vapor-retarder mastic.

R. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and floors.

S. Fire-Rated Wall and Partition Penetrations: Apply insulation continuously through penetrations of fire- rated walls and partitions.
   1. Firestopping and fire-resistive joint sealers are specified in Section 21 00 00 “Wet Pipe Fire Suppression Systems.”

T. Floor Penetrations: Apply insulation continuously through floor assembly.
   1. For insulation with vapor retarders, seal insulation with vapor-retarder mastic where floor supports penetrate vapor retarder.

3.4 GLASS FIBER INSULATION APPLICATION

A. Apply insulation to straight pipes and tubes as follows:
   1. Secure each layer of insulation to pipe with wire, tape, or bands without deforming insulation materials.
   2. Where vapor retarders are indicated, seal longitudinal seams and end joints with vapor-retarder mastic.
   3. For insulation with factory-applied jackets, secure laps with outward clinched staples at 6 inches on center.
   4. For insulation with factory-applied jackets with vapor retarders, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by the insulation material manufacturer and seal with vapor-retarder mastic.

B. Apply insulation to flanges as follows:
   1. Apply preformed pipe insulation to outer diameter of pipe flange.
   2. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
   3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of the same thickness as pipe insulation.
   4. Apply canvas jacket material with manufacturer's recommended adhesive, overlapping seams at least 1 inch, and seal joints with vapor-retarder mastic.

C. Apply insulation to fittings and elbows as follows:
   1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
   2. When premolded sections of insulation are not available, apply mitered sections of cellular-glass insulation. Secure insulation materials with wire, tape, or bands.
   3. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.

D. Apply insulation to valves and specialties as follows:
   1. Apply premolded segments of cellular-glass insulation or glass-fiber blanket insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, arrange insulation for access to strainer basket without disturbing insulation.
   2. Apply insulation to flanges as specified for flange insulation application.
   3. Use preformed standard PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
   4. Use preformed heavy PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
   5. For larger sizes where PVC fitting covers are not available, seal insulation with canvas jacket and sealing compound recommended by the insulation material manufacturer.

3.5 CLOSED-CELL PHENOLIC-FOAM INSULATION APPLICATION

A. Apply insulation to straight pipes and tubes as follows:
   1. Secure each layer of insulation to pipe with wire, tape, or bands without deforming insulation materials.
   2. Where vapor retarders are indicated, seal longitudinal seams and end joints with vapor-retarder mastic.
   3. For insulation with factory-applied jackets, secure laps with outward clinched staples at 6 inches
      on center.
   4. For insulation with factory-applied jackets with vapor retarders, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by the insulation material manufacturer and seal with vapor-retarder mastic.

B. Apply insulation to flanges as follows:
   1. Apply preformed pipe insulation to outer diameter of pipe flange.
   2. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
   3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of block insulation of the same material and thickness as pipe insulation.
   4. Apply canvas jacket material with manufacturer's recommended adhesive, overlapping seams at least 1 inch, and seal joints with vapor-retarder mastic.

C. Apply insulation to fittings and elbows as follows:
   1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturer’s written instructions.
   2. When premolded sections of insulation are not available, apply mitered sections of phenolic- foam insulation. Secure insulation materials with wire, tape, or bands.
   3. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.

D. Apply insulation to valves and specialties as follows:
   1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.

2. When premolded sections of insulation are not available, apply mitered segments of phenolic- foam insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, arrange insulation for access to strainer basket without disturbing insulation.
3. Apply insulation to flanges as specified for flange insulation application.
4. Use preformed heavy PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
5. For larger sizes where PVC fitting covers are not available, seal insulation with canvas jacket and sealing compound recommended by the insulation material manufacturer.

3.6 FIELD-APPLIED JACKET APPLICATION

A. Apply glass-cloth jacket, where indicated, directly over bare insulation or insulation with factory-applied jackets.
   1. Apply jacket smooth and tight to surface with 2-inch overlap at seams and joints.
   2. Embed glass cloth between two 0.062-inch- thick coats of jacket manufacturer's recommended adhesive.
   3. Completely encapsulate insulation with jacket, leaving no exposed raw insulation.

B. Foil and Paper Jackets: Apply foil and paper jackets where indicated.
   1. Draw jacket material smooth and tight.
   2. Apply lap or joint strips with the same material as jacket.
   3. Secure jacket to insulation with manufacturer's recommended adhesive.
   4. Apply jackets with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
   5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-retarder mastic.

C. Apply PVC jacket where indicated, with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

D. Apply metal jacket where indicated, with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches on center and at end joints.

3.7 PIPING SYSTEM APPLICATIONS

A. Insulation materials and thicknesses are specified in schedules at the end of this Section.

B. Items Not Insulated: Unless otherwise indicated, do not apply insulation to the following systems, materials, and equipment:
   1. Flexible connectors.
   2. Vibration-control devices.
   3. Fire-suppression piping.
   4. Drainage piping located in crawl spaces, unless otherwise indicated.
   5. Below-grade piping, unless otherwise indicated.
   6. Chrome-plated pipes and fittings, unless potential for personnel injury.
   7. Air chambers, unions, strainers, check valves, plug valves, and flow regulators.

3.8 INSULATION APPLICATION SCHEDULE, GENERAL

A. Refer to insulation application schedules for required insulation materials, vapor retarders, and field- applied jackets.

B. Application schedules identify piping system and indicate pipe size ranges and material, thickness, and jacket requirements.

3.9 INTERIOR INSULATION APPLICATION SCHEDULE

A. Service: Domestic hot, tempered and recirculated hot water.
   1. Operating Temperature: 60 to 165 degrees F.
   2. Insulation Material: Cellular glass fiber, with jacket.

3. Insulation Thickness: Apply the following insulation thicknesses:
    a. Copper Pipe, 1/2 in to 1 inch: 1 inch thick.
    b. Copper Pipe, 1-1/4 inch and larger: 1-1/2 inches thick.
4. Field-Applied Jacket: Foil and paper at mechanical rooms where piping is exposed.
5. Vapor Retarder Required: Yes.
6. Finish: None.

B. Service: Condensate drain.
1. Operating Temperature: 35 to 60 degrees F.
2. Insulation Material: Closed-cell phenolic foam.
3. Insulation Thickness: Apply the following insulation thicknesses:
    a. Copper Pipe, 1/2 inch to 1 inch: 1/2 inch thick.
    b. Copper Pipe, 1-1/4 inches and larger: 1/2 inch thick.
4. Finish: None.

END OF SECTION

SECTION 22 11 16

DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Under-building slab and above ground domestic water pipes, tubes, fittings, and specialties inside the building.
   2. Encasement for piping.
   3. Specialty valves.
   4. Flexible connectors.

B. Related Section:
   1. Division 2 Section "Water Distribution" for water-service piping outside the building from source to the point where water-service piping enters the building.

1.3 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Domestic water piping and support and installation shall withstand effects of earthquake motions determined according to SMACNA Guidelines.

1.4 SUBMITTALS

A. Product Data: For the following products:
   1. Specialty valves.
   2. Transition fittings.
   3. Dielectric fittings.
   4. Flexible connectors.
   5. Backflow preventers and vacuum breakers.
   6. Water penetration systems.

B. Water Samples: Specified in "Cleaning" Article.

C. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 61-G and California Lead Free Law for potable domestic water piping and components.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type K and L water tube, drawn temper.
   1. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
   2. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and- socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.4 ENCASEMENT FOR PIPING

A. Standard: ASTM A 674 or AWWA C105.

B. Material: Factory coated with 20 mil high density polyethylene coating.

C. Color: Yellow.

2.5 SPECIALTY VALVES

A. Comply with requirements in Division 22 Section "General-Duty Valves for Plumbing Piping" for general-duty metal valves.

B. Comply with requirements in Division 22 Section "Domestic Water Piping Specialties" for balancing valves, drain valves, backflow preventers, and vacuum breakers.

2.6 TRANSITION FITTINGS

A. General Requirements:
   1. Same size as pipes to be joined.
   2. Pressure rating at least equal to pipes to be joined.
   3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Sleeve-Type Transition Coupling: AWWA C219.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Cascade Waterworks Manufacturing.
      b. Dresser, Inc.; Dresser Piping Specialties.
      c. Ford Meter Box Company, Inc. (The).
      d. JCM Industries.
      e. Romac Industries, Inc.
      f. Smith-Blair, Inc; a Sensus company.
      g. Viking Johnson; c/o Mueller Co.

D. Plastic-to-Metal Transition Fittings:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
      a. Charlotte Pipe and Foundry Company.
      b. Harvel Plastics, Inc.
      c. Spears Manufacturing Company.
   2. Description: Schedule 80 PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert and one solvent-cement-socket end.

E. Plastic-to-Metal Transition Unions:
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the

following:
a. Colonial Engineering, Inc.
b. NIBCO INC.
c. Spears Manufacturing Company.

2. Description: Schedule 80 PVC four-part union. Include brass or stainless-steel threaded end, solvent-cement-joint plastic end, rubber O-ring, and union nut.

2.7 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Capitol Manufacturing Company.
b. Central Plastics Company.
c. Hart Industries International, Inc.
d. Jomar International Ltd.
e. Matco-Norca, Inc.
f. McDonald, A. Y. Mfg. Co.
g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
h. Wilkins; a Zurn company.
2. Description:
a. Standard: ASSE 1079.
b. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Flanges:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Capitol Manufacturing Company.
b. Central Plastics Company.
c. Matco-Norca, Inc.
d. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
e. Wilkins; a Zurn company.
2. Description:
a. Standard: ASSE 1079.
b. Factory-fabricated, bolted, companion-flange assembly.
c. Pressure Rating: 150 psig.
d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Insulating Kits:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Central Plastics Company.
d. Pipeline Seal and Insulator, Inc.
2. Description:
a. Nonconducting materials for field assembly of companion flanges.
b. Pressure Rating: 150 psig.
c. Gasket: Neoprene or phenolic.
d. Bolt Sleeves: Phenolic or polyethylene.
e. Washers: Phenolic with steel backing washers.

E. Dielectric Nipples:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
a. Elster Perfection.
b. Grinnell Mechanical Products.
c. Matco-Norca, Inc.
d. Precision Plumbing Products, Inc.
e. Victaulic Company.
2. Description:
a. Standard: IAPMO PS 66
b. Electroplated steel nipple. complying with ASTM F 1545.
c. End Connections: Male threaded or grooved.
d. Lining: Inert and noncorrosive, propylene.

2.8 FLEXIBLE CONNECTORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Flex-Hose Co., Inc.
2. Flexicraft Industries.
3. Flex Pression, Ltd.
4. Flex-Weld, Inc.
5. Hyspan Precision Products, Inc.
6. Mercer Rubber Co.
7. Metraflex, Inc.
8. Proco Products, Inc.
9. Tozen Corporation.
10. Unaflex, Inc.
11. Universal Metal Hose; a Hyspan company

B. Stainless-Steel-Hose Flexible Connectors: Corrugated-stainless-steel tubing with stainless-steel wire-braid covering and ends welded to inner tubing.
1. Working-Pressure Rating: Minimum 200 psig.
2. End Connections NPS 2 and Smaller: Threaded steel-pipe nipple.
3. End Connections NPS 2-1/2 and Larger: Flanged steel nipple.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Comply with requirements in Division 2 Section "Earthwork" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic and recycled water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install underground copper tube in PE encasement according to ASTM A 674 or AWWA C105.

C. Install shutoff valve and hose-end drain valve, inside the building at each domestic water service entrance. Comply with requirements in Division 22 Section "Meters and Gages for Plumbing Piping" for pressure gages and Division 22 Section "Domestic Water Piping Specialties" for drain valves and strainers.

D. Install shutoff valve immediately upstream of each dielectric fitting.

E. Install domestic water piping level with slope up in direction of water flow to air elimination device and plumb.

F. Install seismic restraints on piping. Comply with requirements in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment" for seismic-restraint devices.

G. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

H. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

I. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

J. Install piping adjacent to equipment and specialties to allow service and maintenance.

K. Install piping to permit valve servicing.

L. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.

M. Install piping free of sags and bends.

N. Install fittings for changes in direction and branch connections.

O. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

P. Install thermostats in hot-water circulation piping. Comply with requirements in Division 22 Section "Domestic Water Pumps" for thermostats.

Q. Install thermometers on inlet and outlet piping from each water heater. Comply with requirements in Division 22 Section "Meters and Gages for Plumbing Piping" for thermometers.

R. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

S. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 22 Section "Sleeves and Sleeve Seals for Plumbing Piping."

T. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 22 Section "Escutcheons for Plumbing Piping."

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
   1. Apply appropriate tape or thread compound to external pipe threads.
   2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Brazed Joints" Chapter.

E. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

F. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

G. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.4 VALVE INSTALLATION

A. General-Duty Valves: Comply with requirements in Division 22 Section "General-Duty Valves for Plumbing Piping" for valve installations.

B. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball valves for piping NPS 2 and smaller. Use gate valves for piping NPS 2-1/2 and larger.

C. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping. Drain valves are specified in Division 22 Section "Domestic Water Piping Specialties."
   1. Hose-End Drain Valves: At low points in water mains, risers, and branches.
   2. Stop-and-Waste Drain Valves: Instead of hose-end drain valves where indicated.

3.5 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:
   1. NPS 1-1/2 and Smaller: Fitting-type coupling.
   2. NPS 2 and Larger: Sleeve-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings or unions.

3.6 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric couplings or nipples or unions.

C. Dielectric Fittings for NPS 2-1/2 to NPS 4: Use dielectric flanges, flange kits, nipples.

3.7 FLEXIBLE CONNECTOR INSTALLATION

A. Install stainless-steel-hose flexible connectors in copper domestic water tubing.

3.8 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements in Division 22 Section "Vibration and Seismic Controls for Plumbing Piping and Equipment" for seismic-restraint devices.

B. Comply with requirements in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment" for pipe hanger and support products and installation.
   1. Vertical Piping: MSS Type 8 or 42, clamps.
   2. Individual, Straight, Horizontal Piping Runs:
      a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
      b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
      c. Longer Than 100 Feet If Indicated: MSS Type 49, spring cushion rolls.
   3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls.
      Support pipe rolls on trapeze.
   4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
   1. NPS 1-1/2 and Smaller: 72 inches with 3/8-inch rod.
   2. NPS 2 and larger: 10 feet with 3/8-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Support piping and tubing not listed in this article according to MSS SP-69 and manufacturer's written instructions.

3.9 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment and machines to allow service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
   1. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
   2. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code. Comply with requirements in Division 22 plumbing fixture Sections for connection sizes.
   3. Equipment: Cold- and hot-water supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.10 IDENTIFICATION

A. Identify system components. Comply with requirements in Division 15 Section "Identification for Plumbing Piping and Equipment" for identification materials and installation.

3.11 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Piping Inspections:
   1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
   2. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
      a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing- in after roughing-in and before setting fixtures.
      b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
   3. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
   4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

C. Piping Tests:
   1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
   2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
   3. Leave new, altered, extended, or replaced domestic and recycled water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
   4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand
      for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
   5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
   6. Prepare reports for tests and for corrective action required.

D. Domestic water piping will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.12 ADJUSTING

A. Perform the following adjustments before operation:
1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
5. Remove and clean strainer screens. Close drain valves and replace drain plugs.
6. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
7. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.13 CLEANING

A. Clean and disinfect potable and non-potable domestic water piping as follows:
1. Purge new piping.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
b. Fill and isolate system according to either of the following:
1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.
c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

B. Prepare and submit reports of purging and disinfecting activities.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.14 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Below ground, domestic water piping shall be the following:
1. Hard copper tube, ASTM B 88, Type K; wrought-copper solder-joint fittings; and brazed joints.

D. Aboveground domestic water piping shall be the following:
1. Hard copper tube, ASTM B 88, Type L; wrought- copper solder-joint fittings; and soldered joints.

3.15 VALVE SCHEDULE

A. Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
1. Shutoff Duty: Use ball valves for piping NPS 2 and smaller. Use gate valves with flanged ends for piping NPS 2-1/2 and larger.
2. Throttling Duty: Use ball valves for piping NPS 2 and smaller. Use ball valves with flanged ends for piping NPS 2-1/2 and larger.
3. Drain Duty: Hose-end drain valves.

B. Use check valves to maintain correct direction of domestic water flow to and from equipment.

END OF SECTION

SECTION 22 11 19

PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PLUMBING SPECIALTIES consists of furnishing transportation, labor, materials, and equipment to furnish and install the following plumbing specialties:
   1. Backflow preventers.
   2. Water pressure reducing valves.
   3. Temperature-actuated water mixing valves.
   4. Strainers.
   5. Outlet boxes.
   6. Wall hydrants.
   7. Drain valves.
   8. Air vents.
   9. Trap seal primer valves.
   10. Miscellaneous piping specialties.
   11. Access Panels.
   12. Flashing materials.
   13. Cleanouts.
   14. Drains.
   15. Water Hammer Arrestors.

1.2 RELATED WORK

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1, apply to this Section.

B. METERS AND GAGES FOR PLUMBING SYSTEMS Section 22 05 19

C. COMMON WORK RESULTS FOR PLUMBING Section 22 05 00

1.3 REFERENCES

A. American Water Works Association (AWWA)

B. American Society of Testing and Materials (ASTM)

C. American Society of Sanitation Engineers (ASSE)

D. American Society of Mechanical Engineering (ASME)

1.4 PERFORMANCE REQUIREMENTS

A. Provide components and installation capable of producing piping systems with following minimum working-pressure ratings, unless otherwise indicated:
   1. Domestic Water Piping: 125 psig.
   2. Sanitary Waste and Vent Piping: 10-foot head of water.
   3. Storm Drainage Piping: 10-foot head of water.

1.5 QUALITY ASSURANCE

A. Codes and Standards:
   1. All governing Codes, Ordinances and Agencies, in accordance with the provisions of Division 1 of these specifications.
   2. Comply with NSF 61-G and California Lead Free Law for potable domestic water piping and components.

1.6 SUBMITTALS

A. Product Data:
   1. Backflow preventers.
   2. Balancing valves and strainers.
   3. Water hammer arresters, air vents, and trap seal primer valves and systems.
   4. Hose bibbs.
   5. Cleanouts, floor drains, open receptors and roof drains.
   6. Vent caps, vent terminals, and roof flashing assemblies.
   7. Sleeve penetration systems.

B. Operation and Maintenance Data:
   1. Backflow preventers.
   2. Trap seal primer valves and systems.
   3. Balancing Valves.
   4. Hose bibbs.

PART 2 - PRODUCTS

2.1 BACKFLOW PREVENTERS

A. Manufacturers:
   1. Watts.
   2. Cla-Val Co.
   3. Zurn Industries, Inc.; Wilkins Div.

B. General: ASSE standard, backflow preventers.
   1. NPS 2 and Smaller: Bronze body with threaded ends.
   2. NPS 2-1/2 and Larger: Bronze, cast-iron, steel, or stainless-steel body with flanged ends.

a. Interior Lining: AWWA C550 or FDA-approved, epoxy coating for backflow preventers having cast-iron or steel body.
   3. Interior Components: Corrosion-resistant materials.
   4. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.
   5. Strainer: On inlet.

C. Reduced-Pressure-Principle Backflow Preventers: ASSE 1013, suitable for continuous pressure application. Include ball valves on inlet and outlet, and strainer on inlet; test cocks; and pressure- differential relief valve with ASME A112.1.2 air-gap fitting Model AG-8 located below device. Wilkins Model 975. Pipe full size drain to nearest indirect waste receptor.

2.2 WATER PRESSURE-REDUCING VALVES

A. 3 in. and smaller: Wilkins Model 500XL-YSBR-XL, lead free, bronze, stainless steel seat and strainer.

2.3 TEMPERATURE-ACTUATED WATER MIXING VALVES

A. Lead free bronze body, integral check valves on hot and cold inlets, 0.5 gpm min. flow, 125 PSI max. pressure, ASSE 1017 certified. Leonard 270-LF or equivalent.

2.4 STRAINERS

A. Strainers: Lead free Y-pattern, unless otherwise indicated, and full size of connecting piping. Include ASTM A 666, Type 304, stainless-steel screens with 3/64-inch round perforations, unless otherwise indicated. Wilkins model YBS-XL.
   1. Pressure Rating: 125-psig minimum working pressure, unless otherwise indicated.
   2. NPS 3 and Smaller: Bronze body, with female threaded ends.

2.5 OUTLET BOXES

Not Applicable.

2.6 WALL HYDRANTS

A. Nonfreeze Wall Hydrants (HB-1):
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Woodford Manufacturing company.
      b. Zurn Plumbing Products Group; Specification Drainage Operation.
      c. Chicago Faucets.
   2. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
   3. Pressure Rating: 125 psig.
   4. Operation: Loose key.
   5. Casing and Operating Rod: Of length required to match wall thickness. Include wall clamp.
   6. Inlet: NPS 3/4 or NPS 1.
   7. Outlet: Concealed, with integral vacuum breaker and garden-hose thread complying with ASME B1.20.7.
   8. Box: Deep, flush mounting with cover.
   9. Box and Cover Finish: Nickel bronze.
   10. Outlet: Exposed, with integral vacuum breaker and garden-hose thread complying with ASME B1.20.7
   11. Nozzle and Wall-Plate Finish: Nickel bronze.
   12. Operating Key(s): One with each wall hydrant.

2.7 DRAIN VALVES

A. Ball-Valve-Type, Hose-End Drain Valves:
   1. Standard: MSS SP-110 for standard-port, two-piece ball valves.
   2. Pressure Rating: 400-psig minimum CWP.
   3. Size: NPS 3/4.
   4. Body: Copper alloy.
   5. Ball: Chrome-plated brass.
   6. Seats and Seals: Replaceable.
   7. Handle: Vinyl-covered steel.
   8. Inlet: Threaded or solder joint.
   9. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

2.8 WATER HAMMER ARRESTORS

A. Water Hammer Arrestors:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. AMTROL, Inc.
      b. Josam Company.
      c. MIFAB, Inc.
      d. PPP Inc.
      e. Sioux Chief Manufacturing Company, Inc.
      f. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
      g. Tyler Pipe; Wade Div.
      h. Watts Drainage Products Inc.
      i. Zurn Plumbing Products Group; Specification Drainage Operation.
   2. Standard: ASSE 1010 or PDI-WH 201.
   3. Type: Metal bellows.
   4. Size: ASSE 1010, Sizes AA and A through F or PDI-WH 201, Sizes A through F.

2.9 AIR VENTS

A. Bolted-Construction Automatic Air Vents:
   1. Body: Bronze.
   2. Pressure Rating: 125-psig minimum pressure rating at 140 deg. F.
   3. Float: Replaceable, corrosion-resistant metal.
   4. Mechanism and Seat: Stainless steel.
   5. Size: NPS 1/2 minimum inlet.
   6. Inlet and Vent Outlet End Connections: Threaded.

B. Welded-Construction Automatic Air Vents:
   1. Body: Stainless steel.
   2. Pressure Rating: 150-psig minimum pressure rating.
   3. Float: Replaceable, corrosion-resistant metal.
   4. Mechanism and Seat: Stainless steel.
   5. Size: NPS 3/8 minimum inlet.
   6. Inlet and Vent Outlet End Connections: Threaded.

2.10 TRAP SEAL PRIMER VALVES (TP-1)

A. Piston Operated Trap Seal Primer Valves: ASSE 1018, pressure drop activated, with distribution unit as required.
   1. Manufacturers:
      a. Precision Plumbing Products Model P-1 or P-2, or equal.
   2. Provide for drains and floor sinks where trap primer is not provided from a water closet and as indicated and specified, each including trap primer valve, standpipe, and distribution unit(s) required for the specified distribution. Provide each concealed assembly with access panel, 8 in. by 8 inch size when distribution units are not required and 12 inches by 12 inches size when one or two distribution units are required. Provide trap primer piping same as specified for domestic water, including pipe wrapping.

2.11 MISCELLANEOUS PLUMBING SPECIALTIES

A. Access Panels:
   1. Access Panels in Plaster Walls and Ceilings: Karp #DSC214PL, Elmdor PW, 24x24 in. with metal access door and frame, prime coated steel and painted to match adjacent surfaces. For fire rated areas use Karp #KRP-150 FR 1-1/2 hour "B" Label access panels, U.L. listed.
   2. Access Panels in Acoustic Tile Ceilings: Karp #DSC-210, Elmdor AT, 24x24 in. with metal access door and frame, 24x24 in. minimum size, prime coated steel, recessed to accept standard tile in full opening door.
   3. Access Panels in Ceramic Tile Walls: Karp #DSC214M, Smith 4730, chrome-plated cover and frame of suitable size for purpose intended, but not less than 8x8 in. size. For fire rated areas use Karp #FRP-150 FR 1-1/2 hour "B" Label access panels, U.L. listed.

B. Roof Flashing Assemblies: Manufactured assembly made of 4 pounds per square foot, 0.0625-inch- thick, one piece lead flashing collar and skirt extending at least 6 inches from pipe with galvanized steel boot reinforcement, and counterflashing fitting.
   1. Manufacturers:
      a. Semco Model 1100.
   2. Low-Silhouette Vent Cap: With vandal-proof vent cap.

2.12 SLEEVE PENETRATION SYSTEMS

A. Fire-rated wall and floor penetrations installed in conformance with manufacturers directions. Pro Set, Hilti, Nelson.

B. Description: UL 1479, through-penetration firestop assembly through fire rated walls and floors.

C. Provide at concrete or masonry exterior bearing walls, Adjust-to-Crete, Paramount, or Sperzel Cretesleeve. Wall sleeves shall be flush with finished surface. Sleeves shall be sized to allow 1/2

in. clearance around pipe or insulation. Insulation and covering shall be continuous through sleeves.

D. At exterior walls below grade provide a modular mechanical seal consisting of inter-locking EPDM rubber links shaped to continuously fill the annular space between the pipe and the wall opening with a molded high density polyethylene sleeve water-stop ring, end caps and reinforcing ribs. ASTM B117, ISO 9002. Mechanical seals shall be "Thunderline" Link Seal.

2.13 CLEANOUTS

A. For cast-iron soil pipe, iron body with extra heavy bronze plugs screwed into caulking ferrules; for steel pipe, extra heavy bronze plugs; and for vitrified clay pipe, vitrified clay plugs. Where cleanouts occur in finished interior walls, provide access panels, plates, and frames for flush mounting. Exposed parts of floor cleanouts shall have adjustable top. All cleanouts and cleanout plugs shall be accessible. Cleanout shall be the following:

1. In finished floors: Cast-iron with polished nickel bronze round top, non-skid diamond tread set flush with the floor. Provide with carpet marker when located in future carpeted areas and flashing flange when used with waterproofing membrane.
   a. Smith - 4023
   b. Wade - W-6000
   c. Zurn - ZN-1420-2
2. In mechanical equipment areas: Cast-iron with heavy cast-iron round top, non-skid diamond tread set flush with the floor. Provide flashing flange when used with waterproofing membrane.
   a. Smith - 4223
   b. Wade - W-6000
   c. Zurn - Z-1400
3. In walls: Cleanout tee with squared polished nickel bronze access plate with vandalproof screws and frames. Opening 8 inches by 8 inches minimum.
   a. Smith - 4558-U
   b. Wade - W-8460-S
   c. Zurn - ZN-1447
4. In exterior grades: Cast-iron body, vandalproof cover, non-skid diamond tread, set flush with grade or finished surface. In non-surfaced area, they shall be cast in a concrete block 14 inches by 14 by 6 inches deep.
   a. Smith – 4248
   b. Wade - 6010-Z-75

2.14 FLOOR DRAINS AND FLOOR SINKS

A. Floor Drain (FD-1): Foot traffic.

1. Cast-iron double drainage drain with clamping flange, bottom outlet and 5 inch round polished stainless steel adjustable strainer and trap primer tapping.
   a. Smith - 2005-B
   b. Zurn – Z-415

B. Floor Sink (FS-1)

1. 8-1/2 inch square, 6 inch deep acid-resisting enameled cast-iron drain with stainless steel rim and grate, sediment bucket and anchor flange with membrane clamp. Provide partial grate for discharge pipes.
   a. Smith - 3100Y
   b. Zurn – ZN-1910-K

2.15 ROOF DRAINS

A. Roof Drain (RD-1):

1. Cast-iron drain, adjustable extension sleeve, flashing collar, gravel stop cast-iron dome strainer, sump receiver and underdeck clamp.
   a. Smith – 1010-ERC
   b. Zurn – Z-100-ERC

B. Overflow Drain (OD-1):
   1. Cast-iron drain, extension sleeve, flashing collar, 2 inch high water dam, cast-iron dome strainer, sumo receiver and underdeck clamp.
      a. Smith – 1070-Y
      b. Zurn – Z-100-W2

2.16 DECK DRAINS (AD-1):
   1. Cast-iron drain, extension sleeve, seepage pan and flashing collar, heel proof grate and underdeck clamp.
      a. Zurn – Z610-Z

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to COMMON WORK RESULTS FOR PLUMBING Section 22 05 00 for piping joining materials, joint construction, and basic installation requirements.

B. Install backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
   1. Locate backflow preventers as indicated on plans.
   2. Install drain for backflow preventers with fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe to receptor. Locate air-gap device attached to or under backflow preventer. Simple air breaks are not acceptable for this application.
   3. Do not install bypass piping around backflow preventers.

C. Install pressure regulators with inlet and outlet shutoff valves. Install pressure gages on inlet and outlet.

D. Install strainers on supply side of each pressure regulator.

E. Install outlet boxes recessed in wall. Install 2 x 4 inch fire-retardant-treated-wood blocking wall reinforcement between studs. Fire-retardant-treated-wood blocking is specified in Division 6 Section “Rough Carpentry”.

F. Install water hammer arrestors in water piping according to PDI-WH201.

G. Install air vents at high points of water piping.

H. Install trap seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

I. Install cleanout deck plates with top flush with finished floor for floor cleanouts on piping below floors.

J. Install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall, for cleanouts located in concealed piping.

K. Install flashing flange and clamping device with each stack and cleanout passing through floors with waterproof membrane.

L. Install vent flashing sleeves on stacks passing through roof. Secure over stack flashing according to manufacturer's written instructions.

M. Install drains at low points of surface areas to be drained as indicated on the architectural drawings.
   Set grates of drains flush with finished floor, unless otherwise indicated.

N. Install roof drains at low points of roof areas as indicated on the architectural Drawings.

O. Fasten wall-hanging plumbing specialties securely to supports attached to building substrate if supports are specified and to building wall construction if no support is indicated.

P. Fasten recessed-type plumbing specialties to reinforcement built into walls.

Q. Install blocking reinforcement for wall-mounting and recessed-type plumbing specialties.

R. Install individual shutoff valve in each water supply to plumbing specialties. Use ball, gate, or globe valve if specific valve is not indicated. Install shutoff valves in accessible locations. See GENERAL- DUTY VALVES Section 22 05 23 for general-duty ball, butterfly, check, gate, and globe valves.

S. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Connect plumbing specialties to piping specified in other Division 22 Sections.

D. Connect plumbing specialties and devices that require power conforming to Division 22 Sections.

3.3 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Department maintenance personnel to adjust, operate, and maintain plumbing specialties.

3.5 FIELD QUALITY CONTROL

A. Remove and replace malfunctioning domestic water piping specialties and retest.

3.6 ADJUSTING

A. Set field-adjustable pressure set points of water pressure reducing valves.

B. Set field-adjustable temperature set points of temperature actuated water mixing valves.

END OF SECTION

SECTION 22 13 16

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. SANITARY WASTE AND VENT PIPING consists of furnishing transportation, labor, materials, and equipment to furnish and install the following for soil, waste, and vent piping inside the building:
   1. Pipe and fittings.
   2. Special pipe fittings.
   3. Encasement for underground metal piping.

1.2 RELATED WORK

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1, apply to this Section.

B.	EARTHWORK	Division 31
C.	TRENCHING AND BACKFILLING	Division 31
D.	COMMON WORK RESULTS FOR PLUMBING	Section 22 05 00

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM International)

B. American Water Works Association (AWWA)

C. Cast Iron Soil Pipe Institute (CISPI)

D. Sheet Metal and Air Condition Contractor's National Association (SMACNA)

1.4 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
   1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall be in conformance with the SMACNA Guidelines.

1.5 SUBMITTALS

A. Product Data: For pipe, tube, fittings, and couplings.

1.6 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Codes and Standards:
   1. All governing Codes, Ordinances and Agencies in accordance with the provisions of Division 1 of these specifications.

PART 2 - PRODUCTS

2.1 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings:
   1. Soil, waste, vent and storm drain piping to 5 feet outside building: Cast-iron soil pipe and fittings conforming to the requirements of CISPI Standard 301, ASTM A888 or ASTM A74 for all pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute or receive prior approval of the Engineer. Wrap all underground piping per paragraph 3.3 G, 1 herein.

a. Manufacturers:
1) Tyler Pipe
2) A.B. & I.
3) Charlotte Pipe and Foundry

B. Shielded Couplings: ASTM C1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.
1. Above Ground: Type 300 Series stainless steel, "No-Hub" standard duty, shielded couplings as approved by the Cast Iron Soil Pipe Institute, CISPI-310-85 with stainless steel corrugated shield, stainless steel bands and tightening devices and ASTM C564 rubber sleeve. Equivalent to Tyler.
2. Below Ground, 4 inches and Larger: Type 304 stainless steel, "No-Hub" by the Cast Iron Soil Pipe Institute, CISPI-310-85 with stainless steel shield, stainless steel band and tightening devices and ASTM C564 rubber sleeve. Equivalent to Husky HD-2000.
a. Manufacturers:
1) Clamp-All Corporation
2) Husky Technologies.
3) Tyler Pipe; Soil Pipe Division

PART 3 - EXECUTION

3.1 EXCAVATION

A. Refer to EARTHWORK and TRENCHING AND BACKFILLING Sections for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. Soil and waste piping shall be hubless cast-iron soil pipe and fittings; standard-duty shielded, stainless- steel couplings; and hubless-coupling joints.

B. Vent piping shall be hubless cast-iron soil pipe and fittings; standard, shielded, stainless-steel couplings; and hubless-coupling joints.

3.3 PIPING INSTALLATION

A. Sanitary sewer piping outside the building is specified in SANITARY SEWERAGE Section, or civil drawings.

B. Basic piping installation requirements are specified in COMMON WORK RESULTS FOR PLUMBING Section 22 05 00.

C. Install seismic restraints on piping. Seismic-restraint devices are specified in NOISE, VIBRATION AND SEISMIC CONTROLS OF PLUMBING PIPING AND EQUIPMENT Section 22 05 48.

D. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.

E. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Select number of interlocking rubber links required to make installation watertight. Sleeves and mechanical sleeve seals are specified in PLUMBING SPECIALTIES Section.

F. Install wall-penetration fitting at each service pipe penetration through foundation wall. M

ake installation watertight.

G. Install cast-iron soil piping in conformance with CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
1. Where soil is corrosive install 8 mil. polyethylene encasement on underground piping in conformance with ASTM A674 or AWWA C105/ANSI AZ1.5.

H. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used

on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

I. Install soil and waste drainage piping at 2 percent minimum slope, unless otherwise indicated on Drawings:

J. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.4 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in COMMON WORK RESULTS FOR PLUMBING Section 22 05 00.

B. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.

3.5 HANGER AND SUPPORT INSTALLATION

A. Seismic-restraint devices are specified in NOISE, VIBRATION AND SEISMIC CONTROLS Section 22 05 48.

B. Pipe hangers and supports are specified in HANGERS AND SUPPORTS FOR PLUMBING PIPING & EQUIPMENT Section 22 05 29. Install the following:
   1. Vertical Piping: MSS Type 8 or Type 42, clamps.
   2. Install individual, straight, horizontal piping runs in conformance with to the following:
      a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
      b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
      c. Longer Than 100 Feet, if Indicated: MSS Type 49, spring cushion rolls.
   3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
   4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Install supports according to Hangers and Supports Section.

D. Support vertical piping and tubing at base and at each floor.

E. Horizontal cast-iron no-hub piping: Provide hangers or supports at each side of a no-hub fitting.

F. Install hangers for cast-iron soil piping with maximum horizontal spacing and minimum rod diameters in accordance with the requirements of the California Plumbing Code.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:
   1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by the CPC.
   2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by the CPC.
   3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by the CPC.

3.7 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
   1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of the authorities having jurisdiction or, in absence of published procedures, in accordance with the requirements of the California Plumbing Code.

3.8 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION

SECTION 22 14 13

STORM DRAINAGE PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

A. STORM DRAINAGE PIPING consists of furnishing transportation, labor, materials, and equipment to furnish and install the following storm drainage piping inside the building:
   1. Pipe, tube, and fittings.
   2. Special pipe fittings.

1.2 RELATED WORK

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 apply to this Section.

B.	EARTHWORK	Division 31
C.	TRENCHING AND BACKFILLING	Division 31
D.	COMMON WORK RESULTS FOR PLUMBING	Section 22 05 00

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM International)

B. Cast iron Soil Pipe (CISPI)

C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

D. American Water Works Association (AWWA)

1.4 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working-pressure, unless otherwise indicated:
   1. Storm Drainage Piping: 10-foot head of water.

B. Seismic Performance: Piping and support and installation shall be in conformance with the SMACNA Guidelines.

1.5 SUBMITTALS

A. Product Data: For pipe, tube, fittings, and couplings.

1.6 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Codes and Standards:
   1. All governing Codes, Ordinances and Agencies, in accordance with the provisions of Division 1 of these specifications.

PART 2 - PRODUCTS

2.1 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings:
   1. Soil, waste, vent and storm drain piping to 5 feet outside building: Cast-iron soil pipe and fittings conforming to the requirements of CISPI Standard 301, ASTM A888 or ASTM A74 for all pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute or receive prior approval of the engineer. Wrap all underground piping as specified in this Section.
      a. Manufacturers:
         1) Tyler Pipe

2) A.B. & I.
3) Charlotte Pipe and Foundry.

B. Shielded Couplings: ASTM C1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.
1. Above Ground: Type 300 Series stainless steel, "No-Hub" standard duty, shielded couplings as approved by the Cast Iron Soil Pipe Institute, CISPI-310-85 with stainless steel corrugated shield, stainless steel bands and tightening devices and ASTM C564 rubber sleeve. Equivalent to Tyler.
2. Below Ground, 4 inch and Larger: Type 304 stainless steel, "No-Hub" by the Cast Iron Soil Pipe Institute, CISPI-310-85 with stainless steel shield, stainless steel band and tightening devices and ASTM C564 rubber sleeve. Equivalent to Husky HD-2000.
a. Manufacturers:
1) Clamp-All Corporation
2) Husky Technologies
3) Tyler Pipe; Soil Pipe Division

2.2 COPPER TUBE AND FITTINGS

A. Copper DWV Tube: ASTM B 306, drainage tube, drawn temper.
1. Copper Drainage Fittings: ASME B16.23, cast-copper or ASME B16.29, wrought-copper, solder- joint fittings.

2.3 ENCASEMENT FOR UNDERGROUND METAL PIPING

A. Description: ASTM A 674 or AWWA C105, high-density, cross laminated PE film of 0.004-inch minimum thickness.

B. Form: Sheet or tube.

C. Color: Black or natural.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Refer to EARTHWORK and TRENCHING AND BACKFILLING Sections for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. Storm drainage piping inside building shall be hubless cast-iron soil pipe and fittings; standard-duty shielded, stainless-steel couplings; and hubless-coupling joints or copper DWV tube copper drainage fittings and soldered joints.

3.3 PIPING INSTALLATION

A. Storm drainage piping outside the building downstream of point of connection (POC) are specified in STORM DRAINAGE Section or civil drawings.

B. Basic piping installation requirements are specified in COMMON WORK RESULTS FOR PLUMBING Section 22 05 00.

C. Install seismic restraints on piping. Seismic-restraint devices are specified in NOISE, VIBRATION AND SEISMIC CONTROLS OF PLUMBING PIPING AND EQUIPMENT Section 22 05 48.

D. Install cleanouts at grade and extend to where building storm drains connect to building storm sewers.
Cleanouts are specified in PLUMBING SPECIALTIES Section.

E. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Select number of interlocking rubber links required to make installation watertight. Sleeves and mechanical sleeve seals are specified in PLUMBING SPECIALTIES Section.

F. Install wall-penetration fitting system at each service pipe penetration through foundation wall.

Make installation watertight.

G. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."
   1. Where soil is corrosive install 8 mil. polyethylene encasement on underground piping in conformance with ASTM A674 or AWWA C105/ANSI A21.5.

H. Make changes in direction for storm piping using appropriate branches, bends, and long-sweep bends.
   Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

I. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

J. Install piping at indicated slopes.

K. Install piping to allow application of insulation.

L. Install piping free of sags and bends.

M. Install above ground copper tubing according to CDA's "Copper Tube Handbook".

3.4 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in COMMON WORK RESULTS FOR PLUMBING Section 22 05 00.

B. Hubless Cast-Iron Soil Piping Coupled Joints: Join according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.

C. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux, ASTM B 32, lead-free alloy solder; and ASTM B828 procedure, unless otherwise indicated.

3.5 HANGER AND SUPPORT INSTALLATION

A. Seismic-restraint devices are specified in SOUND, VIBRATION AND SEISMIC CONTROLS Section 13 48 00.

B. Pipe hangers and supports are specified in HANGERS AND SUPPORTS Section. Install the following:
   1. Vertical Piping: MSS Type 8 or Type 42, clamps.
   2. Individual, Straight, Horizontal Piping Runs: According to the following:
      a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
      b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
      c. Longer Than 100 Feet, if indicated: MSS Type 49, spring cushion rolls.
   3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
   4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Install supports in conformance with HANGERS AND SUPPORTS Section.

D. Support vertical piping and tubing at base and at each floor.

E. Horizontal cast-iron no-hub piping: Provide hangers or supports at each side of a no-hub fitting.

F. Install hangers for cast-iron soil piping with maximum horizontal spacing and minimum rod diameter in accordance with the requirements of the California Plumbing Code.

G. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect interior storm drainage piping to exterior storm drainage piping. Use transition fitting to join dissimilar piping materials.

C. Connect storm drainage piping to roof drains and storm drainage specialties.

3.7 IDENTIFICATION

A. Identify exposed storm drainage piping, comply with requirements for identification specified in Division 22 Section “Identification for Plumbing Piping and Equipment”.

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
   1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in.
   2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test storm drainage piping according to the procedures of authorities having jurisdiction or, in absence of published procedures, in accordance with the requirements of the California Plumbing Code.

3.9 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION

SECTION 22 33 00

ELECTRIC, DOMESTIC-WATER HEATERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. SUMMARY

C. Section Includes:

1. Commercial, electric, domestic-water booster heaters.
2. Commercial, electric, storage, domestic-water heaters.
3. Commercial, medium-duty, storage, electric, domestic-water heaters.
4. Commercial, light-duty, storage, electric, domestic-water heaters.
5. Residential, small-capacity, electric, domestic-water heaters.
6. Residential, collector-to-tank, solar, electric, domestic-water heaters.
7. Residential, collector-to-tank-coil, solar, electric, domestic-water heaters.
8. Residential, electric, storage, domestic-water heaters.
9. Residential, tabletop, electric, domestic-water heaters.
10. Flow-control, electric, tankless, domestic-water heaters.
11. Thermostat-control, electric, tankless, domestic-water heaters.
12. Domestic-water heater accessories.

1.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Commercial domestic-water heaters shall withstand the effects of earthquake motions determined according to SMACNA Guidelines.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.3 ACTION SUBMITTALS

A. Product Data: For each type and size of domestic-water heater indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings:

1. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Certificates: For commercial domestic-water heaters, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Product Certificates: For each type of [commercial] [residential] [and] [tankless], electric, domestic-water heater, from manufacturer.
C. Domestic-Water Heater Labeling: Certified and labeled by testing agency acceptable to authorities having jurisdiction.
D. Source quality-control reports.
E. Field quality-control reports.
F. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS
A. Operation and Maintenance Data: For electric, domestic-water heaters to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE
A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1.
C. ASME Compliance: Where ASME-code construction is indicated, fabricate and label commercial, domestic-water heater storage tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.
D. NSF Compliance: Fabricate and label equipment components that will be in contact with potable water to comply with NSF 61, "Drinking Water System Components - Health Effects."

1.7 COORDINATION
A. Coordinate sizes and locations of concrete bases with actual equipment provided

1.8 WARRANTY
A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of electric, domestic-water heaters that fail in materials or workmanship within specified warranty period.
    1. Failures include, but are not limited to, the following:
        a. Structural failures including storage tank and supports.
        b. Faulty operation of controls.
        c. Deterioration of metals, metal finishes, and other materials beyond normal use.
    2. Warranty Periods: From date of Substantial Completion.
        a. Commercial, Electric, Domestic-Water Booster Heaters:
            1) Controls and Other Components: Five years.
        b. Commercial, Electric, Storage, Domestic-Water Heaters:
            1) Storage Tank: Five years.
            2) Controls and Other Components: one year.
        c. Commercial, Light-Duty, Storage, Electric, Domestic-Water Heaters:
            1) Storage Tank: Five years.
            2) Controls and Other Components: One year.
        d. Residential, Electric, Storage, Domestic-Water Heaters:
            1) Storage Tank: Six years.
            2) Controls and Other Components: Six years.

PART 2 - PRODUCTS

2.1 COMMERCIAL, ELECTRIC, DOMESTIC-WATER HEATERS

A. Commercial, Electric, Storage, Domestic-Water Heaters:
1. Basis-of-Design Product: Subject to compliance with requirements, provide products by Bradford White Corporation or comparable product by one of the following:
a. Rheem Manufacturing Company.
Smith, A. O. Water Products Co.; a division of A. O. Smith Corporation.
2. Standard: UL 1453.
3. Storage-Tank Construction: Non-ASME-code, steel vertical arrangement.
a. Tappings: Factory fabricated of materials compatible with tank and piping connections. Attach tappings to tank before testing.
1) NPS 2 (DN 50) and Smaller: Threaded ends according to ASME B1.20.1.
2) NPS 2-1/2 (DN 65) and Larger: Flanged ends according to ASME B16.5 for steel and stainless-steel flanges, and according to ASME B16.24 for copper and copper-alloy flanges.
b. Pressure Rating: 150 psig (1035 kPa).
c. Interior Finish: Vitraglas lining to comply with NSF 61 barrier materials for potable-water tank linings.
4. Factory-Installed Storage-Tank Appurtenances:
a. Anode Rod: Replaceable magnesium.
b. Drain Valve: Low restriction brass ball-type complying with ASSE 1005.
c. Insulation: Comply with ASHRAE/IESNA 90.1.
d. Jacket: Steel with painted finish.
e. Heating Elements: Electric, screw-in type.
f. Temperature Control: Adjustable [surface mount] [immersion type] thermostat.
g. Safety Controls: High-temperature-limit [and] [or] [low-water cutoff] devices or systems.
h. Relief Valves: ASME rated and stamped for combination temperature-and-pressure relief valves. Include one or more relief valves with total relieving capacity at least as great as heat input, and include pressure setting of 150 psig (1035 kPa). Select one relief valve with sensing element that extends into storage tank.
5. Special Requirements: NSF 5 construction.

B. Commercial, Light-Duty, Storage, Electric, Domestic-Water Heaters:
1. Basis-of-Design Product: Subject to compliance with requirements, provide products by Bradford White Corporation or comparable product by one of the following:
a. Rheem Manufacturing Company.
Smith, A. O. Water Products Co.; a division of A. O. Smith Corporation.
2. Standard: UL 174.
3. Storage-Tank Construction: Steel, vertical arrangement.
a. Tappings: ASME B1.20.1 pipe thread.
b. Pressure Rating: 150 psig (1035 kPa).
c. Interior Finish: Vitraglas lining to comply with NSF 61 barrier materials for potable-water tank linings.
4. Factory-Installed Storage-Tank Appurtenances:
a. Anode Rod: Replaceable magnesium.

b. Dip Tube: HydroJet diptube required unless cold-water inlet is near bottom of tank.
c. Drain Valve: Low restriction brass ball-type complying with ASSE 1005.
d. Insulation: Comply with ASHRAE/IESNA 90.1.
e. Jacket: Steel with painted finish.
f. Heat-Trap Fittings: Inlet type in cold-water inlet and outlet type in hot-water outlet.
g. Heating Elements: One; electric, screw-in immersion type; wired for non-simutaneous operation unless otherwise indicated. Limited to 6 kW total per element.
h. Temperature Control: Adjustable surface mount thermostat with160 deg F (71 deg C).
i. Safety Control: High-temperature-limit cutoff device or system.
j. Relief Valve: ASME rated and stamped for combination temperature-and-pressure relief valves. Include relieving capacity at least as great as heat input, and include pressure setting at 150 psig (1035 kPa). Select relief valve with sensing element that extends into storage tank.

5. Special Requirements: NSF 5 construction with legs for off-floor installation.

C. Capacity and Characteristics:
1. Capacity: <80 gal.
2. Recovery: <29 gph > at 90 deg F temperature rise.
3. Temperature Setting: 120 deg F
4. Power Demand: <Insert kilowatts>.
5. Compressor BTU/H: 4200
6. Electrical Characteristics:
a. Volts: 208
b. Phases: [Single]
c. Hertz: 60.
d. Full-Load Amperes: <Insert value>.
e. Minimum Circuit Ampacity: <Insert value>.
f. Maximum Overcurrent Protection: <Insert amperage>.

2.2 DOMESTIC-WATER HEATER ACCESSORIES
A. Domestic-Water Compression Tanks:
1. Manufacturers: Subject to compliance with requirements, AMTROL Inc. [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
2. Basis-of-Design Product: Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
a. AMTROL Inc.
b. Flexcon Industries.
c. Honeywell International Inc.
d. Pentair Pump Group (The); Myers.
e. Smith, A. O. Water Products Co.; a division of A. O. Smith Corporation.
f. State Industries.
g. Taco, Inc.

3. Description: Steel pressure-rated tank constructed with welded joints and factory-installed butyl-rubber diaphragm. Include air precharge to minimum system-operating pressure at tank.
4. Construction:
    a. Tappings: Factory-fabricated steel, welded to tank before testing and labeling. Include ASME B1.20.1 pipe thread.
    b. Interior Finish: Comply with NSF 61 barrier materials for potable-water tank linings, including extending finish into and through tank fittings and outlets.
    c. Air-Charging Valve: Factory installed.
5. Capacity and Characteristics:
    a. Working-Pressure Rating: [150]
    b. Capacity Acceptable: 8 gal.
    c. Air Precharge Pressure: <55 PSIG>.

B. Drain Pans: Corrosion-resistant metal with raised edge. Comply with ANSI/CSA LC 3. Include dimensions not less than 4 inches (102 mm) greater than the base of domestic-water heater, and include drain outlet not less than NPS 3/4 (DN 20) with ASME B1.20.1 pipe threads or with ASME B1.20.7 garden-hose threads.

C. Piping-Type Heat Traps: Field-fabricated piping arrangement according to ASHRAE/IESNA 90.1.

D. Heat-Trap Fittings: ASHRAE 90.2.

E. Combination Temperature-and-Pressure Relief Valves: ASME rated and stamped. Include relieving capacity at least as great as heat input, and include pressure setting less than domestic-water heater working-pressure rating. Select relief valves with sensing element that extends into storage tank.

F. Pressure Relief Valves: ASME rated and stamped. Include pressure setting less than domestic-water heater working-pressure rating.

G. Vacuum Relief Valves: ANSI Z21.22/CSA 4.4.

H. Shock Absorbers: ASSE 1010 or PDI-WH 201, Size A water hammer arrester.

I. Domestic-Water Heater Stands: Manufacturer's factory-fabricated steel stand for floor mounting, capable of supporting domestic-water heater and water. Include dimension that will support bottom of domestic-water heater a minimum of 18 inches (457 mm) above the floor.

J. Domestic-Water Heater Mounting Brackets: Manufacturer's factory-fabricated steel bracket for wall mounting, capable of supporting domestic-water heater and water.

2.3 SOURCE QUALITY CONTROL

A. Factory Tests: Test and inspect domestic-water heaters specified to be ASME-code construction, according to ASME Boiler and Pressure Vessel Code.

B. Electric, domestic-water heaters will be considered defective if they do not pass tests and inspections. Comply with requirements in Section 014000 "Quality Requirements" for retesting and re-inspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 DOMESTIC-WATER HEATER INSTALLATION

A. Commercial, Electric, Domestic-Water Heater Mounting: Install commercial, electric, domestic-water heaters on concrete base. Comply with requirements for concrete bases specified in [Section 033000 "Cast-in-Place Concrete."] [Section 033053 "Miscellaneous Cast-in-Place Concrete."]
   1. Exception: Omit concrete bases for commercial, electric, domestic-water heaters if installation on stand, bracket, suspended platform, or directly on floor is indicated.
   2. Maintain manufacturer's recommended clearances.
   3. Arrange units so controls and devices that require servicing are accessible.
   4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
   5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
   6. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   7. Install anchor bolts to elevations required for proper attachment to supported equipment.
   8. Anchor domestic-water heaters to substrate.

B. Install electric, domestic-water heaters level and plumb, according to layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances. Arrange units so controls and devices needing service are accessible.
   1. Install shutoff valves on domestic-water-supply piping to domestic-water heaters and on domestic-hot-water outlet piping. Comply with requirements for shutoff valves specified in Section 220523 "General-Duty Valves for Plumbing Piping."

C. Install commercial, electric, domestic-water heaters with seismic-restraint devices. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

D. Install combination temperature-and-pressure relief valves in top portion of storage tanks. Use relief valves with sensing elements that extend into tanks. Extend commercial-water-heater relief-valve outlet, with drain piping same as domestic-water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.

E. Install combination temperature-and-pressure relief valves in water piping for electric, domestic-water heaters without storage. Extend commercial-water-heater relief-valve outlet, with drain piping same as domestic-water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.

F. Install water-heater drain piping as indirect waste to spill by positive air gap into open drains or over floor drains. Install hose-end drain valves at low points in water piping for electric, domestic-water heaters that do not have tank drains. Comply with requirements for hose-end drain valves specified in Section 221119 "Domestic Water Piping Specialties."

G. Install thermometers on outlet piping of electric, domestic-water heaters. Comply with requirements for thermometers specified in Section 220519 "Meters and Gages for Plumbing Piping."

H. Install thermometers on inlet and outlet piping of residential, solar, electric, domestic-water heaters. Comply with requirements for thermometers specified in Section 220519 "Meters and Gages for Plumbing Piping."

I. Assemble and install inlet and outlet piping manifold kits for multiple electric, domestic-water heaters. Fabricate, modify, or arrange manifolds for balanced water flow through each electric,

domestic-water heater. Include shutoff valve and thermometer in each domestic-water heater inlet and outlet, and throttling valve in each electric, domestic-water heater outlet. Comply with requirements for valves specified in Section 220523 "General-Duty Valves for Plumbing Piping," and comply with requirements for thermometers specified in Section 220519 "Meters and Gages for Plumbing Piping."

J. Install pressure-reducing valve with integral bypass relief valve in electric, domestic-water booster-heater inlet piping and water hammer arrester in booster-heater outlet piping. Set pressure-reducing valve for outlet pressure of 25 psig (172 kPa). Comply with requirements for pressure-reducing valves and water hammer arresters specified in Section 221119 "Domestic Water Piping Specialties."

K. Install piping-type heat traps on inlet and outlet piping of electric, domestic-water heater storage tanks without integral or fitting-type heat traps.

L. Fill electric, domestic-water heaters with water.

M. Charge domestic-water compression tanks with air.

3.2 CONNECTIONS

A. Comply with requirements for piping specified in Section 221116 "Domestic Water Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to electric, domestic-water heaters, allow space for service and maintenance of water heaters. Arrange piping for easy removal of domestic-water heaters.

3.3 IDENTIFICATION

A. Identify system components. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper operation. Be sure unites are full of water to eliminate dry-firing elements.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Electric, domestic-water heaters will be considered defective if they do not pass tests and inspections. Comply with requirements in Section 014000 "Quality Requirements" for retesting and re-inspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

C. Prepare test and inspection reports.

3.5 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain commercial, electric, domestic-water heaters.

END OF SECTION

SECTION 22 40 00

PLUMBING FIXTURES

PART 1 - GENERAL

1.1 WORK INCLUDED

A. PLUMBING FIXTURES consists of furnishing transportation, labor, materials, and equipment to furnish and install the following plumbing fixtures and related components:
   1. Faucets
   2. Flushometers
   3. Toilet seats
   4. Protective shielding guards
   5. Fixture supports
   6. Shower receptors
   7. Water closets
   8. Urinals
   9. Lavatories
   10. Individual showers
   11. Service sinks

1.2 RELATED WORK

A.	DRINKING FOUNTAINS AND WATER COOLERS	Section 22 47 00
B.	PLUMBING SPECIALTIES	Section 22 11 19
C.	COMMON WORK RESULTS FOR PLUMBING	Section 22 05 00

1.3 DEFINITIONS

A. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.

B. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.

C. Solid Surface: Nonporous, homogeneous, cast-polymer-plastic material with heat-, impact-, scratch-, and stain-resistance qualities.

1.4 SUBMITTALS

A. Manufacturer's Literature: Submit brochures on all materials and equipment to the Architect.

B. Other Submittals:
   1. Operations and Maintenance Manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
   1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.

B. Codes and Standards:
   1. All governing codes, ordinances and agencies, in accordance with the provisions of Division 1 of these specifications.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities," Public Law 90-480, "Architectural Barriers Act;" and Public Law 101-336, "Americans with Disabilities Act;" for plumbing fixtures for people with disabilities.

E. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.

F. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.

G. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

H. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
   1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
   2. Porcelain-Enameled, Formed-Steel Fixtures: ASME A112.19.4M.
   3. Slip-Resistant Bathing Surfaces: ASTM F 462.
   4. Stainless-Steel Commercial, Handwash Sinks: NSF 2 construction.
   5. Vitreous-China Fixtures: ASME A112.19.2M.
   6. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
   7. Water-Closet, Flushometer Tank Trim: ASSE 1037.

I. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
   1. Faucets: ASME A112.18.1.
   2. Hose-Connection Vacuum Breakers: ASSE 1011.
   3. Hose-Coupling Threads: ASME B1.20.7.
   4. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
   5. NSF Potable-Water Materials: NSF 61.
   6. Pipe Threads: ASME B1.20.1.
   7. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
   8. Supply Fittings: ASME A112.18.1.
   9. Brass Waste Fittings: ASME A112.18.2.

J. Comply with the following applicable standards and other requirements specified for shower faucets:
   1. Backflow Protection Devices for Hand-Held Showers: ASME A112.18.3M.
   2. Combination, Pressure-Equalizing and Thermostatic-Control Antiscald Faucets: ASSE 1016.
   3. Deck-Mounted Bath/Shower Transfer Valves: ASME 18.7.
   4. Faucets: ASME A112.18.1.
   5. Hand-Held Showers: ASSE 1014.
   6. High-Temperature-Limit Controls for Thermal-Shock-Preventing Devices: ASTM F 445.
   7. Hose-Coupling Threads: ASME B1.20.7.
   8. Manual-Control Antiscald Faucets: ASTM F 444.
   9. Pipe Threads: ASME B1.20.1.
   10. Pressure-Equalizing-Control Antiscald Faucets: ASTM F 444 and ASSE 1016.
   11. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
   12. Thermostatic-Control Antiscald Faucets: ASTM F 444 and ASSE 1016.

K. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:
   1. Atmospheric Vacuum Breakers: ASSE 1001.
   2. Brass and Copper Supplies: ASME A112.18.1.
   3. Dishwasher Air-Gap Fittings: ASSE 1021.
   4. Manual-Operation Flushometers: ASSE 1037.
   5. Plastic Tubular Fittings: ASTM F 409.
   6. Brass Waste Fittings: ASME A112.18.2.
   7. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.

L. Comply with the following applicable standards and other requirements specified for

miscellaneous components:

1. Disposers: ASSE 1008 and UL 430.
2. Dishwasher Air-Gap Fittings: ASSE 1021.
3. Flexible Water Connectors: ASME A112.18.6.
4. Floor Drains: ASME A112.6.3.
5. Grab Bars: ASTM F 446.
6. Hose-Coupling Threads: ASME B1.20.7.
7. Hot-Water Dispensers: ASSE 1023 and UL 499.
8. Off-Floor Fixture Supports: ASME A112.6.1M.
9. Pipe Threads: ASME B1.20.1.
10. Plastic Shower Receptors: ANSI Z124.2.
11. Plastic Toilet Seats: ANSI Z124.5.
12. Supply and Drain Protective Shielding Guards: ICC A117.1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Flush Valves: As specified.

B. Plumbing Fixtures: As specified.

C. Toilet Seats: As Specified.

D. Faucets: As specified.

2.2 PLUMBING FIXTURES AND TRIMS

A. See fixture schedules on contract drawings

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.

B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
   1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
   2. Use carrier supports without waste fitting for fixtures with tubular waste piping.

C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.

D. Install wall-mounting fixtures with tubular waste piping attached to supports.

E. Install counter-mounting fixtures in and attached to casework.

F. Install fixtures level and plumb according to roughing-in drawings.

G. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

H. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.

I. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.

J. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.

K. Install toilet seats on water closets.

L. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

M. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.

N. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

O. Install shower flow-control fittings with specified maximum flow rates in shower arms.

P. Install traps on fixture outlets.
   1. Exception: Omit trap on fixtures with integral traps.

Q. Install disposer in outlet of each sink indicated to have disposer. Install switch where indicated or in wall adjacent to sink if location is not indicated.

R. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings.

S. Set shower receptors and service basins in leveling bed of cement grout.

T. Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew- resistant silicone sealant. Match sealant color to fixture color.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping.
Use size fittings required to match fixtures.

C. Ground equipment according to Division 26 Section “Grounding and Bonding for Electrical Systems.”

D. Connect wiring according to Division 26 Section “Low-Voltage Electrical Power Conductors and Cables.

3.4 FIELD QUALITY CONTROL

A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.

B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Test installed fixtures after water systems are pressurized for proper operation. Repl
ace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.

E. Install fresh batteries in sensor-operated mechanisms.

3.5 ADJUSTING

A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

B. Adjust water pressure at faucets and flushometer valves to produce proper flow and stream.

C. Replace washers and seals of leaking and dripping faucets and stops.

D. Operate and adjust disposers. Replace damaged and malfunctioning units.

3.6 CLEANING

A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
   1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
   2. Remove sediment and debris from drains.

B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

3.7 PROTECTION

A. Provide protective covering for installed fixtures and fittings.

B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION

SECTION 22 47 00

DRINKING FOUNTAINS AND WATER COOLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following drinking fountains and water coolers and related components:

1. Drinking fountains.

1.3 DEFINITIONS

A. Accessible Drinking Fountain or Water Cooler: Fixture that can be approached and used by people with disabilities.

B. Cast Polymer: Dense, cast-filled-polymer plastic.

C. Drinking Fountain: Fixture with nozzle for delivering stream of water for drinking.

D. Fitting: Device that controls flow of water into or out of fixture.

E. Fixture: Drinking fountain or water cooler unless one is specifically indicated.

F. Remote Water Cooler: Electrically powered equipment for generating cooled drinking water.

G. Water Cooler: Electrically powered fixture for generating and delivering cooled drinking water.

1.4 SUBMITTALS

A. Product Data: For each fixture indicated. Include furnished specialties, and accessories.

B. Operation and Maintenance Data: For fixtures to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; for fixtures for people with disabilities.

C. ANSI/NSF Standard: Comply with NSF 61, Section 9, California Proposition 65, and the Federal Safe Drinking Water Act for fixture materials that will be in contact with potable water.

D. ARI Standard: Comply with ARI 1010, "Self-Contained, Mechanically Refrigerated Drinking-Water Coolers," for water coolers and with ARI's "Directory of Certified Drinking Water Coolers" for type and style classifications.

E. ASHRAE Standard: Comply with ASHRAE 34, "Designation and Safety Classification of Refrigerants," for water coolers. Provide HFC 134a (tetrafluoroethane) refrigerant, unless otherwise indicated.

F. California Health and Safety: Comply with 116875 as evaluated by CSA International.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

A. Drinking Fountains, (DF-1):

1. Manufacturers: Subject to compliance with requirements, provide products by the

following: Elkay Model LVRCTL8WSK wall mounted drinking fountain.

2. Description: Accessible, Hi-lo, barrier free wall-mounting drinking fountain
   a. Stainless steel basin with integral drain.
   b. Stainless steel bottle filler wrapper with ABS plastic alcove.
   c. Easy-touch front and side pushbar controls.
   d. Integrated Silver Ion Anti-microbial Protection in key areas.
   e. Vandal-resistant bubbler.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water and waste piping systems to verify actual locations of piping connections before fixture installation. Verify that sizes and locations of piping and types of supports match those indicated.

B. Examine walls and floors for suitable conditions where fixtures are to be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

A. Use carrier off-floor supports for wall-mounting fixtures, unless otherwise indicated.

B. Use mounting frames for recessed water coolers, unless otherwise indicated.

C. Use chrome-plated brass or copper tube, fittings, and valves in locations exposed to view. Plain copper tube, fittings, and valves may be used in concealed locations.

3.3 INSTALLATION

A. Install off-floor supports affixed to building substrate and attach wall-mounting fixtures, unless otherwise indicated.

B. Install mounting frames affixed to building construction and attach water coolers to mounting frames, unless otherwise indicated.

C. Install fixtures level and plumb.

D. Install water-supply piping with shutoff valve on supply to each fixture to be connected to water distribution piping. Use ball valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Division 15 Section "Valves."

E. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

F. Install pipe escutcheons at wall penetrations in exposed, finished locations. Use deep-pattern escutcheons where required to conceal protruding pipe fittings. Escutcheons are specified in Division 22 Section "Escutcheons for Plumbing Piping."

G. Seal joints between fixtures and walls and floors using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Sealants are specified in Division 7 Section "Joint Sealants."

3.4 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping.

   Use size fittings required to match fixtures.

C. Ground equipment according to Division 26 Section "Grounding and Bonding."

D. Connect wiring according to Division 26 Section "Conductors and Cables."

3.5 FIELD QUALITY CONTROL

A. Water Cooler Testing: After electrical circuitry has been energized, test for compliance with requirements. Test and adjust controls and safeties.
   1. Remove and replace malfunctioning units and retest as specified above.
   2. Report test results in writing.

3.6 ADJUSTING

A. Adjust fixture flow regulators for proper flow and stream height.

B. Adjust water cooler temperature settings.

3.7 CLEANING

A. After completing fixture installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

END OF SECTION

SECTION 23 05 00

COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Piping materials and installation instructions common to most piping systems.
   2. Transition fittings.
   3. Dielectric fittings.
   4. Mechanical sleeve seals.
   5. Sleeves.
   6. Escutcheons.
   7. Grout.
   8. Equipment installation requirements common to equipment sections.
   9. Painting and finishing.
   10. Concrete bases.
   11. Supports and anchorages.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:
   1. ABS: Acrylonitrile-butadiene-styrene plastic.
   2. CPVC: Chlorinated polyvinyl chloride plastic.
   3. PE: Polyethylene plastic.
   4. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:
   1. EPDM: Ethylene-propylene-diene terpolymer rubber.
   2. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For the following:
   1. Transition fittings.
   2. Dielectric fittings.
   3. Mechanical sleeve seals.
   4. Escutcheons.

B. Welding certificates.

1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code--Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
   1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
   2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Mechanical Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for mechanical installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for mechanical items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Basis of Design Product: The design for each product is based on manufacturer named on the drawings. Subject to compliance with requirements, provide either named product or a comparable equivalent product by on of the other manufacturers specified.
   2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
   3. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
   1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
      a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
      b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
   2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

E. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

F. Brazing Filler Metals: AWS A5.8, BcuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

G. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

H. Solvent Cements for Joining Plastic Piping:
   1. ABS Piping: ASTM D 2235.
   2. CPVC Piping: ASTM F 493.
   3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
   4. PVC to ABS Piping Transition: ASTM D 3138.

I. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.4 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
   1. Available Manufacturers:
      a. Cascade Waterworks Mfg. Co.
      b. Dresser Industries, Inc.; DMD Div.
      c. Ford Meter Box Company, Incorporated (The); Pipe Products Div.
      d. JCM Industries.
      e. Smith-Blair, Inc.
      f. Viking Johnson.
   2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
   3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.
   4. Aboveground Pressure Piping: Pipe fitting.

B. Plastic-to-Metal Transition Fittings: CPVC and PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement- joint end.
   1. Available Manufacturers:
      a. Eslon Thermoplastics.

C. Plastic-to-Metal Transition Adaptors: One-piece fitting with manufacturer's SDR 11 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
   1. Available Manufacturers:
      a. Thompson Plastics, Inc.

D. Plastic-to-Metal Transition Unions: MSS SP-107, PVC four-part union. Include brass end, solvent-cement-joint end, rubber O-ring, and union nut.
   1. Available Manufacturers:
      a. NIBCO INC.
      b. NIBCO, Inc.; Chemtrol Div.

2.5 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
   1. Available Manufacturers:
      a. Capitol Manufacturing Co.
      b. Central Plastics Company.
      c. Eclipse, Inc.
      d. Epco Sales, Inc.
      e. Hart Industries, International, Inc.
      f. Watts Industries, Inc.; Water Products Div.
      g. Zurn Industries, Inc.; Wilkins Div.

D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
   1. Available Manufacturers:
      a. Capitol Manufacturing Co.
      b. Central Plastics Company.
      c. Epco Sales, Inc.
      d. Watts Industries, Inc.; Water Products Div.

E. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
   1. Available Manufacturers:
      a. Advance Products & Systems, Inc.
      b. Calpico, Inc.
      c. Central Plastics Company.
      d. Pipeline Seal and Insulator, Inc.
   2. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.

F. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
   1. Available Manufacturers:
      a. Calpico, Inc.
      b. Lochinvar Corp.

G. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.
   1. Available Manufacturers:
      a. Perfection Corp.
      b. Precision Plumbing Products, Inc.
      c. Sioux Chief Manufacturing Co., Inc.
      d. Victaulic Co. of America.

2.6 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
   1. Manufacturers:
      a. Thunderline Link Seal
      b. Calpico, Inc.
      c. Metraflex Co.
   2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
   3. Pressure Plates: Stainless steel. Include two for each sealing element.

4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.7 SLEEVES

A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral water stop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with set screws.

E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe: ASTM D 1785, Schedule 40.

G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.8 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

C. One-Piece, Cast-Brass Type: With set screw.
1. Finish: Polished chrome-plated.

D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
1. Finish: Polished chrome-plated.

E. One-Piece, Stamped-Steel Type: With set screw and chrome-plated finish.

F. Split-Plate, Stamped-Steel Type: With concealed hinge, set screw, and chrome-plated finish.

G. One-Piece, Floor-Plate Type: Cast-iron floor plate.

H. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:
   1. New Piping:
      a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
      b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
      c. Insulated Piping: One-piece, stamped-steel type with spring clips.
      d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
      e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped- steel type.
      f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
      g. Bare Piping in Unfinished Service Spaces: One-piece, cast-brass type with polished chrome-plated finish.
      h. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
      i. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.

M. Sleeves are not required for core-drilled holes.

N. Permanent sleeves are not required for holes formed by removable PE sleeves.

O. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

P. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
   1. Cut sleeves to length for mounting flush with both surfaces.
      a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
   2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
   3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
      a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
      b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
      c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 7 Section "Sheet Metal Flashing and Trim" for flashing.
         1) Seal space outside of sleeve fittings with grout.
   4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 7 Section "Joint Sealants" for materials and installation.

Q. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Install steel pipe for sleeves smaller than 6 inches in diameter.
   2. Install cast-iron "wall pipes" for sleeves 6 inches and larger in diameter.
   3. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten

bolts against pressure plates that cause sealing elements to expand and make watertight seal.

R. Underground, Exterior-Wall Pipe Penetrations: Install cast-iron "wall pipes" for sleeves. Seal pipe penetrations using mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
   1. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

S. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 7 Section "Through-Penetration Firestop Systems" for materials.

T. Verify final equipment locations for roughing-in.

U. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.2 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
   1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
   2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
   1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
   2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
   3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
   4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
   5. PVC Nonpressure Piping: Join according to ASTM D 2855.
   6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.

K. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
   1. Plain-End Pipe and Fittings: Use butt fusion.
   2. Plain-End Pipe and Socket Fittings: Use socket fusion.

M. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.3 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:
   1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
   2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
   3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
   4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.4 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.5 PAINTING

A. Painting of mechanical systems, equipment, and components is specified in Division 9.

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.6 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 5 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment.

C. Field Welding: Comply with AWS D1.1.

END OF SECTION

SECTION 23 05 13

COMMON MOTOR REQUIREMENTS FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes basic requirements for factory installed motors.

1.3 DEFINITIONS

A. Factory-Installed Motor: A motor installed by motorized-equipment manufacturer as a component of equipment.

1.4 SUBMITTALS

A. Manufacturer Seismic Qualification Certification: Submit certification that motors, accessories, and components will withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment". Include the following:
   1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
      a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
      b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
   2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
   3. Detailed description of equipment anchorage devices on which the certification is based and
      their installation requirements.

B. Qualification Data: For testing agency.

C. Source quality-control test reports.

D. Operation and Maintenance Data: For motors to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices and features that comply with the following:
   1. Compatible with the following:
      a. Magnetic controllers.
      b. Multispeed controllers.
      c. Reduced-voltage controllers.
      d. Variable speed drive.

2. Designed and labeled for use with variable frequency controllers, and suitable for use throughout speed range without overheating.
3. Matched to torque and horsepower requirements of the load.
4. Matched to ratings and characteristics of supply circuit and required control sequence.

PART 2 - PRODUCTS

2.1 MOTOR REQUIREMENTS

A. Motor requirements apply to factory installed motors except as follows:
1. Different ratings, performance, or characteristics for motor are specified in another Section.
2. Motorized-equipment manufacturer requires ratings, performance, or characteristics, other than those specified in this Section, to meet performance specified.

2.2 MOTOR CHARACTERISTICS

A. Motors 3/4 HP and Larger: Three phase.

B. Motors Smaller Than 3/4 HP: Single phase.

C. Frequency Rating: 60 Hz.

D. Voltage Rating: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.

E. Service Factor: 1.15 for open drip proof motors; 1.0 for totally enclosed motors.

F. Duty: Continuous duty at ambient temperature of 105 deg F and at altitude of 3300 feet above sea level.

G. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

H. Enclosure:
1. Open drip proof (ODP) for indoor applications.
2. Totally enclosed fan cooled (TEFC) for outdoor applications.

2.3 POLYPHASE MOTORS

A. Description: NEMA MG 1, Design B, medium induction motor.

B. Efficiency: Premium, as defined in NEMA MG 1.

C. Stator: Copper windings, unless otherwise indicated.
1. Multispeed motors shall have separate winding for each speed.

D. Rotor: Squirrel cage, unless otherwise indicated.

E. Bearings: Double-shielded, pre-lubricated ball bearings suitable for radial and thrust loading.

F. Temperature Rise: Match insulation rating, unless otherwise indicated.

G. Insulation: Class F, unless otherwise indicated.

H. Code Letter Designation:
1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
2. Motors Smaller Than 15 HP: Manufacturer's standard starting characteristic.

I. Enclosure: Cast iron for motors 7.5 hp and larger; rolled steel for motors smaller than 7.5 hp.
1. Finish: Gray enamel.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. Motors Used with Reduced-Inrush Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.

B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
1. Designed with critical vibration frequencies outside operating range of controller output.

2. Temperature Rise: Matched to rating for Class B insulation.
3. Insulation: Class H.
4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.

2.5 SINGLE-PHASE MOTORS

A. Type: One of the following, to suit starting torque and requirements of specific motor application:
1. Permanent-split capacitor.
2. Split-phase start, capacitor run.
3. Capacitor start, capacitor run.

B. Shaded-Pole Motors: For motors 1/20 hp and smaller only.

C. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

D. Bearings: Ball type for belt-connected motors and other motors with high radial forces on motor shaft; sealed, pre-lubricated-sleeve type for other single-phase motors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive motors for compliance with requirements, installation tolerances, and other conditions affecting performance.

B. Examine roughing-in for conduit systems to verify actual locations of conduit connections before motor installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

END OF SECTION

SECTION 23 05 29

HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following hangers and supports for mechanical system piping and equipment:
   1. Steel pipe hangers and supports.
   2. Trapeze pipe hangers.
   3. Metal framing systems.
   4. Thermal-hanger shield inserts.
   5. Fastener systems.
   6. Pipe stands.
   7. Pipe positioning systems.
   8. Equipment supports.

B. Related Sections include the following:
   1. Division 5 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
   2. Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment for vibration isolation devices.
   3. Division 23 Section "Metal Ducts and Casings" for duct hangers and supports.
   4. Comply with Section 01 61 00 for seismic requirements for non-structural components.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.4 PERFORMANCE REQUIREMENTS

A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Steel pipe hangers and supports.
   2. Thermal-hanger shield inserts.
   3. Powder-actuated fastener systems.
   4. Pipe positioning systems.
   5. Equipment supports.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze pipe hangers. Include Product Data for components.
2. Metal framing systems. Include Product Data for components, pipe stands. Include Product Data for components.
3. Equipment supports.

C. Welding certificates.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to the following:
1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.2, "Structural Welding Code--Aluminum."
3. AWS D1.3, "Structural Welding Code--Sheet Steel."
4. AWS D1.4, "Structural Welding Code--Reinforcing Steel."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Available Manufacturers:
1. AAA Technology & Specialties Co., Inc.
2. Bergen-Power Pipe Supports.
3. B-Line Systems, Inc.; a division of Cooper Industries.
4. Carpenter & Paterson, Inc.
5. Empire Industries, Inc.
6. ERICO/Michigan Hanger Co.
7. Hilti, Inc.
8. Globe Pipe Hanger Products, Inc.
9. Grinnell Corp.
10. GS Metals Corp.
11. National Pipe Hanger Corporation.
12. PHD Manufacturing, Inc.
13. PHS Industries, Inc.
14. Piping Technology & Products, Inc.
15. Tolco Inc.

C. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

2.3 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural-steel shapes with MSS SP-58 hanger rods, nuts, saddles, and U-bolts.

2.4 METAL FRAMING SYSTEMS

A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components. Available Manufacturers:
   1. B-Line Systems, Inc.; a division of Cooper Industries.
   2. ERICO/Michigan Hanger Co.; ERISTRUT Div.
   3. GS Metals Corp.
   4. Power-Strut Div.; Tyco International, Ltd.
   5. Thomas & Betts Corporation.
   6. Tolco Inc.
   7. Unistrut Corp.; Tyco International, Ltd.

B. Coatings: Manufacturer's standard finish, unless bare metal surfaces are indicated.

C. Nonmetallic Coatings: Plastic coating, jacket, or liner.

2.5 THERMAL-HANGER SHIELD INSERTS

A. Description: 100-psig- minimum, compressive-strength insulation insert encased in sheet metal shield.

B. Available Manufacturers:
   1. Carpenter & Paterson, Inc.
   2. ERICO/Michigan Hanger Co.
   3. PHS Industries, Inc.
   4. Pipe Shields, Inc.
   5. Rilco Manufacturing Company, Inc.
   6. Value Engineered Products, Inc.

C. Insulation-Insert Material for Cold Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate with vapor barrier.

D. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 533, Type I calcium silicate.

E. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

F. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

G. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.6 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
   1. Available Manufacturers:
      a. Hilti, Inc.
      b. ITW Ramset/Red Head.
      c. Masterset Fastening Systems, Inc.
      d. MKT Fastening, LLC.
      e. Powers Fasteners.

B. Mechanical-Expansion Anchors: Insert-wedge-type [zinc-coated] [stainless] steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
   1. Available Manufacturers:
      a. B-Line Systems, Inc.; a division of Cooper Industries.
      b. Empire Industries, Inc.

c. Hilti, Inc.
d. ITW Ramset/Red Head.
e. MKT Fastening, LLC.
f. Powers Fasteners.

2.7 PIPE STAND FABRICATION

A. Pipe Stands, General: Shop or field-fabricated assemblies made of manufactured corrosion- resistant components to support outdoor and roof-mounted piping.

B. Compact Pipe Stand: One-piece plastic unit with integral-rod-roller, pipe clamps, or V-shaped cradle to support pipe, for roof installation without membrane penetration.
1. Available Manufacturers:
a. ERICO/Michigan Hanger Co.
b. MIRO Industries.

C. Low-Type, Single-Pipe Stand: One-piece plastic base unit with plastic roller, for roof installation without membrane penetration.
1. Available Manufacturers:
a. MIRO Industries.

D. High-Type, Single-Pipe Stand: Assembly of base, vertical and horizontal members, and pipe support, for roof installation without membrane penetration.
1. Available Manufacturers:
a. ERICO/Michigan Hanger Co.
b. MIRO Industries.
c. Portable Pipe Hangers.
2. Base: Plastic.
3. Vertical Members: Two or more cadmium-plated-steel or stainless-steel, continuous-thread rods.
4. Horizontal Member: Cadmium-plated-steel or stainless-steel rod with plastic or stainless- steel, roller-type pipe support.

E. High-Type, Multiple-Pipe Stand: Assembly of bases, vertical and horizontal members, and pipe supports, for roof installation without membrane penetration.
1. Available Manufacturers:
a. Portable Pipe Hangers.
2. Bases: One or more plastic.
3. Vertical Members: Two or more protective-coated-steel channels.
4. Horizontal Member: Protective-coated-steel channel.
5. Pipe Supports: Galvanized-steel, clevis-type pipe hangers.

F. Curb-Mounting-Type Pipe Stands: Shop- or field-fabricated pipe support made from structural- steel shape, continuous-thread rods, and rollers for mounting on permanent stationary roof curb.

2.8 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, system of metal brackets, clips, and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.

B. Available Manufacturers:
1. C & S Mfg. Corp.
2. HOLDRITE Corp.; Hubbard Enterprises.
3. Samco Stamping, Inc.

2.9 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.10 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use padded hangers for piping that is subject to scratching.

F. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of 120 to 450 deg F pipes, NPS 4 to NPS 16, requiring up to 4 inches of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24, requiring clamp flexibility and up to 4 inches of insulation.
4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24, if little or no insulation is required.
5. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
6. Adjustable Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS 3/4 to NPS 8.
7. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
8. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
9. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2.
10. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
11. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3.
12. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30.
13. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.
14. Pipe Saddle Supports (MSS Type 36): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange.
15. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 36, with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
16. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes, NPS 2-1/2 to NPS 36, if vertical adjustment is required, with steel pipe base stanchion support and cast-iron floor flange.
17. Single Pipe Rolls (MSS Type 41): For suspension of pipes, NPS 1 to NPS 30, from 2 rods if longitudinal movement caused by expansion and contraction might occur.

18. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes, NPS 2-1/2 to NPS 20,

from single rod if horizontal movement caused by expansion and contraction might occur.

19. Complete Pipe Rolls (MSS Type 44): For support of pipes, NPS 2 to NPS 42, if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
20. Pipe Roll and Plate Units (MSS Type 45): For support of pipes, NPS 2 to NPS 24, if small horizontal movement caused by expansion and contraction might occur and vertical adjustment is not necessary.
21. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes, NPS 2 to NPS 30, if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.

G. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20, if longer ends are required for riser clamps.

H. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

I. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I- beams for heavy loads, with link extensions.
11. Malleable Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
12. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
    a. Light (MSS Type 31): 750 lb.
    b. Medium (MSS Type 32): 1500 lb.
    c. Heavy (MSS Type 33): 3000 lb.
13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.

15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Steel Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
   2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
   3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
   1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
   2. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
   3. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41 roll hanger with springs.
   4. Spring Sway Braces (MSS Type 50): To retard sway, shock, vibration, or thermal expansion in piping systems.
   5. Variable-Spring Hangers (MSS Type 51): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from hanger.
   6. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from base support.
   7. Variable-Spring Trapeze Hangers (MSS Type 53): Preset to indicated load and limit variability factor to 25 percent to absorb expansion and contraction of piping system from trapeze support.
   8. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
      a. Horizontal (MSS Type 54): Mounted horizontally.
      b. Vertical (MSS Type 55): Mounted vertically.
      c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.

L. Comply with MSS SP-69 for trapeze pipe hanger selections and applications that are not specified in piping system Sections.

M. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.

N. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

O. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

3.2 HANGER AND SUPPORT INSTALLATION

A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.
   1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.

2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported.
   Weld steel according to AWS D1.1.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.

D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:
   1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder- actuated tool manufacturer's operating manual.
   2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Pipe Stand Installation:
   1. Pipe Stand Types except Curb-Mounting Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
   2. Curb-Mounting-Type Pipe Stands: Assemble components or fabricate pipe stand and mount on permanent, stationary roof curb. Refer to Division 7 Section "Roof Accessories" for curbs.

G. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. Refer to Division 15 Section "Plumbing Fixtures" for plumbing fixtures.

H. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

I. Equipment Support Installation: Fabricate from welded-structural-steel shapes.Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

J. Install lateral bracing with pipe hangers and supports to prevent swaying.

K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

L. Load Distribution: Install hangers and supports so piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.1 (for power piping) and ASME B31.9 (for building services piping) are not exceeded.

N. Insulated Piping: Comply with the following:
   1. Attach clamps and spacers to piping.
      a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
      b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
      c. Do not exceed pipe stress limits according to ASME B31.1 for power piping and ASME B31.9 for building services piping.
   2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is
      indicated. Fill interior voids with insulation that matches adjoining insulation.
      a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
   3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier.

Shields shall span an arc of 180 degrees.
   a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
4. Shield Dimensions for Pipe: Not less than the following:
   a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
   b. NPS 4: 12 inches long and 0.06 inch thick.
   c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
   d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
   e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
5. Pipes NPS 8 and Larger: Include wood inserts.
6. Insert Material: Length at least as long as protective shield.
7. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make smooth bearing surface.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.6 PAINTING

A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
   1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 9.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply

galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 23 05 48

VIBRATION AND SEISMIC CONTROLS

FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Elastomeric isolation pads and mounts.
   2. Restrained elastomeric isolation mounts.
   3. Freestanding and restrained spring isolators.
   4. Housed spring mounts.
   5. Elastomeric hangers.
   6. Spring hangers.
   7. Spring hangers with vertical-limit stops.
   8. Thrust limits.
   9. Pipe riser resilient supports.
   10. Resilient pipe guides.
   11. Seismic snubbers.
   12. Restraining cables.

B. Related Sections include the following:
   1. Refer to Sheet M1.1 “Vibration Isolation Schedule” if needed for additional clarification.

1.3 DEFINITIONS

A. Av: Effective peak velocity related acceleration coefficient.

B. OSHPD: Office of Statewide Health Planning & Development for the State of California. OSHPD assigns a unique anchorage preapproval "R" number to each seismic restraint it tests. The number describes a specific device applied as tested.

1.4 SUBMITTALS

A. Product Data: Include load deflection curves for each vibration isolation device.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Include the following:
   1. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
   2. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system has been examined for excessive stress and that none will exist.
   3. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to
      structure and to supported equipment. Include auxiliary motor slides and rails, base weights, equipment static loads, power transmission, component misalignment, and cantilever loads.
   4. Seismic-Restraint Details: Detail fabrication and attachment of seismic restraints and snubbers. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.
   5. Submittals for Interlocking Snubbers: Include load deflection curves up to 1/2-inch

deflection in x, y, and z planes.

C. Welding certificates.

D. Air-Mounting System Performance Certification: Include natural frequency, load, and damping tests performed by an independent laboratory or acoustician.

E. Manufacturer Seismic Qualification Certification: Submit certification that all specified equipment will withstand seismic forces identified in "Performance Requirements" Article above. Include the following:
   1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculations.
      a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
      b. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will
      be fully operational after the seismic event."
   2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
   3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

1.5 QUALITY ASSURANCE

A. Seismic-restraint devices shall have horizontal and vertical load testing and analysis performed according to OSHPD and shall bear anchorage preapproval "R" number, from OSHPD or another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer. Testing and calculations must include both shear and tensile loads and 1 test or analysis at 45 degrees to the weakest mode.

B. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-- Steel."

1.6 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into base. Concrete, reinforcement, and formwork requirements are specified in Division 3.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
   1. Basis of Design Product: The design for each product is based on manufacturer named on the drawings. Subject to compliance with requirements, provide either named product or a comparable equivalent product by on of the other manufacturers specified.
   2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 VIBRATION ISOLATORS

A. Manufacturers:
   1. CDI

2. Micrometal
3. Mason Industries, Inc.
4. M.W. Sausse.

B. Elastomeric Isolator Pads: Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.
   1. Material: Standard neoprene.

C. Elastomeric Mounts Double-deflection type, with molded, oil-resistant rubber or neoprene isolator elements with factory-drilled, encapsulated top plate for bolting to equipment and with baseplate for bolting to structure. Color-code or otherwise identify to indicate capacity range.

D. Restrained Elastomeric Mounts: All-directional elastomeric mountings with seismic restraint.
   1. Materials: Cast-ductile-iron housing containing two separate and opposing, molded, bridge- bearing neoprene elements that prevent central threaded sleeve and attachment bolt from contacting the casting during normal operation.
   2. Neoprene: Shock-absorbing materials compounded according to the standard for bridge- bearing neoprene as defined by AASHTO.

E. Spring Isolators: Freestanding, laterally stable, open-spring isolators.
   1. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
   2. Minimum Additional Travel: 50 percent of the required deflection at rated load.
   3. Lateral Stiffness: More than 80 percent of the rated vertical stiffness.
   4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
   5. Baseplates: Factory drilled for bolting to structure and bonded to 1/4-inch- thick, rubber isolator pad attached to baseplate underside. Baseplates shall limit floor load to 100 psig.
   6. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

F. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.
   1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
   2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
   3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
   4. Lateral Stiffness: More than 80 percent of the rated vertical stiffness.
   5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

G. Housed Spring Mounts: Housed spring isolator with integral seismic snubbers.
   1. Housing: Ductile-iron or steel housing to provide all-directional seismic restraint.
   2. Base: Factory drilled for bolting to structure.
   3. Snubbers: Vertically adjustable to allow a maximum of 1/4-inch travel before contacting a resilient collar.

H. Elastomeric Hangers: Double-deflection type, with molded, oil-resistant rubber or neoprene isolator elements bonded to steel housings with threaded connections for hanger rods. Color- code or otherwise identify to indicate capacity range.

I. Spring Hangers: Combination coil-spring and elastomeric-insert hanger with spring and insert in compression.
   1. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or

reducing isolation efficiency.
2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of the rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.

J. Spring Hangers with Vertical-Limit Stop: Combination coil-spring and elastomeric-insert hanger with spring and insert in compression and with a vertical-limit stop.
1. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of the rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.
7. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.

K. Thrust Limits: Combination coil spring and elastomeric insert with spring and insert in compression and with a load stop. Include rod and angle-iron brackets for attaching to equipment.
1. Frame: Steel, fabricated for connection to threaded rods and to allow for a maximum of 30 degrees of angular rod misalignment without binding or reducing isolation efficiency.
2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of the rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.
7. Coil Spring: Factory set and field adjustable for a maximum of 1/4-inch movement at start and stop.

2.3 SEISMIC-RESTRAINT DEVICES

A. Manufacturers:
1. CDI
2. B-Line Systems, Inc.
3. Mason Industries, Inc.
4. M.W. Sausse
5. TOLCO Incorporated.
6. Unistrut Diversified Products Co.; Wayne Manufacturing Division.

B. Resilient Isolation Washers and Bushings: 1-piece, molded, bridge-bearing neoprene complying with AASHTO M 251 and having a durometer of 40, plus or minus 5, with a flat washer face.

C. Seismic Snubbers: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings.
1. Anchor bolts for attaching to concrete shall be seismic-rated, drill-in, and stud-wedge or female-wedge type.

2. Resilient Isolation Washers and Bushings: 1-piece, molded, bridge-bearing neoprene complying with AASHTO M 251 and having a durometer of [40] [50] [60], plus or minus 5.

D. Restraining Cables: Galvanized steel aircraft cables with end connections made of steel assemblies that swivel to final installation angle and utilize two clamping bolts for cable engagement.

E. Anchor Bolts: Seismic-rated, drill-in, and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488/E 488M.

2.4 VIBRATION ISOLATION EQUIPMENT BASES

A. Manufacturers:
1. CDI
2. Mason Industries, Inc.
3. M.W. Sausse.

B. Steel Base: Factory-fabricated, welded, structural-steel bases and rails.
1. Design Requirements: Lowest possible mounting height with not less than 1-inch clearance above the floor. Include equipment anchor bolts and auxiliary motor slide bases or rails. Include supports for suction and discharge elbows for pumps.
2. Structural Steel: Steel shapes, plates, and bars complying with ASTM A 36/A 36M. Bases shall have shape to accommodate supported equipment.
3. Support Brackets: Factory-welded steel angles on frame for outrigger isolation mountings

and to provide for anchor bolts and equipment support.

2.5 FACTORY FINISHES

A. Manufacturer's standard prime-coat finish ready for field painting.

B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.
1. Powder coating on springs and housings.
2. All hardware shall be electrogalvanized. Hot-dip galvanize metal components for exterior use.
3. Baked enamel for metal components on isolators for interior use.
4. Color-code or otherwise mark vibration isolation and seismic-control devices to indicate capacity range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements, installation tolerances, and other conditions affecting performance.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install roof curbs, equipment supports, and roof penetrations as specified in Division 7 Section "Roof Accessories."

B. Install thrust limits at centerline of thrust, symmetrical on either side of equipment.

C. Install seismic snubbers on isolated equipment. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.

D. Install restraining cables at each trapeze and individual pipe hanger. At trapeze anchor

locations, shackle piping to trapeze. Install cables so they do not bend across sharp edges of adjacent equipment or building structure.

E. Install steel angles or channel, sized to prevent buckling, clamped with ductile-iron clamps to hanger rods for trapeze and individual pipe hangers. At trapeze anchor locations, shackle piping to trapeze. Requirements apply equally to hanging equipment. Do not weld angles to rods.

F. Install resilient bolt isolation washers on equipment anchor bolts.

3.3 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified testing agency to perform the following field quality-control testing:

B. Testing: Engage a qualified testing agency to perform the following field quality-control testing:

C. Testing: Perform the following field quality-control testing:
1. Isolator seismic-restraint clearance.
2. Isolator deflection.
3. Snubber minimum clearances.

3.4 ADJUSTING

A. Adjust isolators after piping systems have been filled and equipment is at operating weight.

B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height.
After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

C. Attach thrust limits at centerline of thrust and adjust to a maximum of 1/4-inch movement during start and stop.

D. Adjust air spring leveling mechanism.

E. Adjust active height of spring isolators.

F. Adjust snubbers according to manufacturer's written recommendations.

G. Adjust seismic restraints to permit free movement of equipment within normal mode of operation.

H. Torque anchor bolts according to equipment manufacturer's written recommendations to resist seismic forces.

3.5 CLEANING

A. After completing equipment installation, inspect vibration isolation and seismic-control devices.
Remove paint splatters and other spots, dirt, and debris.

3.6 VIBRATION ISOLATOR AND SEISMIC-RESTRAINT SCHEDULE

A. Supported or Suspended Equipment: As scheduled on drawings.

END OF SECTION

SECTION 23 05 53

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following mechanical identification materials and their installation:
   1. Equipment nameplates.
   2. Equipment markers.
   3. Equipment signs.
   4. Access panel and door markers.
   5. Pipe markers.
   6. Duct markers.
   7. Stencils.
   8. Valve tags.
   9. Valve schedules.
   10. Warning tags.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Valve numbering scheme.

C. Valve Schedules: For each piping system. Furnish extra copies (in addition to mounted copies) to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME A13.1, "Scheme for the Identification of Piping Systems," for letter size, length of color field, colors, and viewing angles of identification devices for piping.

1.5 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with location of access panels and doors.

C. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 EQUIPMENT IDENTIFICATION DEVICES

A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.
   1. Data:
      a. Manufacturer, product name, model number, and serial number.
      b. Capacity, operating and power characteristics, and essential data.
      c. Labels of tested compliances.
   2. Location: Accessible and visible.
   3. Fasteners: As required to mount on equipment.

B. Equipment Markers: Engraved, color-coded laminated plastic. Include contact-type, permanent adhesive.

1. Terminology: Match schedules as closely as possible.
2. Data:
   a. Name and plan number.
   b. Equipment service.
   c. Design capacity.
   d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
3. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.

C. Equipment Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.
1. Data: Instructions for operation of equipment and for safety procedures.
2. Engraving: Manufacturer's standard letter style, of sizes and with terms to match equipment identification.
3. Thickness: 1/16 inch for units up to 20 sq. in. or 8 inches in length, and 1/8 inch for larger units.
4. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

D. Access Panel and Door Markers: 1/16-inch- thick, engraved laminated plastic, with abbreviated terms and numbers corresponding to identification. Provide 1/8-inch center hole for attachment.
1. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

2.2 PIPING IDENTIFICATION DEVICES

A. Manufactured Pipe Markers, General: Preprinted, color-coded, with lettering indicating service, and showing direction of flow.
1. Colors: Comply with ASME A13.1, unless otherwise indicated.
2. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.
3. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers extending 360 degrees around pipe at each location.
4. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip-type pipe markers at least three times letter height and of length required for label.
5. Arrows: Integral with piping system service lettering to accommodate both directions; or as separate unit on each pipe marker to indicate direction of flow.

B. Pretensioned Pipe Markers: Precoiled semirigid plastic formed to cover full circumference of pipe and to attach to pipe without adhesive.

C. Shaped Pipe Markers: Preformed semirigid plastic formed to partially cover circumference of pipe and to attach to pipe with mechanical fasteners that do not penetrate insulation vapor barrier.

D. Self-Adhesive Pipe Markers: Plastic with pressure-sensitive, permanent-type, self-adhesive back.

E. Plastic Tape: Continuously printed, vinyl tape at least 3 mils thick with pressure-sensitive, permanent-type, self-adhesive back.
1. Width for Markers on Pipes with OD, Including Insulation, Less Than 6 Inches: 3/4 inch minimum.
2. Width for Markers on Pipes with OD, Including Insulation, 6 Inches or Larger: 1-1/2 inches minimum.

2.3 DUCT IDENTIFICATION DEVICES

A. Duct Markers: Engraved, color-coded laminated plastic. Include direction and quantity of airflow and duct service (such as supply, return, and exhaust). Include contact-type,

permanent adhesive.

2.4 STENCILS

A. Stencils: Prepared with letter sizes according to ASME A13.1 for piping; minimum letter height of 1-1/4 inches for ducts; and minimum letter height of 3/4 inch for access panel and door markers, equipment markers, equipment signs, and similar operational instructions.
   1. Stencil Material: Metal or fiberboard.
   2. Stencil Paint: Exterior, gloss, black, unless otherwise indicated. Paint may be in pressurized spray-can form.
   3. Identification Paint: Exterior, in colors according to ASME A13.1, unless otherwise indicated.

2.5 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2- inch numbers, with numbering scheme approved by Architect or Engineer. Provide 5/32-inch hole for fastener.
   1. Material: 0.032-inch- thick brass.
   2. Valve-Tag Fasteners: Brass wire-link or beaded chain; or S-hook.

2.6 VALVE SCHEDULES

A. Valve Schedules: For each piping system, on standard-size bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
   1. Valve-Schedule Frames: Glazed display frame for removable mounting on masonry walls for each page of valve schedule. Include mounting screws.
   2. Frame: Extruded aluminum.
   3. Glazing: ASTM C 1036, Type I, Class 1, Glazing Quality B, 2.5-mm, single-thickness glass.

2.7 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.
   1. Size: 3 by 5-1/4 inches minimum.
   2. Fasteners: Brass grommet and wire.
   3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
   4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 APPLICATIONS, GENERAL

A. Products specified are for applications referenced in other Division 23 Sections. If more than single-type material, device, or label is specified for listed applications, selection is Installer's option.

3.2 EQUIPMENT IDENTIFICATION

A. Install and permanently fasten equipment nameplates on each major item of mechanical equipment that does not have nameplate or has nameplate that is damaged or located where not easily visible. Locate nameplates where accessible and visible. Include nameplates for the following general categories of equipment:
   1. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
   2. Pumps, compressors, chillers, condensers, and similar motor-driven units.
   3. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
   4. Fans, blowers, primary balancing dampers, and mixing boxes.

5. Packaged HVAC central-station and zone-type units.

B. Install equipment markers with permanent adhesive on or near each major item of mechanical equipment. Data required for markers may be included on signs, and markers may be omitted if both are indicated.
   1. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
   2. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
   3. Locate markers where accessible and visible. Include markers for the following general
      categories of equipment:
      a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
      b. Fire department hose valves and hose stations.
      c. Meters, gages, thermometers, and similar units.
      d. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
      e. Pumps, compressors, chillers, condensers, and similar motor-driven units.
      f. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
      g. Fans, blowers, primary balancing dampers, and mixing boxes.
      h. Packaged HVAC central-station and zone-type units.
      i. Tanks and pressure vessels.
      j. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.

C. Stenciled Equipment Marker Option: Stenciled markers may be provided instead of laminated- plastic equipment markers, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.

D. Install equipment signs with screws or permanent adhesive on or near each major item of mechanical equipment. Locate signs where accessible and visible.
   1. Identify mechanical equipment with equipment markers in the following color codes:
      a. Green: For cooling equipment and components.
      b. Yellow: For heating equipment and components.
      c. Green and Yellow: For combination cooling and heating equipment and components.
      d. Brown: For energy-reclamation equipment and components.
   2. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
   3. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
   4. Include signs for the following general categories of equipment:
      a. Main control and operating valves, including safety devices and hazardous units such as gas outlets.
      b. Fuel-burning units, including boilers, furnaces, heaters, stills, and absorption units.
      c. Pumps, compressors, chillers, condensers, and similar motor-driven units.
      d. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
      e. Fans, blowers, primary balancing dampers, and mixing boxes.
      f. Packaged HVAC central-station and zone-type units.
      g. Tanks and pressure vessels.

h. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.

E. Stenciled Equipment Sign Option: Stenciled signs may be provided instead of laminated-plastic equipment signs, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.

F. Install access panel markers with screws on equipment access panels.

3.3 PIPING IDENTIFICATION

A. Install manufactured pipe markers indicating service on each piping system. Install with flow indication arrows showing direction of flow.

B. Pipes with OD, Including Insulation, Less Than 6 Inches: Pretensioned pipe markers. Use size to ensure a tight fit.
   1. Pipes with OD, Including Insulation, 6 Inches and Larger: Shaped pipe markers. Use size to match pipe and secure with fasteners.

C. Stenciled Pipe Marker Option: Stenciled markers may be provided instead of manufactured pipe markers, at Installer's option. Install stenciled pipe markers with painted, color-coded bands or rectangles on each piping system.
   1. Identification Paint: Use for contrasting background.
   2. Stencil Paint: Use for pipe marking.

D. Locate pipe markers and color bands where piping is exposed in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior nonconcealed locations as follows:
   1. Near each valve and control device.
   2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
   3. Near penetrations through walls, floors, ceilings, and nonaccessible enclosures.
   4. At access doors, manholes, and similar access points that permit view of concealed piping.
   5. Near major equipment items and other points of origination and termination.
   6. Spaced at maximum intervals of 40 feet along each run. Reduce intervals to 20 feet in areas of congested piping and equipment.
   7. On piping above removable acoustical ceilings. Omit intermediately spaced markers.

3.4 DUCT IDENTIFICATION

A. Install duct markers with permanent adhesive on air ducts in the following color codes:
   1. Green: For cold-air supply ducts.
   2. Yellow: For hot-air supply ducts.
   3. Blue: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
   4. ASME A13.1 Colors and Designs: For hazardous material exhaust.
   5. Letter Size: Minimum 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.

B. Stenciled Duct Marker Option: Stenciled markers, showing service and direction of flow, may be provided instead of laminated-plastic duct markers, at Installer's option, if lettering larger than 1 inch high is needed for proper identification because of distance from normal location of required identification.

C. Locate markers near points where ducts enter into concealed spaces and at maximum intervals of 40 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.5 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; plumbing fixture supply stops; shutoff valves; faucets; convenience and lawn-watering hose connections; and HVAC terminal devices and

similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following:
   1. Valve-Tag Size and Shape:
      a. Cold Water: 1-1/2 inches, round.
      b. Hot Water: 1-1/2 inches, round.
      c. Fire Protection: 1-1/2 inches, round.
      d. Gas: 1-1/2 inches, round.
      e. Steam: 1-1/2 inches, round.
   2. Valve-Tag Color:
      a. Cold Water: Natural.
      b. Hot Water: Red.
      c. Fire Protection: Black.
      d. Gas: Green.
      e. Chilled Water: Blue.
      f. Condenser Water: Yellow.
      g. Heating Hot Water: Red.
   3. Letter Color:
      a. Cold Water: Black.
      b. Hot Water: White.
      c. Fire Protection: White.
      d. Gas: White.
      e. Chilled Water: White.
      f. Condenser Water: Black.
      g. Heating Hot Water: White.

3.6 VALVE-SCHEDULE INSTALLATION

A. Mount valve schedule on wall in accessible location in each major equipment room.

3.7 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

3.8 ADJUSTING

A. Relocate mechanical identification materials and devices that have become visually blocked by other work.

3.9 CLEANING

A. Clean faces of mechanical identification devices and glass frames of valve schedules.

END OF SECTION

SECTION 23 05 93

TESTING, ADJUSTING AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Requirements Division 01, Division 23 Specification Sections, and Common Work Requirements for HVAC apply to the work specified in this Section.

1.2 SUMMARY

A. This Section includes the providing of labor, materials, equipment, and services necessary for complete testing, adjusting, balancing (TAB) of all heating, ventilating and air conditioning systems in accordance with the contract documents and all applicable codes and authorities having jurisdiction, for the following:

1. Air Systems: Balancing of air distribution systems including supply, return and exhaust systems, condensing units, all fan-coils and related equipment for:
    a. Constant-volume air systems.
    b. Variable-air-volume systems.
    c. Terminal devices for HVAC systems.
2. HVAC equipment quantitative-performance settings.
3. Vibration measuring.
4. Sound level measuring.
5. Indoor-air quality measuring.
6. Verifying that automatic control devices are functioning properly.
7. Reporting results of activities and procedures specified in this Section.
8. Required Controlled Inspection, including Equipment Use Permits.

1.3 DEFINITIONS

A. Adjust: To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.

B. Balance: To proportion flows within the distribution system, including submains, branches, and terminals, according to indicated quantities.

C. Barrier or Boundary: Construction, either vertical or horizontal, such as walls, floors, and ceilings that are designed and constructed to restrict the movement of airflow, smoke, odors, and other pollutants.

D. Draft: A current of air, when referring to localized effect caused by one or more factors of high air velocity, low ambient temperature, or direction of airflow, whereby more heat is withdrawn from a person's skin than is normally dissipated.

E. NC: Noise criteria.

F. Procedure: An approach to and execution of a sequence of work operations to yield repeatable results.

G. RC: Room criteria.

H. Report Forms: Test data sheets for recording test data in logical order.

I. Static Head: The pressure due to the weight of the fluid above the point of measurement. In a closed system, static head is equal on both sides of the pump.

J. Suction Head: The height of fluid surface above the centerline of the pump on the suction side.

K. System Effect: A phenomenon that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.

L. System Effect Factors: Allowances used to calculate a reduction of the performance ratings of a fan when installed under conditions different from those presented when the fan was performance tested.

M. TAB: Testing, adjusting, and balancing.

N. Terminal: A point where the controlled medium, such as fluid or energy, enters or leaves the distribution system.

O. Test: A procedure to determine quantitative performance of systems or equipment.

P. Testing, Adjusting, and Balancing (TAB) Firm: The entity responsible for performing and reporting TAB procedures.

1.4 SUBMITTALS

A. LEED Submittals:

1. Air Balance Report for LEED Prerequisite: Documentation of work performed for ASHRAE 62.1-latest edition, Section 7.2.2 - "Air Balancing."

2. TAB Report for LEED Prerequisite: Documentation of work performed for ASHRAE/IESNA 90.1-latest edition, Section 6.7.2.3 - "System Balancing."

B. Qualification Data: Within 30 days from Contractor's Notice to Proceed, submit 2 copies of evidence that TAB firm and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article. Contractor shall also submit Form TR 1 listing person designated to perform controlled inspection so as not to impede the obtaining of required building permits.

C. Contract Documents Examination Report: Within 30 days from Contractor's Notice to Proceed, submit 2 copies of the Contract Documents review report as specified in Part 3.

D. Strategies and Procedures Plan: Within 30 days from Contractor's Notice to Proceed, submit 2 copies of TAB strategies and step-by-step procedures as specified in Part 3 "Preparation" Article. Include a complete set of report forms intended for use on this Project.

E. Certified TAB Reports: Submit two copies of reports prepared, as specified in this Section, on approved forms certified by TAB firm.

F. Sample Report Forms: Submit two sets of sample TAB report forms.

G. Warranties specified in this Section.

H. At least fifteen (15) days prior to starting field work, submit three (3) copies of report forms filled out, including design flow values, installed equipment pressure drops and required air flow for air terminals. Submit a complete list of instruments proposed to be used, organized in appropriate categories and include data sheets for each. Indicate each manufacturer and model number, description and use when needed to further identify instrument, size or capacity range and latest calibration date.

1. Owner/Engineer will review submittals for compliance with Contract Documents, and will return one set marked to indicate discrepancies noted between data shown and Contract Documents, additional, or more accurate, instruments required and requests for recalibration of specific instruments.

2. Submit proposed method of balancing variable air volume systems to account for system diversity.

1.5 REFERENCE STANDARDS

A. Published Specifications' standards, tests or recommended methods of trade, industry or governmental organizations apply to work in this Section.

B. Unless otherwise indicated, all systems shall be balanced and adjusted in accordance with AABC - Associated Air Balance Council, NEBB - National Environmental Balance Bureau and SMACNA - Sheet Metal and Air Conditioning Contractors' National Association, Inc.

C. Comply with all applicable national, state and local codes and refer to Section 23 05 00 COMMON WORK RESULTS FOR HVAC for additional Reference Standards.

1.6 QUALITY ASSURANCE

A. Prior to start of testing, adjusting and balancing, verify that the systems installation is complete and in full operation. Verify that outside conditions are within reasonable range relative to design conditions and that doors and windows are in place or under normal traffic conditions. Ensure that lights are turned "on" for cooling load checks and are turned "off" for heating load checks.

B. Ensure that special equipment such as computers and electronic equipment are in full operation.

C. Dummy loads: When operation testing is performed before final computer and other equipment are installed, provide temporary electric heat loads in rooms, at no extra cost

to Owner. Capacity of heating devices shall be such as to equal full heat gain in rooms, with exact capacity and location as directed by the Owner. Provide heating devices, wiring, connecting fittings compatible with electric circuits, operating and safety controls and other devices, as required. Other heating mediums than electrical may be proposed for approval by Owner and/or Engineer.

D. Verify that requirements for preparation for testing and balancing have been met for elements of each of the systems which require testing.

E. End result of balancing of air systems shall be satisfactory relationship of air pressures, flow directions, room temperatures, etc., whether quantitative data on drawings result in these conditions or not. Make measurements and adjustments in addition to drawing indications if necessary to result in satisfactory air balance. Building air balance shall comprehend overall balance between all systems, whether or not drawing figures may have to be modified to achieve overall balance.

F. Make air balance measurements and adjustments for multiple operating conditions where areas are subject to variety of circumstances (doors open and/or shut, etc.).

1.7 SUBMITTALS

A. Furnish to Owner and/or Engineer documentation that the Air Balance Company is a member of the Associated Air Balance Council, or National Environmental Balancing Bureau and that it has satisfactorily balanced at least three systems of comparable type and size. Include list of such projects. Sample forms for use in compiling and recording test and balance data shall also be submitted.

B. Final submission shall include records and tabulations required hereinafter and certified by a registered professional mechanical engineer experienced in balancing HVAC systems.

C. At least fifteen (15) days prior to starting field work, submit three (3) copies of report forms filled out, including design flow values, installed equipment pressure drops and required CFM for air terminals. Submit a complete list of instruments proposed to be used, organize in appropriate categories and include data sheets for each. Indicate each manufacturer and model number, description and use when needed to further identify instrument, size or capacity range and latest calibration date.

1. Owner/Engineer will review submittals for compliance with Contract Documents, and will return one set marked to indicate discrepancies noted between data shown and Contract Documents, additional, or more accurate, instruments required and requests for re-calibration of specific instruments.

2. Submit proposed method of balancing variable air volume systems to account for system diversity.

D. At least fifteen (15) days prior to Contractor's request for final inspection, submit three (3) copies of final reports, on applicable reporting forms, for review.

1. Schedule testing and balancing of parts of systems which are delayed due to seasonal, climatic, occupancy, or other conditions beyond control of Contractor, as early as proper conditions will allow, after consultation with the Owner and/or Engineer.

2. Submit reports of delayed testing promptly after execution of those services.

3. Submit proposed method of balancing hydronic systems.

4. Each individual final reporting form must bear the signature of the person who recorded data and the signature of the Registered Professional Engineer Supervising air balance of the reporting organization.

   a. When more than one certified organization performs total air balance services, the firm having managerial responsibility shall make submittals.

   b. Identify the instruments of all types which were used, and the last date of calibration of each.

1.8 PROJECT REVIEW

A. Pre-Construction Review:

1. Review Contract Documents (drawings, specifications, bulletin, addenda), submittal data, shop drawings and automatic temperature control drawings.

2. Assure that design intent is clearly understood. Identify potential problems from standpoint of total system balance.

3. Review specifications for scope of work, special requirements and items that will make balancing difficult or impossible.

4. Review drawings for potential problems for total system balance, including location of balancing devices, lack of balancing devices, general system layout, architectural features and accessibility. Determine the most effective system balancing procedures and determine scheduling and coordination requirements.

5. Review submittal data for completeness of data, conformity with Contract Documents, special instructions for use of balancing devices, factors for flow meters, limitations affecting accuracy of measurements and equipment performance data and curves.

6. Review shop drawings for potential problems for total system balance, as specified above for review of Contract Drawings.

7. Review automatic temperature control drawings for thorough understanding of system functions and determining the most effective total system balancing procedure for minimum control manipulation. Avoid disturbing calibration of control devices and coordinate required control manipulation with Control Contractor.

8. Submit report recommending addition and/or relocation of balancing devices, including, but not limited to, volume dampers, balancing valves, flow metering devices for air and water, and pressure and temperature measuring points.

B. Construction Review: make on-site visits during progress of construction. Number of visits shall be as required to perform the functions specified below.

1. The purpose of the review is to identify potential problems for performing total system balance. Identify modification which will affect total system balance. Schedule and coordinate total system balance with other work. Identify conditions that could create hazardous environment for building occupants.

2. Typical activities: check that necessary balancing and measuring hardware are located properly, are accessible and installed correctly. Identify and evaluate variations from system design. Record data from equipment nameplates. Identify and report possible restrictions in systems, such as closed fire dampers, long runs of flexible duct, poorly designed duct fittings, questionable piping connections and others. Verify that construction progress will not delay total system balance. Identify best location for duct pitot tube traverses. Identify scaffolding needs.

C. Leakage testing shall be in accordance with AABC National Standards:

1. Perform before closing of shafts, ceiling and other areas where ductwork will not be accessible.

2. Leakage testing shall be observed by Owner/Engineer representatives. Test report shall be submitted to Owner/Engineer for approval.

D. Refer to AABC National Standards, Latest Edition.

PART 2 - PRODUCTS

2.1 GENERAL

A. Products and materials shall be as described in pertinent Sections of DIVISION NO. 23.

2.2 PREPARATION

A. Prepare a TAB plan that includes strategies and step-by-step procedures.

B. Complete system readiness checks and prepare system readiness reports. Verify the following:

1. Permanent electrical power wiring is complete.

2. Automatic temperature-control systems are operational.

3. Equipment and duct access doors are securely closed.

4. Balance, smoke, and fire dampers are open.

5. Isolating and balancing valves are open and control valves are operational.

6. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.

7. Windows and doors can be closed so indicated conditions for system operations can be met.

8. Ensure that special equipment such as computers, laboratory equipment, and electronic equipment are in full operation.

2.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in ASHRAE 111 ,AABC's "National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems", NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems", SMACNA's TABB "HVAC Systems - Testing, Adjusting, and Balancing" and this Section.

1. Comply with requirements in the latest edition of ASHRAE 62.1, Section 7.2.2 - "Air Balancing."

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing, close probe holes and patch insulation with new materials identical to those removed. Restore vapor barrier and finish according to insulation Specifications for this Project.

C. Mark equipment and balancing device settings with paint or other suitable, permanent identification material, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, to show final settings.

D. Take and report testing and balancing measurements in [inch-pound (IP)] [metric (SI)] [inch-pound (IP) and metric (SI)] units.

2.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For variable-air-volume systems, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct airflow measurements.

E. Check airflow patterns from the outside-air louvers and dampers and the return- and exhaust-air dampers, through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling unit components.

L. Check for proper sealing of air duct system.

2.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure fan static pressures to determine actual static pressure as follows:

   a. Measure outlet static pressure as far downstream from the fan as practicable and upstream from restrictions in ducts such as elbows and transitions.

   b. Measure static pressure directly at the fan outlet or through the flexible connection.

   c. Measure inlet static pressure of single-inlet fans in the inlet duct as near the fan as possible, upstream from flexible connection and downstream from duct restrictions.

   d. Measure inlet static pressure of double-inlet fans through the wall of the plenum that houses the fan.

2. Measure static pressure across each component that makes up an air-handling unit, rooftop unit, and other air-handling and -treating equipment.

   a. Simulate dirty filter operation and record the point at which maintenance personnel must change filters.

3. Measure static pressures entering and leaving other devices such as sound traps, heat recovery equipment, and air washers, under final balanced conditions.

4. Compare design data with installed conditions to determine variations in design static pressures versus actual static pressures. Compare actual system effect factors with calculated system effect factors to identify where variations occur. Recommend corrective action to align design and actual conditions.

5. Obtain approval from Owner for adjustment of fan speed higher or lower than indicated speed. Make required adjustments to pulley sizes, motor sizes, and electrical connections to accommodate fan-speed changes.

6. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload will occur. Measure amperage in full cooling, full heating, economizer, and any other operating modes to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows within specified tolerances.

1. Measure static pressure at a point downstream from the balancing damper and adjust volume dampers until the proper static pressure is achieved.

   a. Where sufficient space in submain and branch ducts is unavailable for Pitot-tube traverse measurements, measure airflow at terminal outlets and inlets and calculate the total airflow for that zone.

2. Remeasure each submain and branch duct after all have been adjusted. Continue to adjust submain and branch ducts to indicated airflows within specified tolerances.

C. Measure terminal outlets and inlets without making adjustments.

1. Measure terminal outlets using a direct-reading hood or outlet manufacturer's written instructions and calculating factors.

D. Adjust terminal outlets and inlets for each space to indicated airflows within specified tolerances of indicated values. Make adjustments using volume dampers rather than extractors and the dampers at air terminals.

1. Adjust each outlet in same room or space to within plus or minus 5 percent of indicated quantities without generating noise levels above the limitations prescribed by the Contract Documents.

2. Adjust patterns of adjustable outlets for proper distribution without drafts.

2.6 PROCEDURES FOR VARIABLE-AIR-VOLUME SYSTEMS

A. Compensating for Diversity: When the total airflow of all terminal units is more than the indicated airflow of the fan, place a selected number of terminal units at a maximum set-point airflow condition until the total airflow of the terminal units equals the indicated airflow of the fan. Select the reduced airflow terminal units so they are distributed evenly among the branch ducts.

B. Pressure-Independent, Variable-Air-Volume Systems: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Set outside-air dampers at minimum, and return- and exhaust-air dampers at a position that simulates full-cooling load.

2. Select the terminal unit that is most critical to the supply-fan airflow and static pressure. Measure static pressure. Adjust system static pressure so the entering static pressure for the critical terminal unit is not less than the sum of terminal-unit manufacturer's recommended minimum inlet static pressure plus the static pressure needed to overcome terminal-unit discharge system losses.

3. Measure total system airflow. Adjust to within +10% of indicated airflow.

4. Set terminal units at maximum airflow and adjust controller or regulator to deliver the designed maximum airflow. Use terminal-unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units as described for constant-volume air systems.

5. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow as described for constant-volume air systems.

    a. If air outlets are out of balance at minimum airflow, report the condition but leave outlets balanced for maximum airflow.

6. Remeasure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.

7. Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure that adequate static pressure is maintained at the most critical unit.

8. Record the final fan performance data.

C. Pressure-Dependent, Variable-Air-Volume Systems without Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Balance systems similar to constant-volume air systems.
2. Set terminal units and supply fan at full-airflow condition.
3. Adjust inlet dampers of each terminal unit to indicated airflow and verify operation of the static-pressure controller. When total airflow is correct, balance the air outlets downstream from terminal units as described for constant-volume air systems.
4. Readjust fan airflow for final maximum readings.
5. Measure operating static pressure at the sensor that controls the supply fan, if one is installed, and verify operation of the static-pressure controller.
6. Set supply fan at minimum airflow if minimum airflow is indicated. Measure static pressure to verify that it is being maintained by the controller.
7. Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow as described for constant-volume air systems.
    a. If air outlets are out of balance at minimum airflow, report the condition but leave the outlets balanced for maximum airflow.
8. Measure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.

D. Pressure-Dependent, Variable-Air-Volume Systems with Diversity: After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:

1. Set system at maximum indicated airflow by setting the required number of terminal units at minimum airflow. Select the reduced airflow terminal units so they are distributed evenly among the branch ducts.
2. Adjust supply fan to maximum indicated airflow with the variable-airflow controller set at maximum airflow.
3. Set terminal units at full-airflow condition.
4. Adjust terminal units starting at the supply-fan end of the system and continuing progressively to the end of the system. Adjust inlet dampers of each terminal unit to indicated airflow. When total airflow is correct, balance the air outlets downstream from terminal units as described for constant-volume air systems.
5. Adjust terminal units for minimum airflow.
6. Measure static pressure at the sensor.
7. Measure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.

PART 3 - EXECUTION

3.1 AIR SYSTEM BALANCING

A. Check that filters are installed clean and free of bypass, and are the type as specified. Make allowance for air filter resistance at time of tests. At design air quantity, the pressure drop across filter banks should be midway between the drops for clean and dirty filters. Submit written report that above was done.

B. In cooperation with the automatic control manufacturer, set adjustments of automatically operated dampers and air terminal boxes to operate as indicated. In cooperation with the automatic control manufacturer and the terminal box manufacturer, verify factory setting of air terminal boxes. Make adjustments required to produce design conditions. Submit written verification that all items listed above have been completed.

C. Fan testing: test and adjust fans speed to design requirements and test and record motors full load amperes.

D. Duct testing: make pitot tube traverse of main supply ducts and obtain design air quantities (cfm) at fans. Adjust main supply, return, and exhaust air ducts to proper design cfm. Adjust each zone supply, return and exhaust to proper design cfm's. Test and adjust recirculated air systems for design cfm's. Test and adjust outside air systems for design cfm's. Test and record suction and discharge systems' static pressures.

E. Air outlet balancing: test and adjust each diffuser, grille and register to within 5 percent of design requirements. Identify each grille, diffuser and register as to location size, type and manufacturer and submit in recorded tabulation with floor plan. Readings and tests of diffusers, grilles and registers shall include required velocity (fpm), test resultant velocity, required cfm, test resultant cfm after adjustments; all in accordance with manufacturers' ratings. Adjust diffusers, throw pattern, grilles and registers to minimize drafts. When balancing return air slots in lights, start with all slots open, and close down dampers as required nearest to return/exhaust air intakes above ceiling.

F. Record in tabulated form balance data by clearly identifying floors, zones, rooms and air outlet/inlet locations to correspond to those in the Contract Documents.

G. Temperature conditions; read and record the following:

1. Outside climatic conditions at time of testing, including DB and WB temperatures and whether it is sunny, cloudy, windy, etc.
2. Entering DB heating and cooling temperature.
3. Entering WB cooling temperature.
4. Leaving DB heating and cooling temperature.
5. Leaving WB cooling temperature.
6. DB temperature and velocity in occupied zones.

H. Sound level readings: take sound level readings at one or more diffusers in each zone approximately 5 feet above the floor. The allowable room sound-pressure level shall fall within range of specified allowable sound power level in the area. See Section Noise Control for the requirements.

1. 33 to 37 db.

I. Belt drive changes: make all changes in belts and sheaves required to obtain proper air balance.

1. At no extra cost to Owner.

2. At end of project, submit an accounting of the costs of additional drives. Upon approval of Owner and/or Engineer, these costs form part of change order to contract. Base accounting is based upon replaced drive material list price times a factor of 2.5 (or other rate as determined by Owner and/or Engineer).

3.2 CONTROL COORDINATION

A. Cooperate with automatic control installer and equipment installer in making adjustments to following items as required to accomplish indicated performance, including terminal air boxes, air valves, fan inlet vanes and adjustable and controllable pitch fan blades.

END OF SECTION

SECTION 23 33 00

DUCT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Indoor, concealed supply and outdoor air.
   2. Indoor, exposed supply and outdoor air.
   3. Indoor, concealed return located in unconditioned space.
   4. Indoor, exposed return located in unconditioned space.
   5. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
   6. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
   7. Outdoor, concealed supply and return.
   8. Outdoor, exposed supply and return.

B. Related Sections include the following:
   1. Division 23 Section "HVAC Insulation”
   2. Division 23 Section "Air Duct Accessories".
   3. Division 23 Section "Metal Ducts and Casings" for duct liners.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

A. A. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.
   1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
   2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment".

B. Coordinate clearance requirements with piping Installer for piping insulation application, duct Installer for duct insulation application, and equipment Installer for equipment insulation application. Before preparing piping and ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Products shall not contain asbestos, lead, mercury, or mercury compounds.

B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Duct Liner: Refer to specification 233100 Metal Ducts and Casings, Section 2.3.

G. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    a. CertainTeed Corp.; Duct Wrap.
    b. Johns Manville; Microlite.
    c. Knauf Insulation; Duct Wrap.
    d. Manson Insulation Inc.; Alley Wrap.
    e. Owens Corning; All-Service Duct Wrap.

H. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied FSK jacket. For equipment applications, provide insulation with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide one of the following:
    a. CertainTeed Corp.; Commercial Board.
    b. Johns Manville; 800 Series Spin-Glas.
    c. Knauf Insulation; Insulation Board.
    d. Owens Corning; Fiberglas 700 Series.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    a. Childers Products, Division of ITW; CP-82.
    b. Foster Products Corporation, H. B. Fuller Company; 85-20.
    c. ITW TACC, Division of Illinois Tool Works; S-90/80.
    d. Marathon Industries, Inc.; 225.
    e. Mon-Eco Industries, Inc.; 22-25.

C. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    a. Childers Products, Division of ITW; CP-82.
    b. Foster Products Corporation, H. B. Fuller Company; 85-20.
    c. ITW TACC, Division of Illinois Tool Works; S-90/80.

d. Marathon Industries, Inc.; 225.
e. Mon-Eco Industries, Inc.; 22-25.

D. PVC Jacket Adhesive: Compatible with PVC jacket.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Dow Chemical Company (The); 739, Dow Silicone.
b. Johns-Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.
c. P.I.C. Plastics, Inc.; Welding Adhesive.
d. Red Devil, Inc.; Celulon Ultra Clear.
e. Speedline Corporation; Speedline Vinyl Adhesive.

2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Childers Products, Division of ITW; CP-35.
b. Foster Products Corporation, H. B. Fuller Company; 30-90.
c. ITW TACC, Division of Illinois Tool Works; CB-50.
d. Marathon Industries, Inc.; 590.
e. Mon-Eco Industries, Inc.; 55-40.
f. Vimasco Corporation; 749.
2. Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 59 percent by volume and 71 percent by weight.
5. Color: White.

2.4 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Childers Products, Division of ITW; CP-76-8.
b. Foster Products Corporation, H. B. Fuller Company; 95-44.
c. Marathon Industries, Inc.; 405.
d. Mon-Eco Industries, Inc.; 44-05.
e. Vimasco Corporation; 750.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.

B. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Childers Products, Division of ITW; CP-76.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.

2.5 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.

C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Johns Manville; Zeston.
   b. P.I.C. Plastics, Inc.; FG Series.
   c. Proto PVC Corporation; LoSmoke.
   d. Speedline Corporation; SmokeSafe.
   2. Adhesive: As recommended by jacket material manufacturer.
   3. Color: White.
   4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
      a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.
   5. Factory-fabricated tank heads and tank side panels.

2.6 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0835.
      b. Compac Corp.; 104 and 105.
      c. Ideal Tape Co., Inc., an American Biltrite Company; 428 AWF ASJ.
      d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.
   2. Width: 3 inches.
   3. Thickness: 11.5 mils.
   4. Adhesion: 90 ounces force/inch in width.
   5. Elongation: 2 percent.
   6. Tensile Strength: 40 lbf/inch in width.
   7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
      b. Compac Corp.; 110 and 111.
      c. Ideal Tape Co., Inc., an American Biltrite Company; 491 AWF FSK.
      d. Venture Tape; 1525 CW, 1528 CW, and 1528 CW/SQ.
   2. Width: 3 inches.
   3. Thickness: 6.5 mils.
   4. Adhesion: 90 ounces force/inch in width.
   5. Elongation: 2 percent.
   6. Tensile Strength: 40 lbf/inch in width.
   7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive. Suitable for indoor and outdoor applications.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0555.
      b. Compac Corp.; 130.

c. Ideal Tape Co., Inc., an American Biltrite Company; 370 White PVC tape.
d. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
   b. Compac Corp.; 120.
   c. Ideal Tape Co., Inc., an American Biltrite Company; 488 AWF.
   d. Venture Tape; 3520 CW.
2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.

1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL APPLICATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor-retarder mastic.
   1. Apply insulation continuously through hangers and around anchor attachments.
   2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
   3. Install insert materials and apply insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by the insulation material manufacturer.

J. Apply adhesives and mastics at the manufacturer's recommended coverage rate.

K. Apply insulation with integral jackets as follows:
   1. Pull jacket tight and smooth.
   2. Circumferential Joints: Cover with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip and spaced 4 inches o.c.
   3. Overlap jacket seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
   4. Vapor-Retarder Mastics: Where vapor retarders are indicated, apply mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

O. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
   1. Seal penetrations with vapor-retarder mastic.
   2. Apply insulation for exterior applications tightly joined to interior insulation ends.
   3. Extend metal jacket of exterior insulation outside roof flashing at least 2 inches below top of roof flashing.
   4. Seal metal jacket to roof flashing with vapor-retarder mastic.

P. Exterior Wall Penetrations: For penetrations of below-grade exterior walls, terminate insulation flush with mechanical sleeve seal. Seal terminations with vapor-retarder mastic.

Q. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and floors.

R. Fire-Rated Wall and Partition Penetrations: Apply insulation continuously through penetrations of fire-rated walls and partitions.
   1. Firestopping and fire-resistive joint sealers are specified in Division 7 Section "Firestopping."

S. Floor Penetrations: Apply insulation continuously through floor assembly.
   1. For insulation with vapor retarders, seal insulation with vapor-retarder mastic where floor supports penetrate vapor retarder.

3.4 MINERAL-FIBER INSULATION APPLICATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
   1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
   2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
   3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
d. Do not overcompress insulation during installation.
e. Impale insulation over pins and attach speed washers.
f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1-inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.
   a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
   b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.
5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

B. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.
1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
   a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
   b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
   c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
   d. Do not overcompress insulation during installation.
   e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1-inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-

barrier mastic, and sealant at joints, seams, and protrusions.

a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.

b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.

6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.5 FIELD-APPLIED JACKET APPLICATION

A. Where FSK jackets are indicated, install as follows:

1. Draw jacket material smooth and tight.
2. Install lap or joint strips with same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Install jacket with 1-1/2-inch laps at longitudinal seams and 3-inch-wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-barrier mastic.

B. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints; for horizontal applications, install with longitudinal seams along top and bottom of tanks and vessels. Seal with manufacturer's recommended adhesive

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

C. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.6 FINISHES

A. Insulation with ASJ or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
   a. Finish Coat Material: Interior, flat, latex-emulsion size.
2. Color: Final color as selected by University’s Representative. Vary first and second coats to allow visual inspection of the completed Work.
3. Do not field paint aluminum or stainless-steel jackets.

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect ductwork, randomly selected by University’s Representative, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct

Insulation Schedule, General" Article.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.8 DUCT INSUALTION SCHEDULE

A. Plenums and Ducts Requiring Insulation:
   1. Indoor, concealed supply and outdoor air.
   2. Indoor, exposed supply and outdoor air.
   3. Indoor, concealed return located in unconditioned space.
   4. Indoor, exposed return located in unconditioned space.
   5. Indoor, concealed exhaust between isolation damper and penetration of building exterior.
   6. Indoor, exposed exhaust between isolation damper and penetration of building exterior.
   7. Outdoor, concealed supply and return.
   8. Outdoor, exposed supply and return.

B. Items Not Insulated:
   1. Fibrous-glass ducts.
   2. Metal ducts with duct liner of sufficient thickness to comply with energy code and ASHRAE/IESNA 90.1.
   3. Factory-insulated flexible ducts.
   4. Factory-insulated plenums and casings.
   5. Flexible connectors.
   6. Vibration-control devices.
   7. Factory-insulated access panels and doors.

END OF SECTION

SECTION 23 07 19

HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Insulation Materials:
      a. Cellular glass.
      b. Flexible elastomeric.
   2. Adhesives.
   3. Mastics.
   4. Sealants.
   5. Factory-applied jackets.
   6. Field-applied jackets.
   7. Tapes.

B. Related Sections:
   1. Division 23 Section "Metal Ducts and Casings" for duct liners.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, thickness, and jackets (both factory and field applied, if any).

B. Qualification Data: For qualified Installer.

C. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.
   1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
   2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment".

B. Coordinate clearance requirements with piping Installer for piping insulation application, duct

Installer for duct insulation application, and equipment Installer for equipment insulation application. Before preparing piping and ductwork Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Duct Liner: Refer to specification 233100 Metal Ducts and Casings, Section 2.3.

G. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Cell-U-Foam Corporation; Ultra-CUF.
   b. Pittsburgh Corning Corporation; Foamglas Super K.
2. Block Insulation: ASTM C 552, Type I.
3. Special-Shaped Insulation: ASTM C 552, Type III.
4. Board Insulation: ASTM C 552, Type IV.
5. Preformed Pipe Insulation without Jacket: Comply with ASTM C 552, Type II, Class 1.
6. Preformed Pipe Insulation with Factory-Applied ASJ-SSL: Comply with ASTM C 552, Type II, Class 2.
7. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.

H. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Aeroflex USA Inc.; Aerocel.
   b. Armacell LLC; AP Armaflex.
   c. RBX Corporation; Insul-Sheet 1800 and Insul-Tube 180.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Aeroflex USA Inc.; Aeroseal.
      b. Armacell LCC; 520 Adhesive.
      c. Foster Products Corporation, H. B. Fuller Company; 85-75.
      d. RBX Corporation; Rubatex Contact Adhesive.

C. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Childers Products, Division of ITW; CP-82.
      b. Foster Products Corporation, H. B. Fuller Company; 85-20.
      c. ITW TACC, Division of Illinois Tool Works; S-90/80.
      d. Marathon Industries, Inc.; 225.
      e. Mon-Eco Industries, Inc.; 22-25.

D. PVC Jacket Adhesive: Compatible with PVC jacket.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Dow Chemical Company (The); 739, Dow Silicone.
      b. Johns-Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.
      c. P.I.C. Plastics, Inc.; Welding Adhesive.
      d. Red Devil, Inc.; Celulon Ultra Clear.
      e. Speedline Corporation; Speedline Vinyl Adhesive.

2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Childers Products, Division of ITW; CP-35.
      b. Foster Products Corporation, H. B. Fuller Company; 30-90.
      c. ITW TACC, Division of Illinois Tool Works; CB-50.
      d. Marathon Industries, Inc.; 590.
      e. Mon-Eco Industries, Inc.; 55-40.
      f. Vimasco Corporation; 749.
   2. Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm at 43-mil dry film thickness.
   3. Service Temperature Range: Minus 20 to plus 180 deg F.
   4. Solids Content: ASTM D 1644, 59 percent by volume and 71 percent by weight.
   5. Color: White.

2.4 SEALANTS

A. Joint Sealants:
   1. Joint Sealants for Cellular-Glass, Phenolic, and Polyisocyanurate Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Childers Products, Division of ITW; CP-76.
      b. Foster Products Corporation, H. B. Fuller Company; 30-45.
      c. Marathon Industries, Inc.; 405.

d. Mon-Eco Industries, Inc.; 44-05.
e. Pittsburgh Corning Corporation; Pittseal 444.
f. Vimasco Corporation; 750.

B. FSK and Metal Jacket Flashing Sealants:
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Childers Products, Division of ITW; CP-76-8.
b. Foster Products Corporation, H. B. Fuller Company; 95-44.
c. Marathon Industries, Inc.; 405.
d. Mon-Eco Industries, Inc.; 44-05.
e. Vimasco Corporation; 750.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.

C. ASJ Flashing Sealants, and Vinyl, PVDC, and PVC Jacket Flashing Sealants:
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Childers Products, Division of ITW; CP-76.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.

2.5 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:
1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.
4. FSP Jacket: Aluminum-foil, fiberglass-reinforced scrim with polyethylene backing; complying with ASTM C 1136, Type II.
5. Vinyl Jacket: White vinyl with a permeance of 1.3 perms when tested according to ASTM E 96, Procedure A, and complying with NFPA 90A and NFPA 90B.

2.6 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.

C. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Johns Manville; Zeston.
b. P.I.C. Plastics, Inc.; FG Series.
c. Proto PVC Corporation; LoSmoke.
d. Speedline Corporation; SmokeSafe.
2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White.
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

5. Factory-fabricated tank heads and tank side panels.

D. Metal Jacket:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Childers Products, Division of ITW; Metal Jacketing Systems.
   b. PABCO Metals Corporation; Surefit.
   c. RPR Products, Inc.; Insul-Mate.
2. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105 or 5005, Temper H-14.
   a. Sheet and roll stock ready for shop or field sizing.
   b. Finish and thickness are indicated in field-applied jacket schedules.
   c. Moisture Barrier for Indoor Applications: 1-mil- thick, heat-bonded polyethylene and kraft paper.
   d. Moisture Barrier for Outdoor Applications: 3-mil- thick, heat-bonded polyethylene and kraft paper.
   e. Factory-Fabricated Fitting Covers:
      1) Same material, finish, and thickness as jacket.
      2) Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
      3) Tee covers.
      4) Flange and union covers.
      5) End caps.
      6) Beveled collars.
      7) Valve covers.
      8) Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

E. Self-Adhesive Outdoor Jacket: 60-mil- thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting of a rubberized bituminous resin on a crosslaminated polyethylene film covered with white stucco-embossed aluminum-foil facing.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Polyguard; Alumaguard 60.

F. PVDC Jacket for Indoor Applications: 4-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.02 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 20 when tested according to ASTM E 84.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dow Chemical Company (The), Saran 540 Vapor Retarder Film.

2.7 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0835.
   b. Compac Corp.; 104 and 105.
   c. Ideal Tape Co., Inc., an American Biltrite Company; 428 AWF ASJ.
   d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.
2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.

5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
b. Compac Corp.; 110 and 111.
c. Ideal Tape Co., Inc., an American Biltrite Company; 491 AWF FSK.
d. Venture Tape; 1525 CW, 1528 CW, and 1528 CW/SQ.
2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive. Suitable for indoor and outdoor applications.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0555.
b. Compac Corp.; 130.
c. Ideal Tape Co., Inc., an American Biltrite Company; 370 White PVC tape.
d. Venture Tape; 1506 CW NS.
2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

D. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0800.
b. Compac Corp.; 120.
c. Ideal Tape Co., Inc., an American Biltrite Company; 488 AWF.
d. Venture Tape; 3520 CW.
2. Width: 2 inches.
3. Thickness: 3.7 mils.
4. Adhesion: 100 ounces force/inch in width.
5. Elongation: 5 percent.
6. Tensile Strength: 34 lbf/inch in width.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL APPLICATION REQUIREMENTS

A. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.

B. Refer to schedules at the end of this Section for materials, forms, jackets, and thicknesses required for each piping system.

C. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Apply insulation with longitudinal seams at top and bottom of horizontal pipe runs.

E. Apply multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.

H. Keep insulation materials dry during application and finishing.

I. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.

J. Apply insulation with the least number of joints practical.

K. Apply insulation over fittings, valves, and specialties, with continuous thermal and vapor-retarder integrity, unless otherwise indicated. Refer to special instructions for applying insulation over fittings, valves, and specialties.

L. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor-retarder mastic.
   1. Apply insulation continuously through hangers and around anchor attachments.
   2. For insulation application where vapor retarders are indicated, extend insulation on anchor legs at least 12 inches from point of attachment to pipe and taper insulation ends. Seal tapered ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.
   3. Install insert materials and apply insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by the insulation material manufacturer.
   4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect the jacket from tear or puncture by the hanger, support, and shield.

M. Insulation Terminations: For insulation application where vapor retarders are indicated, taper insulation ends. Seal tapered ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.

N. Apply adhesives and mastics at the manufacturer's recommended coverage rate.

O. Apply insulation with integral jackets as follows:
   1. Pull jacket tight and smooth.
   2. Circumferential Joints: Cover with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip and

spaced 4 inches o.c.

3. Longitudinal Seams: Overlap jacket seams at least 1-1/2 inches. Apply insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.
   a. Exception: Do not staple longitudinal laps on insulation having a vapor retarder.
4. Vapor-Retarder Mastics: Where vapor retarders are indicated, apply mastic on seams and joints and at ends adjacent to flanges, unions, valves, and fittings.
5. At penetrations in jackets for thermometers and pressure gages, fill and seal voids with vapor-retarder mastic.

P. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
   1. Seal penetrations with vapor-retarder mastic.
   2. Apply insulation for exterior applications tightly joined to interior insulation ends.
   3. Extend metal jacket of exterior insulation outside roof flashing at least 2 inches below top of roof flashing.
   4. Seal metal jacket to roof flashing with vapor-retarder mastic.

Q. Exterior Wall Penetrations: For penetrations of below-grade exterior walls, terminate insulation flush with mechanical sleeve seal. Seal terminations with vapor-retarder mastic.

R. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and floors.

S. Fire-Rated Wall and Partition Penetrations: Apply insulation continuously through penetrations of fire-rated walls and partitions.
   1. Firestopping and fire-resistive joint sealers are specified in Division 7 Section "Firestopping."

T. Floor Penetrations: Apply insulation continuously through floor assembly.
   1. For insulation with vapor retarders, seal insulation with vapor-retarder mastic where floor supports penetrate vapor retarder.

3.4 CELLULAR-GLASS INSULATION APPLICATION

A. Apply insulation to straight pipes and tubes as follows:
   1. Secure each layer of insulation to pipe with wire, tape, or bands without deforming insulation materials.
   2. Where vapor retarders are indicated, seal longitudinal seams and end joints with vapor-retarder mastic.
   3. For insulation with factory-applied jackets, secure laps with outward clinched staples at 6 inches o.c.
   4. For insulation with factory-applied jackets with vapor retarders, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by the insulation material manufacturer and seal with vapor-retarder mastic.

B. Apply insulation to flanges as follows:
   1. Apply preformed pipe insulation to outer diameter of pipe flange.
   2. Make width of insulation segment the same as overall width of the flange and bolts, plus twice the thickness of the pipe insulation.
   3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of cellular-glass block insulation of the same thickness as pipe insulation.
   4. Apply canvas jacket material with manufacturer's recommended adhesive, overlapping seams at least 1 inch, and seal joints with vapor-retarder mastic.

C. Apply insulation to fittings and elbows as follows:
   1. Apply premolded insulation sections of the same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
   2. When premolded sections of insulation are not available, apply mitered sections of cellular-glass insulation. Secure insulation materials with wire, tape, or bands.

3. Cover fittings with heavy PVC fitting covers. Overlap PVC covers on pipe insulation jackets at least 1 inch at each end. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.

D. Apply insulation to valves and specialties as follows:
1. Apply premolded segments of cellular-glass insulation or glass-fiber blanket insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. For check valves, arrange insulation for access to strainer basket without disturbing insulation.
2. Apply insulation to flanges as specified for flange insulation application.
3. Use preformed standard PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
4. Use preformed heavy PVC fitting covers for valve sizes where available. Secure fitting covers with manufacturer's attachments and accessories. Seal seams with tape and vapor-retarder mastic.
5. For larger sizes where PVC fitting covers are not available, seal insulation with canvas jacket and sealing compound recommended by the insulation material manufacturer.

3.5 FLEXIBLE ELASTOMERIC INSULATION APPLICATION

A. Apply insulation to straight pipes and tubes as follows:
1. Secure each layer of insulation to pipe with wire, tape, or bands without deforming insulation materials.
2. Where vapor retarders are indicated, seal longitudinal seams and end joints with vapor-retarder mastic.
3. For insulation with factory-applied jackets, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets with vapor retarders, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by the insulation material manufacturer and seal with vapor-retarder mastic.

B. Apply insulation to fittings and elbows as follows:
1. Install mitered sections of pipe insulation.
2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.6 FIELD-APPLIED JACKET APPLICATION

A. Apply glass-cloth jacket, where indicated, directly over bare insulation or insulation with factory-applied jackets.
1. Apply jacket smooth and tight to surface with 2-inch overlap at seams and joints.
2. Embed glass cloth between two 0.062-inch- thick coats of jacket manufacturer's recommended adhesive.
3. Completely encapsulate insulation with jacket, leaving no exposed raw insulation.

B. Foil and Paper Jackets: Apply foil and paper jackets where indicated.
1. Draw jacket material smooth and tight.
2. Apply lap or joint strips with the same material as jacket.
3. Secure jacket to insulation with manufacturer's recommended adhesive.
4. Apply jackets with 1-1/2-inch laps at longitudinal seams and 3-inch- wide joint strips at end joints.
5. Seal openings, punctures, and breaks in vapor-retarder jackets and exposed insulation with vapor-retarder mastic.

C. Apply PVC jacket where indicated, with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

D. Apply metal jacket where indicated, with 2-inch overlap at longitudinal seams and end joints.

Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

3.7 FINISHES

A. Jacketed Insulation: Paint insulation finished as specified in Division 9 Section "Painting."

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of the insulation manufacturer's recommended protective coating.

C. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

3.8 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:
   1. Inspect pipe, fittings, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of fittings for each pipe service.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements:

END OF SECTION

SECTION 23 09 00

INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 GENERAL DESCRIPTION

A. The Building Automation System shall be as indicated on the drawings and described in these specifications. System must be fully integrated and coordinated with mechanical equipment DDC controllers furnished and installed in the equipment manufacturer's factory as specified in those sections. The intent of the BAS is to integrate all mechanical equipment into one system for global monitoring, control, and alarming associated with the building. It is the BAS manufacturer's responsibility to provide all the design, engineering, and field coordination required to ensure all equipment sequence of operations are met as specified and the designated BAS operators have the capability of managing the building mechanical system to ensure occupant comfort while maintaining energy efficiency.

B. The BAS shall meet open standard protocol communication standards (As defined in System Communications Section) to ensure the system maintains "interoperability" to avoid proprietary arrangements that will make it difficult for the Owner to consider other BAS manufacturers in future projects.

C. Direct Digital Control (DDC) technology shall be used to provide the functions necessary for control of mechanical systems and terminal devices on this project.

D. Approved vendors, products and web services shall comply with SOC2 Type I as defined by the AICPA. SOC2 Type 1 compliance is a certification that confirms that a service provider has established and implemented effective controls to secure their clients' data in accordance with the Trust Services Criteria (TSC).

1. SOC2 Type 1 compliance provides assurance to customers that the service provider has established and implemented effective security controls and is committed to protecting their data.
2. To achieve SOC2 Type 1 compliance, the manufacturer shall have completed an independent audit to assess design and implementation of their controls, policies, and procedures.

E. The BAS shall accommodate simultaneous multiple user operation. Access to the control system data should be limited only by the security permissions of the operator role. Multiple users shall have access to all valid system data. An operator shall be able to log onto any workstation on the control system and have access to all appropriate data.

1.3 MANUFACTURERS

A. Trane Tracer®– Basis of Design.

1.4 QUALITY ASSURANCE

A. BAS Manufacturer Qualifications

1. The BAS manufacturer shall have an established business office within 50.00 miles of the project site and must provide 24 hours/day, 7 days/week response in the event of a customer warranty or service call.
2. The BAS Manufacturer shall have factory trained and certified personnel providing all engineering, service, startup, and commissioning field labor for the project from their local office location. BAS manufacturer shall be able to provide training certifications for all local office personnel upon request.
3. The BAS shall be provided by a single manufacturer and this manufacturer's equipment

must consist of operator workstation software, Web-based hardware/software, Open Standard Protocol hardware/software, Custom application Programming Language, Graphical Programming Language, Building Controllers, Custom Application Controllers, and Application Specific Controllers. All other products specified herein (i.e., sensors, valves, dampers, actuators, etc.) need not be manufactured by the BAS manufacturer listed in this specification.

4. Independent representatives of BAS manufacturers are not acceptable. BAS vendor must be corporate owned entity of BAS manufacturer.

1.5 CODES AND STANDARDS

A. Codes and Standards: Meet requirements of all applicable standards and codes, except when more detailed or stringent requirements are indicated by the Contract Documents, including requirements of this Section.
   1. Underwriters Laboratories: Products shall be UL-916-PAZX listed.
   2. National Electrical Code -- NFPA 70.
   3. Federal Communications Commission -- Part J.
   4. ASHRAE/ANSI 135-2012 (BACnet) - (System Level Devices) - Building Controllers shall conform to the listed version of the BACnet specification in order to improve interoperability with various building system manufacturers' control systems and devices.
   5. ASHRAE/ANSI 135-2012 (BACnet) - (Unit Level Devices) - Unit Controllers shall conform to the listed version of the BACnet specification in order to improve interoperability with various building system manufacturers' control systems and devices.

1.6 SYSTEM PERFORMANCE

A. Performance Standards. The BAS system shall conform to the following:
   1. Graphic Display. The system shall display a graphic with a minimum of 20 dynamic points. All current data shall be displayed within 10 seconds of the operator's request.
   2. Graphic Refresh. The system shall update all dynamic points with current data within 10 seconds.
   3. Object Command. The maximum time between the command of a binary object by the operator and the reaction by the device shall be 5 seconds. Analog objects shall start to adjust within 5 seconds.
   4. Object Scan. All changes of state and change of analog values shall be transmitted over the high-speed network such that any data used or displayed at a controller or workstation will be current within the prior 10 seconds.
   5. Alarm Response Time. The maximum time from when an object goes into alarm to when it is annunciated at the workstation shall not exceed 10 seconds.
   6. Program Execution Frequency. Custom and standard applications shall be capable of running as often as once every 5 seconds. The Contractor shall be responsible for selecting execution times consistent with the mechanical process under control.
   7. Programmable Controllers shall be able to execute DDC PID control loops at a selectable frequency from at least once every 5 seconds. The controller shall scan and update the process value and output generated by this calculation at this same frequency.
   8. Multiple Alarm Annunciations. All workstations on the network shall receive alarms within 5 seconds of each other.

1.7 SUBMITTALS

A. BAS manufacturer shall provide shop drawings and manufacturers' standard specification data sheets on all hardware and software being provided for this project. No work may begin on any segment of this project until the Engineer and Owner have reviewed submittals for conformity with the plan and specifications.
   1. Provide electronic submittal package in PDF format for review and approval. Dielectric fittings.

B. Quantities of items submitted shall be reviewed by the Engineer and Owner. Such review shall not relieve the BAS manufacturer of furnishing quantities required based upon contract

documents.

C. Provide the Engineer and Owner, any additional information or data which is deemed necessary to determine compliance with the specifications or which is deemed valuable in documenting and understanding the system to be installed.

D. All shop drawings shall be provided to the Owner electronically as .dwg or .dxf file formats once they have been approved and as-built drawings have been completed.

E. Submit the following within 90 days of contract award:
   1. A complete bill of materials of equipment to be used indicating quantities, manufacturers and model numbers.
   2. A schedule of all control valves including the valve size, pressure drop, model number (including pattern and connections), flow, CV, body pressure rating, and location.
   3. A schedule of all control dampers including damper size, pressure drop, manufacturer, and model number.
   4. Provide all manufacturers' technical cut sheets for major system components. When technical cut sheets apply to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Include:
      a. Building Controllers
      b. Custom Application Controllers
      c. Application Specific Controllers

d. Auxiliary Control Devices
   5. Provide proposed Building Automation System architectural diagram depicting various controller types, workstations, device locations, addresses, and communication cable requirements
   6. Provide detailed termination drawings showing all required field and factory terminations, as well as terminal tie-ins to DDC controls provided by mechanical equipment manufacturers. Terminal numbers shall be clearly labeled.
   7. Provide a sequence of operation for each controlled mechanical system and terminal end devices.
   8. Provide a BACnet Protocol Implementation Conformance Statement (PICS) for each BACnet system level device (i.e. Building Controller & Operator Workstations) type. This defines the points list for proper coordination of interoperability with other building systems if applicable for this project.

F. Project Record Documents: Upon completion of installation, submit three (3) copies of record (as-built) documents. The documents shall be submitted for approval prior to final completion and include:
   1. Project Record Drawings - These shall be as-built versions of the submittal shop drawings. One set of electronic media including CAD .dwg and .pdf drawing files shall be provided.
   2. Testing and Commissioning Reports and Checklists signed off by trained factory (equipment manufacturers) and field (BAS) commissioning personnel.
   3. Operating and Maintenance (O & M) Manuals - These shall be as-built versions of the submittal product data. In addition to the information required for the submittals, Operating & Maintenance manual shall include:
      a. Procedures for operating the BAS including logging on/off, alarm management, generation of reports, trends, overrides of computer control, modification of setpoints, and other interactive system requirements.
      b. Explanation of how to design and install new points, new DDC controllers, and other BAS hardware.
      c. Documentation, installation, and maintenance information for all third party hardware/software products provided including personal computers, printers, hubs, sensors, valves, etc.
      d. Original issue media for all software provided, including operating systems, programming language, operator workstation software, and graphics software.
      e. Licenses, Guarantee, and Warranty documents for all equipment and systems.

G. Training Manuals: The BAS manufacturer shall provide a course outline and copies of training

manuals at least two weeks prior to the start of any corporate training class to be attended by the Owner.

1.8 WARRANTY REQUIREMENTS

A. BAS system labor and materials shall be warranted free from defects for a period of twelve (12) months after final completion acceptance by the Owner. BAS failures during the warranty period shall be adjusted, repaired, or replaced at no charge to the Owner. The BAS manufacturer shall respond to the Owner's request for warranty service within 24 hours of the initiated call and will occur during normal business hours (8AM-5PM).

B. At the end of the final start-up/testing, if equipment and systems are operating satisfactorily to the Owner and Engineer, the Owner shall sign certificates certifying that the BAS is operational, and has been tested and accepted in accordance with the terms of this specification. The date of Owner's acceptance shall be the start of the warranty period.

C. To ensure that the owner will have the most current operating system provided by the manufacturer, the BAS manufacturer shall include licensing and labor costs to facilitate software/firmware updates throughout the warranty period at no charge to the owner. These updates shall include upgrades for functional enhancements associated with the following: operator workstation software, project specific software, graphics, database, firmware updates, and all security related service packs. Written authorization by the Owner must be granted prior to the installation of these updates.

D. The BAS manufacturer shall provide a web-accessible Users Network for the proposed System and give the Owner free access to question/answer forum, user tips, upgrades, and training schedules for a one year period of time correlating with the warranty period.

1.9 OWNERSHIP OF PROPRIETARY MATERIAL

A. Project specific software and documentation shall become the owner’s property upon project completion.

1.10 OWNERSHIP OF PROPRIETARY MATERIAL

A. DDC: Direct digital control

B. I/O: Input/output.

C. MS/TP: Manager Subordinate / Token Passing.

D. POT: Portable Operator’s Terminal.

E. PID: Proportional plus integral plus derivative.

F. RTD: Resistance temperature detector.

G. BAS/ATC: Building Automation System/Automatic Temperature Controls.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Use new products that the manufacturer is currently manufacturing and that have been installed in a minimum of 25 installations. Do not use this installation as a product test site unless explicitly approved in writing by the owner or the owner’s representative. Spare parts shall be available for at least five years after completion of this contract.

2.2 SYSTEM COMMUNICATION

A. System Communications

1. Each workstation, building controller, and equipment controller communication interface shall utilize the BACnet™ protocol with an Ethernet (IEEE 802.3), Wi-Fi (IEEE 802.11), RS485 (EIA-485), or Zigbee® (802.15.4) physical interface and an appropriate data link

technology as defined in ANSI®/ASHRAE® Standard 135-2012. (e.g. BACnet over IP, BACnet over IPv6, BACnet SC, BACnet over MS/TP, BACnet Zigbee).

2. All system controllers shall be BTL listed as a BACnet Building Controller (B-BC) as defined in ANSI®/ASHRAE® Standard 135-2012.
3. All documented status and control points, schedule, alarm, and data-log services or objects shall be available as standard object types as defined in ANSI®/ASHRAE® Standard 135-2012.
4. Each System Controller shall communicate with a network of Custom Application and Application Specific Controllers utilizing one or more of the interfaces documented within Field Bus Communications below.
5. All Operator Workstations (B-OWS, B-AWS) and Building Controllers (B-BC) shall support BACnet Secure Connect (BACnet SC), a secure and encrypted datalink layer specifically designed for those networks.

B. Field Bus Communications
   1. BACnet™
      a. All equipment and plant controllers shall be BTL listed as a BACnet Application Specific Controller (B-ASC) or a BACnet Advanced Application Controller (B-AAC) as defined in ANSI®/ASHRAE® Standard 135-2012.
      b. All communication shall conform to ANSI®/ASHRAE® Standard 135-2012.
      c. System Controller shall function as a BACnet router to each unit controller providing a globally unique BACnet Device ID for all BACnet controllers within the system.
      d. BACnet Zigbee®
         i. Communication between System Controller and equipment/plant controllers shall utilize BACnet Zigbee as defined in ANSI®/ASHRAE® Standard 135-2012.
         ii. Each equipment controller wireless communication interface shall self-heal to maintain operation in the event of network communication failure.
         iii. Each zone sensor wireless communication interface shall be capable of many-to-one sensors per controller to support averaging, monitoring, and multiple zone applications. Sensing options shall include temperature, relative humidity, CO2, and occupancy.
      e. BACnet MS/TP
         i. Communication between System Controller and equipment/plant controllers shall utilize BACnet MS/TP as defined in ANSI®/ASHRAE® Standard 135-2012.

C. Variable Refrigerant Flow (VRF) Communications
   1. The VRF system shall communicate with the BAS using one of the following communications methods.
      a. The VRF system and the BAS shall utilize ANSI®/ASHRAE® Standard 135 (BACnet) protocol revision 12 or greater.
      b. Recognizing that VRF manufacturers utilize proprietary protocols to pass information between VRF equipment components. A gateway device is an accepted method to convert proprietary data to BACnet data. BACnet data shall conform to BACnet protocol revision 12 or greater.
      c. When a device is capable of data exchange with the BACnet protocol across non-IP network segments, the BACnet protocol shall be used to exchange data. If a device does not support the BACnet protocol an alternative protocol may be used. Data exchanged using the alternative protocol shall be converted to the BACnet protocol to allow integration to the BAS.
   2. To promote BAS interoperability, each instance of the following VRF system components shall be visible to the BAS network as a virtual BACnet device.
      a. Indoor equipment
      b. Outdoor equipment
      c. Refrigerant manifold devices
      d. Outdoor air ventilation systems
   3. Virtual BACnet device functionality shall conform to BACnet protocol revision 12 or greater and meet the minimum functionality defined by BACnet device profile B-ASC.

2.3 BUILDING CONTROLLER - OPERATOR INTERFACE

A. Provide Building Controller Web Interface

1. Manufacturer shall provide a user interface with time-of-day schedules, data collection, dashboards, reports and building summary, system applications, and self-expiring timed overrides. Manufacturer shall provide a published user and applications guide(s) that detail the system application operation, configuration, setup and troubleshooting.
2. The building controller web interface shall be accessible via a web browser without requiring any “plug-ins” (i.e. JAVA Runtime Environment (JRE), Adobe Flash).
3. User Roles
    a. The system shall include pre-defined “roles” that allow a system administrator to quickly assign permissions to a user.
    b. User logon/logoff attempts shall be recorded.

c. The system shall protect itself from unauthorized use by automatically logging off following the last keystroke. The delay time shall be user definable.

4. On-Line Help and Training

a. Provide a context sensitive, on line help system to assist the operator in operation and configuration of the system.

b. On-line help shall be available for all system functions and shall provide the relevant data for each particular screen.

5. Equipment & Application Pages
    a. The building controller web interface shall include standard pages for all equipment and applications. These pages shall allow an operator to obtain information relevant to the operation of the equipment and/or application, including:
        i. Alarms relevant to the equipment or application without requiring a user to navigate to an alarm page and perform a filter.
        ii. Historical Data (As defined in Trend Logs section of CONTROLLER SOFTWARE) for the equipment or application without requiring a user to navigate to a Data Log page and perform a filter.

6. Building Controller System Graphics.

a. The building operator web interface shall be graphically based and shall include at least one graphic per piece of equipment or occupied zone, graphics for each chilled water and hot water system, and graphics that summarize conditions on each floor of each building included in this contract. Indicate thermal comfort on floor plan summary graphics using colors to represent zone temperature relative to zone set point.

b. Graphic imagery – graphics shall use 3D images for all standard and custom graphics. The only allowable exceptions will be photo images, maps, schematic drawings, and selected floor plans.

c. Animation. Graphics shall be able to animate by displaying different Image lies for changed object status.

d. Alarm Indication. Indicate areas or equipment in an alarm condition using color or other visual indicator.

7. Graphics Library. Furnish a library of standard HVAC equipment such as chillers, air handlers, terminals, fan coils, unit ventilators, rooftop units, and VAV boxes, in 3-dimensional graphic depictions. The library shall be furnished in a file format compatible with the graphics generation package program.

8. Manual Control and Override
    a. Point Control. Provide a method for a user to view, override, and edit if applicable, the status of any object and property in the system. The point status shall be available by menu, on graphics or through custom programs.
    b. Temporary Overrides. The user shall be able to perform a temporary override wherever an override is allowed, automatically removing the override after a specified period of time.
    c. Override Owners. The system shall convey to the user the owner of each override for all priorities that an override exists.
    d. Provide a specific icon to show timed override or operator override, when a point, unit controller or application has been overridden manually.

9. Scheduling. - The scheduling application shall provide graphical representation of the day, week,

month and exception events.

10. Alarm/Event Notification

a. Alarm/Event Log. The operator shall be able to view all logged system alarms/events from any building operator web interface.

i. The operator shall be able to sort and filter alarms from events. Alarms shall be sorted in a minimum of 4 categories based on severity.

ii. The operator shall be able to acknowledge and add comments to alarms.

iii. Alarm/event messages shall use full language, easily recognized descriptors.

b. Alarm Suppression. Alarms shall be able to be suppressed based on load/source relationships to present the likely root cause to the building operator as described in ASHRAE Guideline 36. Load/Source relationships shall be configurable by the user through a web interface.

11. Reports and Logs

a. The building operator web interface shall provide a reporting package that allows the operator to select reports.

b. The building operator web interface shall provide the ability to schedule reports to run at specified intervals of time.

c. The following standard reports shall be available without requiring a user to manually configure the report:

i. All Points in Alarm Report: Provide an on demand report showing all current alarms.

ii. All Points in Override Report: Provide an on demand report showing all overrides in effect.

iii. Commissioning Report: Provide a one-time report that lists all equipment with the unit configuration and present operation.

iv. Points report: Provide a report that lists the current value of all points.

d. The controls vendor shall provide a hardening report that summarizes the port configuration details to ensure sites have not been exposed to the Internet in alignment with Cyber Security best practices.

B. Provide Mobile App Interface

1. Provide mobile (smart phone or tablet) interfaces to the building automation system, compatible with iOS and Android™ operating systems.

2. Controls manufacturer shall provide a phone/tablet interface with the ability to view/override status & setpoints, view/change schedules, view/acknowledge/comment on alarms, and view graphics for all spaces and equipment.

3. This phone/tablet interface shall resize itself appropriately for the size of the interface (i.e. no "pinching & zooming" required).

4. This phone/tablet interface shall function remotely from the facility while following IT security best-practices (e.g. no ports exposed to the internet).

5. The operator interface shall support system access on a mobile device via a mobile app.

2.4 BUILDING CONTROLLER SOFTWARE

A. Manufacturer shall provide standard applications to deliver HVAC system control. Standard applications include Time of Day Scheduling with Optimal Start/Stop, VAV Air Systems Control, Chiller Plant Control, Historical Trend Logs and Trim and Respond. Manufacturer shall provide system optimization strategies for functions such as fan pressure optimization and ventilation optimization.

B. Furnish the following applications software for building and energy management. All software applications shall reside and run in the system controllers. Editing of applications shall occur at the building operator interface.

1. Trend Logs

a. The system shall harvest trend logs for defined key measurements for each controlled HVAC device and HVAC application. Trend logs shall be captured for a minimum of 5 key operating points for each piece of HVAC equipment and HVAC application and stored for no less than 1 year at 15-minute intervals. Data Logs shall

be capable of being configured on an interval or change of value basis.

2.5 BUILDING / SYSTEM CONTROLLERS

A. There shall be one or more independent, standalone microprocessor based System Controllers to manage the global strategies described in CONTROLLER SOFTWARE section.

1. The controller shall provide a USB communications port for connection to a PC.
2. The operating system of the Controller shall manage the input and output communications signals to allow distributed controllers to share real and virtual point information and allow central monitoring and alarms.
3. All System Controllers shall have a real time clock and shall be able to accept a BACnet time synchronization command for automatic time synchronization.
4. Data shall be shared between networked System Controllers.
5. Serviceability – The System Controller shall have a display on the main board that indicates the current operating mode of the controller.

B. Controls manufacturer shall provide secure remote access to the Building Automation System (BAS). Secure remote access shall not require IP ports to be "exposed" (i.e. port-forwarded or external public IP addresses) to the Internet. Controls manufacturer shall update secure remote access software as necessary to follow cyber security best practices and respond to cyber security events.

2.6 ADVANCED APPLICATION CONTROLLERS

A. Advance Application Controllers shall be used to control all equipment or applications of medium and high complexity.

B. The Advanced Application Controller shall be capable of operating as a stand-alone controller or as a member of a Building Automation System (BAS).

C. When the Advanced Application Controller is operating as a member of a Building Automation System (BAS), the application controller shall operate as follows:

1. Application Controller will receive operation mode commands from the BAS network controller. The BAS commands shall include but not be limited to the follow: Occupied Heat/Cool, Unoccupied Heat/Cool, Morning Warm-up, / Pre-cool, Occupied Bypass).
2. Application Controller will provide equipment status parameters to the BAS through BACnet communication.
3. Application Controller will operate as a stand-alone controller in the event of communication failure with the BAS.
4. In case of communications failure, stand-alone operation shall use default values or last known values for remote sensors read over the network such as outdoor air temperature.

D. For Stand-Alone Operation of Advanced Application Controllers:

1. Shall operate a schedule in a standalone application using a Real Time Clock with a 7 day power backup.
   a. The Controller shall have a built in schedule (assessable with or without a display)
   b. Support will be for at least 3 schedules with up to 10 events for each day of the week.
   c. Each of the 3 schedules can be Analog, Binary or Multi-State
   d. The controller shall support a minimum of 25 exceptions each with up to 10 events.

E. For ease of troubleshooting, the Controller shall support data trend logging.

1. Trends shall be capable of being collected at a minimum sample rate of once every second
2. Shall be capable of trending all BACnet points used by controller
3. Trends shall be capable of being scheduled or triggered.
4. With a minimum of 20,000 trending points total on a controller

F. To meet the sequence of operation for each application, the Controller shall use library programs provided by the controller manufacturer that are either factory loaded or downloaded with service tool to the controller.

G. Environment. Controller hardware shall be suitable for the anticipated ambient conditions.

1. Operating conditions:

a. Temperature: -40°F to 158°F.
b. Relative Humidity: Between 5% to 100% RH (non-condensing).

2. Controllers used indoors shall be mounted in a NEMA 1 enclosure at a minimum.
3. Controllers used outdoors and/or in wet ambient shall be mounted within NEMA 4 type waterproof enclosures, and shall be rated for operation at -40° F to 158° F.

H. Input/Output: The Controller shall have on board or through expansion module all I/O capable of performing all functionality needed for the application. Controls provided by the equipment manufacture must supply the required I/O for the equipment. In addition other controls must meet the following requirements:

1. Shall support flexibility in valve type, the controllers shall be capable of supporting the following valve control types: 0-10VDC, 0-5VDC, 4-20mA, 24VAC - 2 position.
2. Shall support flexibility in sensor type, the Controller shall be capable of reading sensor input ranges of 0 to10V, 0 to 20mA, 50ms or longer pulses, 200 to 20Kohm and RTD input.
3. Shall support flexibility in sensor type, all Analog Outputs shall have the additional capability of being programmed to operate as Universal Inputs or Pulse Width Modulation Outputs.
4. Shall support flexibility in sensor type, the Controller and/or expansion modules shall support dry and wetted (24VAC) binary inputs.
5. The controller shall support pulse accumulator for connecting devices like energy meters.
6. In order to support a wide range of devices, the Controller's binary output shall be able to drive at least 10VA each.
7. Any unused I/O that is not needed for the functionality of the equipment shall be available to be used by custom programs on the Controller and by any other controller on the network.
8. The Controller shall provide 24VAC and 24VDC power terminals sensors and other devices required.
9. The Controller shall provide a dedicated static pressure input.

I. Input/Output Expandability – The Controller shall provide the following functionality in order to meet current and future application needs:

1. For the application flexibility, the Controller shall be capable of expanding to a total of at least 100 hardware I/O terminations.
2. Expansion I/O can be mounted up to 650 ft. (200m) from control.
3. To keep BACnet MS/TP network traffic to a minimum, expansion I/O must communicate via an internal controller communication bus (point expansion via the BACnet MS/TP network is not allowed).

J. Serviceability – The Controller shall provide the following in order to improve serviceability of the Controller.

1. Diagnostic LEDs for power/normal operation/status, BACnet communications, sensor bus communications, and binary outputs. All wiring connections shall be clearly labeled and made to be field removable.
2. Binary and analog inputs and outputs shall use removable connectors or be connected to terminal strip external to the control box.
3. Software service tool connection through the following methods: direct cable connection to the Controller, connection through another controller on BACnet link.
4. For safety purposes, the controller shall be capable of being powered by a portable computer's USB port for the purposes of configuration, programming and testing programs so that this work can be accomplished with the power off to the associated equipment.
5. The Controller software tool service port shall utilize standard off-the-shelf USB printer cable.
6. Capabilities to temporarily override the BACnet point values with built-in time expiration in the Controller.
7. To aid in service replacement, the Controller shall easily attached to standard DIN rail mounting.
8. For future expansion, the Controller shall be capable of adding sequence of operation programming utilizing service tools software with a graphical programming interface (editing or programming in line code is not permissible).

9. To aid in service replacement, the Controller shall allow for setting its BACnet address via controller mounted rotary switches that correspond to the numerical value of the address. (DIP switch methodologies are not allowed). Setting of the address shall be accomplished without the need of a service tool or power applied to the controller.
10. Controller data shall be maintained through a power failure.

K. Software Retention: All Controller operating parameters, setpoints, BIOS, and sequence of operation code must be stored in non-volatile memory in order to maintain such information for months without power.

L. Controller must meet the following Agency Compliance:
1. UL916 PAZX, Open Energy Management Equipment
2. UL94-5V, Flammability
3. FCC Part 15, Subpart B, Class B Limit
4. BACnet Testing Laboratory (BTL) listed as BACnet Advanced Application Controller (B-AAC)

2.7 APPLICATION SPECIFIC CONTROLLERS:

A. General Description
1. Application Specific Controllers (ASC) shall be microprocessor-based DDC controllers which, through hardware or firmware design, control specified equipment. They are not user programmable, but are customized for operation within the confines of the equipment they are designed to serve.
2. Zone Controllers are controllers that operate equipment that control the space temperature of single zone. Examples are controllers for VAV, Fan coil, Blower Coils, Unit Ventilators, Heat Pumps, and Water Source Heat Pumps.

B. The Application Specific Controller shall be capable of operating as a stand-alone controller or as a member of a Building Automation System (BAS).

C. When the Application Specific Controller is operating as a member of a Building Automation System (BAS), the application controller shall operate as follows:
1. Application Controller will receive operation mode commands from the BAS network controller. The BAS commands shall include but not be limited to the follow: Occupied Heat/Cool, Unoccupied Heat/Cool, Morning Warm-up, / Pre-cool, Occupied Bypass).
2. Application Controller will provide equipment status parameters to the BAS through BACnet communication.
3. Application Controller will operate as a stand-alone controller in the event of communication failure with the BAS.
4. In case of communications failure stand-alone operation shall use default values or last known values for remote sensors read over the network such as outdoor air temperature.

D. Stand-Alone Operation: Each piece of equipment specified in section “A” shall be controlled by a single controller and provide stand-alone control in the event that a BAS is not present.

E. Software
1. To meet the sequence of operation for each zone control, the controller shall use programs developed and tested by the controller manufacturer that are either factory loaded or downloaded with service tool to the controller.
2. For controlling ancillary devices and for flexibility to change the sequence of operation in the future, the controller shall be capable running custom programs written in a graphical programming language.

F. Environment: Controller hardware shall be suitable for the anticipated ambient conditions.
1. Storage: -55° to 203° F and 5 to 95% Rh, non-condensing.
2. Operating: -40° to 158° F and 5 to 95% Rh, non-condensing.
3. Controllers used indoors shall be mounted in a NEMA 1 enclosure at a minimum.
4. Controllers used outdoors and/or in wet ambient shall be mounted within NEMA 4 type waterproof enclosures, and shall be rated for operation at -40° to 158° F.

G. Input/Output:

1. For flexibility in selection and replacement of valves, the controllers shall be capable of supporting all of the following valve control types 0-10VDC, 0-5VDC, 4-20mA, 24VAC floating point, 24VAC - 2 position (Normally Open or Normally Closed).
2. For flexibility in selection and replacement of sensors, the controllers shall be capable of reading sensor input ranges of 0 to10V, 0 to 20mA, pulse counts, and 200 to 20Kohm.
3. For flexibility in selection and replacement of binary devices, the controller shall support dry and wetted (24VAC) binary inputs.
4. For flexibility in selection and replacement devices, the controller's shall have binary output which are able to drive at least 12VA each.
5. For flexibility in selection and replacement of motors, the controller shall be capable of outputting 24VAC (binary output), DC voltage (0 to 10VDC minimum range) and PWM (in the 80 to 100 Hz range).
6. For future needs, any I/O that is unused by functionality of equipment control shall be available to be used by custom program on the controller and by another controller on the network.
7. For future expansion and flexibility, the controller shall have either on board or through expansion, 20 hardware input/output points. Expansion points must communicate with the controller via an internal communications bus. Expansion points must be capable of being mounted up to 650ft. (200 m) from the controller. Expansion points that require the BACnet network for communication with the controller are not allowed.

H. Serviceability – The controller shall provide the following in order to improve serviceability of the controller.

1. Diagnostic LEDs shall indicate correct operation or failures/faults for all of the following: power, sensors, BACnet communications, and I/O communications bus.
2. All binary output shall have LED's indicating the output state.
3. All wiring connectors shall removable without the use of a tool.
4. Software service tool connection through all of the following methods: direct cable connection to the controller, connection through another controller on BACnet link
5. For safety purposes, the controller shall be capable of being powered by a portable computer for the purposes of configuration, programming, and testing programs so that this work can be accomplished with the power off to the equipment.
6. Capabilities to temporarily override of BACnet point values with built-in time expiration in the controller.
7. BACnet MAC Address shall be set using decimal (0-9) based rotary switches.
    a. Configuration change shall not be made in a programming environment, but rather by a configuration page utilizing dropdown list, check boxes, and numeric boxes.
8. For ease of troubleshooting, the Controller shall support BACnet data trend logging.
    a. With a minimum of 20,000 trending points total on controller
    b. Trends shall be capable of being collected at a minimum sample rate of once every second.
    c. Shall be capable of trending all BACnet points used by controller
    d. Trends shall be capable of being scheduled or triggered

I. Software Retention: All Zone Controller operating parameters, setpoints, BIOS, and sequence of operation code must be stored in non-volatile memory in order to maintain such information for months without power.

J. Application controller shall meet the following Agency Compliance:

1. UL916 PAZX, Open Energy Management Equipment
2. UL94-5V, Flammability
3. FCC Part 15, Subpart B, Class B Limit
4. BACnet Testing Laboratory (BTL) listed as BACnet Application Specific Controller (B-ASC)

2.8 INPUT/OUTPUT INTERFACE:

A. Hardwired inputs and outputs may tie into the system through building, custom application, or ASCs.

B. All input points and output points shall be protected such that shorting of the point to itself, to

another point, or to ground will cause no damage to the controller. All input and output points shall be protected from voltage up to 24V of any duration, such that contact with this voltage will cause no damage to the controller.

C. Binary inputs shall allow the monitoring of on/off signals from remote devices. The binary inputs shall provide a wetting current of at least 12 mA to be compatible with commonly available control devices and shall be protected against the effects of contact bounce and noise. Binary inputs shall sense “dry contact” closure without external power (other than that provided by the controller) being applied.

D. Pulse accumulation input objects. This type of object shall conform to all the requirements of binary input objects and also accept up to 10 pulses per second for pulse accumulation.

E. Analog inputs shall allow the monitoring of low voltage (0 to 10 VDC), current (4 to 20 mA), or resistance signals (thermistor, RTD). Analog inputs shall be compatible with and field configurable to commonly available sensing devices.

F. Binary outputs shall provide for on/off operation or a pulsed low-voltage signal for pulse width modulation control. Binary outputs on building and custom application controllers shall have status lights. Outputs shall be selectable for either normally open or normally closed operation.

G. Analog outputs shall provide a modulating signal for the control of end devices. Outputs shall provide either a 0 to 10VDC or a 4 to 20 mA signal as required to provide proper control of the output device. Analog outputs shall not exhibit a drift of greater than 0.4% of range per year.

H. Tri-State Outputs. Provide tri-state outputs (two coordinated binary outputs) for control of three-point floating type electronic actuators without feedback. Use of three-point floating devices shall be limited to zone control and terminal unit control applications (VAV terminal units, duct-mounted heating coils, zone dampers, radiation, etc.). Control algorithms shall run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.

I. System Object Capacity. The system size shall be expandable to at least twice the number of input/ output objects required for this project. Additional controllers (along with associated devices and wiring) shall be all that is necessary to achieve this capacity requirement. The operator interfaces installed for this project shall not require any hardware additions or software revisions in order to expand the system.

2.9 POWER SUPPLIES:

A. Control transformers shall be UL listed. Furnish Class 2 current-limiting type or furnish overcurrent protection in both primary and secondary circuits for Class 2 service in accordance with NEC requirements. Limit connected loads to 80% of rated capacity.

1. DC power supply output shall match output current and voltage requirements. Unit shall be full-wave rectifier type with output ripple of 5.0 mV maximum peak-to-peak. Regulation shall be 1.0% line and load combined, with 100-microsecond response time for 50% load changes. Unit shall have built-in overvoltage and overcurrent protection and shall be able to withstand a 150% current overload for at least three seconds without trip-out or failure.
    a. Unit shall operate between 0°C and 50°C (32°F and 120°F). EM/RF shall meet FCC Class B and VDE 0871 for Class B and MIL-STD 810C for shock and vibration.
    b. Line voltage units shall be UL recognized and CSA approved.

2.10 AUXILLARY CONTROL DEVICES:

A. Electric damper/valve actuators

1. The actuator shall have electronic overload or digital rotation sensing circuitry to prevent damage to the actuator throughout the rotation of the actuator.
2. Where shown, for power-failure/safety applications, an internal mechanical, spring return mechanism shall be built into the actuator housing.
3. Proportional actuators shall accept a 0-10 VDC or 0-20 ma control signal and provide a 2-10 VDC or 4-20 ma operating range.
4. All non-spring return actuators shall have an external manual gear release to allow manual positioning of the damper when the actuator is not powered. Spring return actuators with more

than 60 in-lb. torque capacity shall have a manual crank for this purpose.

5. Actuators shall be provided with a conduit fitting and a minimum 1m electrical cable and shall be pre-wired to eliminate the necessity of opening the actuator housing to make electrical connections.
6. Actuators shall be Underwriters Laboratories Standard 873 listed.
7. Actuators shall be designed for a minimum of 60,000 full stroke cycles at the actuator's rated torque.

B. Binary Temperature Devices

1. Low-voltage space thermostat shall be 24 V, bimetal-operated, mercury-switch type, with either adjustable or fixed anticipation heater, concealed setpoint adjustment, 13°C to 30°C (55°F to 85°F) setpoint range, 1°C (2°F) maximum differential, and vented ABS plastic cover.
2. Line-voltage space thermostat shall be bimetal-actuated, open contact type, or bellows-actuated, enclosed, snap-switch type or equivalent solid-state type, with heat anticipator, UL listed for electrical rating, concealed setpoint adjustment, 13°C to 30°C (55°F to 85°F) setpoint range, 1°C (2°F) maximum differential, and vented ABS plastic cover.
3. Low-limit thermostats. Low-limit airstream thermostats shall be UL listed, vapor pressure type, with an element of 6 m (20 ft) minimum length. Element shall respond to the lowest temperature sensed by any 30 cm (1 ft) section. The low-limit thermostat shall be manual reset only.

C. Wired Temperature Sensors

1. Temperature sensors shall be RTD or thermistor.
2. Duct sensors shall be single point or averaging as shown. Averaging sensors shall be a minimum of 1.5 m (5 ft) in length per 1 m2 (10 ft2) of duct cross section.
3. Space sensors shall be equipped with setpoint adjustment, override switch, display, and/or communication port as shown on plans.
4. Provide matched temperature sensors for differential temperature measurement.

D. Wired Humidity Sensors

1. Duct and room sensors shall have a sensing range of 20% to 80%.
2. Duct sensors shall be provided with a sampling chamber.

E. Static Pressure Sensors

1. Sensor shall have linear output signal. Zero and span shall be field-adjustable.
2. Sensor sensing elements shall withstand continuous operating conditions plus or minus 50% greater than calibrated span without damage.

F. Low Limit Thermostats

1. Safety low limit thermostats shall be vapor pressure type with an element 6m [20 ft] minimum length. Element shall respond to the lowest temperature sensed by any one foot section.
2. Low limit shall be manual reset only.

2.11 WIRING AND RACEWAYS:

A. General: Provide copper wiring, plenum cable, and raceways as specified in the applicable sections of this specification.

B. All insulated wire to be copper conductors, UL labeled for 90°C (194°F) minimum service.

C. Fiber Optic Cable. Optical cables shall be duplex 900 mm tight-buffer construction designed for intra-building environments. The sheath shall be UL Listed OFNP in accordance with NEC Article 770. The optical fiber shall meet the requirements of FDDI, ANSI X3T9.5 PMD for 62.5/125 µm.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

1. Cut sleeves to length for mounting flush with both surfaces.
   a. Exception: Extend sleeves installed in floors of mechanical equipment areas or

other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

2. Install sleeves in new walls and slabs as new walls and slabs are constructed.
3. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
   a. Steel Pipe Sleeves: For pipes smaller than NPS 6.
   b. Steel Sheet Sleeves: For pipes NPS 6 and larger, penetrating gypsum-board partitions.
   c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing.
      Secure flashing between clamping flanges. Install section of cast-iron soil pipe to extend sleeve to 2 inches above finished floor level. Refer to Division 7 Section "Sheet Metal Flashing and Trim" for flashing.
      1) Seal space outside of sleeve fittings with grout.
4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using joint sealants appropriate for size, depth, and location of joint. Refer to Division 7 Section "Joint Sealants" for materials and installation.

3.2 EXAMINATION:

A. The Contract Documents shall be thoroughly examined for coordination of control devices, their installation, wiring, and commissioning. Coordinate and review mechanical equipment specifications, locations, and identify any discrepancies, conflicts, or omissions that shall be reported to the Architect/Engineer for resolution before rough-in work is started.

B. The BAS manufacturer shall inspect the jobsite in order to verify that control equipment can be installed as required, and any discrepancies, conflicts, or omissions shall be reported to the Architect/Engineer for resolution before rough-in work is started.

3.3 PROTECTION:

A. The BAS installation contractor shall protect all work and material from damage by their work or personnel, and shall be liable for all damage thus caused.

B. The BAS manufacturer shall be responsible for their work and equipment until final inspection, testing, and acceptance. The BAS installing contractor shall protect their work against theft or damage, and shall carefully store material and equipment received on site that is not immediately installed. The Contractor shall close all open ends of work with temporary covers or plugs during storage and construction to prevent entry of foreign objects.

3.4 COORDINATION:

A. Site

1. Where the mechanical work will be installed in close proximity to, or will interfere with, work of other trades, the contractor shall assist in working out space conditions to make a satisfactory adjustment. If the contractor installs his/her work before coordinating with other trades, so as to cause any interference with work of other trades, the contractor shall make the necessary changes in his/her work to correct the condition without extra charge.
2. Coordinate and schedule work with all other work in the same area, or with work that is dependent upon other work, to facilitate mutual progress.

B. Submittals. Refer to the “Submittals,” section of this specification for requirements.

C. Test and Balance

1. The contractor shall furnish a single set of all tools necessary to interface to the control system for test and balance purposes.
2. The contractor shall provide training in the use of these tools. This training will be planned for a duration of 4 hours.
3. In addition, the contractor shall provide a qualified technician to assist in the test and balance

process, until the first 20 terminal units are balanced.

4. The tools used during the test and balance process shall be returned to the contractor at the completion of the testing and balancing.

D. Life Safety

1. Duct smoke detectors required for air handler shutdown shall be supplied under Section 26100 of this specification. The contractor shall interlock smoke detectors to air handlers for shutdown as described in the Sequences of Operation for this project.
2. Smoke dampers and actuators required for duct smoke isolation are provided under Section 26100. The contractor shall interlock these dampers to the air handlers as described in the Sequences of Operation for this project as applicable.
3. Fire/smoke dampers and actuators required for fire rated walls are provided under another Section 26100. Control of these dampers shall be by 26100

E. Coordination with Controls Specified in Other Sections or Divisions. Other sections and/or divisions of this specification include controls and control devices that are to be part of or interfaced to the control system specified in this section. These controls shall be integrated into the system and coordinated by the contractor as follows:

1. All communication media and equipment shall be provided as specified in the “Communication” section of this specification.
2. Each supplier of a controls product is responsible for the configuration, programming, start-up, and testing of that product to meet the sequences of operation described in this section.
3. The Contractor shall coordinate and resolve any incompatibility issues that arise between the control products provided under this section and those provided under other sections or divisions of this specification.

3.5 GENERAL WORKMANSHIP:

A. Install equipment, piping, wiring/conduit, parallel to building lines (i.e. horizontal, vertical, and parallel to walls) wherever possible.

B. Provide sufficient slack and flexible connections to allow for vibration of piping and equipment.

C. Install all equipment in readily accessible locations as defined by National Electric Code (NEC). Control panels shall be attached to structural walls or properly supported in a free-standing configuration, unless mounted in equipment enclosure specifically designed for that purpose. Panels shall be mounted to allow for unobstructed access for service.

D. Verify integrity of all control wiring to ensure continuity and freedom from shorts and grounds prior to commencing the startup and commissioning procedures.

E. All control device installation and wiring shall comply with Contract Documents, acceptable industry specifications, and industry standards for performance, reliability, and compatibility. Installation and wiring shall be executed in strict adherence to local codes and standard practices referenced in Contract Documents.

3.6 FIELD QUALITY CONTROL:

A. All work, materials, and equipment shall comply with the rules and regulations of applicable local, state, and federal codes and ordinances as identified in Contract Documents.

B. BAS manufacturer shall continually monitor the field installation for building code compliance and quality of workmanship. All visible piping and or wiring runs shall be installed parallel to building lines and properly supported.

C. BAS installing Contractor(s) shall arrange for field inspections by local and/or state authorities having jurisdiction over the work.

3.7 COMMUNICATION WIRING:

A. All cabling shall be installed in a neat and workmanlike manner. Follow manufacturer’s installation recommendations for all communication cabling.

B. Do not install communication wiring in raceway and enclosures containing Class 1 or other

Class 2 wiring.

C. Maximum pulling, tension, and bend radius for cable installation, as specified by the cable manufacturer shall not be exceeded during installation.

D. Contractor shall verify the integrity of the entire network following cable installation. Use appropriate test measures for each particular cable.

E. When a cable enters or exits a building, a lighting arrestor must be installed between the line and ground.

F. All runs of communication wiring shall be unspliced length when the length is commercially available.

G. All communication wiring shall be labeled to indicate origin and destination.

3.8 INSTALLATION OF SENSORS:

A. Sensors required for mechanical equipment operation shall be factory installed and wired as specified in mechanical equipment specifications. BAS manufacturer shall be responsible for coordinating these control devices and ensuring the sequence of operations will be met. Installation and wiring shall be in accordance with the BAS manufacturer's recommendations.

B. Sensors that require field mounting shall meet the BAS manufacturer’s recommendations and be coordinated with the mechanical equipment they will be associated.

C. Mount sensors rigidly and adequately for the environment the sensor will operate.

D. Room temperature sensors shall be installed on concealed junction boxes properly supported by the block wall framing. For installation in dry wall ceilings, the low voltage sensor wiring can be installed exposed and must meet applicable National and Local Electrical Codes.

E. All wires attached to wall mounted sensors shall be sealed off to prevent air from transmitting in the associated conduit and affecting the room sensor readings.

F. Install duct static pressure tap with tube end facing directly down-stream of air flow.

G. Install space static pressure sensor with static sensing probe applicable for space installation where applicable.

H. Sensors used in mixing plenums, and hot and cold decks shall be of the averaging type. Averaging sensors shall be installed in a serpentine manner horizontally across duct. Each bend shall be supported with a capillary clip.

I. Wiring for space sensors shall be concealed in building drywall. EMT conduit is acceptable within mechanical equipment and service rooms.

J. Install outdoor air temperature sensors on north wall complete with sun shield at manufacturer’s recommended location and coordinated with Engineer.

3.9 WARNING LABELS:

A. Permanent warning labels shall be affixed to all equipment that can be automatically started by the BAS system.

B. Permanent warning labels shall be affixed to all motor starters and all control panels that are connected to multiple power sources utilizing separate disconnects.

3.10 IDENTIFICATION OF HARDWARE AND WIRING:

A. All field wiring and cabling, including that within factory mounted, and wired control panels and devices for mechanical equipment, shall be labeled at each end within 2" of termination with a cable identifier and other descriptive information for troubleshooting, maintenance, and service purposes. BAS manufacturer to coordinate this labeling requirement with mechanical equipment manufacturer as it relates to controls.

B. Permanently label or code each point of field terminal strips to show the instrument or item served and correlate them to the BAS design drawings.

C. Identify control panels with minimum 1-cm letters on laminated plastic nameplates.

D. Identifiers shall match record documents. All plug-in components shall be labeled such that removal of the component does not remove the label.

3.11 CONTROLLERS:

A. Provide a separate DDC Controller for individual HVAC mechanical equipment. BAS manufacturer shall furnish and coordinate DDC controllers and control devices and ensure that installation and wiring adhere to BAS manufacturer's design recommendations. For those mechanical equipment units that do not have factory installed controls specified, the BAS manufacturer shall field mount controls and coordinate all installation and termination information to ensure the specified sequence of operations are met.

B. Building Controllers and Custom Application Controllers shall be selected to provide a minimum of 15% spare I/O point capacity for each point type (analog or digital) found at each location. If input points are not universal, 15% of each type is required. If outputs are not universal, 15% of each type is required. A minimum of one spare is required for each type of point used in each controller.

1. Future use of spare I/O point capacity shall require providing the field instrument and control device, field wiring, engineering, programming, and commissioning. No additional Controller boards or point modules shall be required to implement use of these spare points.

3.12 PROGRAMMING:

A. Provide sufficient internal memory for all controllers to ensure specified sequence of operations, alarming, trending, and reporting requirements are achieved. BAS manufacturer shall provide a minimum of 25% spare memory capacity for future use.

B. Point Naming: System point names shall be modular in design, allowing easy operator interface without the use of a written point index.

C. Software Programming

1. Provide programming for individual mechanical systems to achieve all aspects of the sequence of operation specified. It is the BAS manufacturer's responsibility to ensure all mechanical equipment functions and operates as specified in sequence of operations. Provide sufficient programming comments in controller application software to clearly describe each section of the program. The comment statements shall reflect the language used in the sequence of operations.

D. BAS Operator's Interface

1. When Operator Workstation is specified, provide color graphics for each piece of mechanical equipment depicting sufficient I/O to monitor and troubleshoot operation. Operator color graphics shall include Chiller Plant, Cooling Tower System, Boiler Plant, Air Handling Units, Rooftop Units, VAV Terminal Boxes, Fan Coil Units, Unit Ventilators, Heat Exchangers, Exhaust Fans, etc. These standard graphics shall depict all points dynamically as specified in the points list and/or indicated in sequence of operation.
2. The BAS manufacturer shall provide all the labor necessary to install, initialize, start up, and trouble-shoot all operator interface software and their functions as described in this section. This includes any operating system software, the operator interface data base, and any third party software installation and integration required for successful operation of the operator interface.

3. As part of this execution phase, the BAS manufacturer shall perform a complete test of the operator interface.

3.13 CONTROL SYSTEM CHECKOUT AND TESTING:

A. Start-up testing. All testing in this section shall be performed by the contractor and shall make up part of the necessary verification of an operating control system. This testing shall be completed before the owner's representative is notified of the system demonstration.

1. The contractor shall furnish all labor and test apparatus required to calibrate and prepare for service all of the instruments, controls, and accessory equipment furnished under this specification.
2. Verify that all control wiring is properly connected and free of all shorts and ground faults. Verify that terminations are tight.
3. Enable the control systems and verify calibration of all input devices individually. Perform calibration procedures according to manufacturer's recommendations.
4. Verify all binary output devices (relays, solenoid valves, two-position actuators and control valves, magnetic starter, etc.) operate properly and normal positions are correct.
5. Verify all analog output devices (I/Ps, actuators, etc) are functional, that start and span are correct, and that direction and normal positions are correct. The contractor shall check all control valves and automatic dampers to ensure proper action and closure. The contractor shall make any necessary adjustments to valve stem and damper blade travel.
6. Verify the system operation adheres to the sequences of operation. Simulate and observe all modes of operation by overriding and varying inputs and schedules. Tune all DDC loops and optimal start/stop routines.
7. Alarms and Interlocks

a. Check each alarm separately by including an appropriate signal at a value that will trip the alarm.
b. Interlocks shall be tripped using field contacts to check the logic, as well as to ensure that the fail-safe condition for all actuators is in the proper direction.
    c. Interlock actions shall be tested by simulating alarm conditions to check the initiating value of the variable and interlock action.

3.14 CLEANING:

A. The BAS manufacturer's installing contractor(s) shall clean up all debris resulting from their installation activities on a daily basis. The installation contractors shall remove all cartons, containers, crates, etc. under his control as soon as their contents have been removed. Waste shall be collected and placed in a location designated by the Owner, Construction Manager, General Contractor, and/or Mechanical Contractor.

B. At the completion of work in any area, the installation contractor shall clean all of their work, equipment, etc., making it free from dust, dirt and debris.

C. At the completion of work, all equipment furnished under this Section shall be checked for paint damage. Any factory finished paint that has been damaged shall be repaired to match the adjacent areas. Any metal cabinet or enclosure that has been deformed shall be replaced with new material and repainted to match the adjacent areas.

3.15 TRAINING:

A. Provide minimum of (8) hours of operator training throughout the contract period. Training shall consist of a minimum of (1) classroom training session. The training will be provided for personnel designated by the Owner.

B. These objectives will be divided into logical groupings; participants may attend one or more of these, depending on level of knowledge required:

1. Day-to-day BAS Operators
2. BAS Troubleshooting & Maintenance

C. Provide course outline and materials prior to scheduled training session. The instructor(s) shall provide one copy of training material per student.

D. The instructor(s) shall be factory-trained and experienced in teaching this technical material.

END OF SECTION

SECTION 23 23 00

REFRIGERANT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes refrigerant piping used for air-conditioning applications.

B. Related Sections include the following:

1. Division 7 Section "Roof Accessories" for roof curbs, piping supports, and roof penetration boots.
2. Division 7 Section "Through-Penetration Firestop Systems" for materials and methods for sealing pipe penetrations through fire and smoke barriers.
3. Division 7 Section "Joint Sealants" for materials and methods for sealing pipe penetrations through exterior walls.
4. Division 23 Section "Hangers and Supports for HVAC Piping and Equipment" for pipe supports and installation requirements.
5. Division 23 Section "Identification for HVAC Piping and Equipment" for labeling and identifying refrigerant piping.
6. Division 23 Section "HVAC Instrumentation and Controls" for thermostats, controllers, automatic-control valves, and sensors.

1.3 SUBMITTALS

A. Product Data: For each type of valve and refrigerant piping specialty indicated. Include pressure drop, based on manufacturer's test data, for thermostatic expansion valves, solenoid valves, and pressure-regulating valves.

B. Shop Drawings: Show layout of refrigerant piping and specialties, including pipe, tube, and fitting sizes, flow capacities, valve arrangements and locations, slopes of horizontal runs, oil traps, double risers, wall and floor penetrations, and equipment connection details. Show interface and spatial relationship between piping and equipment.

1. Refrigerant piping indicated is schematic only. Size piping and design the actual piping layout, including oil traps, double risers, specialties, and pipe and tube sizes, to ensure proper operation and compliance with warranties of connected equipment.

C. Welding Certificates: Copies of certificates for welding procedures and personnel.

D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

E. Maintenance Data: For refrigerant valves and piping specialties to include in maintenance manuals specified in Division 1.

1.4 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to ASME Boiler and Pressure Vessel Code: Section IX; "Welding and Brazing Qualifications."

B. ASHRAE Standard: Comply with ASHRAE 15, "Safety Code for Mechanical Refrigeration."

C. ASME Standard: Comply with ASME B31.5, "Refrigeration Piping."

D. UL Standard: Provide products complying with UL 207, "Refrigerant-Containing Components and Accessories, Nonelectrical"; or UL 429, "Electrically Operated Valves."

1.5 COORDINATION

A. Coordinate layout and installation of refrigerant piping and suspension system components with other construction, including light fixtures, HVAC equipment, fire-suppression-system components, and partition assemblies.

B. Coordinate pipe sleeve installations for foundation wall penetrations.

C. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."

D. Coordinate pipe sleeve installations for penetrations in exterior walls and floor assemblies. Coordinate with requirements for firestopping specified in Division 7 Section "Through-Penetration Firestop Systems" for materials and methods for sealing pipe penetrations through fire and smoke barriers.

E. Coordinate pipe fitting pressure classes with products specified in related Sections.

PART 2 - PRODUCTS

2.1 COPPER TUBE AND FITTINGS

A. Drawn-Temper Copper Tube: ASTM B 280, Type ACR.

B. Annealed-Temper Copper Tube: ASTM B 88, Type L.

C. Wrought-Copper Fittings: ASME B16.22.

D. Wrought-Copper Unions: ASME B16.22.

E. Brazing Filler Metals: AWS A5.8, Classification BAg-1 (silver)

F. Flexible Connectors: 500-psig (3450-kPa) minimum operating pressure; seamless tin-bronze core, high-tensile bronze-braid covering, and solder-joint end connections; dehydrated, pressure tested, minimum 7 inches long

2.2 REFRIGERANTS

A. ASHRAE 34, R-123: Dichlorotrifluoroethane.

B. ASHRAE 34, R-134a: Tetrafluoroethane.

C. ASHRAE 34, R-22: Monochlorodifluoromethane.

D. ASHRAE 34, R-500: Azeotrope.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

A. Aboveground, within Building: Type ACR drawn-copper tubing.

3.2 PIPING INSTALLATION

A. Install refrigerant piping according to ASHRAE 15.

B. Basic piping installation requirements are specified in Division 23 Section "Common Work Results for HVAC".

C. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.

D. Arrange piping to allow inspection and service of compressor and other equipment. Install valves and specialties in accessible locations to allow for service and inspection.

E. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation. Use sleeves through floors, walls, or ceilings, sized to permit installation of full-thickness insulation.

F. Belowground, install copper tubing in protective conduit. Vent conduit outdoors.

G. Install copper tubing in rigid conduit in locations where copper tubing will be exposed to mechanical injury.

H. Slope refrigerant piping in accordance with air conditioning equipment manufacturer's recommendations.

I. Install unions to allow removal of solenoid valves, pressure-regulating valves, and expansion valves and at connections to compressors and evaporators.

J. When brazing, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion valve bulb.

K. Hanger, support, and anchor products are specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment".

L. Install the following pipe attachments:
1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
3. Pipe rollers for multiple horizontal runs 20 feet or longer, supported by a trapeze.
4. Spring hangers to support vertical runs.

M. Install hangers for copper tubing with the following maximum spacing and minimum rod sizes:
1. NPS 1/2: Maximum span, 60 inches; minimum rod size, 1/4 inch.
2. NPS 5/8: Maximum span, 60 inches; minimum rod size, 1/4 inch.
3. NPS 1: Maximum span, 72 inches; minimum rod size, 1/4 inch.
4. NPS 1-1/4: Maximum span, 96 inches; minimum rod size, 3/8 inch.
5. NPS 1-1/2: Maximum span, 96 inches; minimum rod size, 3/8 inch.
6. NPS 2: Maximum span, 96 inches; minimum rod size, 3/8 inch.
7. NPS 2-1/2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
8. NPS 3: Maximum span, 10 feet; minimum rod size, 3/8 inch.
9. NPS 4: Maximum span, 12 feet; minimum rod size, 1/2 inch.

N. Install hangers for steel piping with the following maximum spacing and minimum rod sizes:
1. NPS 1/2: Maximum span, 84 inches; minimum rod size, 1/4 inch.
2. NPS 3/4: Maximum span, 84 inches; minimum rod size, 1/4 inch.
3. NPS 1: Maximum span, 84 inches; minimum rod size, 1/4 inch.
4. NPS 1-1/2: Maximum span, 108 inches; minimum rod size, 3/8 inch.
5. NPS 2: Maximum span, 10 feet; minimum rod size, 3/8 inch.
6. NPS 2-1/2: Maximum span, 11 feet; minimum rod size, 3/8 inch.
7. NPS 3: Maximum span, 12 feet; minimum rod size, 3/8 inch.
8. NPS 4: Maximum span, 14 feet; minimum rod size, 1/2 inch.

O. Support vertical runs at each floor.

3.3 PIPE JOINT CONSTRUCTION

A. Braze joints according to Division 23 Section "Common Work Results for HVAC".

B. Fill pipe and fittings with an inert gas (nitrogen or carbon dioxide) during brazing to prevent scale formation.

3.4 FIELD QUALITY CONTROL

A. Test and inspect refrigerant piping according to ASME B31.5, Chapter VI.
1. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure.
2. Test high- and low-pressure side piping of each system at not less than the lower of the design pressure or the setting of pressure relief device protecting high and low side of system.
   a. System shall maintain test pressure at the manifold gage throughout duration of test.
   b. Test joints and fittings by brushing a small amount of soap and glycerine solution over joint.
   c. Fill system with nitrogen to raise a test pressure of 150 psig or higher as required by authorities having jurisdiction.
   d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

3.5 ADJUSTING

A. Adjust thermostatic expansion valve to obtain proper evaporator superheat requirements.

B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.

C. Adjust set-point temperature of the conditioned air or chilled-water controllers to the system design temperature.

D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:
   1. Open shutoff valves in condenser water circuit.
   2. Check compressor oil level above center of sight glass.
   3. Open compressor suction and discharge valves.
   4. Open refrigerant valves, except bypass valves that are used for other purposes.
   5. Check compressor-motor alignment, and lubricate motors and bearings.

3.6 CLEANING

A. Before installing copper tubing other than Type ACR, clean tubing and fittings with trichloroethylene.

B. Replace core of filter-dryer after system has been adjusted and design flow rates and pressures are established.

3.7 SYSTEM CHARGING

A. Charge system using the following procedures:
   1. Install core in filter-dryer after leak test but before evacuation.
   2. Evacuate entire refrigerant system with a vacuum pump to a vacuum of 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
   3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
   4. Charge system with a new filter-dryer core in charging line. Provide full-operating charge.

END OF SECTION

SECTION 23 31 00

METAL DUCTS AND CASINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related sections include the following:

1.2 SUMMARY

A. This Section includes metal ducts for supply, return, outside, and exhaust air-distribution systems in pressure classes from minus 2- to plus 10-inch wg. Metal ducts include the following:
   1. Rectangular ducts and fittings.
   2. Single-wall, round, and flat-oval spiral-seam ducts and formed fittings.

B. Related Sections include the following:
   1. Division 23 Section "Air Duct Accessories" for dampers, sound-control devices, duct- mounting access doors and panels, turning vanes, and flexible ducts.

1.3 DEFINITIONS

A. FRP: Fiberglass-reinforced plastic.

1.4 SYSTEM DESCRIPTION

A. Duct system design, as indicated, has been used to select size and type of air-moving and - distribution equipment and other air system components. Changes to layout or configuration of duct system must be specifically approved in writing by Architect. Accompany requests for layout modifications with calculations showing that proposed layout will provide original design results without increasing system total pressure.

1.5 SUBMITTALS

A. Shop Drawings: CAD-generated and drawn to 1/4 inch equals 1 foot scale. Show fabrication and installation details for metal ducts.
   1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
   2. Duct layout indicating sizes and pressure classes.
   3. Elevations of top and bottom of ducts.
   4. Dimensions of main duct runs from building grid lines.
   5. Fittings.
   6. Reinforcement and spacing.
   7. Seam and joint construction.
   8. Penetrations through fire-rated and other partitions.
   9. Equipment installation based on equipment being used on Project.
   10. Duct accessories, including access doors and panels.
   11. Hangers and supports, including methods for duct and building attachment, vibration isolation, and seismic restraints.

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
   1. Ceiling suspension assembly members.
   2. Other systems installed in same space as ducts.
   3. Ceiling- and wall-mounting access doors and panels required to provide access to dampers and other operating devices.

4. Ceiling-mounting items, including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

C. Welding certificates.

D. Field quality-control test reports.

1.6 QUALITY ASSURANCE

A. NFPA Compliance:
1. NFPA 90A, "Installation of Air Conditioning and Ventilating Systems."
2. NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with NFPA 96, "Ventilation Control and Fire Protection of Commercial Cooking Operations," Ch. 3, "Duct System," for range hood ducts, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 SHEET METAL MATERIALS

A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G90 coating designation; ducts shall have mill-phosphatized finish for surfaces exposed to view.

C. Carbon-Steel Sheets: ASTM A 366/A 366M, cold-rolled sheets; commercial quality; with oiled, matte finish for exposed ducts.

D. Stainless Steel: ASTM A 480/A 480M, Type 304.

E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts.

F. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 DUCT LINER

A. Fibrous-Glass Liner: Comply with NFPA 90A or NFPA 90B and with NAIMA AH124.
1. Manufacturers:
a. CertainTeed Corp.; Insulation Group.
b. Johns Manville International, Inc.
c. Knauf Fiber Glass GmbH.
d. Owens Corning.
2. Materials: ASTM C 1071; surfaces exposed to airstream shall be coated to prevent erosion of glass fibers.
a. Thickness: 1 inch.
b. Thermal Conductivity (k-Value): 0.26 at 75 deg F mean temperature.
c. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84.
d. Liner Adhesive: Comply with NFPA 90A or NFPA 90B and with ASTM C 916.
e. Mechanical Fasteners: Galvanized steel suitable for adhesive attachment, mechanical attachment, or welding attachment to duct without damaging liner when applied as recommended by manufacturer and without causing leakage in

duct.

1) Tensile Strength: Indefinitely sustain a 50-lb- tensile, dead-load test perpendicular to duct wall.
2) Fastener Pin Length: As required for thickness of insulation and without projecting more than 1/8 inch into airstream.
3) Adhesive for Attaching Mechanical Fasteners: Comply with fire-hazard classification of duct liner system.

3. Mold Resistance: ASTM C 1338; ASTM G21; ASTM G22; surfaces exposed to airstream
shall be resistive to and not support mold, fungal, and bacterial growth.

2.4 SEALANT MATERIALS

A. Joint and Seam Sealants, General: The term "sealant" is not limited to materials of adhesive or mastic nature but includes tapes and combinations of open-weave fabric strips and mastics.

B. Joint and Seam Tape: 2 inches wide; glass-fiber-reinforced fabric.

C. Tape Sealing System: Woven-fiber tape impregnated with gypsum mineral compound and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.

D. Low VOC Solvent-Based Joint and Seam Sealant: One-part, nonsag, solvent-release-curing, polymerized butyl sealant formulated with a minimum of 75 percent solids.

E. Flanged Joint Mastic: One-part, acid-curing, silicone, elastomeric joint sealant complying with ASTM C 920, Type S, Grade NS, Class 25, Use O.

F. Flange Gaskets: Butyl rubber or EPDM polymer with polyisobutylene plasticizer.

2.5 HANGERS AND SUPPORTS

A. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
1. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
2. Exception: Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.

B. Hanger Materials: Galvanized sheet steel or threaded steel rod.
1. Hangers Installed in Corrosive Atmospheres: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
2. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards-Metal and Flexible" for steel sheet width and thickness and for steel rod diameters.
3. Galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.

C. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

D. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.
1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
2. Supports for Stainless-Steel Ducts: Stainless-steel support materials.
3. Supports for Aluminum Ducts: Aluminum support materials unless materials are electrolytically separated from ducts.

2.6 RECTANGULAR DUCT FABRICATION

A. Fabricate ducts, elbows, transitions, offsets, branch connections, and other construction according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" and complying with requirements for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals.
1. Lengths: Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure class.

2. Deflection: Duct systems shall not exceed deflection limits according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

B. Transverse Joints: Prefabricated slide-on joints and components constructed using manufacturer's guidelines for material thickness, reinforcement size and spacing, and joint reinforcement.
   1. Manufacturers:
      a. Ductmate Industries, Inc.
      b. Nexus Inc.
      c. Ward Industries, Inc.

C. Formed-On Flanges: Construct according to SMACNA's "HVAC Duct Construction Standards-- Metal and Flexible," Figure 1-4, using corner, bolt, cleat, and gasket details.
   1. Manufacturers:
      a. Ductmate Industries, Inc.
      b. Lockformer.
   2. Duct Size: Maximum 30 inches wide and up to 2-inch wg pressure class.
   3. Longitudinal Seams: Pittsburgh lock sealed with noncuring polymer sealant.

D. Cross Breaking or Cross Beading: Cross break or cross bead duct sides 19 inches and larger and 0.0359 inch thick or less, with more than 10 sq. ft. of nonbraced panel area unless ducts are lined.

E. Secure insulation between perforated sheet metal inner duct of same thickness as specified for outer shell. Use mechanical fasteners that maintain inner duct at uniform distance from outer shell without compressing insulation.
   1. Sheet Metal Inner Duct Perforations: 3/32-inch diameter, with an overall open area of 23 percent.

2.7 ROUND AND FLAT-OVAL DUCT AND FITTING FABRICATION

A. Diameter as applied to flat-oval ducts in this Article is the diameter of a round duct with a circumference equal to the perimeter of a given size of flat-oval duct.

B. Round, Spiral Lock-Seam Ducts: Fabricate supply ducts of galvanized steel according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible."

C. Flat-Oval, Spiral Lock-Seam Ducts: Fabricate supply ducts according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible. Fabricate ducts larger than 72 inches in diameter with butt-welded longitudinal seams.

D. Duct Joints:
   1. Ducts up to 20 Inches in Diameter: Interior, center-beaded slip coupling, sealed before and after fastening, attached with sheet metal screws.
   2. Ducts 21 to 72 Inches in Diameter: Three-piece, gasketed, flanged joint consisting of two internal flanges with sealant and one external closure band with gasket.
   3. Ducts Larger Than 72 Inches in Diameter: Companion angle flanged joints per SMACNA "HVAC Duct Construction Standards--Metal and Flexible," Figure 3-2.
   4. Round Ducts: Prefabricated connection system consisting of double-lipped, EPDM rubber gasket. Manufacture ducts according to connection system manufacturer's tolerances.
      a. Manufacturers:
         1) Ductmate Industries, Inc.
         2) Lindab Inc.
   5. Flat-Oval Ducts: Prefabricated connection system consisting of two flanges and one synthetic rubber gasket.
      a. Manufacturers:
         1) Ductmate Industries, Inc.
         2) McGill AirFlow Corporation.
         3) SEMCO Incorporated.

E. 90-Degree Tees and Laterals and Conical Tees: Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," with metal thicknesses specified

for longitudinal-seam straight ducts.

F. Diverging-Flow Fittings: Fabricate with reduced entrance to branch taps and with no excess material projecting from fitting onto branch tap entrance.

G. Fabricate elbows using die-formed, pleated, or mitered construction. Bend radius of die-formed, and pleated elbows shall be 1-1/2 times duct diameter. Unless elbow construction type is indicated, fabricate elbows as follows:
   1. Mitered-Elbow Radius and Number of Pieces: Welded construction complying with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible," unless otherwise indicated.
   2. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from minus 2- to plus 2-inch wg:
      a. Ducts 3 to 36 Inches in Diameter: 0.034 inch.
      b. Ducts 37 to 50 Inches in Diameter: 0.040 inch.
      c. Ducts 52 to 60 Inches in Diameter: 0.052 inch.
      d. Ducts 62 to 84 Inches in Diameter: 0.064 inch.
   3. Round Mitered Elbows: Welded construction with the following metal thickness for pressure classes from 2- to 10-inch wg:
      a. Ducts 3 to 26 Inches in Diameter: 0.034 inch.
      b. Ducts 27 to 50 Inches in Diameter: 0.040 inch.
      c. Ducts 52 to 60 Inches in Diameter: 0.052 inch.
      d. Ducts 62 to 84 Inches in Diameter: 0.064 inch.
   4. Flat-Oval Mitered Elbows: Welded construction with same metal thickness as longitudinal- seam flat-oval duct.
   5. 90-Degree, 2-Piece, Mitered Elbows: Use only for supply systems or for material-handling Class A or B exhaust systems and only where space restrictions do not permit using radius elbows. Fabricate with single-thickness turning vanes.
   6. Round Elbows 8 Inches and Less in Diameter: Fabricate die-formed elbows for 45- and 90- degree elbows and pleated elbows for 30, 45, 60, and 90 degrees only. Fabricate nonstandard bend-angle configurations or nonstandard diameter elbows with gored construction.
   7. Round Elbows 9 through 14 Inches in Diameter: Fabricate gored or pleated elbows for 30, 45, 60, and 90 degrees unless space restrictions require mitered elbows. Fabricate nonstandard bend-angle configurations or nonstandard diameter elbows with gored construction.
   8. Round Elbows Larger Than 14 Inches in Diameter and All Flat-Oval Elbows: Fabricate gored elbows unless space restrictions require mitered elbows.
   9. Die-Formed Elbows for Sizes through 8 Inches in Diameter and All Pressures 0.040 inch thick with 2-piece welded construction.
   10. Flat-Oval Elbow Metal Thickness: Same as longitudinal-seam flat-oval duct specified above.
   11. Pleated Elbows for Sizes through 14 Inches in Diameter and Pressures through 10-Inch wg:
       0.022 inch.

PART 3 - EXECUTION

3.1 DUCT APPLICATIONS

A. Static-Pressure Classes: Unless otherwise indicated, construct ducts according to the following:
   1. Main Supply Ducts: 4-inch wg, medium pressure.
   2. Supply Ducts (before Air Terminal Units): 4-inch wg, medium pressure.
   3. Supply Ducts (after Air Terminal Units): 2-inch wg, low pressure.
   4. Return Ducts (Negative Pressure): 2-inch wg, low pressure
   5. Exhaust Ducts (Negative Pressure): 2-inch wg, low pressure.

B. All ducts shall be galvanized steel except as follows:
   1. Range Hood Exhaust Ducts: Comply with NFPA 96.

a. Exposed: Type 304, stainless steel with finish to match kitchen equipment and range hood.
b. Weld and flange seams and joints.

2. Dishwasher Hood Exhaust Ducts:
a. Type 304, stainless steel with finish to match kitchen equipment and range hood.
Weld and flange seams and joints.

3.2 DUCT INSTALLATION

A. Construct and install ducts according to SMACNA's "HVAC Duct Construction Standards-Metal and Flexible," unless otherwise indicated.

B. Install round and flat-oval ducts in lengths not less than 12 feet unless interrupted by fittings.

C. Install ducts with fewest possible joints.

D. Install fabricated fittings for changes in directions, size, and shape and for connections.

E. Install couplings tight to duct wall surface with a minimum of projections into duct. Secure couplings with sheet metal screws. Install screws at intervals of 12 inches, with a minimum of 3 screws in each coupling.

F. Install ducts, unless otherwise indicated, vertically and horizontally and parallel and perpendicular to building lines; avoid diagonal runs.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Conceal ducts from view in finished spaces. Do not encase horizontal runs in solid partitions unless specifically indicated.

J. Coordinate layout with suspended ceiling, fire- and smoke-control dampers, lighting layouts, and similar finished work.

K. Seal all joints and seams. Apply low VOC based sealant to male end connectors before insertion, and afterward to cover entire joint and sheet metal screws.

L. Electrical Equipment Spaces: Route ducts to avoid passing through transformer vaults and electrical equipment spaces and enclosures.

M. Non-Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls and are exposed to view, conceal spaces between construction openings and ducts or duct insulation with sheet metal flanges of same metal thickness as ducts. Overlap openings on 4 sides by at least 1-1/2 inches.

N. Fire-Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriately rated fire dampers, sleeves, and firestopping sealant. Fire and smoke dampers are specified in Division 23 Section "Air Duct Accessories" Firestopping materials and installation methods are specified in Division 7 Section "Through-Penetration Firestop Systems."

O. Protect duct interiors from the elements and foreign materials until building is enclosed. Follow SMACNA's "Duct Cleanliness for New Construction."

P. Paint interiors of metal ducts, that do not have duct liner, for 24 inches upstream of registers and grilles. Apply one coat of flat, black, latex finish coat over a compatible galvanized-steel primer. Paint materials and application requirements are specified in Division 9 painting Sections.

3.3 SEAM AND JOINT SEALING

A. Seal duct seams and joints according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for duct pressure class indicated.
1. For pressure classes lower than 2-inch wg, seal transverse joints.

B. Seal ducts before external insulation is applied.

3.4 HANGING AND SUPPORTING

A. Support horizontal ducts within 24 inches of each elbow and within 48 inches of each branch intersection.

B. Support vertical ducts at maximum intervals of 16 feet and at each floor.

C. Install upper attachments to structures with an allowable load not exceeding one-fourth of failure (proof-test) load.

D. Install concrete inserts before placing concrete.

E. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
   1. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.

3.5 CONNECTIONS

A. Make connections to equipment with flexible connectors according to Division 23 Section "Air Duct Accessories".

B. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.6 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections according to SMACNA's "HVAC Air Duct Leakage Test Manual" and prepare test reports:
   1. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
   2. Conduct tests at static pressures equal to maximum design pressure of system or section being tested. If pressure classes are not indicated, test entire system at maximum system design pressure. Do not pressurize systems above maximum design operating pressure.
      Give seven days' advance notice for testing.
   3. Maximum Allowable Leakage: Comply with requirements for Leakage Class 3 for round and flat-oval ducts, Leakage Class 12 for rectangular ducts in pressure classes lower than and equal to 2-inch wg (both positive and negative pressures), and Leakage Class 6 for pressure classes from 2- to 10-inch wg.
   4. Remake leaking joints and retest until leakage is equal to or less than maximum allowable.

3.7 CLEANING NEW SYSTEMS

A. Mark position of dampers and air-directional mechanical devices before cleaning, and perform cleaning before air balancing.

B. Use service openings, as required, for physical and mechanical entry and for inspection.
   1. Create other openings to comply with duct standards.
   2. Disconnect flexible ducts as needed for cleaning and inspection.
   3. Remove and reinstall ceiling sections to gain access during the cleaning process.

C. Vent vacuuming system to the outside. Include filtration to contain debris removed from HVAC systems, and locate exhaust down wind and away from air intakes and other points of entry into building.

D. Clean the following metal duct systems by removing surface contaminants and deposits:
   1. Air outlets and inlets (registers, grilles, and diffusers).
   2. Supply, return, and exhaust fans including fan housings, plenums (except ceiling supply and return plenums), scrolls, blades or vanes, shafts, baffles, dampers, and drive assemblies.
   3. Air-handling unit internal surfaces and components including mixing box, coil section, air wash systems, spray eliminators, condensate drain pans, humidifiers and dehumidifiers, filters and filter sections, and condensate collectors and drains.
   4. Coils and related components.

5. Return-air ducts, dampers, and actuators except in ceiling plenums and mechanical equipment rooms.
6. Supply-air ducts, dampers, actuators, and turning vanes.

E. Mechanical Cleaning Methodology:
1. Clean metal duct systems using mechanical cleaning methods that extract contaminants from within duct systems and remove contaminants from building.
2. Use vacuum-collection devices that are operated continuously during cleaning. Connect vacuum device to downstream end of duct sections so areas being cleaned are under negative pressure.
3. Use mechanical agitation to dislodge debris adhered to interior duct surfaces without damaging integrity of metal ducts, duct liner, or duct accessories.
4. Clean fibrous-glass duct liner with HEPA vacuuming equipment; do not permit duct liner to get wet.
5. Clean coils and coil drain pans according to NADCA 1992. Keep drain pan operational.
   Rinse coils with clean water to remove latent residues and cleaning materials; comb and straighten fins.

F. Cleanliness Verification:
1. Visually inspect metal ducts for contaminants.
2. Where contaminants are discovered, re-clean and reinspect ducts.

END OF SECTION

SECTION 23 33 00

AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Backdraft dampers.
   2. Volume dampers.
   3. Volume damper remote control cable assemblies.
   4. Turning vanes.
   5. Duct-mounting access doors.
   6. Flexible connectors.
   7. Flexible ducts.
   8. Duct accessory hardware.
   9. Duct silencers.

B. Related Sections include the following:
   1. Division 28 Section "Fire Alarm" for duct-mounting fire and smoke detectors.
   2. Division 23 Section "HVAC Instrumentation for electric and pneumatic damper actuators.

1.3 SUBMITTALS

A. Product Data: For the following:
   1. Backdraft dampers.
   2. Volume dampers.
   3. Turning vanes.
   4. Flexible connectors.
   5. Flexible ducts.
   6. Duct Accessory hardware.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   1. Special fittings.
   2. Manual-volume damper installations.

C. Coordination Drawings: Reflected ceiling plans, drawn to scale and coordinating penetrations and ceiling-mounting items. Show ceiling-mounting access panels and access doors required for access to duct accessories.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 SHEET METAL MATERIALS

A. Comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods, unless otherwise indicated.

B. Galvanized Sheet Steel: Lock-forming quality; complying with ASTM A 653/A 653M and having G90 coating designation; ducts shall have mill-phosphatized finish for surfaces exposed to view.

C. Stainless Steel: ASTM A 480/A 480M.

D. Aluminum Sheets: ASTM B 209, alloy 3003, temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.

E. Extruded Aluminum: ASTM B 221, alloy 6063, temper T6.

F. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

G. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 BACKDRAFT DAMPERS

A. Manufacturers:
1. Air Balance, Inc.
2. Greenheck.
3. Penn Ventilation Company, Inc.
4. Ruskin Company.

B. Description: Multiple-blade, parallel action gravity balanced, with center-pivoted blades of maximum 6-inch width, with sealed edges, assembled in rattle-free manner with 90-degree stop, steel ball bearings, and axles; adjustment device to permit setting for varying differential static pressure.

C. Frame: 0.052-inch- thick, galvanized sheet steel, with welded corners and mounting flange.

D. Blades: 0.025-inch- thick, roll-formed aluminum.

E. Blade Seals: Vinyl or Neoprene.

F. Blade Axles: Galvanized steel.

G. Tie Bars and Brackets: Galvanized steel.

H. Return Spring: Adjustable tension.

2.4 VOLUME DAMPERS

A. Manufacturers:
1. Air Balance, Inc.
2. METALAIRE, Inc.
3. Nailor Industries Inc.
4. Penn Ventilation Company, Inc.
5. Ruskin Company.

B. General Description: Factory fabricated, with required hardware and accessories. Stiffen damper blades for stability. Include locking device to hold single-blade dampers in a fixed position without vibration. Close duct penetrations for damper components to seal duct consistent with pressure class.
1. Pressure Classes of 3-Inch wg or Higher: End bearings or other seals for ducts with axles full length of damper blades and bearings at both ends of operating shaft.

C. Standard Volume Dampers: Multiple- or single-blade, parallel- or opposed-blade design as indicated, standard leakage rating, with linkage outside airstream, and suitable for horizontal or vertical applications.

1. Steel Frames: Hat-shaped, galvanized sheet steel channels, minimum of 0.064 inch thick, with mitered and welded corners; frames with flanges where indicated for attaching to walls and flangeless frames where indicated for installing in ducts.
2. Roll-Formed Steel Blades: 0.064-inch- thick, galvanized sheet steel.
3. Aluminum Frames: Hat-shaped, 0.10-inch- thick, aluminum sheet channels; frames with flanges where indicated for attaching to walls; and flangeless frames where indicated for installing in ducts.
4. Roll-Formed Aluminum Blades: 0.10-inch- thick aluminum sheet.
5. Extruded-Aluminum Blades: 0.050-inch- thick extruded aluminum.
6. Blade Axles: Galvanized steel.
7. Bearings: Oil-impregnated bronze.
8. Tie Bars and Brackets: Galvanized steel.

D. Low-Leakage Volume Dampers: Multiple- or single-blade, parallel- or opposed-blade design as indicated, low-leakage rating, with linkage outside airstream, and suitable for horizontal or vertical applications.
1. Steel Frames: Hat-shaped, galvanized sheet steel channels, minimum of 0.064 inch thick, with mitered and welded corners; frames with flanges where indicated for attaching to walls and flangeless frames where indicated for installing in ducts.
2. Roll-Formed Steel Blades: 0.064-inch- thick, galvanized sheet steel.
3. Blade Axles: Galvanized steel.
4. Bearings: Oil-impregnated bronze thrust or ball.
5. Blade Seals: Vinyl or Neoprene.
6. Jamb Seals: Cambered stainless steel.
7. Tie Bars and Brackets: Galvanized steel.

E. Jackshaft: 1-inch- diameter, galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
1. Length and Number of Mountings: Appropriate to connect linkage of each damper in multiple-damper assembly.

F. Damper Hardware: Zinc-plated, die-cast core with dial and handle made of 3/32-inch- thick zinc- plated steel, and a 3/4-inch hexagon locking nut. Include center hole to suit damper operating-rod size. Include elevated platform for insulated duct mounting.

2.5 VOLUME DAMPER CONTROL CABLE ASSEMBLIES

A. Manufacturer:
1. Young Regulator Company.

B. Concealed Ceiling Regulator:
1. Damper controller and cable shall be concealed above the ceiling. Cable to consist of Bowden cable .054" stainless steel control wire encapsulated in 1-16" flexible galvanized spiral wire sheath. Control kit shall consist of 2-5/8" diameter die cast aluminum housing with 3" diameter zinc plated (polished chrome is optional) cover and 14 gauge steel rack and pinion gear drive converting rotary motion to push-pull motion. Control shaft shall be D-style flatted and 1/4" diameter with 265-degree rotation providing graduations for positive locking and control, and 1-1/2" linear travel capability. Control kit is designed to be imbedded in the ceiling flush with the finished surface. Control kit shall be manually operated using Young Regulator Model 030-12 wrench. Control kit shall be Young Regulator Model 270-301.

C. Controller Mounted in Plenum of Slot Diffusers:
1. Damper controller and cable shall be concealed above the ceiling. Cable to consist of Bowden cable .054" stainless steel control wire encapsulated in 1/16" flexible galvanized spiral wire sheath. Control kit shall be designed for use with internally or externally controlled round or rectangular dampers and shall consist of 14 gauge steel rack and pinion gear drive converting rotary motion to push-pull motion. Control shaft shall be D-style flatted and 1/4" diameter with 265-degree rotation providing 1-1/2" linear travel capability. Control kit mounting bracket to be field mounted on ceiling

framework, behind grilles on or inside plenum slot diffusers and other various types of diffusers. Control kit shall be manually operated using Young Regulator Model 030-12 wrench. Control kit shall be Young Regulator Model 270-275.

2. Damper(s) to be constructed of heavy duty galvanized steel spiral shell design with rolled-in stiffening beads for superior rigidity. Spiral shell shall have one crimped end and one straight end for ease of installation. Damper to include "V" style 20 gauge galvanized steel blade secured with 1/2" diameter steel shafts and high strength Teflon bushings requiring no lubrication. Damper shall include all necessary hardware to ensure compatibility with Bowden remote cable control system. Damper(s) shall be Young Regulator Model 5020-CC.

2.6 TURNING VANES

A. Fabricate to comply with SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for vanes and vane runners. Vane runners shall automatically align vanes.

B. Manufactured Turning Vanes: Fabricate 1-1/2-inch- wide, double-vane, curved blades of galvanized sheet steel set 3/4 inch o.c.; support with bars perpendicular to blades set 2 inches o.c.; and set into vane runners suitable for duct mounting.
   1. Manufacturers:
      a. Ductmate Industries, Inc.
      b. Duro Dyne Corp.
      c. METALAIRE, Inc.
      d. Ward Industries, Inc.

C. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

2.7 FLEXIBLE CONNECTORS

A. Manufacturers:
   1. Ductmate Industries, Inc.
   2. Duro Dyne Corp.
   3. Ventfabrics, Inc.
   4. Ward Industries, Inc.

B. General Description: Flame-retardant or noncombustible fabrics, coatings, and adhesives complying with UL 181, Class 1.

C. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inch- wide, 0.028-inch- thick, galvanized sheet steel or 0.032-inch- thick aluminum sheets. Select metal compatible with ducts.

D. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.
   1. Minimum Weight: 26 oz./sq. yd..
   2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
   3. Service Temperature: Minus 40 to plus 200 deg F.

E. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.
   1. Minimum Weight: 24 oz./sq. yd..
   2. Tensile Strength: 530 lbf/inch in the warp and 440 lbf/inch in the filling.
   3. Service Temperature: Minus 50 to plus 250 deg F.

2.8 FLEXIBLE DUCTS

A. Manufacturers:
   1. Casco Silentflex II.

B. Insulated Flexible Duct: UL 181, Class 1 with:
   1. Non-woven nylon liner.
   2. Steel spring wire helix.
   3. Polyethylene vapor barrier jacket.

4. Adjustable metal male/female collars.
5. Pressure rating 1-1/2 in. positive to 1/2 in. negative.
6. Maximum Air Velocity: 4,000 fpm (continuous).
7. Temperature Range: 20 deg. F to 200 deg. F.

C. Flexible Duct Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action, in sizes 3 through 18 inches to suit duct size.

2.9 DUCT ACCESSORY HARDWARE

A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct insulation thickness.

B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

2.10 DUCT SILENCERS

A. Manufacturers:
1. Industrial Acoustics Company (IAC)
2. Commercial Acoustics.
3. Vibro-Acoustics.

B. General Description: Factory-fabricated and -tested, round or rectangular silencers with performance characteristics and physical requirements as indicated.

C. Fire Performance: Adhesives, sealants, packing materials, and accessory materials shall have fire ratings not exceeding 25 for flame-spread index and 50 for smoke-developed index when tested according to ASTM E 84.

D. Rectangular Units: Fabricate casings with a minimum of 0.034-inch- thick, solid galvanized sheet metal for outer casing and 0.022-inch- thick, ASTM A 653/A 653M, G60, perforated galvanized sheet metal for inner casing.

E. Round Units:
1. Outer Casings:
   a. ASTM A 653/A 653M, G60, galvanized sheet steel.
   b. Up to 24 Inches in Diameter: 0.034 inch thick.
   c. 26 through 40 Inches in Diameter: 0.040 inch thick.
   d. 42 through 52 Inches in Diameter: 0.052 inch thick.
   e. 54 through 60 Inches in Diameter: 0.064 inch thick.
   f. Casings fabricated of spiral lock-seam duct may be one size thinner than that indicated.
2. Interior Casing, Partitions, and Baffles:
   a. ASTM A 653/A 653M, G60, galvanized sheet steel.
   b. At least 0.034 inch thick and designed for minimum aerodynamic losses.

F. Sheet Metal Perforations: 1/8-inch diameter for inner casing and baffle sheet metal.

G. Fill Material: Inert and vermin-proof fibrous material, packed under not less than 5 percent compression.
1. Erosion Barrier: Polymer bag enclosing fill and heat-sealed before assembly.

H. Fabricate silencers to form rigid units that will not pulsate, vibrate, rattle, or otherwise react to system pressure variations.
1. Do not use nuts, bolts, or sheet metal screws for unit assemblies.
2. Lock form and seal or continuously weld joints.
3. Suspended Units: Factory-installed suspension hooks or lugs attached to frame in quantities and spaced to prevent deflection or distortion.
4. Reinforcement: Cross or trapeze angles for rigid suspension.

I. Source Quality Control:
1. Acoustic Performance: Test according to ASTM E 477.
2. Record acoustic ratings, including dynamic insertion loss and self-noise power levels with

an airflow of at least 2000-fpm face velocity.

3. Leak Test: Test units for airtightness at 200 percent of associated fan static pressure or 6- inch wg static pressure, whichever is greater.

PART 3 - EXECUTION

3.1 APPLICATION AND INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards--Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Provide duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.

C. Install backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.

D. Install volume dampers in ducts with liner; avoid damage to and erosion of duct liner.

E. Provide balancing dampers at points on supply, return, and exhaust systems where branches lead from larger ducts as required for air balancing. Coordinate requirements with TAB contractor. Install at a minimum of two duct widths from branch takeoff.

F. Where volume damper adjustment is not readily accessible through finished ceilings, provide volume damper remote control cable adjustment. Locate concealed ceiling regulators in coordination with Architect.

G. Provide test holes at fan inlets and outlets and elsewhere as indicated.

H. Install fire and smoke dampers, according to manufacturer's UL-approved written instructions.

I. Install duct access doors to allow for inspecting, adjusting, and maintaining accessories and terminal units as follows:
   1. On both sides of duct coils.
   2. Downstream from volume dampers and equipment.
   3. Adjacent to fire or smoke dampers, providing access to reset or reinstall fusible links.
   4. To interior of ducts for cleaning; before and after each change in direction, at maximum 50- foot spacing.
   5. On sides of ducts where adequate clearance is available.

J. Install the following sizes for duct-mounting, rectangular access doors:
   1. One-Hand or Inspection Access: 8 by 5 inches.
   2. Two-Hand Access: 12 by 6 inches.
   3. Head and Hand Access: 18 by 10 inches.
   4. Head and Shoulders Access: 21 by 14 inches.
   5. Body Access: 25 by 14 inches.
   6. Body Plus Ladder Access: 25 by 17 inches.

K. Install the following sizes for duct-mounting, round access doors:
   1. One-Hand or Inspection Access: 8 inches in diameter.
   2. Two-Hand Access: 10 inches in diameter.
   3. Head and Hand Access: 12 inches in diameter.
   4. Head and Shoulders Access: 18 inches in diameter.
   5. Body Access: 24 inches in diameter.

L. Install the following sizes for duct-mounting, pressure relief access doors:
   1. One-Hand or Inspection Access: 5 inches in diameter.
   2. Two-Hand Access: 10 inches in diameter.
   3. Head and Hand Access: 13 inches in diameter.
   4. Head and Shoulders Access: 19 inches in diameter.

M. Label access doors according to Division 23 Section "Identification for HVAC Piping and Equipment".

N. Install flexible connectors immediately adjacent to equipment in ducts associated with fans and motorized equipment supported by vibration isolators.

O. For fans developing static pressures of 5-inch wg and higher, cover flexible connectors with loaded vinyl sheet held in place with metal straps.

P. Connect diffusers or light troffer boots to low pressure ducts directly or with minimum 60-inch lengths of flexible duct clamped or strapped in place.

Q. Connect flexible ducts to metal ducts with adhesive plus sheet metal screws.

R. Install duct test holes where indicated and required for testing and balancing purposes.

3.2 ADJUSTING

A. Adjust duct accessories for proper settings.

END OF SECTION

SECTION 23 34 23

HVAC POWER VENTILATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Roof mounted downblast centrifugal exhaust fan.
2. Ceiling-mounted fans.
3. In-line centrifugal fans.

1.3 PERFORMANCE REQUIREMENTS

A. Project Altitude: Base air ratings on actual site elevations.

B. Operating Limits: Classify according to AMCA 99.

1.4 SUBMITTALS

A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated and include the following:

1. Certified fan performance curves with system operating conditions indicated.
2. Certified fan sound-power ratings.
3. Motor ratings and electrical characteristics, plus motor and electrical accessories.
4. Material gages and finishes, including color charts.
5. Dampers, including housings, linkages, and operators.
6. Roof Curbs
7. Fan Speed Controllers.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
2. Design Calculations: Calculate requirements for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
3. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.

C. Maintenance Data: For power ventilators to include in maintenance manuals specified in Division 1.

D. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Roof framing and support members relative to duct penetrations.
2. Ceiling suspension assembly members.
3. Size and location of initial access modules for acoustical tile.

4. Ceiling-mounted items including light fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. AMCA Compliance: Products shall comply with performance requirements and shall be licensed to use the AMCA-Certified Ratings Seal.

C. NEMA Compliance: Motors and electrical accessories shall comply with NEMA standards.

D. UL Standard: Power ventilators shall comply with UL 705.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver fans as factory-assembled unit, to the extent allowable by shipping limitations, with protective crating and covering.

B. Disassemble and reassemble units, as required for moving to final location, according to manufacturer's written instructions.

C. Lift and support units with manufacturer's designated lifting or supporting points.

1.7 COORDINATION

A. Coordinate size and location of structural-steel support members.

B. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete."

C. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Product: The design for each product is based on manufacturer named on the drawings. Subject to compliance with requirements, provide either named product or a comparable equivalent product by on of the other manufacturers specified.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Roof-mounted Downblast Centrifugal Exhaust Fans
    a. Greenheck Fan Corp.
    b. Cook, Loren Company.
    c. Twin City Fan Company.
2. Ceiling-Mounting Fans:
    a. Greenheck Fan Corp.
    b. Cook, Loren Company.
    c. Twin City Fan Company.
3. In-Line Centrifugal Fans:
    a. Broan Mfg. Co., Inc.
    b. Greenheck Fan Corp.
    c. Cook, Loren Company.

2.2 ROOF-MOUNTED DOWNBLAST CENTRIFUGAL EXHAUST FAN

A. Description:
   1. Downblast fan shall be for roof mounted applications
   2. Maximum continuous operating temperature is 180 Fahrenheit
   3. Each fan shall bear a permanently affixed manufacture's engraved metal nameplate containing the model number and individual serial number.

B. Wheel:
   1. Constructed of composite.
   2. Non-overloading, backward inclined centrifugal
   3. Statically and dynamically balanced in accordance to AMCA Standard 204-05
   4. The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency.

C. Electronically Commutated Motor:
   1. Motor enclosures: Open type.
   2. Motor to be a DC electronic commutation type motor (ECM) specifically designed for fan applications.
   3. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
   4. Internal motor circuitry to convert AC power supplied to the fan to DC power to operate the motor.
   5. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by either a potentiometer dial mounted at the motor or by a 0-10 VDC signal.
   6. Motor shall be a minimum of 85% efficient at all speeds.

D. Housing:
   1. Motor cover, shroud, curb cap, and lower windband shall be constructed of heavy gauge aluminum
   2. Shroud shall have an integral rolled bead for extra strength
   3. Shroud shall be drawn from a disc and direct air downward
   4. Lower windband shall have a formed edge for added strength
   5. Motor cover shall be drawn from a disc
   6. All housing components shall have final thicknesses equal to or greater then preformed thickness.
   7. Curb cap shall have pre-punched mounting holes to ensure correct attachment
   8. Rigid internal support structure
   9. Leak proof

E. Housing Supports and Drive Frame:
   1. Drive frame assemblies shall be constructed of heavy gauge steel and mounted on vibration isolators

F. Vibration Isolation:
   1. Rubber isolators
   2. Sized to match the weight of each fan

G. Options/Accessories:
   1. Birdscreen:
      a. Material Type: Galvanized
      b. Protects fan discharge
   2. Roof Curbs:
      a. Types: GPI
      b. Mounted onto roof with fan
      c. Material: Galvanized
   3. Curb Seal:
      a. Typically mounted between the fan curb cap and the roof curb
   4. Dampers:

a. Type: Gravity
b. Prevents outside air from entering back into the building when fan is off
c. Balanced for minimal resistance to flow
d. Galvanized frames with prepunched mounting holes

5. Finishes:
   a. Types: [None] [Permatector] [Hi-Pro Polyester] [Macropoxy with UV top coat]
6. Hinge Kit:
   a. Aluminum hinges
   b. Allows the fan to tilt away for access to wheel and ductwork for inspection and cleaning
7. Hinge Base:
   a. Aluminum hinges
   b. Hinges and restraint cables are mounted to a base (sleeve)
   c. Allows the fan to tilt away for access to wheel and ductwork for inspection and cleaning

2.3 DIRECT DRIVE CEILING MOUNTED CENTRIFUGAL EXHAUST FAN

A. General Description:
   1. Base fan performance at standard conditions (density 0.075 Lb/ft3)
   2. Ceiling mounted applications
   3. Performance capabilities up to 200 cubic feet per minute (cfm) and static pressure to 1 inches of water gauge
   4. Fans are available in nineteen sizes (50 - 1550 unit sizes)
   5. Maximum operating temperatures is 130 Fahrenheit
   6. Sound levels as low as 0.8 AMCA sones
   7. UL/cUL listed for above bathtub exhaust
   8. Fans are UL/cUL listed 507 - Electric Fans
   9. Each fan shall bear a permanently affixed manufacture's nameplate containing the model number and individual serial number
B. Wheel:
   1. Forward curved centrifugal wheel
   2. Constructed of galvanized steel or calcium carbonate filled polypropylene
   3. Statically and dynamically balanced in accordance to AMCA Standard 204-05
C. Motors:
   1. Motor enclosures shall be open driproof (ODP), opening in the frame body and or end brackets
   2. Motors are permanently lubricated sleeve bearing type to match with the fan load and furnished at the specific voltage and phase
   3. Motor shall be mounted on vibration isolators and be accessible for maintenance
   4. Thermal overload protection
D. Housing:
   1. Constructed of heavy gauge galvanized steel
   2. Interior shall be lined with 0.5 inches of acoustical insulation
   3. Profile as low as 7 inches
E. Plastic Backdraft Damper:
   1. Prevents air from entering back into the building when fan is off
   2. Eliminates rattling or unwanted backdrafts
F. Outlet:
   1. Type of outlet: Round
   2. Field rotatable from horizontal to vertical discharge
   3. Duct collar shall include backdraft damper
G. Mounting Brackets:
   1. Fully adjustable for multiple installation conditions
H. Options/Accessories:

1. Speed Controls:
    a. Controls the fan's output
    b. Fan can be adjusted to 60 percent of full speed.
2. Vibration Isolation:
    a. For suspended installations
    b. Includes prepunched hole for ease of installation and shall have all hardware to mount one unit.

I. Certifications: Fan shall be manufactured at an ISO 9001 certified facility. Fan shall be listed by Underwriters Laboratories (UL 705) and UL listed for Canada (cUL 705). For restaurant applications, fan shall be listed by Underwriters Laboratories (UL 762) and UL listed for Canada (Power Ventilator for Restaurant Exhaust Appliances). Fan shall bear the AMCA certified ratings seal for air performance.

2.4 IN-LINE CENTRIFUGAL FAN

A. General Description:
1. Base fan performance at standard conditions (density 0.075 Lb/ft3)
2. Performance capabilities up to 5,025 cubic feet per minute (cfm) and static pressure to 2.0 inches of water gauge.
3. Fans are available in thirteen sizes with nominal wheel diameters ranging from 8 inches through 16 inches (60 - 160 unit sizes)
4. Normal operating temperature up to 130 Fahrenheit.
5. Applications include: intake or make-up air systems
6. Each fan shall bear a permanently affixed manufacture's nameplate containing the model number and individual serial number

B. Wheel:
1. Constructed of aluminum.
2. Wheel type to be non-overloading, backward inclined centrifugal wheel
3. Statically and dynamically balanced in accordance to AMCA Standard 204-05.
4. The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency.
5. Single thickness blades are securely riveted or welded to a heavy gauge back plate and wheel cone.

C. Electronically Commutated Motor:
1. Motor enclosures: Open type.
2. Motor to be a DC electronic commutation type motor (ECM) specifically designed for fan applications.
3. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
4. Internal motor circuitry to convert AC power supplied to the fan to DC power to operate the motor.
5. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by either a potentiometer dial mounted at the motor or by a 0-10 VDC signal.
6. Motors can achieve up to 95% efficiency, model and horsepower dependent.

D. Housing/Cabinet Construction:
1. Construction material: Aluminum
2. Square design constructed of heavy gauge galvanized steel, aluminum or painted steel

E. Inlet Cone:
1. Construction material: Galvanized

F. Housing Supports and Drive Frame:
1. Housing supports are constructed of structural steel with formed flanges.
2. Drive Frame is constructed of structural steel with formed flanges.

G. Options/Accessories:
1. MERV 13 filter.

2. Damper:
   a. Type: Gravity
   b. Galvanized frames with prepunched mounting holes
   c. Balanced for minimal resistance to flow

2.5 SOURCE QUALITY CONTROL

A. Sound-Power Level Ratings: Comply with AMCA 301, "Methods for Calculating Fan Sound Ratings from Laboratory Test Data." Factory test fans according to AMCA 300, "Reverberant Room Method for Sound Testing of Fans." Label fans with the AMCA-Certified Ratings Seal.

B. Fan Performance Ratings: Establish flow rate, pressure, power, air density, speed of rotation, and efficiency by factory tests and ratings according to AMCA 210, "Laboratory Methods of Testing Fans for Rating."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install power ventilators level and plumb.

B. Vibration- and seismic-control devices are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment".
   1. Secure vibration and seismic controls to concrete bases using anchor bolts cast in concrete base.

C. Secure roof-mounting fans to roof curbs with cadmium-plated hardware. Refer to Division 7 Section "Roof Accessories" for installation of roof curbs.

D. Ceiling Units: Suspend units from structure; use steel wire or metal straps.

E. Vibration-control devices are specified in Division 23 Section "Mechanical Vibration Controls and Seismic Restraints."

F. Install units with clearances for service and maintenance.

G. Label units according to requirements specified in Division 23 Section "Identification for HVAC Piping and Equipment".

3.2 CONNECTIONS

A. Duct installation and connection requirements are specified in other Division 23 Sections.

Drawings indicate general arrangement of ducts and duct accessories. Make final duct connections with flexible connectors. Flexible connectors are specified in Division 23 Section "Air Duct Accessories".

B. Install ducts adjacent to power ventilators to allow service and maintenance.

C. Ground equipment.

D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

A. Equipment Startup Checks:
   1. Verify that shipping, blocking, and bracing are removed.
   2. Verify that unit is secure on mountings and supporting devices and that connections to ducts and electrical components are complete. Verify that proper thermal-overload protection is installed in motors, starters, and disconnect switches.
   3. Verify that cleaning and adjusting are complete.

4. Disconnect fan drive from motor, verify proper motor rotation direction, and verify fan wheel free rotation and smooth bearing operation. Reconnect fan drive system, align and adjust belts, and install belt guards.
5. Verify lubrication for bearings and other moving parts.
6. Verify that manual and automatic volume control and fire and smoke dampers in connected ductwork systems are in fully open position.
7. Disable automatic temperature-control operators.

B. Starting Procedures:
1. Energize motor and adjust fan to indicated rpm.
2. Measure and record motor voltage and amperage.

C. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation. Remove malfunctioning units, replace with new units, and retest.

D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Shut unit down and reconnect automatic temperature-control operators.

F. Refer to Division 23 Section " Commissioning of HVAC" for testing, adjusting, and balancing procedures.

G. Replace fan and motor pulleys as required to achieve design airflow.

H. Repair or replace malfunctioning units. Retest as specified above after repairs or replacements are made.

3.4 ADJUSTING

A. Adjust damper linkages for proper damper operation.

B. Adjust belt tension.

C. Lubricate bearings.

3.5 CLEANING

A. On completion of installation, internally clean fans according to manufacturer's written instructions.

Remove foreign material and construction debris. Vacuum fan wheel and cabinet.

B. After completing system installation, including outlet fitting and devices, inspect exposed finish.

Remove burrs, dirt, and construction debris and repair damaged finishes.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain power ventilators.
1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
2. Review data in maintenance manuals. Refer to Division 1 Section "Closeout Procedures."
3. Review data in maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
4. Schedule training with Owner, through Architect, with at least seven days' advance notice.

END OF SECTION

SECTION 23 37 13

DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes ceiling- and wall-mounted diffusers, registers, and grilles. (Refer to Sheet M004 “HVAC Equipment Schedules 3” if needed for additional clarification.)

B. Related Sections include the following:
   1. Division 8 Section "Louvers and Vents" for fixed and adjustable louvers and wall vents, whether or not they are connected to ducts.
   2. Division 23 Section "Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers, registers, and grilles.
   3. Section "Acoustics".

1.3 SUBMITTALS

A. Product Data: For each product indicated, include the following:
   1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
   2. Diffuser, Register, and Grille Schedule: Indicate Drawing designation, room location, quantity, model number, size, and accessories furnished.

B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
   1. Ceiling suspension assembly members.
   2. Method of attaching hangers to building structure.
   3. Size and location of initial access modules for acoustical tile.
   4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
   5. Duct access panels.

C. Samples for Initial Selection: For diffusers, registers, and grilles with factory-applied color finishes.

D. Samples for Verification: For diffusers, registers, and grilles, in manufacturer's standard sizes to verify color selected.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Products: Subject to compliance with requirements, provide one of the products specified.
   2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 GRILLES AND REGISTERS

A. Adjustable Sidewall Supply:
   1. Product: Product: Price 500
   2. Manufacturers:
      a. Price Industries.
      b. Titus.

B. Steel supply grilles shall be of the sizes and mounting types shown on the plans and outlet schedule. The deflection blades shall be available parallel to the long or short dimension of the grille. Construction shall be of steel with a 1-1/4 inch wide border on all sides. Screw holes shall be countersunk for a neat appearance. Corner shall be welded with full penetration resistance welds.

C. Deflection blades shall be contoured to a specifically designed and tested cross-section to meet published test performance data. Blades shall be spaced on 3/4-inch centers. Blades shall have steel friction pivots on both ends to allow individual blade adjustment without loosening or rattling. Plastic blade pivots are not acceptable.

D. Optional opposed-blade volume damper shall be constructed of heavy gauge steel. Damper must be operable from the face of the grille. The grille finish shall be #26 white. The finish shall be an anodic acrylic paint, baked at 315°F for 30 minutes. The pencil hardness must be HB to H. The paint must pass a 100-hour ASTM B117 Corrosive Environments Salt Spray Test without creepage, blistering, or deterioration of film. The paint must pass a 250-hour ASTM D870 Water Immersion Test. The paint must also pass the ASTM D2794 Reverse Impact Cracking Test with a 50-inch pound force applied.

E. The manufacturer shall provide published performance data for the grille. The grille shall be tested in accordance with ANSI/ASHRAE Standard 70-1991.

F. The manufacturer shall provide published performance data for the grille. The grille shall be tested in accordance with ANSI/ASHRAE Standard 70-1991

G. Return and Exhaust Register:
   1. Product: Price 520
   2. Manufacturers:
      a. Price Industries.
      b. Titus.
   3. The fixed deflection blades shall be available parallel to the long or short dimension of the grille. Construction shall be of steel with a 11/4-inch wide border on all sides. Screw holes shall be countersunk for a neat appearance. Corners shall be welded with full penetration resistance welds.
   4. Deflection blades shall be contoured to a specifically designed and tested cross-section to meet published test performance data. Blades shall be firmly held in place by mullions from behind the grille and fixed to the grille by welding in place. Blade deflection angle shall be available at 35°.
   5. Optional opposed-blade volume damper shall be constructed of heavy gauge steel. Damper must be operable from the face of the grille.
   6. The grille finish shall be #26 white. The finish shall be an anodic acrylic paint, baked at 315° F for 30 minutes. The pencil hardness must be HB to H. The paint must pass a 100-hour ASTM B117 Corrosive Environments Salt Spray Test without creepage, blistering, or deterioration of film. The paint must pass a 250-hour ASTM D870 Water Immersion Test. The paint must also pass the ASTM D2794 Reverse Impact Cracking Test with a 50-inch pound force applied.
   7. The manufacturer shall provide published performance data for the grille. The grille shall be tested in accordance with ANSI/ASHRAE Standard 70-1991.

2.3 DIFFUSER OUTLETS & INLETS

A. Louver Face Diffuser:
   1. Product: Price MCD
   2. Manufacturers:
      a. Price Industries.
      b. Titus.
   3. Ceiling diffusers shall be for adjustable discharge pattern. These diffusers shall consist of an outer frame assembly of the sizes and mounting types shown on the plans and outlet schedule. A square or rectangular inlet shall be an integral part of the frame

assembly and a transition piece shall be available to facilitate attachment of round duct. An inner core assembly consisting of fixed deflection louvers shall be available in one-, two-, three-, or four-way horizontal discharge patterns. Diffusers shall include adjustable vanes to provide full vertical projection as well as horizontal projection. The inner core assembly must be removable in the field without tools for easy installation, cleaning, or damper adjustment.

4. The finish shall be #26 white. The finish shall be an anodic acrylic paint, baked at 315° F for 30 minutes. The pencil hardness must be HB to H. The paint must pass a 100-hour ASTM B117 Corrosive Environments Salt Spray Test without creepage, blistering, or deterioration of film. The paint must pass a 250-hour ASTM D870 Water Immersion Test. The paint must also pass the ASTM D2794 Reverse Impact Cracking Test with a 50-inch pound force applied.
5. Optional damper shall be constructed of heavy gauge steel. Damper must be operable from the face of the diffuser by removing the spring loaded inner core assembly.
6. The manufacturer shall provide published performance data for the diffuser. The diffuser shall be tested in accordance with ANSI/ASHRAE Standard 70-1991.

2.4 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas where diffusers, registers, and grilles are to be installed for compliance with requirements for installation tolerances and other conditions affecting performance of equipment.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb.

B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practicable. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.3 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION

SECTION 23 40 00

HVAC AIR CLEANING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes factory-fabricated air-filter devices and media used to remove particulate matter from air for HVAC applications. Filters shall meet MERV 13 requirements.

1.3 SUBMITTALS

A. Product Data: Include dimensions; operating characteristics; required clearances and access; rated flow capacity, including initial and final pressure drop at rated airflow; efficiency and test method; fire classification; furnished specialties; and accessories for each model indicated.

B. Shop Drawings: Include plans, elevations, sections, and details to illustrate component assemblies and attachments.

1. Show filter ultra low leak rack assembly, dimensions, materials, and methods of assembly of components.
2. Include setting drawings, templates, and requirements for installing anchor bolts and anchorages.
3. Wiring Diagrams: Power, signal, and control wiring.

C. Operation and Maintenance Data: For each type of filter and rack to include in emergency, operation, and maintenance manuals.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of air filters and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with ARI 850.

D. Comply with ASHRAE 52.1 and ASHRAE 52.2 for method of testing and rating air-filter units.

E. Comply with NFPA 70 for installing electrical components.

F. Comply with NFPA 90A and NFPA 90B.

1.5 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Provide one complete set of filters for each filter bank. If system includes prefilters, provide only prefilters.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Air Filters, Electrostatic Air Cleaners, and Filter-Holding Systems:
   a. TFM
2. Filter Gages:
   a. Airguard Industries, Inc.
   b. Dwyer Instruments, Inc.

2.2 DISPOSABLE PANEL FILTERS

A. Description: Factory-fabricated, viscous-coated, flat-panel-type, disposable air filters with holding frames.

B. Media: Interlaced glass fibers sprayed with nonflammable adhesive and anti-microbial agent.

C. Frame: Galvanized steel with metal grid on outlet side, steel rod grid on inlet side, hinged, and with pull and retaining handles.

D. Duct-Mounting Frames: Welded, galvanized steel with gaskets and fasteners and suitable for bolting together into built-up filter banks.

2.3 EXTENDED-SURFACE, DISPOSABLE PANEL FILTERS

A. Description: Factory-fabricated, dry, extended-surface filters with holding frames.

B. Media: Fibrous material formed into deep-V-shaped pleats with anti-microbial agent and held by self-supporting wire grid.

C. Media and Media-Grid Frame: Galvanized steel.

D. Duct-Mounting Frames: Welded, galvanized steel with gaskets and fasteners, and suitable for bolting together into built-up filter banks.

2.4 EXTENDED-SURFACE, NONSUPPORTED-MEDIA FILTERS

A. Description: Factory-fabricated, dry, extended-surface, self-supporting filters with holding frames.

B. Media: Fibrous material constructed so individual pleats are maintained in tapered form by flexible internal supports under rated-airflow conditions and anti-microbial agent.

C. Filter-Media Frame: Galvanized steel.

D. Duct-Mounting Frames: Welded epoxy coated aluminum with gaskets and fasteners, and suitable for bolting together into built-up filter banks.

2.5 FRONT- AND REAR-ACCESS FILTER FRAMES

A. Framing System: Epoxy coated aluminum framing members with access for either upstream (front) or downstream (rear) filter servicing, cut to size and prepunched for assembly into modules. Vertically support filters prevent deflection of horizontal members without interfering with either filter installation or operation.

B. Prefilters: Incorporate a separate track, removable from front or back.

C. Sealing: Factory-installed, positive-sealing device for each row of filters to ensure seal between gasketed filter elements to prevent bypass of unfiltered air.

2.6 FILTER GAGES

A. Description: Diaphragm type with dial and pointer in metal case, vent valves, black figures on white background, and front recalibration adjustment.

1. Diameter: 4-1/2 inches.
2. Range: 0- to 2.0-inch wg.

B. Accessories: Static-pressure tips, tubing, gage connections, and mounting bracket.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install filter frames according to manufacturer's written instructions.

B. Position each filter unit with clearance for normal service and maintenance. Anchor filter holding frames to substrate.

C. Install filters in position to prevent passage of unfiltered air.

D. Install filter gage for each filter bank.

E. Install filter gage static-pressure tips upstream and downstream from filters to measure pressure drop through filter. Mount filter gages on outside of filter housing or filter plenum in an accessible position. Adjust and level inclined gages.

F. Coordinate filter installations with duct and air-handling unit installations.

G. Electrical wiring and connections are specified in Division 26 Sections.

H. Ground equipment according to Division 26 Section "Grounding and Bonding."

3.2 CLEANING

A. After completing system installation and testing, adjusting, and balancing air-handling and air- distribution systems, clean filter housings and install new filter media.

END OF SECTION

SECTION 23 75 00

ENERGY RECOVERY VENTILATOR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes Energy Wheel Air-to-Air Energy Recovery Ventilators for rooftop installation.

1.3 SUBMITTALS

A. Product Data: For each type or model include the following:

1. Complete fan performance curves for both Supply Air and Exhaust Air, with system operating conditions indicated, as tested in an AMCA Certified Chamber.
2. Energy wheel performance data for both summer and winter operation.
3. Motor ratings, electrical characteristics and motor and fan accessories.
4. Combined efficiency data per ARI Guideline V-2003 for each model. Data shall include RER, COP, Unitary Net Cooling, Unitary EER and CEF.
5. Material types and gauges of all component pieces and assemblies.
6. Dimensioned drawings for each type of installation, showing isometric and plan views, to include location of attached ductwork and service clearance requirements.
7. Estimated gross weight of each installed unit.
8. Installation, Operating and Maintenance manual (IOM) for each model.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain unit with all appurtenant components or accessories from a single manufacturer.

B. For the actual fabrication, installation, and testing of work under this section, use only thoroughly trained and experienced workers completely familiar with the items required and with the manufacturer's current recommended methods of installation.

C. Product Options: Drawings must indicate size, profiles and dimensional requirements of Energy Recovery Units and are to be based on the specific system indicated. Refer to Division 1 Section "Product Requirements".

D. Certifications

1. Energy Wheel shall be AHRI Certified, per Standard 1060.

1.5 COORDINATION

A. Coordinate size and location of all building penetrations required for installation of each unit and associated plumbing and electrical systems.

B. Coordinate sequencing of construction of associated plumbing, HVAC, electrical supply, roofing contractor.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: 1 set(s) of MERV 13 disposable supply air filters and 1 set(s) MERV 8 disposable exhaust air filters for each unit.
2. One set of fan belts.
3. One set of energy wheel belts.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with specifications contained within this document, manufacturers offering products that may be incorporated into the work include, but are not limited to:

1. Greenheck Fan Corporation

2.2 MANUFACTURED UNITS

A. Unit shall be fully assembled at the factory and consist of an insulated metal cabinet, energy wheel, motorized intake damper, motorized exhaust damper, curb assembly, filter assembly for intake and exhaust air, supply air blower assembly, exhaust air blower assembly and an electrical control center. All specified components and internal accessories factory installed and tested and prepared for single-point high voltage connection.

2.3 CABINET

A. Materials: Formed double wall insulated metal cabinet, fabricated to permit access to internal components for maintenance.

1. Outside casing: 18 gauge, galvanized (G90) steel meeting ASTM A653 for components that do not receive a painted finish.
2. Internal assemblies: 18 gauge, galvanized (G90) steel except for motor supports which shall be minimum 14 gauge galvanized (G90) steel.

B. Access doors shall be hinged.

C. Shall have factory-installed duct flanges on all duct openings.

D. Cabinet Insulation: Comply with NFPA 90A and NFPA 90B and erosion requirements of UL 181.

1. Materials: Fiberglass insulation. If insulation other than fiberglass is used, it must also meet the Fire Hazard Classification shown below.
   a. Thickness: 1 inch (25 mm)
   b. Fire Hazard Classification: Maximum flame spread of 25 and smoke developed of 50, when tested in accordance with ASTM C 411.
   c. Location and application: Full coverage of entire cabinet exterior to include walls, roof and floor of unit. Insulation shall be of semi-rigid type and installed between inner and outer shells of all cabinet exterior components.

E. Energy wheel: Energy wheel shall be of total enthalpy, rotary air-to-air type and shall be an element of a removable energy wheel cassette. The cassette shall consist of a galvanized steel framework (designed to produce laminar air flow through the wheel), an energy wheel as specified and a motor and drive assembly. The cassette shall incorporate a pre-tensioned urethane drive belt with a five year warranty. The wheel media shall be a polymer film matrix in a stainless steel framework and be comprised of individual segments that are removable for servicing. Non-segmented energy wheels are not acceptable. Silica gel desiccant shall be permanently bonded to the polymer film and shall be designed and constructed to permit cleaning and servicing. The energy wheel is to have a five year warranty. Performance criteria are to be as specified in AHRI Standard 1060, complying with the Combined Efficiency data in the submittal.

F. Supply Air and Exhaust Air blower assemblies: Blower assemblies consist of an electric motor and a belt driven blower. Assembly shall be mounted on heavy gauge galvanized rails and further mounted on 1.125 inch thick neoprene vibration isolators.

G. Control panel / connections: Energy Recovery Ventilator shall have an electrical control center where all high and low voltage connections are made. Control center shall be constructed to permit single-point high voltage power supply connections.

H. Frost control: none.

I. Motorized dampers / Exhaust Air, Intake Air, Motorized dampers of low leakage type shall be factory installed.

J. Curb Assembly: A curb assembly made of 14 gauge galvanized steel shall be provided by the factory for assembly and installation as part of this division. The curb assembly shall provide perimeter support of the entire unit. Curb assembly shall enclose the underside of the unit and shall be sized to fit into a recess in the bottom of the unit. Contractor shall be responsible for coordinating with roofing contractor to ensure curb unit is properly flashed to provide protection against weather/moisture penetration. Contractor shall provide and install appropriate insulation for the curb assembly.

2.4 BLOWER

A. Blower section construction, Supply Air and Exhaust Air: Belt drive motor and blower shall be assembled onto a 14 gauge galvanized steel platform and must have neoprene vibration isolation devices.

B. Blower assemblies: Shall be statically and dynamically balanced and designed for continuous operation at maximum rated fan speed and horsepower.

C. Centrifugal blower housing: Formed and reinforced steel panels to make curved scroll housing with shaped cutoff.

D. Forward curved blower (fan) wheels: Galvanized or aluminum construction with inlet flange and shallow blades curved forward in direction of airflow. Mechanically attached to shaft with set screws.

E. Blower performance shall be factory tested for flow rate, pressure, power, air density, rotation speed and efficiency. Ratings are to be established in accordance with AMCA 210, "Laboratory Methods of Testing Fans for Rating".

2.5 MOTORS

A. General: Blower motors greater than 3/4 horsepower shall be "NEMA Premium" unless otherwise indicated. Minimum compliance with EPAct minimum energy-efficiency standards for single speed ODP and TEFC enclosures is not acceptable. Motors shall be heavy-duty, permanently lubricated type to match the fan load and furnished at the specified voltage, phase and enclosure. Drives shall be sized for a minimum of 150% of driven horsepower and pulleys shall be fully machined cast-type, keyed and fully secured to the fan wheel and motor shafts. Electric motors of ten horsepower or less shall be supplied with an adjustable drive pulley. Comply with requirements in Division 23 05 13, matched with fan load.

B. Fan motors shall be 60 cycle, 1 phase 230 volts.

2.6 UNIT CONTROLS

A. The unit shall be constructed so that it can be controlled by a factory-supplied controller or it can be monitored and controlled by a Building Management System (BMS).

B. Sensors

1. Dirty filter sensor
2. Temperature Sensors - OAI EAD RAI OAD
3. Relative Humidity Sensor - OAH RAH

2.7 FILTERS

A. Unit shall have permanent metal filters located in the outdoor air intake and shall be accessible from the exterior of the unit. MERV 13 disposable pleated filters shall be provided in the intake air stream and MERV 8 filters in the exhaust air stream.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to start of installation, examine area and conditions to verify correct location for compliance with installation tolerances and other conditions affecting unit performance. See unit IOM.

B. Examine roughing-in of plumbing, electrical and HVAC services to verify actual location and compliance with unit requirements. See unit IOM.

C. Proceed with installation only after all unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Installation shall be accomplished in accordance with these written specifications, project drawings, manufacturer's installation instructions as documented in manufacturer's IOM, Best Practices and all applicable building codes.

3.3 CONNECTIONS

A. In all cases, industry Best Practices shall be incorporated. Connections are to be made subject to the installation requirements shown above.

1. Duct installation and connection requirements are specified in Division 23 of this document.

2. Electrical installation requirements are specified in Division 26 of this document.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory authorized service representative to inspect field assembled components and equipment installation, to include electrical and piping connections. Report results to A/E in writing. Inspection must include a complete startup checklist to include (as a minimum) the following: Completed Start-Up Checklists as found in manufacturer's IOM.

3.5 START-UP SERVICE

A. Engage a factory authorized service representative to perform startup service. Clean entire unit, comb coil fins as necessary, and install clean filters. Measure and record electrical values for voltage and amperage. Refer to Division 23 "Testing, Adjusting and Balancing" and comply with provisions therein.

3.6 DEMONSTRATION AND TRAINING

A. Engage a factory authorized service representative to train owner's maintenance personnel to adjust, operate and maintain the entire unit. Refer to Division 01 Section Closeout Procedures and Demonstration and Training.

END OF SECTION

SECTION 23 74 16

ROOFTOP PACKAGED HEAT PUMP UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes Packaged Heat Pump System for rooftop installation.

1.3 SUBMITTALS

A. Product Data:

1. Provide literature that indicates dimensions, capacities, ratings, performances, gauges and finishes of materials, electrical characteristics and connection requirements.
2. Provide data of filter media, performance, framing and assembly.
3. Provide coil performance data and fan performance data.
4. Submit sound power level data for fan outlet, fan inlet and casing radiation at rated capacity.
5. Submit electrical requirements for power supply wiring including wiring diagrams for control wiring.

1.4 QUALITY ASSURANCE

A. Cooling capacity shall be rated in accordance with current ANSI/AHRI Standard 210/240.

B. Unit shall be UL or ETL listed and designed to conform to ANSI/ASHRAE Standard 15 Safety Code for Mechanical Refrigeration.

C. ANSI/NFPA 70: National Electrical Code.

D. Provide units with Minimum EER of 11, COP 3.4 rated at AHRI conditions and calculated in accordance with AHRI Standard 210/240.

E. The unit roof curbs shall conform to NRCA standards.

F. Insulation and adhesive shall meet NFPA 90A and 90B requirements for flame spread and smoke generation.

G. Unit casing shall be capable of withstanding ASTM B117 500-hour salt spray test.

H. Each unit shall be run tested at factory per ANSI/ASHRAE 37 and provided with a certificate indicating tested pressures, amperages, dates, and inspector.

1.5 WARRANTY

A. Compressors shall be provided with manufacturer's five-year warranty, replacement only.

B. Manufacturer shall warrant all parts for a period of five years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with specifications contained within this document, manufacturers offering products that may be incorporated into the work include, but are not limited to:

1. Trane

B. Furnish packaged Heat Pump unit for rooftop installation. Unit shall be self-contained, completely factory assembled, with complete internal wiring and controls. Unit shall also be provided with a fully piped refrigerant circuit, fully charged with a refrigerant that is not scheduled for phase out. Unit

shall be field configurable for down-flow or horizontal discharge. Cooling and heating capacities, electrical characteristics, and operating conditions shall be as indicated on Drawings.

2.2 UNIT CABINET

A. Galvanized steel with baked enamel finish on external surfaces that are exposed to weather.

B. Interior surfaces exposed to conditioned and return air streams shall be insulated with a minimum ½-inch thick, 1-pound density foil-faced cleanable insulation.

C. Cabinet top cover shall be of one-piece construction or where seams exist, shall be double hemmed and gasket sealed.

D. Cabinet panels shall be hinged access panels for filter, compressors, evaporator fan, and control box areas. Each panel shall use multiple quarter-turn latches. Each major external hinged access panel shall be permanently attached to the rooftop unit. Panels shall also include tiebacks.

E. Return air filters shall be accessible through a hinged access panel and be on a track using standard size filters.

F. Holes shall be provided in base rails (minimum 16 gage) for rigging shackles and level travel and movement during overhead rigging operations.

G. Unit shall have a factory-installed internally sloped condensate drain pan, providing a minimum ¾-inch NPT connection to prevent standing water from accumulating. Pan shall be fabricated of high impact polycarbonate material or stainless steel and shall slide out for cleaning or maintenance. An alternate vertical drain (¾-inch NPT) connection shall also be available. Drain pans shall conform to ASHRAE 62 self-draining provisions.

2.3 COMPRESSORS

A. Unit shall be furnished with single (If single compressor is used, then it shall be Two Stage type) or fully hermetic scroll compressors with internal vibration isolators.

B. Compressors shall be provided with service access valves.

C. Compressor motors shall be cooled by refrigerant passing through motor windings.

D. Compressors shall be provided with line break thermal and current overload protection.

E. Compressors shall be provided with crankcase heaters, internal high-pressure and temperature protection.

2.4 REFRIGERANT CIRCUITS

A. Thermostatic expansion valve (TXV) with removable power element or Electronic Expansion Valve (EEV).

B. Refrigerant strainer.

C. Service gage connections on suction, discharge, and liquid lines.

D. Solid core bi-flow refrigerant filter driers.

E. High-pressure safety switch.

F. Low-pressure safety switch.

G. Minimum off-time relay.

2.5 EVAPORATOR AND CONDENSER COILS

A. Condenser Coils:

1. Spine Fin condenser coil shall be continuously wrapped, corrosion resistant aluminum with minimum brazed joints. This coil is 3/8-inch OD seamless aluminum tubing glued to a continuous aluminum fin. Coils are lab tested to withstand 2,000 pounds of pressure per square inch. The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on four sides by louvered panels.

B. Evaporator Coils:

1. All aluminum micro channel, extruded tubes, mechanically bonded to aluminum fins and factory pressure and leak tested at 480-650 psig.

2.6 FANS AND MOTORS

A. Indoor Fan: Direct drive, forward curved, centrifugal wheel in a Composite Vortica Blower housing. Motor shall have thermal overload protection. Permanently lubricated motor bearings. Motor/blower assembly isolated from the unit with rubber mounts.

B. Condenser Fan: Direct-drive, draw thru propeller type. Weather-proofed permanent split capacitor fan motor shall have built-in thermal overload and permanently lubricated motor bearings.

2.7 CONTROLS, SAFETIES AND DIAGNOSTIC POINTS

A. Unit Controls: Unit shall be furnished with self-contained, BACnet MS/TP Direct Digital Controls.

1. Controls shall be factory-installed.
2. Controls shall operate with zone control systems as needed.
3. Controls shall furnish built-in diagnostics for thermostat/sensor commands for staged heating and cooling, evaporator-fan operation, and economizer operation.
4. Controls shall be furnished with a 5-minute time delay between modes of operation.
5. Control circuit shall be protected by a fuse on 24-V transformer side.
6. Control shall incorporate passive infrared detection for sensing occupancy in space serve.

B. Compressor high temperature, high current, internal overloads, internal thermostat.

1. Compressor reverse rotation protection.
2. Loss-of-charge/low-pressure switch.
3. Freeze-protection thermostat, evaporator coil.
4. High-pressure switch.
5. Internal relief valve.
6. Anti-recycle relay, or time cycle device to prevent rapid cycling of compressor after any off cycle.

C. Operating Characteristics:

1. Unit shall be capable of starting and operating at 125 degrees F ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 360 at plus or minus 10 percent voltage.
2. Compressor with standard controls shall be capable of operation down to 25 degrees F ambient outdoor temperature.

2.8 FILTERS

A. Provide filter section with factory-installed low-velocity, throwaway, 4-inch (if available), or 2-inch thick high capacity, MERV 13 Class 2, filters of commercially available sizes unless noted otherwise on the drawings.

B. Filter face velocity shall not exceed 300 fpm at nominal airflows.

C. Filter section shall allow installation of standard size air filter.

D. Return air filters shall be accessible through a hinged or tool-less access panel.

2.9 Furnish programmable digital thermostat with following features:

A. Heat, cool, automatic changeover.

B. Occupied/ Unoccupied modes.

C. With built-in PIR occupancy sensor.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas under which Work of this Section will be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Installation shall be accomplished in accordance with these written specifications, project drawings, manufacturer's installation instructions as documented in manufacturer's IOM, Best Practices and all applicable building codes.

B. Downflow Packaged Units: Install unit on a prefabricated mounting frame or curb secured directly to roof. Follow manufacturers recommended installation manuals. Submit Shop Drawings for review by Architect.

C. Horizontal Flow Packaged Units: Install unit on platform or prefabricated mounting frame or curb secured directly to roof designed to suit roof conditions and requirements of provided unit. Submit Shop Drawings for review by Architect.

3.3 CONNECTIONS

A. In all cases, industry Best Practices shall be incorporated. Connections are to be made subject to the installation requirements shown above.

1. Duct installation and connection requirements are specified in Division 23 of this document.
2. Electrical installation requirements are specified in Division 26 of this document.

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory authorized service representative to inspect field assembled components and equipment installation, to include electrical and piping connections. Report results to A/E in writing. Inspection must include a complete startup checklist to include (as a minimum) the following: Completed Start-Up Checklists as found in manufacturer's IOM.

3.5 START-UP SERVICE

A. System shall be started up and initially operated with components operating. During this test, various strainers or filters shall be periodically cleaned until no further accumulation of foreign material occurs. Adjust safety and automatic control instruments as required to provide proper operation and control sequence.

3.6 DEMONSTRATION AND TRAINING

A. Engage a factory authorized service representative to train owner's maintenance personnel to adjust, operate and maintain the entire unit. Refer to Division 01 Section Closeout Procedures and Demonstration and Training.

END OF SECTION

SECTION 23 81 26

SPLIT-SYSTEM AIR-CONDITIONERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes split-system air-conditioning and heat pump units consisting of separate evaporator-fan and compressor-condenser components. Units are designed for exposed or concealed mounting, and may be connected to ducts.

1.3 SUBMITTALS

A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For split-system air-conditioning units to include in emergency, operation, and maintenance manuals.

F. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of split-system units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Energy-Efficiency Ratio: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

D. Coefficient of Performance: Equal to or greater than prescribed by ASHRAE 90.1, "Energy Efficient Design of New Buildings except Low-Rise Residential Buildings."

E. Units shall be designed to operate with HCFC-free refrigerants.

1.5 COORDINATION

A. Coordinate size and location of concrete bases for units. Cast anchor-bolt inserts into bases.

Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."

B. Coordinate size, location, and connection details with roof curbs, equipment supports, and roof penetrations specified in Division 07 Section "Roof Accessories."

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Mitsubishi Electronics America, Inc.; HVAC Division.
2. Trane Company (The); Unitary Products Group.

2.2 WALL-MOUNTING, EVAPORATOR-FAN COMPONENTS

A. Cabinet: Enameled steel with removable panels on front and ends in color selected by Architect, and discharge drain pans with drain connection.

B. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with thermal-expansion valve.

C. Fan: Direct drive, centrifugal fan.

D. Fan Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."

1. Special Motor Features: Multitapped, multispeed with internal thermal protection and permanent lubrication.

E. Filters: Permanent, cleanable.

2.3 AIR-COOLED, COMPRESSOR-CONDENSER COMPONENTS

A. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.

B. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation.

Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.

1. Compressor Type: Scroll.
2. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
3. Refrigerant Charge: R-407C.

C. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins, complying with ARI 210/240, and with liquid subcooler.

D. Heat Pump Components: Reversing valve and low-temperature air cut-off thermostat.

E. Fan: Aluminum-propeller type, directly connected to motor.

F. Motor: Permanently lubricated, with integral thermal-overload protection.

G. Low Ambient Kit: Permits operation down to 45 deg F.

H. Mounting Base: Polyethylene.

2.4 ACCESSORIES

A. Control equipment and sequence of operation are specified in Division 23 Sections "Instrumentation and Control for HVAC" and "Sequence of Operations for HVAC Controls."

B. Thermostat: Low voltage with subbase to control compressor and evaporator fan.

C. Thermostat: Wireless infrared functioning to remotely control compressor and evaporator fan, with the following features:

1. Compressor time delay.
2. 24-hour time control of system stop and start.
3. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating

mode, and fan speed.

4. Fan-speed selection, including auto setting.

D. Automatic-reset timer to prevent rapid cycling of compressor.

E. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.

F. Additional Monitoring:

1. Monitor constant and variable motor loads.
2. Monitor variable frequency drive operation.
3. Monitor economizer cycle.
4. Monitor cooling load.
5. Monitor air distribution static pressure and ventilation air volumes.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units level and plumb.

B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.

C. Install ground-mounting, compressor-condenser components on 4-inch- thick, reinforced concrete base; 4 inches larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.

D. Install ground-mounting, compressor-condenser components on polyethylene mounting base.

E. Install roof-mounting compressor-condenser components on equipment supports specified in Division 07 Section "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.

F. Install seismic restraints.

G. Install compressor-condenser components on restrained, spring isolators. Refer to Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."

H. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

1. Water Coil Connections: Comply with requirements in Division 23 Section "Hydronic Piping." Connect to supply and return coil with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
2. Remote Water-Cooled Condenser Connections: Comply with requirements in Division 23 Section "Hydronic Piping." Connect to supply and return with shutoff-duty valve and union or flange on the supply connection and with throttling-duty valve and union or flange on the return connection.
3. Steam Coil Connections: Comply with requirements in Division 23 Section "Steam and Condensate Heating Piping." Connect to steam piping with shutoff valve and union or flange; for condensate piping, starting from the coil connection, connect with union or flange, strainer, trap, and shutoff valve.

B. Install piping adjacent to unit to allow service and maintenance.

C. Duct Connections: Duct installation requirements are specified in Division 23 Section "Metal Ducts." Drawings indicate the general arrangement of ducts. Connect supply and return ducts to split-system air-conditioning units with flexible duct connectors. Flexible duct connectors are

specified in Division 23 Section "Air Duct Accessories."

D. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

E. Electrical Connections: Comply with requirements in Division 26 Sections for power wiring, switches, and motor controls.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Perform the following field tests and inspections and prepare test reports:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Remove and replace malfunctioning units and retest as specified above.

3.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION

SECTION 23 81 29

VARIABLE REFRIGERANT FLOW HVAC SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes variable refrigerant volume heat pump units consisting of separate evaporator-fan and compressor-condenser components. Units are designed for exposed or concealed mounting and may be connected to ducts.

1.3 SUBMITTALS

A. Product Data: Include rated capacities, furnished specialties, and accessories for each type of product indicated. Include performance data in terms of capacities, outlet velocities, static pressures, sound power characteristics, motor requirements, and electrical characteristics.

B. Shop Drawings: Diagram power, signal, and control wiring.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For variable refrigerant volume heat pump units to include in emergency, operation, and maintenance manuals.

F. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. The units shall be listed by Electrical Testing Laboratories (ETL) and bear the ETL label.

B. All wiring shall be in accordance with the National Electrical Code (N.E.C.).

C. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).

D. All units must meet or exceed the 2010 Federal minimum efficiency requirements and the ASHRAE 90.1 efficiency requirements for VRF systems. Efficiency shall be published in accordance with the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standard 1230.

E. System start-up supervision shall be a required service to be completed by the manufacturer or a duly authorized, competent representative that has been factory trained in system configuration and operation. The representative shall provide proof of manufacturer certification indicating successful completion within no more than two (2) years prior to system installation. This certification shall be included as part of the equipment and/or controls submittals.

1.5 DELIVERY, STORAGE AND HANDLING

A. Unit shall be stored and carefully handled according to the manufacturer’s recommendations.

1.6 COORDINATION

A. Coordinate size and location of concrete bases for units. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."

B. Coordinate size, location, and connection details with roof curbs, equipment supports, and roof penetrations specified in Division 07 Section "Roof Accessories."

1.7 WARRANTY

A. The CITY MULTI units shall be covered by the manufacturer’s limited warranty for a period of one

(1) year parts and seven (7) year compressor to the original owner from date of installation.

B. Installing contractor shall meet manufacturer requirements to obtain extended manufacturer's limited parts and compressor warranty for a period of ten (10) years to the original owner from date of installation. This warranty shall not include labor.

C. Manufacturer shall have a minimum of fifteen (15) years continuous experience providing VRF systems in the U.S. market.

D. All manufacturer technical and service manuals must be readily available for download by any local contractor should emergency service be required.

E. Registering and sign-in requirements which may delay emergency service reference are not allowed.

F. The CITY MULTI VRF system shall be installed by a contractor with extensive CITY MULTI install and service training. The mandatory contractor service and install training should be performed by the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Trane-Mitsubishi.

2.2 OUTDOOR UNIT

A. General: The outdoor unit is designed specifically for use with VRV series components.

1. The outdoor unit modules shall be air-cooled, direct expansion (DX), multi-zone units used specifically with VRF components described in this section. The outdoor unit modules shall be equipped with a single compressor which is inverter-driven and multiple circuit boards—all of which must be manufactured by the branded VRF manufacturer. Each outdoor unit module shall be completely factory assembled, piped and wired and run tested at the factory.
2. Outdoor unit shall have a sound rating no higher than 59 dB(A). If an alternate manufacturer is selected, any additional material, cost, and labor to meet published sound levels shall be incurred by the contractor.
3. Refrigerant lines from the outdoor unit to the indoor units shall be insulated in accordance with the installation manual.
4. The outdoor unit shall have the capability of installing the main refrigerant piping through the bottom of the unit.
5. The outdoor unit shall have an accumulator with refrigerant level sensors and controls.
6. The outdoor unit shall have a high pressure safety switch, over-current protection, crankcase heater and DC bus protection.
7. VRF system shall meet performance requirements per schedule and be within piping limitations & acceptable ambient temperature ranges as described in respective manufacturers' published product catalogs. Non-published product capabilities or performance data are not acceptable.
8. The outdoor unit shall be capable of guaranteed operation in heating mode down to -13°F ambient temperatures and cooling mode up to 115°F without additional restrictions on line length & vertical separation beyond those published in respective product catalogs. Models with capacity data for required temperature range published as "for reference only" are not considered capable of guaranteed operation and are not acceptable. If an alternate manufacturer is selected, any additional material, cost, and labor to meet ambient operating range and performance shall be incurred by the contractor.
9. The outdoor unit shall have a high efficiency oil separator plus additional logic controls to ensure adequate oil volume in the compressor is maintained. Oil return sequences must be enabled only during extended periods of reduced refrigerant flow to ensure no disruption to correct refrigerant flow to individual zones during peak loads. Systems which might engage oil return sequence based on hours of operation risk oil return during inopportune periods are

not allowed. Systems which rely on sensors (which may fail) to engage oil return sequence are not allowed.

10. VRF four-legged outdoor unit mounting systems shall be provided by manufacturer. Stand shall be made from 7 gauge plate steel with thermally fused polyester powder coat finish that meets ASTM D3451-06 standards. Stands shall be provided with galvanized mounting hardware and meets all ASCE 7 overturning safety requirement.

B. Unit Cabinet:
   1. The casing(s) shall be fabricated of galvanized steel, bonderized and finished.
   2. Outdoor unit components shall be coated with the Seacoast Protection Coating (Brine Spray – BS coating) to protect from premature corrosion due to a seacoast environment. Coating shall be applied to components before original outdoor unit assembly to ensure manufacturer quality standards are not compromised and shall meet the following minimum requirements:
      a. ≥85µm thermoset polyester-resin powder coating on External Front Panel
      b. ≥70µm thermoset polyester-resin powder coating on External Panel Base, Pillar, Compressor Cover, Fan Motor Support, Electrical Box
      c. ≥1µm cellulose and polyurethane-resin coating on heat exchanger fins
      d. ≥10µm polyurethane coating on printed circuit boards
   3. The outdoor unit shall be tested in compliance with ISO9277 such that no unusual rust shall develop after 960 hours of salt spray testing.
   4. Panels on the outdoor unit shall be scratch free at system startup. If a scratch occurs the salt spray protection is compromised and the panel should be replaced immediately.

C. Fan:
   1. Each outdoor unit module shall be furnished with direct drive, variable speed propeller type fan(s) only.
   2. All fan motors shall have inherent protection, have permanently lubricated bearings, and be completely variable speed.
   3. All fans shall be provided with a raised guard to prevent contact with moving parts.

D. Coil:
   1. The outdoor coil shall be of nonferrous construction with lanced or corrugated fins on copper tubing.
   2. The coil fins will have a factory applied corrosion resistant blue-fin finish.
   3. The coil shall be protected with an integral metal guard.
   4. Refrigerant flow from the outdoor unit shall be controlled by means of an inverter driven compressor.

E. Compressor:
   1. Each outdoor unit module shall be equipped with only inverter driven scroll hermetic compressors. Non inverter-driven compressors, which may cause inrush current (demand charges) and require larger generators for temporary power shall not be allowed.
   2. Crankcase heat shall be provided via induction-type heater utilizing eddy currents from motor windings. Energy-wasting “belly-band” type crankcase heaters are not allowed.
   3. Compressor shall have an inverter to modulate capacity.
   4. The compressor shall be equipped with an internal thermal overload.

F. Electrical:
   1. The outdoor unit electrical power shall be 208/230 volts, 1-phase, 60 hertz per equipment schedule.
   2. The outdoor unit shall be controlled by integral microprocessors.
   3. The control circuit between the indoor units and the outdoor unit shall be 24VDC completed using a 2-conductor, twisted pair shielded cable to provide total integration of the system.

2.3 4-WAY CEILING-RECESSED CASSETTE WITH GRILLE FOR 2X2 GRID INDOOR UNIT

A. Unit:

1. The indoor unit shall be a four-way cassette style indoor unit that recesses into the ceiling with a ceiling grille. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, an emergency operation function and a test run switch. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in plenums in accordance with UL1995 ed 4.

B. Unit Cabinet:

1. The cabinet shall be a compact 22-7/16” wide x 22-7/16” deep so it will fit within a standard 24” square suspended ceiling grid.
2. The cabinet panel shall have provisions for a field installed filtered outside air intake.
3. Four-way grille shall be fixed to bottom of cabinet allowing two, three or four-way blow.

C. Fan:

1. The indoor fan shall be an assembly with a turbo fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall be capable of three (3) speed settings, Low, Mid, and High.
4. The indoor unit shall have an adjustable air outlet system offering 4-way airflow, 3-way airflow, or 2-way airflow.
5. The indoor unit vanes shall have 5 fixed positions and a swing feature that shall be capable of automatically swinging the vanes up and down for uniform air distribution.
6. Grille shall include an optional “3D i-see” sensor, or equal, to work in conjunction with indoor unit control sequence to prevent unnecessary cooling or heating in unoccupied areas of the zone without decreasing comfort levels. Sensor must detect occupancy (not simply motion) and location of occupants by measuring size & temperature of objects within a 39’ detecting diameter (based on 8.8ft mounting height) with 1,856 or more measuring points.

D. Filter:

1. Return air shall be filtered by means of a long-life MERV13 filter.

E. Coil:

1. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phos-copper or silver alloy.
2. The coils shall be pressure tested at the factory.
3. The unit shall be provided with an integral condensate lift mechanism that will be able to raise drain water 19-3/4” inches above the condensate pan.

F. Electrical:

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

G. Controls:

1. Indoor unit shall compensate for the higher temperature sensed by the return air sensor compared to the temperature at level of the occupant when in HEAT mode. Disabling of compensation shall be possible for individual units to accommodate instances when compensation is not required.
2. Control board shall include contacts for control of external heat source. External heat may be energized as second stage with 1.8°F – 9.0°F adjustable deadband from set point.
3. Indoor unit shall include no less than four (4) digital inputs capable of being used for customizable control strategies.

4. Indoor unit shall include no less than three (3) digital outputs capable of being used for customizable control strategies.
5. A factory-installed drain pan sensor shall provide protection against drain pan overflow by sensing a high condensate level in the drain pan. Should this occur, the control shuts down the indoor unit before an overflow can occur. A thermistor error code will be produced should the sensor activate indicating a fault which must be resolved before the unit re-starts.

2.4 1-WAY CEILING-RECESSED CASSETTE WITH GRILLE INDOOR UNIT

A. Unit:

1. The one-way cassette indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, an emergency operation function and a test run switch. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in plenums in accordance with UL1995 ed 4.

B. Unit Cabinet:

1. The one-way grille shall be fixed to bottom of cabinet allowing for one-way airflow.

C. Fan:

1. The indoor fan shall be an assembly with one line-flow fan direct driven by a single motor with permanently lubricated bearings.
2. The indoor fan shall consist of four (4) speeds, Low, Mid1, Mid2, and High.

D. Filter:

1. Return air shall be filtered by means of a long-life MERV13 filter.

E. Coil:

1. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phos-copper or silver alloy.
2. The coils shall be pressure tested at the factory.
3. The unit shall be provided with an integral condensate lift mechanism able to raise drain water 23 inches above the condensate pan.

F. Electrical:

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

G. Controls:

1. Indoor unit shall compensate for the higher temperature sensed by the return air sensor compared to the temperature at level of the occupant when in HEAT mode. Disabling of compensation shall be possible for individual units to accommodate instances when compensation is not required.
2. Control board shall include contacts for control of external heat source. External heat may be energized as second stage with 1.8°F – 9.0°F adjustable deadband from set point.
3. Indoor unit shall include no less than four (4) digital inputs capable of being used for customizable control strategies.
4. Indoor unit shall include no less than three (3) digital outputs capable of being used for customizable control strategies.
5. A factory-installed drain pan sensor shall provide protection against drain pan overflow by sensing a high condensate level in the drain pan. Should this occur, the control shuts down the indoor unit before an overflow can occur. A thermistor error code will be produced should the sensor activate indicating a fault which must be resolved before the unit re-starts.

2.5 VERTICAL/HORIZONTAL DUCTED (MULTI-POSITION AIR HANDLER)

A. Unit:

1. The multi-position indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in air handling spaces in accordance with Section 18.2 of UL 1995 4th Edition, be tested in accordance with ANSI/ASHRAE 193 and have less than 2% air leakage at maximum airflow setting.

B. Unit Cabinet:

1. The cabinet shall include a fixed bottom return, a fixed vertical discharge supply and be pre-painted, pre-insulated, 22 gauge galvanized steel.

C. Fan:

1. The indoor unit fan shall be an assembly with a single, statically and dynamically balanced direct drive fan with a high efficiency DC motor with permanently lubricated bearings.
2. The fan shall have 3-speeds with the capability to operate between 0.3-0.8 In.WG selectable.

D. Filter:

1. The unit shall have a 1” filter rack with a MERV13 filter.

E. Coil:

1. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phos-copper or silver alloy.
2. The coils shall be pressure tested at the factory.

F. Electrical:

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).

G. Controls:

1. Control board shall include contacts for control of no less than two stages of external heat. The first stage of external heat may be energized when the space temperature is 2.7°F from set point for between 10-25 minutes (user adjustable). The second stage of external heat may be energized when the first stage has been active for no less than 5 minutes and the space temperature has not risen by more than 0.9°F.
2. Indoor unit shall include no less than four (4) digital inputs capable of being used for customizable control strategies.
3. Indoor unit shall include no less than three (3) digital outputs capable of being used for customizable control strategies.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units level and plumb.

B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.

C. Install ground-mounting, compressor-condenser components on 4-inch- thick, reinforced concrete base; 4 inches larger on each side than unit. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete." Coordinate anchor installation with concrete base.

D. Install ground-mounting, compressor-condenser components on polyethylene mounting base.

E. Install seismic restraints.

F. Install compressor-condenser components on restrained, spring isolators. Refer to Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."

G. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.2 FIELD-INSTALLED REFRIGERANT PIPING

A. Connect pre-charged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

B. Install piping adjacent to unit to allow service and maintenance.

C. Piping shall be copper with joints brazed with 15% silver, silphos brazing rod.

D. Elbows shall be of the long radius type.

E. Liquid and vapor piping shall be insulated with 3/4-inch-thick closed cell rubberized insulation.

F. Piping shall be secured to structure with straps, taking care to ensure that the liquid line does not contact the structure and that the insulation is not torn.

G. Piping shall be purged with dry nitrogen prior to evacuation and charging with refrigerant.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

C. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation. Remove malfunctioning units, replace with new components, and retest.

D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Perform the following field tests and inspections and prepare test reports:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

F. Remove and replace malfunctioning units and retest as specified above.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION

SECTION 26 01 00

BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 WORK INCLUDED

A. The specifications and drawings are intended to cover a complete installation of systems. The omission of expressed reference to any item of labor or material for the proper execution of the work in accordance with present practice of the trade shall not relieve the Contractor from providing such additional labor and materials.

B. All labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery and installation of electrical system, complete, as shown on the drawings and/or specified herein. Work includes but is not necessarily limited to the following:

1. Conduits for all wiring systems, unless otherwise specifically noted.

2. All electrical wiring and connections to equipment furnished under other sections of Specifications.

3. All wiring and conduit for Air Conditioning and Heating and Ventilating systems, and electrical equipment in Plumbing Section of work.

4. Time clocks and contactors for control of lighting and air conditioning.

5. Pull wires in conduit runs indicated as conduit only (CO).

6. Building electrical wiring, conduits, outlet boxes, junction boxes, convenience outlets, switches, plates and all miscellaneous items of electrical equipment, apparatus and material specified and/or shown on Drawings.

7. Disconnect switches, magnetic motor starters and manual motor starters.

8. All required grounds.

9. Parking lot poles, luminaries and lamps.

10. All anchors, chases, sleeves and supports for electrical equipment.

11. Excavation necessary for execution and completion of electrical work.

12. Required backing, supports and blocking for lighting fixtures.

13. Complete Fire Alarm and Detection System.

14. Computer Network Wiring System – j-box and conduit only.

15. Tests of entire system.

16. Lighting fixtures complete with lamps and required accessories.

17. Guarantees.

18. Temporary power for building construction.

19. Temporary lighting during construction.

20. Complete connections to all motors, apparatus, electrically operated devices, etc., as shown on Drawings.

21. Circuits, switches, starters and connections for all exhaust fans, blowers and heaters.

22. Flashing of conduits through roof.

23. Shop Drawings.

24. In these specifications, Fire Alarm, CCTV, Television, Intrusion Alarm, etc. are referred to as Auxiliary Systems or Signal Systems.

1.03 GUARANTEE

A. In addition to guarantee required in Division 1 or specifically specified elsewhere, all materials and equipment provided and installed under this Division of Specifications shall be guaranteed by Contractor in writing for a period of one year from date of acceptance of work by Owner. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and materials to correct the trouble without costs to Owner.

B. Guarantee complete and perfect operation of entire system and that all apparatus will perform in accordance with detailed drawings and Specifications.

C. Guarantee that all equipment will be supported in such a way as to be free from objectionable vibration and noise.

D. Guarantee that all licenses and royalties for use of any patented feature of system will be paid before acceptance of system.

1.04 GENERAL REQUIREMENTS

A. Codes: Construct project in accordance with following codes and regulations.

1. 2022 California Electrical Code, Title 24 C.C.R.
(2020 National Electrical Code of the National Fire Protection Association, NFPA)

2. 2022 California Mechanical Code, Title 24 C.C.R.
(2021 Uniform Mechanical Code of the International Association of Plumbing and Mechanical Officials, IAPMO)

3. 2022 California Plumbing Code, Title 24 C.C.R.
(2021 Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials, IAPMO)

4. 2022 California Energy Code, Title 24 C.C.R.

5. 2022 California Historical Building Code, Title 24 C.C.R.

6. 2022 California Fire Code, Title 24 C.C.R.
(2021 International Fire Code of the International Code Council)

7. 2022 California Existing Building Code, Title 24 C.C.R.
(2021 International Existing Building Code of the International Code Council, with amendments)

8. 2022 California Green Building Standards Code (CALGreen Code), Title 24 C.C.R.

9. 2022 California Referenced Standards Code, Title 24 C.C.R.

10. Local codes and ordinances.

Keep a copy of applicable code available at Site while performing work of this Section. Nothing in these Drawings and Specifications to be construed as authority to violate codes and ordinances. Conflict with applicable regulations to be resolved at Contractor's expense before installation.

B. Permits, Fees and Inspections: Obtain and pay for all necessary permits and fees required by any constituted authority having jurisdiction including utilities. Arrange and pay for all required inspections or examinations and deliver certificates of inspection to Architect.

C. Record Drawings:

1. Provide record drawings for work of this Section.

2. Keep up-to-date a complete "As-Built" record set of blueline prints corrected daily and showing every change from original Drawings and Specifications and exact "As-Built" locations, sizes, and kinds of equipment.

3. Prints for this purpose may be obtained from Architect at cost of printing. Keep this set of Drawings on job and use only as a record set.

4. Drawings to serve as work progress sheets. Make neat and legible notations in red ink thereon daily as work proceeds, showing work as actually installed. Drawings to be available at all times for inspection and kept at a location designated by Architect.

5. On completion of work, obtain one set of prints from Architect at cost of printing, and note neatly in scale all changes on record set. Deliver complete set of prints together with one set of blueline prints to Architect together with Contractor's name, address and phone number. Incorrect, non-legible or non-reproducible drawings will not be accepted.

D. Selection and Ordering of Equipment and Materials: Within two weeks after award of Contract, arrange for purchase and delivery of all light fixtures, equipment and materials required in ample quantities and at proper time. Inform Architect immediately of any inability to obtain suitable delivery of any equipment or material. Send copy of letter verifying date of purchases to Architect.

E. Shop Drawings and Material Lists:

1. Submit material lists and shop drawings as called for in Division 1, and as supplemented by this Division, and with sufficient promptness to ensure that overall work of project will not be delayed.

2. Submit six copies of a list of materials and equipment manufacturers that Contractor intends to use.

3. Provide shop drawings for following:

a. Panelboards.

b. Parking lot poles and luminaries.

c. Lighting fixtures, lamps and necessary accessories.

d. Time switches.

e. Contactors.

f. Emergency Power System – Inverter Unit.

g. Fuses.

h. Flush floor boxes covers and carpet flanges.

i. Disconnect switches.

j. Lighting control devices

k. Photovoltaic collectors

l. Fire alarm systems

m. EV Chargers

n. Magnetic Motor Starters

o. LED Light Fixture Drivers

4. Do not fabricate work until reviewed shop drawings for work have been received from Architect. Work fabricated or erected in advance of reviewed shop drawings will be at risk of Contractor.

5. Architect's or Engineer's review of shop drawings does not relieve Contractor of responsibility for errors including details, dimensions, or materials, as well as conformance with requirements of Drawings and Specifications.

6. Shop drawings will be checked by Architect and Engineer for conformance to design as a convenience to Contractor. Dimensions will not be checked. Should interferences become evident, notify Architect immediately so that matter may be resolved prior to proceeding with fabrication.

7. No reimbursement based on a claim that work was placed in accordance with dimensions shown on a reviewed shop drawing will be allowed for removing or replacing work already in place.

8. Make available a copy of every reviewed shop drawing at Project Site.

9. Submit shop drawings in coherent groups; e.g., all lighting fixtures at one time.

10. Submit actual samples of specified equipment or material to Architect for review when requested.

F. Substitution and Approval of Material:

1. Base all bids and proposals only upon materials, construction and equipment named or described in specification and/or shown on drawing. Should a Contractor wish to use other equipment than that specified, he shall submit proposed substitution by

fully describing equipment he prefers to use and by listing credit or additional cost to his bid as a separate item should substitution be acceptable.

2. All equipment and materials proposed for substitution shall be similar in design and equal in quality and function to those specified herein or on drawings. Contractor (not sales vendor) shall demonstrate his proposed substitution and shall specifically note all differences between item specified and proposed substitution. Actual samples and test data, certified by an independent testing laboratory, shall be submitted when requested.

3. Each substitution will be given consideration, but without any obligation expressed or implied on part of Architect to change named requirements of specification. Only one substitution for each item of equipment will be permitted. Contractor assumes sole responsibility for performance and space requirements for substitute equipment. Decision of Architect shall be final as to whether or not substitution is acceptable.

G. Terminology:

1. Term "provide" used on Drawings and elsewhere in the Specifications shall be considered to mean "furnish and install".

2. Term "UL" means Underwriters Laboratories Inc.

H. Workmanship: See supplementary Conditions, Architect is sole judge of whether execution is in a workmanlike manner.

I. Safety Conditions: Be responsible in preventing energized switches, circuit breakers or circuits from being turned to "On" position during construction period. Be responsible for damages to personnel and/or property resulting from contact with energized circuits, switches, circuit breakers, busses or other electrical apparatus. Construct all electrical work with electrical system de-energized in area. At no time permit work on equipment or apparatus with energized circuits.

J. Verification of Dimensions: All scaled and figured dimensions are approximate and are given for estimating purposes only. Before proceeding with work carefully check and verify all dimensions and sizes and assume all responsibility for fitting of materials and equipment to other parts of equipment and to structure. Where apparatus and equipment have been indicated on drawings, dimensions have been taken from typical equipment of class indicated. Carefully check drawings and see that equipment will fit into spaces provided.

K. Locations:

1. Locations of conduits, outlets, apparatus and equipment indicated on drawings are approximate only and shall be changed to meet architectural and structural conditions as required.

2. Install conduit and equipment in a manner and in locations avoiding all obstructions,

preserving headroom, keeping openings and passageways clear and readily accessible for maintenance and repairs. Make changes in locations of conduit or equipment which may be necessary to accomplish this. Drawings are essentially diagrammatic to extent that many offsets, bends, special fittings and exact locations are not indicated. Examine all drawings prepared by manufacturers, suppliers and installers of all equipment including air conditioning and plumbing fixture shelving, for requirements and locations of equipment and outlets.

3. Should any structural interferences prevent installation of outlets, setting of cabinets for lighting panelboards, running of conduits, or installation of other electrical equipment at locations shown on Drawings, necessary minor deviations therefore as determined by Engineer may be permitted. In event changes in indicated locations or arrangements are necessary due to developed conditions in building's construction or rearrangement of furnishings or equipment, Owner shall be permitted to move any junction box or utility outlet a distance of 10' and such changes shall be made without extra cost providing change is ordered before work is installed. Submit an estimate of cost or credit for other changes and proceed only upon written authority of Architect.

4. Be cautioned that diagrams showing electrical connections are diagrammatic only and must not be used for obtaining lineal runs of wiring or conduit. Wiring diagrams do not necessarily show exact physical arrangement of equipment.

5. Locations of outlets, lighting fixtures, cabinets, panelboards, apparatus, motors, mechanical equipment, etc., shown on Electrical Drawings is only approximate. Do not scale them from Electrical Drawings.

6. Verify locations of outlets, lighting fixtures, equipment etc., with Architectural Drawings of interior and exterior details and finish, and coordinate location of electrical work with mechanical and other equipment.

7. Locate lighting fixtures as per reflected ceiling plans prepared by Architect.

L. These Specifications and attendant Drawings are intended to cover a complete and operable electrical system. Follow Drawings and Specifications and execute all work according to true intent and meaning. Should any error or omission exist in either or both of these Drawings and Specifications, or conflict one with another, have same explained and adjusted by Engineer before submitting bid price for electrical work; otherwise at own expense, supply proper materials and labor to completely install same, make good any damage to or defect in work of results obtained therefore caused by such error, omission or conflict. Most restrictive, greater quantity or size, better quality or other superior condition of all representations shall prevail. It is intended that outlets be located symmetrical with Architectural elements notwithstanding fact that locations indicated on Drawings may be distorted for clarity.

M. Omission of expressed reference in Drawings or Specifications to any item of labor or material necessary for proper execution of work in accordance with present good practice of trade will not relieve Contractor from providing such additional labor and materials.

N. Job Visits by Engineer: Periodic visits to job by Engineer is for express purpose of verifying compliance by Contractor with contract documents. Such visits by Engineer shall not be construed as construction supervision. Neither shall such visits be construed to make Engineer responsible for providing a safe place for performance of work by Contractor or Contractor's employees or safety of supplies of Contractor or his subcontractors.

O. Cooperation with Others: Organize work that will harmonize with work of all trades so that all work may proceed as expeditiously as possible. Be responsible for correct placement of work and connection of work to all related trades.

P. Protection of Finish: Provide adequate means for protecting all finished parts of materials and equipment against damage from any cause during progress of work and until acceptance by Architect. Cover all material and equipment in storage and during construction in such a manner that no finished surfaces will be damaged, marred or splattered with paint. Keep moving parts perfectly clean and dry. No paint spraying will be permitted in building. Replace or refinish damaged material or equipment including face plates or panels without additional costs to Owner.

Q. Cleaning Equipment and Premises: Thoroughly clean all parts of materials, equipment and exposed parts such as receptacles and panelboards, of cement, plaster and other materials. Remove all oil and grease spots with a non-inflammable cleaning solvent. Brush exposed metal work with steel brushes to remove rust and other spots and leave smooth and clean. During progress of work, carefully clean up and leave premises and all portions of building free from debris. At completion of work, remove all waste materials and debris resulting, leaving everything in a complete and satisfactory condition.

R. Cutting and Patching: Include all cutting and patching in bid. Do not cut any structural members without first having received written permission from Architect. Cutting of round openings which can be done by use of a rotary drill shall be done by Contractor requiring same. Cutting and patching finish work shall be performed by workmen of the respective trade.

S. Conditions at Site: Visit Job Site and become familiar with all existing conditions within scope of work and include in Bid Proposal allowance for these conditions. Verify exact locations of services prior to construction. Notify all other Contractors of these utility locations.

T. Documents: Read all relevant documents, become familiar with job, scope of work, type of general construction, Architectural, Structural, Mechanical and Electrical Drawings and Specifications. Also become familiar with purpose for which these Drawings have been prepared and become cognizant of all details involved.

U. Acceptance: Before work will be accepted, demonstrate to Owner and Architect that entire installation is complete and in proper operating condition and Contract has been fully and properly executed. Following items shall be prepared and submitted to Architect:

1. Two copies of all test results required under this Division.

2. Two copies of local and/or state code enforcing authorities final inspection certificates.

3. Copies of as-built record drawings as required.

4. Notify Architect in writing when installation is complete and that a final inspection of this work can be performed. In event defects or deficiencies are found during this final inspection they shall be corrected to satisfaction of Architect before final acceptance can be issued.

5. Two Maintenance and Operating Manuals as required.

V. Field Inspections: Provide proper facilities for access of Owner or Owner's representative to conveniently examine and inspect all portions of work covered in this Contract at any and all reasonable hours.

W. Completing Work: At completion of work, remove all waste materials and debris resulting from work, leaving everything in a complete and satisfactory condition.

X. Electrical Superintendent: Include services of a qualified electrical foreman capable of interpreting intent of Drawings and Specifications, to study Plans, Specifications and references, and coordinate all requirements with other trades, authorized to make decisions and issue instructions; be constantly in charge of work and available at job site at all times and at final inspection. Instruct Owner's representative for proper operation and recommend maintenance of all systems.

Y. Maintenance and Operating Manuals:

1. Before completion and acceptance of work, furnish Owner with two complete sets of operating and maintenance instruction manuals. Bind each set in durable hardboard binder and index.

2. Compile data for manuals upon approval of material list and sketches so as not to delay final approval of work installed. Operating manuals to contain all pertinent data relating to electrical installation such as fixture cuts, manufacturer's approval, shop drawings, sketches, wiring diagrams and equipment operating instructions.

3. Instruct Owner's operating personnel with electrical operating procedures before work is considered complete.

Z. Extra Work or Costs to This Contractor Due to Other Contractors or Trades: Adjusted between this Contractor and offending Contractor at no extra cost to Owner. Notify Architect before such extra work is done.

AA. Tests:

1. Upon completion of work and adjustment of all equipment, all systems shall be

tested under direction of Owner's representative to demonstrate that all equipment furnished and installed and/or connected under provision of these Specifications shall function electrically in manner required. All tests shall be completed prior to final inspection of project.

2. All systems shall test free from short circuits and grounds and shall be free from mechanical and electrical defects. All circuits shall be tested for proper neutral connection.

3. All instrumentation and personnel required for testing shall be furnished by Contractor.

BB. Noise Control:

1. Perform electrical work to a manner in minimize transmission of noise and preserve acoustical properties of building structure.

2. Where equipment is mounted on vibration isolators, use flexible connections to reduce transmission of noise.

3. Where conduits pass through sleeves in interior walls, floors, or ceilings, completely fill space between each conduit and its sleeve to provide an airtight seal.

4. Use glass fiber material, "Duxseal" compound, for acoustic seals.

CC. Seismic Bracing Standards: All pipes, cable trays, conduits, etc. shall be supported and braced in accordance with SMACNA “Seismic Restraint Manual, Guidelines for Mechanical Systems”, including Appendix B, “Additional Requirements for OSHPD” and “Addendum no. 1, September 2000”. Comply with CBC, where requirements are more stringent than SMACNA, including, but not limited to the following:

1. Pipes and conduit shall be braced to resist the forces prescribed in California Building Code.

2. Where possible, pipes, conduit and their connections shall be constructed of ductile materials (copper, ductile iron, steel or aluminum and brazed, welded, or screwed connections.) Pipes, conduits and their connections, constructed of nonductile materials (e.g., cast iron, no-hub pipe and plastic), shall have the brace spacing reduced to one-half of the spacing allowed for ductile material in accordance with California Building Code or SMACNA Seismic Restraint Manual.

3. Seismic restraints may be omitted for the following conditions:

a. All piping suspended by individual hangers 12 inches or less in length from the top of the pipe to the bottom of the structural support for the hanger.

b. All electrical conduit less than 2.5 inches trade size.

4. For rigidly supported, electrical conduit, or cable trays, the product of $C_a I_p$ need not to exceed 1.2 for any value of I_p.

5. All Trapeze assemblies supporting, cable trays and conduit shall be braced to resist the forces and relative displacements per ASCE 7 Chapter 13, considering the total weight of the elements on the trapeze.

6. Conduit supported by a trapeze where none of these elements would individually be braced need not be braced if connection to the pipe/conduit of directional changes do not restrict movement of the trapeze. If this flexibility is not provided, bracing will be required when the aggregate weight of the pipes and conduit exceed 10 pounds/foot. The weight shall be determined assuming all pipes and conduits are filled with water.

DD. Bracing Standards Application: Comply with bracing standards by evaluating the complete installation of all utilities and equipment, and providing a comprehensive solution based on Contractor's layout, coordination withal other trades, and with the structural design and all other provisions for incorporating systems into the buildings. Show bracing products and layout in shop drawing submittals. The following criteria apply to the bracing of all systems:

1. The design parameters for determining the Total
Design Lateral Force shall be as designated on the structural drawing.

2. Seismic Hazard Levels (SHL) shall be as designated on structural drawings.

3. Contractor shall submit documentation for each condition, which is not specifically covered in the SMACNA manual, including piping configurations and conditions, structural systems, structural connection methods, and other issues regarding the application of the standards.

4. Provide expansion anchors, sized per SMACNA guidelines, for use in concrete.

5. For connections to structural steel, wood framing, etc. provide bolted or welded connections, sized per SMACNA guidelines.

6. Seismic bracing components consisting of structural shapes.

7. Seismic bracing cable shall be galvanized steel, conforming to ASTM A603, zinc-coated with minimum 0.4 ounces/sf, pre-stretched, 7 x 19 strand, sized per SMACNA guidelines.

EE. In hard ceiling space where access to j-boxes, detectors, etc is required, provide ceiling access panel, fire-rated typical.

END OF SECTION

SECTION 26 02 00
GENERAL ELECTRICAL REQUIREMENTS

PART 1- - GENERAL

1.1 DESCRIPTION:

A. Related Work:

1. 01811 Commissioning Requirements
2. 01813 Prefunctional Checklists
3. 260560 Electrical Systems Commissioning
4. 260570 Electrical Testing Requirements

B. Electrical subcontractor shall attend the Commissioning pre-construction meeting and other required meetings to facilitate coordination and execution of the commissioning scope.

C. Provide pre-functional checklists and complete functional testing under the supervision of the commissioning authority, including preparation of data in form templates. Provide qualifying calibrated instrumentation needed for the prescribed testing procedures.

D. Provide the services of specialized technicians for testing and validation. Technicians may be supplied by the equipment suppliers or from qualified independent testing services.

E. Systems that shall be commissioned are:

1. Lighting system and controls
2. Fire Life and Safety system using Chief's 4 testing procedures

F. Detailed descriptions of electrical commissioning requirements are provided in Section 01810.

G. Comply with all provisions of the General Conditions, Supplementary Conditions and General Requirements as applicable to work of all Sections of Division 26 concerning definitions, guarantees, submittals, as-builts, clean-up, etc.

H. Examine all Technical Sections for work required to be included in work in Sections of Division 26 - Electrical Work.

I. All work of this Division shall be coordinated with work of other trades.

1.2 SCOPE

A. Required: Provide all labor, materials, equipment, tools and appliances required to furnish and install all electrical work shown on the Contract Drawing and herein specified in the Sections of Division 16 complete and operable but not limited to the following:

1. All construction power and lighting and power for testing equipment and systems through

final acceptance of test.

2. Complete lighting and power system(s) including branch circuits, outelets, fixtures, switches, controllers, and auxiliary equipment.

3. Complete distribution system(s) including panelboards, feeders, and auxiliary equipment.

4. New outdoor light pole and pole mounted light fixture.

5. Complete Grounding System.

6. Distribution for emergency power system including but not limited to a central battery inverter, lighting panelboard and branded circuit wiring.

7. Control wiring and devices for equipment specified in Sections of Division 26 and other Technical Sections, except where specifically indicated or noted otherwise on the Contract Drawings or in the Specifications.

8. Complete and Operable Fire Alarm System.

9. Connection and testing of electrical equipment and controls specified in Division 26 and other technical sections, except where specifically indicated or noted elsewhere on the Contract Drawing or in the Specifications.

10. Applicable excavating, trenching and backfilling.

11. Demolition of existing electrical systems as shown on the plans.

12. Complete and operable Photovoltaic System and Battery Energy Storage System to be design build by contractor.

13. Complete and Operable EV Charging stations.

1.3 WORK NOT INCLUDED

A. Furnishing all electrical or partially electrically devices related uniquely to mechanical equipment and only as specified in the Mechanical Division 23.

B. Furnishing and installing of all motors.

1.4 RELATED WORK

A. Preparation of Soils Reports, refer to Division 31 EARTHWORK.

B. Painting of exposed raceways and equipment in Division 9.

C. Ventilation and exhaust systems.

D. Air conditioning system controls in Division 23.

E. Commissioning requirements in Division 1.

F. Municipal Facilities Electrical Commissioning Requirements in Division 26.

G. Municipal Facilities Electrical Testing Requirements in Division 26.

1.5 LEGAL REQUIREMENTS AND STANDARDS

A. Required: Comply with the latest, as applicable and effective, during the progress of Contracted Work.

1. Latest Los Angeles City Electrical, Fire and Building Codes and U.B.C. Supplement.

2. California State Administrative Code, Title 24, State Building Standard.

3. (CAL/OSHA) California State Occupational Safety and Health Act.

4. California State Fire Marshal Standards.

5. Los Angeles City Department of Water and Power.

6. U.L. - Underwriters Laboratories Inc.

7. NEC - National Electric Code.

8. ASTM - American Society of Testing and Materials.

9. Current publications of the National Fire Protection Association.

10. National and American Standards Association.

B . General Compliance as Applicable

1. Drawings and specification requirements shall govern where they exceed Code requirements.

2. Where requirements between governing Codes and Regulations vary, the more restrictive provision shall apply.

3. Nothing contained in Contract Documents shall be construed as authority or permission to disregard or violate legal requirements.

1.6 GENERAL REQUIREMENTS

A. Permits and Inspections:

1. Apply and pay for all required electrical work (construction and installation) prescribed by legally constituted public authorities.

2. Arrange and pay for all required inspections or examinations and shall deliver "certifications" of such inspections to the City Engineer prior to acceptance of the electrical work. Obtain approved plans from the Los Angeles City Department of Building and Safety.

B. Site Inspections:

1. Carefully examine the job-site and existing facilities and compare the Contract Drawings for work coordination.

2. By act of submitting bid, it will be deemed the Contractor has made required inspections and has accepted such job-site conditions and has made allowances thereof in the preparation of "Bid" figures.

C. Verification of Dimensions: All dimensions (scaled, figured or noted) are approximate, given for estimating purposes. Before proceeding with work Contractor shall carefully check and verify all dimensions, sizes, etc. and shall assume full responsibility for proper fitting in and attachment of all materials and equipment to other equipment and to the structure.

D. Examination of the Contract Drawings:

1. Carefully study Contract Drawings and Specifications to verify if any work as laid out or indicated is contrary to or in conflict with applicable Codes and Standards. Report to the City Engineer such data prior to submittal of Bid(s).

2. The City Engineer will then instruct the Contractor on how to proceed.

3. By the act of submitting a "Bid" or "Proposal" Contractor is deemed to have made such study and has accepted all job-site conditions.

E. Substitutions:

1. Items, articles or products named on the Contract Drawings and in the Specifications are intended to establish a standard of quality and required functional performance.

2. If the Contractor desires to propose a substitution or alternate, submit a complete list with detailed specifications and manufacturer's data which differ from those specified within thirty-five (35) days after award of Contract for approval or rejection by the City Engineer.

3. If such submittals are not approved, use specified materials and equipment throughout the Electrical Work.

F. Interpretations:

1. Make all requests for interpretations of the Contract Drawings and/or Specifications to the Contractor through the Architect or City Engineer.

2. Manufacturer's or Supplier's requests for interpretations will be referred to the Contractor.

G. Submittals: Conform to applicable provisions of Section 01330 of the General Requirements and as hereinafter specified.

1. Prepare, review and coordinate schedule of submittals, determining necessary lead time for preparation, submitting, checking, and ordering and delivering materials and equipment to the job-site for timely arrival and conformance with the overall Construction schedule.

2. All submittals will be checked for general compliance with Specifications only. Contractor will be responsible for deviations from the Drawings or Specifications and for errors or omissions of any sort in the Submittals.

3. Shop drawings shall be submitted in completed groups of materials (i.e., all lighting fixtures or all switchgear, etc.). The Contractor shall add and sign the following paragraph on all equipment and materials submitted for review.

a. "It is hereby certified that the (equipment) (material) shown and marked in this submittal is that proposed to be incorporated into the project; is in compliance with the Contract Drawings and Specifications and can be installed in the allocated spaces".

b. Failure to add the above written statement for compliance will result in return of submittals to be reviewed.

4. All required submittals on electrical items and equipment shall include complete catalog information such as construction ratings, insulation systems, including manufacturer's certification that items or equipment meet or exceed U.L. and Trade Standards, and the Specifications.

5. Equipment Floor Plans: Submit after approval of material and/or equipment is secured. Prepare for each electrical equipment room drawn to 1/2" = 1'0" scale. Layout drawing shall be to exact scale.

* 6. Materials list of items and equipment proposed to be provided for the work of this Division 26 and shall include the following as applicable:

a. Central battery inverter.

b. Panelboards and breakers.

c. Conduits.

d. Conductors.

e. Electrical equipment layout at 1/2" = 1'-0" scale indicating exact dimensions of equipment, clearances, housekeeping pads.

f. Disconnect switches, pull boxes and fuses.

g. Lighting fixtures.

h. Fire alarm and detection system.

i. Control devices, standard and special receptacles, switches and finish device plates.

j. Cabinets for signal and telephone systems, special terminals and cabinets.

k. All fabricated equipment.

l. EV charging stations

m. Time clocks, contactors, control switches, etc. including wiring diagrams and sequence of operation.

n. Grounding Systems.

o. Cable Trays.

p. Photovoltaic System

q. Battery Energy Storage System

H. Special Submissions:

1. Test Reports for the Following:

a. Ground fault devices.

b. Megger Readings: Ground system, motors, feeders and switchgear.

c. Voltage Readings: Distribution, service and motors.

d. Fire alarm system.

2. Maintenance service and operating manuals for all equipment.

3. Items as outlined in other Sections.

I. "No Exceptions Taken": Be responsible for equipment ordered and/or installed prior to receipt of shop drawings returned from the City Engineer bearing the Electrical Engineer's stamp of "No Exceptions Taken". Corrections or modifications to equipment as noted on shop drawings shall be performed or equipment removed from the job site at request of City Engineer without additional compensation.

J. Disapprovals: Any article or equipment supplied by the Contractor disapproved by the Architect or City Engineer as not conforming to the Specifications or not of proper quality or grade or suitability shall be deleted and suitable article or equipment be provided in lieu thereof in conformance with the Specifications at no added cost to the City.

K. Terminology: Generally speaking throughout this Division 16 of the Specifications when the words "or equal" or other words of similar intent and meaning are used implying judgment or decision is to be exercised, it is understood that it is the judgment, discretion, or decision of the City Engineer to which reference is made.

Note: Specifier should name at least two manufacturers plus the words "or equal".

L. Modification of Contract Drawings: In each case where proposed substitute material or equipment will require changes to the design of the Project as indicated on the drawings, for proper installation or operation, appropriate proposed revision drawings prepared and signed by a licensed Engineer shall be furnished by the Contractor for approval by the City Engineer. Make such drawings sufficiently complete for the proper installation and operation of the proposed substitute materials or equipment, and for construction by all of the involved trades of the proposed revisions. The cost of the drawings and the proposed revised construction shall be borne by the Contractor.

M. Record Drawings: Provide in strict accordance with applicable provisions of Section 30 in the GENERAL CONDITIONS of these Specifications concerning accurate locations of raceways, cable runs, outlets and equipment. See also applicable provisions of Section 01783-RECORD (as-built) Drawings of the GENERAL REQUIREMENTS of these Specifications.

N. Operation and Maintenance Manuals: Prior to final acceptance of Contracted Work by the City, furnish 4 bound copies of operation and maintenance manuals for all electrical equipment, as required in this Section. The contents shall include description of equipment, names of manufacturers, parts lists, model numbers, maintenance schedules, location of nearest facility for replacement parts or service, wiring and connection diagrams, internal schematic drawings, and other electrical/mechanical data necessary for operation and maintenance.

1.7 QUALITY ASSURANCE

A. General:

1. All equipment and accessories to be the product of a manufacturer regularly engaged in its manufacture.

2. Supply all equipment and accessories new, free from defects and listed by Underwriters' Laboratories, Inc. or bearing its label. Special or custom equipment must bear the label of laboratory recognized by the City of Los Angeles Department of Building and Safety.

3. Supply all equipment and accessories in compliance with the applicable standards listed in Article 1. 5 of this Section and with all applicable National, State and Local codes.

4. All items of a given type shall be the product of the same manufacturer.

B. Labor: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and completely familiar with specifications, requirements and methods needed for proper performance of the work of Electrical Division 26.

C. Superintendence: Provide an experienced Superintendent to be in charge of erection and/or installation of electrical work together with journeymen helpers to properly unload, erect, connect, adjust, operate and test the work involved to provide a neat, workmanlike and operable installation.

1.8 LOCATION

A. The location of apparatus and equipment indicated on the Contract Drawings are approximate only and shall be changed to meet the Architectural and Structural conditions as required.

B. Any change in work which has not been installed shall be made by the Contractor without additional compensation, except changes which are caused by Architectural changes which increase or decrease the size of apparatus or materials specified or indicated on the drawings. The Contractor shall submit a detailed breakdown cost estimate of, or credit for, such changes and shall proceed only upon the written authority of the Architect and Engineer.

C. All apparatus and equipment shall be furnished and installed in a manner and in locations avoiding all obstructions, preserving head room, and keeping openings and passageways clear. Changes shall be made in locations of equipment and materials which may be necessary in order to accomplish this.

D. The drawings are essentially diagrammatic to the extent that many offsets, bends, special fittings, and exact locations are not indicated. The Contractor shall carefully study the Contract Drawings and premises in order to determine the best methods, exact location, routes, and building obstructions, etc., and shall install all apparatus and equipment in the available location.

1.9 CUTTING AND PATCHING

A. Conform to provisions of Section 01731 of the General Requirements.

B. The Contractor shall do all drilling, cutting and patching of the general construction work existing or new, rough finish and trim, which may be required for the installation of electrical equipment. All patching shall be of the same materials, workmanship and finish as the original work, and shall accurately match all surrounding work.

C. All cutting and patching shall be as approved by the Architect or his authorized representative.

1.10 PROTECTION OF WORK

A. The Contractor shall protect all work, material and equipment from damage from any cause whatsoever, and shall provide adequate and proper storage facilities during the progress of the Work. Contractor shall provide for the safety and good condition of all work until final acceptance of the work by the City, and replace all damaged or defective work, materials and equipment before requesting final acceptance.

B. The Contractor shall be held responsible for the protection and correction of the work of all trades from smears, splashes, stain or damages that might occur in the progress of the work.

1.11 WORK COORDINATION

A. The Contractor shall so order electrical work that progress will harmonize with that of other trades so that all work may proceed as expeditiously as possible.

B. So far as possible, the work has been indicated on the Contract Drawings in such positions as to suit and accommodate the work of the other trades, but the work as indicated is largely diagrammatic, and the correct finish position of all equipment and materials cannot always be indicated. Therefore, the Contractor is hereby made directly responsible for the correct placing of electrical work and the proper location and connection of electrical work in relation to the work of other trades.

1.12 JOB SAFETY

A. The Contractor shall be solely and completely responsible for the condition of the premises on which the work is performed and for the safety of all persons and property on the site during performance of the Contract. These requirements shall not be limited to normal working hours, but shall apply continuously.

B. Contractor shall conform to all governing safety regulations.

PART 2 -- PRODUCTS

2.1 MATERIALS

A. All materials, items and equipment furnished under this Contract shall be new, recently manufactured and available locally.

B. All materials shall comply with applicable legal requirements and standards hereinbefore specified in this Section 26 02 00.

C. The label of listing by UL shall appear on all materials and equipment for which standards have been established by that agency.

D. Where local or other authorities having jurisdiction have established label or approval requirements, furnish all materials and equipment with either the required labels affixed or the necessary written approval.

E. Examine the Drawings and Specifications and determine the work to be performed by the electrical and other trades. Provide the type and quantity of electrical materials and equipment necessary to complete this work and all systems in proper operation, tested and ready for use.

F. Provide and install all incidental items not indicated on the Drawings nor mentioned in the Specifications that belong to the work described or are required for complete systems.

2.2 MATERIALS LISTING

A. Required: See Subsection 1. 6 G 6 of this Section 26 02 00.

PART 3 - - EXECUTION

3.1 UTILITY SERVICES

A. Every effort has been made to determine as accurately as possible the requirements of the electrical and telephone services. However, before submitting bid, the Contractor shall verify the locations shown on the plans and shall include sufficient funds for material, labor and utility fees for installation of an approved utility service.

B. Before any work is performed on these facilities, verify all electrical, civil, architectural and structural, dimensional and other requirements related to these facilities with the serving utility companies.

C. Should any major changes to the work indicated be necessary to complete the power and telephone systems, notify the City Engineer at once and cease all work affected until approval for required modifications has been obtained from the City Engineer.

3.2 WORK RESPONSIBILITIES

A. The drawings indicate diagrammatically the desired locations or arrangement of conduit runs, outlets, equipment, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the work so as to secure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference with structural conditions. The Contractor is responsible for the correct placement and coordination of electrical work in relation to the work of other trades. Advise appropriate trade as to locations of access panels.

B. Locations shown on architectural plans and elevations shall take precedence over electrical plan locations, but where a major conflict is evident; notify the Architect or City Engineer for instructions.

C. In the event changes in the indicated locations or arrangement are necessary due to developed conditions in the building construction or rearrangement of furnishings or equipment, such changes shall be made without extra cost, providing the change is ordered before the conduit runs, etc., and work directly connected to same are installed and no extra materials are required.

D. Where equipment is furnished by others, verify dimensions and the correct location of this equipment before proceeding with the roughing in of connections.

E. Lighting fixtures and equipment disconnects in mechanical spaces and elevator machine rooms and pits are shown in their approximate locations only. Do no install outlets, switches, equipment disconnects or fixtures until mechanical piping and ductwork are installed; then lights shall be installed in locations best suited for equipment arrangement or as directed by the City Engineer. Verify exact locations of elevator equipment disconnects, switches, receptacles and fixtures in elevator machine room and pits with the elevator equipment installer before rough in.

F. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with any work, carefully check and verify all dimensions, sizes, etc., with the drawings to see that the equipment will fit into the spaces provided without violation of applicable codes.

G. Should any changes to the work indicated on the Drawings or described in the Specifications be necessary in order to comply with the above requirements, notify the City Engineer immediately and cease work for all parts of the Contract Work which are affected until approval for any required modifications to the construction has been obtained from the City Engineer.

H. Be responsible for any cooperative work which must be altered due to lack of proper supervision or failure to make proper provisions in time. Such changes shall be under the direction of the City Engineer and shall be made to their satisfaction.

I. Perform all work with competent and skilled personnel. Conform to provisions of Subsection 1. 7B of this Section.

J. All work, including aesthetic as well as electrical and mechanical aspects of the work, shall be of the highest quality consistent with the best practices of the trade.

K. Replace or repair, without additional compensation, any work which, in the opinion of the City Engineer does not comply with these requirements.

3.3 GENERAL INSTALLATION (AS APPLICABLE)

* For special requirements, refer to specific equipment under other sections.

A. Unless otherwise specified elsewhere in the Specifications, do all excavating necessary for the proper installation of the electrical work in accordance with the "Earthwork" Section 02220.

B. Locations of Openings: Obtain approval for all chases, shafts and openings required for the installation of the electrical work. Cutting or drilling in any structural member is prohibited without written approval of the Architect or City Engineer. Furnish access panels as required.

C. Finish Around Sleeves: Rough edges shall be finished smooth. Space between conduit and sleeves where conduit passes through exterior walls shall be sealed to permit movement of conduit but prevent entrance of water. Space between conduit and sleeves where conduit passes through fire rated interior walls and slabs shall be sealed with approved materials to provide a fire barrier conforming to the requirements of the governing authorities having jurisdiction, use Dow Corning 3-6548 RTV silicone foam or equal by General Electric if so approved by the applicable and/or authorities having jurisdiction of the job site.

D. Wherever conduit extends through roof, furnish and install flashings in accordance with City Engineer's directions.

E. Be responsible for all cutting and patching which may be required for the proper installation of the electrical work. Work shall be performed by the trade originally installing same and paid for under this Section of the work.

F. Protect all work, materials and equipment from damage from any cause whatever and provide adequate and proper storage facilities during the progress of the work. Storage outdoors shall be weather protected and shall include space heaters to prevent condensation. Provide for the safety and good condition of all work until final acceptance of the work by the City Engineer and replace all damaged or defective work, materials and equipment before requesting final acceptance at no added cost to the City.

G. Conduit and Equipment to be installed: Clean thoroughly to remove plaster, spattered paint, cement and dirt on both exterior and interior.

H. Conduit and Equipment to be painted: Clean all conduits exposed to view in completed structure by removing plaster and dirt. Remove grease, oil and similar material from conduit and equipment by wiping with clean rags and suitable solvents in preparation for paint.

I. All Items with Factory Finish: Remove cement, plaster, grease and oil, and leave all surfaces, including cracks and corners, clean and polished. Touch up any scratched or bare spots to match finish. Factory finish may be approved as prime coat by the Architect (see "Painting" Section).

J. Site Cleaning: Remove from site all packing cartons, scrap materials and other rubbish relating to electrical installation.

K. Electrical equipment and materials exposed to public and in finished areas shall be finish-painted after installation to coordinate with surrounding walls. Surfaces shall be thoroughly cleaned for receiving painting. Paint color coordination shall be as directed by the Architect or City Engineer. Paint shall be identical to that on adjacent surfaces to insure proper matching of quality and color with surrounding areas.

3.4 EXCAVATION, CUTTING AND PATCHING

A. All excavating, trenching and backfilling required for the work of this Division shall conform to the applicable requirements of the "Earthwork" Division 31 in the Project Specifications. All excavating and backfilling connected with electrical work, repaving all cuts and providing and maintaining all protective measures for the electrical work excavation required by the governing authorities having jurisdiction shall be performed as a part of the work of this Division.

B. At a time in advance of the work, verify all openings indicated on the Drawings. Should the work of this division require it, furnish new instruction as to requirements for these openings, subject to the Architect's approval. All cutting, patching and reinforcement of the building (subject to the City Engineer's approval) shall be performed under the Section of the Specifications under which the work was originally performed, but the coat shall be an obligation of the Contractor.

3.5 TESTS

A. Conduct resistance to ground tests by qualified personnel to measure resistance to ground at all grounding electrodes. Make tests before slabs of affected areas are poured in order that corrective measures, if requested, may be taken. Submit to the City Engineer a report showing the results of these measurements. If the resistances exceed values specified elsewhere, perform all corrective measures as directed by the City Engineer at no additional cost to City.

B. Prior to energizing any motors, measure the service voltage for phase balance and report immediately to the City Engineer if unbalance exceeds 1% from means.

C. Measure the three-phase voltage at no load and at maximum load conditions and submit to the City Engineer a report showing the results of these measurements.

D. Upon completion of the work and adjustment of all equipment, conduct an operating test for approval at such time as the Architect directs. Conduct the test in the presence of an authorized representative of the State. Demonstrate all systems and equipment to operate in accordance with all requirements of the Contract documents and to be free from all electrical and mechanical defects. Provide all systems free from short circuits and grounds and show an insulation resistance between phase conductors and ground not less than the requirements of the governing electric code. Test all circuits for proper neutral connections.

E. Complete all tests prior to final inspection of project, including corrective work based on the results of the tests.

F. Perform special tests on systems and equipment as specified herein in other sections of this division, using personnel qualified to perform such tests.

G. Measure voltage on secondary side of all transformers with full load connected and adjust taps to provide rated secondary voltage.

H. Submit to the City Engineer a report showing test voltage of L-N on the secondary's of all transformers.

3.6 PROTECTION

A. Besides the provisions of Subsection 1.10 of this Section comply with the following:

1. Protect all finish parts of the materials and equipment against damage during the progress of the work and until final completion and acceptance. Cover all materials and equipment in storage and during construction in such a manner that no finished surfaces will be damaged or marred. Keep all moving parts clean, dry and lubricated.

3.7 PRELIMINARY OPERATIONS

A. Required**:** Should the City require that any portion of the systems or equipment be operated prior to the final scheduled dates for completion and acceptance of the work, the Contractor shall consent. Such operation shall be under the direct supervision of, and at the expense of the Contractor, and shall not be construed as an acceptance of any of the work by the City.

3.8 CLEANING UP

A. Conform to applicable provisions of Section 01740 of the General Requirements and the following as applicable.

B. Upon completion of the work and at various times during the progress of the work, remove from the building all surplus materials, rubbish and debris resulting from the work of this division and leave the involved portions of the job-site in a neat, clean and acceptable conditions.

C. Thoroughly clean all switchgear, apparatus, exposed conduit, metal work and accessories for the work of this Division of cement, plaster and other deleterious materials; remove all grease and oil spots with cleaning solvent; carefully wipe all surfaces and scrape all cracks and corners clean.

D. Thoroughly polish all chromium and all plated work. Remove all dirt and stains from lighting fixtures.

E. Leave the entire installation in a neat, clean and usable condition.

3.9 COMPLETION

A. The work will not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, panel directories and nameplates specified herein have been approved and properly posted or installed and final cleaning of equipment and premises has been completed.

B. When the installation is complete and all adjustments have been made, operate the systems for a period of one week, during which time demonstrate to the City Engineer that the systems are completed and operating in conformance with the Specifications.

3.10 GUARANTEE

A. Conform to applicable provisions of the GENERAL CONDITIONS of these Specifications.

B. Required: Except as may be specified under other sections in the Specifications, guarantee all equipment furnished under the specifications for a period of one year from date of acceptance against defective workmanship and material, and improper installation. Upon notification of failure, correct deficiency immediately and without cost to the City.

C. Standard warranty of manufacturer shall apply for replacement of parts after expiration of the above period. Manufacturer shall furnish replacement parts to the City or his service agency as directed. Furnish to the City Engineer printed manufacturer's warranties complete with material included and expiration dates, upon completion of project.

3.11 OPERATING AND MAINTENANCE DATA

A. Required: Submit to the City Engineer, complete and at one time, prior to acceptance of the installation, 10 copies of manufacturer's instructions for operation and maintenance of electrical equipment, including replacement parts lists. Each set to be bound in an indexed loose leaf ring binder with permanent cover and permanent identification on back.

3.12 RECORD DRAWINGS

A. Required: Conform to the provisions of Subsection 1. 6 M of this Section and as noted hereinafter as applicable.

B. Provide and maintain in good order at the field office a complete set of electrical contract prints. All changes to the contract shall be clearly recorded on this set of prints and initialed by the Contractor on a weekly basis. At the end of the project transfer all changes, using same symbols, to one set of Mylar transparencies. Obtain Mylar transparencies from the Architect at Contractor's cost.

C. Accurately indicate and dimension all underground conduit runs and conduit stub-outs and all pullboxes from building walls on all Record Drawings.

D. Upon completion of the work and as a prerequisite to issuance of certificate for final payment, deliver one complete set of final prints of the mylars and the Mylar originals themselves.

E. Initial and identify name and telephone number of installing Contractor on all sheets as being a correct and accurate record of the installation. This also includes, but is not limited to, fire alarm

and control systems.

3.13 INSPECTION AND ACCEPTANCE PROCEDURES

The City Engineer will submit observation reports periodically during the construction phase detailing Contract deficiencies. The Contractor is responsible for making all corrections immediately to avoid delaying other trades. Final acceptances of the project will not be made until all items have been corrected.

3.14 FINAL ACCEPTANCE OF ELECTRICAL SYSTEMS

A. Prior to Final Acceptance of operating electrical systems Contractor shall do the following, as applicable:

1. Provide materials of the type and quality specified and as necessary for proper operation, tested and ready for use.

2. Deliver to the City Engineer the "as-built" transparency and set of prints as "Record Drawings".

3. Furnish the required operating and maintenance data/manuals.

4. Clean-up of the project pertaining to this Division of the work, as hereinbefore noted in Subsection 3. 8 of this Division.

5. After installation has been completed and adjustments made, operate the system for a period of one week, during which time, demonstrate to the City Engineer that all systems are complete and operating in conformance with Contract documents.

6. Conduct all tests required and as specified in Sections of this Division and submit test reports and corrective actions taken.

7. Submission of all warranties and guarantees.

B. Final Acceptance of Electrical Work Shall Be Contingent On The Following:

1. Contractor replacing defective materials and workmanship.

2. Upon completion of work and adjustments made, Contractor shall conduct an operating test for each system for approval at such time as City Engineer directs. Conduct test in presence of authorized representative of the City Engineer demonstrate that systems and equipment do operate in accordance with requirements of the Contract documents and are free from electrical and mechanical defects.

3. Contractor shall provide the necessary training programs and instructions to the City's representative.

4. Submit copies of manufacturer's instructions and maintenance of electrical equipment including replacement parts lists. Each set shall include one set of shop drawings of equipment installed.

3.15 SUBMITTALS FOR CHANGE ORDERS

A. General: When changes are made during the construction phase, deletions and additions shall be presented in a manner that will indicate the cost of each item of material and corresponding

labor. Overhead and profit makeup shall be then added in accordance with the requirements of the GENERAL CONDITIONS.

1. Unit costs shall apply in event of changes, additions and deletions to the contract, as follows:

2. Submit with Bid Costs a unit cost, covering one hour of labor, including all applicable supervision, nonproductive labor, burdens, benefits, insurance, taxes, direct and indirect job expenses including drawings, engineering, temporary power, warehouse, tools, equipment, clean-up, bonds, overhead and profit, charged for labor. Unit cost of labor shall be applicable for duration through completion of the project.

3. Material unit costs shall be based on the latest edition of "Electrical Trade Book", published by Trade Service Publications, Inc. Unit cost shall be taken from extreme right-hand column.

4. Labor unit quantities, for specific items required, shall be those listed in the third column from the National Electrical Contractors' Association, Inc., "NECA Manual of Labor Units".

END OF SECTION

SECTION 26 05 19

WIRE AND CABLE-RATED 600 VOLT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

A. Work includes but is not limited to the following:

1. Building wire.

2. Ground Conductors.

3. Wiring connections and terminations.

4. Conductor Identification.

B. Related Work:

1. Section 26 01 00 - Basic Materials and Methods.

2. Section 26 05 33 - Conduit.

3. Section 26 05 53 – Identification for Electrical Systems.

4. Section 26 05 26 - Grounding.

PART 2 - PRODUCTS

2.01 BUILDING WIRE

A. Wires shall be single conductor type THHN/THWN insulated with polyvinyl chloride and covered with a protective sheath of nylon, rated at 600 volts. Wires may be operated at 90 degrees C. maximum continuous conductor temperature in dry locations, and 75 degrees C. in wet locations and shall be listed by UL Standard 83 for thermoplastic insulated wires, listed by Underwriter's Laboratories (UL) for installation in accordance with Article 310 of the California Electrical Code (CEC). Conductors shall be solid copper for 10 AWG and smaller conductors, and stranded copper for 8 AWG and larger conductors. Conductors shall be insulated with PVC and sheathed with nylon. Wires shall be identified by surface markings indicating manufacturer's identification, conductor size and metal, voltage rating, UL symbol, type designations and optional rating. Indentations for lettering are not permitted. Wires shall be tested in accordance with the requirements of UL standard for types THWN, or THHN.

B. Conductors shall be solid Class B or stranded Class C, annealed uncoated copper in accordance with UL standards, or another Nationally Recognized Testing Laboratory (NRTL).

C. Control Circuits: Copper, stranded conductor 600 volt insulation, THWN/5

D. Minimum branch circuit wiring: No. 12 AWG copper, 600 volt insulation.

E. For conductors installed in exposed conduit outside of buildings and conduit within or just under roofing material, provide type XHHW.Control Circuits for Mechanical Equipment: Use 600 volt Underwriters' type THWN conductors except where subject to abnormally high temperatures such as on or near boilers. Under these conditions, use type FEPB.

F. Conductor for Door Status and Lock: Stranded jacketed twisted pair for Class 2 or 3 systems, No. 18 A.W.G. size.

G. Conductors for Fire Protective Signaling Systems: Solid No. 14 A.W.G. size minimum.

2.02 GROUND CONDUCTORS

A. Equipment ground: Insulated conductor green in color.

B. Isolated circuit ground: Insulated conductor green in color.

C. Ground Wires: Bare copper or with green colored insulation.

2.03 CONDUCTOR ARRANGEMENT AND IDENTIFICATION

A. Ties: T & B "Ty-rap" or 3M Company.

B. Lacing: Nylon twine.

C. Markers: Adhesive type, Brady.

2.04 CONDUCTORS

A. All Wire: New and delivered to job site in unbroken packages.

B. Each package shall bear Underwriter's and Manufacturer's labels and seals indicating date of manufacture and maximum allowable voltage.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wires shall not be installed until debris and moisture is removed from conduits, boxes, and cabinets. Wires stored at site shall be protected from physical damage until they are installed and walls are completed.

B. Wire-pulling compounds furnished as lubricants for installation of conductors in raceways shall be compounds approved and listed by UL, NRTL, or equal. Oil, grease, graphite, or similar substances are not permitted. Pulling of 2 AWG or larger conductors shall be performed with a cable pull machine. Any runs shorter than 50 feet are exempt. When pulling conductors, do not exceed manufacturer’s recommended values

C. At outlets for light, power, and signal equipment, pigtail splices with 8-inch circuit conductor leads for connection to fixtures, equipment, and devices.

D. Pressure cable connectors, pre-insulated 3M Scotchlok, Hubbell Power, O-Z/Gedney or equal, Y, R or B spring-loaded twist-on type, may be furnished in splicing number 8 AWG or smaller wires for wiring systems; except public address and telephone systems.

E. Joints, splices, taps, and connections to switchboard neutral, bonding or grounding conductors, conductors to ground busses, and transformer connections for wires 6 gage and larger shall be performed with high-pressure cable connectors approved for installation with copper conductors. Connectors shall be insulated with heavy wall heat shrink WCSM, or cold-applied roll-on sleeve RVS. Insulation level shall be a minimum of 600V and joints, splices, and taps shall be qualified to ANSI C 119.1, UL, NRTL, or equal listed mechanical pressure connections.

F. Connections to any bussing and high-press cable connectors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

G. Connection of any bonding or grounding conductors shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.

H. Wire switchboards, panel cabinets, pull boxes, and other cabinets except public address, shall be neatly grouped and tied in bundles with nylon ties at 10-inch intervals. In switchboards, panels and terminal blocks, wires shall be fanned out to terminals. If bundles are longer than 24 inches, a maximum of nine current carrying conductors may be bundled together.

I. Install conductor lengths with a minimum length within the wiring space. Conductors must be long enough to reach the terminal location in a manner that avoids strain on the connecting lug.

J. Maintain the conductor required bending radius.

K. Neutral conductors larger than 6 gage, which are not color identified throughout their entire length, shall be taped, painted white, or taped white where they appear in switchboards, cabinet, gutters or pull boxes. Neutral conductors 6 gage and smaller shall be white color identified throughout their entire length.

L. Fire alarm and clock wiring shall be continuous from terminal cabinets or from equipment to each device. Splices are not permitted between devices and/or terminal cabinets at junction and pull boxes. Wiring shall be terminated at terminal blocks or devices only.

M. Wiring systems shall be free from short circuits and grounds, other than required grounds. The contractor shall be responsible for the testing of feeder and branch circuit conductor's insulation resistance. The insulation of the conductors shall be tested prior to connections to any panelboards, switchboards, variable frequency drives, lighting control systems, ballasts, and wiring devices such as but not limited to GFI receptacles, TVSS receptacles, or equipment. Insulation testing of panelboards and switchboards shall be independently performed from the insulation testing of any conductors as specified in other sections of this specification.

1. Utilize the services of an approved independent testing laboratory to perform megger time-resistance insulation testing of feeder conductors. Tests must be conducted with wires disconnected at both ends.

    a. Provide calibration program records to assure the testing instrument to be within rated accuracy. The test equipment accuracy shall be in accord with the requirements stated by the National Institute of Standards and Technology (NIST).

    b. Test equipment shall be provided with a label stating the date of last calibration. As a minimum the equipment shall have been calibrated within the past 12 months.

    c. Test reports shall include the following:

1)Identification of the testing organization.
2)Equipment identification.
3)Ambient conditions.
4)Identification of the testing technician.
5)Summary of project.
6)Description of equipment being tested.
7)Description of tests.
8)Test results.
9)Analysis, interpretation and recommendations.

3.02 COLOR CODES

A. General Wiring:

1. Color code conductor insulation as follows:

SYSTEM VOLTAGE		
Conductor	208Y/120	480Y/277
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	White

Neutrals shall be colored-distinguished if circuits of two voltage systems are used in the same raceway.

2. For phase and neutral conductors 6 gage or larger, permanent plastic-colored tape may be furnished to mark conductor end instead of coded insulation. Tape shall cover not less than 2 inches of conductor insulation within enclosure.

B. Signal Systems: Wires for signal systems shall be color-coded. Except where otherwise specified, color-coding shall be as follows:

SYSTEM	COLOR CODE
Fire Alarm Horns	Pink (+) and Gray (-)
Fire Alarm Strobes	Orange (+) and Blue (-)
Un-Interruptible 24 Volt Power (Annunciator, Water Flow, and Audible Device)	Yellow (+) and White (-) Note: A single white wire may be common to both
Interruptible 24 Volt Power (4 wire smoke detectors, duct detectors)	Brown (+) and White (-) Note: A single white wire may be common to both
Switch-Leg Sprinkler Bell (Between water flow and audible device)	Violet (+) and White (-)
Door Holding Magnets (Non Power Limited)	Black (+) and White (-)

3.03 FEEDER IDENTIFICATION

A. Feeder wires and cables shall be identified at each point the conduit run is broken by cabinet, box, gutter, etc. Where terminal ends are available, identification shall be by means of heat shrink wire markers, which provide terminal strain relief. Markers shall be by Tyco Electronics, Panduit, Brady Perma-Sleeve, or equal. Identification in other areas shall be by means of wrap-around tape markers from Tyco Electronics, Panduit, Brady Perma-Code or equal. Markers shall include feeder designation, size, and description.

3.04 SPLICES

A. Make splices for No. 8 A.W.G. and smaller conductors with twist-on type pressure connectors suitable for the number and size of conductors. Connectors shall be Ideal Industries Inc., "Wingnut" or equal.

B. Make splices for No. 6 A.W.G. and larger conductors with bronze split-bolt or solderless compression type connectors requiring the use of a pressure tool. Connectors shall be wrapped with varnished cambric prior to taping, where tape is used as the insulating medium.

C. Make "pigtail" type splices at multiple conductor terminations for lighting fixtures, switches, receptacles, and other devices or outlets, to provide for connection of a single set of circuit conductors to the device or load. This requirement shall not apply to line and load conductors connected to GFCI type receptacles.

D. Install each feeder conductor without splice or joint, from equipment terminal to equipment terminal, except as specifically indicated otherwise on the Drawings.

3.5 MISCELLANEOUS (AS APPLICABLE)

A. Make all branch circuit and fixture joints for #10 AWG and smaller wire with UL approved connectors, listed for 600 volts. Provide Minnesota Mining and Manufacturing Co. insulated "Scotch locks", Ideal Co. "Wing-Nut", or T&B Burndy Co. "Piggy" connectors.

B. Make all branch circuit joints of #8 AWG and larger with screw pressure lugs, and insulate with electrical tape to 150% of the insulating value of the conductor insulation.

C. Tape all connections made with non-insulated type connectors with half-lapped, rubber-type tape, to 1-1/2 times the thickness of the conductor insulation, then cover with Scotch #33 tape.

D. Each circuit must correspond to the branch circuit number indicated on the panel schedule shown on the drawings except where departures are approved by the Architect.

E. Neatly group or tape together wiring within equipment enclosures.

F. Where conductors in conduit pass through exterior walls, a sealing compound of moisture-resistant material shall be applied in the ends of the conduits to seal around the conductors.

G. Megger tests shall be taken on all feeder conductors and on all conductors for motors over 15 HP. Tests shall be made in presence of the City's representative and prior to connection of equipment. Written reports of results shall be submitted to the City Engineer. Conductors testing below manufacturer's standard shall be replaced

3.05 PROTECTION

A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1: GENERAL

1.01 Provide required grounding.

1.02 SYSTEM DESCRIPTION

A. All metallic objects on the premises that enclose electrical conductors or that are likely to be energized by electrical currents shall be effectively grounded.

B. All metal equipment parts such as enclosures, raceways, and equipment grounding conductors and all earth grounding electrodes shall be solidly joined together into a continuous electrically conductive system.

C. All metallic systems shall be solidly interconnected to the electrical system as provided by the service entrance and for each grounded separately derived system that is installed.

D. A separately derived A.C. source shall be grounded to the equipment grounding conductor and to a separate made electrode.

E. Electrical continuity to ground metal raceways and enclosures, isolated from equipment ground by use of non-metallic conduit or fittings, shall be provided by a green insulated grounding conductor of approved size within each raceway connected to isolated metallic raceways, or enclosures at each end. Each flexible conduit shall be provided with a green insulated grounding conductor of approved size. In addition to using metallic conduits as ground, provide a ground wire sized per code in every conduit.

F. Cold water or other utility piping systems shall not be used as the only source of grounding electrodes. Grounding electrodes shall be "made electrodes" specified as follows:

1. Grounding electrodes as specified in Part 2 of this Specification.

2. Concrete enclosed electrode, which is made up of at least 20'-0" of #4 AWG, minimum size, copper conductor, encased by at least 2" of concrete, located within or near bottom of a concrete foundation, or footing, which is in direct contact with earth. Footing rebar must be connected to copper wire using approved connections. An external electrode as specified in Article 2.01, Paragraph B of this Specification Section must be installed and connected to foundation or footing rebar.

G. Non-current-carrying metal parts of high voltage equipment enclosure, signal and power conduits, switchboard and panelboard enclosures, motor frames, equipment cabinets, and metal frames of buildings shall be permanently and effectively grounded.

H. Metallic or semi-conducting shields, and lead sheaths of cables operating at high voltage, shall be permanently and effectively grounded at each splice and termination.

I. Neutral of service conductors shall be grounded as follows:

1. Neutral shall be grounded at only one point within site for the incoming service.

Preferable location of grounding point shall be at service switchboard, or main switch.

2. Equipment and conduit grounding conductors shall be bonded to that grounding point.

3. If other buildings are served from a switchboard or panelboard in another building, power supply is classified as a feeder and not as a service.

4. Equipment grounding conductor is carried from switchboard to each individual building. At building, grounding conductor is bonded with power equipment enclosures, metal frames of building, etc., to "made electrode" for that building.

5. Neutral of feeder shall not be grounded.

J. If there is a distribution transformer at a building, secondary neutral conductor shall be grounded to "made electrode" serving building.

K. If applicable within every building, main switchboard or panel, shall be bonded to a 1" or larger cold water line with a 1" conduit with one #6 wire. Metallic piping systems (gas, fire sprinkler, etc.) shall be bonded to cold water line with 3/4" conduit with one #8 wire.

PART 2: PRODUCTS

2.01 YARD BOXES

A. Yard boxes shall be precast concrete and shall be approximately 14" wide, 19" long, and 12" deep (outside dimensions), or larger, if necessary, to obtain required clearances. Boxes shall be equipped with bolt-down, checkered, cast iron covers and a cast iron frame cast into box. Yard boxes shall be Brooks 36 or approved equal.

2.02 ELECTRODES

A. "Made" electrodes shall be approved copper-clad steel ground rods, minimum 3/4" diameter, 10'-0" long.

2.03 GROUND ENHANCEMENT MATERIAL

A. Ground enhancement material as manufactured by Erico Electrical Products shall be used packed inside a 3" diameter hole around ground rod. Manufacturer's installation instructions must be followed for each ground rod installation.

PART 3: EXECUTION

3.01 ELECTRICAL DEVICES

A. Grounding electrodes shall be located in nearest usable planting area, where not otherwise indicated on Drawings, and each electrode shall terminate within a concrete yard box installed flush with finish grade. In planting areas, concrete yard box shall be 2" above planting surfaces.

B. If concrete enclosed electrode is used, grounding wire shall terminate to a suitable copper plate with grounding lugs.

C. Grounding rods shall be driven to a depth of not less than 8'-0". A permanent ground enhancement material as manufactured by Erico Electrical Products shall be used at each ground rod to improve grounding effectiveness. The manufacture's guidelines shall be used for each installation.

D. Grounding electrodes shall have a resistance to ground of not more than 10 ohms.

E. When using grounding rods, if resistance to ground exceeds 25 ohms, 2 or more rods connected in parallel shall be provided to meet grounding resistance requirement.

F. Ground rods shall be separated from one another by not less than 10'-0"

G. Parallel grounding rods shall be connected together with approved fittings and approved grounding conductors in galvanized rigid steel conduit, buried not less than 12" below finish grade.

H. Electrical Contractor shall include in his bid, cost of services of an approved independent testing laboratory, to test grounding resistance of all made electrodes, ground rods, and bonding of building steel, water pipes, gas pipes and other utility piping. Tests to be performed are as follows:

1. Visually and mechanically examine ground system connections for completeness and adequacy.

2. Perform "fall of potential" tests on each ground rod or ground electrode where suitable locations are available per IEEE Standard No. 81, Section 8.2.1.2. Where suitable locations are not available, measurements will be referenced to a known dead earth or reference ground.

3. Perform the two point method test per IEEE No. 81, Section 8.2.1.1 to determine ground resistance between ground rod and building steel, and utility piping - such as water, gas and panelboard grounds. Metal railings at building entrances and at handicapped ramps shall also be tested.

4. Test shall be conducted in presence of the District Electrical Inspector.

I. Three copies of test results shall be submitted to the District Electrical Inspector. Test results shall be submitted on an official form from the independent testing laboratory showing project location, test engineer, test conditions, test equipment data, ground system layout or diagram, and final test results.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

A. Work includes but is not limited to the following:

1. Conduit and equipment supports.

2. Fastening hardware.

B. Related Work:

1. Division 3 - Concrete.

2. Section 26 01 00 - Basic Materials and Methods.

3. Section 26 05 33 - Conduit.

4. Section 26 05 19 - Wire and Cable.

5. Section 26 05 34 - Boxes.

6. Section 26 24 13 - Service Switchboards and Distribution Sections.

7. Section 26 24 16- Panelboards.

8. Section 26 51 00 - Lighting Fixtures.

1.03 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

1.04 COORDINATION

A. Coordinate size, shape and location of concrete pads, concrete work - Section 03 30 00.

PART 2: PRODUCTS

2.01 MATERIAL

A. Support Channel: Galvanized.

B. Hardware: Corrosion resistant.

C. Concrete: See Division 3.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using beam clamps, or spring steel clips.

B. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

C. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit, or to any vibrating equipment.

D. Do not use powder-actuated anchors.

E. Do not drill structural steel members without Structural Engineers approval.

F. Fabricate supports from structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

G. Install surface-mounted cabinets and panelboards with minimum of four anchors.

H. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.

END OF SECTION

SECTION 26 05 33

CONDUIT

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-01 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

A. Work includes but is not limited to the following:

1. Rigid metal conduit and fittings.
2. Intermediate metal conduit and fittings.
3. Electrical metallic tubing and fittings.
4. Flexible metal conduit and fittings.
5. Liquidtight flexible metal conduit and fittings.
6. Non-metallic conduit and fittings.

PART 2: PRODUCTS

2.01 RIGID STEEL CONDUIT AND FITTINGS

A. Rigid Steel Conduit: Hot dipped galvanized inside and out, galvanized threads, mild steel, zinc coated, inside and outside protective coating. Standard lengths: 10'-0".

B. Bushings: Threaded insulated metallic type except sizes 1" and smaller may be non-metallic type. Setscrew bushings are not acceptable.

C. Couplings, elbows, bends and other fittings: Same material and finish as rigid steel conduit. All shall be threaded type.

2.02 RIGID ALUMINUM CONDUIT AND FITTINGS

A. Not allowed-No exceptions

2.03 INTERMEDIATE METAL CONDUIT (IMC) AND FITTINGS

A. Conduit: Galvanized steel, zinc coated, protective coating inside and out.

B. Fittings and Conduit Bodies: Use fittings and conduit bodies specified above for rigid steel conduit.

C. Conduit: May be used in lieu of rigid steel conduit where permitted by code, except in concrete, underground, runs longer than 100 feet for all power feeders with conduit greater than 2 inches.

2.04 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

A. Conduit: Hot dipped galvanized or sherardized inside and out, zinc coated with protective enamel coating inside. Provide bushings at ends of conduits.

B. Connectors: Steel, insulated, bused tap-on or wrench tightened compression type. (Couplings similar) Indentor or screw type not acceptable.

C. Conduit: May be used in lieu of rigid steel conduit where permitted by code, except exposed, in concrete and for runs more than 100' for all power feeders with conduit greater than 2 inches.

2.05 FLEXIBLE METAL CONDUIT AND FITTINGS

A. Conduit: Steel single strip, hot dipped galvanized on all 4 sides prior to fabrication. Flexible aluminum conduit will not be allowed.

B. Connectors: Die cast with ridges that thread into conduit. (Binding screw type connectors are not acceptable.)

C. Conduit: May be used in lieu of rigid steel conduit where specifically indicated; at connections to vibrating equipment; at drops to light fixtures from J-boxes; at locations judged by Architect impractical to use rigid conduit. Maximum length for any application shall be 6 feet.

2.06 LIQUIDTIGHT FLEXIBLE CONDUIT AND FITTINGS

A. Conduit: Steel, single strip, hot dipped galvanized on 4 sides prior to fabrication.

B. Connectors: Insulated, special Appleton "STN" Series.

C. Jacket: Liquidtight, polyvinyl chloride plastic.

D. Conduit: Use for final connection to motor terminal boxes and transformers. Use at exterior locations, damp locations, wet locations and for flex connections in kitchen, restrooms and similar areas.

2.07 PLASTIC CONDUIT AND FITTINGS

A. Conduit: Extruded, virgin polyvinyl chloride compound, Schedule 40, heavy wall, in 10'-0" lengths with couplings.

B. Fittings: Non-threaded type couplings.

C. Conduit: May be used underground only. Vertical elbows and risers of all sizes shall be rigid steel with 20 mil bonded PVC coating.

2.08 CONDUIT SUPPORTS

A. Conduit Clamps, Straps, and Supports: Steel or malleable iron. Clamps: Unistrut Nos. P111 thru P1124, Kindorf No. C105. Straps: One or two hole as required.

B. Conduit hangers, racks and trapezes: Steel, threaded rods, channel iron "U" shaped racks equal to "Unistrut".

C. Individual conduit hangers: Steel, threaded rods with malleable iron split rings.

D. Hanger rods: 3/8" minimum diameter for 2" and smaller conduit, factory made. 1/2" minimum for 2-1/2" and larger conduit.

E. Wire supports: 12 gauge zinc coated iron tie wire, or 16 gauge galvanized double annealed steel tie wire.

2.09 CONDUIT ROOF JACKS AND FLASHING

A. Roof Jacks:

1. For Single Conduits Through Roof: Stonemen Stormtite Series #1100-4; seamless 4 pound lead flashing assembly, 8" skirt, steel reinforced varipitch boot; caulk type cast iron counterflashing sleeve, with vandalproof set screws, and Perma-seal waterproofing compound.

2. Sleeves for Conduits: Sleeves shall be adjustable type, of 26 gage galvanized iron, Adjust-to Crete Co. Adjust-to-Crete, or Jet Line Products Inc. Jet-Line, or equal.

3. Where conduit enters a building through a concrete foundation below grade, or ground water level, or where it is necessary to seal around a conduit where it passes through a concrete floor or wall, provide O-Z/Gedney Type FSK Thru Wall and Floor Seal, or equal.

2.10 CONDUIT PULLING CORDS

A. Pull Wire: No. 12 galvanized iron or nylon pull wire rated 250 pounds tensile strength.

2.11 CONDUIT FITTINGS, ELLS AND BUSHINGS

A. Special conduit fittings: Crouse-Hinds "Condulets" or Appleton "Unilets".

B. Ells: Same quality, same finish and same make as conduit.

C. Bushings: Thomas & Betts or approved equal.

D. Seismic separations and expansion joints: OZ type "AX" complete with bonding strap and clamps. At exterior locations use OZ type "EX".

2.12 CONDUIT SEALS AND SEALING COMPOUND

A. Vertical seals: Crouse Hinds type "EYD" or Appleton type "SF".

B. Horizontal Seals: Crouse Hinds type "EYS" or Appleton type "ESU".

C. Sealing compound: Crouse Hinds "CHICO" or Appleton "APELCO".

D. Fireproofing Compound: Dow Corning No. 3-6548 RTV or equal by 3M Company or Nelson.

2.13 UNDERGROUND SPACERS FOR PVC CONDUIT

A. Spacers: PVC, interlocking type, intermediate and base styles.

B. Sizes: For 2" to 4" conduit.

C. Manufacturer: Carlon or approved equal.

2.14 SPECIAL UNDERGROUND COUPLINGS FOR PVC CONDUIT

A. Expansion couplings: PVC type to expand up to 4".

B. Couplings: Socket type for joining PVC conduit.

C. Adapters: Socket type at one end for PVC conduit and threaded female type at other end for metallic connection.

2.15 PLASTIC CONDUIT CEMENT

A. Solvent weld cement: Fast drying, brush-on type.

2.16 MC CABLE

A. Metal Clad (MC) cable system is allowed as per approved plans..

PART 3: EXECUTION

3.01 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT

A. Arrange conduit to maintain headroom and present a neat appearance.

B. Unless indicated otherwise, conceal conduit within or behind finished walls and ceiling.

C. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.

D. Maintain minimum 6 inch clearance between conduit and piping. Maintain 12 inch clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.

E. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.

F. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps. Provide space for 25 percent additional conduit.

G. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.

H. Do not support conduit from any equipment subject to vibration. Support from structural members only.

I. Structural Considerations for Conduit Routing:

1. Where conduits are to pass through or will interfere with any Structural member, or where notching, boring or cutting of the structure is necessary, or where special openings are required through walls, floors, footings, or other buildings elements, to accommodate the electrical work, such work shall conform to State Building Code.

2. Where conduits are terminated in groups at panelboards, switchboards and signal cabinets, etc., provide templates or spacers to hold conduits in proper position and to preserve alignment. Conduits terminating at signal cabinets shall enter cabinets in following approved locations only: Conduits entering top, side, and bottom of cabinets shall be aligned in a single row, centered 2" from rear of cabinet; conduits entering back of cabinet shall be aligned in a single row centered 2" from top of cabinet. Conduits shall not be spaced closer than 3" on centers.

3. 1" and smaller conduits above metal lath ceilings shall be tied to ceiling channels. 1-1/4" conduits above metal lath ceilings shall be rigidly suspended with pipe hangers or pipe racks or shall be secured to superstructure with factory made pipe straps. Conduits in metal lath or steel stud partitions, shall be tied to furring channels or studs. In ceiling spaces and in partitions, tie wires shall be spaced not more than 5'-0" apart, shall hold conduit tight against channels and studs at point of tie and shall not bear any of weight of conduit. Tie wire shall be #16 gage galvanized double annealed steel tie wire.

4. Where auxiliary supports, saddles, brackets,, etc., are required to meet special conditions they shall be made rigid and secure before conduit is attached thereto.

5. Conduit in ceiling spaces, in stud walls and under floors shall be supported with factory made pipe straps or shall be suspended with pipe hangers or pipe racks. Pipe straps shall be attached to and shall hold conduit tight at point of support against ceiling and floor joists, rafters, and wall studs, or 2" x 4" headers fitted between joists or wall studs.

6. Conduits installed on exposed steel trusses and rafters shall be fastened with factory made conduit straps or clamps which shall hold conduit tight against supporting member at point of support.

7. Conduits under buildings shall be strapped with factory made conduit straps to underside of concrete floor or joists, or wood floor joists, or shall be suspended with pipe hangers or pipe racks. Conduits under building shall not rest on ground but shall be suspended from building or shall be buried below surface of ground. 1" and larger conduits under buildings shall be suspended with conduit hangers or racks.

8. Pipe hangers for individual conduits shall be factory made, consisting of a pipe ring and threaded suspension rod. Pipe ring shall be malleable iron, split and hinged, and shall securely hold conduit, or shall be springable wrought steel. Rings shall be bolted to or interlocked with suspension rod socket. Rods shall be 3/8" for 2" conduit hangers and smaller and shall be 1/2" for 2-1/2" conduit hangers and larger.

9. Pipe racks for groups of parallel conduits and for supporting total weights not exceeding 500 pounds shall be trapezed type and shall consist of a cross channel, Steel City Kindorf #B-900, Unistrut #P-1000 suspended with a 3/8" minimum diameter steel rod at each end. Each rod shall be fastened with nuts, top and bottom to cross channel and with a square washer on top of channel. Each conduit shall be clamped to top for cross channel with conduit clamps, Steel City Kindorf #C-105 or Unistrut Nos. P-1111 through P-1124. Conduits shall not be stacked one on top of another, but a maximum of 2 tiers maybe on same rack providing an additional cross channel is installed. Where a pipe rack is to be longer than 18", or if weight it is to support exceeds 500 pounds, submit details of installation to the Architect for approval.

10. Factory-made pipe straps shall be one or 2-hole formed galvanized clamps, heavy

duty type, except where otherwise specified.

11. Hangers straps, rods, or pipe supports under concrete shall be attached to inserts set at time concrete is poured. Under wood use bolts, lag bolts, or lag screws; under steel joists or trusses use beam clamps.

3.02 CONDUIT INSTALLATION

A. Cut conduit square using a saw or pipe cutter; de-burr cut ends.

B. Bring conduit to the shoulder of fittings and couplings and fasten securely.

C. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations.

D. Install no more than equivalent of two 90- degree bends between boxes for conduits 2" diameter and larger, three for conduit under 2" diameter. Locate pull boxes as required.

E. Use conduit bodies to make sharp changes in direction, as around beams.

F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2 inch size.

G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.

H. Support rigid, intermediate and thin wall conduit at 8'-0" maximum on centers and 3'-0" from junction boxes.

I. Support flexible and liquidtight flexible conduit at 4'-0" maximum on centers and 12" from junction boxes.

J. PVC conduit: Use underground only. Encase in 3” concrete (2000 psi) envelope except under building.

K. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.

L. Install expansion-deflection joints where conduit crosses building expansion or seismic joints.

M. Where conduit penetrates fire-rated walls and floors, seal opening around conduit with UL listed fire barrier, "3M" calk or equal.

N. Route conduit to roof mounted devices and equipment through roof jacks. Provide flashing/roof jacks for all new and existing conduits which penetrate roof to appropriate Roofing Section(s) for installation.

O. Run conduit to equipment on roof concealed in attic space. Penetrate roof at equipment locations only.

P. For conduits to roof mounted HVAC equipment, penetrate roof with roof jacks outside footprint of HVAC units. Do not penetrate roof inside HVAC units.

Q. Do not use aluminum conduit below grade, cast in concrete or in masonry in contact with earth.

R. Conduit underground may be rigid conduit and in these conditions shall be given two heavy coatings of a suitable primer and a single half lapped layer of protective plastic tape. Primer and tape shall be "Scotchrap" No. 50 tape. Primer and tape shall be "Scotchrap" Primer or Trantex V-10 tape and Dutch Brand Primer. Primer and tape shall be in strict accordance with manufacturer's instructions. As an alternate, conduit and fittings shall have a PVC bonded coating (40 mil thickness minimum) by Occidental Coating Company.

S. Where conduit is installed underground, under slabs on grade, exposed to weather or in wet locations, make joints liquidtight and gastight.

T. For underground or underslab conduit, apply a heavy coat of Pabco P & B No. 2 paint to all surfaces within 6" each side of fittings and to areas where wrenches or other tools have been applied. On exposed conduit, repair scratches and other defects with galvanizing repair stick, Enterprise Galvanizing "Galvabar".

U. Cut threads on rigid conduit to standard taper and to a length such that all bare metal exposed by threading operation will be completely covered by couplings or fittings used. In addition, cut lengths of thread such that all joints will become secure and wrench tight just preceding point where conduit ends would butt together in couplings and where conduit ends would butt into ends or shoulders of other fittings. Securely tighten all threaded connections.

V. Encase all underground primary and secondary electric service conduits in concrete envelopes with a minimum 3” cover all around from end-to-end. Provide concrete with a compressive strength of not less than 2,000 psi at 28 days of age. Provide red concrete encasement for systems over 600-volt. Space multiple conduit not less than 3” apart. Use factory made conduits spacers to stagger connections or couplings for neater installation. Tie conduit to spacers and anchor system to prevent dislodgement. Provide personnel to inspect during pouring to prevent displacement of conduit.

W. Make joints in rigid conduit installed in concrete or masonry liquid-and-gas-tight, with red lead and oil, or other approved joint compound and engage not less than five threads.

X. Keep bends and offsets in conduit runs to an absolute minimum. Replace all deformed, flattened or kinked conduit. Provide large radius factory made bends or power bend rigid metal conduit of 1-1/4" trade size or larger.

Y. Place sleeves for electrical conduit passing through walls, beams or slabs before concrete is poured (exception-floor slabs on earth). Where conduit passes through suspended floor slabs, outside of chases, sleeves shall be standard weight black steel pipe extending 1-1/2" above the finished floor level. Sleeves at other locations shall be either lightweight galvanized steel tube, or galvanized sheet steel, with a minimum thickness of 24 USSG. Clearance between conduit and sleeves shall be not less than 1/2". Sleeves through outside walls below grade shall be caulked tight. Caulk with oakum and mastic to obtain watertight joint.

Z. Penetration Membrane: Where penetration cannot be avoided, cut and re-seal membrane at point of penetration.

AA. Provide minimum 3/4" conduit size underground.

BB. Run exposed conduit parallel with or at right angles to building line, beams, or ceilings. Place symmetrical bends or metal boxes at changes in direction or taps.

CC. Stub from each panel which is flush mounted in a wall, from top of panel a minimum of 3-3/4" conduits to nearest ceiling space or other accessible locations and cap for future use. Tag to

indicate panel origination.

DD. Independently support conduit rising from floor for motor connections if over 24" above floor. Support shall not be a motor or duct work which may transmit vibrations.

EE. Provide pull wire in all conduit runs indicated as conduit only (C.O.).

FF. Do not run conduit closer than 12" to any hot water pipe, steam pipe, heater flue or vent.

GG. Terminate conduit stub-ups through floor for connection to equipment of junction boxes in couplings flush with top of concrete slab floor.

HH. Within building, bury underground conduit a minimum of 6" below bottom of slab.

II. Use rigid metal conduit where legally required, where exposed to weather, where located in unheated areas, or where subject to mechanical injury, here defined as exposed conduit less than 7'-6" above floor in areas accessible to anyone other than authorized operating or maintenance personnel.

JJ. Where a conduit from one structure crosses to another structure, e.g., from a building to an arcade or from one arcade to another arcade, use a section of liquid-tight flex conduit at the crossing with sufficient slack to allow the two structures to move during an earthquake without breaking the conduit. For stub up to relocatable buildings, provide liquid-tite flex from stub up to first box on back of building.

KK. Provide PVC deflection - expansion joint fittings where underground run passes through expansion joint or is necessary for seismic conditions.

LL. Provide a green insulated ground wire in all flexible conduit runs regardless of length.

MM. Wipe plastic conduit (PVC) clean before joining. Apply even coat of cement to entire area to be inserted into fitting. Let joint cure for 20 minutes minimum. Use approved solvent-weld cement specifically manufactured for purpose. Threading of PVC conduit is prohibited.

NN. Install an equipment ground (green) insulated conductor in each non-metallic conduit.

OO. Do not install PVC conduit above grade for any reason. Seal both ends of all PVC conduit runs at each junction box or conduit interruption with sealant. Seal steel conduit risers to panelboards, switchboards, or pullboxes from underground PVC conduit runs.

PP. Flash and counterflash all conduit runs passing through roof.

QQ. Use electrical metallic tubing above grade in dry locations only and where not subject to mechanical injury or otherwise prohibited. Concrete and masonry in contact with earth are not considered dry locations.

RR. Use liquid tight flexible conduit for final connections to motors and vibrating equipment. Use flexible conduit where required for equipment servicing for connections to recessed lighting fixtures from nearby accessible junction boxes, and for concealed runs in dry locations where structural conditions prevent use of other types of conduit.

SS. For conduits for computer cables and coax cables, use large radius bends. Do not use j-box or pull box to change direction. Install boxes at straight conduit sections only and sweep conduit to make turns. Do not use condulet fittings to change directions.

TT. Minimum radius for conduits designated for computer LAN wiring, coax cable wiring, data

wiring, fibre-optics wiring, and TV cable wiring shall be as follows:

3/4"C	-	12"
1"C	-	12"
1-1/4"C	-	18"
2"C	-	24"
2-1/2"C	-	24"
3"C	-	30"
3-1/2"C	-	30"
4"C	-	30"
5"C	-	36"
6"C	-	42"

UU. Size all conduits as legally required or larger where indicated or preferred. Where portions of a conduit run are increased in size, for whatever reason, make all remaining portions in that run same size.

VV. Mark all underground conduit stub-outs with a 6 inch square by 2 foot deep concrete block with an embedded brass nameplate indicating the origin of conduit.

WW. Do not cut concrete, masonry or structural members except where approved by Architect.

XX. Empty raceways over 10 feet long : provide with fish or pull wire ,galvanized steel or nylon rope

YY. Underground Requirements:

1. Except for branch circuit conduits and auxiliary system branch circuits within a building, all conduits installed underground shall be entirely encased in concrete (2000 psi), 3" thick on all sides with multiple conduits spaced not less than 3" apart, except where otherwise specified. Provide approved conduit spacers as required to prevent any deflection of conduits when concrete is placed and to preserve position and alignment of conduits in concrete. Conduits shall be tied to spacers. Anchors shall be installed to prevent floating of conduits during pouring of concrete. Red concrete shall be used to encase conduits of systems operating above 600 volts. To protect conduits from underground to surface wall mounted panels, terminal cabinets, etc., encase conduits in 3" high concrete curb.

2. Assemble sections of conduit with approved fittings and stagger all joints. Cut ends of conduit shall be reamed to remove all rough edges. Joints in all conduits shall be made liquid-tight. All bends at risers shall be completely below surface where possible.

3. Two or more conduit runs in a common trench shall be separated by at least 3" of concrete. Conduit runs installed in a common trench with other utility lines and water, gas, sew lines, shall be separated from such lines by at least 12" horizontally. Power conduits shall be separated from low voltage signal conduits by 6" of concrete.

4. Slope underground conduits between two pull boxes towards one of the boxes to avoid water and moisture trap. For underground conduits coming out of a building, slope conduits towards the first pull boxes. Take care to install underground conduits such that water cannot travel through underground pull boxes and conduits back into a building. Prevention method shall include but not limited to installing pull boxes with draining provision where conduits enter building, sealing both ends of each conduit water tight, etc.

5. Provide electronic markers to identify conduit stub locations at property lines, as required by electric service utility company.

6. All underground conduit systems for use by service utility company shall meet all requirements of utility company.

7. Raceways Located Underground, Beyond Building:

   a. Minimum 24-inches top cover, 30-inches in areas subject to heavy vehicular traffic.

   b. Slope away from building.

   c. Building entry and preceding manhole:

   d. Plug empty raceways.

   e. Seal cables in raceways with terminators:

   f. Similar to O.Z. type CRC Series.

   g. Manhole Entries: Through end bells perpendicular to entering wall.

   h. Anchor raceways to prevent movement.

   i. After Installation: Pass stiff bristle, mandrel (85 percent of raceway diameter) and plug.

   j. Placement: Over well-tamped trench bottom and on concrete blocks, five feet on centers. Provide non-metallic spacers.

   k. Joints: Minimum six inches apart and staggered.

   l. Provide watertight joints

3.03 EXCAVATION AND BACKFILL

A. Include all excavation and backfilling required for work under this Section.

1. Bury underground conduit at least 24 inches below finished grade to top of conduit encasement.

2. Underground branch circuit conduit, within building limits, 6" below bottom of slab unless specifically indicated otherwise in these specifications.

3. After installation of work has been inspected and approved, backfill trenches with clean earth, moistened and layer tamped to same compaction density as specified for both building and site locations under "Earthwork".

B. Locate existing underground pipes by use of electronic locating devices and exercise utmost care in excavation work. Contractor is responsible for satisfactory repair of any underground utility line damaged as result of his excavation.

C. Trenches or any other excavation required for installation of electrical work, which are

outside of barricaded working area, shall be barricaded at all times with continuous portable barricades. At completion of work, remove barricades from site. Backfill trenches and excavations outside of barricaded working area immediately after approval of conduit work by Inspector.

D. Where asphalt concrete has been cut, backfill up to existing grade.

E. Do not start excavations until approval is obtained from Inspector.

END OF SECTION

SECTION 26 05 34

BOXES

PART 1: GENERAL

1.01 RELATED DOCUMENTS

A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

A. Work includes but is not limited to the following:

1. Wall and ceiling outlet boxes.
2. Pull and junction boxes.
3. Sealant.

B. Related Work:

1. Section 26 01 00 - Basic Materials and Methods.
2. Section 26 05 33 - Conduit
3. Section 26 27 26 - Wiring Devices.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS-OUTLET BOXES:

A. Raco

B. Steel City

C. Bowers

2.02 BOXES

A. outlet boxes, except as otherwise required by construction, devices or wiring, as follows:

1. Stamped or Welded Steel, 4-Inches, Square or Octagon For Lighting Fixtures: 1-1/2 inch deep above ceiling, 3 inch deep in slab, and 2-1.8 inch deep in wall.
2. In Wall For Receptacles and Switches: 4 inches square or octagon by 1-1/2 inch deep with raised covers and fixture studs where required. Through-the-wall type not permitted.
3. In Wall For Telephone or Data: 5-inches square or octagon by 2-1/8 inch deep with raised covers and fixture studs where required. Through-the-wall type not permitted.

4. Galvanized Cast-Iron or Aluminum With Threaded Hubs: 4 inch round, 2-inch deep on ceiling, and 4-inch square, 2-inch deep on wall.

5. Boxes For Outdoors and Damp Locations: Weatherproof, cast metal.

6. In Hazardous Locations: Cast, copper-free aluminum.

7. Boxes Without Fixture or Device: Provide with blank cover.

8. Offset back-to-back outlets with minimum six-inch separation except in "Acoustic partitions" where back-to-back outlets are not allowed. Refer to detail 5, architectural drawing sheet.

9. Boxes in "Acoustic Partitions" shall be provided as detailed on architectural drawing sheet.

B. Floor Boxes: Unless otherwise noted, galvanized cast iron with stainless steel covers and flanges, suitable for conduit and devices indicated. Walkerbox 880 Series or equal.

1. See also Section 26 27 26 wiring devices for special outlet boxes.

2. For additions to existing areas, match existing.

3. Zinc die cast boxes are not permitted.

2.03 ACCEPTABLE MANUFACTURERS-FLOOR BOXES

A. Hubbell

B. Walker Parkersburg

C. Steel City

2.04 PULL AND JUNCTION BOXES

A. Interior and non-weatherproof boxes shall be constructed of blue or galvanized steel with ample laps, spot welded, and shall be rigid under torsional and deflecting forces. Boxes shall have auxiliary angle iron framing where necessary to ensure rigidity. Covers shall be fastened to box with a sufficient number of brass machine screws to ensure continuous contact all around. Flush type boxes shall be drilled and tapped for cover screws at Site if boxes are not installed plumb. All surfaces of pull and junction boxes and covers shall be given one coat of metal primer, and one coat of aluminum paint.

B. Weatherproof pull and junction boxes shall conform to foregoing for interior boxes with following modifications: Cover of flush mounting boxes shall have a weather-tight gasket cemented to and trimmed even with cover all around. Surface or semi-flush mounting pull and junction boxes shall be UL approved as rain-tight and shall be complete with threaded conduit hubs. All exposed portions of boxes shall be galvanized and finished with a prime coat and coat of baked-on gray enamel.

C. All junction and pull-boxes shall be rigidly fastened to the structure and shall not depend on conduits for support.

D. Underground Concrete Pull Boxes:

1. Precast Concrete Pull Boxes. Concrete pull boxes shall be traffic type, reinforced for HS20-44 Traffic bridge loading, precast concrete. Pull boxes with inside dimensions 2'-0"x 3'-0" x 3'-0"D

shall consist of a base section, top ring and cover. Base section shall have a minimum of two 10"x10" knockouts in each 3'-0" side, and one 20"x20" knockout in each 2'-0" side. Pull boxes with inside dimension 4'-0 x 4'-0"x 4'- 0"D or larger shall consist of a base section, mid section, topping, and cover. Base section shall have a minimum of two 8"x 16" knockouts on each of two opposite sides, and one 20" x 20" knockout on each of the other two opposite sides. All pull boxes shall have a minimum of 6" diameter sump knockout, and 1" diameter ground rod knockout. In each pull box, furnish and install cable racks on walls. Each rack shall be equipped with 3 porcelain cable holders on a vertical steel mounting bar. Each pull box shall have 3/4" diameter pull irons. Covers shall be traffic type consisting of steel safety plate bolted to frame. Covers shall be marked "Electrical", "Power" "Telephone", "Signal" or "Ground", as required. Pull boxes shall be as manufactured by Quickset, or approved equal. Knockout requirements as stated above is minimum requirement. Contractor is responsible for providing pull boxes with the proper knockouts to accept the conduits as shown on the drawings. Depth of pull boxes as shown is the minimum requirement. Provide deeper pull boxes as required to accommodate conduits and minimum conduit cover requirements. All conduits must enter pull boxes in a straight horizontal line.

2. Provide end bells in all duct entrances. Terminate each metal conduit with insulated bushing having grounding terminal, O.Z. Type "Big"

3. Place pulling irons on opposite walls and below horizontal centerlines of ducts and bricked-up openings, and in bottom. Install pulling irons with each end hooked around a reinforcing bar.

4. Remove floor drain knockout and provide a depth of 24 inches of crushed rocks below box extending a minimum of 12 inches beyond all 4 sides.

5. Identify all power and signal cables by tagging in all manholes and pull boxes. Tie securely to cables with nylon cord or insulated type TW wire. Tie so that turns of wires do not form a closed electrical circuit, loop wires all around pull box perimeter at least one time to allow for slack in the wire run. All cables, power or signal must be supported by the cable racks. Cables shall not be resting on the bottom of a pull box.

6. Top of steel plate shall have a minimum co-efficient of static friction of 0.5 for either wet or dry conditions, when tested for any shoe sole material. Testing and certification of the friction factor shall be conducted by an independent testing laboratory approved by the engineer, under the direction of a registered Civil or Quality Engineer. Testing shall conform to ASTM D1047 or F489 or F609, or other procedure approved by the Engineer.

7. Manufactured by: Associated Concrete Products, Inc., Brooks Products, Inc., or equal

E. Underground utility boxes shall be reinforced concrete with non-setting shoulders to prevent settlement following installation. Boxes shall be furnished with cast iron cover with finger hole, size as indicated on Drawings. Utility boxes shall be as manufactured by Quickset, or approved equal.

F. Manholes, vaults and pull-boxes required by utility company, and installed by Electrical Contractor, shall meet all requirements of utility company.

G. Cast Metal Boxes for Outdoor and Wet Location Installations: Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as rain-tight. Galvanized cast iron OR Cast aluminum box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

2.05 ACCEPTABLE MANUFACTURERS-SEALANT

A. Crouse Hinds "CHICO"

B. Permacel

C. Ductseal

2.06 ACCEPTABLE MANUFACTURERS - FIRE PROOFING SEALANT

A. Dow Corning

B. 3M Company

C. Nelson

PART 3: EXECUTION

3.01 COORDINATION OF BOX LOCATIONS

A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.

B. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify exact location of floor boxes and outlets in offices and work areas with Owner's representative prior to rough-in.

C. Locate and install boxes to allow access.

D. Locate and install to maintain headroom and to present a neat appearance.

3.02 OUTLET BOX INSTALLATION

A. Unless otherwise noted on plan or specifically allowed by the Engineer, conceal all boxes flush in wall or in ceiling space above drop ceiling. In finished areas and where it is not possible to conceal conduits and boxes, for example, on existing concrete wall, provide Wiremold type metallic surface raceways and boxes.

B. Do not install boxes back-to-back in walls. Provide minimum 6 inch separation, except provide minimum 24 inch separation in acoustic-rated walls.

C. Provide knockout closures for unused openings.

D. Support boxes independently of conduit except for cast box that is connected to two rigid metal conduits, both supported within 12 inches of box.

E. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

F. Install boxes in walls without damaging wall insulation.

G. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

H. Position outlets to locate lighting fixtures as shown on reflected ceiling plans.

I. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed

lighting fixture, to be accessible through lighting fixture ceiling opening.

J. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes. Install plaster rings to interface with equipment to be mounted thereon.

K. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

L. Provide cast outlet boxes in exterior locations and wet locations. Provide cast bell-boxes at interior locations where box is exposed to view. (do not use regular 4/s or handy box with exposed knockouts and unfinished appearances for these interior exposed applications).

M. Where boxes are installed in fire rated ceiling or walls, be responsible for preserving integrity of B fire rating as required.

N. In fire-rated wall, use 4" square deep boxes. Do not aggregate more than 100 square inches of boxes for any 100 square feet of wall or partitions. Separate outlet boxes on opposite sides of walls or partition by a minimum horizontal distance of 24 inches. Where the separation cannot be achieved due to site condition, provide 2-hour rated fire-proof material behind boxes to maintain fire rating of walls.

O. Flush boxes used for support lighting fixtures or other equipment shall be securely fastened to two structural support members unless embedded in masonry or concrete. Do not use powder-driven fastening devices unless specifically approved by the City Engineer.

3.03 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.

B. Support pull and junction boxes independent of conduit.

END OF SECTION

SECTION 26 05 53
ELECTRICAL IDENTIFICATION

PART 1 -- GENERAL

1.1 SCOPE

A. Required: Furnish and install nameplates and warning sign where indicated on the Contract Drawings or herein specified.

B. Comply with the General Conditions, General Requirements and Section **26 02 00** of this Division 26 concerning definitions, guarantees, submittals, as-builts, clean-up, etc. as applicable to work of this Section.

C. Work includes but is not necessarily limited to the following:

1. Nameplates and warning signs permanently installed on all electrical equipment and devices including, but not limited to, the following items:

   a. Transformers, switchboards, motor control centers, panelboards, variable frequency drives, pullboxes, cabinets and motors.

   b. Enclosures for all separately enclosed devices including, but not limited to, disconnect switches, circuit breakers, contactors, time switches control stations and relays, fire alarm panels and lighting control panel.

   c. Wall switches not within sight of outlet controlled.

   d. Special systems such as, but not limited to, telephone, fire alarm, warning and signal systems. Identification shall be at each equipment rack, terminal cabinet, control panel, annunciator and pullbox.

   e. Devices mounted within and part of equipment including circuit breakers, switches, control devices, control transformers, relays, indication devices and instruments.

D. Related Work:

1. Section 26 01 00 - Basic Materials and Methods.

2. Section 26 05 33 - Conduit.

3. Section 26 05 19 - Wire and Cable -Rated 600 Volt.

4. Section 26 05 34 - Boxes.

5. Section 26 24 13 - Service Switchboards and Distribution Sections.

6. Section 26 28 16 - Disconnect Switches.

7. Section 26 05 26 - Grounding.

8. Section 26 24 16 - Panelboards.

9. Section 26 09 25 – Lighting Controls

PART 2 -- PRODUCTS

2.1 NAMEPLATE DESIGNATIONS SHALL CLEARLY STATE

A. Manufacturer's nameplate including equipment design rating of current, voltage, KVA, HP, bus bracing rating or as applicable.

B. Equipment nameplates designating system usage and purpose, system nominal voltage, equipment rating in KVA, amperes, HP and RPM as applicable. Designation data per drawings shall be supplied with Shop Drawings approval.

C. Panelboard nameplates showing panel designation, voltage, phase and source.

2.2 MANUFACTURERS DEVICE NAMEPLATES

Device usage, purpose, or circuit number; manufacturer and electrical characteristic ratings including the following:

A. Circuit Breakers: Voltage, continuous current, maximum interrupting current and trip current.

B. Switches: Voltage, continuous current, horsepower or maximum current switching. If fused, include nameplate stating "Fuses must be replaced with current limiting type of identical characteristics".

C. Contactors: Voltage, continuous current, horsepower or interrupting current, and whether "mechanically held" or "electrically held".

D. Motors: Rated voltage, full load amperes, frequency, phases, speed, horsepower, code letter rating, time rating, type of winding, class and temperature.

E. Controllers: Voltage, current, horsepower and trip setting of motor running overcurrent protection.

F. Motor Control Centers: Horizontal and vertical bus ratings.

2.3 MATERIALS

A. For Nameplates**:** Three layer laminated plastic or Micarta with engraved black letters over white background.

B. For Emergency Equipment: Use engraved white letters over red background.

C. For Warning Signs: Minimum 18 gauge steel with red lettering on white porcelain enamel finish.

PART 3 -- EXECUTION

3.1 MOUNTING

Nameplates shall be mounted by self-tapping, threaded stainless steel screws and bolts, or by rivets. Adhesive types are not acceptable.

3.2 MINIMUM LETTER HEIGHTS ON NAMEPLATES (AS APPLICABLE)

A. Panelboards, Switchboards and Motor Control Centers and Special Systems Enclosures: 1/4 inch identifies equipment designation; 3/16 inch identifies voltage rating and source.

B. Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 1/4 inch identifies circuit and load served, including location.

C. Individual Circuit Breakers, Enclosed Switches, and Motor Starters: 1/4 inch identify load served.

D. Transformers: 1/4 inch identifies equipment designation; 3/16 inch identifies primary and secondary voltages, primary source and secondary load. Include location of primary source or secondary load if remote from transformer.

3.3 WARNING SIGNS

A. Warning signs shall be permanently mounted with stainless steel screws or nickel-plated brass bolts.

B. Warning signs to read "DANGER - HIGH VOLTAGE", with letters 1-1/2 inch high, 1/4 inch stroke minimum.

C. Provide warning sign on all doors or immediately next to door for equipment rooms or closets containing equipment energized above 150 volts to ground.

END OF SECTION

SECTION 26 05 60
ELECTRICAL SYSTEMS COMMISSIONING

PART 1 – GENERAL

1.1 DESCRIPTION

A. The purpose of this section is to specify Division 26 responsibilities in the commissioning process which are being directed by the CA. Other electrical systems testing are required under the direction of the CM.

B. The list of commissioned equipment and systems is found in Section 01810, Part 1.12.

C. Commissioning requires the participation of Division 16 to ensure that all systems are operating in a manner consistent with the Contract Documents. The general commissioning requirements and coordination are detailed in Division 01. Division 26 shall be familiar with all parts of Division 01 and the commissioning plan issued by the CA and shall execute all commissioning responsibilities assigned to them in the Contract Documents.

1.2 RESPONSIBILITIES

1.2.1 Electrical Contractors. The commissioning responsibilities applicable to the electrical contractor are as follows (all references apply to commissioned equipment only):

1.2.1.1 Construction and Acceptance Phases

1.2.1.1.1 Include the cost of commissioning in the contract price, if not yet let.

1.2.1.1.2 In each purchase order or subcontract written, include requirements for submittal data, O&M data and training.

1.2.1.1.3 Attend a commissioning kickoff meeting and other necessary meetings scheduled by the CA to facilitate the construction process.

1.2.1.1.4 Contractors shall provide normal cut sheets and shop drawing submittals to the CA of commissioned equipment.

1.2.1.1.5 Provide additional requested documentation, prior to normal O&M manual submittals, to the CA for development of start-up and functional testing procedures.

1.2.1.1.5.1 Typically this will include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, full details of any owner-contracted tests, fan and pump curves, full factory testing reports, if any, and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation

and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the Commissioning Agent.

1.2.1.1.5.2 The Commissioning Agent may request further documentation necessary for the commissioning process.

1.2.1.1.5.3 This data request may be made prior to normal submittals.

1.2.1.1.6 Provide a copy of the O&M manuals submittals of commissioned equipment, through normal channels, to the CA for review and approval.

1.2.1.1.7 Contractors shall assist (along with the design engineers) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures

1.2.1.1.8 Provide assistance to the CA in preparation of the specific functional performance test procedures specified in Section 260570. Subs shall review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during the tests.

1.2.1.1.9 Develop a full start-up and initial checkout plan using manufacturer's start-up procedures and the prefunctional checklists from the CA. Submit manufacturer's detailed start-up procedures and the full start-up plan and procedures and other requested equipment documentation to CA for review.

1.2.1.1.10 During the startup and initial checkout process, execute and document the electrical-related portions of the prefucntional checklists provided by the CA for all commissioned equipment.

1.2.1.1.11 Perform and clearly document all completed startup and system operational checkout procedures, providing a copy to the CA.

1.2.1.1.12 Address current A/E punch list items before functional testing.

1.2.1.1.13 Provide skilled technicians to execute starting of equipment and to execute the functional performance tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.

1.2.1.1.14 Perform functional performance testing under the direction of the CA for specified equipment in Section 260570 and 01810. Assist the CA in interpreting the monitoring data, as necessary.

1.2.1.1.15 Correct deficiencies (differences between specified and observed performance) as interpreted by the CA, CM and A/E and retest the equipment.

1.2.1.1.16 Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built

conditions.

1.2.1.1.17 During construction, maintain as-built red-line drawings for all drawings and final CAD as-builts for contractor-generated coordination drawings. Update after completion of commissioning (excluding deferred testing). Prepare red-line as-built drawings for all drawings and final as-builts for contractor-generated coordination drawings.

1.2.1.1.18 Provide training of the Owner's operating personnel as specified.

1.2.1.1.19 Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.

1.2.1.2 Warranty Period

1.2.1.2.1 Execute seasonal or deferred functional performance testing, witnessed by the CA, according to the specifications.

1.2.1.2.2 Correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

1.2.2 Electrical Designer/Engineer

1.2.2.1 Refer to Section 01810 for the responsibilities of the Electrical Designer/Engineer.

1.3 RELATED WORK

1.3.1 Refer to Section 01810 for systems to be commissioned and Section 260570 for functional testing requirements.

PART 2 -- PRODUCTS

1.4 TEST EQUIPMENT

1.4.1 Division 26 shall provide all test equipment necessary to fulfill the testing requirements of this Division (i.e. light meters).

PART 3 -- EXECUTION

3.1 SUBMITTALS

A. Division 26 shall provide submittal documentation relative to commissioning to the CA as requested by the CA. Refer to Section 01810 Part 3.3 for additional Division 26 requirements.

3.2 STARTUP

3.2.1 The electrical contractors shall follow the start-up and initial checkout procedures listed in the Responsibilities list in this section and in 01810 Part 3.4. Division 26 has start-up responsibility and is required to complete systems and sub-systems so they are fully functional, meeting the design objectives of the Contract Documents. The

commissioning procedures and functional testing do not relieve or lessen this responsibility or shift that responsibility partially to the commissioning agent or Owner.

3.2.2 Functional testing is intended to begin upon completion of a system. Functional testing may proceed prior to the completion of systems, or sub-systems at the discretion of the CA and CM. Beginning system testing before full completion does not relieve the Contractor from fully completing the system, including all prefunctional checklists as soon as possible.

3.3 FUNCTIONAL PERFORMANCE TESTS

3.3.1 Refer to Section 01810 Part 1.12 for a list of systems to be commissioned and to Part 3.5 for a description of the process and to Section 260570 for specific details on the required functional performance tests.

3.4 TESTING DOCUMENTATION, NON-CONFORMANCE AND APPROVALS

3.4.1 Refer to Section 01810 Part 3.6 for specific details on non-conformance issues relating to prefunctional checklists and tests.

3.4.2 Refer to Section 01810 Part 3.5 for issues relating to functional performance tests.

3.5 OPERATIONS AND MAINTENANCE (O&M) MANUALS

3.5.1 Division 26 shall compile and prepare documentation for all equipment and systems covered in Division 26 and deliver to the GC for inclusion in the O&M manuals, according to Section 01810.

3.5.2 The CA shall receive a copy of the O&M manuals for review.

3.6 TRAINING OF OWNER PERSONNEL

3.6.1 The GC shall be responsible for training coordination and scheduling and ultimately to ensure that training is completed. Refer to Section 01810 for additional details.

3.6.2 The CA shall be responsible for overseeing and approving the content and adequacy of the training of Owner personnel for commissioned equipment. Refer to Section 01810 for additional details.

3.6.3 Electrical Contractor. The electrical contractor shall have the following training responsibilities:

3.6.3.1 Provide the CA with a training plan two weeks before the planned training according to the outline described in Section 01810, Part 3.8.

3.6.3.2 Provide designated Owner personnel with comprehensive training in the understanding of the systems and the operation and maintenance of each major piece of commissioned electrical equipment or system.

3.6.3.3 Training shall start with classroom sessions, if necessary, followed by hands on training on each piece of equipment, which shall illustrate the various modes of operation, including startup, shutdown, fire/smoke alarm, power failure, etc.

3.6.3.4 During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will

be repaired or adjusted as necessary and the demonstration repeated.

3.6.3.5 The appropriate trade or manufacturer's representative shall provide the instructions on each major piece of equipment. This person may be the start-up technician for the piece of equipment, the installing contractor or manufacturer's representative. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment is required. More than one party may be required to execute the training.

3.6.3.6 The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.

3.6.3.7 Training shall include:

3.6.3.7.1 Use the printed installation, operation and maintenance instruction material included in the O&M manuals.

3.6.3.7.2 Include a review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shut-down, seasonal changeover and any emergency procedures.

3.6.3.7.3 Discuss relevant health and safety issues and concerns.

3.6.3.7.4 Discuss warranties and guarantees.

3.6.3.7.5 Cover common troubleshooting problems and solutions.

3.6.3.7.6 Explain information included in the O&M manuals and the location of all plans and manuals in the facility.

3.6.3.7.7 Discuss any peculiarities of equipment installation or operation.

3.6.3.7.8 The format and training agenda in Guidelines for Commissioning HVAC Systems, ASHRAE, 1989R, 1996 is a recommended reference.

3.6.3.7.9 Classroom sessions shall include the use of overhead projections, slides, video and audio taped material as might be appropriate.

3.6.3.8 Hands-on training shall include start-up, operation in all modes possible, including manual, shut-down and any emergency procedures and maintenance of all pieces of equipment.

3.6.3.9 The electrical contractor shall fully explain and demonstrate the operation, function and overrides of any local packaged controls, not controlled by the central control system.

3.6.3.9.1 Training shall occur after functional testing is complete, unless approved otherwise by the Project Manager.

3.6.3.9.2 Duration of Training. The electrical contractor shall provide training on each piece of equipment according to the following schedule.

Hours	System
4	Lighting controls, controllers, and schedules
2	Occupancy sensors and photo sensors

3.7 DEFERRED TESTING

3.7.1 Refer to Section 01810, Part 3.9 for requirements of deferred testing.

3.8 WRITTEN WORK PRODUCTS

3.8.1 Written work products of Contractors will consist of the startup and initial checkout plan described in Section 01810 and the filled out startup, initial checkout and pre-functional checklists.

END OF SECTION

SECTION 26 05 70
ELECTRICAL TESTING REQUIREMENTS

PART 1 – GENERAL

1.1 INCLUDED SYSTEMS AND EQUIPMENT

A. The following is a list of the equipment and system test requirements included in this section:

1. Lighting sweep controls (weekday, weekend, and holiday schedules).

2. Occupancy sensors.

3. Photo sensors (indoor and outdoor).

4. Lighting controllers (indoor and outdoor).

1.2 DESCRIPTION

1.2.1 This section specifies the functional testing requirements for Division 26 systems and equipment. From these requirements, the Commissioning Authority (CA) shall develop step-by-step procedures to be executed by the Subs. The general functional testing process, requirements and testing methods definitions are described in Section 01810. The test requirements for each piece of equipment or system contain the following:

1.2.1.1 The contractors responsible to execute the tests, under the direction of the CA.

1.2.1.2 A list of the integral components being tested.

1.2.1.3 Prefunctional checklists associated with the components.

1.2.1.4 Functions and modes to be tested.

1.2.1.5 Required conditions of the test for each mode.

1.2.1.6 Special procedures.

1.2.1.7 Required methods of testing.

1.2.1.8 Required monitoring.

1.2.1.9 Acceptance criteria.

1.2.1.10 Sampling strategies allowed.

1.3 PREREQUISITES

1.3.1 The following applicable generic prerequisite checklist items are required to be listed on each written functional test form and be completed prior to functional testing.

1.3.1.1 All related equipment has been started up and calibrated and start-up reports and prefunctional checklists submitted and approved ready for functional testing. Sample prefunctional checklists can be found in Section 01813. These are samples and for reference only. Final prefunctional checklists will be provided as part of the Construction Phase Commissioning Plan.

1.3.1.2 All A/E punchlist items for this equipment corrected.

1.3.1.3 These functional test procedures reviewed and approved by installing contractor.

1.3.1.4 Safeties and operating ranges reviewed by the CA.

1.3.1.5 Test requirements and sequences of operation attached.

1.3.1.6 Schedules and set points attached.

1.3.1.7 Record of all values for pre-test set points changed to accommodate testing has been made and a check box provided to verify return to original values (control parameters, limits, delays, lockouts, schedules, etc.).

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

1.4 LIGHTING SWEEP CONTROLS

1.4.1 Parties Responsible to Execute Functional Test

1.4.1.1 Lighting Controls contractor: operate the controls

1.4.1.2 Electrical contractor: assist in testing sequences

1.4.1.3 CA: to witness, direct and document testing.

1.4.2 Prerequisites

1.4.2.1 The applicable prerequisite checklist items listed in the beginning of Section 26570 shall be listed on each functional test form and checked off prior to functional testing.

1.4.3 Functions / Modes Required To Be Tested and Test Methods

1.4.3.1 The following testing requirements are an addition to and do not replace any testing requirements elsewhere in this Division.

Function / Mode	Test Method Manual (demonstration), Monitoring, Either or Both

Function / Mode	Test Method Manual (demonstration), Monitoring, Either or Both
MISCELLANEOUS FUNCTIONS	
1. All specified functions and features are set up, debugged and fully operable.	Verbal discussion of features
2. Power failure and battery backup and power-up restart functions.	Demonstration
3. Security and access codes.	Demonstration
4. Verify override duration setting.	Demonstration
5. Scheduling features fully functional and setup, including weekdays, weekends, and holidays.	Observation in terminal screens or printouts
SWEEP FUNCTIONS	
1. 50% of the zones with a minimum of 2 zones per controller or relay must be verified by turning on at least 25% of the lights in the zone and witnessing an actual sweep.	Either
OVERRIDE FUNCTIONS	
1. Manual occupant overrides: 25% of the local override switches, with a minimum of 4 switches must be verified by turning the override switches ON after a sweep and seeing the lights turn back on. 100% of the remainder of the switches should be sight verified to be in place.	Either

1.4.4 Acceptance Criteria (referenced by function or mode ID)

1. For the conditions, sequences and modes tested, the sweep controls, integral components and related equipment respond to changing conditions and parameters appropriately as expected, as specified and according to acceptable operating practice.

1.4.5 Sampling Strategy for Identical Units

1. Sample the units per the above table. If 10% of the units in the first sample fail the functional performance tests, test another 10% of the group (the 2nd sample). If 10% of the units in the 2nd sample fail, test all remaining units in the whole group, fully at the contractor's expense.

1.5 OCCUPANCY SENSORS

A. Parties Responsible to Execute Functional Test

1. Electrical contractor: assist in testing sequences
2. CA: to witness, direct and document testing.

B. Prerequisites

1. All occupancy sensor calibration and set points shall be verified prior to functional testing.

2. The applicable prerequisite checklist items listed in the beginning of Section 16570 shall be listed on each functional test form and checked off prior to functional testing.

C. Functions / Modes Required To Be Tested and Test Methods

1. The following testing requirements are an addition to and do not replace any testing requirements elsewhere in this Division.

Function / Mode	Test Method Manual (demonstration), Monitoring, Either or Both
MISCELLANEOUS FUNCTIONS	
1. All specified functions and features are set up, calibrated, debugged and fully operable.	Verbal discussion of features
2. Occupant over-ride functions and duration setting.	Demonstration
OCCUPANCY SENSOR FUNCTIONS	
1. Test the sequence of operation for all features and modes.	Manual
2. Verify that the controls and sensors are not easily overridden or disabled by occupants.	Visual inspection
3. Verify that the occupancy sensor is in an adequate location and is not being affected by obstructions.	Visual inspection

D. Acceptance Criteria (referenced by function or mode ID)

1. For the conditions, sequences and modes tested, the dimming controls, integral components and related equipment respond to changing conditions and parameters appropriately as expected, as specified and according to acceptable operating practice.

E. Sampling Strategy for Identical Units

1. Each occupancy sensor and its controlled zone must be tested (no sampling).

1.6 PHOTO SENSORS

A. Parties Responsible to Execute Functional Test

1. Electrical contractor: assist in testing sequences

2. CA: to witness, direct and document testing.

B. Prerequisites

1. All photo sensor calibration and set points shall be verified prior to functional testing.

2. The applicable prerequisite checklist items listed in the beginning of Section 16570 shall be listed on each functional test form and checked off prior to functional testing.

C. Functions / Modes Required To Be Tested and Test Methods

1. The following testing requirements are an addition to and do not replace any testing requirements elsewhere in this Division.

Function / Mode	Test Method Manual (demonstration), Monitoring, Either or Both
MISCELLANEOUS FUNCTIONS	
1. All specified functions and features are set up, calibrated, debugged and fully operable (indoor and outdoor sensors).	Verbal discussion of features
PHOTO SENSOR FUNCTIONS	
1. Test the sequence of operation for all features and modes (weekday, weekend, and holiday schedules) and interlocks with time clocks, if any.	Manual
2. Verify that the controls and sensors are not easily overridden or disabled by occupants.	Visual inspection
3. Verify that the photo sensor is in an adequate location and is not being affected by obstructions.	Visual inspection
DIMMING FUNCTIONS	
1. Verify that dimming does not cause lower than specified light levels in adjacent “non-dimmed” spaces.	

D. Acceptance Criteria (referenced by function or mode ID)

1. For the conditions, sequences and modes tested, the dimming controls, integral components and related equipment respond to changing conditions and parameters appropriately as expected, as specified and according to acceptable operating practice.

E. Sampling Strategy for Identical Units

1. Each photo sensor and its controlled zone must be tested (no sampling).

END OF SECTION

SECTION 26 05 73
SHORT CIRCUIT AND COORDINATION REPORT

PART 1 -- GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall prepare a power system analysis of short circuit calculations, a protective device coordination study and arc flash hazard analysis in accordance with the requirements of these Specifications and as shown.

B. The studies shall include all portions of the electrical distribution system for normal and standby power sources down to and including the (208 V) distribution system.

C. The work to be provided by the CONTRACTOR shall include protection studies for motors supplied with solid state overload and overcurrent protection devices.

D. The work to be provided by the CONTRACTOR shall include an evaluation of harmonic distortion and the furnishing and installation of filters and any other equipment as may be required for harmonic suppression.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. The Work of the following Sections applies to the work of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this work.

1. Section **262413** Switchboard

2. Section **262416** Panelboard
3.
4. Section **262813** Fuse

5. Section **262818** Disconnect Switches

6. Section **260200** General Electrical requirements

7. Section **260570** Electrical Testing Requirements

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Comply with the current provisions of the following codes and standards.

1. Codes:

LAECCity of Los Angeles Electrical Code, latest adopted edition,

2. Commercial Standards:

ANSI/IEEE 141	Recommended Practice for Electrical Power Distribution for Industrial Plants
ANSI/IEEE 242	Recommended Practice for Protection and Coordination Industrial and Commercial Power Systems.

ANSI C 37.5	Calculations of Fault Currents for Application of Power Circuit Breakers
ANSI C-37.13	Low-Voltage AC Power Circuit Breaker (600-Volt Insulation Class)
IEEE 1584	IEEE Guide for Performing Arc Flash Hazard Calculations

1.3 CONTRACTOR SUBMITTALS

A. Submittals shall be made in accordance with Section **26 01 00-** Basic materials and methods and as specified herein.

B. The power system analysis shall be submitted to the ENGINEER prior to receiving final approval of the distribution equipment shop drawings and/or release of equipment for manufacture; approval from the ENGINEER may be obtained for a preliminary submittal of sufficient detail to ensure that device selection will be adequate. Preliminary submittal shall indicate the computer program for use in performing the work of this Section.

C. Final settings of Protective device shall be approved by the ENGINEER prior to project acceptance and shall be based on the results of the power system analysis.

D. Arc flash calculations based upon actual overcurrent device clearance.

E. The CONTRACTOR shall indicate in the submittal, changes to the protection scheme or equipment selection that will result in improved system reliability and safety.

1.4 QUALITY ASSURANCE

A. Organization's Qualifications:

1. Short circuit studies, protective device evaluation studies, and protective device coordination studies shall be performed by the arch flash analysis manufacturer or by an electrical testing service regularly engaged in the short circuit and protective device coordination studies for a period of at least 15 years. The study shall utilize proven computer programs for power system analysis. The studies shall be signed by the professional electrical engineer, registered in the State of California, responsible for the studies.

PART 2 -- PRODUCTS

2.1 GENERAL

A. The organization of the study shall include a single-line and an impedance diagram of the power system. This diagram shall identify all components considered in the study and the ratings of all power devices (this includes, but is not limited to: transformers, circuit breakers, relays, fuses, busses, and cables). The resistance and reactances of all cables shall be identified in the impedance diagram. The study shall contain, from the service utility company, all written data regarding maximum available short circuit current, voltage, and X/R ratio of the utilities' power system.

2.2 SHORT CIRCUIT STUDY

A. The short circuit study shall be performed with the aid of a digital computer program and shall be in accordance with ANSI C 37.5, IEEE Standard 242, and IEEE Standard 141.

2.3 PROTECTIVE DEVICE EVALUATION STUDY

A. A protective device evaluation study shall be performed to determine the adequacy of circuit breakers, molded case switches, automatic transfer switches, and fuses. Any problem areas or inadequacies in the equipment due to prospective short-circuit currents shall be promptly brought to the ENGINEER's attention.

2.4 PROTECTIVE DEVICE COORDINATION STUDY

A. A protective device coordination study shall be performed to provide the necessary calculations required to select or check the selection of power fuse ratings, protective relay characteristics and settings, ratios and characteristics of associated current transformers, and low-voltage breaker trip characteristics and settings. The results of the study shall govern the final selection of the protective devices.

2.5 TIME/CURRENT COORDINATION CURVES

A. As a minimum, the time/current coordination curves for the power distribution system shall include the following on 5-cycle log-log graph paper:

1. Time/current curves for each protective relay or fuse showing graphically that the settings will provide protection and selectivity within industry standards. Each curve shall be identified, and tap and time dial settings shall be specified.

2. Time/current curves for each device shall be positioned to provide the maximum selectivity to minimize system disturbances during fault clearing.

3. Time/current curves and points for cable and equipment damage.

4. Circuit interrupting device operating and interrupting times.

5. Indicate maximum fault values on the graph.

6. Sketch of bus and breaker arrangement.

7. Magnetizing inrush points of transformers.

8. All restrictions of the ANSI and LAEC shall be adhered to and proper coordination intervals and separation of characteristics curves shall be maintained.

9. Thermal limits of motors 250 hp and above.

2.6 ARC FLASH HAZARD ANALYSIS

A. CONTRACTOR shall perform arc flash hazard analysis according to IEEE 1584 equations presented in NFPA 70E-2020, Annex D. Safe working distance boundary shall consider incident energy of 1.2 cal/cm^2.

PART 3 -- EXECUTION

3.1 PROTECTIVE DEVICE TESTING, CALIBRATION AND ADJUSTMENT

A. The CONTRACTOR shall provide the services of a qualified field engineer and necessary tools and equipment to test, calibrate, and adjust the protective relays and circuit breaker trip devices as

recommended in the power system analysis. The qualifications of the field engineer shall be subject to review and approval by the ENGINEER.

3.2 STUDY REPORTS

A. The results of the power system analysis shall be submitted summarized in a final report. The report shall include, but not limited to the following:

1. Single-line diagram
2. Impedance diagram
3. Tabulation of all protective devices, which shall be identified on the single-line diagram
4. Time/current coordination curves
5. Computerized fault current calculations
6. Specific recommendations, if any
7. Test instrumentation, condition and connections, as applicable, for each study
8. Arc flash report.

3.3 ARC FLASH LABELS

A. CONTRACTOR for the arc flash hazard analysis shall provide 3.5” by 5” thermal transfer type label of high adhesive polyester for each location analyzed. Labels shall be machine printed.

B. All labels shall be based on recommended overcurrent device settings and will be provided after the result of analysis have been presented to the ENGINEER and accepted as final.

C. Labels shall include the following information:

1. Location Designation
2. Nominal Voltage
3. Flash Protection Boundaries
4. Hazard Risk Category
5. Incident Energy
6. Working Distance

END OF SECTION

SECTION 26 24 14
PANELBOARDS

PART 1 -- GENERAL

1.1 SCOPE

A. Required: Provide and install complete equipment including circuit breakers and panelboards as indicated on the Contract Drawings and herein specified.

B. Comply with the General Conditions, General Requirements and the requirements of Section 26 02 00 of this Division 26 concerning definitions, guarantees, submittals, as-builts, clean-up, etc. as applicable to work of this Section.

1.2 RELATED WORK

A. Related Sections: The following sections contain requirements that relate to this section:

1. Section 26 05 60 " Municipal Facilities Electrical Commissioning Requirements " for commissioning requirements.

2. Section 16570 " Municipal Facilities Electrical Testing Requirements" for testing requirements.

1.3 QUALITY ASSURANCE

A. Comply with applicable provisions of Subsection 1.2 of Section 260200.

B. Conform to the applicable provisions of Subsection 1.6 of Section 260200 related to legal requirements and standards including NEMA, ANSI and IEEE Standards, NFPA 70, and Federal Specifications.

1. 4 SUBMITTALS

A. Submit under the provisions of Section 01330.

B. Product Data: For each type of panelboard, overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

C. Maintenance Data: For panelboards and components to include in maintenance manuals specified in Division 1. In addition to requirements specified in Section 01770, "Closeout Procedures," include the following:

1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

2. Time-current curves, including selectable ranges for each type of overcurrent protective device.

PART 2 -- PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Cabinets to House Panelboards: Cabinets shall be formed of galvanized metal, chemically cleaned, and all breaks in galvanizing shall be painted with metallic aluminum paint.

Minimum size: 20 inches wide by 5-3/4 inches deep. Trims and doors shall be chemically cleaned. Provide ANSI synthetic alkalyd factory enamel finish on the exterior and interior of panels. Provide for circuit directory behind door with glass or heavy plastic protection. Cabinets shall be flush or surface mounted type as indicated with screw cover, hinged doors with flush lock keyed to operate from one key. Cabinets greater than three feet shall have three trim bolts on each side.

B. Identification: Each panelboard shall have an exterior engraved laminated plastic nameplate identifying the panelboard as designated on the Drawings and indicating voltage, phases, and number of system conductors. For example:

"Panel A 277/480V. 3ph, 4W". Lettering shall be white on black finish and 3/16 inch high minimum. Nameplates shall be affixed with a minimum of two escutcheon pins or screws. Each circuit breaker shall have a permanent metal or plastic number to identify each circuit. A circuit schedule card and holder shall be mounted on the inside of the door and covered with plastic.

C. Protective Devices:

1. Protective devices, main, branch or sub-feed shall be thermal-magnetic-molded-case circuit breakers, bolt-on type ampacities as scheduled on Drawings. Provide single handle, common trip for two and three-pole units. Handle ties are not acceptable

2. Circuit Breakers, 250A and Larger: Adjustable magnetic trip setting

3. Electronic Circuit Breakers, 400A and Larger: RMS sensing; field-replaceable rating plug; with the following field-adjustable settings:

   a. Instantaneous trip.

   b. Long- and short-time pickup levels.

   c. Long- and short-time time adjustments.

   d. Ground-fault pickup level, time delay, and I^2t response. Where indicated on the drawings.

4. GFCI Circuit Breakers: Single- and two-pole configurations with 5-mA trip sensitivity, where indicated on the lighting and appliance panelboards.

5. Molded-case circuit breakers shall be suitable for application; Rype SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

D. Electrical Equipment Adjacent to Panelboards: Where scheduled provide a separate cabinet with screw cover and hinged door with flush lock keyed alike with panelboard. A single cabinet may be used when a compartment (with appropriate barriers) under separate lockable door and cover is provided.

E. Finish: As specified for service switchboards in Section 260270 service and distribution switchboards.

2.2 ACCEPTABLE MANUFACTURE

A. Eaton

B. General electric

C. Square D

D. Siemens

2.3 DISTRIBUTION PANELBOARDS

A. Each distribution panelboard shall be a deadfront, deadrear, U.L. listed, circuit breaker type with copper buses and comply with Federal Specification W-P-115a. Construction shall be NEMA Class I. Electrical ratings shall be as indicated on the Drawings.

B. Series-connected or "integrated equipment" short circuit ratings shall not be applied in lieu of, or to comply with, short circuit and interrupting capacity ratings indicated on the Drawings unless specifically approved by the City Engineer. Provide fronts with flush cylinder tumbler locks, trim clamps, and concealed hinges.

C. Double doors or doors over 48 inches high shall have 3 point latching. Provide 2 keys for each panelboard. Furnish panelboards with main lugs or main circuit breakers and all other circuit breakers as indicated on the drawings. Each circuit breaker shall be provided with a means for individual padlocking. Distribution panelboards shall be Square D. Co. I-line type or equal.

2.4 LIGHTING AND APPLIANCE PANELBOARDS

A. Each lighting and appliance panelboard shall be a U.L. listed circuit breaker type with copper buses and meet Federal Spec. W-P115a. Electrical ratings shall be as indicated on the Drawings. Series connected or "integrated equipment" ratings shall not be applied in lieu of or to comply with short circuit and interrupting ratings indicated on the Drawings, unless specifically approved by the City Engineer. Provide fronts with flush cylinder tumbler locks, trim clamps, and concealed hinges. Provide two keys for each panelboard. Furnish panelboards with main lugs or main circuit breakers and all circuit breakers as indicated on the Drawings.

B. **Each circuit breaker shall be provided with a means for individual padlocking.**

2.5 FABRICATION AND FEATURES

A. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

B. Directory Card: With transparent protective cover, mounted inside metal frame, inside panelboard door.

C. Bus: Hard-drawn copper, 98 percent conductivity.

D. Main and Neutral Lugs: Mechanical type suitable for use with conductor material.

E. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.

F. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

G. Isolated Equipment Ground Bus: Adequate for branch-circuit equipment ground conductors; insulated from box, where indicated on the Drawings.

H. Extra-Capacity Neutral Bus: Neutral bus rated 200 percent of phase bus and UL listed as suitable for nonlinear loads, where indicated on the Drawings.

I. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor. Provide back, sides and removable front.

J. Feed-through Lugs: Mechanical type suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device, where indicated on the Drawings.

PART 3 -- EXECUTION

3.1 GENERAL INSTALLATION OF PANELBOARDS

A. Install equipment square, level and secure to the building structure by bolting.

B. Align top of adjacent panelboards unless specifically noted otherwise. Install panelboards over 29 inches high to mount highest protective device handle a maximum of 6'-6" or 5'-6" for panelboards up to 29 inches high, except where adjacent to taller panelboards.

C. Flush enclosures shall be installed with the front edge flush with combustible finish surfaces and not more than 1/4 inch behind noncombustible finish surfaces, and shall be secured to framing or blocking except where embedded in masonry or concrete.

D. Provide weather-proof gaskets on trims and doors of panelboards located in mechanical areas.

3.2 OTHER APPLICABLE REQUIREMENTS

A. Provide a typewritten circuit directory for each branch circuit. Obtain City facility room numbers and use in final directory.

B. Provide a schematic diagram and sequence of operation for control devices installed under separate door adjacent to panelboards.

C. Install nameplates in accordance with provisions noted in Section 26 05 53 – Electrical Identification.

D. Provide filler plates for all unused spaces.

E. Stub five 3/4-inch empty conduits from each flush mounted panelboard into accessible ceiling space and cap for future use. Stub four 1-inch empty conduits into raised floor space or below slab not on grade

F. Wiring in Panelboard Gutters: Arrange conductors into groups and bundle and wrap with wire ties after completing load balancing.

G. Equip each circuit breaker fire alarm, security and control circuits with a locking device.

3.3 COMMISSIONING

A. Spot check breaker settings against Short Circuit Study

B. Spot check phase balance after system is under load. Ensure proper, thorough and accurate identification of load. Trip breakers and validate load identified. Test GFI breakers.

C. Receptacle Polarity Test: Spot check receptacles installed or reconnected under this contract with a receptacle circuit tester. Tester shall test for open ground, reverse polarity, open hot, open neutral, hot and ground reversed, hot or neutral and hot open.

D. Check circuit labeling by de-energizing circuits while circuit tester is in the receptacle. Labeling shall be checked on the load/receptacle and at the breaker

3.4 CLEANING

A. On completion of installation, inspect interior and exterior of panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

A. Work includes but is not limited to the following:

1. Controls
2. Receptacles.
3. Device plates and box covers.

B. Related Work:

1. Section 26 01 00 - Basic Materials and Methods.
2. Section 26 05 34 - Boxes.
3. Section 26 05 53 - Identification for Electrical Systems.
4. Section 26 05 26 - Grounding.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS – WALL SWITCHES

A. Hubbell Company.

B. Legrand.

C. Leviton.

2.02 WALL SWITCHES

A. Switches shall be self-grounding, color coded, silent or quiet type, and rated 120-277 Volts AC, 20 ampere rating, totally enclosed, where installed in AC systems Bakelite or composition base with "T" rating for AC loads, standard toggle handle, side wired only and binding screw terminals with screwdriver slot

B. Provide screw type; push-in type connections not acceptable.

C. All switches shall be specification grade and meet Federal Spec. W-S-896E.

2.03 ACCEPTABLE MANUFACTURERS - RECEPTACLES

A. Hubbell Company.

B. Legrand.

C. Leviton.

2.04 RECEPTACLES

A. Convenience and Straight-blade Receptacles: NEMA Configuration 5-15R: Decorator Spec Grade, White.

B. Convenience and Straight-Blade Receptacles: NEMA configuration 5-20R: Decorator Spec Grade, White.

C. GFI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter, NEMA 5-20R, Decorator Spec Grade, White. Unit shall comply with UL 2003 GFCI requirements including lockout action.

D. Receptacles: Highest specification grade.

E. All receptacles shall be specification grade and meet Federal Spec. WC 596 E.

F. Provide screw terminal type receptacles. Push-in type connections are not acceptable

G. Special outlets of other types shall be as indicated on the Contract Drawings. .

2.05 ACCEPTABLE MANUFACTURERS - WALL PLATES (Match manufacturer of Device)

A. Harvey Hubbell Company.

B. Pass and Seymour.

C. Leviton.

D. TayMac.

E. Match manufacturer of switches and receptacles.

2.06 WALL PLATES

A. Weatherproof Cover Plates: Receptacles in wet locations shall be installed with an outlet enclosure clearly marked “Suitable for Wet Locations While In Use”. There must be a gasket between the enclosure and the mounting surface, and between the cover and base to assure a proper seal. The enclosure must employ stainless steel mounting hardware and enclosure shall be recessed where possible and by TayMac Corporation or equal.

B. Highest specification grade

2.07 CONTROLS

A. Required: For all equipment furnished in this and other divisions, as required by Code, and as indicated on the Contract Drawings and in the specifications. All devices shall be listed by U.L. or another approved testing laboratory.

B. Types:

1. Circuit Breakers: Thermal-magnetic with interrupting and trip ratings as indicated on the drawings. Equip each breaker with a device for individual padlocking. Circuit breakers shall meet Federal Specifications W-C-375B.

2. Enclosed Safety Switches: Shall be externally operable, heavy duty "tease-proof", fusible and nonfusible with number of poles and ratings as indicated on the Contract Drawings.Provide suitable rejection type fuse holders for Class R fuses. Switches shall me Federal Spec. W-S-865C. Switches shall be as manufactured by Square D Co. or equal.

3. Fuses: All fuses shall meet U.L. Standard 198. Provide a label within each fuse enclosure indicating fuse replacement type and ratings. Provide one complete set of each type and rating of fuses and limiters, as spares. Fuses shall be one of the following types:

a. Current-limiting Class L; Bussman KRP-C or KTU.

b. Current-limiting Class J; Bussman JKS or JHC.

c. Dual element Class RK-1; Bussman KTS-R or KTN-R.

d. Dual element Class RK-5; Bussman FRS-R or FRN-R.

e. Low Peak dual element Class RK-5; Bussman LPS-R or LPN-R.

f. For secondary protection of control transformers rated 500 V.A. and 50 volts, or less; Bussman FNQ fuses with HPS-D or HPL-B fuse holder or equal.

g. Fuses for direct-current circuits shall be identified for the use.

h. Other required fuses, if not specified, shall be standard nonrenewable type Bussman FRN or FRS for circuits where available fault current is 10,000 amperes or less.

4. Terminal connection blocks shall be provided in switch and circuit breaker enclosures in which grounded (neutral) conductors are installed.

5. Identification: Identify all control and disconnecting devices by engraved laminated plastic nameplates designating the equipment controlled, except where device plates are engraved.

a. Motors and other equipment shall be suitably and durably identified to correspond to the control or disconnecting device. Nameplate lettering shall be white on black finish and 1/8 inch high minimum.

b. Marking shall be as indicated on the drawings or as approved by the City Engineer. Nameplates shall be affixed with a minimum of two escutcheon pins

or screws.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install wall switches 48 inches above floor to top of wall box, “OFF” position down. Verify mounting height with Architect prior to installation. unless otherwise noted on contract drawings

B. Install convenience receptacles 18 inches above floor, or as noted on drawings, grounding pole on bottom.

C. Install specific-use receptacles at heights shown on Contract Drawings.

D. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets in non-public places.

E. Install devices and wall plates flush and level.

F. Provide etched plates with 3/16” high black letters for:

1. Outlets where voltage is other than 120 volt.

2. When switch controls device other than lighting fixture.

3. When switch is located out of sight of unit being controlled.

4. Lock switches.

5. Where more than one switch occurs under a common plate.

6. Air Distribution System control switches.

G. Install plates with all four edges in continuous contact with finished wall surfaces without use of mats or similar devices.

H. Provide blank cover plates for all boxes as required.

END OF SECTION

SECTION 26 28 16
SWITCHES, DISCONNECT AND SAFETY

PART 1 -- GENERAL

1.1 SCOPE

A. Work Included: Not limited to the following:

1. Fabricate, provide and install disconnect and safety type switches where indicated on the Contract Drawing and hereinafter specified.

2. Comply with General Conditions, the General Requirements and the requirements of Section 260200 of this Division 26 concerning definitions, guarantees, submittals, as-builts, clean-up, etc. as applicable to the work of this Section.

3. Examine all other Sections for work related to those Sections which are required to be included as work under this Section.

1.2 QUALITY ASSURANCE

A. Conform to applicable provisions of Subsection 1.7 of Section 260200 – General Electrical Requirements.

B. Conform to applicable Codes and NEMA, ANSI, UL and IEEE Standards, Federal Specification W-S-865,

1.3 SUBMITTALS

Conform to applicable provisions of Section 01330 of Division 1 - General Requirements and Subsection 1.6 G of Section 260200.

PART 2 -- PRODUCTS

2.1 GENERAL

A. APPROVED MANUFACTURERS:

1. Appleton;

2. Eaton;

3. Schneider Electric;

4. Or equal.

B. Disconnect Switches: Provide with devices enabling the switch to be locked in the open or closed positions.

C. Manual Motor Switches: Tumbler type rated 3HP, 208 Volts three phase or single phase with or without overload heaters as required to protect equipment served.

D. Externally Operable Safety Switches: To have quick-make, quick-break mechanism, capable of

switching 10 times switch rating, with cover interlock to prevent opening with switch in ON position and defeat mechanism for maintenance.

E. Switches: Shall be Heavy Duty (HD) type unless otherwise indicated. Provide NEMA 1 enclosures for interior locations, NEMA 3R enclosures for exterior or wet locations, NEMA 4X 316 SS for corrosive locations and NEMA 7 for hazardous locations. Provide with number of poles, ampacity, voltage and HP rating, fusible or nonfusible as indicated.

F. Fusible Switches: Shall be Heavy Duty (HD) type. Equip them with rejection clips for UL Class R fuses. Switches having a dual rating when used with dual element fuses shall have a rating so indicated.

G. 600 Amperes or Less Fuses: UL Class RKI with a minimum interrupting rating of 200,000 Amperes, Bussmann "Low-Peak Type" or equal.

PART 3 -- EXECUTION

3.1 GENERAL INSTALLATION

A. Locations: Install switches, disconnects and safety where indicated on the Contract Drawings.

B. Fastenings: Securely fasten switches to structural members or unistrut support as directed by the manufacturer.

C. Manual Motor Starters: Install flush mounted for switching motors 3HP and smaller in finished areas. Install surface mounted in equipment rooms and non-finished areas. Where installed above inaccessible ceilings provide access panels.

END OF SECTION

SECTION 26 33 23
EMERGENCY INVERTER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes single-phase, on-line, Central Lighting Inverter system.

1.3 SUBMITTALS

A. Submit under the provisions of Section 01330.

B. Product Data: Include data on features, components, ratings, and performance for each product specified in this Section.

C. Shop Drawings: Detail fabrication, internal and interconnecting wiring, and installation of emergency lighting inverter system. Include dimensioned plan, elevation views, and details of control panels. Show access and clearance requirements. Differentiate between field-installed and factory-installed wiring and components.

D. Product Certificates: Signed by manufacturers of central lighting inverter systems certifying that the products furnished comply with requirements.

E. Qualification Data: For firms and persons specified in the "Quality Assurance" Article.

F. Factory Test Reports: Comply with specified requirements.

G. Field Test Reports: For tests specified in Part 3.

H. Maintenance Data: For system and products to include in the maintenance manuals specified in Division 1. Include the following:

1. Lists of spare parts and replacement components recommended to be stored at the Project site for ready access.

2. Detailed operating instructions covering operation under both normal and abnormal conditions.

I. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated without delaying the Work, as documented according

to OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or a full member company of the International Electrical Testing Association.

1. Testing Agency's Field Supervisor: Person currently certified by the Inter-National Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.

B. Comply with NFPA 70.

C. Source Limitations: Obtain central lighting inverter system, including components, from a single manufacturer with responsibility for entire system.

D. Listing and Labeling: Provide central lighting inverter system specified in this Section that are listed and labeled as a factory-assembled unit.

1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

E. Comply with UL 1778 and UL 924.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver equipment in fully enclosed vehicles after specified environmental conditions have been permanently established in spaces where equipment is to be placed.

B. Store equipment in spaces with environments that are controlled within manufacturer's ambient temperature and humidity tolerances for non-operating equipment.

1.6 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Myers

2. Or approved equal.

2.2 MANUFACTURED UNITS

A. Description: Factory fabricated in one cabinet. Automatic system operating functions include the following:

1. Normal Conditions: Supply the lighting load with power conditioned and regulated by the inverter's solid state electronics. The solid state electronics regulates inverter's output voltage to within specified limits. The rectifier maintains the batteries in a fully charged state.

2. Emergency Conditions: Upon loss of input power or when power exceeds the specified input limits, the control logic shall transfer to battery operation and disconnect the input line. The transfer to battery shall be an uninterrupted or "no break" power transfer. The inverter shall supply power from the batteries and through the solid state electronics to the lighting loads. The output shall be sinusoidal and within specified limits. If power is not restored before the batteries become discharged, the inverter shall completely shut down, protecting the batteries from possible damage.

3. Recharge: Upon restoration of input power and before the batteries are completely discharged, the inverter shall automatically return to normal operation. This retransfer to normal operation shall be uninterrupted. The battery charger shall automatically recharge the batteries to full capacity. The battery charger shall recharge the batteries as set forth in UL 924.

B. Load Description: Supply power without noise, vibration, pulsation of load, or abnormal output or visual appearance for the following loads types, in any combination and at any percentage of unit capacity.

1. LED fixtures

2. Exit signs

2.3 SYSTEM SERVICE CONDITIONS

A. Environmental Conditions: Operate continuously in the following environmental conditions without mechanical or electrical damage or degradation of operating capability:

1. Ambient Temperature: 0 to 40 deg C.

2. Relative Humidity: 0 to 95 percent, non-condensing.

4. Altitude: Sea level to 6000 feet (1829 m).

2.4 SYSTEM CHARACTERISTICS

A. Minimum Duration of Supply: 90 minutes, if rated full load is being supplied solely from the battery.

B. System Performance When Supplied from Battery: Performance under steady-state and transient-load conditions remains within specified tolerances throughout minimum duration of supply from battery specified.

C. Input Voltage and Frequency Tolerance: System steady-state and transient output performance remains within specified tolerances when steady-state ac input voltage varies plus or minus 10 percent from nominal voltage; when steady-state input frequency varies plus or minus 5 percent from nominal voltage; and when the THD of input voltage is 15 percent, and the largest single harmonic component is a minimum of 5 percent of the fundamental value.

2.5 PERFORMANCE EFFICIENCIES

A. Minimum overall system efficiency, when operated within indicated nominal input- and output-voltage and frequency limits, shall be more than 90%

B. Maximum Acoustical Noise: 58 dB, "A" weighting, emanating from the system under any condition of normal operation, measured 1 meter from the nearest surface of the enclosure.

C. Maximum Output-Voltage Regulation for No Load to Full Load: Plus or minus 4 percent of the full range of battery voltage.

D. Output Frequency: 60 Hz, plus or minus 0.5 Hz when on Inverter.

E. Maximum Harmonic Distortion of Output-Voltage Waveform: 10 percent THD with Linear Load.

2.6 SYSTEM COMPONENTS, GENERAL

A. Solid State Electronics: The Solid State Electronics shall provide regulation and conditioning from incoming power aberrations. Power to the critical lighting load shall be supplied by the Solid State Electronics whether the Inverter is in normal mode or emergency mode. The output wave shape shall be sinusoidal for all modes of operation.

B. Battery Subsystem: Sealed, maintenance-free batteries shall be provided. The batteries shall have an expected life of ten (10) years. The batteries shall be fully wired and contained within a freestanding battery cabinet. Battery run time at 100% full load shall be no less than ninety (90) minutes.

C. Inverter: The Inverter shall convert DC power supplied from the batteries into AC power.

D. Charger: A battery charger shall be provided. The battery charger shall maintain the batteries at full charge. The battery charger shall be sized such that it recharges the batteries as set forth in UL 924.

E. Power Connections: The Inverter input and output shall be hardwired. A main output circuit breaker shall be provided. This circuit breaker provides overcurrent protection and a means to easily disconnect power from the lighting system.

F. Monitoring Subsystem: The Inverter shall be furnished with a system status indicator panel.This panel shall have the following enunciators:

1. Green LED for AC Line Present

2. Green LED Battery Charger Charging in 20% increments

3. Green LED for Inverter Output Status

4. Amber LED for Inverter on Battery Operation

5 Red LED Low Battery Condition in 20% increments

6 Red LED for Alarm

2.7 SOURCE QUALITY CONTROL

A. Factory test complete CBI, including battery, before shipment. Include the following tests:

1. Functional test and demonstration of all functions, controls, indicators, sensors, and protective devices.

2. Full-load test.

3. Transient-load response test.

4. Overload test.

5. Power failure test.

6. Efficiency test at 50, 75, and 100 percent loads.

B. Report test results. Include the following data:

1. Description of input source and output loads to be used. Describe actions required to simulate source load variation and various operating conditions and malfunctions.

2. List of indications, parameter values, and system responses considered satisfactory for each test action. Include tabulation of actual observations during test.

3. List of instruments and equipment required to duplicate factory tests in the field for those tests required to be repeated there.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Maintain minimum workspace at equipment according to manufacturer's written instructions and NFPA 70.

B. Connections: Interconnect system components. Make connections to supply and load circuits according to manufacturer's wiring diagrams, unless otherwise indicated.

C. The system shall carry a full 2-year manufacturer’s warranty. This warranty shall be included with the inverter submittal information.

3.2 IDENTIFICATION

A. Identify components according to Division 26 Section "Electrical Identification."

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Supervision of unit installation, connections, pretests, and adjustments by a factory-authorized service representative. Report results in writing.

B. Supervised Adjusting and Pre-testing: Under supervision of a factory-authorized service representative, pretest system functions, operations, and protective features. Adjust to ensure

operation complies with specifications. Load the system using a variable-load bank simulating kVA, kW, and power factor of loads for which unit is rated.

C. Tests: Perform tests listed below by an independent testing agency meeting the qualifications specified in the "Quality Assurance" Article. Perform tests according to the manufacturer's written instructions. Load the system using a variable-load bank to simulate kVA, kW, and power factor of loads for the unit's rating. Use instruments calibrated, within the previous 6 months, according to NIST standards.

1. Simulate malfunctions to verify protective device operation.

2. Test duration of supply on emergency, low-battery voltage shutdown, and transfers and restoration due to normal source failure.

3. Test harmonic content of input and output current less than 25, 50, and 100 percent of rated loads.

4. Test output voltage under specified transient-load conditions.

5. Test efficiency at 50, 75, and 100 percent rated loads.

6. Test alarm panel functions.

E. Retest: Correct deficiencies and retest until specified requirements are met.

3.4 CLEANING

A. On completion of installation, inspect system components. Remove paint splatters and other spots, dirt, and debris. Repair scratches and mars of finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel as specified below:

1. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.

2. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."

3. Schedule training with Owner, through Architect, with at least 7 days' advance notice.

END OF SECTION

SECTION 26 51 00
LIGHTING FIXTURES

PART 1 -- GENERAL

1.1 SCOPE

A. Furnish and install lighting fixtures, lamps and ballasts as indicated on the Contract Drawings and specified hereinafter.

B. Comply with the General Conditions, General Requirements and the requirements of Section 16020 of this Division 16 concerning definitions, guarantees, submittals, as-builts, etc. as applicable to work of this Section.

1.2 RELATED WORK

A. Related Sections: The following sections contain requirements that relate to this section:

1. Section 260560 " Electrical Commissioning Requirements " for commissioning requirements.

2. Section 260570 " Electrical Testing Requirements" for testing requirements.

1.3 SUBMITTALS

A. Conform to applicable provisions of Section 01330 of the General Requirements and of Subsection 1.6 of Section 260200.

B. Conform to the following as applicable:

1. Ballast catalog indicating lamp wattage, input watts, sound rating, power factor and type of ballast, as well as levels of total harmonic distortion.

2. Photocell data indicating switching capacity, means of adjusting the lighting pickup level and enclosure.

3. Regarding pole-mounted fixtures provide complete data on the pole material, finish, handpole anchoring and fixture attachment and support method for interior fixtures weighing over fifty pounds.

4. Substitutions for specified fixtures, etc. shall be based upon quality of specified fixture construction, light distribution, appearance and maintenance.

5. Provide pictures or cuts of all lighting fixtures with photometric data and isofootcandle curves.

1. 4 QUALITY ASSURANCE

A. Conform to applicable provisions of Subsection 1. 7 in Section 260200.

B. Work of this Section shall comply with applicable legal requirements and standards specified in Subsection 1.6 in Section 260200 and the following:

1. Standards of the Certified Ballast Manufacturer's Association.

2. NFPA 70

C. Demonstrations:

1. Exterior lighting system operation shall be demonstrated during the hours of darkness to indicate that fixtures are properly focussed, photocell operation is correct, and that fixture switching functions as intended. Similar requirements shall apply to interior lighting. Through demonstration, the CONTRACTOR shall also verify that panel schedules properly indicate the lighting outlets connected to each circuit.

2. Lighting demonstration shall occur within 2 weeks prior to project acceptance.

1.5 CLEANING PROCEDURES

A. Comply with applicable provisions of Section 01740 of the General Requirements.

B. Clean fixture lenses, diffusers and reflectors just prior to time specified for required demonstrations noted above in 1.3C.

C. Clean damaged finish of fixture trim, including poles and support brackets, prior to required refinishing.

D. Before installation of louvers, diffusers or lenses clean reflector surfaces and lamps of all lighting fixtures of accumulated dust, dirt, grease, plaster, paint, etc.

1. 6 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provision of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranties for LED drivers: Written warranty, executed by manufacturer agreeing to replace LED drivers that fail in materials or workmanship within specified warranty period.

1. Special Warranty Period for LED drivers: Five years from date of manufacture, but not less than four years from date of Substantial Completion.

PART 2 -- PRODUCTS

2.1 LIGHTING SYSTEMS GENERAL REQUIREMENTS

A. Lighting fixtures shall have all parts and fittings necessary for complete and proper installation.

B. Where both catalog numbers and narrative descriptions are indicated, the narrative description requirements shall take precedence and prevail.

C. All fixtures of one type shall be one manufacturer and of identical finish and appearance.

D. Fixture types shall be as indicated on the Contract Drawings. However, if the fixture type is not shown, the bid shall be based on installing fixtures specified in similar areas.

F. Recessed fixtures in suspended ceilings shall be free of light leaks below ceiling and shall have adequate ventilation and clearance.

G. Fixtures in exterior locations, wash-down areas, wet or moist locations shall bear a UL label for installation in wet or moist areas or locations.

H. All exposed metal parts of exterior lighting fixtures shall be stainless steel or anodized aluminum with specified finish over. Screws and fastening shall be stainless steel.

I. Complete units and all electrical components for LED fixtures shall bear the Underwriters' Laboratories, Inc. or IBEW and Electrical Testing Laboratory labels.

2. 2 LED FIXTURES

A. See Lighting Fixture Schedule on contract drawings.

2. 3 EXIT SIGNS

A. General Requirements: Comply with UL 924 and the following:

1. Sign Colors and Lettering Size: See Lighting Fixture Schedule on contract drawings.

2.4 LIGHTING CONTROLS

A. General: Lighting control system shall be per contract drawings

2.5 FOUNDATIONS

Install required number and type of reinforced concrete pole bases as indicated on the Contract Drawings.

PART 3 -- EXECUTION

3. 1 INSTALLATION OF LIGHTING FIXTURES (LUMINARIES)

A. General:

1. Install fixtures in a manner recommended by the fixture manufacturer and accepted by the City Engineer.

2. Furnish and install all additional ceiling bracing, hanger supports, and other structural reinforcements to the building and to concrete pole bases required to properly and safely mount luminaires, all acceptable to the City Engineer.

3. Be responsible for handling the luminaires, installing plumb and level, and keeping luminaires clean.

4. Where luminaires are wall mounted and a mounting height is indicated in the Luminaire Schedule or on the Contract Drawings, the height is from the bottom of the luminaire to finished floor or finished grade, whichever is applicable, unless otherwise noted on contract drawing

5. Where luminaires are pendant-mounted and a mounting height is indicated in the Luminaire Schedule or on the Contract Drawings, the height is from the bottom of the luminaire to finished floor, unless otherwise noted on contract drawing

6. Provide each luminaire outlet box with a galvanized luminaire stud to fit the luminaire selected.

7 Provide pendant-mounted luminaires with swivel type hangers and canopies as approved by the city ENGINEER. Finish hangers and canopies to match luminaires, unless otherwise noted.

8 After construction is completed, remove all labels and other markings, wash dirty luminaires inside and out with a nonabrasive mild soap or cleaner. Clean luminaire plastic lenses with antistatic cleaners only. Touch up all painted surfaces of luminaires with high-grade exterior enamel, and poles with paint supplied by manufacturer.

B. Finished Areas:

1. Locate luminaires where shown on the Architectural Reflected Ceiling Plans and Site Plan

2. Install all luminaires straight and true with reference to adjacent walls and where mounted on tiled ceilings; locate luminaires symmetrically with the tile pattern as shown on the Drawings. In all cases, locate centerlines of luminaires either on centerline of tile or on joint between adjacent tile runs, as best suits luminaire spacing shown.

3. Provide surface-mounted luminaires, not accepted for installation on combustible low-density cellulose fiberboard, with accepted spacers to mount luminaires 1-1/2-inches from the ceiling surface.

4. Provide flush and recessed luminaires installed in ceilings with junction boxes located at least 1-foot from luminaires. Provide wiring from junction box to luminaire of temperature rating as required by the luminaire in not less than 4-feet, but no more than 6-feet of flexible steel conduit. In concealed locations, install junction boxes to be accessible by removing luminaire.

5. Install all recessed luminaires tight with the finished surface so that no spill light will show between the ceilings and the sealing rings, and furnish plaster frames when required by ceiling construction.

6. All fixtures installed in gypsum board ceilings or plaster soffits shall be provided with metal frames. Fixtures in concrete shall be steel housing with bitumastic paint finish. Fixtures shall be compatible with type of ceiling.

7. Exterior fixtures requiring exposed exterior boxes shall be mounted on approved cast boxes equipped with suitable gaskets.

8. Support recessed LED fixtures to building structure independently of ceiling system with steel wires 12 AWG at each corner suspended of each fixture. Wires to have 1/4 inch slack.

9. All adjustable lighting fixtures shall be aimed (during non-daylight hours) and set to the satisfaction of, and in the presence of, the City Engineer.

C. Unfinished Areas:

1. Install all luminaires straight and true with reference to adjacent walls and structural members. Locate luminaires symmetrically in the pattern shown on the Contract Drawings.

2. Coordinate luminaire locations with other utility systems (e.g., Plumbing, HVAC). Relocate luminaires to avoid conflict with these other systems and to avoid blockage of luminaire light output per city engineer's direction.

3. 2 STEMS

A. Required:

1. Stem hung fixtures shall be provided with ball swivels located at the canopies and rockers (at the fixtures) allowing minimum 45 degree swing from the vertical. Stems shall be of 3/8" ID minimum pipe and shall be finished to match the lighting fixture.

3.3 INSTALLATION OF LAMPS

A. After installation clean all lamps.

3. 4 MISCELLANEOUS (AS APPLICABLE)

A. Provide all metal shims, spacers and/or mounting bolts or devices, where necessary, in order to permit surface mounted fixtures to be pulled tight to ceiling supports or backing without causing ceiling tiles to be raised out of place.

B. Louvers, diffusers or lenses shall not be installed in lighting fixtures until such time as all glazing has been completed and all construction work involving plastering, grinding, sanding, painting, etc., and final clean-up sweeping and dusting have been completed by the Contractor as noted in Subsection 1. 4 of this Section.

C. Reflector surfaces and lamps in all lighting fixtures shall be thoroughly cleaned of accumulated dust, dirt, plaster, paint, etc., before the installation of the louvers, diffusers or lenses.

D. After completion of this portion of the work, it shall be the responsibility of the Contractor to clean and/or repair any damage to the finished building caused by this work, to the complete satisfaction of the Architect at no added cost to the City.

3.5 INSTALLATION OF LED DRIVERS

A. Install in strict accordance with manufacturer's recommendations.

3.6 LIGHTING CONTROL

A. Install all lighting control devices per contract drawings

3.7 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Advance Notice: Give dates and times for field tests.

C. Provide instruments to make and record test results.

D. Tests: As follows:

1. Verify normal operation of each fixture after installation.

2. Emergency Lighting: Interrupt electrical supply to demonstrate proper operation.

3. Verify normal transfer to battery source and retransfer to normal.

4. Verify actuation and termination on photocell, timer, or other control function, as applicable, and in coordination with required testing per Section 16570.

5. Report results in writing.

E. Malfunctioning Fixtures and Components: Replace or repair, then retest. Repeat procedure until units operate properly.

F. Corrosive Fixtures: Replace during warranty period.

3.09 COMMISSIONING (FOR LIGHTING CONTROL SYSTEMS)

A. Spot check the lighting systems start up and ensure that the all lamps are operational and fixtures are clean.

B. Spot check occupancy sensor placement and test reliability of activation/deactivation.

C. Test photocells for functionality and accuracy

D. Spot check switches to ensure proper operation and circuiting

E. Spot check lighting schedules to ensure they are programmed per the ENGINEER direction.

F. Test operation of circuits by changing system date and time to cause various circuits to switch modes. For rooms with occupancy sensors, validate the circuit energizes with occupancy in the space after the lights have been swept off. Test warning flicker prior to off sweep.

G. For exterior fixtures, simulate night mode to validate function. Measure and record light level to ensure they meet the requirements and are generally provide adequate security. Check for excessive light level fluctuations or dark spots.

END OF SECTION

SECTION 28 31 00
LIFE SAFETY FIRE ALARM SYSTEMS

PART 1 -- GENERAL

1.1 SCOPE

A. Required: Furnish all labor, materials, equipment, services, permits, fees and transportation necessary for and/or reasonably incidental to the Construction and completion of life safety fire alarms systems.

B. Comply with the General Conditions, General Requirements and the requirements of Section 260200 of this Division 26 concerning definitions, guarantees, submittals, as-builts, clean-up, etc. as applicable to work of this Section.

C. Work Includes, but is not limited to the following:

1. Life safety fire alarm detection and signaling system.
2. Plan check approval.
3. Furnishing and installation of equipment and devices.
4. Wiring in conduit, and connections.
5. Interface with elevator controls.
6. Interface with security system CPU.
7. Conduit, wire and connections for control and status of H&V motors, smoke dampers, for shutdown and smoke exhaust.
8. Conduit, wire, and connections for control and status of book conveyor fire dampers.
9. Testing, cleaning, and adjusting of completed work.
10. Wiring diagrams, shop drawings, equipment data.
11. Complete maintenance and off-site fire monitoring service for one year. Proposal for subsequent maintenance contract and monitoring service.
12. All work and material for complete and operable systems as indicated or specified.
13. Record drawings.
14. Permits, inspections, fees. See General Conditions.
15. Identification and instruction.
16. Coordination with other trades in the project.
17. Furnishing of special back boxes for installation under electrical section.
18. Install at least one automatic smoke detector in each enclosed room, connecting to the main Fire Alarm Control Panel.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 260100 - Basic Materials and Methods.

B. Section 260533 - Conduit

C Section 260519 - Wire and Cable

C. Section 262726- Wiring Devices

D. Section 260553-Electrical Identification

E. Section "Painting"-Painting, except shop finishing and field touch-up

F. Division 23-HVAC and fire protection systems

G. Temporary service (General Conditions).

H. Section "Elevators"-Elevators and elevator controls

J. Section 260560-Electrical Commissioning Requirements

K. Section 260570-Electrical Testing Requirements

1.3 LEGAL REQUIREMENTS AND STANDARDS

A. Legal: Conform to all applicable requirements of California State, Los Angeles City Fire and Building Departments concerning life safety and smoke control systems and requirements of local authorities having jurisdiction. See Sub-Section 1.5 of Section 260200 – Municipal Facilities General Electrical Requirements.

B. Standards: Comply with guidelines of the Electronics Industries Association, the National Fire Protection Association (NFPA) and Underwriters Laboratories (U.L.).

1.4 APPROVALS

The Fire Alarm System shall be Design-Build by the contractor. Prepare complete plans, risers, wiring diagrams, battery calculations, Voltage drop calculations and installation drawings for the fire alarm system. Obtain City Fire Department and Building Department approval for fire alarm system after incorporating all shop drawing review comments. Install system per final approved drawings.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in smoke detection and fire alarm systems with five years documented experience.

B. Installer:

1. Submit evidence of completion and satisfactory operation of five projects of equal scope for the specified systems.

2. Submit evidence that installers are factory authorized agents.

3. Submit letter from equipment manufacturers indicating intent to maintain local service organizations or direct factory service.

4. Installers to be prepared to offer a service contract on expiration of guarantee.

1.6 SUBMITTALS

A. Comply with applicable provisions of Sections 01330 & 260200.

B. Shop Drawings:

1. Provide schematic layout, floor plan, drawings indicating location of all components and equipment, required size and location of conduit and outlets and type and quantity of system conductors. Include voltage drop calculations and battery calculations.

2. Riser Diagram.

3. Include wiring diagrams for overall system and components.

4. Include physical and electrical characteristics of equipment to indicate conformance with the Specifications.

5. Describe system characteristics and function.

C. Data Sheets: Show California State Fire Marshall Listing, U.L. listing, equipment ratings, dimensions and finishes.

D. Manufacturer's Certificate: Note that system meets or exceeds specified requirements.

E. Test Procedures: Provide one copy for necessary review.

F. Operating and Maintenance Instruction Manual:

1. Conform to applicable provisions of Subsection 1. 6N of Section 260200.

2. Manual shall include the following:

a. Operational description.

b. Coded cabling plan.

c. Two wire circuit diagrams.

d. Wiring destination schedule.

e. Schematic component diagrams and PC board layouts.

f. Maintenance and alignment procedures.

1.7 COORDINATION

Refer to the electrical and mechanical drawings and specifications to determine quantities and location of devices and required scope of work and coordinate work with mechanical and electrical installers. Provide function described under mechanical section Sequence of Control, for fire and/or emergency conditions. Submit cable requirements to elevator supplier. Submit conduit requirements to electrical installer. For self-contained door release, coordinate with door supplier.

1.8 SYSTEM DESCRIPTION

A. General: System to be listed by Underwriters Laboratories and the California State Fire Marshal, designed to meet the functional requirements of NFPA 72A, 72B, 72D

B. Features:

1. "Main fire Alarm control panel with graphic annunciator as located on the Contract Drawings.

2. Remote annunciators at the main entry.

3. Alarm/trouble point transmitters.

4. Manual alarm reporting stations.

5. Ionization smoke detectors.

6. Ionization smoke detectors in elevator lobbies, elevator machine rooms and the top of each elevator hoistway. Provide two contacts on elevator lobby detectors. Wire one to fire alarm panel and second to elevator control panel.

7. Fan duct smoke detectors.

8. Smoke detectors in ducts at smoke dampers.

9. Power supply for smoke damper motors.

10. Combination fixed temperature/rate of rise heat detectors.

11. Electromagnetic door hold open devices as required.

12. Combination horn/visual alarm signal devices. Visual alarm signal devices.

13. Connection to sprinkler water flow and pressure switches.

14. Sprinkler valve supervision.

15. Cabling and connections.

16. Interface with the standby generator and day tank for alarm and status reporting and control.

17. Provision for connection to off-site central station via leased telephone lines.

18. Interface with the HVAC system for duct Detector “shut-off”

19. Interface with the elevator system for elevator capture, status and control.

20 Interface with the fire protection system (sprinklers) for alarm and trouble reporting.

21 Operating and supervising electrical power for the system at 120-volt single phase, three wire from the emergency system to the fire command center. Internal battery back up, sized for
24 hours of standby and 5 minutes of alarm

1.9 SYSTEM OPERATION

A. System to be the active interrogate/respond type alarm system, 24 volt DC non-coded, positive, non-interfering, successive operation, in which all devices are constantly sending status signals to the main fire control command center from remote data transmitter panels approximately every one second. A change in status to be reported twice to determine that it is a valid signal, and be automatically and permanently recorded. The requirements in NFPA 72B for 60 hours standby power to be met by the emergency standby generator system.

B. Wiring, equipment and devices for alarm initiation, annunciation, and audible signaling to be continuously supervised for open circuits, shorts or grounds (trouble). Each alarm initiating device circuit to be provided with illuminated and audible annunciation of both trouble and alarm conditions. Non-illumination indicates a normal condition. Wiring to the equipment in one conduit, the return portion of the loop in the second conduit. Wiring between reporting devices to the field equipment cabinets to be Class "B" wiring in conduit, with end-of-line device.

C. Any alarm or trouble condition to sound an audible signal at the fire command center and the remote annunciator. Signal to be silenced by a momentary contact switch which shall transfer the signal to a visual indicator. Subsequent trouble conditions to cause the signal to resound and in turn may be silenced. Upon restoration to normal, the trouble signal silencing indicator to extinguish automatically.

D. Activation of any automatic or manual alarm initiating device to cause the following to occur:

1. Sound an audible alarm and illuminate the visual indicator for zone and type of alarm at the fire command center and the remote annunciator.

2. Sound, by building of origin, the slow whoop alarm signal over the system speakers and activate the visual signal devices.

3. Transmit signal to release the electromagnetic hold open devices on corridor doors by floor.

4. Transmit signal to close smoke dampers.

5. Transmit alarm signal to the central station office, via autodialer.

E. System not to incorporate a time delay for any of the alarm initiating devices.
All alarms to be considered confirmed alarms.

F. Ionization type smoke detectors in the elevator lobbies interfaced with the elevator controls system for recall of elevators to first floor under fire alarm conditions, and report to fire central station.

G. Detection and reporting of fire conditions to be accomplished by the following basic methods:

1. Manual stations.

2. Smoke detectors.

3. Heat detectors.

4. Duct detectors.

5. Water flow switches.

H. Fire alarm system inputs to be further subdivided as follows, for a more defined indication of the location and nature of the fire or trouble condition:

1. Manual station. By floor and zone.

2. Smoke detector in elevator shaft. By device.

3. Smoke detector in an elevator lobby. By device.

4. Smoke detectors at smoke dampers. By device.

5. Smoke and/or heat detector in mechanical and electrical rooms. By floor and room.

6. Door held open detector. By floor and location.

7. Tamper switch and Water flow or pressure switch. By floor and zone.

8. Sprinkler valve position indication. By floor and zone.

I. Alarm condition to override trouble indication. Trouble indication to reappear after alarm reset.

J Selective manual testing of any device point in the system to determine normal trouble or alarm status

K. Remote annunciator to duplicate annunciation from the main fire alarm control panel.

L. System to be capable of manual operation in the event of malfunction of the central processor. Supplier to include a statement in the system shop drawing submittal explaining the manual operating capability of the system. Provide redundant processor to duplicate primary processor function.

M. Sequence of Operation Under Alarm Condition:

1. Sound an audible alarm at the main fire control command center and the remote annunciator and simultaneously illuminate the visual indicator for zone and type of alarm.

2. Manual acknowledge switch operation, to illuminate alarm acknowledge light and silence and audible signal. Visual indicator for zone of alarm to remain illuminated. New alarm to re-sound the audible alarm and repeat sequence.

3. Transmit signal to off-site central station office.

4. Correction of alarm condition to provide return to normal status and to print out.

5. Sound building alarm as described in "System Features and Operation."

N. Sequence of Operation for Supervision:

1. The following trouble conditions to sound an audible alarm and illuminate the visual trouble zone indicator at the main fire control command center and the remote annunciators:

a. Malfunction or trouble in any equipment or component of the fire alarm system.

b. Opens, shorts or grounds in the fire alarm system wiring.

c. Closed sprinkler system valve.

d. Removal of any fire alarm detection or reporting device.

e. Wet system water flow switch - tamper switch.

2. Manual acknowledge switch operation, to illuminate trouble acknowledge light and silence audible signal. Visual indicator for zone of trouble to remain illuminated.

O. HVAC Interface: Coordinate system function with sequence of control described in the mechanical section.

P. Operation: All components connected in accordance with the manufacturer's instructions to provide a complete and operable system.

1.10 LOADS OF EQUIPMENT AND COMPONENTS

A. Follow Electronics Industries Association Standard where applicable.

B. Provide fuse protection for equipment and spare fuses.

C. Design systems for operation at 120 volts, normal or emergency power as indicated, 60 Hz nominal input.

D. Operating voltage dissipated by resistors shall not exceed 25% of ratings.

E. Operating voltage of capacitors shall not exceed 80% of rated voltage.

F. Operating loads and voltages on transistors and solid-state devices shall not exceed manufacturer's recommendation for normal full load operation.

G. Use electronic components of types and rating commonly available from stock of established commercial distribution.

1.11 GUARANTEE

A. Conform to applicable provisions of the General Conditions.

B. Service technicians and replacement components for the system shall be available locally from a service representative of the manufacturer who is able to provide evidence of technical training and authorization by the manufacturer.

C. For a period of one year from date of final acceptance, the system shall be under full guarantee for materials and labor at no cost to the City. The system shall be under a service contract with a

technician authorized by the manufacturer. Replacement parts and labor shall be readily available during normal business hours while the service contract is in effect. A complete system inspection and test shall be performed at five months and again at eleven months after final acceptance. Tests shall include all smoke detector sensitivity settings.

D. Any component failures shall be remedied to the satisfaction of the Owner.

E. A continuing service contract shall be offered at time of bid to commence at the expiration of warranty included with the system.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Manufacturers: Equipment descriptions refer to the Edwards System Technology . Equivalent systems conforming to the Specifications are acceptable.

B. Provide materials and equipment of new and recent manufacture, UL labeled and/or listed for specific use.

C. The system and equipment described and furnished under these Specifications are to be the standard product of the manufacturer specified for each system. All reference to model numbers and other pertinent information herein is intended to establish the standards of performance, quality, and appearance.

D. System and equipment proposed as equivalent to that specified shall conform to the standards herein. Contractor and Manufacturer to supply evidence of having produced and installed similar equipment for at least five years, and list systems of equal scope rendering satisfactory service. Obtain the Project Manager's approval in writing ten working days prior to bidding equipment other than as specified. Submit the manufacturer's name, model numbers, and three copies of working drawings and engineering data sheets for approval.

Include in the submittal a certified statement from the manufacturer of the substitute equipment that it does, in fact, equal the electronic and physical features and functions of the specified equipment.

E. A continuing service contract shall be offered at time of bid to commence at the expiration of warranty included with the system.

2.2 FIRE ALARM CONTROL PANEL

A. Modular design with all modules and spacing panels to be the same size. All solid-state circuitry and components. Battery backup.

B. Dead front panel construction. Panels to be mounted in heavy gauge steel cabinets finished in read with module front plates finished in black. Hinged cabinet doors with locks to provide access to field wiring terminals. Internal audible signal.

C. Fire alarm control panel to Incorporate the Following Basic Components for Fire Alarm System Functions:

1. Operators control module.

2. Remote annunciator (approved by Fire Department).

3. Signal generator module.

4. Amplifier module or modules.

D. Operators Control Module to Incorporate:

1. Eighty character alpha-numeric display for continuous indication of time-of-day, day-of-week, month, date-of-month and year or for indication of manual function entries.

2. LED indicators for operating and supervising power, common alarm, alarm silenced, manual mode, system trouble, audible silenced, common trouble, loop fault, alarm circuit trouble and disconnect and auxiliary circuit trouble.

3. Keypad for the following entries and call ups displayed on the alpha-numeric display:

a. Alarm silence.

b. Audible silence.

c. System reset.

d. Auxiliary disconnect for central station circuit.

e. Call up of all system troubles not annunciated.

f. Call up of the status of any system point.

g. Set time, day-of-week, month, date-of-month and year.

h. Annunciator LED test.

E. Annunciator Module to Incorporate:

1. LED indicators for zone alarm and trouble.

2. Provision for indicating zone designations.

F. Signal Generator Module to Incorporate:

1. Two separate electrically supervised fire tone circuits.

2. Failure of one circuit to sound a trouble signal and the second circuit to take over automatically.

G. Battery Backup: Sealed lead acid type, with automatic battery charger. Four hour standby, five minute alarm.

H. Model EST-3 or equal.

2.3 REMOTE ANNUNCIATOR

A. The remote annunciator to be a Graphic type. The Graphic Annunciator to have a display of LED's for displaying individual initiating devices and be approved by

B. Model ”ENVOY” Series or equal.

2.4 ALARM/TROUBLE POINT TRANSMITTERS

A. Single, four or eight input point Class "B" units as required by the system design and layout.

B. Number of units in any one zone as required by the system design and layout.

C. For mounting in standard module cabinets.

D. Power supplied from the main fire alarm control panel.

E. Model SIGA-CT1, or equal.

2.5 MANUAL ALARM REPORTING STATIONS

A. Non-coded, semi-flush, double action with "Lift to Break - Pull Lever Down" lettering on clear plastic shield.

B. Mechanically locked until manually reset, rigid metal construction with raised lettering "Pull Down".

C. Model SIGA-270 single action or equal.

D. Manual Stations shall have a protective clear plastic cover model “Stopper II”.

2.6 AUTOMATIC SMOKE DETECTORS

A. Solid-state dual chamber type ionization detector, allowing for compensation for pressure and humidity changes.

B. Equipped with solid state voltage regulator to maintain detection sensitivity over varying voltages, and current regulator to insulate from power surges.

C. Detector mounted LED visual alarm indicator.

D. Model SIGA-IS with base model SIGA-SB or equal.

2.7 HEAT DETECTORS

A. Combination fixed temperature and rate-of-rise type, 135 degrees Fahrenheit fixed temperature rating, 15 degrees F per minute rate-of-rise rating, normally open contacts.

B. Flush mounted in finished areas, surface mounted in unfinished areas, off-white finish.

C. Model SIGA-HFS with base model SIGA-SB or equal.

2.8 AUDIBLE/VISUAL SIGNAL DEVICES

A. Combination speaker/lamp units, steel back box, recessed or surface mounted as indicated, on

supervised circuits. Visual portion to flash on alarm condition.

B. Model 757-8A-T, Model 757-7A-T, Model 757-5A-T or equal.

2.9 VISUAL SIGNAL DEVICES

A. Solid-state lamp flasher, built-in lamp unit, red thermoplastic lens, steel back box, red molded phenolic front panel, recessed or surface mounted as indicated, on supervised circuits. Unit to flash on alarm condition.

B. Model 202-5A-Tor equal.

2.10 DUCT DETECTORS

A. Furnished under H.V.A.C., Section, connected under this section.

B. Coordinate with H.V.A.C., Section.

2.11 WATERFLOW AND/OR PRESSURE SWITCHES

A. Furnished under Fire Protection section connected under this section.

B. Coordinate with Fire Protection section.

2.12 SPRINKLER VALVE TAMPER SWITCH

A. Furnished under Fire Protection Section, connected under this section .

Coordinate with Fire Protection section.

2.13 CONDUCTORS

No. 14 AWG, 600 volt, minimum shielded as required. Twisted pairs for audio. Conductor layout and quantities to be delineated on the shop drawing submittals as described in Paragraph 1.B. of the specifications. Calculate voltage drop and increase conductor size as required.

2.14 SUPPLEMENTARY RELAYS

A. Designed to activate or deactivate external circuit controls such as fans, smoke dampers, door releases.

B. Contacts rated two amperes minimum, but adequate for circuit controlled.

C. Relay coil supplied from system power supply.

D. Where remote from command center, enclose in NEMA 12 dust tight enclosure.

E. State Fire Marshal approved for use in fire alarm system.

2.15 DIGITAL COMMUNICATOR

A. Furnish and install a digital communicator by “Silent Night” Model 5104 or equal with all required accessories to send alarm and trouble signals

B. The Contractor shall arrange for the activation of the Building fire alarm system

C. The Contractor shall pay for all accessories, including communicator and one year of fire alarm monitoring and maintenance service by an approved monitoring company

2.16 Door Hold Open Devices

Electromagnetic type at doors where required, 24 VDC. Door release on activation of fire alarm system by floor.

PART 3 -- EXECUTION

3.1 GENERAL

A. Comply with all applicable paragraphs in Section 16020 – Municipal Facilities General Electrical Requirements, apply as though repeated herein.

B. Install system(s) in accordance with manufacturer's instructions.

C. Include services of certified technicians to supervise installation, adjustments, final connections and system testing.

3.2 OPERATION

Systems outlined herein to be complete and operable including all labor and material necessary for the required performance. Exact wiring and connections per suppliers' wiring diagrams.

3.3 GROUNDING

All equipment to be grounded by means of green ground wire to "U" contact of duplex receptacles and bonded to ground provided under Electrical Section.

3.4 INSPECTION

Systems to meet all the requirements of the code enforcing agency and shall be approved thereby before installation.

3.5 LOCATION

Before installation, verify exact location of control equipment and outlets. The City reserves the right to relocate outlets within a radius of 10' at no increase in cost before rough-in work is started for the respective outlet.

3.6 WIRING

A. Furnish all conductors, equipment, plugs, terminal strips, etc., and labor to install a complete and operable system. All cable conductors to be color coded and numbered for identification at all terminals. Green for grounding conductor. White for grounded conductor.

B. All cables and wiring shall be installed in conduits

3.7 TESTING

After all equipment specified herein for each system has been installed and is in operating condition, conduct performance tests to determine if the installation and components comply with these specifications. Perform smoke removal test. Furnish competent personnel, all test material and approved test instruments and conduct the tests under supervision of factory personnel, in the presence of the Project Manager, and the City building and fire inspecting agencies. Test atrium smoke control system before sunrise or after sunset.

3.8 COMMISSIONING

A. Spot check location of sensors and switches to ensure conformance with requirements.

B. Verify sampling of all types of devices. Cause activation of the device, assure alarms are initiated and resulting response is per the requirements.

C. Verify interfaces with all other inter-related systems or equipment including FMS, sound systems, security systems, HVAC systems, vertical delivery systems, etc.

D. Validate output devices (speakers and strobes) meet the code criteria (96 dBa at 10' and 117 candela at peak)

E. Test all functions and sequences associated with the elevator recall system.

F. Activate high temperature detectors in the elevator machine room. Verify all sequences including elevator shunt off, elevator recall including alternate floors when main floor is in alarm.

G. Activate smoke detector and verify all smoke control sequences and ensure fire/smoke dampers actuate as required.

H. Activate a sample of sprinkler flow switches. Validate that appropriate zone enunciates and alarms sound.

I. Verify audio aspects of the system function as required. Verify paging messages can be heard throughout the building.

J. Testing of the HVAC response is included with the associated equipment. Coordinate testing of the fire alarm system with the testing of the individual HVAC systems including shaft pressurization systems.

K. Ensure that the system functions while using all sources of power including normal, emergency, and battery. Check battery life by simulating an extended outage.

3.8 REPORT

Prepare written report of final test results, signed by witnessing parties. Submit to the Project Manager in triplicate.

END OF SECTION

SECTION 31 00 00

GENERAL EARTHWORK

PART ONE - GENERAL

1.1 SUMMARY

A. Provide and execute grading work as indicated on the Contract Drawings or in the Project Manual including but not limited to the following:

1. General excavating and trenching for various trades.

2. General exterior grading and cutting.

3. General excavating for site improvements.

4. Filling, Backfilling and Compaction.

B. RELATED WORK SPECIFIED ELSEWHERE

1. Documents affecting work of this Section include, but are not necessarily limited to the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, DIVISION 1 - GENERAL REQUIREMENTS and other applicable Sections of the Project Manual.

2. CAST IN PLACE CONCRETE in Section 03 30 00.

3. SITE CLEARING in Section 31 10 00.

4. IRRIGATION in Section 32 80 00

5. LANDSCAPE PLANTING in Section 32 90 00.

1.2 QUALITY ASSURANCE

A. Labor: Use adequate numbers of skilled laborers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with specified requirements and the methods needed for proper performance of the Work of this Section.

B. Equipment: Use equipment adequate in size, capacity, and numbers to accomplish the work of this Section in a timely manner.

C. Codes and Standards: Perform excavation work in compliance with applicable ordinance of governing authorities having jurisdiction including, but not limited to, the L. A. City Building Code and applicable Amendments; Division 1-DEPARTMENT OF INDUSTRIAL RELATIONS of Title 8 of the California Code of Regulations; Section 300 - EARTHWORK of SSPWC, as amended by Brownbook.

1. In addition to complying with Codes and Standards having jurisdiction, comply with directions of the GEOTECHNICAL ENGINEER.

D. Stormwater Pollution Control: The CONTRACTOR shall provide and employ the required measures for stormwater pollution control and water quality protection. The CONTRACTOR shall meet the standards of these requirements and reporting at all times.

E. Testing and Inspection Services: The CITY will provide qualified soil testing and inspection for quality control during earthwork operations. Testing shall be performed in accordance with the APPROVED SOIL REPORT and testing standards, the instructions of the GEOTECHNICAL ENGINEER and the applicable Sections of GENERAL CONDITIONS.

F. Geotechnical Engineer: The CITY will retain the services of a GEOTECHNICAL ENGINEER for the purpose of soil investigations and compaction testing, all the necessary inspections and observations, and certifications.

G. Survey: The CONTRACTOR shall employ the services of a California licensed surveyor for the purposes of survey control, layout, grade and cross-sections required to control work. Survey work shall conform to Survey Section of the General Requirements.

1.3 SUBMITTALS

Conform to provisions of DIVISION 1 - GENERAL REQUIREMENTS.

A. Sources of imported fill materials, if required.

B. Dewatering Plans, if required.

C. As required: California General Construction Activity Stormwater Permit, Waste Discharge Identification Number, Wet Weather Erosion Control Plan or Stormwater Pollution Prevention Plan.

D. Test Reports-Excavating: Contractor shall submit the following reports directly to the Los Angeles City Department of Building & Safety, prepared by the Soil Engineer and the testing service, with a copy to the CONSTRUCTION MANAGER.

1. Test reports on imported fill material.

2. Verification of each footing subgrade.

3. Field density test reports.

4. One optimum moisture-maximum density curve for each type of soil encountered.

5. Other test reports as required by the GEOTECHNICAL ENGINEER and the Los Angeles City Department of Building & Safety.

1.4 PERMITS

A. Required: In addition to the requirements specified herein, and in applicable Sections of the GENERAL REQUIREMENTS of the Project Manual.

B. The Contractor shall perform all work in accordance with the permit requirements of the Los Angeles

City Department of Building and Safety, including obtaining the grading permit; a grading bond, and making the required notification to the adjacent property owners; at no additional expense to the City.

C. Contractor shall furnish the BCA Inspector with a duplicate copy of OSHA excavation permit when required, and all other required permits prior to the start of the excavation work.

D. The Contractor shall obtain and pay for the California State Regional Water Quality Control Board (LARWQCB) Construction Water Discharge Permit if required.

E. The Contractor shall obtain and pay for California General Construction Activity Stormwater Permit if required. The Contractor shall obtain Waste Discharge Identification Number after submitting the Wet Weather Erosion Control Plan (WWECP) pursuant to Section 61.02 and 64.72 of L.A.M.C.

F. The Contractor shall make all necessary notifications, obtain and pay for required permits and file manifests with the South Coast Air Quality Management District (S.C.A.Q.M.D.) when required.

1.5 JOB CONDITIONS

A. Required Work Coordination: The Contractor shall fully coordinate the work operations of this Section with that of other trades involved and with the ENGINEER to assure proper sequence of work, limitations, methods and time of work to minimize or avoid interference with the existing utilities as well as performance of work by the other Contractors. Contractor shall include minimum two weeks in the Construction Schedule to allow the Soil Engineer to prepare final Soil Report to be submitted to the Los Angeles City Department of Building and Safety Grading Division for final approval. The Contractor shall coordinate and arrange for all the inspections with the local authorized agencies and the Bureau of Contract Administration.

B. Trench Safety: Attention is directed to the provisions of Section 6705 of the Labor Code concerning trench excavation safety plans when specified.

C. Air Pollution Control: The Contractor shall comply with all air pollution control rules, regulations, ordinances and statutes which apply to work performed pursuant to the Contract, including any air pollution control rules, regulations, ordinances and statutes, specified in Section 1107 of the Government Code.

1. The Contractor shall conform to Section 7-8.1 of the SSPWC latest edition with the current yearly supplements for clean-up and dust control.

D. Sound Control Requirements: The Contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the Contract.

1. Each combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.

E. Use of Explosives: The use of explosives is not permitted.

1.6 PROTECTIONS

A. General: Comply with provisions of Section 30 - PROTECTION OF PERSONS AND PROPERTY AND RESTORATION OF EXISTING IMPROVEMENTS in GENERAL CONDITIONS. Protect and guard all

excavations against damage to life, limb and property as prescribed by Los Angeles City Department of Building and Safety.

B. Protections of Persons and Property: Provide and install signs, lights and barricades at danger points on and off the job site to guard against accidents, etc.

1. Barricade open excavations occurring as part of this work and post with warning lights.

2. Protect all existing structures, utilities, sidewalks, pavements and other facilities to remain from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

3. See: Tree Protection, sheet G104 for addition requirements.

C. Existing Improvements: Protect against damage resulting from CONTRACTOR'S operations. Repair or replace damaged items to the full satisfaction of the CITY at no additional cost to the City.

D. Shoring, Cribbing and Lagging: Shall be installed where required by Code for safety of excavations and earth banks as necessary to prevent caving in, erosion or gullying of sides.

1. CONTRACTOR shall be responsible for obtaining and paying for all shoring permits, shoring design and calculations of shoring, etc.

2. Shoring shall be in accordance with requirements of with the latest Los Angeles City Building Code, Section 2811 and Safety Orders of State of California, Division of Industrial Safety, Title 8, Subchapter 4, Article 6, Sections 1540 and 1541.

3. Upon completion of project or when no longer needed or otherwise directed by the authority having jurisdiction, CONTRACTOR shall remove all such shoring from the job site.

E. Water: Divert or pump out of all excavations until concrete and other items are placed therein, forms removed, and backfilling is completed. The CONTRACTOR shall provide a means for solids removal before discharging the water. Comply with all applicable Codes and Regulations.

F. Existing Utilities: Utilities shown on the drawings are shown pursuant to a search of available records and are shown as a matter of information and not as a matter of fact. Conforming with GENERAL REQUIREMENTS and other Sections of the Project Manual, the CONTRACTOR shall locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, CONTRACTOR shall notify the CONSTRUCTION MANAGER immediately for direction. CONTRACTOR shall cooperate with CITY and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility Company.

2. Do not interrupt existing utilities serving facilities occupied and used by CITY and others, during occupied hours, except when permitted in writing by the PROJECT MANAGER and then only after acceptable temporary utility services have been provided.

3. Provide a minimum of 48-hour notice to the PROJECT MANAGER and receive written notice to proceed before interrupting any utility. Obtain clearance and notify all utility companies in the area and call Underground Service Alert by calling (800) 422-4133. Deliver utility clearance ticket number to the BCA INSPECTOR prior to the start of any work.

4. Demolish and completely remove from site existing underground utilities ***indicated to be removed***. Coordinate with utility companies for shut-off of service if lines are active.

G. Dust Control: Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the job site. Comply with all applicable Codes and Ordinances.

1.7 INSPECTION

A. Required: All work and materials are subject to inspection and approval by the PROJECT MANAGER or ENGINEER. Any work done without proper inspection will be subject to rejection per Section 2-11 of the Standard Specifications for Public Works Construction. The Contractor shall notify the Bureau of Contract Administration (BCA) INSPECTOR and PROJECT MANAGER three (3) days prior to requested date of inspection of the following for approval:

1. All excavations and trenches shall be inspected by the BCA INSPECTOR, Los Angeles City Building and Safety Inspector, and the GEOTECHNICAL ENGINEER before filling, backfilling and/or other subsequent work is placed therein. Earthwork backfill for structures shall comply with requirements of Section 300-3.5 - STRUCTURAL BACKFILL of SSPWC and/or requirements in the Project Manual.

2. ROUGH GRADING: When forms have been set, they shall be reviewed by ENGINEER to verify alignment and grade. Offsets or vertical controls shall be verifiable in the field, or be provided in grade sheet form, and submitted to the CONSTRUCTION MANAGER for approval prior to the inspection.

3. FINISH GRADE REVIEW: For all finish grades in planting areas following rolling in turf areas and prior to landscape container planting.

1.8 GEOTECHNICAL INFORMATION

The GEOTECHNICAL REPORT dated April 18, 2022, the Supplemental Geotechnical Report dated July 24, 2023, and LADBS Approval letters dated June 23, 2022 and August 26, 2023 are part of the Project Manual. CONTRACTOR shall comply with all Soils Report recommendations specified and other instruction directed by the GEOTECHNICAL ENGINEER. In case of conflicts between other part of the Project Manual and Soils Report the most restrictive condition shall govern unless otherwise approved by the Soil Engineer.

1.9 MATERIAL HANDLING

A. Delivery: All materials, tools, equipment, etc. to be delivered to the job site, in such a manner coordinated with progress of work of this Section.

B. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or dispose of in accordance with Section 300-2.6 - SURPLUS MATERIALS of SSPWC. Place, grade and shape stockpiles for proper drainage.

1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.
2. Dispose of excess soil material and waste materials as herein specified.

PART TWO – PRODUCTS

2.1 SOIL MATERIALS

A. Suitable Excavated Material: Suitable materials from excavations for use in fill shall be free from shale, sod, large clods or hard lumps of earth, roots, trash or other debris; that has a liquid limit of less than 30, and a plasticity index of less than 9; and is readily compatible to specified density. No rock, cobbles or broken concrete exceeding 2-inches in maximum dimension shall be placed in compacted fill without the specified approval of the GEOTECHNICAL Engineer. No rock, cobles or broken concrete exceeding 1-inch in maximum dimension shall be placed in compacted fill of the utility trench.

B. Fill Material: Furnish imported earth material as necessary if specified in the contract requirements or if the amount of suitable earth materials obtained from the job site excavations is not sufficient to properly construct the required fill, subject to the approval of the GEOTECHNICAL ENGINEER prior to use.

1. Fill material shall meet the requirements noted in the Geotechnical Report.

2. Submit imported fill material samples and testing results for the ENGINEER'S approval prior to importing to the job site in accordance with Section 300-5 BORROW EXCAVATION of SSPWC and the Geotechnical Report..

3. Imported fill material shall be free of foreign materials, vegetable growths, sod, rocks, expansive soils and debris.

4. Where fill material exhibits a wide variation in consistency, the ENGINEER may require blending to stabilize and upgrade the material as directed by the GEOTECHNICAL ENGINEER.

5. In landscape planting areas, the top 24" of fill shall be "Class A" topsoil, and not contain anything that would prevent normal plant growth (800-1.1.2). See LANDSCAPE PLANTING, Section 32 90 00 for additional information. Refer to Section 33 16 66 – Capture and Reuse LID System for soil requirements of LID planters.

C. Base Material: Shall be "Crushed Miscellaneous Base," as specified in Section 200-2 - UNTREATED BASE MATERIALS of SSPWC.

D. Pipe Bedding and Trench Backfill Material:

1. Trench excavations may be backfilled with onsite soils under the observation of the Geotechnical Engineer. Refer to the Geotechnical Report.

2. Use clean earth materials previously removed from job site excavations, or use approved imported fill materials as above specified, free from clay, rock or gravel larger than 1-inches for utility trenches, subject to the Soil Engineer's approval prior to use.

3. For storm drain piping, use approved washed sand to 4-inches above top of pipe, with the balance of backfill to be approved clean earth materials. For storm drain piping sections located beneath the sidewalk and connected to a concrete curb outlet, sand bedding and backfill are not required.

4. For domestic water pipe, use approved washed sand to 4-inches above top of pipe, with the balance of backfill to be approved clean earth materials.

5. For electrical conduits, see Electrical Plans.

6. For the landscape irrigation piping, use clean earth materials previously removed from job site excavations, or use approved imported fill materials as specified above, free from clay, rock or gravel larger than 1-inches diameter.

7. Conforming to applicable Sections of the Project Manual for the pipe bedding widths and depths.

2.3 TOPSOIL

A. The top 24" of any placed fill in proposed landscape planting areas shall be approved topsoil. Where possible, obtain or re-use stockpiled "CLASS C" topsoil from sources within the project limits.

B. If required by or indicated on the Landscape Drawings or specifications, CONTRACTOR shall provide imported "CLASS A" topsoil (800-1.1.2). Imported "Class A" topsoil shall meet the following additional requirements.

1. Gradation Limits: Sand - 50-80 percent, clay - 20 percent maximum, and silt - 30 percent maximum. The sand, clay and silt gradation limits shall be as defined in ASTM D-422 – TEST METHOD FOR PARTICLE – SIZE ANALYSIS OF SOILS.

2. Permeability Rate: Hydraulic conductivity rate shall be not less than one inch per hour nor more than 20 inches per hour when tested in accordance with the USDA Handbook Number 60, method 34b or other approved methods.

3. Agricultural Suitability and Fertility Analysis Tests: The top-soil shall be fertile and friable garden soil suitable for sustaining and promoting the growth of the specified plants. The topsoil shall comply with maximum permissible element concentration.

C. All imported "Class A" Topsoil shall be from a source outside the limits of the project selected by the Contractor and in compliance with Inspection requirements specified in General Conditions. Within 90 days after Notice-To-Proceed, CONTRACTOR shall submit the proposed source of topsoil to the ENGINEER for approval. After the ENGINEER or authorized representative makes an initial inspection at the site of the proposed imported material, the Contractor shall perform the required tests as deemed necessary to determine that the material meets the requirements. The Contractor shall submit to the ENGINEER a written report of a soil testing laboratory registered by the State of California for agricultural soil evaluation which states that the proposed source complies with this Section, and or proposed soil amendments as needed to meet compliance. After the testing report and proposed soil amendments are reviewed by the ENGINEER, the CONTRACTOR shall comply with all the recommendations of the soil testing laboratory and add any additional soil amendments necessary to achieve proper nutrient levels to support a healthy plant growth to the imported topsoil at the time of placement, at no additional cost to the City.

2.4 OTHER MATERIALS

Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the ENGINEER.

PART THREE - EXECUTION

3.1 SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until detrimental conditions are corrected.

3.2 WATER QUALITY PROTECTION

A. Comply with requirements shown in the approved Wet Weather Erosion Control Plan (WWECP).

3.4 SUBGRADE PREPARATION

A. Excavation of Subgrade. For permitted structures, structural paving, roads, and vehicular pathways, over-excavate the existing soil including fill material, debris, roots and foreign materials to natural subgrade at the proposed location. Over-excavation shall be to the depth and extended to each side beyond edge of construction as indicated in the APPROVED SOILS REPORT. Completed over-excavation shall be approved by the GEOTECHNICAL ENGINEER and LADBS GRADING INSPECTOR prior to placing fill.

1. For non-structural paving, footings, or other work as indicated in the APPROVED SOILS REPORT, excavate surface material to the required depth of the subgrade per plans or details.

2. If fill material is encountered below the required depth of excavation, CONTRACTOR shall notify the GEOTHECHNICAL ENGINEER immediately.

B. Subgrade Preparation: Unless indicated otherwise in the APPROVED SOILS REPORT, scarify for top of subgrade to a depth of 6-inches and bring to optimum moisture content and then recompact to at least 95% maximum density for subgrade as per ASTM D1557 - TESTED METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING MODIFIED EFFORT (56,000 FT - LBF/FT^3.). Prepare subgrade in accordance with Section 301-1 - SUBGRADE PREPARATION of SSPWC.

C. Backfill and Recompaction: Unless indicated otherwise in the APPROVED SOILS REPORT, place backfill in accordance with Section 300-4.5 - PLACING MATERIALS FOR FILLS of SSPWC in 8-inch layers and each layer compacted to 95% relative compaction and finished to elevations necessary to require cutting by fine grading. Inspection by Los Angeles City Building and Safety Inspector and the GEOTECHNICAL ENGINEER are required prior to placing fill. Obtain minimum one compaction test for each layer or volume as specified by Code or indicated in the APPROVED SOILS REPORT.

D. Dewatering:

1. Remove all water, including rainwater, encountered during trench and sub-grade work to an approved location by pumps, drains, and other approved methods.

2. Keep excavations and site construction area free from water.

E. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material. Apply water in manner to prevent free water appearing on surface during or subsequent to compaction operations.

1. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

F. Rework: Any previously compacted or tested subgrade and fill material, which are affected or disturbed, in the opinion of the GEOTECHNICAL ENGINEER, by the inclemency of the weather such as rains, floods, earthquake or others shall be reworked, retested and re-inspected at no additional cost to the City.

3.5 GRADING

A. Rough: Leave cut and fill sufficiently high to require cutting by fine grading.

B. Fine: To elevations required to ensure proper drainage or finished elevations indicated on drawings; finish elevations for planting areas in Section 02900 – LANDSCAPING.

C. Subgrade Preparation: Unless indicated otherwise in the APPROVED SOILS REPORT, required for all areas, other than filled or backfill areas, over which moisture barrier material, slabs, walks or pavement will be placed; in accordance with provision specified herein and Section 301-1 - SUBGRADE PREPARATION of SSPWC.

D. Inspection Required: Prior to placing base material, concrete or other materials.

3.5 EXCAVATING

A. General: Unless indicated otherwise in the APPROVED SOILS REPORT:

1. Excavation consists of the removal and disposal of materials necessary to establish required grade elevations and certified compacted fill for new construction pursuant to Section 300-2 UNCLASSIFIED EXCAVATION of SSPWC.

2. Excavated materials suitable for use as fill and/or backfill to be stockpiled where directed by the PROJECT MANAGER.

3. Non-approved and excess excavated materials to be legally removed and disposed of from the job site at the CONTRACTOR'S expense.

4. Shoring, Bracing and Bulkheading of Trenches: All to be provided, installed and maintained where required to support trenches, See Subsection 1.6 of this Section. Conform to the requirements prescribed by the Los Angeles City Department of Building and Safety, CAL/OSHA, and other Sections of the Project Manual.

5. Access to Trenches: Conform to Section 306-1.1.4 - ACCESS TO TRENCHES of SSPWC. Provide safe and suitable ladders, which project 2 feet above the top of the trench. It shall be provided for all trenches over 4 feet in depth. Minimum one ladder shall be provided for each 50 feet of open trench or fraction thereof and be so located that the workers in the trench need not move more than 25 feet to a ladder.

6. Encountered Existing Underground Piping or Conduits: Immediately stop the trench operations at the point of encounter, notify the PROJECT MANAGER of such condition and submit support drawings to the ENGINEER for approval. The support drawings shall be in conformance with the

Los Angeles City Bureau of Engineering Standard Plans S-253, SUPPORTS FOR STORM DRAIN AND SEWER PIPES ACROSS TRENCHES, latest edition; CAL/OSHA and the utility company's requirements.

B. For Site Improvements:

1. For Planter Curbs: To exact curb limit, without excessive removal of adjacent paving or subgrade for new paving.

2. For Concrete and Asphaltic Site Improvements such as concrete and/or asphalt pavements, concrete walkways, driveways aprons, concrete curb and gutter: Excavate to exact limits of such work without excessive removal of existing subgrade. Scarify and compact top 6 inches of subgrade and compact at 95% relative density, unless otherwise indicated in the APPROVED SOILS REPORT.

C. For Walls (including wall footings): refer to recommendation of the APPROVED SOILS REPORT.

D. Conduit and Piping: Conforming to the requirements as specified on the drawings, Los Angeles City Plumbing Code, SSPWC and other sections of the Project Manual. Any piping with 8 feet or less cover or backfill, Case 1 Bedding Installations of Los Angeles City Bureau of Engineering Standard Plan S-251, latest edition, shall be used for all piping laying unless otherwise specified on the drawings or noted.

E. Depth and Width of Trench for Storm Drainage Piping: To depth necessary for installation of piping and construction of catch basin in accordance with requirements of Section 02545 - STORM DRAIN SYSTEM, PLUMBING Section in Division 15 of the Project Manual and as noted on the Contract Drawings. Provide minimum [7 ½ inches] [12 inches] side clearance from side of the piping. Make the sides vertical and the bottoms smooth, firm, level or uniformly sloped as required, slope to not exceed a downward slope of two horizontal to one vertical in a manner to prevent formation of water pockets in the pipe. For backfill or earth cover exceeded 8 feet, refer to Los Angeles City Bureau of Engineering Standard Plan S-251, latest edition, for maximum allowable trench width and bedding material. Unless specified otherwise, provide minimum 2 inches washed sand bedding below the pipe barrel.

F. Depth and Width of Trench for Plumbing Piping: As necessary for complete installations of the piping, fixtures and controls; provide minimum [7 1/2 inches] [12 inches] side clearance from side of the piping; make the sides vertical and bottoms smooth, firm, level or slopes, as required by the code for proper drainage. [Final elevations shown on Contract Drawings] shall mean the invented pipe elevations. Pipe thickness and bedding thickness shall be used in determining trench depths. Conform to the requirements as specified in the Los Angeles City Plumbing Code and in Division 15 of the Project Manual. For backfill or earth cover exceeded 8 feet, refer to Los Angeles City Bureau of Engineering Standard Plan S-251, latest edition, for maximum allowable trench width and bedding material. Unless specified otherwise, provide minimum 4 inches washed sand bedding below the pipe barrel. If final elevation is not shown on contract drawings, place all piping to a depth no less than 24 inches.

G. Corrections: Required of all unauthorized excavations made below indicated depths, as recommended by the Soil Engineer at no added cost to the City.

3.7 FILLING

A. General: Construct in accordance with the APPROVED SOILS REPORT and Section 300-4- UNCLASSIFIED FILL of SSPWC. Place soil in layers not exceeding 8-inches thickness, compacted to a relative compaction of not less than 95% when tested in accordance with Section 211-2 - COMPACTION TESTS of SSPWC.

B. Fill in planting areas shall be compacted to no more than 90% relative compaction. For Topsoil fill in the upper 24" of the profile, see Section 32 90 00 LANDSCAPE PLANTING for more information.

C. Fill all holes on the existing jobsite or resulting from site-clearing or demolition operations.

3.8 BACKFILLING

A. Prior to Backfilling: Remove any debris, trash or foreign material from excavation.

B. Inspection Required: Prior to backfilling operations, for compaction of subgrade or trench bottom.

C. Placement of Backfill: in accordance with the APPROVED SOILS REPORT in layers not exceeding 8-inches thickness, moisten to optimum moisture content and tamp until 95% relative compaction is achieved and finish to designated elevations providing for any anticipated settlement and shrinkage.

D. Pipe Bedding and Backfill Over Underground Piping and Conduit: Place bedding and backfill material in conformance with provisions specified [Subsection 2.1 (D) herein] and in Section 02545 - STORM DRAIN SYSTEM, Division 15 - PLUMBING and Division 16 – ELECTRICAL of the Project Manual. Do not place backfill materials until the Inspector has inspected and approved the pipe installation. The bedding shall be compacted and shaped to form a firm base for the pipe and conduit. The initial backfill shall be placed in two lifts. The first lift shall be to the spring line of the pipe or conduit. The initial backfill shall be lightly compacted by light tamping. The balance of backfill shall be placed in accordance with [Subsection 3.8 (C)] herein.

E. For Backfill Against Retaining Walls: Do not place until such walls have gained sufficient strength to resist backfill loads and backside of such walls have been properly waterproofed to details and specifications without prior approval of the BCA INSPECTOR. Bring backfill up to finish grade or to subgrade for paving as indicated on the drawings.

F. Slurry Backfill: In areas where specified and/or around the utilities, vaults or other structures where the Soil Engineer determines that it is not practical to attain the required compaction by the mechanical methods or water densification, provide a trench slurry backfill 60-E0.7 (Class 100-E-100).

3.9 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Removal from City's Property: Remove waste materials, including unacceptable excavated material, trash and debris, and dispose of it off City's property in a legal manner and to conform with the requirements shown in Section 01572 – CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT of Division 1 - General Requirement

B. Provide written consent of the owner of the property upon which the surplus material is to be deposited, pursuant to Section 01572 – CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT specified above and Section 300-26 - SURPLUS MATERIAL of SSPWC.

END OF SECTION 31 00 00

31 10 00

SITE CLEARING AND DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

Perform all site clearing and demolition on the job site as indicated on the Contract Drawings.

A. Demolition shall include the removal and disposal of all constructed site features designated on the Contract Drawings for removal, including all below-ground components such as footings, etc.

B. Site clearing shall consist of removing all vegetation such as trees, roots, stumps, shrubs, brush, limbs; and stone, boulders, wood and other vegetative growth from the ground surface. Clearing shall also include the removal and disposal of trash piles, rubbish, debris, etc.

C. CONTRACTOR shall furnish all tools, equipment materials and supplies and shall perform all labor to complete the work associated with removal of all designated natural and artificial material from the areas of work as indicated in the contract documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials not specifically described but required for completion of the work of this section as selected by the CONTRACTOR subject to the approval of the ENGINEER.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

A. Examine the job site and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper site-clearing operations, as directed by the ENGINEER. Do not proceed until such detrimental conditions have been corrected.

3.2 PROTECTION

A. Protect existing trees and shrubs indicated to remain in the Contract Drawings per tree protection requirements in sheets G104.

1. Prior to commencement of site clearing work, all Tree Protection fencing shall be installed and approved by the ENGINEER.

3.3 SITE CLEARING AND GRUBBING

A. General:

1. For drawing clarity, not all trees, shrubs, brush, grass, weeds, or exact amount of trash or debris are shown on the drawings. CONTRACTOR shall carefully study the Contract Drawings and visit the job site and verify the extent of the work to be done prior to bidding.

2. 48 hours prior to commencement of clearing, grubbing and stripping operations, the CONTRACTOR shall request a site meeting to include the BCA inspector, PROJECT MANAGER, project ENGINEER and other CITY staff as designated by the PROJECT MANAGER to review and clearly mark all existing vegetation to remain, and to mark the extents of any required tree protection fencing.

B. Site clearing operations

1. Remove all surface vegetation indicated on the Contract Drawings for removal. Remove all roots, and stumps and other undesirable materials to a depth of at least (2) feet below existing ground surface.

2. Remove all concrete and masonry debris, including footings.

3. Remove all existing rubbish and debris or material resulting from work operations of this section as soon as possible and dispose of properly per general requirements.

4. Where active utility lines need to be capped or plugged, perform such work in accordance with requirements of the utility company or government agency having jurisdiction and conform to relevant provisions of the general requirements.

5. Existing utility services to remaining structures are to be maintained at all times.

3.4 STRIPPING

A. Stripping shall include the removal and disposal of all surface organic sod, grass and grass roots, topsoil and other objectionable material remaining after clearing and grubbing from the areas designated in the Contract Drawings. The depth of stripping shall be as shown on the drawings and/or specified herein.

B. Prior to beginning any excavation or fill, strip the existing topsoil to a depth of 12” or as sufficient to remove all organic material, and stockpile for future use. In general, topsoil shall be removed where structures are to be built, trenches dug, and roads, parking lots, walks, and similar improvements constructed within the areas presently covered with topsoil.

3.5 TOPSOIL

A. If on site topsoil is specified for reuse, stockpile topsoil in an area clear of new construction or where directed by the ENGINEER or the CONSTRUCTION MANAGER.

B. Maintain topsoil stockpiles in a manner which will not obstruct the natural flow of drainage.

1. Maintain the stockpiled topsoil free from debris and trash.

2. Keep the stockpiled topsoil moist to prevent drying out and creating a dusts source.

3. Place and compact topsoil backfill in the planting areas where designated on Contract Drawings. See section landscape planting for amendment requirements.

3.6 REMOVAL AND DISPOSAL OF CLEARING AND GRUBBING DEBRIS

A. General: all undesirable materials removed during site clearing and demolition shall be disposed of per general requirements. No accumulation of flammable material shall remain inside the limit of work.

3.7 STORAGE OF MATERIALS AT THE JOB-SITE

A. Storage of removed materials is not permitted beyond brief accumulation awaiting pick up by removal trucks. Delays in the removal of site-clearing materials from the job site shall be subject to the approval of the CONSTRUCTION MANAGER or the BCA inspector.

END OF SECTION 31 10 00

SECTION 32 00 00

GENERAL LANDSCAPE

PART 1 - GENERAL

A. The GENERAL CONDITIONS and GENERAL REQUIREMENTS, the latest edition and supplements of the Standard Specifications For Public Works Construction, hereinafter referred to as (SSPWC) adopted by the Board Of Public Works and the City of Los Angeles including the City of Los Angeles Department Of Public Works SSPWC additions and amendments (Brown Book) shall be made a part of these plans.

1. Website: http://eng2.laCITY.org/brownbook/frame.cfm

B. Where conflicts occur between the GENERAL CONDITIONS and GENERAL REQUIREMENTS and the SSPWC, the GENERAL CONDITIONS and GENERAL REQUIREMENTS shall take precedence. Where conflicts occur between these LANDSCAPE SPECIFICATIONS and the SSPWC, these LANDSCAPE SPECIFICATIONS shall take precedence.

1. Subsections included within these LANDSCAPE SPECIFICATIONS modify or add to the corresponding subsection (by number) of the SSPWC, latest edition with current yearly supplements; where options for materials and/or methods appear in the SSPWC, the option listed herein shall be used.

C. Precedence of contract documents shall be in accordance with the GENERAL CONDITIONS.

D. Contract work area shall be as defined on the title sheet, or as indicated on the plans by means of a contract limit of work line.

E. Permits and licenses: CONTRACTOR shall procure all required CITY, county and state permits and licenses, including municipal business license and pay all charges and fees for the same.

F. These LANDSCAPE SPECIFICATIONS apply only to work described on sheets L201-L803.

G. The project site shall be maintained in conformance with Section 7-8: Project Site Maintenance of the SSPWC and the requirements of the Project Manual.

1.1 PLANS AND SPECIFICATIONS

A. The CONTRACTOR shall be responsible for issuing a complete set of plans and specifications to all Sub-Contractors.

B. CONTRACTOR shall maintain a current set of plans reflecting all issued plan clarifications, RFI's and change orders at all times.

C. GEOTECHNICAL INFORMATION: The Geotechnical Report dated April 18, 2022, the Supplemental Geotechnical Report dated July 24, 2023, and LADBS Approval letters dated June 23, 2022 and August

26, 2023 are part of the Project Manual. CONTRACTOR shall comply with all soils report recommendations specified and other instruction directed by the GEOTECHNICAL ENGINEER. In case of conflicts between another part of the Project Manual and Geotechnical Report the most restrictive condition shall govern unless otherwise approved by the GEOTECHNICAL ENGINEER.

1.2 SCHEDULE OF WORK

A. The CONTRACTOR shall schedule all work in accordance with the GENERAL REQUIREMENTS.

B. The PROJECT MANAGER, CONSTRUCTION MANAGER, ENGINEER, CONTRACTOR and Department Of Recreation & Parks (RAP) maintenance personnel shall coordinate the CONTRACTOR's schedule of work with ongoing RAP maintenance of the facility outside the work area and the CONTRACTOR's maintenance of the area within the work area, as defined in the maintenance portion of the LANDSCAPE PLANTING section.

1.3 JOB START MEETING

A. The CONTRACTOR shall schedule a job start meeting with the PROJECT MANAGER after receipt of the notice to proceed. This meeting shall include the following participants: CONTRACTOR, PROJECT MANAGER, CONSTRUCTION MANAGER, BCA Inspector, ENGINEER, and RAP site maintenance personnel prior to the commencement of meeting to review the content of the plans and discuss the coordination of the project with RAP operations at the project site. The pre-construction meeting can be held at the same time as the job start meeting at the CONTRACTOR’s discretion.

1.4 QUALITY ASSURANCE

A. Labor: use adequate number of skilled laborers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

B. Codes and regulations: conform to the applicable Los Angeles City Building Code and Amendments, the SSPWC latest edition, Los Angeles City Bureau of Engineering Brown Book, latest edition and provisions hereinafter specified in the Project Manual, and all other applicable codes and regulations.

C. Permits: CONTRACTOR shall submit inspection/acceptance certificates required by the governing authorities and pay for all the required permits, plan check, inspections, and fees unless otherwise noted. CONTRACTOR shall arrange for and make required inspections and tests.

D. Inspections: all work and materials are subject to inspection and approval by the BCA inspector, PROJECT MANAGER or project ENGINEER. Any work done without required inspection will be subject to rejection per Section 2-11 of the SSPWC.

1. The CONTRACTOR shall notify the BCA Inspector and PROJECT MANAGER three (3) days prior to requested date of inspection. See each section herein for required inspections for each type of work.

2. Pre-final inspection. Pre-final inspection shall be in accordance with Article 46 of the GENERAL CONDITIONS.

3. Contract final inspection: contract final inspection shall be in accordance with the GENERAL CONDITIONS

4. In-plant inspection: CONTRACTOR shall be responsible for scheduling all required in-plant inspections with the bureau of contract administration. In-plant inspection requirements shall be determined by BCA materials control unit, and shall include, but not limited to, the following items:

1. Galvanizing of fabricated steel items	6. Shop welding of fabricated steel items
2. Galvanizing of chain link fabric and hardware	7. Shop painting of fabricated steel items
3. Steel grates and frames	
4. Portland cement concrete & base	
5. Asphalt concrete and base	

1.5 MATERIALS SUBMITTAL

The CONTRACTOR shall make required submittals in accordance with the GENERAL REQUIREMENTS.

1.6 SUBSTITUTIONS AND "OR EQUAL" SUBMITTAL

The CONTRACTOR shall make substitution submittals in accordance with the GENERAL REQUIREMENTS.

1.7 RECORD DRAWINGS (AS-BUILTS) SUBMITTALS

Record drawings shall be in accordance with the GENERAL REQUIREMENTS. See Section 11 - IRRIGATION SYSTEMS for additional requirements.

1.8 DEPARTMENT OF PUBLIC WORKS STANDARD PLANS

The following department of public works standard plans are to be included as a part of these plans:

Number	title
S-442-6	Curb Ramps
S-601-3	Detectable Warning Surfaces
S-463-3	Pedestrian Pipe Guardrails and Handrails

SSPWC

2017 edition of the Greenbook
Website: http://eng.laCITY.org/techdocs

1.9 LAYOUT OF WORK & GRADE SHEET APPROVAL

All spot elevations, grading contour lines, and grades shown on the plans for grading, pavement and drainage improvements shall be staked by a California licensed land surveyor provided by the CONTRACTOR at no additional cost to the CITY per the GENERAL REQUIREMENTS. Grade stakes shall be a minimum size of 1" x 2" and shall be driven a minimum of 12" into ground; each grade stake shall be protected by a flagged lath projecting 24" above ground; grade stakes disturbed by on-site activities shall be reset by the surveyor. If specified on the plan the CONTRACTOR shall have his surveyor provide grade sheets. The grade sheets shall be submitted to the CONSTRUCTION MANAGER for approval one week in advance of any grading operations.

1.6 PROTECTION OF PERSONS AND PROPERTY

A. General: comply with provisions of Article 30 - Protection of Persons And Property And Restoration Of Existing Improvements in the GENERAL CONDITIONS.

B. Protections of persons and property: provide and install signs, barricades and other required devices or techniques at danger points in the job site to guard against accidents, etc.

C. Existing improvements: protect against damage resulting from CONTRACTOR'S operations. Repair or replace damaged items to the full satisfaction of the CITY at no additional cost to the CITY.

1. See: Tree Protection Requirements, sheet G104 for addition requirements.

D. Existing utilities: utilities shown on the drawings are shown pursuant to a search of available records and are shown as a matter of information and not as a matter of fact. Conforming with GENERAL REQUIREMENTS and other sections of the Project Manual, the CONTRACTOR shall locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, CONTRACTOR shall notify the CONSTRUCTION MANAGER immediately for direction. CONTRACTOR shall cooperate with CITY and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility company.

2. Do not interrupt existing utilities serving facilities occupied and used by CITY and others, during occupied hours, except when permitted in writing by the PROJECT MANAGER and then only after acceptable temporary utility services have been provided.

3. Provide a minimum of 48-hour notice to the PROJECT MANAGER and receive written notice to proceed before interrupting any utility. Obtain clearance and notify all utility companies in the area and call underground service alert by calling (800) 422-4133. Deliver utility clearance ticket number to the BCA inspector prior to the start of any work.

4. Demolish and completely remove from site existing underground utilities ***indicated to be removed***. Coordinate with utility companies for shut-off of service if lines are active.

2.0 ENVIRONMENTAL CONTROL

CONTRACTOR shall comply with provisions of Article 5 in GENERAL REQUIREMENTS – Environmental Control and Mitigation, to include:

A. Site sanitation and odor control: use means necessary to provide sanitary conditions at job site and prevent a nuisance to the public, to neighbors, and to other work being performed on or near the job site. Comply with all applicable codes and ordinances.

B. Dust control: use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the job site. Comply with all applicable codes and ordinances.

C. Noise and vibration: comply with requirements of CITY noise ordinances and mitigation specified in general requirements.

D. Storm water pollution control: the CONTRACTOR is responsible for obtaining all required permits and deploying all required storm water pollution control measures for construction activities, including when required:

1. Comply with the state general construction activity storm water permit.

2. Wet weather erosion control plan (WWECP)

3. The CONTRACTOR Stormwater Pollution Prevention Plan (SWPPP): CONTRACTOR is responsible for the payment of the notice of intent (NOI) to the State of California Water Resources Control Board to comply with the California General Construction Activity Stormwater Permit (NPDES NO. CAS000002), and the prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) document, which is to be prepared by a qualified SWPPP developer (QSD). This document is to be submitted to the PROJECT MANAGER for approval and submission to the State Water Resources Control Board. The SWPPP must describe the erosion control practices being implemented during construction and the selection and implementation of appropriate BMP's to account for site-specific and seasonal conditions. CONTRACTOR shall draft the SWPPP before start of construction and submit it to the ENGINEER for approval; no construction work shall commence without an approved SWPPP. The document is to remain on the construction site and all of the measures stated in the document are to be implemented during the duration of construction. The QSD shall be responsible for creating, revising, overseeing and implementing the SWPPP and the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities.

E. Migratory Bird Protection: In compliance with the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503 and 3503.5, all designated tree removal shall take place outside of the nesting bird season (February 1 to September 1), unless specifically authorized by the PROJECT MANAGER in writing. In accordance with these regulatory requirements, removal of trees may be performed between September 2 and January 31 to avoid the nesting bird season. If tree removal or adjacent construction activities are to occur during the nesting bird season, all suitable habitats inside the limit of work and extending 500' beyond, shall be thoroughly surveyed for the presence of nesting birds by a qualified biologist (or a qualified arborist) at the CONTRACTOR's expense, a minimum of (3) days prior any tree removal. If any active nests are detected, tree removal will be suspended, and the area will be flagged. A minimum 250 foot (500 foot for raptors) non-disturbance buffer shall be established (a modification of this buffer may be determined by the monitoring biologist and in consultation with US Fish and Wildlife Service and California Department of Fish and Wildlife), and construction activity inside the established buffer shall be suspended until the nesting cycle has been completed, and the monitoring biologist determines that the nest has fledged.

END OF SECTION 32 00 00

SECTION 32 12 16

ASPHALT PAVING AND RESURFACING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide all work indicated on the drawings and in other sections of the project manual; including but not limited to:

1. Asphalt concrete paving.
2. Asphalt concrete paving repairs.
3. Seal coating.
4. Concrete wheel bumpers.
5. Parking lot striping and disabled symbol marking.
6. Disabled parking accessible signage.

1.2 SUBMITTALS

A. Asphaltic concrete:

1. Submit a mix design for asphaltic concrete prepared by a material laboratory under the direction of a California Registered Engineer.

2. Certificates: submit certificates signed by the materials producer and the asphalt paving Sub-CONTRACTOR, stating that materials meet or exceed the specified requirements prior to any fabrication. Submit the certified delivery tickets for each truckload of asphaltic material delivered to the job site.

B. Product data: submit to the ENGINEER the data on all proprietary items, materials, etc. To be used in the work of this section, as conforming to the specified requirements of this section.

PART 2 - PRODUCTS

2.1 ASPHALT CONCRETE MATERIALS

A. Asphalt: Asphalt to be used shall be as follows:

1. Asphalt for parking lots and roadway construction shall be type C2-PG 64-10-50, (203-6.3) or as otherwise indicated in Contract Drawings. See applicable details in Contract Drawings.

2.2 MISCELLANEOUS MATERIALS

A. Aggregate base: as specified in Section 31 00 00 – GENERAL EARTHWORK.

B. Asphalt sealcoat: The asphalt-based sealcoat shall be as specified on Contract Drawings:

1. Where indicated, the sealcoat shall be Guardtop asphalt-based sealcoat or approved equal. Apply per Manufacturer's instructions. Refer to manufacturer's website for technical bulletin and SDS sheet.

C. Prime coat: consisting of Grade SC-250 liquid asphalt, applied at a rate between 0.10 and 0.25 gallon per square yard, conforming to section 302-5.3 - Prime Coat of the SSPWC.

D. Tack coat/binder: Grade SS-1H emulsified asphalt at an approximate rate of 0.05 to 0.10-gallon per square yard), conforming to section 302-5.4 - Tack Coat of the SSPWC.

E. Adhesive for securing of concrete wheel bumpers to concrete paving: a long curing, two-component type epoxy adhesive, manufactured by Edeco, Furance, Andrew Brown or approved equal.

F. Paint for parking stalls and game court striping shall be regular dry type non-reflective, applied at a wet film thickness of 15 mil min. traffic paint, as manufactured by Vista Paint, or an approved equal in the specified color, per SSPWC (310-5), (210-1).

PART THREE - EXECUTION

3.1 JOB-SITE CONDITIONS

A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work, as directed by the ENGINEER.

3.2 ASPHALT CONCRETE PAVING

A. Asphalt paving thickness and courses shall be as indicated on the contract drawings and details.

B. Installation of underground piping crossing asphalt paving: where pipe or conduit is to be installed under existing A.C. paving, the paving shall be removed in clean straight parallel lines by saw-cutting. The resulting trench shall be backfilled to within 1" of the undersides of the existing A.C. paving with a two-sack concrete slurry mix. The existing A.C. paving shall have a tack coat applied before the new A.C. is placed.

C. Construction:

1. Prime coat: apply to the subgrade or aggregate base prior to placing the asphalt concrete and subbase; and to other surfaces designated by the BCA Inspector.

2. Tack coat: apply to concrete surfaces abutting new A.C. paving at least 24 hours prior to laying new work; apply to the surface of any course before the succeeding course or all cold pavement joints, curbs, gutters, manholes and the like. All the surfaces shall be free of water, foreign material or debris when the tack coat is applied.

3. Laying and compaction: in accordance with section 302-5.5 Distribution and Spreading and Section 302.5.6 - Rolling of the SSPWC.

4. Finish asphalt concrete surfaces smooth and even, to indicated elevations without low spots, hollow or irregularities and properly sloped for drainage.

D. Testing: Upon completion, the pavement shall be true to grade and cross section. When a straight edge is laid on the finished surface, the surface shall not vary from the edge of the straightedge no more than ⅛" inches, except at the intersection or at the change of grade.

1. Any area that is not within this tolerance shall be brought to grade by removing the paving material in the area to be repaired by an approved method. Provide a minimum laying depth of 1" inches of the new pavement material at the joint line. Repairs shall not be made to the pavement surface by feather edging at the joints.

E. Sealcoat: 30 days after the asphalt concrete surfacing was installed, apply one coat of approved sealcoat to the surface, in accordance with manufacturer's instructions. Before application of the seal coat, the surface of the newly constructed asphalt concrete shall be thoroughly cleaned.

3.3 ASPHALT SEAL COATING

A. Required: over new asphalt concrete paving, or as otherwise directed in Contract Drawings.

B. Surface preparation: Clean all existing asphalt concrete surfaces of oil, grease, and foreign materials.

C. The CONTRACTOR shall not apply any seal coat if the weather is not suitable for the application. The CONTRACTOR shall notify the CONSTRUCTION MANAGER and the BCA Inspector minimum 24 hours in advance of the date the CONTRACTOR intends to begin work.

D. Protection: provide as required to avoid getting seal coat materials on exposed concrete, masonry and/or miscellaneous adjacent surfaces.

E. Application: apply 2 coats per manufacturer's instructions.

F. Curing: allow for curing and drying per manufacturer's instructions.

3.4 INSTALLATION OF CONCRETE WHEEL BUMPERS

A. Locations: in parking stalls where indicated on the Contract Drawings and details.

1. On asphalt concrete: secure in place with steel drift pins or pipe driven to at least 1/4" below top of a surface of the bumper unit. Fill holes with non-shrink grout to top surface of unit.

3.5 PARKING LOT STRIPING, LETTERS AND ARROWS.

A. Materials: as specified above.

B. Lines: 4" wide, or as indicated on the drawings.

C. Letters: sizes and strokes as indicated on the drawings. Minimum dry paint thickness shall be 9 mils.

D. Arrows: 10" stroke with proportionate head.

E. Handicapped parking striping: sizes and colors are in conformance with the State Of California, Code Of Regulations, Title 24. An international symbol of accessibility symbol shall be stenciled at the rear of the parking space. Each accessible parking unloading zone shall be marked.

F. Preparation: all surfaces to be free of dirt, grease or other foreign materials. Remove existing markings by sandblasting or other approved methods.

G. Application: apply one heavy undiluted coat with traffic line painting equipment in locations indicated on the drawings in uniform coverage, free from light spots and with all edges clean-cut and true. Paint by spray can shall not be allowed. Wet paint thickness shall be 15 mils.

3.6 DISABLED ACCESSIBILITY PARKING SIGN

A. Required: where indicated on the contract drawings Disabled Accessibility Parking Signage Complying with State of California, Code of Regulation, Title 24.

B. Materials and fabrications: constructed of 3m Scotchlite brand reflective sheeting laminated to 18-gage heavy duty sheet steel and silkscreened in transparent blue with "disabled symbol" and/or the appropriate message in white. Sign to have a weather-resistant finish.

END OF SECTION 32 12 16

SECTION 32 14 33
PERMEABLE PAVERS

PART ONE: GENERAL

1.1 REFERENCES

A. American Society of Testing Materials (ASTM)

1. C936, Standard Specification for Solid Concrete Interlock Paving Units
   Clarification, Section 1.2 – Hydro-Flo pavers have the desired special feature of being permeable. Therefore, regarding Section 5.4, by design, the absorption rate is greater for Hydro-Flo pavers than the 5% desired for non-pervious pavers. Similarly, for Section 5.3 the compressive strength for Hydro-Flo pavers is less than the 8,000 psi required for non-pervious pavers as the main property of pervious concrete, permeability, is inversely proportional to strength.
2. C140, Standard Test Methods of Sampling and Testing Concrete Masonry Units
3. C136, Method for Sieve Analysis for Fine and Coarse Aggregate
4. C33, Specification for Concrete Aggregates
5. D2940, Standard Specification for Graded Aggregate Material for Bases

1.2 QUALITY ASSURANCE

A. Utilize an installer who has successfully completed installations similar in type and size to this

B. project. Installer shall provide certification of experience.

C. As applicable by state/provincial and local laws, contractor shall hold a current contractor's and business license in the state/ province and locality where work is performed.

1.3 SUBMITTALS

A. In accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, [expansion and control joints,] concrete paver [layout,] [patterns,] [color arrangement,] installation [and setting] details.

C. Sieve analysis per ASTM C 136 for grading of bedding and joint sand.

D. Samples :

1. Four representative full-size samples of each paver type, thickness, color, finish that indicate the range of color variation and texture expected in the finished installation. Color(s) selected by Landscape Architect as specified on contract drawings.
2. Accepted samples become the standard of acceptance for the work.
3. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.
4. Paver Installation Subcontractor:
5. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

E. Mock-Ups:

1. Install a 5 ft x 5 ft paver area.
2. Use this area to determine surcharge of the bedding sand layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job.

3. This area will be used as the standard by which the work will be judged.
4. Subject to acceptance by owner, mock-up may be retained as part of finished work.
5. If mock-up is not retained, remove and properly dispose of mock.

1.4 DELIVERY, STORAGE AND HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Refer to manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Deliver interlocking pavers to the site in plastic wrapped cubes capable of transfer by fork lift. Unload pavers at job site in such a manner that no damage occurs to the product.

D. Cover sand and topsoil with waterproof covering to prevent exposure to rainfall or removal by wind. Secure the covering in place.

E. Store materials protected such that they are kept free from mud, dirt, and other foreign materials.

1.5 ENVIRONMENTAL CONDITIONS

A. Do not install sand or pavers during heavy rain or snowfall.

B. Do not install frozen sand or topsoil.

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PART 2: PRODUCTS

2.1 PAVERS

A. Dimensions, Quantities and Weight A 8” x 4” x 2 3/8”

B. Stones per SF: 4.6

C. Stones per pallet: 450

D. Coverage: 98 sf per pallet

E. Weight: 26 lb/sf, 2548 lb/pallet

2.2 CRUSHED STONE FILLER, BEDDING, BASE AND SUBBASE

A. Crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C131, minimum CBR of 80% per ASTM D1883.

B. Do not use rounded river gravel.

C. All stone materials shall be washed with less than 1% passing the No. 200 sieve.

D. Joint/opening filler, bedding, base and sub-base: conforming to ASTM D448 gradation as shown in Tables 1, 2, 3 and 4 below:

E. Depths of each layer per detail.

Table 1: ASTM C33 Fine Aggregate Joint Filler – Grading Requirements:

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
No. 4 (4.75 mm)	95-100
No. 8 (2.36 mm)	80-100
No. 16 (1.18 mm)	50-85
No. 30 (600 µm)	25-60
No. 50 (300 µm)	5-30
No. 100 (150 µm)	0-10

Table 2: No. 8 Bedding Aggregate – Grading Requirements:

Sieve Size	Percent Passing
1/2 inch (12.5 mm)	100
3/8 inch (9.5 mm)	85 to 100
No. 4 (4.75 mm)	10 to 30
No. 8 (2.36 mm)	0 to 10
No. 16 (1.18 mm)	0 to 5

Table 3: No. 57 Base Aggregate – Grading Requirements:

Sieve Size	Percent Passing
1 1/2 inch (37.5 mm)	100
1 inch (25 mm)	95 to 100
1/2 inch (12.5 mm)	25 to 60
No. 4 (4.75 mm)	0 to 10
No. 8 (2.36 mm)	0 to 5

Table 4: No. 2 Subbase Aggregate – Grading Requirements:

Sieve Size	Percent Passing
3 inch (75 mm)	100
2 1/2 inch (63 mm)	90 to 100
2 inch (50 mm)	35 to 70
1 1/2 inch (37.5 mm)	0 to 15
3/4 inch (19 mm)	0 to 5

2.3 NON-WOVEN PERMEABLE GEOTEXTILE

A. As indicated in the Contract Drawings.

2.4 PERFORATED PIPE

A. Refer to Section 33 40 00 Storm Drain System.

PART 3: EXECUTION

3.1 EXAMINATION

A. Subgrade shall be compacted in accordance with the geotechnical engineer.

B. Verify that base is dry, uniform, even, free of any sediment (if open-graded), and ready to support sand, pavers and imposed loads.

C. Verify gradients and elevations of base are correct.

D. Verify location, type, installation and elevations of edge restraints around the perimeter area to be paved.

E. Beginning of installation means acceptance of base and edge restraints.

3.2 INSTALLATION

A. Note: The specifier should be aware that the top surface of the pavers after compaction may be 1/8 to 1/4 in. (3 to 7 mm) above the final elevations after compaction. This difference in initial and final elevations is to compensate for possible minor settling.

B. Spread the leveling course aggregate evenly over the compacted, open-graded base course and screed uniformly to 1 – 1 ½ in. (25 - 40 mm) thickness. The screeded aggregate should not be disturbed. Place sufficient aggregate to stay ahead of the laid pavers.

C. Ensure that pavers are free from foreign materials before installation.

D. Lay the pavers in the pattern(s) as shown on the drawings. Maintain straight pattern lines.

E. Joints between the pavers shall be between 1/16 in. and 1/8 in. (2 to 4 mm) wide.

F. Fill gaps at the edges of the paved area with cut pavers or edge units.

G. Cut pavers to be placed along the edge with a double-bladed splitter or masonry saw.

H. Compact and seat the pavers into the screeded aggregate using a low amplitude, 75-90 Hz plate compactor capable of at least 5,000 lbs. (22 kN) centrifugal compaction force. Note: A rubber or neoprene pad between the compactor and grids is necessary to prevent cracking or chipping on textured surfaces.

I. Vibrate and compact the pavers again, sweeping a small fraction of ASTM C33 fine aggregate or equivalent into the joints and openings until it is within ½ in. (13 mm) from the top surface. This will require at least two or three passes with the compactor. Do not compact within 3-ft (1 m) of the unrestrained edges of the paving units.

3.3 EXTRA MATERIALS:

A. Contractor shall provide owner with (2) 50lb sacks of additional joint sand for maintenance and repair. Contractor shall provide owner (10) pavers of each color used for maintenance and repair. Pavers shall be from the same production run as installed materials.

END OF SECTION 32 14 33

SECTION 32 31 13

CHAIN LINK FENCING AND GATES

PART ONE - GENERAL

1.1 SUMMARY

A. All permanent chain link fencing, gates and appurtenances as indicated on the Contract Drawings and as specified herein, and as needed for complete and proper installation.

B. Related Work Sections:

1. Concrete Work in Section 03 30 00.

1.2 QUALITY ASSURANCE

A. Labor: Use adequate number laborer's who are thoroughly trained and skilled in the fencing trade and who are completely familiar with the specified requirements and methods needed for the proper executions of the work of this Section.

B. Codes and Regulations: Perform all work in strict accordance with applicable Government Codes and Regulations, meeting all "Safety Standards" of CAL/OSHA, County and the current Los Angeles City-Building Code and applicable Amendments.

C. Qualification of Fabricators: Provide adequate number of fabricators who are thoroughly familiar with the specified requirements regarding fabrication of fencing fabrics, posts and gates.

D. Quality of All Materials and Accessories: All materials and accessories shall conform with the requirements of the Standard Specifications for Public Works Construction (SSPWC) and specified herein.

1.3 SUBMITTALS

A. General: Comply with applicable provisions the GENERAL REQUIREMENTS and other Sections of the Project Manual.

B. Product Data:

1. CONTRACTOR shall provide Shop drawings in sufficient detail to show layout of fence and gate, elevation details, fabrication, assembly, hardware, installation, anchorages and interface of work of this Section with work of adjacent trades.

2. Manufacturer's Specifications and other data needed to prove compliance with the specified requirements for chain link fabric, posts and rails.

3. Manufacturer's recommended installation procedures which when reviewed and approved by the ENGINEER, will become the basis for accepting or rejecting actual installation procedures used on the Work.

4. Vinyl coating and color for chain link fabric. Note: For special post coating, use section 206-6.1 of SSPWC.

1.4 PRODUCT HANDLING

A. Protection: Protect fencing fabric, posts and gate assemblies before, during and after installation. Properly package and identify and note location of unassembled items (hardware, etc.) for protection against damage.

B. Delivery: Deliver all items to be built into concrete or masonry work in time, so as not to delay construction and installation operations.

PART TWO - PRODUCTS AND FABRICATION

2.1 MATERIALS

A. General: All materials for fencing, posts and gates and fasteners to be new and hot-dipped galvanized.

B. Galvanizing: Where noted on drawings or Specified herein, metal products shall be hot-dipped galvanized, and comply with requirements of Section 210-3 - GALVANIZING of SSPWC, except as modified herein.

C. Fabric:

1. Galvanized steel chain link fabric shall conform to ASTM A392 - SPECIFICATION FOR ZINC COATED STEEL CHAIN LINK FENCE FABRIC and A817 - SPECIFICATION FOR METALLIC - COAT STEEL WIRE FOR CHAIN LINK FENCE FABRIC. Fabric shall be 2-inch mesh of 9-gage steel wire (minimum 75,000 psi tensile strength) galvanized with 1.2 oz/ft^2 zinc, in single fabric width for the entire height. Top and bottom selvedges shall be knuckled.

   Vinyl coated galvanized steel fabric, when specified, shall conform to ASTM F 668, Class 2b, "fused and adhered", and meet the galvanizing requirements contained in this section, (206-6.3).

2. Fabric Tie: 11 gage galvanized steel used to fasten the fabric to posts, rails and gate frame.

D. Posts:

1. Schedule 40 Standard weight pipe conforming to ASTM F-1083 - SPECIFICATION FOR PIPE, STEEL, HOT-DIPPED ZINC - COATED (GALVANIZED) WELDED, FOR FENCE STRUCTURES.

2. Line Posts: 2 3/8-inch O.D. complete with malleable iron eye-top of suitable design to provide moisture-proof cap.

3. Terminal (End) and/or Corner Posts: 2 7/8-inch O.D. with malleable iron moisture-proof cap.

4. Gate Posts: 4-inch O.D. complete with malleable iron moisture-proof cap.

E. Top and Bottom Rails: 1-5/8 inch O.D. standard weight steel pipe complete with end caps and end clamps for attachment to posts.

F. Horizontal and Diagonal Bracing:

1. Horizontal Rails with Diagonal Bracing to all end sections: Intermediate horizontal rail, 1-5/8-inch O.D. standard weight steel pipe complete with end caps and clamps for attachment to posts.

2. Diagonal: 3/8-inch diameter steel truss rods complete with turn buckles and attachments to post.

G. Tension Wire: For fabric of 9-gage and heavier use 6-gage galvanized coiled spring steel wire.

H. Galvanizing Repair Material: Galvanized surfaces which have been damaged in transport or during installation shall be re-coated using the metalizing process or zinc oxide, zinc dust paint per Section 210-3.5 of the SSPWC.

I. Galvanized Steel Brace Bands, Tension Bands or Bars and Tension Rods: Brace bands shall be galvanized**,** minimum of 3/16 inch x 3/4-inch wide; tension bands or bars shall be 3/16 inch x 3/4-inch wide and tension rods shall be 3/8 inch diameter galvanized steel rod with galvanized turnbuckles or other suitable tightener or tightening devices.

2.2 GATE HARDWARE

A. Swinging Gate:

1. Hinges: Heavy-duty ball and socket, industrial service**,** offset type**,** minimum 3 inch in width.

2. Latch for Single Swing Gate: Heavy malleable iron, fork type with provisions for padlocking.

3. Latch for Double Swing Gate: Heavy center drop rod latch assembly with provisions for padlocking. For hold-back sleeves provide steel pipe of diameter greater than of drop rod diameter and of length **[**indicated on the Drawing**].]**

2.3 GATE CONSTRUCTION

A. Swinging Gate Frame Construction:

1. All welded, fabricated of 1-7/8 inch O.D., galvanized steel pipe; all welded joints ground smooth and coated with a galvanizing repair material; all in accordance with reviewed Shop Drawings.

2. Frame Bracing: Use galvanized steel truss rods with galvanized turn buckles as hereinbefore specified.

3. Fabric: Same as hereinbefore specified for fencing, placed on exterior side of gate frame, as indicated, in same manner as specified for fencing.

PART THREE - EXECUTION

3.1 SURFACE CONDITIONS

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until detrimental conditions are corrected.

3.2 CHAIN LINK FENCE INSTALLATION

A. Post Setting: In concrete foundations per applicable detail/s; set plumb, at specified height and spacing, in straight alignment for uniform installation as indicated on the Drawings.

1. Excavating and Backfilling: Neatly and accurately excavate foundation holes for posts as indicated. Compact subgrade or any loose material. Solidly and firmly backfill around completed concrete foundations with excavated earth materials to finish grade or to proper elevation, as necessary for required paving as applicable.

2. Concrete Footings: Minimum 2500 psi concrete or as otherwise specified on drawings and conforming to the most recent edition of Los Angeles City Building Code and applicable Amendments. Finish top of footing smooth and even, sloped to shed water and with edges at finish grade of adjoining ground or adjusted for paved surfaces. Allow concrete to attain at least 75% of its 28-day strength before installation of fencing components.

C. Top Rail: Extend through post eye-top caps and attach ends to corner, gate, and/or terminal (end) posts.

D. Horizontal and Diagonal Bracing:

1. Horizontal Rail: Locate mid-height in fencing panels adjacent to gates, corner, and terminal (end) posts.

2. Diagonal Bracing: Extend from the joint of horizontal brace (with adjacent post) diagonally to the base of gate, corner, or terminal post.

E. Chain Link Fabric:

1. The fabric shall be installed so that the edge extends beyond the top rail and the bottom rail by 1 inch. The bottom of the fabric shall extend to within 1 inch maximum of the natural ground or final grade. High points of ground shall be excavated to clear the bottom of the fabric and depression shall be filled and compacted to within 2 inches of the bottom of fabric. Secure fabric to tension wire with galvanized clip rings or wire ties spaced not more than 18 inches apart.

2. Tightly stretch and secure to line posts, with adequate tie wires, space maximum 18-inches apart or as recommended by manufacturer.

3. Secure fabric to top rail, terminal (end) and gate posts by means of heavy, galvanized steel bands bolted to 1/4-inch x 3/4-inch tension bars passing vertically through full

height of fabric 16 inches interval.

3.3 SWINGING GATE INSTALLATION

Properly hang or set gate(s) in plumb and level position for full opening without interference and adjust the hardware for smooth and trouble-free operation and inspect latching and locking hardware for proper alignment and function.

3.4 MISCELLANEOUS

A. Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.

B. Bend ends of wire to minimize hazards to persons and clothing.

C. Fasteners:

1. Install galvanized nuts for tension band and hardware bolts on side of fence opposite fabric side.

2. Peen the ends of bolts to prevent removal of the nuts.

D. Repairs: Repair fencing coatings damaged in the shop or during field erection using a hot-applied repair compound applied in accordance with repair compound manufacturer's recommendations as approved by the City Engineer; at no added cost to the City.

E. Cleanup: Comply with provisions of the GENERAL REQUIREMENTS regarding removal from the jobsite; rubbish, all equipment, unused materials, temporary structures and/or facilities no longer required.

END OF SECTION 32 31 13

SECTION 32 80 00

IRRIGATION

PART ONE – GENERAL

Website: http://eng2.lacity.org/brownbook/frame.cfm

1.1 DESCRIPTION

A. Work Included:

1. All labor, materials, equipment, appliances, fixtures and tests necessary for complete demolition of existing irrigation system and a new operating irrigation system as indicated on the Contract Drawings.

B. Related Work:

1. Documents affecting work of this Section include, but are not necessarily limited to the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS in DIVISION 1 - GENERAL REQUIREMENTS and other Sections of the Project Manual.

2. Site Clearing and Grubbing in Section 31 11 00.

1.2 SUBMITTALS

A. The Contractor shall make all required materials submittals in accordance with Article 10 of the General Requirements. Far all materials not approved upon the first submittal, Contractor is responsible to promptly resubmit for approval, necessary data concerning a substitution for a disapproved item or piece of equipment.

B. The Contractor shall make substitution submittals in accordance with Article 11 of the General Requirements.

C. Submit copies of the following:

1. Complete list of irrigation materials and miscellaneous hardware complete with descriptions and/or photographs and manufacturer's literature. Clearly mark or underline proposed items.

1.3 QUALITY ASSURANCE

A. Codes and Regulations: Contractor shall obtain and pay for all required permits. Deliver all permits and submit certifications of compliance to the BCA Inspector and the Project Manager.

1.4 GENERAL REQUIREMENTS

A. **Approvals by the Engineer**: Before commencement of irrigation installation, Contractor shall obtain:

1. All approvals on required submittals hereinafter specified.

2. Approval of all re-submittals requested by the City Engineer.

3. Contractor shall make a detailed staked layout on the work site of the proposed trenching locations for all mainline, control wire conduit, and valve manifolds for approval by City Engineer prior to trenching.

4. Contractor shall make a detailed staked layout on the work site of the proposed head locations for approval by City Engineer prior to lateral line trenching.

B. **Required Inspections**: Notify the City Inspector at least 72 hours prior to time of required inspection.

1. **IRRIGATION MAINLINE PRESSURE TEST:** The pressure test shall take place under the direction of the BCA Inspector.

2. I**RRIGATION COVERAGE TEST:** After installation of heads and lateral lines etc., entire irrigation system shall be tested for coverage. Contractor shall notify the BCA Inspector, Project Manager, Landscape Architect and designated Recreation and Parks Regional maintenance staff three (3) days before the scheduled test.

C. **Existing Utilities and Plant Materials**: Protect utilities and/or plant materials not designated for removal or modification in place against damage resulting from work of this Contract. Perform any removal and/or modifications only on approval or instruction from the City Engineer or in accordance with applicable provisions noted or specified.

D. **Verification of Dimensions and Quantities**: Verify site conditions, contract drawings, all dimensions and quantities prior to the bid. Furnish the quantities as necessary to do the specified work. Notify the Project Manager of any discrepancies between the Contract Drawings and the site conditions prior to beginning work. Do not work in areas where such discrepancies occur until further instruction by the City Engineer.

E. **Record Drawings**: Comply with provisions of the General Requirements. Contractor shall accurately dimension the location and depths of all piping, valves, and control equipment as installed. Indicate with suitable colored ink on one set of prints of the Contract Drawings to produce a record of complete installations to be kept on the job and up-to-date at all times during construction. At the completion of the work and prior to Final Inspection, the Contractor shall copy his record "as installed" data, using red ink, onto a set of clean prints. The Contractor shall certify to the completeness and accuracy of the "as installed" information indicated on the prints with his signature, and deliver the signed prints to the Project Manager for review prior to the completion of the Plant Establishment Period.

Dimension from two permanent points of reference, building corners, sidewalk, or road intersections, the location of the following items:

1. Connection to existing water lines.

2. Connection to existing electrical power.

3. Gate valves.
4. Routing of all pressure lines. Indicate dimensional location at 100' intervals.
5. Irrigation control valves.
6. Routing of control wiring.
7. Quick coupling valves.
8. Controller.
9. Other related equipment as directed by the Architect.
10. Sleeve locations.

F. **Water and Power Services:** Upon award of contract, the Contractor shall contact the Department of Water and Power to arrange and pay for the installation of all required water meters and services. Service connections shall be as shown on the Contract Drawings or as designated by the utility company. Upon final acceptance of the project, the Contractor shall transfer billing to the City of Los Angeles, Department of Recreation and Parks as directed by the Project Manager.

G. **Guarantee**: In accordance with provisions of the GENERAL CONDITIONS, contractor shall guarantee the entire irrigation system against defects in materials and workmanship for a period of one year from the date of final acceptance of the Project.

1. The entire irrigation system shall be warranted to be free from defects in materials and workmanship, and installed in accordance with the irrigation plans, specifications and the SSPWC. The Contractor shall be required to repair or replace any defects in material or workmanship which may develop within one (1) calendar year from the date of acceptance, excepting ordinary wear and tear and unusual abuse or neglect. Further, the Contractor shall be required to make any necessary repairs within 48 hours of notification at no cost to the City. If the Contractor or his agent fail to make such repairs within the stipulated time, the City shall make such repairs or have repairs made by a third party and bill the Contractor for all expenses that accrue from making such repairs.

2. The City reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the City will not relieve the Contractor of his responsibilities under the terms of the guarantee.

3. Contractor shall repair any settlement of backfilled trenches which may occur during a one-year period after final acceptance by the City Engineer, to the City Engineer's satisfaction, without expense to the City, including the complete restoration of all damaged planting, paving, or other improvements of any kind.

1.5 DELIVERY, STORAGE AND HANDLING

A. **Delivery**: Deliver products to the job-site in their manufacturer's original containers, with labels intact and legible.

B. **Storage**: Store piping, materials, fitting, etc. at the job-site where directed by the City Engineer until such time for installation.

C. **Handling**: Promptly remove damaged materials and unsuitable items from the job-site and promptly replace with materials meeting the specified requirements, at no added cost to the City.

PART TWO - PRODUCTS

2.1 MATERIALS

A. **General**: Provide recently manufactured materials of the best grade of each respective kind.

B. **Pipe and Fittings**: The type of pipe material and fittings designated on the Contract Drawings, or as hereinafter specified shall be:

1. Steel Pipe: Galvanized standard weight Schedule 40 steel water pipe complying with ASTM A53 - SPECIFICATION FOR PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED, WELDED AND SEAMLESS; jointed with galvanized, threaded, standard weight malleable iron fittings, and/or couplings.

2. Plastic Irrigation Pipe: High impact rigid polyvinyl chloride PVC 1220 (Type I, Grade 2), conforming to ASTM D1785 - SPECIFICATION FOR POLY (VINYL CHLORIDE) (PVC) PLASTIC PIPE, SCHEDULES 40 & 80 and CLASS 200. The minimum pressure rating to be not less than indicated therein for the schedule and size listed.

3. DOMESTIC WATER LINES FOR DRINKING FOUNTAINS: Install water piping in accordance with the latest edition of the Uniform Building Code and all local ordinances. Prior to allowing human consumption of water from newly installed drinking fountains the contractor shall perform domestic sterilization procedures as indicated in applicable details and provide testing results to document compliance with the standards indicated. New drinking fountains shall be turned off or otherwise made inoperable until this testing is successfully completed and approved.

    a. Domestic Cold Water Piping **ABOVE GRADE**: Piping shall be ASTM B88 Type "L" seamless hard drawn copper tubing with ANSI B 16.22 wrought copper fittings. Joints shall be made up with lead-free, nickel bearing alloy solder such as Harris Bridget.

    b. Domestic Cold Water Piping **BELOW GRADE**: Piping shall be ASTM B88 Type "K" seamless hard drawn copper tubing with ANSI B 16.22 wrought copper fittings. Joints shall be made up with lead-free, nickel bearing alloy solder such as Harris Bridget.

4. All Pipes: Shall be homogeneous throughout and free from cracks, holes, foreign materials, blisters, deleterious wrinkles, and dents.

5. Solvent-welded Schedule 40 PVC plastic pipe and fittings shall be used for pipe sizes up to and including 2½ inch for installation of irrigation pressure lines and lateral lines.

6. Schedule 80 PVC plastic pipe and threaded fittings shall be used only when threaded

joints are specified, or otherwise permitted by the City Engineer.

7. All piping shall be permanently marked with the following: Manufacturer's name or trademark, size, schedule, and type of pipe, working pressure at 73 degrees F. and National Sanitation Foundation (N.S.F.) approval.

8. Gasket lubricant for push on fittings shall be non-toxic, odorless, tasteless and shall not support bacteria. Use 'Seal Lube", SK#87710 by IPS Weldon Corp. or equal.

C. **Valves and Valve Boxes**:

1. General: Provide valves of the type and capacity designated on the Contract Drawings and with the requirements specified herein. All valves shall be capable of continuous performance at a working pressure of 200 psi or less.

2. Gate Valves and mainline isolation Valves: ***in sizes 2.5-inch and smaller*** shall be bronze type, non-rising stem, solid wedge gate valve; model as noted per plan or approved equal.

3. Automatic Control Valves: Electrically operated, cast brass or bronze normally closed globe valve, capable of with manual flow control adjustment and manual operation capability, readily disassembled for servicing, slow opening and closing, and self-flushing. Reclaimed water compatible. Model as noted per plan or approved equal.

5. Quick-Coupling Valves: shall be 1" type with two-piece red brass construction with a locking thermoplastic rubber cover. The Contractor shall provide one quick coupler key with hose swivel for each five quick couplers installed. Rainbird model #44LRC or approved equal.

6. Valve Boxes and 2-wire cable pull boxes and terminal boxes shall be constructed of polypropylene or equivalent material for maximum durability, UV protection and corrosion resistance. The plastic body, excluding extensions, shall have pipe slots on each end and the plastic body shall have two (2) resting points for the lid to sit securely and flush. The plastic lid shall have molded diamond tread-pattern for skid resistance. Valve boxes shall have a lockable lid using a hex-bolt to secure the cover.

   For Remote Control Valves and 2-wire pull/terminal boxes:
   The dimensions of the box shall be 14.5" L x 9.4" W, Model VB-STD-H by Rainbird, or approved equal. The lid shall be permanently heat-embossed with station number for each valve, or CW for control wire.

   For Quick Couplers and Gate Valves:
   The dimensions of the box shall be 13.75 inches bottom diameter and 10" top diameter. Model VB-10RND-H by Rainbird, or approved equal.

   Boxes are to be installed per the applicable details. The lid shall be permanently heat-embossed as follows (paint is not acceptable):

Gate Valve	GV
Remote Control Valve	RCV
Quick Coupler Valve	QC
Master Valve	MV

Flow Meter FM
2-wire cable Pull Boxes CW

D. **<u>Backflow Prevention - Reduced Pressure Zone Assembly and Wye Strainer</u>**:

1. The Reduced Pressure Zone Assembly shall consist of two independently operating, spring loaded, "Y" pattern check valves and one hydraulically dependent differential relief valve. Mainline valve body and caps including relief valve body and cover shall be lead-free cast copper silicon alloy. Check valve and relief valve components shall be constructed so they may be serviced without removing the valve body from the line. Shutoff valves and test cocks shall be full ported ball valves.

   The assembly shall be rated to 175psi working pressure and water temperature range from 32°F to 140°F. The lead-free* Reduced Pressure Zone Assemblies shall comply with state codes and standards, where applicable, requiring reduced lead content. The assembly shall meet the requirements of AWWA Standard Code C511; and approved by the Foundation for Cross-Connection Control and Hydraulic Hydraulic Research at the University of Southern California. The Reduced Pressure Zone Assembly shall be Febco LF825Y, or approved equal.

2. Wye-Strainer: The main body shall be low lead bronze (ASTM B 584), the access cover shall be low lead yellow brass (ASTM B 16) or cast bronze (ASTM B 584), the strainer screen shall be 300 series stainless steel #100 mesh. Screens shall be accessible for cleaning without removing the device from the line. Model as noted per plan or approved equal.

3. Backflow enclosure: shall be of a vandal resistant nature manufactured of formed cold rolled steel tubing and rod, coated with a performance polymer alloy. All locking and mounting hardware shall be manufactured entirely of stainless steel. Each enclosure shall have amounting pad which shall be used as installation frame. Enclosure hardware on the mounting frame shall be stainless steel. The backflow cage enclosure shall remain bolted to frame in open and closed positions. Enclosure and door shall close with concealed locking tab with hole to accept padlock. Enclosure shall be powder-coated dark green. By Strongbox, SBBC-CR series or approved equal. https://strongbox.com

E. **<u>Irrigation Heads</u>**:

1. <u>Pop-up spray head</u>: bodies shall have a 4", 6" or 12" pop-up stroke. The body of the spray head shall be constructed of corrosion and UV-resistant, heavy-duty A.B.S. The spray head body shall have a factory-installed drain check valve capable of checking up to 10 feet in elevation change. The spray head body shall have a standard pressure-regulating device as an integral part of the pop-up riser maintaining a constant nozzle outlet pressure of 30 or 45 PSI with inlet pressures of up to 100 PSI. Nozzles shall be matched precipitation rate, fixed spray or multiple-stream, rotating type or other as noted on Contract Drawings.

2. <u>Pop-up Gear Driven Rotor Head</u>: The body of the rotor head shall be constructed of corrosion and UV-resistant, heavy-duty A.B.S. The rotor head body shall have a factory-installed drain check valve capable of checking up to 10 feet in elevation change. The full or part-circle rotor head shall be a single stream, water lubricated, gear drive type

capable of both full circle and/or part circle operation in the same unit as noted on Contract Drawings. The rotor head shall have a screen attached to the drive housing to filter inlet water, protect the drive from clogging and simplify its removal for cleaning and flushing of the system. The rotor head body shall have a 1" (26/34) female (NPT or BSP) bottom inlet. The rotor head shall have a standard rubber cover which designates each adjustment opening from the top. Pop-up height as measured from the top of the cover to the centerline of the nozzle orifice shall be at least 5 inches. The rotor shall have a stainless steel covered nozzle turret and riser stem. Manufactured by Rainbird Corporation, or approved equal.

3. Root Watering System: The RWS assembly shall consist of a perforated polyethylene rigid mesh cylinder 18" long x 4" diameter or 10" long x 2" diameter with an integrated pressure compensating bubbler and optional check valve. The assembly shall be preconfigured with swing joint assembly or spiral barbed fittings to enable the RWS to be directly connected to PVC or polyethylene lateral drip lines, and shall have a plastic locking grate cover. Manufactured by Rainbird Corporation, or approved equal.

4. SA Swing Joint Assemblies: The Swing Assemblies shall be used as a flexible swing joint assembly for 1/2" inlet sprinklers. The pipe shall be flexible black tubing constructed of linear low density polyethylene material with a wall thickness of 0.090"and an inside diameter of 0.490". The fittings shall be constructed of UV-resistant, thermoplastic material. The Swing Assembly shall have an operating pressure rating of 80 psi at 110° F. As manufactured by Rain Bird Corporation, Glendora, California or approved equal.

F. **Automatic Irrigation Controller**: The Controller shall be of a type that combines fully automatic or manual operation with an interface to a two-wire path for decoder-based irrigation control. The controller shall provide flow sensing capability and management and a 50 station capacity expandable to 200 stations. The controller shall allow up to 8 valves to operate simultaneously per program and total for the controller including the master valves. The controller shall incorporate a FloManager feature providing real-time flow, power, and station management. FloManager shall manage the number of stations operating at any point in time based on water source capacity, station flow rate, number of valves per station, and shall incorporate the ability to provide station priorities to determine the order in which stations shall operate. The Flow Smart Module shall accept sensor decoder input from 1 - 5 flow sensors with no flow scaling device required. Controller shall include a FloWatch Learn Flow Utility which learns the normal flow rate of each station and compares the current real-time flow rate to the learned rate and takes user-defined actions if high flow, low flow, or no flow is detected. FloWatch shall automatically determine the location of the flow problem and isolate the problem turning off the affected station(s) or master valve(s). FloWatch shall be compatible with both normally closed and open master valves. A Manual Master Valve Water Window shall be provided to coordinate daytime manual watering with the flow sensing. This Water Window shall offer programmable days of the week and manual watering additional flow rate. The controller shall have features and modular options that include: ET Manager Smart Cartridge, NCC Network Communication Cartridges. ESP-LXIVM, manufactured by Rain Bird Corporation or approved equal.

1. Two-wire Controller Field Devices: Shall be Rainbird IVM-SOL to control station valves, Rainbird IVM-OUT interfaces with non-Rainbird valves, IVM-SEN interfaces with weather sensors and flow sensors, and IVM-SD, which provides surge protection on the two-wire path.

H. **Control Wire**:

1. Connection between the automatic controller and the valve decoders shall be made with polyethylene double-jacketed or UF-B UL PVC double-jacketed two-conductor solid core wire designed for direct burial with insulation 3/16 inch (.060") thick, high density, sunlight resistant incased in an outer jacket of Polyethylene or PVC conforming to ICEA S-GL-402 or NEMA WC5, having a minimum wall thickness of .045 inches. Two-wire Polyethylene 'twisted' cable and single strand 14 gauge PVC coated irrigation wire are not acceptable.

2. 2-WIRE Conductor SIZING**:** Standard wire lengths for straight line installation i.e. wire distance to the furthest device without any loop:

Wire Size(gauge)	#14	#12
Total loop Length	10,000'	14,800'
Distance to furthest valve	5,000'	7,400'

3. All 2-wire conductors shall be installed in a 1-1/4" diameter sch. 80 PVC conduit per details. Distance between pull boxes shall not exceed 200'. See materials specifications above for Valve Boxes for 2-wire cable pull boxes.

4. Low voltage control wire conductors between the 2-wire decoders and the valves shall be U.L. approved direct burial Type U.F., 600 volt, No. 14 AWG solid copper. Use a different color wire for each valve in the manifold grouping.

I. **Wire Connectors**: Control wire connections shall be made with 3-M brand of DBY or DBR Direct Burial Splice kits, or approved equal. The splice kit shall consist of a one-piece malleable plastic bulb body with internal locking fingers, filled with re-enterable gel sealant and a Scotchlok Electrical Spring Connector. Materials shall be as follows:

1. Connector shall be a flame retardant PVC insulator with a steel spring and shell within. Connector shall be a non-crimping system
2. Tube material shall be clear see-through polypropylene.
3. Gel material shall be hixotropic calcium organic complex.
4. Wire sizes and numbers of wires per connector shall be as follows:

Connector:	Color:	No. and Size of Wires:
3M Model DBY	Yellow	Max. 4-12 gage UF wires
3M Model DBR	Red	Max. 3-14 gage UF wires

PART THREE - EXECUTION

3.1 SURFACE CONDITIONS

Examine the area of work and conditions under which work of this Section will be performed. Correct any conditions detrimental to timely and proper completion of the work prior to commencing installation of irrigation equipment.

3.2 IRRIGATION SYSTEM INSTALLATION:

A. General:

1. The Irrigation system layout shown on the Contract Drawings shall be considered as diagrammatic. The Contractor shall make all necessary adjustments to conform to actual field conditions unless otherwise noted or as directed by the Engineer at no additional cost to the City.

2. The CONTRACTOR shall verify that approximate finish grade is in place prior to beginning irrigation trenching or installation. If finish grade is not already achieved, CONTRACTOR shall notify the PROJECT MANAGER immediately. Any irrigation work performed by the CONTRACTOR prior to the establishment of approximate finish grade may require repair or modification at the CONTRACTOR's expense.

3. All piping shown on the Contract Drawings in paved areas but running parallel and adjacent to planted areas, is done for clarity only and is to be installed inside the planting area whenever possible.

4. Specimen trees (24-inch or larger size box) may be planted before installing the irrigation system upon written approval from the Project Manager. Contractor shall re-route irrigation lines conflicting with specimen plant locations to clear the root ball by twenty-four (24) inches minimum at no additional cost to the City. Watering of all specimen trees planted before completion of the irrigation system shall be the Contractor's responsibility.

5. Contractor shall make all required water and utility connections as shown on the Contract Drawings or as required by the utility company. Replace all sidewalks, curbs or paving removed or damaged by the installation of required utilities to the satisfaction of the BCA Inspector.

B. Trench Excavating and Backfilling: Size trenches and other excavations to accommodate the irrigation system components, conduits, pipe bedding material and other required elements indicated on Contract Drawings. Provide a minimum of 4" of side clearance on outside of lateral piping, and 6" of side clearance on outside of mainline piping to assure proper installation and access for inspections.

1. See TREE PROTECTION REQUIREMENTS on Sheet G104 for trenching within the protected root zone of an existing tree.

2. Unless otherwise specified, the minimum depth of cover over pipelines and conduits shall be as follows:

   a. Control wire conduit - 30-inches (36-inches under roadways and parking lots).

   b. Other Control Wiring - Depth of mainline, or a minimum of 24-inches cover if without any mainline.

   c. Irrigation Mainline: 24-inches for piping 2" and smaller; 30-inches for piping 3" and larger.

   d. Lateral lines - 12-inches.

3. Make the bottom of trenches true to grade and free of protruding stones, roots or other matter which would prevent proper bedding of pipe or other facilities.

4. All trench backfill shall be performed in accordance with approved soils report. Pipe bedding shall be clean site soil, free of all rocks, debris, etc. over 1/2" diameter. Bed pipe in at least 4-inches of finely divided material to provide a firm, uniform bearing. Surround the pipe with additional finely divided material to at least 6-inches over the top of the pipe. Bedding shall be placed in 6-inch maximum lifts. Backfill shall be site soil placed above the bedding to finish grade. There shall be no rocks over 2" in greatest dimension or organic matter in the backfill. All bedding and backfill shall be properly moisture conditioned and compacted at each lift. All trenches shall have a minimum relative compaction of 90%. Compaction shall be tested by the City at locations to be determined by the Geotechnical Engineer.

5. Finished trenches shall be flush with adjacent finish grades. The Contractor shall be responsible for maintaining the trenches flush and smooth with adjacent surface grade until final acceptance of the project. After compaction has been approved, trenches in existing turf areas shall be re-planted per "Method A" lawn repair of the Landscape Planting Specifications, unless otherwise noted.

C. **Irrigation Pipeline Installation - General**: Execute trench excavating and backfilling, including the depth of cover over the pipeline, in accordance with requirements above.

1. Pipe layout as shown on irrigation plan is diagrammatic. Contractor shall route piping in planted areas in the most expedient manner consistent with the requirements set forth herein, including avoidance of tree roots.

2. When two or more pipelines are installed in the same trench, separate the pipelines by a minimum horizontal clear distance of 12-inches. Install piping such that each pipe, valve, or other component may be serviced or replaced without disturbing the others.

2. During installation of pipe, fittings, valves, and other components, prevent soil or foreign matter from entering the system. Temporarily cap or plug all open ends at completion of installation operations.

3. All changes in pipe size shall be made with reducer fittings. No close nipples or bushings shall be used.

4. a. Where irrigation piping crosses a vehicular roadway or other paving having a width of less than 25 feet, a Schedule 40 PVC sleeve which is a minimum of two pipe sizes larger than the piping to pass through it, shall be placed under the paving at a depth of 36 inches minimum cover. Where remote control wiring crosses under paving having a width of less than 25 feet, a 3-inch Schedule 40 PVC sleeve shall be placed under the paving at a depth of 30 inches minimum. All sleeves shall extend 3 feet minimum beyond the edges of paving.

b. Where irrigation piping crosses a vehicular roadway or other paving having a width greater than 25 feet, a trench shall be excavated across the roadway or paving to accommodate a Schedule 40 PVC sleeve a minimum of two pipe sizes larger than the piping to pass through it, at a depth of 36 inches minimum cover. Where remote control wiring crosses under paving having a width greater than 25 feet, a 3-inch Schedule 40

PVC sleeve shall be installed at a depth of 30 inches minimum cover. The backfill of the trench shall be a 2-sack cement slurry. The slurry shall extend from the bottom of the trench to within one inch of the bottom of the existing paving. The trench in the existing paving shall be repaired with a like paving material and join the existing paving both horizontally and vertically.

c. All piping and control wire sleeves shall be placed perpendicular to the edge of paving.

5. Pipe or irrigation components of dissimilar metals shall be separated by an approved "Dielectric" coupling.

D. **Steel Pipe**:

1. Square cut and ream pipe ends to full size with a long taper reamer.

2. Cut threads with clean sharp dies.

3. Make joints with a non-toxic, non-hardening joint compound applied to the male threads only.

4. Wrap steel pipe embedded in the ground with seamless 10 mil F.D.S. Safe-T-clad tape. Spiral wrap pipe with uniform laps. Apply the second layer of wrap in the reverse direction of the first layer of wrap.

5. Joints and any remaining unwrapped portion of the pipeline shall be similarly wrapped after pressure testing.

E. **Solvent Welded Plastic Pipeline**:

1. Join plastic pipe with slip type solvent welded fittings, threaded fittings as specified. Install steel pipe first when plastic pipe is joined to steel pipe.

2. Cut pipe square, externally chamfer approximately 10-15 degrees, and remove all burrs and fins.

3. Prior to the application of the P.V.C. solvent cement, prepare all surfaces to be solvent welded with tetrahydrofuran primer tinted purple. Make solvent welded joints in accordance with ASTM D2855 - PRACTICE FOR MAKING - SOLVENT - CEMENTED JOINTS WITH POLY (VINYL CHLORIDE) (PVC) PIPE AND FITTINGS. Use a solvent approved by the pipe manufacturer.

4. Install plastic pipe in accordance with ASTM D2774 - PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PRESSURE PIPING and the requirements herein. Exercise care in assembling a pipeline with solvent welded joints so that stress on previously made joints is avoided. Handling of the pipe following jointing, such as lowering the assembled pipeline into the trench, shall not occur prior to the set times specified by the manufacturer.

5. Apply solvent to pipe ends in such a manner that no material is deposited on the interior surface of the pipe or extruded into the interior of the pipe during jointing. Wipe off excess cement on the exterior of the joint immediately after assembly.

6. Make threaded pipe joints using Teflon tape or other approved jointing material. Do not use solvent with threaded joints. Protect pipe from tool damage during assembly. Use vises with padded jaws and strap wrenches for installation of fittings and nipples. Remove and replace any plastic pipe which has been nicked, scarred, or otherwise damaged.

7. Snake plastic pipe from side to side in the trench to allow 1-foot of expansion and contraction per 100 feet of straight run.

8. Do not expose the pipeline to water for 24 hours after the last solvent welded joint is made.

F. Bell and Spigot Gasketed Pipeline:

1. Join plastic pipe with "push-on" type gasketed fittings with mechanical restraints as detailed and specified.

2. Cut pipe square, externally chamfer approximately 10-15 degrees, and remove all burrs and fins. Remove and replace any plastic pipe which has been nicked, scarred, or otherwise damaged.

3. Align pipe sections straight. Clean all debris from the bell areas of the fitting and install gasket so that it is completely seated in the groove with no raised areas.

4. Apply lubricant to the installed gasket and to beveled end of the cut pipe or to the spigot end of the pipe or fitting. Align the pipe with fitting and push together by hand or with pry bars on the end of the fitting or with two pry bars using the lugs on the fitting. Insert until the reference line mark is even with edge of the fitting bell.

5. Install mechanical restraints per details and manufacturer's instructions.

6. Snake plastic pipe from side to side in the trench to allow 1-foot of expansion and contraction per 1000 feet of straight run.

G. Installation of Valves, Valve Boxes, and Special Equipment:

1. General: Install all valves and other equipment in strict accordance with the details, and make readily accessible for manual operation, maintenance or replacement.

2. Install isolation or gate valves of the same size as the pipeline in which they are installed, unless otherwise indicated.

3. Install all valves below ground housed in a covered valve box with a securable lid that will permit access for field servicing. Boxes shall be set flush with existing grade, including sloped areas, and all soil within 12 inches of the perimeter of the box shall be compacted per the trench repair section of this specification. Boxes are to be positioned per details.

4. Set valve boxes per applicable details and set valves at sufficient depth to provide clearance between the cover and valve handle or key when the valve is in the fully open position. Do not cover valve with pea gravel.

5. Install backflow preventers per applicable details with pipe supports and the accessories necessary to properly secure the assembly where required. Install backflow preventers per prevailing codes. All Backflow devices shall be certified by a licensed inspector as required by the County Health Department Test Instructions, Water Pollution Control Section after installation at the Contractor's expense.

6. No equipment shall be installed closer than 12 inches to any paved surface, unless separated from the paved surface by a wall, fence, curb, or similar barrier, or installed underground.

H. <u>Irrigation Head Installation and Adjustment</u>:

1. General: In accordance with the requirements of Subsection 3.2 of this Section, flush and pressure test all mains and flush lateral lines before installing irrigation heads.

2. Irrigation Head Placement and Spacing:

   a. Irrigation plans are designed, as a minimum standard, for head-to-head coverage on all spray heads. Head locations shall be determined by referencing the irrigation plan and using the head spacing listed in the irrigation head legend. Accuracy of final installation shall be within plus or minus 12 inches for all rotary heads having a throw of 30 feet or greater; within plus or minus 4 inches for all head types with a throw of under 30 feet. Do not exceed the maximum irrigation head spacing shown on the Contract Drawings.

   b. Prior to head installation, Contractor shall mark the proposed locations of all irrigation heads in the field for review and approval by the Engineer. Contractor shall make any adjustments to head locations requested by the Engineer at that time at no additional expense to the City. Contractor shall provide minimum 48 hours notice prior to the requested time of inspection.

3. Head Installation:

   a. Do not exceed the maximum irrigation head spacing shown on the Contract Drawings.

   b. Install all irrigation heads <u>3-inches</u> clear of adjacent walks, curbs, paving, headers, and similar improvements. Adjust all heads to flush with the final finish grade - adjusting for depth of sod in turf areas if needed.

   c. All soil within 12 inches of the perimeter of the head shall be compacted as indicated in applicable details.

   d. All irrigation heads shall be installed on swing joint assemblies as shown on details.

4. Irrigation Head Adjustment:

   a. When all irrigation heads are installed and the irrigation system is operating, adjust and balance each section or unit with all section control valves fully open to obtain uniform 100% head to head coverage.

b. Adjust irrigation heads having adjustable pin nozzles, screws or orifices to provide optimum distribution of water over the coverage pattern. Without additional cost to the City, Contractor shall substitute larger or smaller nozzles in irrigation heads and/or add or omit sprinkler heads as necessary to obtain uniform coverage to meet MWELO requirements. Any requested modification shall not alter the total GPM to a degree to require a major revision of pipe sizing.

c. At no time is the irrigation system to cause excessive overspray on adjacent paved areas, or cause any erosion to the site.

d. Low Head Drainage: The Contractor shall install in-line drainage swing check valves where necessary to prevent low head drainage or as indicated on contract drawings.

I. <u>Automatic Control System Installation</u>:

1. General: Install a complete automatic irrigation 2-wire control system, including the automatic controller, automatic control valves, decoders and wiring, and all necessary accessories and utility service connections.

2. Install the automatic controller outside of the coverage pattern of the irrigation system at the location designated on the Contract Drawings. Verify location with City Engineer prior to installation.

3. Install a separate disconnect switch between the source of power and the controller inside the controller enclosure per details. Provide grounding per details and manufacturer's instructions.

4. Install all electrical service wiring per Electrical Code in galvanized steel electrical conduit from the service point to the controller. The minimum service wire shall be No. 12 AWG copper 600 volt, Type THW or THWN or larger, as required by the controller manufacturer. Locate splices only in specified pull boxes and make splices with a water-proof packaged kit approved for underground use. Set pull boxes to finish grade on a 12-inch deep layer of one (1) inch crushed rock.

5. All 2-wire control wire shall be installed in 1-1/4" SCH 80 PVC conduit per details, with a maximum run of 200' between pull boxes. Install conduit in the same trench as irrigation mainline per trenching detail where possible. Low voltage control wire conductors between the 2-wire decoders and the valves shall be installed in 1/2" SCH 80 PVC conduit per details.

6. Wire connectors shall be DBY or DBR as manufactured by 3M Corp. Control wires shall be stripped of 1/2 inch of insulation USING A WIRE-STRIPPING TOOL SPECIFICALLY MADE FOR THAT PURPOSE, inserted into the electrical spring connector, and the connector twisted in a clockwise direction until the wires are tight. Insert the completed splice into the gel-filled tube, and check visually to confirm that the wire nut has been pushed past the fingers and is seated in the bottom of the tube. Position wires in wire channels and close insulator cover. Make splices in control wire in accordance with the requirements for service wire. Leave at least 2-feet of coiled slack at each splice and point of connection inside of valve boxes.

7. Testing Electrical Components: Field tests shall be performed by the Contractor on all irrigation system conductors in accordance with the requirements specified herein prior to performing the functional tests. Where conductors are installed by trenching and backfilling, such tests shall be performed after at least six (6) inches of backfill material has been placed over the conductors and backfill material has been compacted.

   a. Prior to the start of the functional testing, the Contractor shall perform the following tests on all irrigation system electrical conductors in the presence of the BCA Inspector:

      1. Each circuit shall be tested for continuity and open circuits.

      2. Each circuit shall be tested for grounds.

      3. An insulation resistance test at 500-volts DC shall be made on each circuit between the circuit and the ground. The insulation resistance shall not be less than 10-megohms on all circuits.

   b. The functional test for all the electric automatic irrigation system(s) shall consists of a minimum of fifteen (15) working days of operation during which time the controller shall complete at least three (3) complete cycles automatically for each station. The lengths and frequencies of the cycles will be determined by the City's representative. If unsatisfactory performance of the system develops, the condition shall be corrected and the test repeated until fifteen (15) working days of continuous, satisfactory operation is obtained.

   c. The functional test shall be satisfactorily completed prior to the start of the plant establishment period.

   d. Repair to the irrigation system wiring shall be made within five (5) working days of a malfunction or damage to any portion of the system.

8. Contractor shall leave the control system in operating condition with an operational chart mounted within the controller cabinet upon completion of the work.

3.3 FLUSHING AND TESTING

A. After completion, and prior to the installation of any terminal fittings, thoroughly flush the entire pipeline system to remove dirt, scale, or other material. After flushing, conduct the following tests in the sequence listed below. Provide all equipment, materials, and labor necessary to perform the tests. Conduct all tests in the presence of the City Inspector.

1. The irrigation system mainlines shall be pressure tested for 24 hours at 125 p.s.i. with all control valves in place and closed. During the test, the Contractor shall provide pressure gauges downstream from the backflow device and upstream from the farthest remote control valve in the system. Air pressure testing of the irrigation system is acceptable if approved by the BCA inspector. Placement of control wires shall be verified before mainline trenches are backfilled after pressure test.

2. After installation, the irrigation lateral lines shall be thoroughly flushed in the presence

of the BCA inspector. Each valve and lateral system shall be flushed commencing with the head closest to the valve and proceeding to the farthest head.

3. Irrigation Coverage Test: After installation of heads and lateral lines etc., entire irrigation system shall be tested for coverage. The BCA Inspector, Project Manager, Contractor and Recreation and Parks Regional maintenance staff shall be notified three (3) days before the scheduled test. Perform the coverage test for each zone after irrigation heads have been installed and demonstrated that each section or unit in the irrigation system is balanced to provide uniform and adequate coverage of the areas serviced. Correct deficiencies in the system in accordance with the requirements of Subsection 3.2(G)4.

3. Operational Test: Evaluate the performance of all components of the automatic control system for manual and automatic operation. During the maintenance period, and at least 15 days prior to final inspection, set the controller on automatic operation so that the system will operate satisfactorily during such period. Make all necessary repairs, replacements, and adjustments until all equipment, electrical work, controls, and instrumentation are functioning in accordance with the Contract Documents.

3.4 OPERATING MANUALS AND EQUIPMENT

A. Furnish the City with 2 bound copies of operating and maintenance manuals for all irrigation system equipment such as automatic controller, valves, heads, etc.

B. Explain in detail all irrigation equipment operations, watering schedule and maintenance procedures to the City personnel as directed by the Project Manager before completion of the project.

C. Provide the City with a reduced legible copy of the "As-Installed" Irrigation Plan hermetically sealed in a plastic cover to be affixed inside the controller cover.

3.5 RECORD DRAWINGS

Irrigation record drawings shall include the following: Dimension the following locations from two permanent points of reference (building corners, sidewalks, road intersections, etc.):

a. Connection to existing water lines
b. Connection to existing electrical power
c. Gate valves
d. Mainline routing and/or directional turns (dimension maximum 100 feet along routing).
e. Remote control valves
f. Air and pressure relief valves
g. Master valves/flow sensors
h. Control wire routing
i. Quick coupling valves
j. Lightning protection (rod, plate, etc.)
k. Pull boxes
l. Irrigation controllers
m. Backflow prevention units

END OF SECTION 32 80 00

SECTION 32 90 00

LANDSCAPE PLANTING

PART ONE - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. All labor, materials, equipment, and tools necessary to provide and execute: soil preparation and amendments; planting of new trees, plants, shrubs, vines, and ground cover and sod; all required testing and inspections; maintenance and establishment of new landscape plantings as indicated on the Contract Drawings, specified herein and as needed for complete and proper installation and maintenance.

1.2 SUBMITTALS

A. The CONTRACTOR shall make all required materials submittals in accordance with the General Requirements.

B. The CONTRACTOR shall make substitution submittals in accordance with the General Requirements.

Submit copies of the following:

1. Complete list of landscape plant materials soil amendments, fertilizers and miscellaneous hardware complete with descriptions and/or photographs and manufacturer's literature. Clearly mark or underline proposed items.

1.3 QUALITY ASSURANCE

A. Codes and Regulations: CONTRACTOR to obtain and pay for all required permits. Deliver all permits and submit certifications of compliance to the CITY ENGINEER.

1.4 GENERAL REQUIREMENTS

A. Required Approvals by the ENGINEER: No work included in this Section shall be commenced until the following are completed and approved:

1. Any required agricultural suitability and fertility analysis or testing and weed/pest control prior to placing topsoil or soil amendments.

2. All work on irrigation system prior to start of landscape planting work.

3. All reviews on required submittals and re-submittals requested by the ENGINEER for materials included in this section.

B. Inspection: All work and materials are subject to inspection and approval by the Bureau of Contract

Administration (BCA) Inspector and the PROJECT MANAGER. Any work done without proper inspection will be subject to rejection per Section 2-11 of the Standard Specifications for Public Works Construction. The CONTRACTOR shall notify the Bureau of Contract Administration (BCA) Inspector and PROJECT MANAGER three (3) days prior to requested inspection of the following for approvals:

1. For all finish grades in planting areas following all weed/pest control, soil fertilizing and conditioning, prior to landscape container planting, and after rolling in turf areas.

2. Inspection of all plant materials under 24" box size shall be at the time of delivery to the job site. This inspection will be for compliance with the caliper, height and spread requirements if given on the plant legend and for the general health, structure and appearance of plants. The CONTRACTOR shall also stake all tree planting locations at this time for review and approval by the ENGINEER.

3. Tagging of 24" box or larger trees at the grower with City approved tags. This inspection will be for compliance with the caliper, height and spread requirements if given on the plant legend and general health, structure and appearance of plants. All trees shall be tagged by the ENGINEER or authorized representative.

4. All completed landscape planting and irrigation work for approval to begin the plant maintenance and plant establishment period.

C. Existing Plant Materials: Protect all existing plant materials, not designated for removal or modification, in place against damage resulting from work of this Contract. Perform any removal and/or trimming only on approval or instructions from the CITY ENGINEER or in accordance with applicable provisions noted or specified on the Contract Drawings. CONTRACTOR shall replace all damaged existing plant material with like type and size material. If an acceptable replacement is not available, CONTRACTOR shall pay damages to the CITY for the value of the damaged tree as assessed by the tree value formula in the ISA Guide for Establishing Value of Trees and Other Plants.

D. Tree Protection Requirements: See sheet L-020.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Delivery of plant material shall begin only when it is ready for plant installation and after the inspections are made and any required soil samples and tests have been reviewed by the PROJECT MANAGER. All materials furnished for the work shall be not less than the approved submittal. Upon delivery, CONTRACTOR shall tag one plant of each variety for identifying purposes.

2. Notify the ENGINEER of a scheduled delivery a minimum of 48 hours in advance so the plant materials may be inspected upon arrival at the jobsite. All plant material judged by the ENGINEER at the time of delivery as unacceptable shall be removed immediately from the jobsite by the CONTRACTOR. All trees not accompanied with the tags signed placed the ENGINEER or the authorized representative**,** or plants not correspondent with contract requirements shall be rejected and immediately removed from the job site.

3. Protect plants during delivery against damage to root balls or desiccation of leaves. Protect trees during transport by tying in the branches and covering all exposed branches.

4. Deliver fertilizer to the jobsite in the original and unopened containers bearing manufacturer's guarantee chemical analysis, name, trademark or trade name in conformance with Federal and Local law. In lieu of containers, fertilizer may be furnished in bulk and a certificate indicating the above information shall accompany each delivery.

B. Storage:

1. Store plants, trees, etc. at the jobsite where directed by the PROJECT MANAGER.

2. Keep fertilizer in dry storage away from contaminants. Loose fertilizers and soil amendments shall be kept covered with a tarp.

3. Store plants not installed on the day of arrival at the jobsite as follows:

a. Outside storage to be protected from wind.

b. Keep plants in containers in a moist condition until planted by watering with fine mist spray.

C. Handling: Transport and handle plants with care to ensure protection against injury.

PART TWO - PRODUCTS

2.1 MATERIALS

A. Topsoil: The type and thickness of topsoil shall be as shown on the plans. If not shown, the topsoil shall be the existing class "C" on-site topsoil and amended as indicated.

B. Fertilizers and Conditioning Materials: Comply with the applicable requirements of the State Agricultural Code. All fertilizing materials shall be packaged, first grade, commercial quality products identified by source, type of material, weight and manufacturer's guaranteed analysis. Fertilizing material shall not contain toxic ingredients or fillers in quantities harmful to human, animal, or plant life.

1. Agricultural Gypsum: Hydrated calcium sulfate product containing 23 percent calcium and 18 percent sulfur with a guaranteed analysis of 84 percent calcium sulfate.

2. General Purpose Fertilizer: Shall be Gro-Power Plus fertilizer, having a minimum analysis of 5-3-1 (N-P-K) derived from ammonium phosphate, urea, sulfate of potash, compost and sulfides and oxides of iron, manganese and zinc, with 1.00% Alkyl Naphthalene Sodium Sulfonate soil penetrant as manufactured by Gro-Power Inc., 5065 Telephone Avenue, Chino, CA 91710 (909) 393-3744, or an approved equal. https://www.gropower.com

3. Fertilizer Tablets**:** Fertilizer tablets shall be Tri-C Myco Tabs planting tablets, 1.7 gram 17-9-5 (N-P-K) as manufactured by TRi-C Organics Inc., (800) 590-3301, or an approved equal. https://www.tricorganics.com

4. Granular Humic Acid Soil Conditioner: Shall be LIVE EARTH HUMATE SOIL CONDITIONER [PLUS GYPSUM] or Tri-C Humate [Tri-C Humate Plus with Gypsum] or approved equal. Contact Todd Burns, Live Earth Products, Inc. (661) 978-7307 for availability, or TRi-C Organics Inc., (800) 590-3301 https://www.tricorganics.com, or an approved equal. Apply per manufacturer's instructions.

5. Soil Penetrant**:** Shall be "Ground Breaker" by Green As it Gets, Inc. or approved equal. Soil penetrant shall contain organic yucca and kelp extracts. Soil penetrant MAY NOT contain alcohol. Apply soil penetrant per manufacturer's instructions. Contact: Green As It Gets Inc., 300 Morning Drive, Bakersfield, CA 93306 Phone: 1-800-476-0034. https://www.greenasitgets.com

6. Organic Soil Amendment**:** "Type 1" organic soil amendment shall be a relatively dry and friable fine-textured organic composite that is well-composted and nitrogen stabilized, derived from composted greenwaste or processed wood products, and free of foreign matter including animal waste and any viable plant, tree or weed seed. 99% of material shall pass through a 1/2" screen. CONTRACTOR shall submit a sample of the organic soil amendment to the PROJECT MANAGER for approval prior to installation.

   All Organic Soil Amendment shall conform with the following criteria:

   a. The pH of the material shall be between 6 to 7.5.

   b. Salinity: material shall have a maximum saturation extract conductivity of 2.50 millisiemens per centimeter.

   c. Boron content of the saturated extract shall be less than 1.0 parts per million.

   d. Sludge-based or animal waste materials are not allowed.

   e. Carbon:Nitrogen ratio is less than 25:1.

   f. All compost shall be aerobic without malodorous presence of decomposition products.

   g. Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

Arsenic	20	Copper	150	Selenium	50
Cadmium	15	Lead	200	Silver	10
Chromium	300	Mercury	10	Vanadium	50
Cobalt	50	Molybdenum	60	Zinc	300
Nickel	100				

7. Top Dress Mulch**:** Shall be well-seasoned composted tree chip mulch, free all foreign matter including weed and tree seeds. Mulch chip size shall be minimum one (1) inch in diameter and not more than four (4) inches in diameter. Submit a sample of mulch and source to the PROJECT MANAGER for approval prior to application.

C. Plant Materials:

1. Availability & substitutions: No substitutions of plant species, type, cultivar, size etc. will be accepted without prior approval of PROJECT MANAGER. CONTRACTOR is expected to utilize all reasonable nursery resources in the Southern California region before determining if a specified material is unavailable. When plants of a specified kind or size are determined by PROJECT MANAGER to be not available, substitution may be made upon approval by the ENGINEER, in accordance with the General Conditions. CONTRACTOR shall provide information regarding his attempts to locate such material.

2. All Plants: The plant names shown or listed on the Contract Drawings shall conform to the "Sunset Western Garden Book," latest edition unless otherwise specified. In all cases, botanical names take precedence over common names. One plant of each variety shall be tagged for identifying purposes.

3. Quality: All plants shall have a growth habit normal to the species in accordance with U.S.A. Standards for Nursery Stocks, latest editions; shall be sound, healthy, vigorous and free from insect pests, plant disease, sun scalds, weeds, fresh bark abrasions, excessive abrasions or other objectionable disfigurements. Tree trunks shall have normal well-developed branch systems. All plant materials shall have vigorous and fibrous root system, not root bound and shall be free of kinked or girdling roots. The CONTRACTOR shall be responsible for the condition of all plants, planted or otherwise, until final acceptance by the CITY and termination of maintenance period

4. Sod: Shall be of the type designated on the planting plan, or an approved equal. Sod shall be delivered to the job site within 24 hours of being cut at the nursery, and COMPLETELY installed within 12 hours of delivery to the job site. The sod shall be machine cut to between 3/8" and 5/8" thick, not including top growth or thatch.

5. All plants shall be inspected and approved prior to planting as per provisions of Subsection 1.4(B) specified above

D. Tree Stakes:

1. Wood tree stakes 2-inches in diameter by 10 feet long, lodgepole grade, pressure-treated, capable of standing in the ground at least two years.

   a. All trees in non-turf areas as indicated on the Contract Drawings shall be ***double staked*** per detail.

   b. All trees in turf areas as indicated on the Contract Drawings shall be ***triple staked*** per detail.

E. Slope Stabilization and Erosion Control Material: Jute Mesh material shall be light weight, brown color, fire retardant, open weave construction and shall have a minimum 4-year longevity. Material shall handle maximum water flow of 8 feet per second.

PART THREE - EXECUTION

3.1 GENERAL

A. The Landscape work shall not be performed at any time when it may be subject to damage by climatic conditions.

B. Planting and soil preparation work shall not begin in until irrigation installation is complete, and coverage and approximate finish grade has been approved by the ENGINEER in the area of work.

C. The CONTRACTOR shall verify all dimensions shown on the Contract Documents and at the site.

D. In case of conflict between the plant schedule totals and total plant count of the contract documents, the CONTRACTOR shall provide the higher number of plants.

E. Delivery of material shall begin only when it is ready for the work and after the inspections are made and the required samples and tests have been reviewed by the ENGINEER. All materials furnished for the work shall be not less than the reviewed sample.

F. The CONTRACTOR shall provide temporary fencing, barricades, covering, or other protection to preserve existing landscaping items indicated to remain and to protect the adjacent properties and other structures from damages by the landscape and other contract work.

G. The CONTRACTOR shall abide by the Tree Preservation Guidelines, Section 1.4.D herein for all trees indicated to remain.

H. The CONTRACTOR shall remove and/or relocate landscape items such as trees, shrubs, grass, other vegetation, improvements, and obstructions as shown on Drawings or specified otherwise. All plant material to be removed shall be disposed of off the site in a legal and proper manner.

3.2 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until detrimental conditions are corrected.

3.3 GRADING AND SITE PREPARATION:

A. Rough Grading:

1. Earthwork and Topsoil Placement: Shall include excavation and backfilling for the irrigation system and the preparation for the spreading, densification, cultivation and raking of topsoil, including fertilization and conditioning.

B. Topsoil Preparation and Amendment:

1. After completion of ***all necessary trenching and backfill*** for electrical, irrigation, or drainage piping and conduit, bring planting areas to approximate finish grade, including construction of landscape mounds, before performing soil amendment. CONTRACTOR shall account for the amount of fertilizer and soil amendments to determine the appropriate grade.

2. Turf Areas**:** For all TURF planting areas ***outside of tree protection zones,*** Class "C" on-site ("native") topsoil shall be scarified and cultivated to a uniform, finely divided condition to a depth of 12 inches. Soil shall not be worked when it is so wet as to cause excessive compaction to cause the formation of large clods; or so dry as to create excessive dust. All soil amendments

shall then be broadcast evenly at the rate as specified below (or per the recommendations of the approved agricultural suitability and fertility analysis if directed by the PROJECT MANAGER)**,** and then thoroughly and uniformly incorporated to the depth of 12 inches**.** Prior to planting, the top 3 inches of all planting areas (including slopes) shall be free of weeds, stones and other deleterious matter 1-inch diameter and larger.

a. All turf planting areas shall receive the following soil amendments per 1,000 square feet:

4 cubic yards, Type I organic soil amendment
15 lbs. Agricultural Gypsum
50 lbs. Gro-Power Plus fertilizer

b. Topsoil shall be restored to a smooth finish grade after amendment process is complete and irrigated thoroughly to activate amendments and fertilizers.

3. Non-Turf Area Bulk Amendment**:** For all continuous areas designated on plans for tree, shrub and groundcover planting areas ***outside of tree protection zones***, the Class "C" on-site ("native") topsoil shall be scarified to a depth of 1 inch, taking care not to damage surface roots.

a. After scarification, apply “GROUND BREAKER” soil penetrant to all planting areas at a rate of 1 gallon per 1,000 square feet per manufacturer’s instructions.

b. 12 hours minimum after applying soil penetrant, all planting areas shall receive the following soil amendment per 1,000 square feet:
   - 50 lb. GRANULAR HUMIC ACID SOIL CONDITIONER

c. Soil amendment shall be evenly broadcast on the surface and uniformly cultivated into the top 6” of the soil and ***thoroughly irrigated*****.** Soil shall not be worked when it is so wet as to cause excessive compaction or to cause the formation of large clods; or so dry as to create excessive dust. Prior to planting, the top 3 inches of soil (including slopes) shall be free of weeds, stones and other deleterious matter 1-inch diameter and larger.

4. For all planting areas ***inside of tree protection zones***, the Class "C" on-site ("native") topsoil shall be scarified to a depth of 1 inch, taking care not to damage surface roots.

a. After scarification, apply “GROUND BREAKER” soil penetrant to all planting areas at a rate of 1 gallon per 1,000 square feet per manufacturer’s instructions.

b. 12 hours minimum after applying soil penetrant, all planting areas shall receive the following soil amendment per 1,000 square feet:
   - 20 lb. GRANULAR HUMIC ACID SOIL CONDITIONER

c. Soil amendment shall be evenly broadcast on the surface and uniformly cultivated into the top 1” of the soil and ***thoroughly irrigated*****.** Soil shall not be worked when it is so wet as to cause excessive compaction or to cause the formation of large clods; or so dry as to create excessive dust. Prior to planting, the top 3 inches of soil (including slopes) shall be free of weeds, stones and other deleterious matter 1-inch diameter and larger.

5. For individual tree and shrub planting outside of designated bulk soil amendment areas, backfill shall be 100% Class "C" on-site ("native") topsoil uniformly amended with GRANULAR HUMIC ACID SOIL CONDITIONER at the rate specified below:

15 gallon: 1/2 cup (US) per plant
24" box: 2 cups (US) per plant
36" box: 6 cups (US) per plant
48" box: 10 cups (US) per plant

6. Incorporation of all soil amendments shall be performed in the presence of the BCA Inspector, and at that time CONTRACTOR shall furnish the BCA Inspector with delivery tickets to verify the source, kind and quantities delivered and applied. Furnish PROJECT MANAGER duplicate copies of the material invoices as required in Subsection 1.2 (C).

C. Finish Grading:

1. Make finish grade smooth, uniform and free of abrupt grade changes and depressions to insure proper surface drainage.

2. Finish grade below adjacent paving, curbs or headers shall be 1.5 inches in shrub or ground cover areas and 3/4 inch in sodded lawn areas.

3. Water soil after spreading of fertilizer and/or soil conditioning materials and allow it to settle to provide a stable surface. After the soil has dried out to a workable condition, regrade, rake and smooth to the required grades and contours, eliminating any erosion scars. Finished surfaces shall be clean and suitable for planting.

4. Finish grading shall insure proper drainage of site. Surface drainage shall be away from all building foundations at a minimum of 2% or in accordance grades shown on Contract Drawings.

5. Turf Areas**:** Finish grading of turf areas shall take place after the soil has dried out to a workable condition following the soil preparation operations. The soil shall be remodeled and smoothed to the required grades and contours, then rolled in two directions at right angles with a water ballast roller weighing 200 to 300 pounds maximum. Any resulting irregularities in the grade after the initial rolling shall be re-raked, cut or filled, then re-rolled until the grade is free from irregularities. No trucks, tractors or other heavy objects shall be taken over the areas at any time. The final finish grade shall be smooth, uniform, without abrupt changes in grade, within one-tenth of a foot of the grades shown on the plan. No turf areas shall exceed 5:1 slope. Final grade must be approved by the CITY ENGINEER or BCA Inspector prior to seeding or sodding. (801-2.3).

3.4 WEED ABATEMENT

A. Weed Suppression (Non-Herbicide Weed Removal): shall apply to all turf and planting areas. The suppression operation shall be commenced only after removals, grading, hardscape construction, installation of irrigation system, soil preparation, and fine grading of turf and planting areas have been completed. The CONTRACTOR shall thoroughly water all turf and planting areas for a minimum period of two weeks prior to commencing removal. CONTRACTOR shall completely remove from the site all unwanted vegetation and weeds including underground roots and stolons by hand or mechanical means. All removed vegetation shall be properly disposed of off-site. Watering and removal process shall be repeated again 2 weeks after completion of initial removal. CONTRACTOR shall maintain the entire work area weed-free on a weekly basis from completion of weed removal process until Final Acceptance.

3.5 PLANTING

B. **General:** All plant materials, including plants previously approved at the nursery, shall be inspected by the ENGINEER prior to planting. The CONTRACTOR shall be responsible for the condition of all plants, planted or otherwise, until final acceptance by the CITY and termination of maintenance and establishment period. CONTRACTOR shall be obligated to honor all requirements of warranty as indicated herein.

1. Perform planting with materials and equipment according to procedures favorable to the optimum growth of the plant. Do not plant during high wind conditions.

2. Except as noted for specimen planting, do not start planting operations until the completion of weed suppression and completion and acceptance of the irrigation system coverage and approximate finish grade is achieved.

3. In cases where dripline tubing irrigation is specified, planting may occur prior to placement of dripline with approval of the PROJECT MANAGER. In such cases, extensive hand watering of the planting area should occur prior to planting – do not plant in dry soil.

4. Large boxed trees may be planted prior to hardscape installation or irrigation completion to facilitate construction and avoid damage to completed work with written approval from the PROJECT MANAGER. CONTRACTOR shall re-route irrigation lines in conflict with boxed tree locations to clear the root ball by 24" minimum at no additional cost to CITY.

C. Protection and Storage:

1. Keep all plant materials delivered to the jobsite in a healthy condition for planting. Do not crowd containers together in a manner that adversely affects plant foliage or growing conditions.

2. Do not allow plants to dry out or suffer physical damage from other construction activities. Protect from heavy winds.

D. Layout and Plant Locations:

1. Plant locations indicated on the Contract Drawings are approximate.

2. CONTRACTOR shall lay out each plant in its intended planting location as shown on the plan while the plant is still in the container and obtain approval of the layout from the ENGINEER ***prior to installation***.

3. Prior to planting, the CONTRACTOR may be directed to alter the layout of plants by direction of the ENGINEER, without additional compensation to the CONTRACTOR.

4. For "on center" plant spacing, locate the first row of plants in areas designated at one-half the specified spacing from the edge. Do not stretch the maximum specified spacing for each species as shown on the plans.

E. Container Plants Backfill Mix:

1. Unless specified otherwise or recommended by the approved agricultural suitability and fertility analysis and approved by the PROJECT MANAGER, container plants shall be backfilled with 100% amended site soil.

    a. Each plant pit shall also receive Tri-C Myco Tabs 1.7 gram 17-9-5 (N-P-K) planting tablets as shown in the relevant planting details, and as follows:

Container Size	
1 gallon	= 2 tablet
5 gallon	= 8 tablets
15 gallon	= 10 tablets
Boxed Trees	= 10 tablets per inch of trunk diameter, with a minimum of 20 tablets per tree.

    b. Some plant species may be designated not to receive any planting tablets. Refer to legend on Planting Plan.

F. Tree and Shrub Planting:

1. Prior to planting, irrigation system installation and soil amendment shall be completed and approved. Soil shall be thoroughly irrigated beforehand, and suitably moist for planting. ***Do not plant in dry soil***.

2. Make planting holes approximately square with vertical sides ***no greater than the depth of the plant container*** (or such depth as needed so that the root crown has the correct relationship to adjacent finished grade per the planting details) and approximately twice the width of the plant container or rootball and larger if necessary to permit handling and planting without injury to the root system. Lightly scarify native soil at the bottom of planting holes.

3. Do not plant plants with a broken or cracked rootball. Such plants shall be considered defective and rejected. Rejected plants shall be removed promptly from the job site.

4. Open and remove plant containers in such a manner that the plant roots are not injured. Do not pull plants out of the pot by the stalk.

5. Scarify native soil at the bottom of planting holes.

6. If soil is not adequately moist, apply water to planting hole and allow to drain. Set the plant approximately in the center of the planting hole and add backfill under rootball if needed to adjust the root crown to correct grade.

7. Backfill the balance of the planting hole with moist, amended site soil; firming the backfill by hand or with tools to assure all air pockets have been removed, and settlement will be minimized. After planting, all plants shall be plumb with the root crown at its natural depth with respect to finish grade.

8. Prune or remove any broken or damaged minor limbs. Any major damage to plant material shall be brought to the attention the ENGINEER for evaluation. Trees or shrubs with major broken limbs shall be considered defective and rejected. Rejected plants shall be removed promptly from the job site.

9. For any trees installed prior to completion of irrigation system: form a circular watering basin 6-inches high and slightly larger than the planting hole to accommodate temporary hand watering. Make the bottom of the basin level with surrounding finish grade. Watering basin berms shall be removed during fine grading process and before application of top-dress mulch.

10. Tree Edging: Where trees are planted in lawn area, a minimum 4-foot diameter circle around each tree shall be maintained free of lawn area to avoid the growth-reducing effects of lawn area on trees. Mulch shall be placed in the circle. This circle shall be kept clear of lawn area by the CONTRACTOR for the duration of the maintenance period.

11. Install vines per planting detail. Remove nursery stakes and affix all branches to walls or fences per notes and details on Contract Drawings.

G. Turf Planting: Soil amendment, irrigation installation, weed abatement, and fine grading shall be completed and approved before seeding or sod installation.

1. **Sod Planting**: The type of sod and the area to be sodded shall be in accordance with the Contract Drawings. Sod shall be machine cut to between 3/8" and 5/8" thick, not including top growth or thatch.

a. Site shall be fine graded to the specified thickness of the sod below finish grades. Soil conditioning and fine grading shall be completed before sodding. No heavy equipment shall operate over the site after grading is completed.

b. The site shall be moist but not wet when sod is laid. Sod shall be laid with closely fitted joints, and the ends of the strips shall be staggered forming a running bond pattern. Openings shall be plugged with sod or topsoil. Within 2 hours after installing sod and before rolling, the sod shall be lightly irrigated. All seams and joints shall then be rolled with a 200-300 lb. water ballast roller until the sod is well bonded to the soil below.

c. The sodded areas shall then be watered thoroughly to penetrate the subsoil at least 8 inches. Watering shall be repeated as necessary to keep the sod moist until rooted into the subgrade. Sodded areas shall be protected against all traffic until the sod is well established.

2. Turf Repair: All trenches shall be fully compacted, and the grade brought flush with the adjacent undisturbed finish grade. This repair shall include areas of irrigation or other piping trenches, conduit trenches or where vehicles or equipment has damaged the existing turf. Turf repair shall be accomplished using sod shall be carefully cut, removed, and reused to re-sod trenches after backfilling and compaction. CONTRACTOR shall use seed/sod to match existing turf type in areas being repaired unless directed otherwise by the ENGINEER.

3.6 TREE STAKING AND GUYING

A. Tree Staking: See planting legend for what type of staking shall be used for each tree type, if any shall be used. Stake trees with 2" diameter x 10' long lodgepole pine stakes as indicated on the Drawings and details.

1. After planting, all trees shall be re-staked promptly per details.

2. Remove any existing nursery stakes first before installing new lodgepole stakes.

3. All trees in turf areas shall be triple staked unless noted otherwise. Stakes shall be placed in a circular pattern around tree, evenly spaced 1/3 circle apart.

4. All trees in non-turf areas shall be double staked, unless noted otherwise. Align stakes with the direction of strongest seasonal winds.

5. DO NOT drive stakes into the rootball of any newly planted trees.

B. Guying: Guy any boxed trees indicated on planting legend. Install guying immediately after planting per detail.

3.7 MAINTENANCE AND PLANT ESTABLISHMENT

A. General Maintenance: Maintain all areas Inside of work on a continuous basis as they are completed ***during the progress of the work and during the plant establishment period***.

1. CONTRACTOR shall maintain the entire area of work until final acceptance of the Contract by the CITY. Maintenance activities shall include continuous operations of picking up trash, watering, weeding (including all broadleaf weeds in lawn areas), mowing, rolling, edging, fertilization, spraying & pest control of insects and rodents, reseeding & plant replacement (irrespective of cause), or any other operations necessary to provide normal healthy plant growth.

2. Any malfunctions of, or damage to the irrigation system due to workmanship or materials or as caused by the CONTRACTOR in the execution of his work shall be repaired by the CONTRACTOR within 24 hours at his own expense. The CONTRACTOR is responsible for keeping all plant material sufficiently watered during any irrigation failures.

B. Plant Establishment Period:

1. The Plant Establishment Period shall be for a minimum period of **90** days unless extended as described in this section. The Plant Establishment Period shall be started when all planting and irrigation related work has been completed in accordance with the contract documents and approved by the PROJECT MANAGER. CONTRACTOR shall request a review of completed work by the PROJECT MANAGER at the appropriate time to determine if the Plant Establishment period may begin. A field notification will be issued to the CONTRACTOR to establish the effective beginning date of the plant establishment period.

2. The designated plant establishment period is part of the total contract time. The plant establishment period will be extended at fourteen (14) day intervals if, at the end of the plant establishment period, the planting, irrigation and other improvements do not reflect the intent of the plans and specifications. All extensions of the plant establishment period shall be subject to the assessment of liquidated damages, (801-6).

3. All lawns shall be of the grass seed or sod specified and shall be free from all broadleaf weeds. The lawn shall not be allowed to grow higher than three (3) inches and shall be mowed to a 1½" - 2" inch height. The lawn shall be mowed at least weekly during the Plant Establishment Period. All lawn areas shall have 95 percent coverage with bare areas not exceeding three square inches at the end of the Plant Establishment Period. **60 days** after commencement of Plant Establishment Period, CONTRACTOR shall apply a slow release 38-0-0 granular fertilizer at a rate of 15 pounds per 1000 sq. ft. to all lawn areas and irrigate immediately afterwards. The fertilizer shall be applied in the presence of the BCA Inspector.

4. All trees and shrubs shall be healthy and vigorous in appearance throughout the duration of the Plant Establishment Period. Upon notice from the PROJECT MANAGER, the CONTRACTOR shall replace within seven (7) days of such notice at his own expense, any and all plant materials and/or sod which, for any reason dies or is damaged while under the CONTRACTORS care, or does not meet or exceed the quality of appearance and growth condition at the time of planting. Replacement shall be made with the same plant species and varieties as indicated or specified for the original planting. All replacement plants are subject to the same inspection requirements set forth in these specification for the original plant installation.

5. During the plant establishment period, all damage caused by erosion shall be repaired by the CONTRACTOR at his own expense within three (3) working days.

6. Broken or vandalized tree stakes shall be repaired or replaced by the CONTRACTOR at his own expense within seven (7) days.

7. During the plant establishment period, the irrigation system shall be operated in the automatic mode, unless otherwise permitted by the ENGINEER. No hand watering or manual station operations should be performed without notifying the ENGINEER. CONTRACTOR shall be responsible for setting an appropriate watering schedule for all irrigation zones, such as to provide adequate watering for each plant type, but not so much as to create any wasteful or unhealthful growing conditions. CONTRACTOR shall be responsible for modifying the watering schedule as needed to accommodate changing weather conditions.

C. Final Inspection/Final Acceptance:

1. Upon completion of the plant establishment period, a final inspection for acceptance will be performed by the BCA Inspector and ENGINEER or authorized representative. The CONTRACTOR shall request for inspection at least three (3) working days prior to the anticipated date. For this inspection, the site must be thoroughly cleared of all debris and excess material removed. If work fails to pass final inspection, any subsequent inspection must be rescheduled as per above, and will be charged to the CONTRACTOR.

2. If the plant establishment period is satisfactorily completed ahead of other work included in the Contract, the plants establishment shall be extended and shall be the responsibility of the CONTRACTOR until all other work has been completed and accepted by the CITY.

3.8 GUARANTEE

A. General: All shrubs and ground covers shall be guaranteed for a period of ninety (90) days from the end of the Plant Establishment Period. All trees and shrubs 15-gallon size or larger shall be guaranteed for a period of one (1) year from the end of the Plant Establishment Period. CONTRACTOR shall provide a written guarantee for the above materials as a part of the final close out package.

B. Deficiencies: Should any deficiencies develop within the specified guarantee period, CONTRACTOR shall correct such deficiencies to the full satisfaction of the ENGINEER without added expense to the CITY. All replacement plants shall be subject to a new guarantee for a period as described herein above.

END OF SECTION 32 90 00

SECTION 33 16 66

STORMWATER CAPTURE AND REUSE SYSTEM

PART ONE - GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials and equipment necessary to provide Capture and Reuse System as shown on the Contract Drawings.

B. Related work sections:
   1. Section 33 40 00 – Storm Drain System
   2. Section 31 00 00 – Earthwork
   3. Section 32 05 23 – Cast-in-place Concrete
   4. Section 03 20 00 – Reinforcement Steel

1.2 QUALITY ASSURANCE

A. A Certificate of Compliance in conformance with the provisions of these Standard Specifications shall be furnished to the Engineer.
B. Photo-documentation of each stage of construction will be required by the Landscape Architect in accordance with Stormwater Observation Report noted on the plan documents.
C. Contractor shall coordinate an on-site meeting with the manufacturer, landscape architect, and BCA Inspector to review installation instructions.

1.3 SUBMITTALS

A. Product Data: Within 35 calendar days after the Contractor has received the City's "Notice to Proceed", submit:

   1. Materials list of items proposed to be provided under this Section and other related Sections;

   2. Manufacturer's Specifications and other data needed to prove compliance with the specified requirements;

   3. Manufacturer's recommended installation procedures which, when approved by the City Engineer, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 INSPECTION

A. Required:

   1. All work inside the property lines regarding storm drain lines shall be inspected by the Los

Angeles City Department of Building and Safety.

2. Photo-documentation of each stage of the planter construction will be required by the Landscape Architect in accordance with Stormwater Observation Report noted on the plan documents.

PART TWO-PRODUCTS

2.1 PERMAVOID PRE-FABRICATED GEOCELLULAR UNITS/FITTINGS

A. Permavoid (PV150) : Manufactured using 100% recycled pre-consumer polypropylene to the following requirements.

1. Dimensions (metric): 710mm x 355mm x 150mm, Footprint area: 0.252m^2
   Dimensions (imperial): 27.95in x 13.98in x 5.91in, Footprint area: 2.713ft^2

2. Material: Polypropylene

3. Storage: 95% void space, 35.92L (1.2696 ft^3)

4. Compressive Yield Strength, Vertical : 715kPa (103.6psi) [1162kPa (168 psi) ultimate strength], Lateral: 156kPa (22.6psi)

5. Deflection Strength, Vertical: 400kPa (58.0psi) Lateral: 47.6kPa (6.9psi)

B. Permaties: Full height interlocking monolithic key connectors. Tapered with dovetail interlock to pull units together. PV150 has six tapered slots and utilizes two permaties per slot installed from the top and bottom.

D. Shear Connectors: When stacking Permavoid, shear connectors must be used to prevent lateral shift. One shear connector per unit is required.

E. Wicking Cylinders: Mineral Fibre capillary cones designed to deliver water from storage tank to soil.

F. PermaTexHP: A Wicking geotextile designed to spread water laterally to maintain full contact with the soil from wicking cylinders.

G. Supplied by:

As supplied by: ABT, Inc.
259 Murdock Rd. Troutman, NC 28166
Phone: 800-438-6057
Fax: 704-528-5478
www.abtdrains.com

2.2 PERMAVOID PLANTER SOIL REQUIREMENTS

A. The landscape/planter area has been sized to capture and treat the stipulated design volume and allow for the growth of healthy vegetation. Minimum recommendation for achieving the aforementioned are as follows:

1. 75% (+/- 5%) by weight shall consist of sand meeting the following:
2. For soil depths of 6 to 12 inches, average particle size shall be 500mm (0.020 in.)
3. For soil depths of 12 to 24 inches, average particle size shall be 300mm (0.012 in.)
4. Soils shall have a uniformity coefficient of 4.0 or less
5. Soils shall have less than 10% fines (passing 200 sieve) by weight
6. Planting media should consist of 60 to 80% fine sand and 20 to 40% compost.

B. Sand should be free of wood, waste, coating such as clay, stone dust, carbonate, etc. or any other deleterious material. All aggregate passing the No. 200 sieve size should be non-plastic. Sand for biofiltration should be analyzed by an accredited lab using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D 422 or as approved by the local permitting authority) and meet the following gradation (Note: all sands complying with ASTM C33 for fine aggregate comply with the gradation requirements provided in the following table:

Sand Texture Specifications

	Percent Passing by Weight	
Sieve Size ASTM D422	**Minimum**	**Maximum**
3 /8 inch	100	100
No. 4	90	100
No. 8	70	100
No. 16	40	95
No. 30	15	70
No. 40	5	55
No. 110	0	15
No. 200	0	5

C. Compost shall be a well decomposed, stable, weed free organic matter source derived from waste materials including yard debris, wood wastes, or other organic materials not including manure or biosolids meeting standards developed by the US Composting Council (USCC). Compost quality should be verified via a lab analysis to be:

1. Feedstock materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
2. Organic matter: 35-75% dry weight basis.
3. Carbon and Nitrogen Ratio: 15:1 < C:N < 25:1
4. Maturity/Stability: shall have dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120 F) upon delivery or rewetting is not acceptable.
5. Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
6. NH4:NH3 < 3
7. Ammonium < 500 ppm, dry weight basis
8. Nutrient content:
9. Total Nitrogen content 0.9% or above preferred

10. Total Boron should be <80 ppm, soluble boron < 2.5 ppm
11. Salinity: < 6.0 mmhos/cm
12. pH between 6.5 and 8
13. Compost for biofiltration should be analyzed by an accredited lab using #200, ¼ inch, ½ inch, and 1 inch sieves (ASTM D 422) and meet the gradation described in the following table:

    Compost Texture Specifications

	Percent Passing by Weight	
Sieve Size ASTM D422	**Minimum**	**Maximum**
1 inch	99	100
½ inch	90	100
¼ inch	40	90
#200	2	10

C. Product: Biofiltration Soil Mixture: A loamy sand blend (moderate percolation rate media of 5-10 in/hr) as supplied by Gail Materials, Corona, CA 92883; (951) 667-6106; www.gailmaterials.net or approved equal.

2.3 IMPERMEABLE LINER

A. Impermeable Liner: 30 mil PVC liner by AccuGeo or approved equal. Impermeable plastic liner shall conform to Section 210-2 – PLASTIC LINER (Subsections 210-2.1 to 210-2.3.6) of SSPWC.

2.4 SUBSTITUTIONS

A.. The Permavoid system is being utilized as a capture and reuse passive irrigation system that has been reviewed and approved by LA Sanitation and Environment (LASAN) to meet the Low Impact Development (LID) requirements for this project. Alternate capture and reuse passive irrigation systems can only considered if they meet the storage capacity requirements of the Permavoid system within the given planter footprint while irrigating the entirety of the planter area and have equal or better strength characteristics. Alternate systems will also need to be reviewed and approved by LA Sanitation and Environment (LASAN); all costs for additional plan check review (if any) will be borne by the Contractor. Substitutions will be also subject to additional requirements noted in the GENERAL REQUIREMENTS.

PART 3: EXECUTION

3.1 INSTALLATION, GENERAL

A. All work to be carried out by a suitably qualified installer, with a minimum of 5 years' experience. Ensure site support from membrane and Permavoid manufacturers' representatives.
B. Site storage of Permavoid units must ensure UV protection if duration exceeds 7 days.
C. Coordinate with applicable trades for water inlet and discharge locations.

3.1 EXCAVATION

A. Ensure planters are level for base units. Leveling sand can be used to ensure accuracy (installed under impermeable liner). Ensure site is free of sharp objects and projections.
B. Tolerance to achieve a maximum deviation of 5mm in 3.0m in any direction.
C. Locate inlet and discharge pipe locations.
D. Install impermeable membrane liner. Waterproof membrane manufacturer to ensure suitable membrane for water containment with high resistance to puncture and elongation. All joints and pipe penetrations to be water-tight and welded by a qualified contractor. Corners to be formed and folded welts and heat sealed if required.

3.2 PERMAVOID PASSIVE IRRIGATION TANK

A. Ensure membrane is dry, clean and free from debris before installing Permavoid.
B. Check installation plans to confirm Permavoid orientation.
C. Install Permavoid wicking geotextile. Allow enough material to fully cover the bottom, sides and top of the Permavoid tank. Overlaps should be a minimum of 450mm.
D. Install wicking cones into Permavoid panels. Refer to installation plans to confirm location, quantity and style of wicking cones.
E. Install Permavoid panels onto wicking geotextile using all necessary tie connectors.
F. Install aeration piping/cleanouts.
G. Wrap panels with wicking geotextile to ensure coverage on all sides, top and bottom. Can be held in place with tape.

END OF SECTION 33 16 66

SECTION 33 40 00

STORM DRAIN SYSTEM

PART ONE - GENERAL

1.1 DESCRIPTION

A. Furnish all labor, materials and equipment necessary to provide "on-site" Storm Drain System as shown on the Contract Drawing and specified herein, including:

1. Catch basin
2. Drainage Piping/Fittings
3. Clean outs

B. Related work sections:
1. Section 33 16 66 - Permavoid Capture and Reuse Planter
2. Section 32 14 33 - Permeable Pavers
3. Section 31 00 00 - Earthwork
4. Section 32 05 23 – Cast-in-place Concrete

1.2 QUALITY ASSURANCE

A. Codes and Regulations: Conform to the applicable Los Angeles City Building Code and Amendments, Los Angeles City Bureau of Engineering Standard Plans, and the Standard Specifications for Public Works Construction (SSPWC), latest edition.

1.3 SUBMITTALS

A. Product Data: Within 35 calendar days after the Contractor has received the City's "Notice to Proceed", submit:

1. Materials list of items proposed to be provided under this Section and other related Sections;

2. Manufacturer's Specifications and other data needed to prove compliance with the specified requirements;

3. Manufacturer's recommended installation procedures which, when approved by the City Engineer or the Consultant, will become the basis for accepting or rejecting actual installation procedures used on the Work.

1.4 INSPECTION

A. Required:

1. All work inside the property lines regarding storm drain lines shall be inspected by the Los Angeles City Department of Building and Safety.

1.5 COORDINATION

A. Required: All on-site storm drain work shall be fully coordinated with other Contracted Work operations as per approved work scheduled.

PART TWO-PRODUCTS

2.1 CATCH BASINS

A. PVC surface drainage inlets shall include the drain basin type and size as indicated on the plans. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

B. The drain basins required for this contract shall be manufactured from PVC pipe stock, utilizing a hermoforming process to reform the pipe stock to the specified configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe bell spigot shall be joined to the main body of the drain basin or catch basin. The raw material used to manufacture the pipe stock that is used to manufacture the main body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

C. The grates and frames furnished for all surface drainage inlets shall be ductile iron for sizes and shall be made specifically for each basin to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for drain basins shall be capable of supporting various wheel loads as specified by Nyloplast.

D. Backfill and Bedding Material for Catch Basin: The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. This requirement may be met with onsite soil subject to the approval of the geotechnical engineer. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321.

E. Catch Basin Filters: As indicated in Contract Drawings.

2.2 PIPE MATERIALS/FITTINGS

A. PVC Pipe**:** size per Contract Drawings**.** As per Section 207 - Pipe and Section 208 - Pipe Joint Types and Materials of the Standard Specifications for Public Works Construction (SSPWC.

B. Perforated Subsurface Drain Pipe: Provide shop-perforated with perforations symmetrically located within a maximum arc of 160 degrees. Perforations shall provide a total open area of at least 0.3 square inches per linear foot of pipe, with a minimum of one perforation per linear foot, except for joint areas. Perforation shall be either holes or slots. Hole diameters of 1⁄4-inch minimum to 3/8-inch maximum. Width of slots of 3/16-inch minimum to 5/16-inch maximum with slot length not exceeding 4-inches.

C. Backfill and Bedding Material for Pipe: Conform to the requirements of Section 31 00 00 - EARTHWORK, and Approved Soils Report as required.

2.3 CLEANOUTS

A. Cleanout: detail and location per contract drawings.

1. Concrete Paved area - Smith Fig. 4020, secure round top, spigot connection, set in concrete flush with paved surface.

2. Paver area – Smith Fig. 4040 with secure square top, spigot connection, set flush with top of paver surface.

3. Unpaved area - Smith Fig. 4240 with extensions to finish grade.

B. Concrete, Mortar and Related Materials: Conform to Section 32 05 23 – CAST IN PLACE CONCRETE.

PART THREE - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completions of the Work. Do not proceed until detrimental conditions are corrected as directed by the ENGINEER or BCA Inspector.

3.2 EXCAVATING AND TRENCHING

A. General: Conform to the requirements as specified on the drawings, Los Angeles City Plumbing Code, SSPWC, Geotechnical Reports, and Section 31 00 00 - EARTHWORK.

B. Provide excavation and trenches for storm drain piping systems, concrete catch basins indicated on the Contract Drawings in accordance with applicable requirements specified in Section 31 00 00 - EARTHWORK.

3.3 STORM DRAIN SYSTEM CONSTRUCTION

A. General: In strict accordance with pipe manufacturers recommendations and the Los Angeles City Plumbing Code and the SSPWC.

B. Installation of Catch Basins: The specified PVC catch basins shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly

in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.

C. Installation of Pipe: In accordance with Sec. 306-1.2 INSTALLATION OF PIPE of the SSPWC on unyielding bedding foundations with uniform bearing under full length of pipe barrels; walking on or disturbing pipe in any manner after joints have been made, is not permitted. Whenever work is stopped for any reason, protect ends of pipe with temporary tight-fitting closures. Slope pipe per Contract Drawings.

D. Pipe Bedding:

1. Provide bedding per applicable requirements specified in Section 31 00 00 - EARTHWORK and Approved Soils Report. Bedding material to be tamped and compacted and accurately graded and shaped to support bottom quadrant of pipe, with coupling holes dug prior to placement of pipe.

2. Backfill: Provide backfill and compact per applicable requirements specified in Section 31 00 00 - EARTHWORK and Approved Soils Report.

END OF SECTION 33 40 00

ATTACHMENT A

- GEOTECHNICAL REPORT, DATED 4/18/22

- SOILS APPROVAL LETTER, DATED 8/26/23

- REQUEST FOR MODIFICATION, DATED 8/17/23

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING

GEOTECHNICAL ENGINEERING DIVISION

GEOTECHNICAL ENGINEERING REPORT
LAS PALMAS SENIOR CENTER IMPROVEMENTS
1820 NORTH LAS PALMAS AVENUE
LOS ANGELES, CALIFORNIA

W.O. #E1908358
GED FILE # 21-159
APRIL 18, 2022

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Appendix B – Geotechnical Data Report for the Las Palmas Senior Citizen Renovation Project by Tetra Tech BAS, Inc. dated March 31, 2022

Appendix C – Results of LPILE Analyses

1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the Las Palmas Senior Center Improvements project. The project site, as shown on Figure 1 – Vicinity Map, is located on the southeast corner of Franklin Avenue and North (N) Las Palmas Avenue in the Hollywood area. The project site address is 1820 N Las Palmas Avenue.

The purposes of this investigation were to evaluate the nature and engineering properties of the subsurface materials and develop geotechnical recommendations for design and construction of the project. The City of Los Angeles, Department of Public Works, Bureau of Engineering, Geotechnical Engineering Division (GED) has prepared this report in response to the Architectural Division's request.

2.0 PROJECT DESCRIPTION

The project site location is presented on Figure 2 – Site Location Map, and the concept plan is provided in Appendix A of this report. As shown on the concept plan (Appendix A), the project includes construction of a concrete pedestrian ramp. The maximum retained height of the ramp walls is not expected to exceed 4 feet. Other site improvements include a shade structure, outdoor seats, lighting, new pavement, and a trash enclosure. Structural load information for the proposed shade canopy and/or ramp retaining wall footings was not provided at the time this report was prepared. The maximum applied static bearing pressure is not expected to exceed 1,500 pounds per square foot (psf).

We understand the existing Senior Center building will undergo interior renovations; however, the project does not include structural retrofitting of and/or any addition(s) to the existing Senior Center building. New foundations and/or foundation upgrades within the existing building are not proposed at this time. Furthermore, the total value of the interior renovations is expected to be significantly less than 50 percent of the theoretical replacement value. We expect the interior renovation of the existing building will meet the exemption requirements from liquefaction and fault-rupture hazard zone investigations, as outlined in the Los Angeles Department of Building and Safety's (LADBS') Information Bulletin P/BC 2020-044.

We understand the site will be re-graded. We expect the proposed finished grades will be approximately within one to two feet of the existing ones, except in the area of the proposed pedestrian ramp. The finished grades could be up to 4 feet lower than the existing ones in some areas of the pedestrian ramp. If significant changes to the project are proposed, the findings and recommendations in this report may not be applicable, and a supplemental report may be required. The GED shall be provided an opportunity to review any proposed changes and determine if a supplemental report is required.

3.0 GEOTECHNICAL INVESTIGATION

This geotechnical investigation included reviewing relevant information, field exploration, and laboratory testing. The field exploration and laboratory testing was completed by Tetra Tech BAS, Inc. (Tetra Tech), and a copy of their data report is included in Appendix B of this report. The GED has reviewed their data report, concurs with the information contained in it, and accepts responsibility for the use of its contents.

3.1 REVIEW OF RELEVANT INFORMATION

As part of this investigation, the GED reviewed previous geologic and geotechnical investigation reports that were prepared for developments at private properties in close proximity to the project site. Many of these reports evaluated potential faulting associated with the Hollywood Fault and provided design recommendations to mitigate hazards associated with active faulting where appropriate. The list of reports reviewed are included in the references section at the end of this report. Key findings and conclusions of these investigations are summarized in Section 4.2 of this report.

3.2 FIELD EXPLORATION

Tetra Tech drilled four hollow-stem auger exploratory borings, and an additional boring that was used for infiltration testing. The boring locations are presented on the Field Exploration Location Map in Figure 2 in Tetra Tech's report (Appendix B). The boring depths ranged from approximately 16½ to 26½ feet below ground surface (bgs). The infiltration test boring, I-1, was drilled to a depth of approximately 8½ feet bgs. The subsurface conditions and infiltration test results are discussed in Sections 4.4 and 4.6 of this report, respectively.

3.3 LABORATORY TESTING

Laboratory tests were performed on selected samples to characterize the engineering properties of the on-site soils. The laboratory testing program included in-situ moisture content and dry density, particle size distribution (i.e. gradation) and hydrometer, percent passing the No. 200 sieve (i.e. fines content), Atterberg Limits, Expansion Index (EI), maximum dry density and optimum moisture content (i.e. compaction), consolidation, and direct shear. The individual laboratory test results are included in Tetra Tech's report (Appendix A). The test results are discussed in Section 4.7 of this report.

4.0 DISCUSSION OF FINDINGS

The following discussion of findings is based on the results of the data review, field exploration, and laboratory testing programs.

4.1 GEOLOGIC SETTING

The geology of the site and surrounding areas is presented on Figure 3 – Geologic Map. Regionally, the site is located near the boundary of the Peninsular Ranges physiographic province and Transverse Ranges physiographic province. Northwest trending mountains and faults characterize the Peninsular Ranges, whereas east-west trending mountain and faults characterize the Transverse Ranges. The predominate structural feature near the project site is the east-west trending Hollywood Fault Zone. As shown on Figure 4 – Earthquake Zones of Required Investigation, the main trace of the Hollywood Fault is mapped a few hundred feet north of the project site.

Locally, the site is situated near the southern flank of the Santa Monica Mountains at the northern edge of the Los Angeles Basin. The Santa Monica Mountains immediately north of the site are composed of Miocene-age shale or claystone of the Upper Topanga Formation. Based on geological mapping by Dibblee Jr. (1991), the site is underlain by late Pleistocene-age older alluvial deposits (Qae) consisting of clay, sand, and gravel.

4.2 PREVIOUS HOLLYWOOD FAULT EVALUATIONS BY OTHERS

As shown on Figure 4 – Earthquake Zones of Required Investigation, the project site and surrounding areas are located within an "Earthquake Fault Zone" associated with the Hollywood Fault. An Earthquake Fault Zone is a state-designated zone that was established to restrict development of new human-occupied structures across traces of active faults and mitigate the hazards associated with surface fault rupture. To construct new human-occupied structures in this zone, developers are required to prove absence of active faulting in order to get their projects permitted. As such, numerous investigations have been performed at properties near the site to evaluate faulting and the potential impacts on development of new human-occupied structures. A fault investigation is not required for the subject project because the planned improvements do not include human-occupied structures. Therefore, the following is presented for informational purposes only.

As shown on Figure 5 – Previous Hollywood Fault Investigation Map, previous surface fault rupture investigations have been performed for the adjacent properties located directly west (1840 N. Highland Ave.) and east (6650 and 6668 W. Franklin Ave., and 1855 N. Cherokee Ave.) of the existing Las Palmas Senior Center property. At the 1840 N. Highland Ave. property, GeoPentech performed an extensive fault investigation to support design of a six-story multi-family residential building. The investigation included advancement of 35 Cone Penetrometer Soundings (CPT's), drilling of 23 continuous core borings, and observation and logging of excavations created during construction. GeoPentech determined that four active fault splays (referred to as Fault F-1, F-2, F-3, and F-4 on Figure 5, attached) projected across the northern portion of the site, and no active faulting existed in the southern portion of the site. Based on these findings, GeoPentech concluded that a building exclusion zone should be established for the northern portion of the site within which human-occupied structures could not be constructed (Figure 5). The six-story residential building was recommended and permitted for construction on the southern portions of the site. The surface fault rupture investigation report was approved by the LADBS, Grading Division on September 5, 2017 under Log No. 99716.

To evaluate faulting on the property located directly east of the site (6650 and 6668 W. Franklin Ave., and 1855 N. Cherokee Ave.), Feffer Geological Consulting (Feffer) performed an investigation to support design of a six-story residential apartment building. Feffer's investigation included the advancement of four CPT's, drilling of two continuous core borings and six bucket-auger borings, and excavation of three fault trenches. Feffer identified two faults that projected across the property however, the faults were interpreted to have occurred before the Holocene Epoch, and therefore, these faults are considered to be "inactive." Feffer concluded that the property is not exposed to the hazard of surface fault rupture and human-occupied structures are acceptable within the entire site limits. The surface fault rupture investigation report was approved by the LADBS, Grading Division on October 3, 2016 under Log No. 92628-01.

4.3 SITE CONDITIONS

The property at 1820 N Las Palmas is bounded by Franklin Avenue to the north, N Las Palmas Avenue to the west, and private properties to both the south and east. The northeastern portion of the property is occupied by an existing single-story building that currently serves as a Senior Center and a preschool. The building is accessed via a pedestrian walkway from N Las Palmas Avenue.

The project site is located in the southeast area of the property and on the south side of the existing building. There is an existing concrete staircase that is located within approximately 3 feet away from the south side of the building. The stairs extend from the paved exterior concrete paths on the south side of the building to a paved concrete "court" area, which is mostly used for outdoor leisure activities. There is also an existing concrete retaining wall that is connected to the stairs and extends along the north and west sides of the "court" area. The maximum retained height of the concrete wall and stairs is approximately 3 feet. We expect portions of the concrete retaining wall will be demolished to facilitate construction of the pedestrian ramp near the southeast corner of the building. The project site also includes an existing paved parking area on the south side of the "court" area, which is accessed from N Las Palmas Avenue. There is a chain-link fence surrounding the south, west, and east sides of the court area. The adjacent area to the west is landscaped with grass, plants and several trees.

The elevation difference across the property in a north-south direction is approximately 8 feet. The ground surface descends to the south at an average inclination of approximately 2.7 percent. The approximate 3-foot grade difference between the "upper" building area and "lower" court area is not clearly depicted on Figure 2.

4.4 SUBSURFACE CONDITIONS

Uncertified fill was encountered in all four exploratory borings. The fill thickness in all borings, except Boring B-4, is approximately 20 feet. The fill thickness in B-4, which was advanced in the parking area, is approximately 15 feet. The fill is mostly comprised of clayey sand with varying amounts of gravel. Fill indicators, including glass, brick, and concrete fragments, were observed in several of the samples collected. Based on the field Standard Penetration Test (SPT) blow counts, the relative density of the fill is generally loose to medium dense. The underlying native soil mostly consists of silty sand with gravel. A layer of lean clay with sand / sandy lean clay was encountered at a depth of approximately 25 feet bgs in Borings B-2 and B-3. Based on the field SPT blow counts, the native "sandy" is generally medium dense. Refer to the boring log information in Appendix B for more details.

4.5 GROUNDWATER

Groundwater was not encountered in any of the four borings, which were advanced to a maximum explored depth of approximately 26½ feet bgs. Groundwater information from the California Department of Conservation, Division of Mines and Geology (DMG, 1998) indicates the shallowest reported historic groundwater depth is between approximately 80 to 100 feet.

It is important to note that the Hollywood Fault is considered to act as a groundwater barrier in this area. The groundwater levels on the north side of the fault are expected to be much higher than those on the south side. Also, groundwater levels can also fluctuate with seasonal rainfalls, dry weather (i.e. drought conditions), and pumping activities in the vicinity of the site. Groundwater is not expected to affect the proposed construction.

4.6 BOREHOLE INFILTRATION TEST RESULTS

A borehole infiltration test was performed to evaluate the feasibility of onsite stormwater infiltration. The soils within the infiltration zone consist of existing uncertified fill. The infiltration rate was estimated using the guidelines presented in the County of Los Angeles, Department of Public Works, Geotechnical and Materials Engineering Division's (2021) Administrative Manual. The infiltration rate was averaged over a period where a steady-state flow condition could be achieved. The *unadjusted* infiltration rate was found to be approximately 0.9-inch per hour. The feasibility of stormwater infiltration is discussed further in Section 6.9 of this report.

4.7 LABORATORY TEST RESULTS

Moisture and dry density determinations were performed to evaluate the in-situ unit weight of the soil. Test results indicate the moisture content and dry density of the existing fill ranges from about 8.1 to 23.2 percent and 87.9 to 111.1 pounds per cubic foot (pcf), respectively. The total unit weight of the existing fill ranges from approximately 95 to 126 pcf with an average value of 116 pcf. Based on a limited number of (i.e. three) test results, the total unit weight of the native soil ranges from approximately 107 to 117 pcf.

Four gradation tests and four fine content tests were performed on selected samples of the fill and native soil. The test results confirm the soil descriptions shown on the boring logs. Hydrometer test results material indicate the clay content (percent finer than 0.005 mm) of the existing fill is approximately 15 percent.

An EI test was performed on a bulk sample of the near surface fill material from B-1. The test results indicate the EI value is 6, which indicates a very low potential expansion potential.

Atterberg Limits tests were performed on three samples of the existing fill material and on two samples of the native soil to evaluate the shrink-swell behavior of these materials. The test results indicate the plasticity index (PI) of the fill is between 9 and 20. The test results indicate the PI of the native "clayey" soil is 31. Based on these test results, the existing fill and native soil are expected to exhibit moderate and high shrink-swell behavior, respectively.

Direct shear tests were performed on a remolded sample of the near surface fill material and on a relatively undisturbed sample of the native "clayey" soil. The near surface fill material was remolded to approximately 90 percent relative compaction (RC) at 2 percent above the optimum moisture content. The direct shear test results indicate the ultimate friction angle and cohesion value of the remolded fill material is 34 degrees and 100 psf, respectively. The direct shear test results indicate the ultimate friction angle and cohesion value of the "clayey" native soil is 27 degrees and 250 psf, respectively.

A consolidation test was performed on a remolded sample of the near surface fill material from Boring B-3. The soil was remolded to approximately 90 percent RC at 2 percent above the optimum moisture content. The results indicate there is no significant potential for collapse upon wetting. The remolded sample did exhibit swell upon wetting; however, it was relatively minor (~0.1%).

Finally, a compaction test was performed on a bulk sample of the near surface fill material to determine its maximum dry density and optimum moisture content. The compaction test results indicate the optimum moisture content and maximum dry density of this material is 11.5 percent, and 124.2 pcf, respectively.

5.0 SEISMIC CONSIDERATIONS

The following sections present seismic design parameters and discuss seismic hazards for the site.

5.1 2020 LABC SEISMIC DESIGN PARAMETERS

Seismic design parameters for the project were developed in accordance with the 2020 Los Angeles Building Code (2020 LABC), which are based on the procedures outlined in ASCE 7-16. The seismic design parameters for the site are summarized in Table 1.

TABLE 1 – SEISMIC DESIGN PARAMETERS

Parameter	Value
Site Class	D
S_s	2.116
S_1	0.76
S_{MS}	2.539
S_{M1}	Null – see Section 11.4.8
S_{DS}	1.692
S_{D1}	Null – see Section 11.4.8

The site modified peak ground acceleration (PGA_M) at the site is 1.09g.

5.2 SEISMIC HAZARDS

This section provides the results of our evaluation of earthquake-related geologic/geotechnical hazards for the site, including surface fault rupture, and liquefaction.

5.2.1 Surface Fault Rupture

As discussed in Section 4.2 of this report, the site is located in close proximity to adjacent sites where active faulting has been identified by others. Based on our review of existing fault investigation reports by others, portions of the Las Palmas Senior Center property may be underlain by active fault traces. The GED's scope of work for this project did not include an evaluation of surface fault rupture; therefore, we are not in a position to render an opinion regarding the surface fault rupture hazard. Based on the LADBS' Information Bulletin P/BC 2020-044, we consider the proposed improvements to be exempt from a surface fault rupture evaluation. If the proposed project changes, a surface fault rupture evaluation may be required.

5.2.2 Liquefaction Evaluation

As shown on Figure 4, the project site is located within a liquefaction zone. As discussed, groundwater was not encountered in the borings to the maximum explored depth of approximately 26½ feet. Although the historical high groundwater depth is between approximately 80 and 100 feet, the GED acknowledges the groundwater depth may be much shallower in the northern portion of the property due to the groundwater barrier associated with the Hollywood Fault.

Based on the LADBS' Information Bulletin P/BC 2020-044, we consider the proposed improvements to be exempt from a liquefaction evaluation. The GED's scope of work for this project did not include an evaluation of liquefaction; therefore, we are not in a position to render an opinion regarding the liquefaction hazard potential.

6.0 RECOMMENDATIONS

Based on the results of our investigation, the proposed project is considered geotechnically feasible provided the recommendations presented in this report are incorporated into the design and construction. If changes in the design are made, or variations or changed conditions are encountered during construction, the GED shall be notified to determine if supplemental recommendations are required.

6.1 KEY DESIGN ISSUE

The primary geotechnical design issue is the long-term effect of settlement associated with loose and debris-laden fill. This settlement is expected to be episodic and differential in nature. Static settlement (i.e. soil collapse) is expected to occur if the uncertified fill is inundated with water. Dynamic settlement may occur during an earthquake. As discussed, the fill thickness is approximately 20 feet in the proposed pedestrian ramp and shade structure areas (see B-1 through B-3). The fill thickness is approximately 15 feet in the proposed trash enclosure area (see B-4). The LADBS, Grading Division typically doesn't allow structures to be supported on uncertified fill. To mitigate the effects of potential settlement associated with loose and debris-laden uncertified fill, we recommend supporting the shade structure and pedestrian ramp on cast-in-drilled-hole (CIDH) piles. As an alternative to deep foundations, the pedestrian ramp and retaining walls may be supported on a rigid shallow foundation that is designed to resist differential settlement. The earthwork recommendations provided in Section 6.2 of this report will also help mitigate the effects of potential settlement on the proposed improvements.

Differential settlement may impact existing and proposed utility pipes. To minimize the potential for settlement to impact underground utility pipes, we recommend discussing mitigation alternatives with someone who specializes in the design of them. They should be involved in the design process, and their recommendations should be implemented during construction. Flexible pipe connections shall be used wherever feasible, and connections should be designed to withstand the differential settlement between inlet and outlet facilities. The GED recognizes the potential for utility pipes to become damaged in the future and we consider this is a matter of maintenance. Repairs to damaged utility pipes should be made in a timely manner. If possible, the civil engineer should locate utilities in areas that can be easily assessed.

6.2 EARTHWORK

All earthwork shall be performed in accordance with the geotechnical recommendations presented in this report and the LADBS, Grading Division requirements. Furthermore, all earthwork should be performed under the observation and testing of the GED.

6.2.1 Site Preparation

Site preparation will initially involve the demolition of the existing pavement, structures, and other obstructions within the construction area. Following demolition, the construction area should be cleared of any vegetation and stripped of miscellaneous debris and other deleterious material. Organic matter and other material that may interfere with the completion of the work should be removed from the limits of the construction area. Vegetation and organic matter should not be incorporated into the compacted fill. Organic rich soil, if present, may be stockpiled for future landscaping. Voids resulting from the demolition shall be backfilled with properly compacted fill. These materials shall be removed from the construction area and hauled to a proper disposal area.

Any utilities, whether active or inactive, shall be identified and properly abandoned or relocated per project plans and specifications. Any depressions resulting from removal of any existing foundations or utility lines shall be properly backfilled and compacted in accordance with the recommendations in the following sections.

6.2.2 Over-Excavation

Over-excavation and recompaction is not required for structures that are entirely supported on CIDH piles.

If shallow foundations are the preferred alternative for the pedestrian ramp and retaining walls (see Section 6.3), the existing soil shall be removed to a depth of at least 48 inches below the bottom of the proposed foundation. The excavation shall extend laterally at least 48 inches beyond each edge of the structure, except in areas on the north side adjacent to the existing building. Lateral over-excavation on the north side of the proposed ramp, and particularly in the west portion, shall only be performed if it can be done without undermining the existing building foundation.

The existing soil beneath proposed pavement areas and the trash enclosure shall be removed to a depth of at least 24 inches below existing subgrade. The excavation shall extend laterally at least 24 inches beyond each edge of the pavement/slab or to the property boundary, whichever is less. The over-excavation and recompaction, including subgrade preparation shall result in at least 24 inches of compacted fill beneath the exterior slab for the trash enclosure and 18 inches of compacted fill beneath the aggregate base for new pavements.

The soil beneath non-structural footings (planters, fences, and non-retaining site walls) shall be removed to a depth of 24 inches below the bottom of footing. The excavation shall extend laterally at least 2 feet beyond the edge of the footing or to the property boundary, whichever is less.

6.2.3 Temporary Excavations

Based on our observations during subsurface investigation and results of laboratory tests, the materials at the site should be readily excavated by conventional earthmoving equipment in good operating condition. All temporary excavations shall conform to the State of California Construction Safety Orders (CAL/OSHA).

Unsurcharged, temporary vertical excavations shall generally not exceed 5 feet, except near the existing building; however, unsurcharged temporary excavations shall not extend within a 1:1 (horizontal:vertical) theoretical projection of the existing building footing(s). It is the contractor's responsibility to make sure temporary vertical excavations do not adversely impact the existing building's foundation elements. If deeper excavations are proposed, they shall be reviewed by the GED, and supplemental recommendations may be required.

6.2.4 Temporary Shoring

Cantilever or braced shoring may be considered at this site as an alternative to temporary excavations. Shoring deflections shall not exceed ½-inch unless it can be clearly demonstrated with calculations that adjacent structures, utilities, and/or streets will not be impacted. Sheet piles, box shoring, and/or trench shields (i.e. speed shores) are generally not acceptable. The GED may approve them; however, approval depends on several factors. If they are proposed, the GED will review each situation on a case-by-case basis.

Settlement of structures will occur in proportion to both the distance between the shoring and the structure, and the amount of horizontal deflection of the shoring system. Vertical settlement will be a maximum at the shoring face and decrease as the horizontal distance from the shoring increases. Beyond a distance from the shoring equal to the height of the shoring, the settlement is expected to be negligible. The maximum vertical settlement is expected to be about 75 percent of the horizontal deflection of the shoring system.

Prior to excavation, it is recommended that walls, structures, or portions of structures within a horizontal distance of 1½ times the depth of the excavation be inspected to determine their present condition. For documentation purposes, photographs should be taken of preconstruction conditions and level surveys should be performed.

6.2.4.1 Lateral Earth Pressures

Cantilever or braced shoring shall be designed for the lateral earth pressures shown on Figure 6 – Lateral Earth Pressures for Temporary Shoring Systems. These values are based on the assumption that (1) the shored soil material is level at ground surface, (2) the exposed height of the shoring is no greater than 15 feet, and (3) the shoring is temporary, and will not be required to support the soil longer than about six months. Surcharge coefficients of 0.32 and 0.48 may be used with uniform vertical surcharges for cantilever and braced shoring lateral earth pressures, respectively. These surcharge pressures should be added to the lateral earth pressures.

6.2.4.2 Soldier Piles and Lagging Design

Drilled holes for soldier piles shall be backfilled with sand-cement slurry per Greenbook Section 201, from the bottom of lagging (i.e. proposed excavation depth) to the ground surface. The sand-cement slurry shall contain a minimum of one sack of Portland cement per cubic yard of slurry and a maximum of two sacks of Portland cement per cubic yard of slurry. Drilled holes below the excavation bottom shall be backfilled with structural concrete. To reduce the potential for sloughing and caving of the soils, continuous lagging shall be installed between the soldier piles. All lumber shall be pressure-treated in accordance with Specification C-2 of the American Wood Preservers Association.

6.2.4.3 Construction Considerations for Soldier Piles

We expect the soldier piles can be drilled using conventional equipment. Significant caving conditions are not anticipated; however, if caving conditions are encountered, temporary steel casing shall be used to support the sides of the pile excavations. Sonotubes are not acceptable as a substitute for steel casing. For temporary steel casing, the inside diameter shall be at least as large as the diameter of the piles. Drilling shall be completed within the temporary steel casing.

The contractor shall remove loose soil (i.e. slough) from the bottom of the pile excavation. The drilled holes shall be plumb to within a tolerance of 2 percent. Upon completion of drilling, secure covers shall be placed over the excavations. Concrete placement shall be completed within 12 hours of drilling and drilled holes shall not be left open overnight. Excavations shall be observed and approved by the GED during drilling and prior to installation of steel reinforcement.

Depending on the final depths and construction methods, concrete placement by the pump and tremie method may be required. Concrete shall not be allowed to free fall more than 6 feet. Concrete placement shall be performed in a manner such that it does not hit the side of the drilled hole and so that the alignment of the steel reinforcement is not affected. The web of the steel reinforcement may be used as a vertical chute for placement of concrete provided the concrete does not impact its alignment.

If temporary steel casing is utilized, it shall be raised slowly during concrete placement as the drilled hole is filled with concrete. The bottom of the casing shall remain a minimum of 3 feet below the level of concrete during the pour.

6.2.5 Subgrade Preparation

Excavation bottoms shall be scarified to a depth of at least 6 inches, moisture conditioned to within 3 percent above the optimum moisture content, and compacted to at least 90 percent RC, as determined by ASTM Test Method D1557. Excavation bottoms shall be approved by a GED representative and the LADBS, Grading inspector prior to backfill.

6.2.6 Geotextile Placement

If shallow foundations are the preferred alternative for the pedestrian ramp and retaining walls, a layer of Tensar InterAx NX850 or equal shall be placed along the base of the excavation. An additional layer of Tensar InterAx NX850 or equal shall be placed at 18 inches above the initial layer following the placement of compacted fill (see Section 6.2.7).

For the proposed trash enclosure and new pavements, a layer of Tensar InterAx NX850 or equal shall be placed along the base of the excavation. An additional layer of Tensar InterAx NX850 or equal shall be placed at 12 inches above the initial layer following the placement of compacted fill (see Section 6.2.7). We anticipate the top layer will be near the bottom of the aggregate base within the pavement section.

6.2.7 Fill Materials and Backfill Placement

Fill materials may consist of the existing fill onsite or approved import soil. Import soil shall be predominantly granular (minimum 80% passing the No. 4 sieve and between 10% and 35% passing the No. 200 sieve), non-expansive (EI less than 20). All fill shall be free of organic or inorganic debris, contamination and materials with any dimension larger than 3 inches. Proposed import soil shall be reviewed by the GED for approval prior to delivery to the job site. The GED shall be notified a minimum of three working days prior to scheduled delivery to the site.

Fill material shall be placed in loose lifts not exceeding 8 inches in thickness, moisture-conditioned to between 0 and 3 percent above the optimum moisture content and mechanically compacted. The hydrometer test results indicate the onsite soils are “clayey.” “Clayey” primary structural fill and all secondary structural fill shall be compacted to at least 90 percent RC. Import “sandy” soil used as primary structural fill shall be compacted to at least 95 percent RC. Crushed aggregate base (CAB) and/or crushed miscellaneous base (CMB) in pavement areas, including the trash enclosure, shall be compacted to at least 95 percent RC.

Fill placement and compaction shall be observed and tested by a certified compaction testing agency working under the direct supervision of the GED. Compacted fill soils shall be kept moist, (at or slightly above the specified moisture content at the time of compaction) but not flooded, until covered with subsequent construction. If compacted fill soils become softened or disturbed, they shall be replaced or recompacted at the discretion of the GED before additional fill or construction is placed. Certification and inspection approvals for compromised soils are void and invalid.

6.2.8 Utility Trench Backfill

Trench excavations for utility pipes may be backfilled with onsite soils under the observation of a representative of the GED. After utility pipes have been laid, properly bedded, and covered per the project specifications, they shall be backfilled to the ground surface or design subgrade with controlled backfill. Controlled backfill shall be moisture conditioned, placed and compacted in accordance with the recommendations presented above (Section 6.2.7). Densification by flooding or jetting is not allowed.

6.2.9 Fill Certification

Upon successful completion of fill placement and compaction, the GED will issue a Compaction Certification for the fill. Unless approved by the Building Inspector during construction, the Contractor shall not pour footings until an approval letter is issued by the LADBS, Grading Division for the Compaction Certification. The contractor may excavate in compacted fill for foundation elements before the fill certification approval letter is issued, but does so at his/her own risk.

6.3 PEDESTRIAN RAMP SHALLOW FOUNDATION ALTERNATIVE – STRUCTURAL MAT

Following the site preparation and recommended earthwork, the proposed pedestrian ramp and retaining walls may be supported on a structural mat foundation. Design recommendations are provided in the following sections.

6.3.1 Bearing Capacity and Settlement

The structural mat shall be underlain by at least 48 inches of compacted fill that is reinforced with two layers of Tensar InterAx NX850 or equal. The structural engineer shall determine if thickened edges along the perimeter are required to resist the lateral loads. If thickened edges are required, they shall be embedded at least 12 inches below lowest adjacent grade. The mat may be designed based on an allowable static bearing capacity of 1,500 psf. This value may be increased by 1/3rd for temporary loading conditions such as wind or seismic forces.

Based on the allowable bearing value recommended above, the total static settlement of the mat foundation should not exceed 1 inch. The maximum differential settlement across the footprint of the structure is not expected to exceed ½-inch.

6.3.2 Lateral Load Resistance

Lateral load resistance will be developed by passive soil pressure against the thickened edges and by friction acting along the base of the mat. An allowable passive pressure of 250 psf per foot of depth may be used for design purposes. Passive pressure shall begin at a depth of 12 inches below the ground surface; however, if the ramp structure is located adjacent to an exterior slab or pavement, passive pressure may begin at the ground surface. The allowable passive pressure is only applicable for level (ground slope equal to or flatter than 5:1) conditions. An allowable coefficient of friction of 0.35 may be used for dead and sustained live loads for frictional resistance. A FS of 1.5 has been incorporated into both the allowable passive and frictional resistance values.

For temporary loading conditions such as wind or seismic forces, the lateral load resistance may combine the passive pressure and frictional resistance; however, the passive pressure shall not exceed ½ the combined total lateral resistance.

6.3.3 Modulus of Subgrade Reaction

We recommend the structural mat be designed based on elastic theory principles with an estimated modulus of subgrade reaction "k" based on the following equation:

$$k = k_1\left(\frac{1}{B}\right)\left(\frac{1+0.5\frac{B}{L}}{1.5}\right)$$

where k_1 is the coefficient of subgrade reaction in pounds per cubic inch (pci) of a square foundation measuring one foot by one foot, and B and L are the width and length of the structural mat, respectively. A value of 150 pci may be assumed for k_1 in the above equation.

6.4 CAST-IN-DRILLED-HOLE PILE FOUNDATIONS

The shade structure and pedestrian ramp may be supported on CIDH piles that are embedded at least 3 feet into the native soil. The actual embedment may be deeper and will depend on the results of the axial capacity and lateral load analysis, which shall be completed by the structural engineer. The minimum pile diameter shall be 24 inches, and the minimum pile spacing shall be 3 pile diameters on the center. Based on discussions with the Structural Engineer, the loads have not yet been determined at this time.

6.4.1 Axial Capacity in Compression

The axial compression capacity assumes the CIDH piles develop their capacity solely from skin friction or side resistance. Also, all skin friction shall be neglected in the upper 20 feet bgs. An allowable adhesion value of 500 psf may be used below 20 feet. The minimum pile embedment depth shall be 23 feet; however, the actual depth(s) may be deeper depending on the required lateral loads. We anticipate the piles will be isolated (i.e. spaced at least 3 pile diameters on center), and therefore, group effects are not anticipated. The total settlement for each pile is not expected to exceed 1-inch provided the piles are properly constructed.

The allowable adhesion value of 500 psf assumes the CIDH piles develop their capacity solely from side resistance of the native soil (i.e. skin friction). Also, we assumed no downdrag forces were contributed to the pile from the existing uncertified fill.

6.4.2 Axial Capacity in Tension

The allowable axial tensile capacity may be assumed to be ½ the axial capacity in compression (see Section 6.4.1 above). The weight of the embedded portion of the concrete shaft may be added to the tensile capacity.

6.4.3 Lateral Load Behavior

The lateral load behavior of a 24-inch diameter CIDH pile was evaluated using the LPILE (Ensoft, 2016) software program. LPILE (2016) uses load deflection (p-y) curves to approximate the relationship between soil resistance and pile deflection. The lateral load behavior was evaluated based on an allowable deflection of ½-inch at the pile head. We assumed a concrete compressive strength of 3,000 psi for our analyses and a steel reinforcement equal to approximately 1.1 percent of the total pile cross-sectional area.

The main inputs in the LPILE software for each soil layer are the unit weight and soil shear strength. The uncertified fill in our profile was assumed to behave as "sand" with a total unit weight of 98 pcf, effective friction angle of 20 degrees, and no cohesion. A request for modification of building ordinances for deriving lateral support from the existing undocumented fill will be submitted concurrently with this report. The existing native soil below 20 feet was assumed to have a total unit weight of 117 pcf, an effective friction angle of 27 degrees and a cohesion value of 250 psf. The results of the LPILE analyses are included in Appendix C of this report.

The structural engineer shall review the results of our analyses once the actual loads have been determined. We anticipate supplemental analyses will likely be required if the proposed pedestrian ramp and retaining walls are supported on CIDH piles.

6.4.4 CIDH Pile Construction

The recommendations provided in Section 6.2.4.3 of this report are applicable to CIDH pile construction for the shade structure and pedestrian ramp.

6.5 LATERAL EARTH PRESSURES FOR RETAINING WALLS

The pedestrian ramp retaining walls shall be designed to retain the surrounding soil using either an equivalent "active" or "at-rest" fluid pressure. Walls that are free to rotate away from the base (i.e. not restrained) shall be designed to withstand an "active" pressure based on an equivalent fluid pressure of 45 pcf. Restrained walls shall be designed to withstand an equivalent "at-rest" fluid pressure of 60 pcf. The recommended lateral earth pressure value assumes that the surface of the backfill behind the retaining walls is close to horizontal (inclination of 5:1 or flatter). The foregoing lateral earth pressure assumes non-expansive and free-draining backfill behind the ramp walls. If surcharge loads (live or dead) are applied, they should be added to the earth pressure by applying a uniform (rectangular) pressure. The lateral earth pressure coefficients for a uniform vertical surcharge load applied behind the ramp walls are 0.33 and 0.50 for an active and at-rest condition, respectively.

Although we expect the retained heights of the proposed ramp walls to be less than 6 feet, the exact retained heights are not known at this time. Per the requirements of the LADBS' Bulletin P/BC 2020-083, retaining walls supporting more than 6 feet of backfill shall be designed for seismic lateral earth pressures. The seismically induced increment, which is separate and in addition to the static earth pressure(s), was estimated based on the procedures outlined in Bulletin P/BC 2020-083. A seismic earth pressure increment of 25 pcf shall be used, and this should be applied as an inverted triangle pressure distribution.

6.6 RETAINING WALL DRAINAGE

The lateral earth pressures provided in Section 6.5 assume non-expansive backfill and no buildup of hydrostatic pressure behind the ramp retaining walls. The bottom front portion of the ramp walls shall include 2-inch diameter weep holes. Also, the backfill shall consist of granular filter material. A minimum 12-inch thick layer of filter material shall be placed against the back of the ramp walls and extend up to 18 inches below the adjacent grade behind the wall(s). The filter material should be clean, well-graded and consist of sand and gravel meeting the following gradation requirements:

Sieve Size	Percentage Passing Sieve
1"	100
¾"	90-100
⅜"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

An alternative to graded filter material is to use clean gravel (3/8-inch or ¾-inch size) with a nonwoven geosynthetic (i.e. filter fabric) placed between the gravel and backfill soil. The filter fabric shall also be placed between the clean gravel and the overlying soil cap. The filter fabric shall meet the requirements outlined in Table 213-2.2 of the "Greenbook". Fill materials overlying the filter material shall consist of the onsite fill material or import material.

6.7 PLANTER AND FENCE WALL AND NON-STRUCTURAL FOUNDATIONS

Continuous and/or isolated footings may be used to support planter, fence, and other non-structural (i.e. non-retaining) site walls less than 8 feet tall. Non-structural footings shall be structurally isolated from adjacent structural foundations. Also, the footings shall bear on at least 24 inches of compacted fill. The structural engineer is responsible for designing the steel reinforcement.

Footings with a minimum width of 12 inches and embedded a minimum of 18 inches below the lowest adjacent grade, bearing on properly compacted fill, may be designed for an allowable bearing capacity of 1,200 psf. The allowable bearing capacity includes dead-load and sustained live-loads. The value may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces.

Lateral load resistance will be developed by passive soil pressure against the footings and by friction acting along the base of the footings. An allowable passive pressure of 150 psf per foot of depth may be used for design purposes. Passive pressure shall begin at a depth of 12 inches below the ground surface; however, if the structure is located adjacent to an exterior slab or pavement, passive pressure may begin at the ground surface. The allowable passive pressure is only applicable for level (ground slope equal to or flatter than 5:1) conditions. An allowable coefficient of friction of 0.35 may be used for dead and sustained live loads for frictional resistance.

6.8 DRAINAGE

Final grades should be sloped to direct surface water away from foundations and slabs and towards discharge facilities. Surface water should not be allowed to pond anywhere onsite. Water from downspouts, if any, should be collected in closed pipes and conveyed to storm drains or other appropriate discharge locations.

6.9 FEASIBILITY OF STORMWATER INFILTRATION

The requirements outlined in LADBS' Information Bulletin P/BC 2020-118 typically don't allow for storm water infiltration into existing uncertified fill material. Due to the potential for significant settlement to occur in the existing fill materials, the GED does not consider this site to be feasible for shallow stormwater infiltration. Deeper stormwater infiltration via a dry well may be feasible; however, it would require an additional investigation. The dry well is expected to increase saturation of the native soils below a depth of 20 feet making them prone to post-liquefaction settlement, and therefore, a liquefaction evaluation would be required. To meet the City's LID BMP requirements, the civil designer should consider other alternatives such as biofiltration and/or a capture-and-use system. A supplemental report, which includes the results of a liquefaction evaluation, will be prepared if a dry well system becomes incorporated into the project scope.

6.10 PAVEMENT DESIGN

The following pavement designs have been prepared for parking areas and driveways based on an assumed R-value of 50. In all pavement areas, the uppermost 18 inches of subgrade soil shall should be compacted to at least 90 percent RC.

6.10.1 Asphalt Pavement Sections

Traffic indexes (TIs) were not provided to us at the time of this report. Pavement sections were calculated for the range of TIs shown in the table below.

TABLE 2 – ASPHALT PAVEMENT SECTION LAYER THICKNESSES (INCHES)

Layer	Traffic Index = 5.0	Traffic Index = 6.0	Traffic Index = 7.0	Traffic Index = 8.0	Traffic Index = 9.0
AC surface	2.5	3.0	3.5	4.0	4.0
CAB/CMB (95 percent RC)	4.0	6.0	6.0	7.0	9.0
Compacted Subgrade (90 percent RC)	18	18	18	18	18

6.10.2 Portland Cement Concrete Pavement

Portland cement concrete (PCC) pavement may be used instead of asphalt concrete. For TIs between 6 and 7, a section of 6 inches of PCC over 8 inches of crushed aggregate base or crushed miscellaneous base is recommended. For TIs of 8 and 9, the PCC section should be increased to 7 and 8 inches, respectively. The Portland Cement Concrete should have a minimum modulus of rupture of 650 psi at 28 days.

7.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

7.1 REVIEW OF PLANS AND SPECIFICATIONS

The grading and foundation plans and specifications should implement the recommendations presented in this report and should be reviewed by the GED to ensure proper interpretation and application of our recommendations.

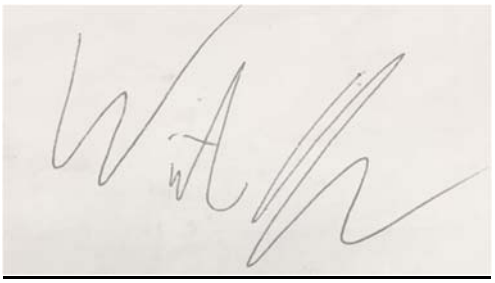
7.2 GEOTECHNICAL OBSERVATION AND TESTING DURING CONSTRUCTION

All grading, excavation, and construction of foundations should be performed under the observation and testing of the Geotechnical Engineer at the following stages:

- During demolition and site clearing;
- During site excavation;
- During shoring installation;
- During subgrade preparation,
- During placement of geotextiles,
- During fill placement and compaction;
- After excavation of the structural mat foundation prior to concrete placement;
- During CIDH pile excavations;
- During excavation and backfilling of all utility trenches; and
- When any unusual or unexpected geotechnical conditions are encountered.

8.0 CLOSURE

If you have any questions regarding this report, please contact Winston Boyce at (213) 847-0486.



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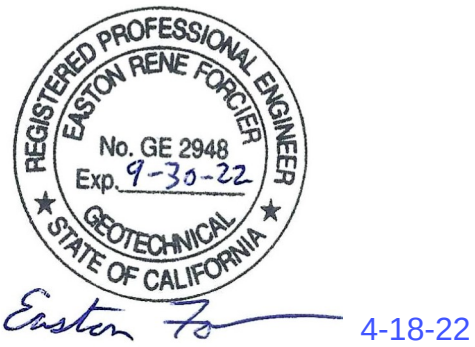

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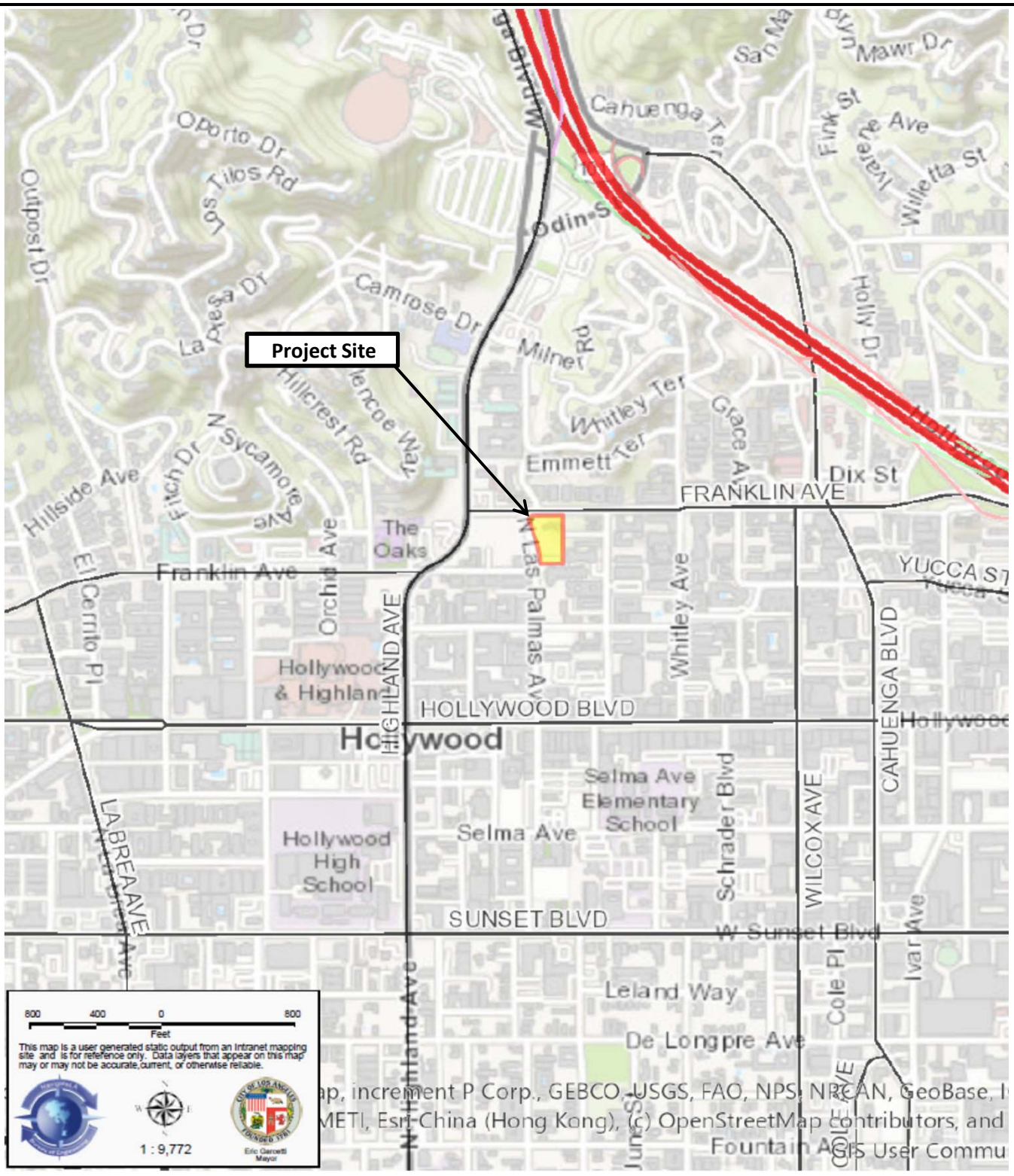
FIGURES



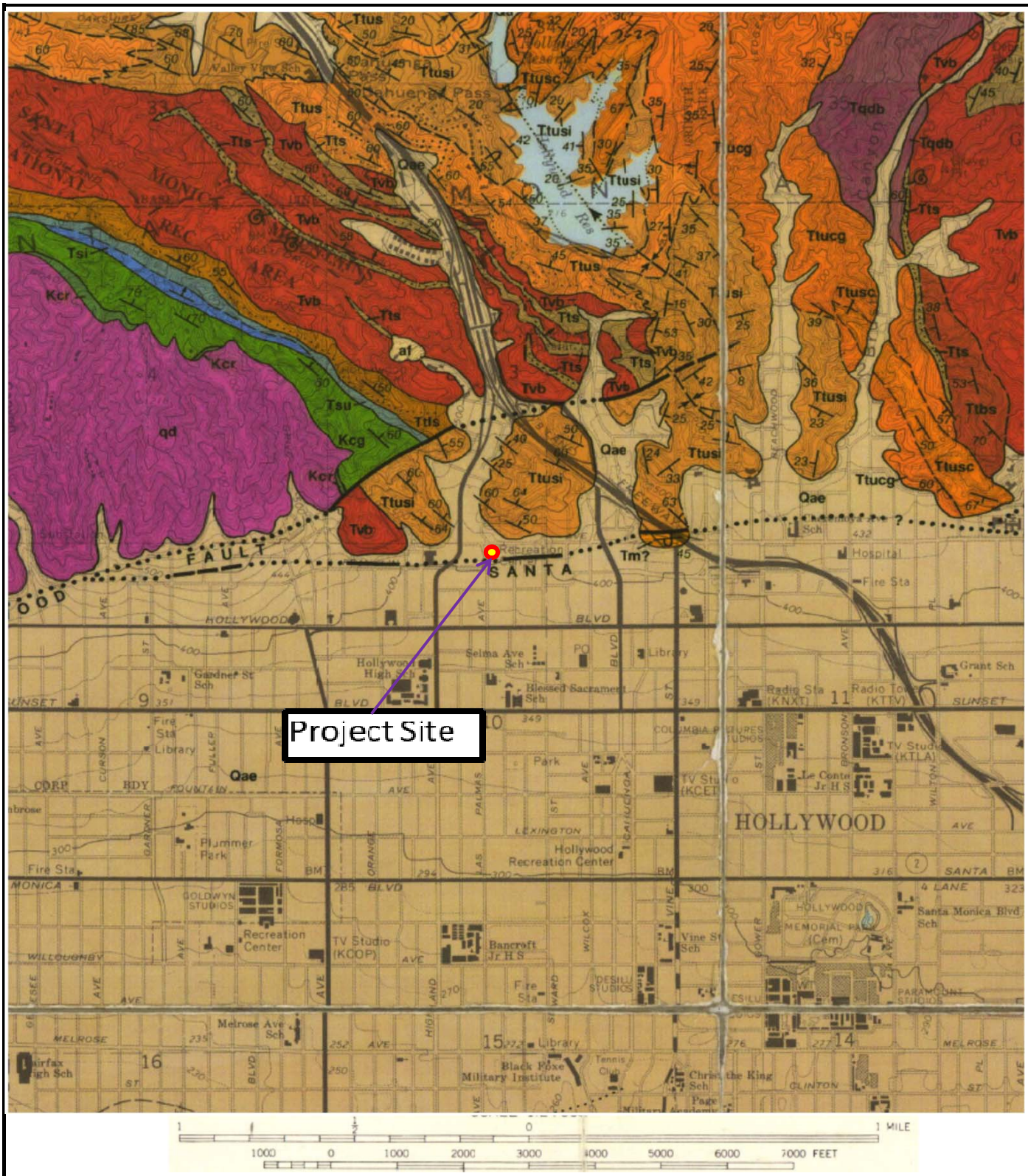
Vicinity Map

Las Palmas Senior Center 1820 N Las Palmas Avenue Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-159 DATE: APRIL 2022	FIGURE NO. 1



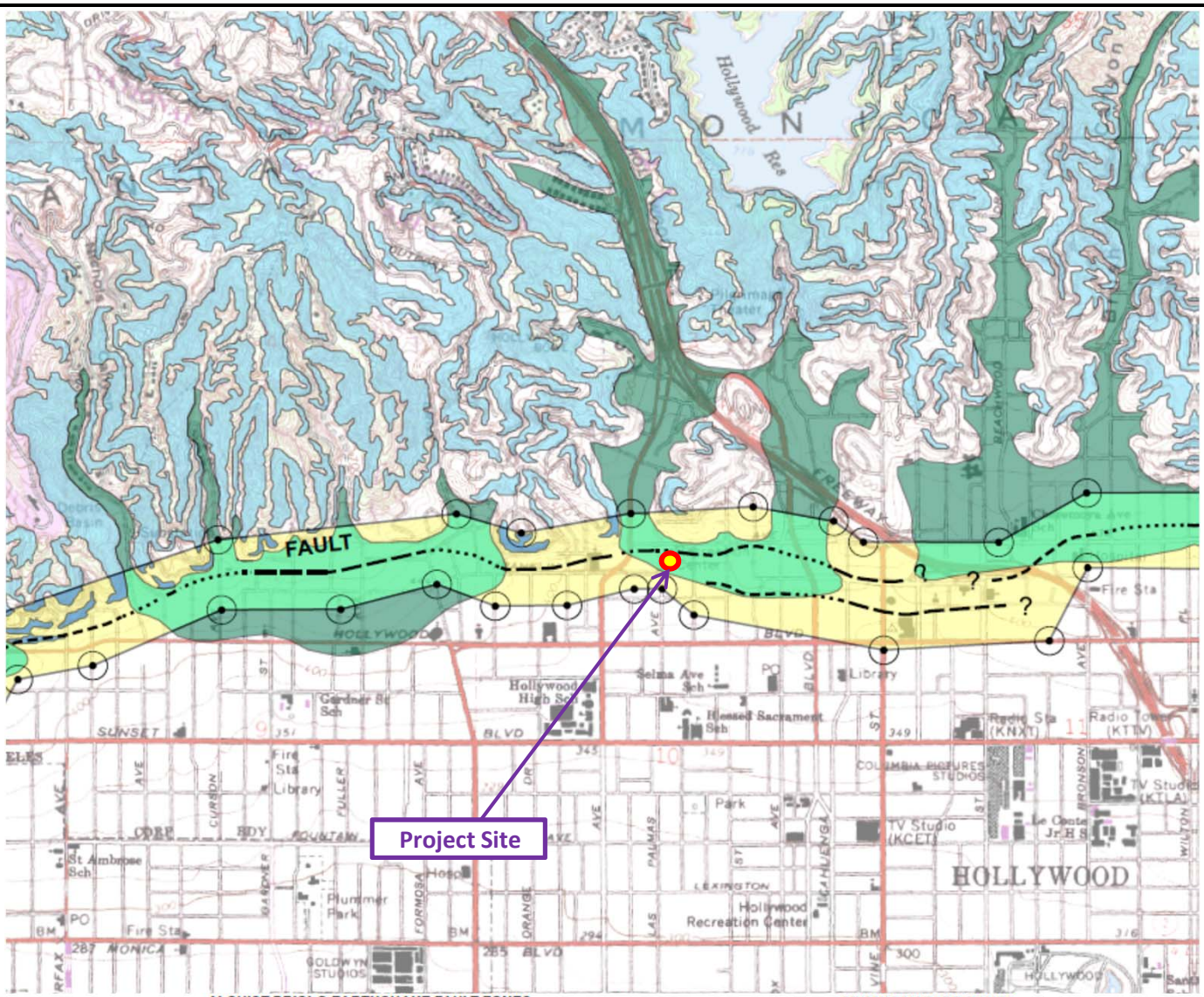
Site Location Map

Las Palmas Senior Center 1820 N Las Palmas Avenue Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-159 DATE: APRIL 2022	FIGURE NO. 2



Geologic Map (Dibblee Jr., 1991)

Las Palmas Senior Center 1820 N Las Palmas Avenue Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-159 DATE: APRIL 2022	FIGURE NO. 3



ALQUIST-PRIOLO EARTHQUAKE FAULT ZONES

Earthquake Fault Zones
Zone boundaries are delineated by straight-line segments that connect encircled turning points; the boundaries define the zone encompassing active faults that constitute a potential hazard to structures from surface faulting or fault creep such that avoidance as described in Public Resources Code Section 2621.5(a) would be required.

Active Fault Traces
Faults considered to have been active during Holocene time and to have potential for surface rupture; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by fault creep.

1906 C

Overlap of Earthquake Fault Zone and Liquefaction Zone
Areas that are covered by both Earthquake Fault Zone and Liquefaction Zone.

SEISMIC HAZARD ZONES

Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

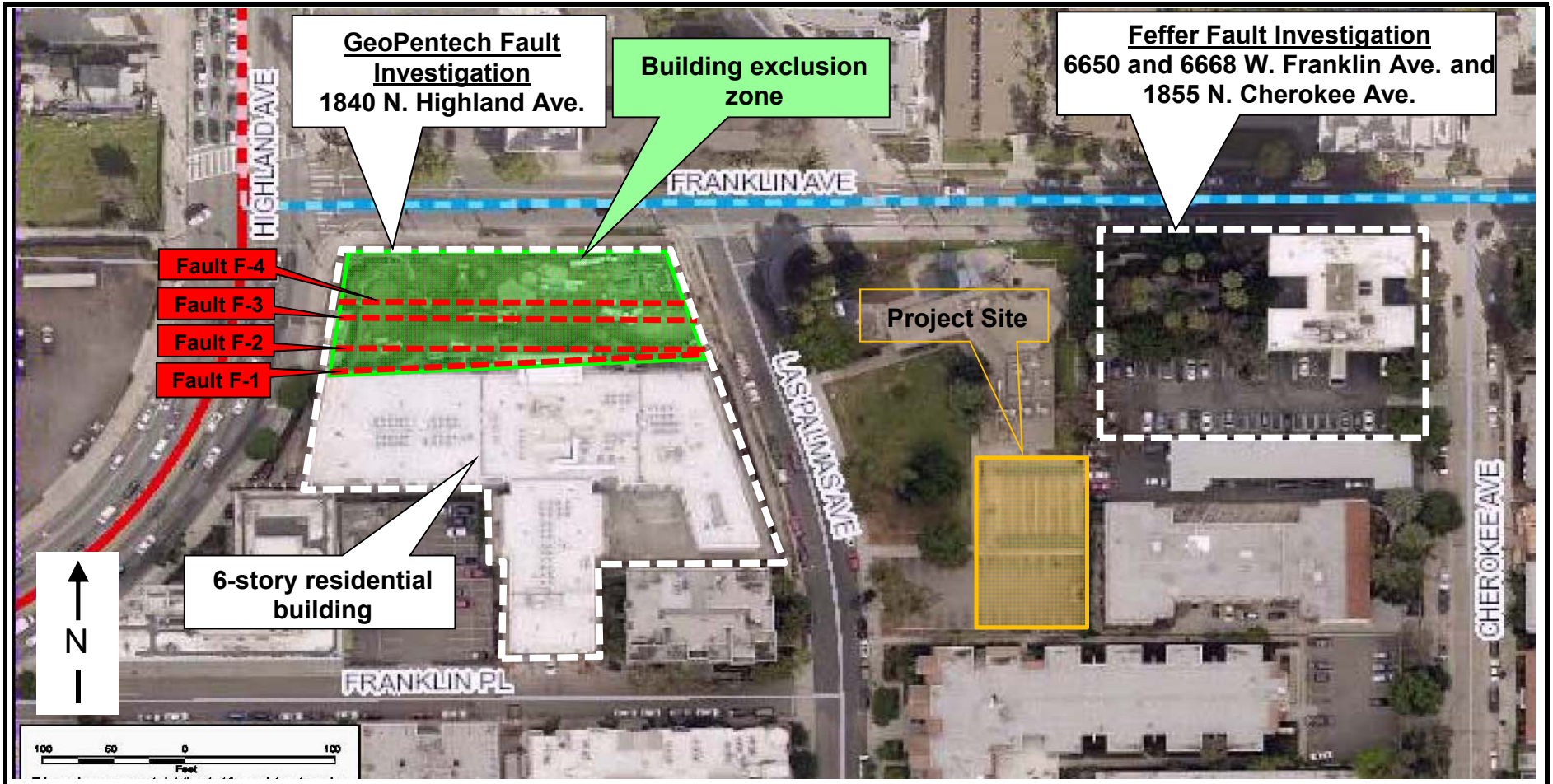
Earthquake-Induced Landslide Zones
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Overlap of Earthquake Fault Zone and Earthquake-Induced Landslide Zone
Areas that are covered by both Earthquake Fault Zone and Earthquake-Induced Landslide Zone.

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

Earthquake Zones of Required Investigation (CGS, 2014)

Las Palmas Senior Center 1820 N Las Palmas Avenue Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-159 DATE: APRIL 2022	FIGURE NO. 4



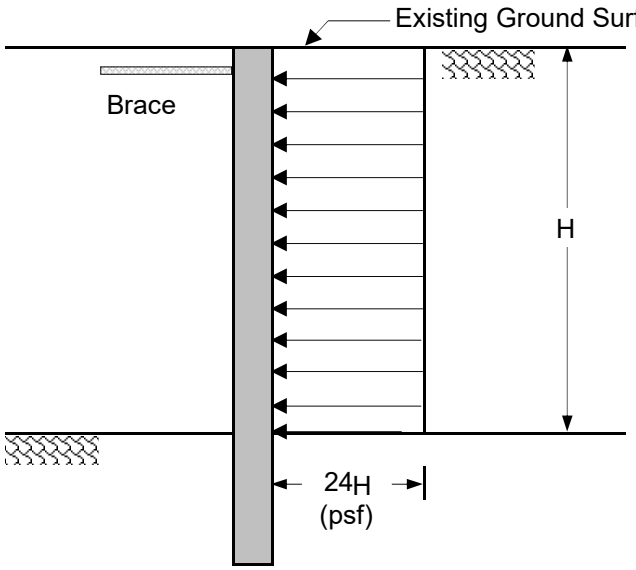
LEGEND

Fault F-1 — Approximate location of active fault traces, GeoPentech Fault Investigation

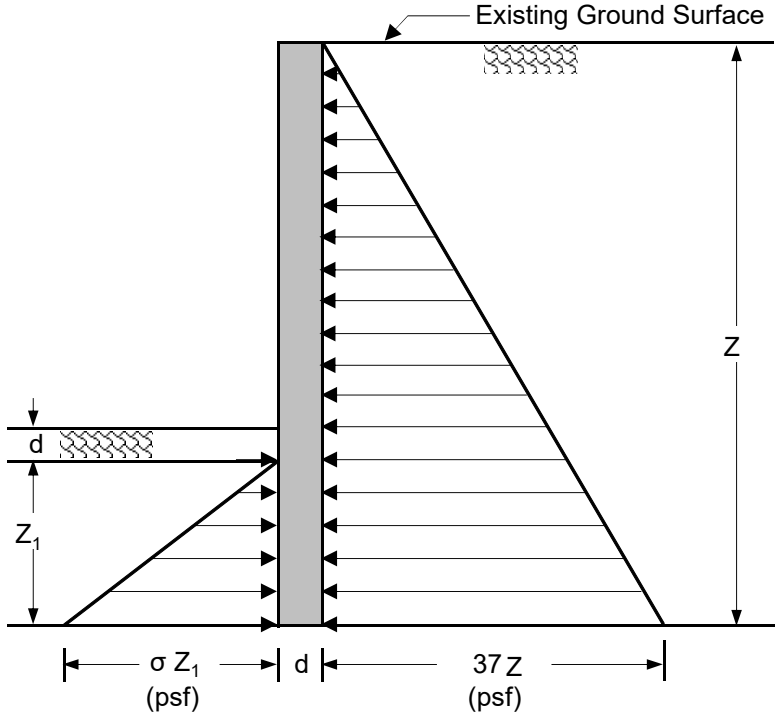
Previous Hollywood Fault Investigation Map

Las Palmas Senior Center 1820 N Las Palmas Avenue Los Angeles, CA	BUREAU OF ENGINEERING GEOTECHNICAL ENGINEERING DIVISION (GED) GED FILE NO.: 21-159 DATE: APRIL 2022	FIGURE No. 5

Q:\PROJECTS\2021\21-159 Las Palmas Senior Center\Analysis\Figure 6 - Lateral Pressures for Shoring



BRACED SHORING



CANTILEVER SHORING

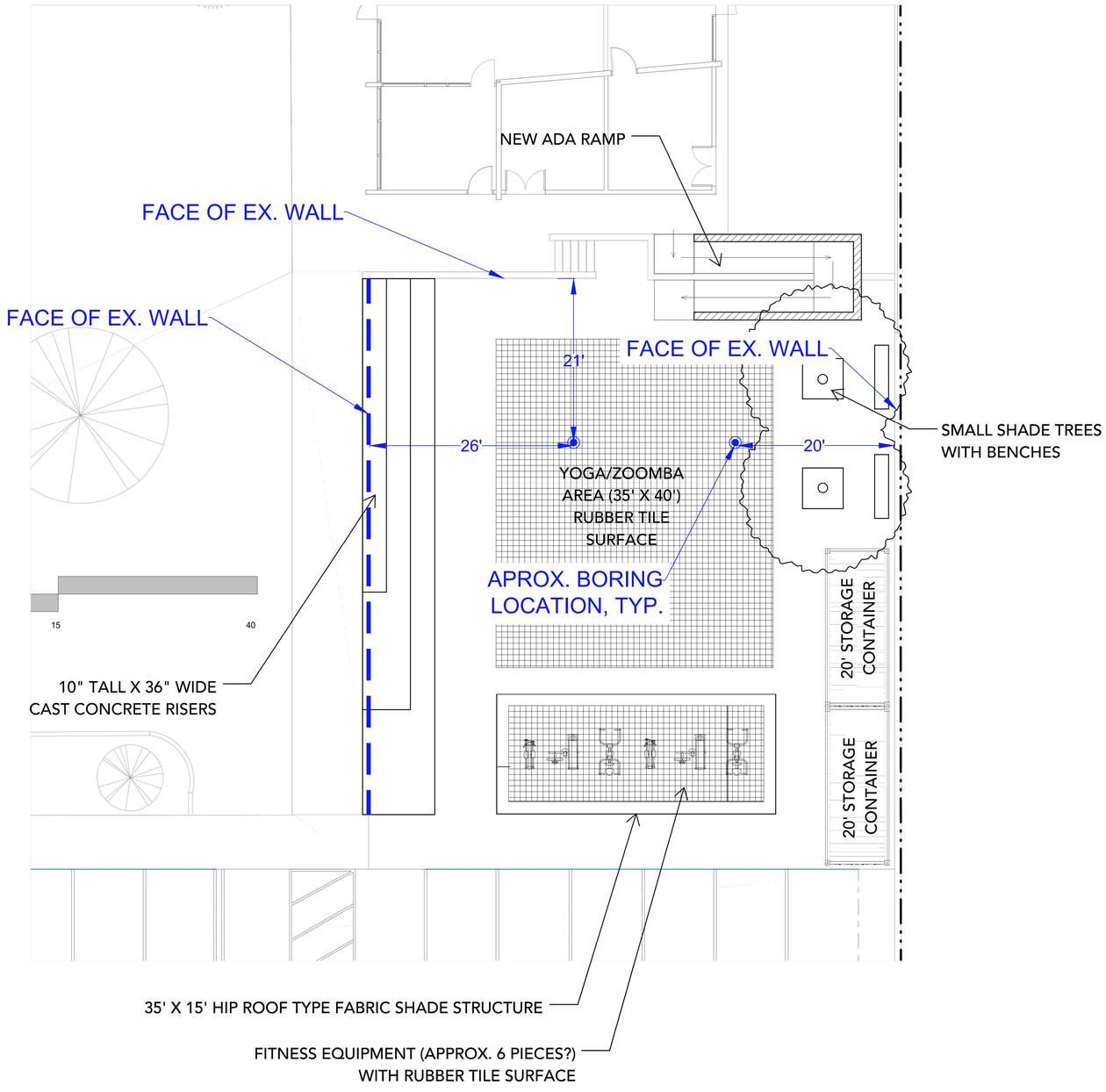
σ = 470 pcf for soldier piles spaced at least 2.5d apart
σ = 230 pcf for soldier piles spaced less than 2.5d apart

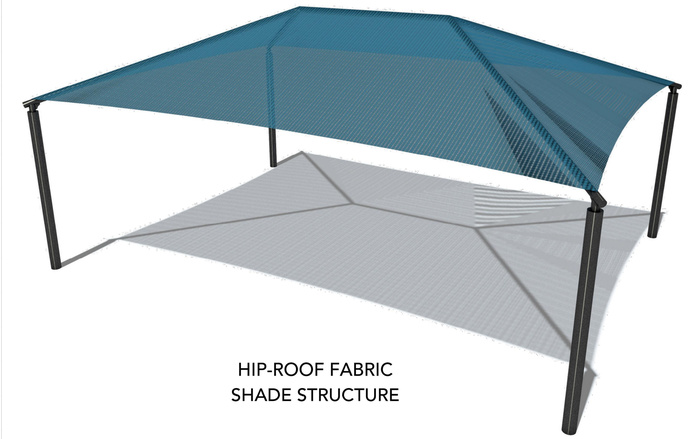
Notes:
1. Not to scale.
2. Dimensions are in feet.
3. Earth pressures shown are based on level backfill conditions behind shoring elements and groundwater below bottom of shoring elements.

LATERAL EARTH PRESSURES FOR TEMPORARY SHORING SYSTEMS
Las Palmas Senior Center
1820 N Las Palmas Avenue
Los Angeles, California

By: ERF	Date: APRIL 2022	Project No.: 21-159
City of Los Angeles, DPW, BOE, Geotechnical Engineering Division		Figure **6**

APPENDIX A





HIP-ROOF FABRIC
SHADE STRUCTURE



FITNESS EQUIPMENT WITH
TILE SURFACE

LAS PALMAS SENIOR CENTER
FITNESS AREA CONCEPT PLAN

SCALE: 1/8" =1'-0"

APPENDIX B

TETRA TECH

Geotechnical Engineering ● Engineering Geology

Geotechnical Data Report

Las Palmas Senior Citizen Center Renovation Project
1820 N Las Palmas Avenue
Los Angeles, California



Prepared for:

Geotechnical Engineering Division
City of Los Angeles
1149 S. Broadway, Suite 120
Los Angeles, California 90015

Prepared by:

Tetra Tech,
21700 Copley Drive Suite 200
Diamond Bar, California 91765

March 31, 2022
Project No. ciLA 22-04G

TETRA TECH

Project No. ciLA 22-04G
March 31, 2022

Mr. Patrick Schmidt
Geotechnical Engineering Division
1149 S. Broadway, Suite 120
Los Angeles, California 90015-2213

Subject: **GEOTECHNICAL DATA REPORT**
LAS PALMAS SENIOR CITIZEN CENTER RENOVATION PROJECT
1820 N Las Palmas Avenue
City of Los Angeles, California

Dear Mr. Schmidt:

Tetra Tech is pleased to submit this Geotechnical Data Report for the Las Palmas Senior Citizen Center renovation project located at 1820 N Las Palmas Avenue, Hollywood, in the City of Los Angeles. Our work was performed in general accordance with the scope of services as outlined in the City of Los Angeles' TOS 21-159, Work Order #E1908358, Contract No. C-130600 dated January 26, 2022. This report includes a brief description of site conditions, the proposed development, discussion regarding our field investigation, and description of subsurface soil conditions. The appendices to the report include logs of borings, laboratory testing data, and logs of infiltration testing.

We appreciate the opportunity to provide our professional services on this project. If you have any questions regarding this report or if we can be of further service, please do not hesitate to contact the undersigned.

Respectfully submitted,
Tetra Tech BAS, Inc.

Fernando Cuenca, Ph.D., G.E.
Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
FERNANDO AUGUSTO CUENCA
GE 3128
GEOTECHNICAL
STATE OF CALIFORNIA

Peter Skopek, Ph.D., G.E.
Principal Engineer

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Distribution: Addressee (6 hardcopies + pdf by email patrick.schmidt@lacity.org)
Easton Forcier (pdf by email easton.forcier@lacity.org)

Filename: 2022-03-31 Las Palmas Senior Center Data FINAL RPT.docx

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Appendix B – Logs of Infiltration Testing
Appendix C – Laboratory Testing Results

1. INTRODUCTION

Presented herein is Tetra Tech's Geotechnical Data Report for the Las Palmas Senior Center Citizen renovation project located at 1820 N Las Palmas Avenue, Hollywood, in the City of Los Angeles. Our work was performed in general accordance with the scope of services as outlined in the City of Los Angeles' TOS 21-159, Work Order #E1908358, Contract No. C-130600 dated January 26, 2022. It is our understanding that the project entails the complete renovation of the existing Las Palmas Senior Center and the construction of new exterior structures and site improvements. The new structures include two shade canopies and a concrete pedestrian ramp with retaining walls. The canopies will be built over an area that it is currently occupied by a concrete slab. Other site improvements include permeable pavements, outdoor seats, and lighting. The approximate location of the project site is shown in Figure 1 – Site Location Map.

A geotechnical investigation is required to provide information regarding the subsurface materials at the site and to provide information to the Geotechnical Engineering Division (GED), the Engineer of Record, so that foundation design and grading recommendations can be developed for the proposed new structures. Additionally, infiltration rates are herein for the design of infiltration Best Management Practices (BMPs). This report presents the geotechnical data collected from our field exploration program in support of the design and construction of the subject project.

2. SCOPE OF SERVICES

Tetra Tech's scope of services for this project is in general accordance with the requirements outlined in Task Order Solicitation (TOS) of City of Los Angeles TOS 21-159, Work Order #E1908358, Contract No. C-130600 dated January 26, 2022. The scope of services for this project consisted of the following tasks:

- Review of available background data, including in-house and Client provided geotechnical data, geotechnical literature, and geologic maps relevant to the subject site.
- Perform a reconnaissance site visit to observe ground conditions and mark boring locations in coordination with GED staff.
- Coordinate with GED staff and Underground Service Alert (USA) to locate underground utilities at the site.
- Perform concrete coring through existing concrete slab before drilling.
- Conduct a subsurface investigation including the excavating, logging, and sampling of 4 exploratory borings to a maximum depth of 26.5 feet.
- Advance one boring for infiltration testing to a depth of approximately 8.5 feet and conduct infiltration testing using a falling head test method.
- Transport selected soil samples obtained from the borings to the laboratory.
- Perform laboratory testing on select samples as requested by GED staff.
- Prepare this Geotechnical Data Report in conformance with the scope specified in Section 2.4 of TOS.

3. FIELD EXPLORATION PROGRAM

Prior to starting the field exploration program, a field reconnaissance was conducted to observe surface conditions and to mark the locations of the planned exploratory and infiltration boreholes under the direction of the GED staff.

Underground Service Alert and GED staff were notified of the subsurface exploration schedule at least 48 hours prior to drilling.

The subsurface soil and groundwater conditions beneath the site were explored on February 9, 2022. The field program included the drilling, logging, and sampling of 4 exploratory geotechnical borings denoted B-1 through B-4 and one additional boring for infiltration testing denoted I-1. Prior to drilling concrete coring was performed through the concrete slab at those marked boring locations within the slab footprint (B-1 through B-3 and I-1). All the borings were advanced using a track-mounted limited access rig equipped with 6-inch diameter hollow stem augers. The limited access rig had the following dimensions: 5.5 feet wide, 11 feet long, and 7.5 feet high when towered down. The borings were drilled at the approximate locations shown on Figure 2 – Boring Location Map. At least one GED representative was present at the site during all field activities.

The longitude and latitude of the as-drilled boring locations was obtained with a handheld NAD 83 Coordinate System Global Positioning System (GPS) unit and are summarized in Table 1 provided below. The highlighted exploration corresponds to an infiltration test location.

Table 1
Boring Information

Exploration Number	General Location	Approximate Latitude	Approximate Longitude	Approximate Ground Surface Elevation (feet)*	Approximate Depth (feet)
B-1	Southern end of the slab	34.104519° N	-118.335751° W	412	26.5
B-2	Central west end of the slab	34.104547° N	-118.335839° W	412	26.5
B-3	Northeastern end of the slab	34.104603 ° N	-118.335712° W	411	26.5
B-4	Near trash enclosure	34.104340° N	-118.335654° W	409	16.5
I-1	Northcentral end of the slab	34.104595° N	-118.3335779° W	411	8.5

One bulk sample was collected within the upper 5 feet at each boring location. Disturbed and relatively undisturbed soil samples were collected every 2.5 feet to a depth of 15 feet. Below 15 feet, soil samples were collected every 5 feet. The relatively undisturbed samples were collected utilizing a Modified California-type driven ring sampler. Disturbed soil samples were collected using a standard split-poon sampler (inner diameter = 1 3/8 inches) without liners. Standard Penetration Tests (SPT) and driven ring samplers were advanced with a 140-pound

hammer with a drop of 30 inches in general accordance with ASTM D1586. Field blowcounts were recorded for every 6 inches of penetration. The calibration of the hammer energy efficiency was reported to be about 87.7 percent.

Recovered cuttings from the soil borings and in-situ samples were logged by a Tetra Tech Professional Engineer in general accordance with the visual-manual procedure for description and identification of soils, ASTM D2488. The soil samples were also prepared for subsequent examination and laboratory testing. Following drilling, all boreholes were backfilled with soil cuttings, and the borings through the concrete slab, B-1 through B-3, and I-1, were repaired with a concrete patch at the surface. The remaining borehole on the asphalt pavement near the trash enclosure B-4 was capped with an asphalt cold patch.

Additional details pertinent to material types encountered in the borings, groundwater conditions, and sampling depths and types are presented in the boring logs included in Appendix A.

4. FIELD INFILTRATION TESTING

The infiltration testing was performed by Tetra Tech on February 9, 2022. The infiltration testing borehole I-1 was advanced to a depth of approximately 8.5 feet. The installation and testing of the infiltration test boring was performed in general accordance with the small diameter boring infiltration test procedure described in the Los Angeles County Department of Public Works (LACDPW) GS200.1 Guidelines (2021). The infiltration test boring was constructed by placing 2 inches of ¾-inch gravel at the bottom of the boring and then installing a 3-inch-diameter perforated pipe (casing) with 5/8-inch-diameter holes. The casing extended from the top of the gravel placed at the bottom of the boring to the ground surface and was wrapped in a protective cloth filter sock to limit the migration of soil particles into the pipe. The annular space of each boring was filled with ¾-inch gravel (filter pack) up to a few feet above the zone of infiltration testing. The ¾-inch gravel was selected as the filter pack material since it has a hydraulic conductivity significantly larger than that of the surrounding soil.

Prior to starting the infiltration testing, the borehole was presoaked for at least 4 hours. Based on the infiltration rate observed during the presoaking it was determined that a falling head test would be utilized for assessing the infiltration rate.

For the falling head test, an initial water level of approximately 1 foot was established above the bottom of the borehole and then the subsequent fall in water level was recorded over a 30-minute time interval. The water level after 30 minutes was refilled to the initial water level of about 1 foot for each successive test. Testing was performed at the I-1 location until a stabilized drop rate was obtained (per GS 200.1 a stabilized rate is obtained when the highest and lowest readings are within 10 percent from each other for 3 consecutive readings), with no less than 6 readings taken. The water levels were measured using a water sounder.

Logs of the infiltration test are included in Appendix B. Upon completion of infiltration testing, the casings was removed, and the boring was backfilled with soil cuttings generated during drilling. I-1 was capped with a concrete patch.

The results of the infiltration testing are provided in Table 2 below. The field percolation rate was converted, as indicated in the infiltration test logs in Appendix B, to a raw field infiltration rate using the Porchet method considering the effect of the porosity of the gravel pack i.e., approximately 0.35. According to City of los Angeles LID Manual (2016) a design Factor of Safety is required to be applied to the raw field infiltration rate to obtain a design infiltration rate. A minimum design Factor of Safety of 3 is required for the design of stormwater facilities. The design infiltration rate for stormwater facilities is provided in Table 2.

Table 2
Results of Infiltration Test

Exploration Number	Soil Type at Bottom of Hole	Approx. Ground Elevation (ft)	Depth to Bottom of Borehole (ft)	Infiltration Rate (in/hr)	
				Field	Design FS=3.0
I-1	Clayey Sand (SC)	411	8.5	0.9	0.3

5. LABORATORY TESTING

Laboratory tests were performed on selected samples recovered from the borings to aid in the classification of soils and to evaluate pertinent engineering properties of the foundation soils. The following tests were performed as requested by GED:

- In-situ Moisture Content and Dry Density, ASTM D2937;
- Grain Size Distribution, ASTM D6913 and D7928;
- Percent Passing #200 Sieve, ASTM D1140;
- Atterberg Limits, ASTM D4318;
- Expansion Index, ASTM D4829;
- Direct Shear ASTM D3080;
- Compaction Testing, ASTM D1557;
- Consolidation ASTM D2435.

Testing was performed in general accordance with applicable indicated ASTM Standards and California Test Methods. Results of all laboratory tests are presented in Appendix C. A summary of the direct shear test results is presented in Table C-1. For ease of referral to the soil profile, selected laboratory results have also been included in the boring logs in Appendix A.

6. SUBSURFACE SOIL CONDITIONS

Based on geological mapping (Dibblee and Ehrenspeck, 1991), the site is underlain by Quaternary age older alluvial deposits (Qae), underlain by Tertiary-age sedimentary bedrock of the Topanga Formation (Tt). As encountered in the borings, fill soils about 15 to 20 feet thick mantle the alluvium. Generalized descriptions of the encountered units are provided below. More detailed descriptions of the soil conditions encountered at the boring locations are presented on the boring logs in Appendix A.

6.1. Fill (Af)

Undocumented fill (Af) was encountered in all the borings to depths ranging from 15 feet near the trash enclosure to 20 feet in the concrete slab area. The fills consisted mostly of olive gray to yellowish brown loose to medium dense silty sands, and clayey sands. Trace amounts of red brick fragments and gravel were generally observed. It is noted that a soil investigation performed by Feffer Geological Consulting (2016) on a property adjacent to the site to the east at 6650 Franklin Avenue also encountered fills ranging in thickness between 3 and 22 feet.

6.2. Alluvium (Qae)

Alluvial soils (Qae) encountered in the 4 exploratory borings B-1 through B-4 consisted mostly of yellowish brown medium dense silty sands and clayey sands, and yellowish brown stiff to very stiff lean clays.

7. LIMITATIONS

The geotechnical data presented in this report are based on Tetra Tech's review of background documents and on information obtained from field explorations. Due to the limited nature of the field explorations, conditions not observed and described in this report may be present on the site. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation and laboratory testing can be performed upon request. It should be understood that conditions different from those anticipated in this report may be encountered during grading operations, for example, the extent of unsuitable soil and the associated additional effort required to mitigate them.

Site conditions, including groundwater level, can change with time as a result of natural processes or the activities of man at the subject site or at nearby sites. Changes to the applicable laws, regulations, codes, and standards of practice may occur as a result of government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Tetra Tech has no control.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Tetra Tech should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document. Reliance by others on the data presented herein or for purposes other than those stated in the text is authorized only if so permitted in writing by Tetra Tech. It should be understood that such an authorization may incur additional expenses and charges.

Tetra Tech has endeavored to perform its evaluation using the degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical professionals with experience in this area and similar soil conditions. No other warranty, either expressed or implied, is made as to the conclusions and recommendations contained in this report.

8. SELECTED REFERENCES

California Division of Mines and Geology (CDMG), 1998, Seismic Hazard Evaluation of the Hollywood 7.5-minute Quadrangle, Los Angeles County, California. Open File Report 98-17.

City of Los Angeles, Department of Building and Safety, 2017. Guidelines for Storm Water Infiltration. Information Bulletin/Public – Building Code. Document No.: P/BC 2017-118.

City of Los Angeles, 2016. Planning and Land Development Handbook for Low Impact Development (LID). Part B, Planning Activities, 5th Edition. May 9, 2016.

Dibblee, T.W. and Ehrenspeck, H.E., ed., 1991, Geologic map of the Hollywood and Burbank (south 1/2) quadrangles, Los Angeles, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-30, scale 1:24,000.

Feffer Geological Consulting, 2017. Geotechnical Investigation. Proposed Six-story Building Over two Subterranean Levels. Montecito Apartments 6650 and 6668 W. Franklin Avenue, and 1855 N. Cherokee Avenue, Hollywood, CA. July 6, 2017.

Yerkes, R.F., and Campbell, R., 2005, Preliminary geologic map of the Los Angeles 30' x 60' quadrangle, southern California: U.S. Geological Survey, Open-File Report OF-97-255, scale 1:24,000.

Figures



FIGURE 1

TETRA TECH
21700 Copley Drive, Suite 200, Diamond Bar, CA 91765
TEL 909.860.7777 www.tetratech.com

LAS PALMAS SENIOR CITIZEN CENTER - LOS ANGELES, CA

SITE LOCATION MAP

JOB NO.	CiLA 22-04G
DATE	March 2022
DRAWN BY	TAC/MAS
CHECKED BY	FC

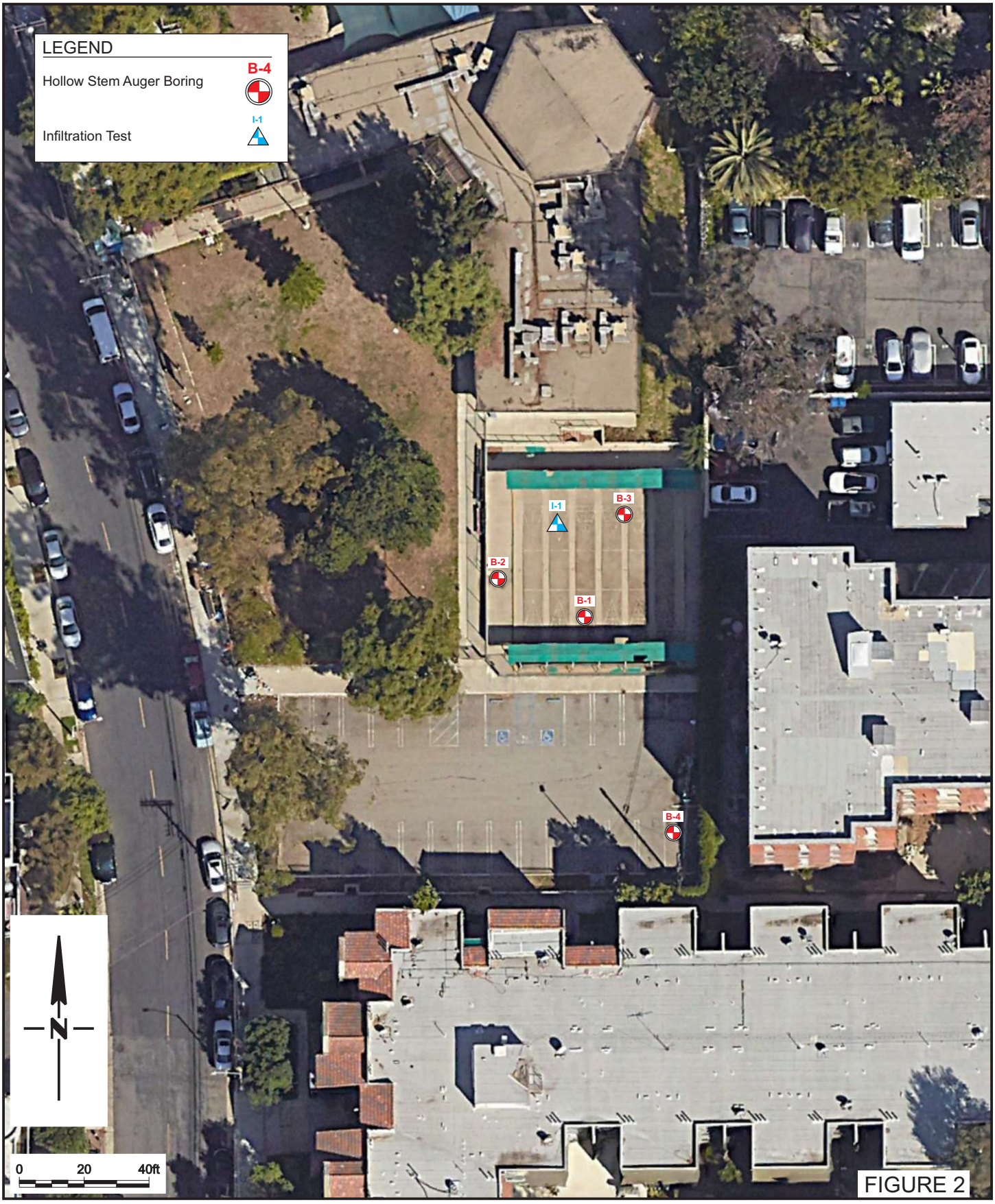

FIGURE 2

TETRA TECH

21700 Copley Drive, Suite 200, Diamond Bar, CA 91765
TEL 909.860.7777 www.tetratech.com

LAS PALMAS SENIOR CITIZEN CENTER - LOS ANGELES, CA

BORING LOCATION MAP

JOB NO.	CiLA 22-04G
DATE	March 2022
DRAWN BY	TAC/MAS
CHECKED BY	FC

Appendix A

Log of Exploratory Borings

Appendix A
Logs of Exploratory Borings

Bulk and relatively undisturbed driven samples were obtained in the field during our subsurface evaluation. The samples were tagged in the field and transported to our laboratory for observation and testing. The driven samples were obtained using the California Split Barrel Drive, Shelby Tube, or Standard Penetration Test (SPT) sampler as described below.

California Split Barrel Drive Sampler
The split barrel drive sampler was driven with a 140-pound hammer allowed to drop freely 30 inches. The number of blows per foot recorded during sampling is presented in the logs of exploratory borings. The sampler has external and internal diameters of approximately 3.0 and 2.4 inches, respectively, and the inside of the sampler is lined with 1-inch-long brass rings. The relatively undisturbed soil sample within the rings is removed, sealed, and transported to the laboratory for observation and testing.

Shelby Tube Sampler
This sampler consists of a thin-walled tube with a cutting edge at the toe. A sampler head attaches the tube to the drill rod. The sampler has external diameter and wall thickness of approximately 3 inches and 16 gauges, respectively, with a total length of 36 inches. The Shelby tube sampler was driven with a 140-pound hammer allowed to drop freely 30 inches. The number of blows per foot recorded during sampling is presented in the logs of exploratory borings. The relatively undisturbed soil sample within the Shelby tubes is removed, sealed, and transported to the laboratory for observation and testing.

Standard Penetration Test Sampler
The standard penetration test sampler is driven with a 140-pound hammer allowed to drop freely 30 inches in general accordance with ASTM D1586. The number of blows (N-value) required to drive the SPT sampler 12 inches is shown on the boring logs. The sampler has external and internal diameters of approximately 2.0 and 1.4 inches respectively. The sampling tube consists of an unlined split-tube barrel. The disturbed soil sample is removed, sealed, and transported to the laboratory for testing.

Tetra Tech Inc.
21700 Copley Dr. Suite #200
Diamond Bar, CA 91765
(909) 860-7777

BORING B-1

PROJECT NAME Las Palmas Senior Citizen Cent. **CLIENT** City of Los Angeles **GROUND ELEVATION** 412 ft

PROJECT NUMBER 197-4693-0004 **PROJECT LOCATION** Hollywood - Los Angeles **GROUNDWATER DEPTH** Not encountered

DATES DRILLED 2/9/2022 **DRILLING CONTRACTOR** Jet Drilling **BOREHOLE DEPTH** 26.5 ft

LOGGED/CHECKED BY TA/FC **DRILLING METHOD** Hollow Stem Auger-LAR **BOREHOLE DIAMETER** 6 in

COORDINATES 34.104519, -118.335751 **HAMMER DATA** 140 Lbs, 30" drop **BACKFILL** Soil Cuttings

LOCATION DESCRIPTION South central area of the project site

Standard Penetration Test (SPT) | No Recovery | Shelby Tube
California-Type Ring Sample | No Recovery | Grab/Bulk Sample

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOWCOUNT blows/6" (bpf)	USCS	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	Notes	ELEVATION (ft)
0			SC	[FILL] Artificial Fill (af) Clayey SAND with Gravel, brown (10YR 4/3), damp to moist, fine to coarse sand, coarse gravel up to 2"				410
	SK-1			...(2.5 ft) plastic pieces			EI=6	
5	R-2	14-14-15 (29)		...(5 ft) yellowish brown (10YR 5/6), more clay content, w/ plastic pieces	94.6	20.4		405
	SPT-3	4-4-8 (12)		...(7.5 ft) olive gray (5Y 4/2), medium dense, moist, medium-grained, gravel up to 1", concrete chunks at tip			#200=15%	
10	R-4	15-8-9 (17)		...(10 ft) brown (10YR 4/3), moist, fine to coarse sand, coarse gravel up to 1"	108.5	16.4		400
	SPT-5	4-3-3 (6)		...(12.5 ft) loose, with concrete chunks			10" recovery	
15	R-6	5-9-15 (24)		...(15 ft) w/ plastic and brick fragments	99.2	23.2	PL=23, LL=43	395
20	SPT-7	6-6-7 (13)	SM	[NATIVE] Alluvium (Qae) Silty SAND with Gravel, medium dense, yellowish brown (10YR 5/6), moist, fine to medium grained, gravel up to 2"				390
25	R-8	5-8-7 (15)		...(25 ft) trace gravel	104.0	12.1	G/S/F=4/63/33%	

Notes:
Total depth=26.5 ft.
Groundwater was not encountered.
Boring backfilled with soil cuttings.

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BORING B-2

PROJECT NAME Las Palmas Senior Citizen Cent. **CLIENT** City of Los Angeles **GROUND ELEVATION** 412 ft

PROJECT NUMBER 197-4693-0004 **PROJECT LOCATION** Hollywood - Los Angeles **GROUNDWATER DEPTH** Not encountered

DATES DRILLED 2/9/2022 **DRILLING CONTRACTOR** Jet Drilling **BOREHOLE DEPTH** 26.5 ft

LOGGED/CHECKED BY TA/FC **DRILLING METHOD** Hollow Stem Auger-LAR **BOREHOLE DIAMETER** 6 in

COORDINATES 34.104547, -118.335839 **HAMMER DATA** 140 Lbs, 30" drop **BACKFILL** Soil Cuttings

LOCATION DESCRIPTION West central area of the project site

Standard Penetration Test (SPT) | No Recovery | Shelby Tube
California-Type Ring Sample | No Recovery | Grab/Bulk Sample

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOWCOUNT blows/6" (bpf)	USCS	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	Notes	ELEVATION (ft)
0								412
	SK-1		SM	[FILL] Artificial Fill (af) Silty SAND, olive brown (2.5Y 4/3), damp to moist, fine medium-grained				410
5	R-2	5-6-7 (13)	SC	Clayey SAND, brown (10YR 4/3), moist, fine to medium-grained, gravel up to 2"	111.1	13.0		405
	SPT-3	4-4-5 (9)		...(7.5 ft) loose, with glass pieces and concrete chunks			#200=34%	
10	R-4	5-7-9 (16)		...(10 ft) concrete chunks up to 2"	109.0	10.8	PL=21, LL=30	400
	SPT-5	3-4-4 (8)		...(12.5 ft) with brick fragments at tip			10" recovery	
15	R-6	7-10-12 (22)			95.6	16.1		395
20	SPT-7	5-9-10 (19)	SM	[NATIVE] Alluvium (Qae) Silty SAND with Gravel, medium dense, yellowish brown (10YR 5/6), moist, fine to coarse-grained, coarse gravel				390
25	R-8	5-7-9 (16)	CL	Sandy Lean CLAY, yellowish brown (10YR 5/6), moist, fine to coarse-grained	98.8	18.4	G/S/F=1/41/58%, Direct Shear	

Notes:
Total depth=26.5 ft.
Groundwater was not encountered.
Boring backfilled with soil cuttings.

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BORING B-3

Sheet 1 of 1

PROJECT NAME Las Palmas Senior Citizen Cent. **CLIENT** City of Los Angeles **GROUND ELEVATION** 411 ft

PROJECT NUMBER 197-4693-0004 **PROJECT LOCATION** Hollywood - Los Angeles **GROUNDWATER DEPTH** Not encountered

DATES DRILLED 2/9/2022 **DRILLING CONTRACTOR** Jet Drilling **BOREHOLE DEPTH** 26.5 ft

LOGGED/CHECKED BY MAS/FC **DRILLING METHOD** Hollow Stem Auger-LAR **BOREHOLE DIAMETER** 6 in

COORDINATES 34.104603, -118.335712 **HAMMER DATA** 140 Lbs, 30" drop **BACKFILL** Soil Cuttings

LOCATION DESCRIPTION North east corner of the project site

Standard Penetration Test (SPT) | No Recovery | Shelby Tube
California-Type Ring Sample | No Recovery | Grab/Bulk Sample

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOWCOUNT blows/6" (bpf)	USCS	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	Notes	ELEVATION (ft)
0								410
	SK-1 / R-0	9-6-9 (15)	SC	[FILL] Artificial Fill (af) Clayey SAND with Gravel, brown (10YR 4/3), damp to moist, fine to coarse sand, fine to coarse gravel, with brick fragments ...(2.5 ft) gravel up to 0.3", asphalt pieces			G/S/F=10/59/31% Direct Shear, Consolidation, Compaction Test No sample retrieved	
5	SPT-2	5-7-2 (9)		...(5 ft) loose, moist			#200=22%	405
	R-3	14-17-20 (37)	SP-SM	Poorly-graded SAND with Silt, olive yellow (2.5Y 6/6), damp to moist, fine to coarse grained, w/ plastic pieces	87.9	8.1	rock stuck at tip	
10	SPT-4	5-6-6 (12)	SC	Clayey SAND with Gravel, medium dense, yellowish brown (10YR 5/6), moist, fine to coarse sand, fine to coarse gravel, with brick fragments				400
	R-5	6-9-9 (18)			107.4	10.7	PL=24, LL=36	
15	SPT-6	7-10-11 (21)		...(15 ft) concrete chunks up to 0.25"				395
20	R-7	5-9-13 (22)	SM	[NATIVE] Alluvium (Qae) Silty SAND with Gravel, light yellowish brown (10YR 6/4), damp to moist, fine to medium-grained, fine gravel	97.2	10.2	G/S/F=21/62/17%, PL=NP, LL=NP	390
25	SPT-8	7-7-8 (15)	CL	Lean CLAY with Sand, stiff to very stiff, yellowish brown (10YR 5/6), moist, fine-grained			PL=13, LL=44	385

Notes:
Total depth=26.5 ft.
Groundwater was not encountered.
Boring backfilled with soil cuttings.

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BORING B-4

PROJECT NAME Las Palmas Senior Citizen Cent. **CLIENT** City of Los Angeles **GROUND ELEVATION** 409 ft

PROJECT NUMBER 197-4693-0004 **PROJECT LOCATION** Hollywood - Los Angeles **GROUNDWATER DEPTH** Not encountered

DATES DRILLED 2/9/2022 **DRILLING CONTRACTOR** Jet Drilling **BOREHOLE DEPTH** 16.5 ft

LOGGED/CHECKED BY MAS/FC **DRILLING METHOD** Hollow Stem Auger-LAR **BOREHOLE DIAMETER** 6 in

COORDINATES 34.104340, -118.335654 **HAMMER DATA** 140 Lbs, 30" drop **BACKFILL** Soil Cuttings

LOCATION DESCRIPTION South east corner of the parking lot

Standard Penetration Test (SPT) | No Recovery | Shelby Tube
California-Type Ring Sample | No Recovery | Grab/Bulk Sample

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOWCOUNT blows/6" (bpf)	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	Notes	ELEVATION (ft)
0									409
	SK-1			SM	[FILL] Artificial Fill (af) Silty SAND with Gravel, yellowish brown (10YR 5/6), damp to moist, fine to medium grained, gravel up to 0.2" in size				
					...(2.5 ft) grinding on boulder/cobble				
5									405
	SPT-2	3-4-4 (8)			...(5 ft) loose, some clay and gravel, brick fragments			poor recovery	
	R-3	8-6-10 (16)		SC	Clayey SAND with Gravel, brown (10YR 4/3), moist, fine to coarse sand, trace of brick fragments	100.2	12.1		
10									400
	SPT-4	3-3-4 (7)			...(10 ft) loose, light yelloyish brown (10YR 6/4), dry			poor recovery	
	R-5	8-8-10 (18)			...(12.5 ft) brown (10YR 4/3), damp	97.4	17.3		
15									395
	SPT-6	3-8-8 (16)		SC	[NATIVE] Alluvium (Qae) Clayey SAND, medium dense, yellowish brown (10YR 5/6), damp to moist, fine to medium grained			#200=45%	

Notes:
Total depth=16.5 ft.
Groundwater was not encountered.
Boring backfilled with soil cuttings.

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WELL I-1

PROJECT NAME Las Palmas Senior Citizen Cent. **CLIENT** City of Los Angeles **GROUND ELEVATION** 411 ft

PROJECT NUMBER 197-4693-0004 **PROJECT LOCATION** Hollywood - Los Angeles **GROUNDWATER DEPTH** Not encountered

DATES DRILLED 2/9/2022 **DRILLING CONTRACTOR** Jet Drilling **BOREHOLE DEPTH** 8.52 ft

LOGGED/CHECKED BY MAS/FC **DRILLING METHOD** Hollow Stem Auger-LAR **BOREHOLE DIAMETER** 6 in

COORDINATES 34.104595, -118.335779 **HAMMER DATA** **BACKFILL** Soil Cuttings

LOCATION DESCRIPTION North central area of the project site

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	WELL DIAGRAM
0		SC		[FILL] Artificial Fill (af) Clayey SAND with Gravel, brown (10YR 4/3), damp to moist, fine to coarse sand, fine to coarse gravel, with brick fragments	3" diameter perforated pipe with filter sock 1.5" of gravel around pipe
5					
8.5				Bottom of borehole at 8.5 feet.	402.5 2" of gravel at bottom

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Appendix B

Logs of Infiltration Testing

TETRA TECH

FALLING HEAD INFILTRATION DATA SHEET

Project:	Las Palmas Senior Citizen Cent. - Hollywood		Job No:	CiLA 22-04G	
Test Hole No:	**I-1**		Date Excavated:	Thursday, February 10, 2022	
Test Hole Depth (feet):	8.52	feet	Soil Classification:	SC - Fill	
Stick up Length (feet):	0.65	feet	Gravel Porosity:	0.35	
Sandy Soil Criteria Tested By:	TA		Presoak Date:	Thursday, February 10, 2022	
Actual Percolation Tested By:	TA		Test Date:	Thursday, February 10, 2022	
Test Hole Diameter (inches):	6	inches	Latitude:	34.104595	Longitude: -118.335779
Casing Diameter (inches):	3	inches	Elevation:	411 feet	

PERCOLATION TEST (presoaking for 1 hour)

Time	Time Interval (min)	Initial Reading (feet below top of pipe)	Final Reading (feet below top of pipe)	Initial Water Level (feet above hole bottom)	Final Water Level (feet above hole bottom)	Δ in Water Level (inches)	Measured Raw Infiltration Rate (inches/hour) (corrected for gravel)
8:16 AM 8:46 AM	30	6.51	8.08	2.66	1.09	18.84	1.2
8:50 AM 9:20 AM	30	6.08	7.70	3.09	1.47	19.44	1.0
9:21 AM 9:51 AM	30	6.70	7.83	2.47	1.34	13.56	0.9
9:55 AM 10:25 AM	30	6.92	7.93	2.25	1.24	12.12	0.8
10:27 AM 10:57 AM	30	6.95	8.00	2.22	1.17	12.60	0.9
10:58 AM 11:28 AM	30	6.90	7.91	2.27	1.26	12.12	0.8
11:31 AM 12:01 PM	30	6.85	7.90	2.32	1.27	12.60	0.8
12:04 PM 12:34 PM	30	6.83	7.97	2.34	1.20	13.68	0.9

Factor of Safety per City of LA LID BMP Manual (2016) 3.00

Observed Raw Field infiltration rate (in/hr)= 0.9

Design Infiltration Rate =	**0.29**	**in/hour**

Per Planning and Land Development Handbook for Low Impact Development (LID), May 9, 2016

Appendix C

Laboratory Testing Results

Table C1
Summary of Direct Shear Tests

Material Type	Exploration ID	Sample ID	Depth (ft)	Normal Stress (Psf)	Ultimate Shear Strength (psf)	Peak Shear Strength (psf)	phi (peak)	c (peak) (psf)	phi (ult)	c (ult) (psf)
Native	B-2	R-8	25.0	1,000	732	744	27	250	27	250
				3,000	1,824	1,824				
				5,000	2,808	2,808				
Fill	B-3	SK-1	0-5	1,000	794	868	34	150	34	100
				2,000	1,524	1,548				
				4,000	2,916	2,964				

TETRA TECH

MOISTURE CONTENT AND DENSITY

ASTM D7263

Job Name:	**Las Palmas Senior Citizen Center**	**Date Sampled:**	2/16/2022
Job Number:	**CiLA-22-04G**	**Date Completed:**	2/22/2022
Tested By:	**MG**	**Note:**	Page 1 of 2

Boring / Test Pit / Trench		**B-1**	**B-1**	**B-1**	**B-1**	**B-2**	**B-2**	**B-2**	**B-3**	**B-3**
Sample Number		**R-2**	**R-4**	**R-6**	**R-8**	**R-2**	**R-4**	**R-6**	**R-3**	**R-5**
Sample Depth	*ft*	**5**	**10**	**15**	**25**	**5**	**10**	**15**	**7.5**	**12.5**
USCS Soil Description		Brown SC Fill	Dark Brown SC Fill	Dark Brown SC Fill	Brown SM Fill	Dark Brown SC Fill	Dark Brown SC Fill	Dark Brown SC Fill	Olive Brownish Gray SP Fill	Reddish Brown SC Fill
Number of Rings		6	6	6	6	6	5	6	5	6
Total Weight Rings + Soil	*grams*	1096.20	1186.00	1156.80	1115.60	1180.90	954.80	1074.60	800.20	1132.50
Volume of Rings	ft^3	0.0159	0.0159	0.0159	0.0159	0.0159	0.0133	0.0159	0.0133	0.0159
Weight of Rings	*grams*	272.40	272.40	272.40	272.40	272.40	227.00	272.40	227.00	272.40
Weight of Soil	*grams*	823.80	913.60	884.40	843.20	908.50	727.80	802.20	573.20	860.10
Wet Density	*pcf*	113.90	126.32	122.28	116.59	125.62	120.76	110.92	95.11	118.92
	Container ID	X12	X53	X47	B1	X25	X19	X34	X49	X28
Tare	*grams*	10.5	10.5	10.5	141.3	10.5	10.5	10.5	10.5	10.5
Wet Soil + Tare	*grams*	305.6	312.2	298.9	535.1	285.7	426.2	246.2	217.8	347.3
Dry Soil + Tare	*grams*	255.5	269.7	244.5	492.5	254	385.6	213.6	202.2	314.8
Weight of Water	*grams*	50.1	42.5	54.4	42.6	31.7	40.6	32.6	15.6	32.5

Dry Density	***pcf***	**94.6**	**108.5**	**99.2**	**104.0**	**111.1**	**109.0**	**95.6**	**87.9**	**107.4**
Moisture Content	***%***	**20.4**	**16.4**	**23.2**	**12.1**	**13.0**	**10.8**	**16.1**	**8.1**	**10.7**

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TETRA TECH

MOISTURE CONTENT AND DENSITY

ASTM D7263

Job Name:	**Las Palmas Senior Citizen Center**	**Date Sampled:**	2/16/2022
Job Number:	**CiLA-22-04G**	**Date Completed:**	2/22/2022
Tested By:	**MG**	**Note:**	Page 2 of 2

Boring / Test Pit / Trench		**B-3**	**B-4**	**B-4**						
Sample Number		**R-7**	**R-3**	**R-5**						
Sample Depth	*ft*	**20**	**7.5**	**12.5**						
USCS Soil Description		Brown SM Native	Dark Brown SC Native	Dark Brown SC Native						
Number of Rings		6	6	6						
Total Weight Rings + Soil	*grams*	1047.30	1084.60	1098.30						
Volume of Rings	ft^3	0.0159	0.0159	0.0159						
Weight of Rings	*grams*	272.40	272.40	272.40						
Weight of Soil	*grams*	774.90	812.20	825.90						
Wet Density	*pcf*	107.14	112.30	114.19						
	Container ID	X37	X35	X23						
Tare	*grams*	10.5	10.5	10.5						
Wet Soil + Tare	*grams*	269.6	257.4	203.3						
Dry Soil + Tare	*grams*	245.6	230.7	174.9						
Weight of Water	*grams*	24	26.7	28.4						

Dry Density	***pcf***	**97.2**	**100.2**	**97.4**						
Moisture Content	***%***	**10.2**	**12.1**	**17.3**						

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TETRA TECH

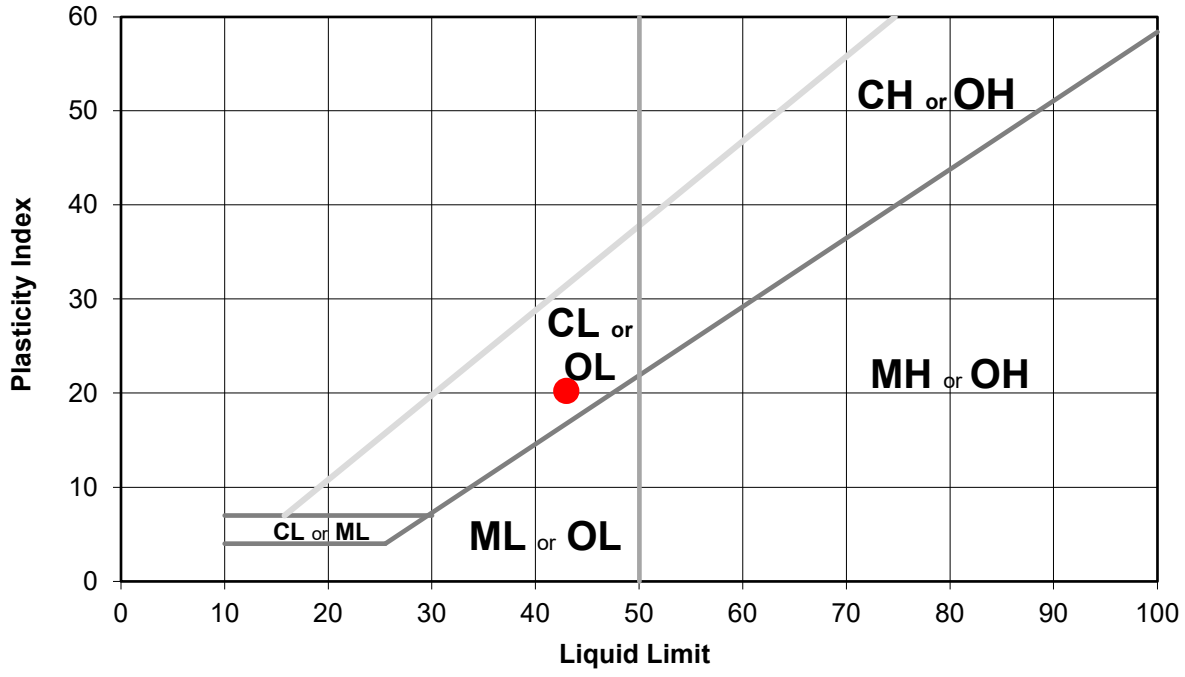
ATTERBERG LIMITS

ASTM D4318

Job Name:	Las Palmas Senior Center	**Date Sampled:**	2/16/2022
Job Number:	ciLA-22-04G	**Date Completed:**	2/23/2022
Tested By:	MG	**Sample Identification:**	B-1, R-6
Note:		**Sample Depth:**	15 ft
Sample Description:	Dark Brown Clayey SAND, SC Fill		

		Plastic Limit	
Test No.		**1**	**2**
Number of Blows			
Container ID		F10	F7
Wet Weight of Soil + Cont.	*grams*	18.90	21.00
Dry Weight of Soil + Cont.	*grams*	17.70	19.40
Weight of Container	*grams*	12.40	12.40
Moisture Weight	*grams*	1.20	1.60
Weight of Dry Soil	*grams*	5.30	7.00
Moisture Content	*%*	**22.6**	**22.9**

Liquid Limit			
1	**2**	**3**	**4**
36	25	20	
P40	T38	N11	
46.20	60.00	48.00	
40.20	49.80	41.20	
25.20	25.80	25.50	
6.00	10.20	6.80	
15.00	24.00	15.70	
40.0	**42.5**	**43.3**	



Plastic Limit	**23**
Liquid Limit	**43**
Plasticity Index	**20**

USCS Classification **CL**

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TETRA TECH

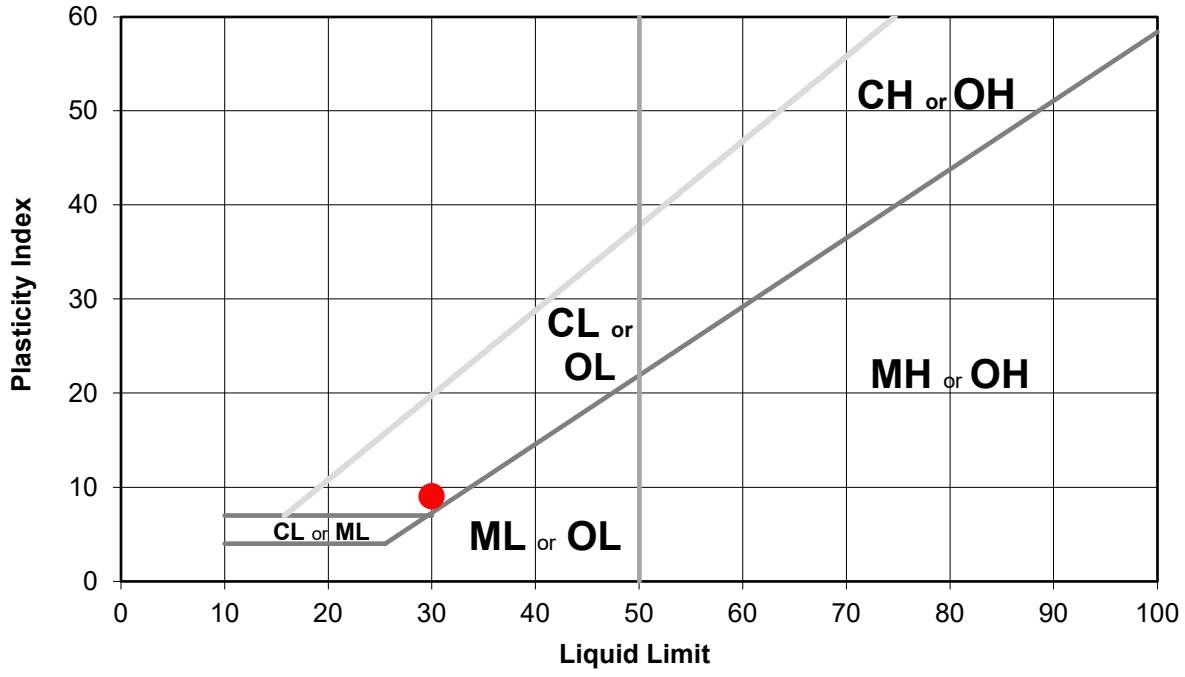
ATTERBERG LIMITS

ASTM D4318

Job Name:	Las Palmas Senior Center	**Date Sampled:**	2/16/2022
Job Number:	ciLA-22-04G	**Date Completed:**	2/23/2022
Tested By:	MG	**Sample Identification:**	B-2, R-4
Note:		**Sample Depth:**	10 ft
Sample Description:	Olive Brown Clayey SAND, SC Fill		

		Plastic Limit	
Test No.		**1**	**2**
Number of Blows			
Container ID		P8	F2
Wet Weight of Soil + Cont.	*grams*	20.20	20.80
Dry Weight of Soil + Cont.	*grams*	18.80	19.40
Weight of Container	*grams*	12.40	12.40
Moisture Weight	*grams*	1.40	1.40
Weight of Dry Soil	*grams*	6.40	7.00
Moisture Content	*%*	**21.9**	**20.0**

Liquid Limit			
1	**2**	**3**	**4**
36	25	16	
T23	T20	P36	
51.30	56.00	55.20	
45.70	49.00	48.10	
25.80	25.70	25.20	
5.60	7.00	7.10	
19.90	23.30	22.90	
28.1	**30.0**	**31.0**	



Plastic Limit	**21**
Liquid Limit	**30**
Plasticity Index	**9**

USCS Classification **CL**

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TETRA TECH

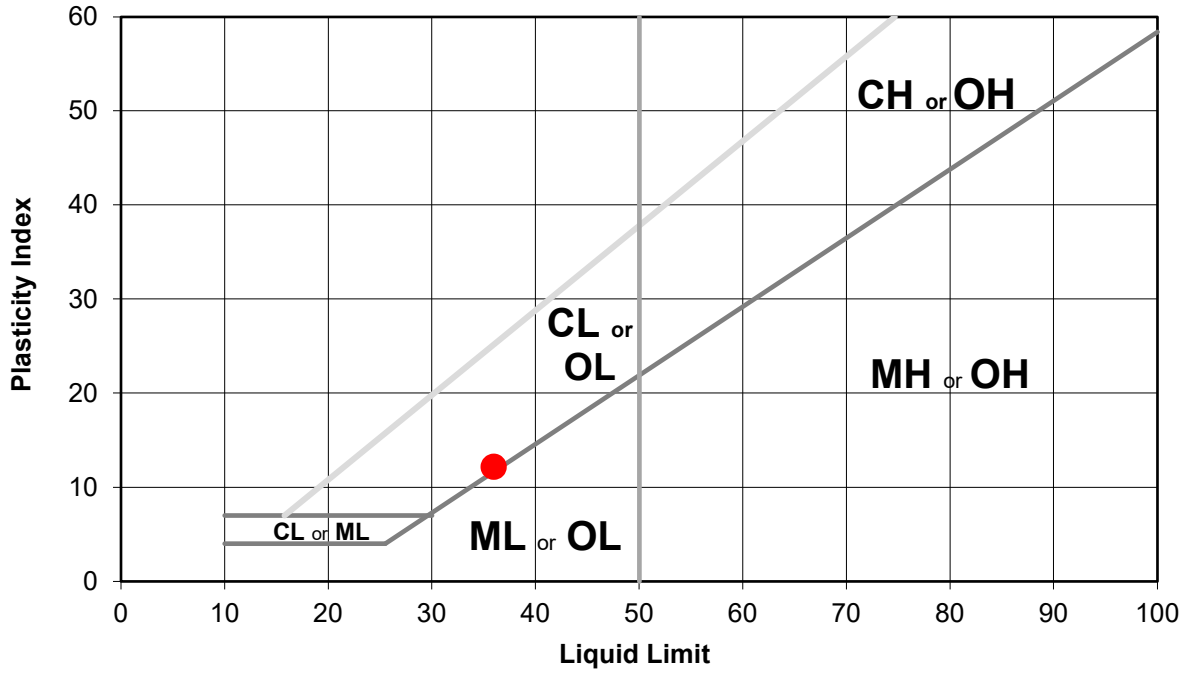
ATTERBERG LIMITS

ASTM D4318

Job Name:	Las Palmas Senior Center	**Date Sampled:**	2/16/2022
Job Number:	ciLA-22-04G	**Date Completed:**	2/23/2022
Tested By:	MG	**Sample Identification:**	B-3, R-5
Note:		**Sample Depth:**	12.5 ft
Sample Description:	Olive Brown Clayey SAND, SC Fill		

		Plastic Limit	
Test No.		**1**	**2**
Number of Blows			
Container ID		P4	F3
Wet Weight of Soil + Cont.	*grams*	21.90	20.60
Dry Weight of Soil + Cont.	*grams*	20.10	19.00
Weight of Container	*grams*	12.40	12.40
Moisture Weight	*grams*	1.80	1.60
Weight of Dry Soil	*grams*	7.70	6.60
Moisture Content	*%*	**23.4**	**24.2**

Liquid Limit			
1	**2**	**3**	**4**
36	25	16	
T18	P13	M14	
50.40	53.20	50.80	
44.30	45.90	43.70	
25.50	25.40	25.30	
6.10	7.30	7.10	
18.80	20.50	18.40	
32.4	**35.6**	**38.6**	



Plastic Limit	**24**
Liquid Limit	**36**
Plasticity Index	**12**

USCS Classification	**CL**
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TETRA TECH

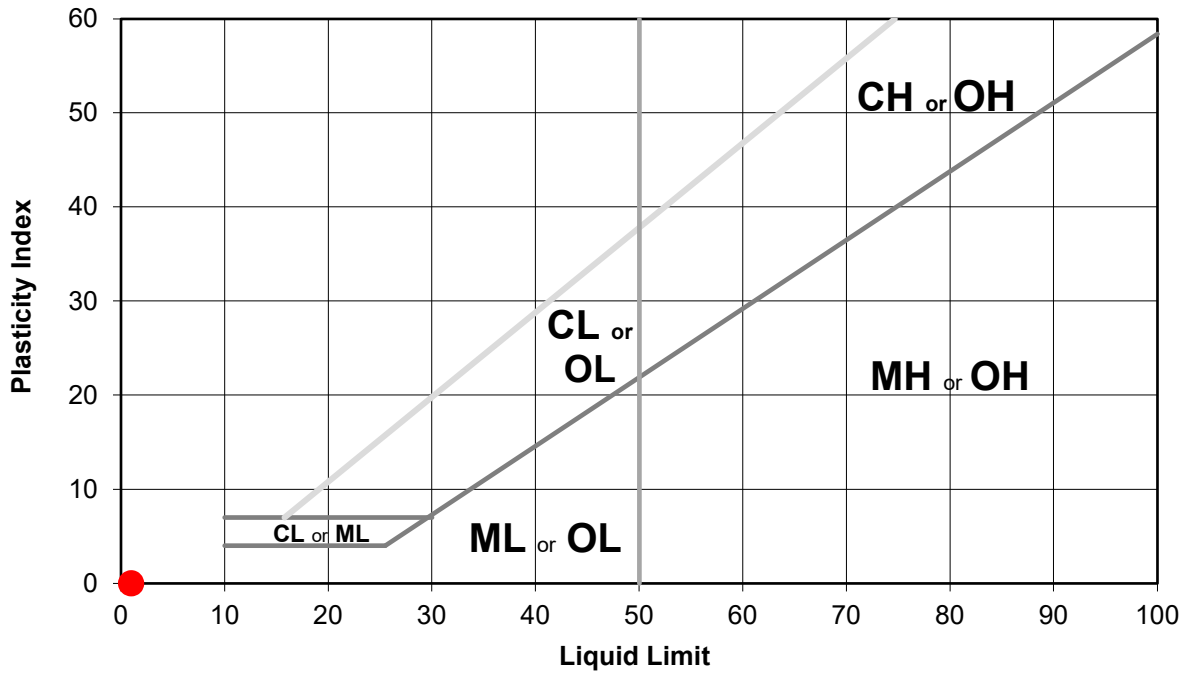
ATTERBERG LIMITS

ASTM D4318

Job Name:	Las Palmas Senior Center	**Date Sampled:**	2/16/2022
Job Number:	ciLA-22-04G	**Date Completed:**	2/23/2022
Tested By:	MG	**Sample Identification:**	B-3, R-7
Note:		**Sample Depth:**	20 ft
Sample Description:	Olive Yellow Silty SAND, SM Native		

		Plastic Limit	
Test No.		**1**	**2**
Number of Blows			
Container ID			
Wet Weight of Soil + Cont.	*grams*	NP	NP
Dry Weight of Soil + Cont.	*grams*		
Weight of Container	*grams*		
Moisture Weight	*grams*	0.00	0.00
Weight of Dry Soil	*grams*	0.00	0.00
Moisture Content	*%*	**NP**	**NP**

Liquid Limit			
1	**2**	**3**	**4**
NP	NP	NP	NP
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
NP	**NP**	**NP**	**NP**



Plastic Limit	**NP**
Liquid Limit	**NP**
Plasticity Index	**NP**

USCS Classification	**SM**

Based on Atterberg Limits only

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TETRA TECH

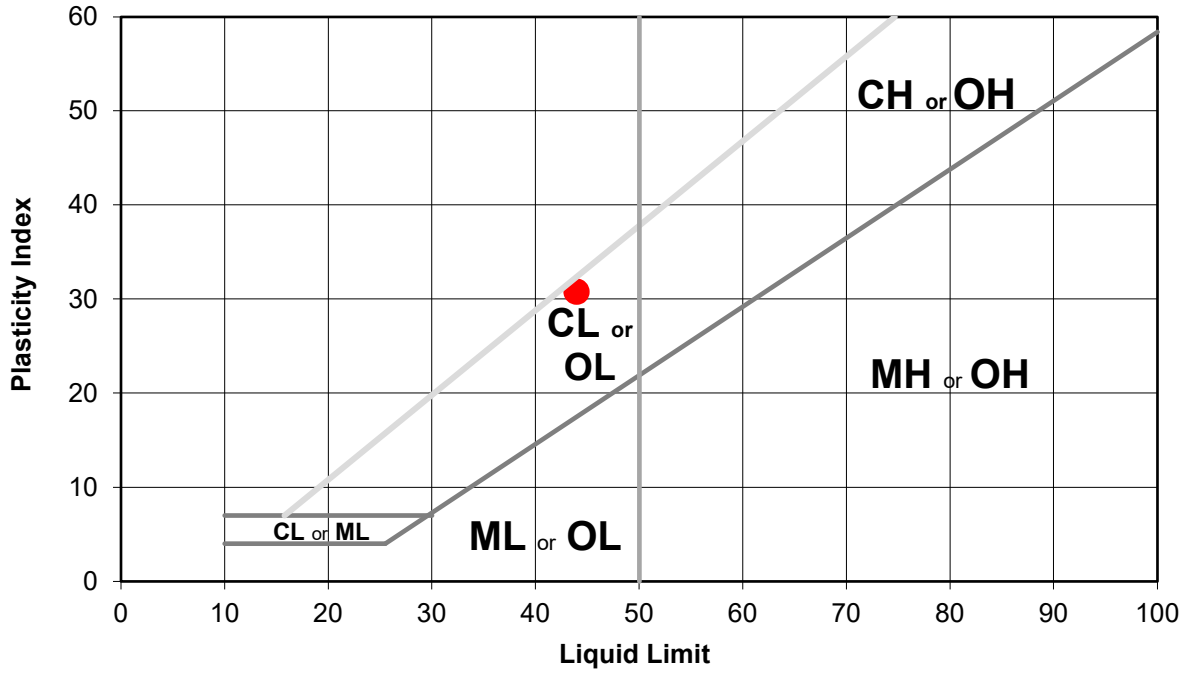
ATTERBERG LIMITS

ASTM D4318

Job Name:	Las Palmas Senior Center	**Date Sampled:**	3/2/2022
Job Number:	ciLA-22-04G	**Date Completed:**	3/6/2022
Tested By:	MG	**Sample Identification:**	B-3, SPT-8
Note:		**Sample Depth:**	25 ft
Sample Description:	Dark Brown CLAY, Native		

		Plastic Limit	
Test No.		**1**	**2**
Number of Blows			
Container ID		F7	F10
Wet Weight of Soil + Cont.	*grams*	20.30	19.10
Dry Weight of Soil + Cont.	*grams*	19.40	18.30
Weight of Container	*grams*	12.40	12.40
Moisture Weight	*grams*	0.90	0.80
Weight of Dry Soil	*grams*	7.00	5.90
Moisture Content	*%*	**12.9**	**13.6**

Liquid Limit			
1	**2**	**3**	**4**
36	24	15	
T23	P36	N11	
45.10	48.50	47.10	
39.40	41.40	40.30	
25.80	25.20	25.60	
5.70	7.10	6.80	
13.60	16.20	14.70	
41.9	**43.8**	**46.3**	



Plastic Limit	**13**
Liquid Limit	**44**
Plasticity Index	**31**

USCS Classification **CL**

Based on Atterberg Limits only

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TETRA TECH

PERCENT PASSING # 200 SIEVE

ASTM D1140

Job Name:	Las Palmas Senior Center	**Date Completed:**	2/16/2022
Job Number:	CiLA-22-04G	**Date Sampled:**	2/22/2022
Note:			
Tested By :	MG		

Boring Number	Sample Number	Depth (ft)	Weight Before Wash - Dry (grams)	Weight After Wash - Dry (grams)	Percent Passing # 200 Sieve	USCS Classification
B-1	**SPT-3**	7.5	290.9	246.2	15%	SC
B-2	**SPT-3**	7.5	276.9	182.7	34%	SC
B-3	**SPT-2**	5.0	228.6	177.3	22%	SC
B-4	**SPT-6**	15.0	207.2	114.6	45%	SC

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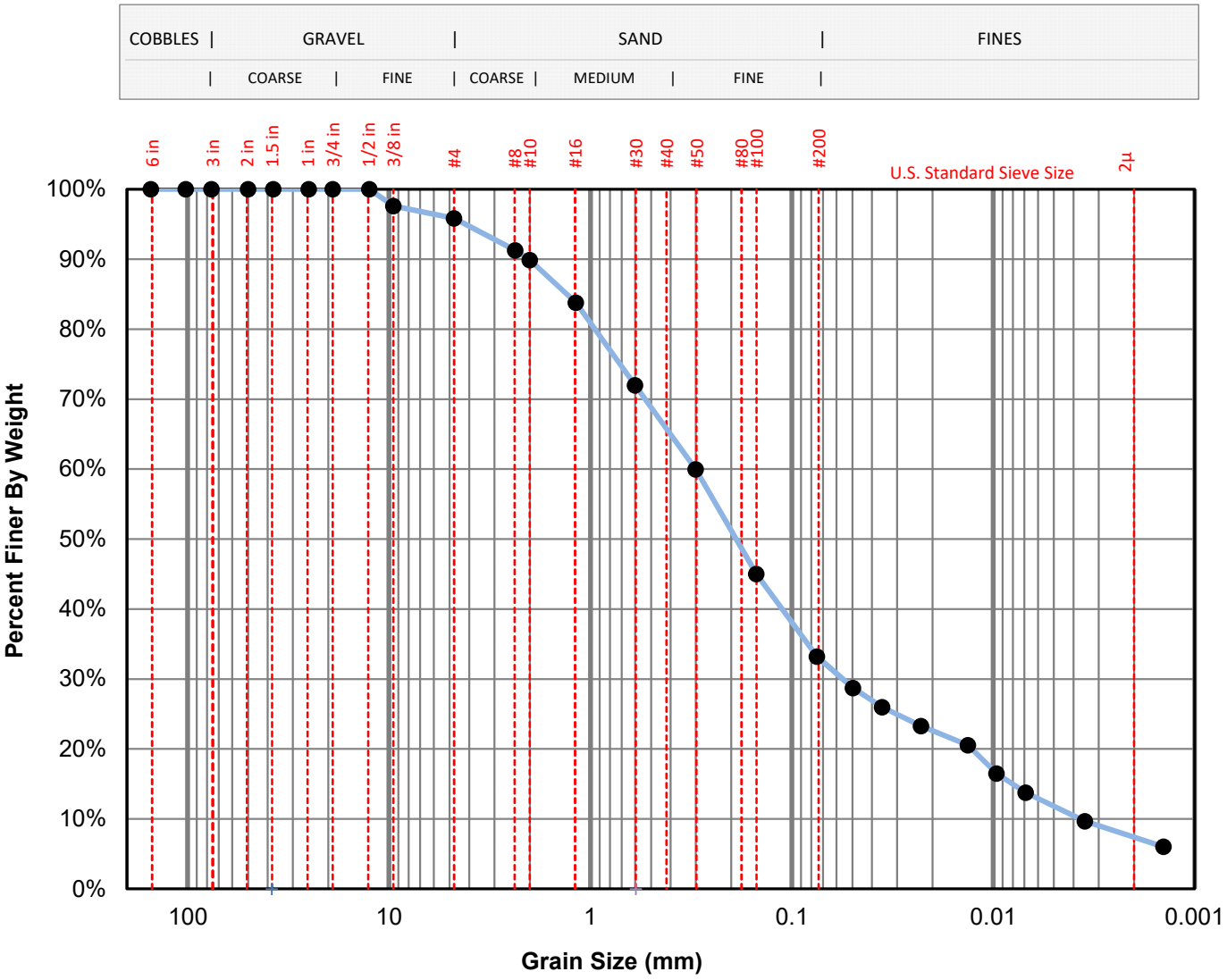
TETRA TECH

GRAIN SIZE DISTRIBUTION ANALYSIS

ASTM C136/C117/D7928/D6913

Job Name:	Las Palmas Senior Center	**Date Sampled:**	2/16/2022
Job Number:	CILA-22-04G	**Date Completed:**	2/22/2022
Tested By:	MG	**Sample Identification:**	B-1, R-8
Note:		**Sample Depth:**	25ft
Sample Description:	Brown Silty SAND, SM Native		



Symbol	Boring No.	Sample No.	Depth	LL	PI	USCS	Cobbles	Gravel	Sand	Fines	2µ
●	B-1	R-8	25ft			SM	**0%**	**4%**	**63%**	**33%**	**8%**

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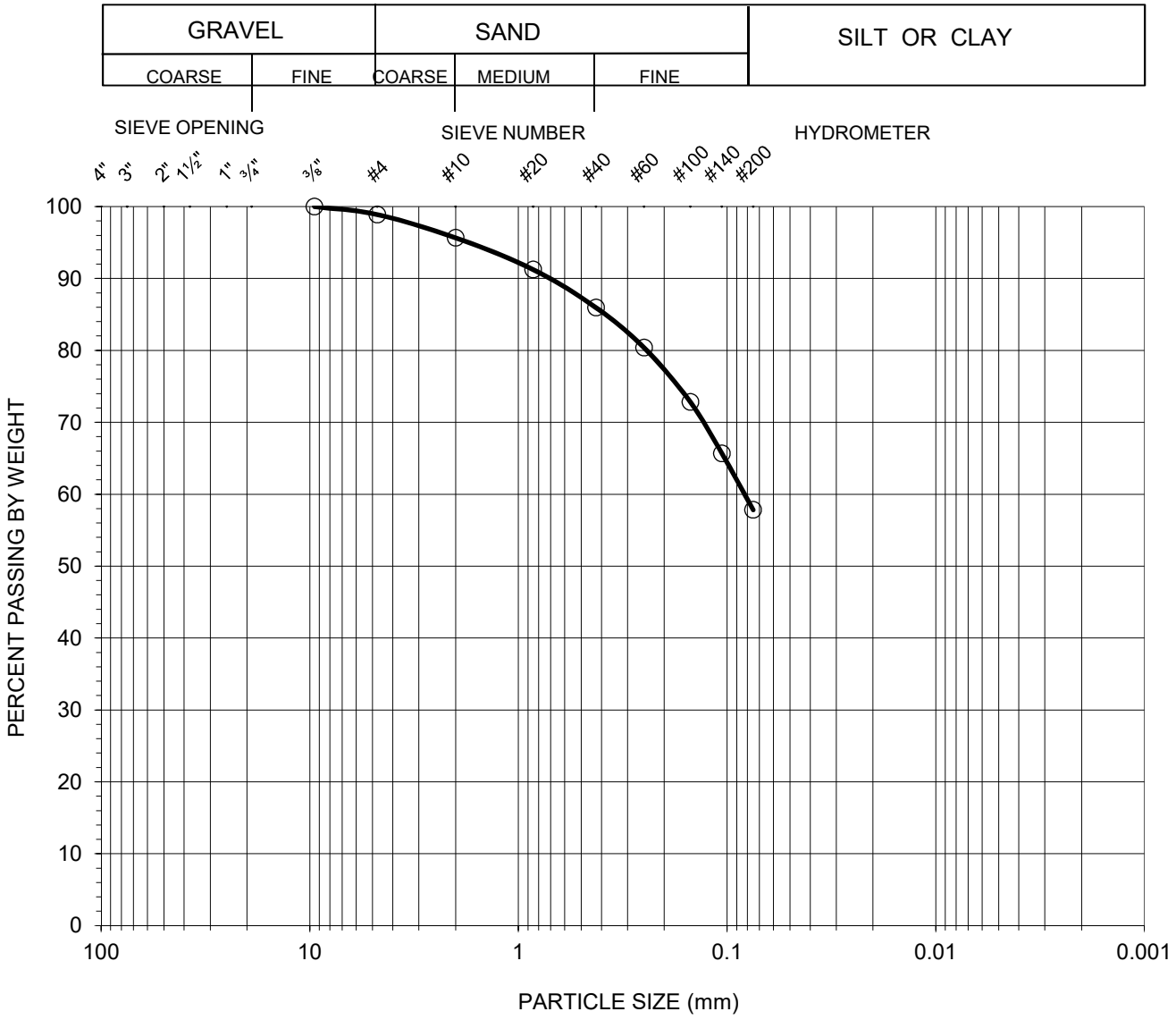
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913

Client Name: Tetra Tech — Tested by: TV — Date: 02/23/22
Project Name: Las Palmas Senior Citizen Center - Hollywood — Computed by: NR — Date: 02/24/22
Project No.: ciLA 22-04G — Checked by: AP — Date: 02/25/22



Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	B-2	R-8	25	1	41	58	N/A	CL*

**Note: Based on visual classification of sample*

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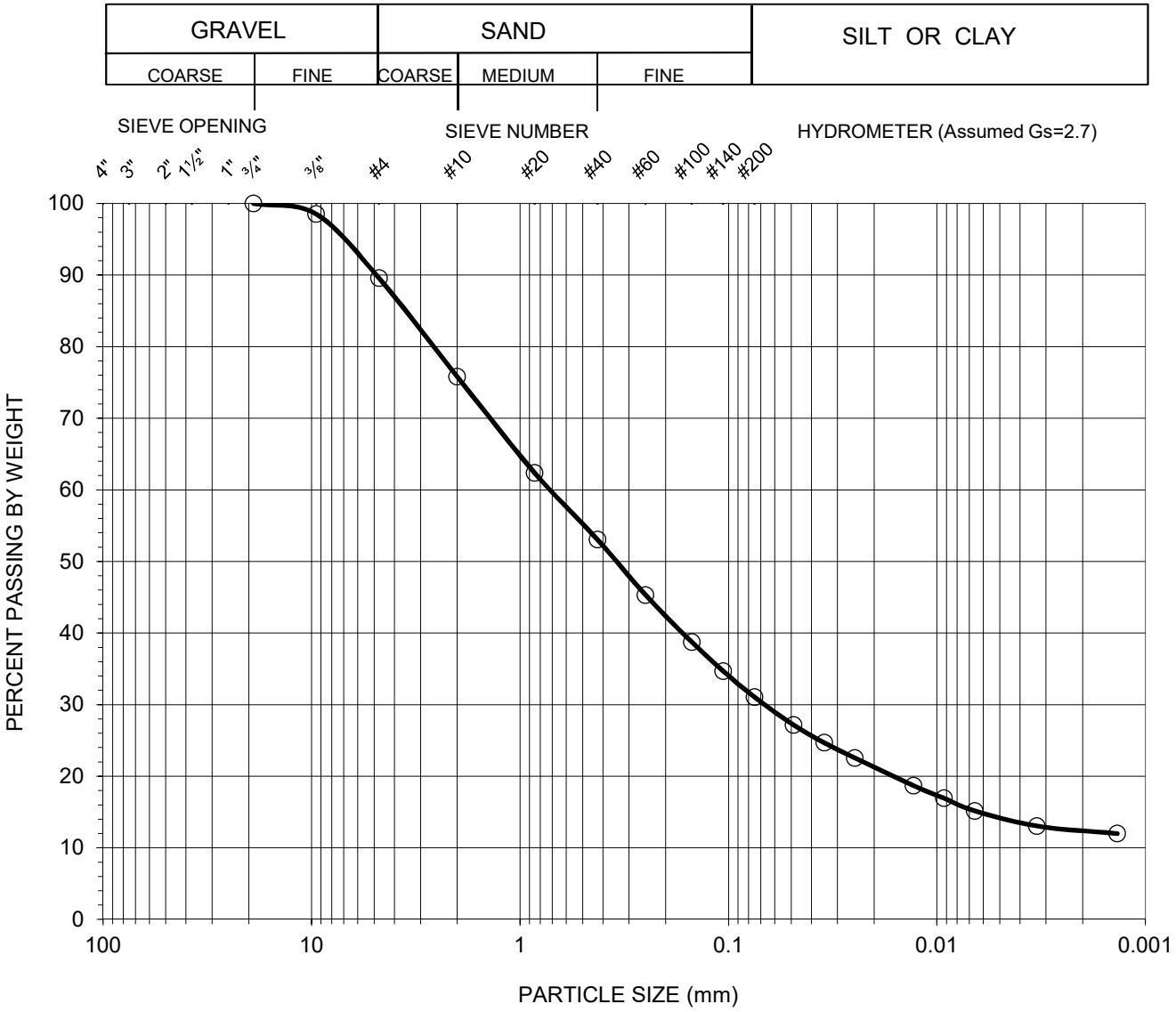
GRAIN SIZE DISTRIBUTION CURVE
ASTM D 6913 & D 7928

Client Name: Tetra Tech — Tested by: TV — Date: 02/25/22
Project Name: Las Palmas Senior Citizen Center - Hollywood — Computed by: NR — Date: 02/25/22
Project No.: ciLA 22-04G — Checked by: AP — Date: 02/25/22



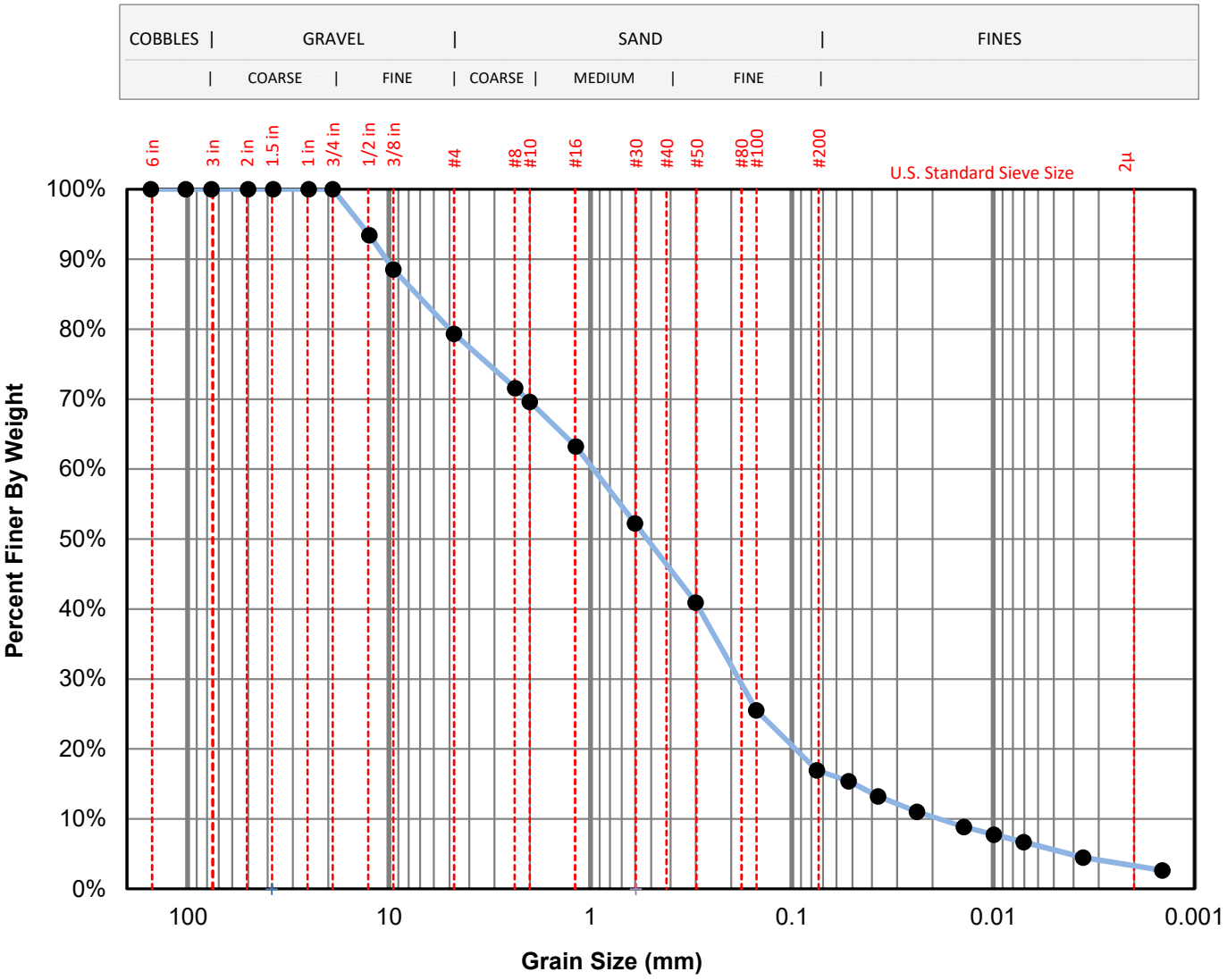
Symbol	Boring No.	Sample No.	Sample Depth (feet)	Percent			Atterberg Limits LL:PL:PI	Soil Type U.S.C.S
				Gravel	Sand	Silt & Clay		
○	B-3	SK-1	0-5	10	59	31	N/A	SM

TETRA TECH

GRAIN SIZE DISTRIBUTION ANALYSIS

ASTM C136/C117/D7928/D6913

Job Name:	Las Palmas Senior Center	**Date Sampled:**	2/16/2022
Job Number:	CILA-22-04G	**Date Completed:**	2/22/2022
Tested By:	MG	**Sample Identification:**	B-3, R-7
Note:		**Sample Depth:**	20ft
Sample Description:	Brown Silty SAND with Gravel, SM Native		



Symbol	Boring No.	Sample No.	Depth	LL	PI	USCS	Cobbles	Gravel	Sand	Fines	2µ
●	B-3	R-7	20ft			SM	**0%**	**21%**	**62%**	**17%**	**4%**

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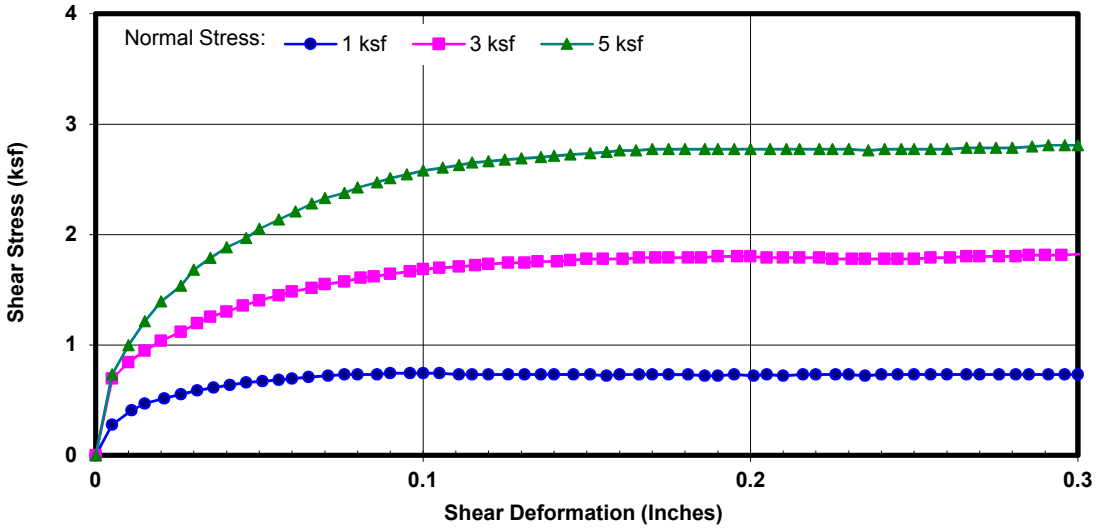
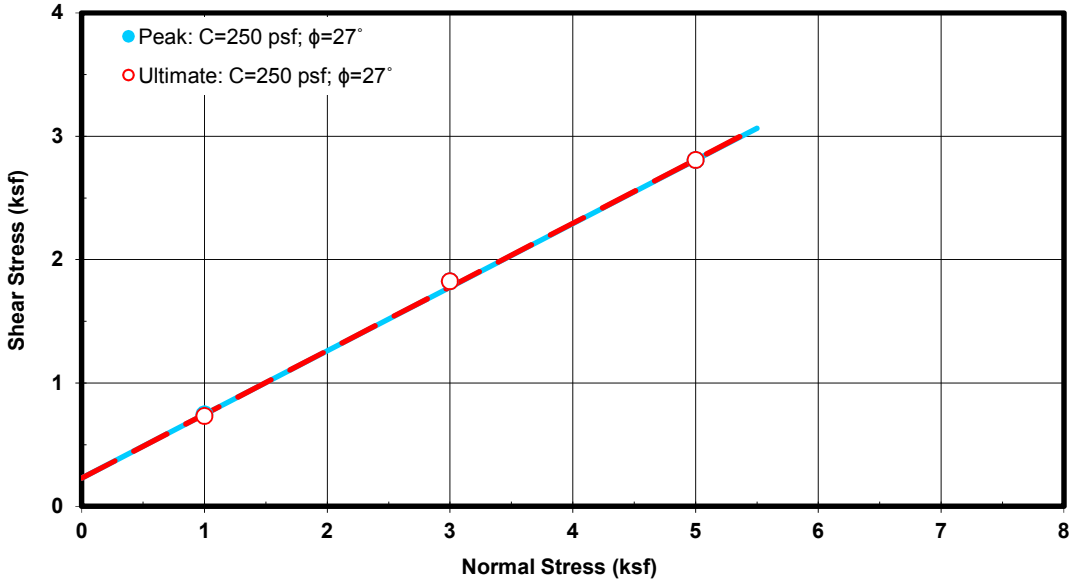
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Client:	Tetra Tech		**Tested By:**	ST	**Date:** 02/21/22
Project Name:	Las Palmas Senior Citizen Center - Hollywood		**Computed By:**	NR	**Date:** 02/24/22
Project No.:	ciLA 22-04G		**Checked by:**	AP	**Date:** 02/25/22
Boring No.:	B-2				
Sample No.:	R-8	**Depth (ft):** 25			
Sample Type:	Mod. Cal.				
Soil Description:	Sandy Clay				
Test Condition:	Inundated	**Shear Type:** Regular			

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
117.0	98.8	18.4	23.6	70	90	1	0.744	0.732
						3	1.824	1.824
						5	2.808	2.808





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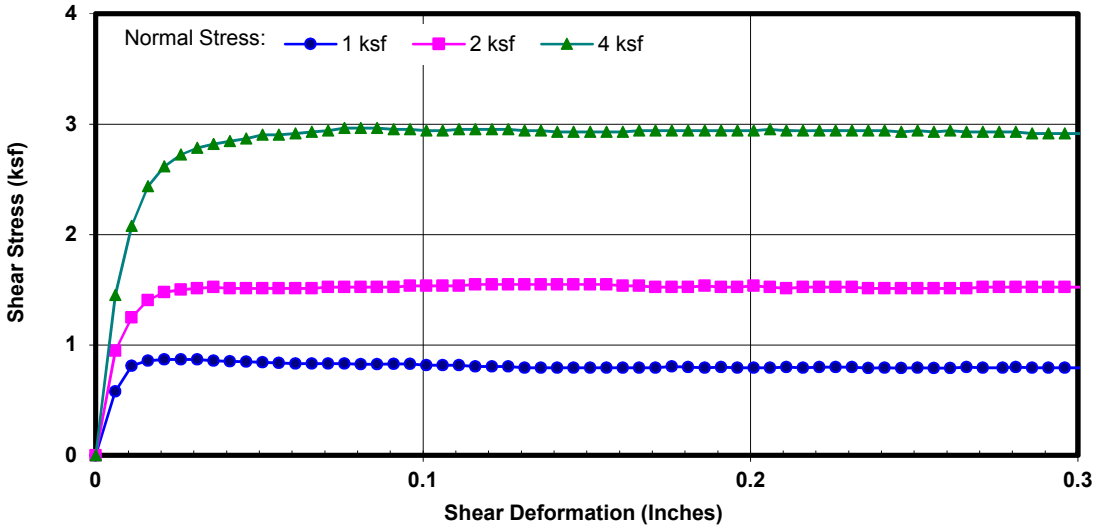
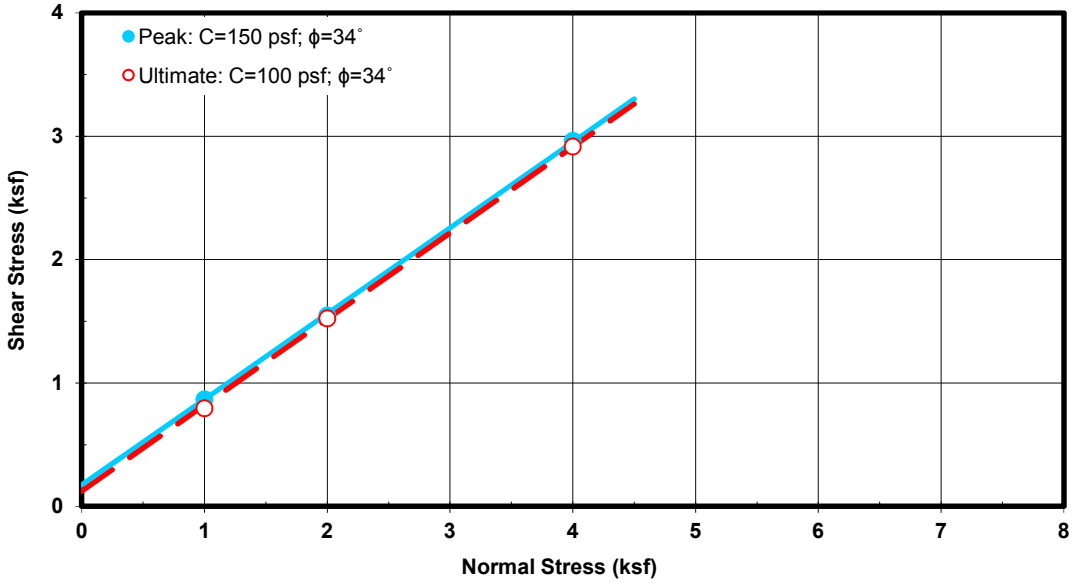
DIRECT SHEAR TEST RESULTS
ASTM D 3080

Client:	Tetra Tech	**Tested By:**	ST	**Date:**	02/22/22
Project Name:	Las Palmas Senior Citizen Center - Hollywood	**Computed By:**	NR	**Date:**	02/24/22
Project No.:	ciLA 22-04G	**Checked by:**	AP	**Date:**	02/25/22
Boring No.:	B-3				
Sample No.:	SK-1	**Depth (ft):**	0-5		
Remold Cond.:	Remolded to 90% RC at 2% above opt. MC				
Soil Description:	Silty Sand w/traces of clay				
Test Condition:	Inundated	**Shear Type:**	Regular		

Wet Unit Weight (pcf)	Dry Unit Weight (pcf)	Initial Moisture Content (%)	Final Moisture Content (%)	Initial Degree Saturation (%)	Final Degree Saturation (%)	Normal Stress (ksf)	Peak Shear Stress (ksf)	Ultimate Shear Stress (ksf)
124.2	108.4	14.6	19.4	71	94	1	0.868	0.794
						2	1.548	1.524
						4	2.964	2.916





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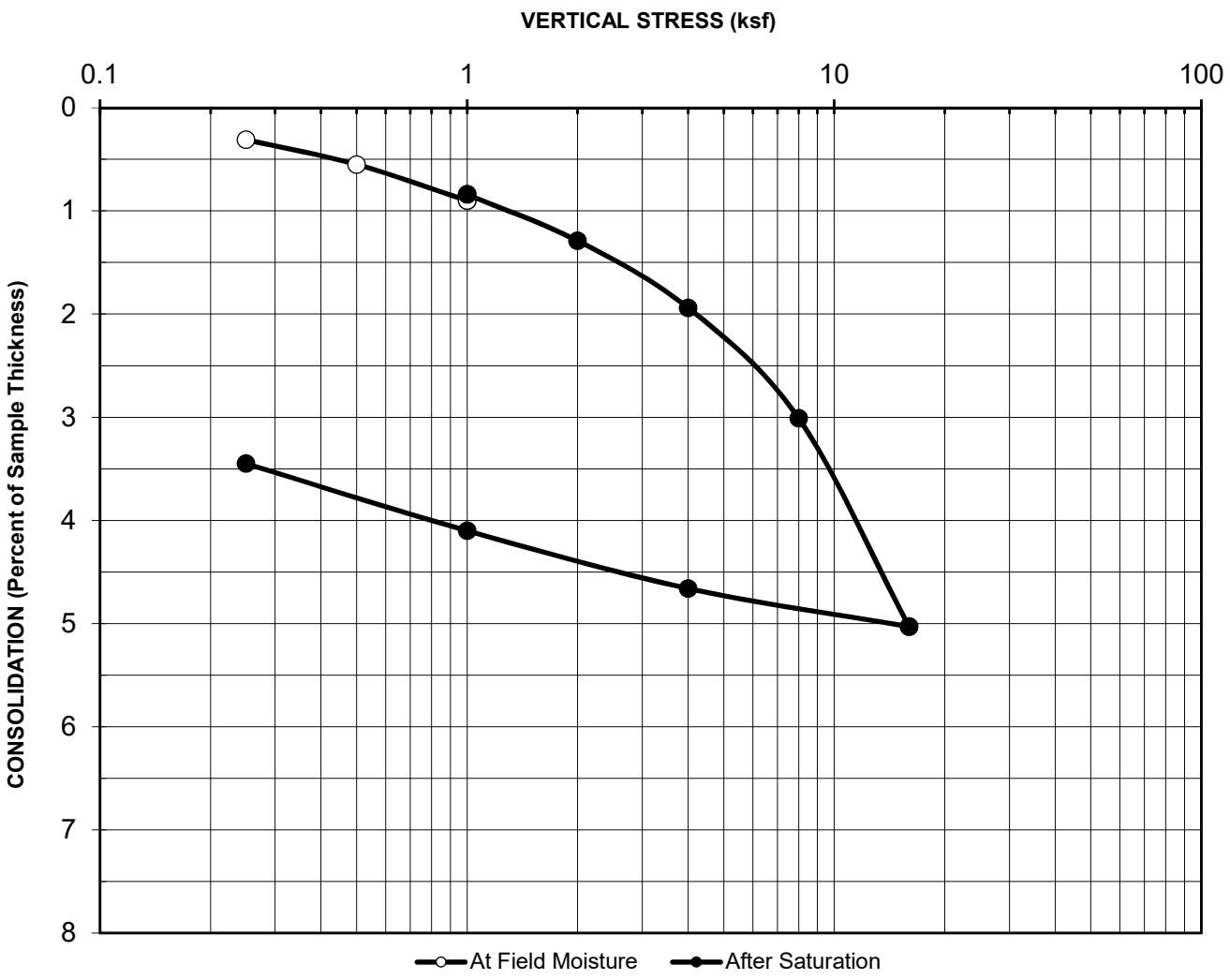

Boring No. :	B-3	Initial Dry Unit Weight (pcf):	108.4
Sample No.:	SK-1	Initial Moisture Content (%):	14.6
Depth (feet):	0-5	Final Moisture Content (%):	18.1
Remold Cond.:	Remolded to 90% RC at 2% above opt. MC	Assumed Specific Gravity:	2.7
Soil Description:	Silty Sand w/traces of clay	Initial Void Ratio:	0.55
Remarks:	Swell= 0.06% upon inundation		

CONSOLIDATION CURVE
ASTM D 2435

Project Name:	Las Palmas Senior Citizen Center - Hollywood
Project No.:	ciLA 22-04G
Date:	2/21/2022
AP No:	22-0242 **Sheet No:** 1

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COMPACTION TEST

Client: Tetra Tech
AP Number: 22-0242
Project Name: Las Palmas Senior Citizen Center - Hollywood
Tested By: JT
Date: 02/18/22
Project No. : ciLA 22-04G
Calculated By: NR
Date: 02/21/22
Boring No.: B-3
Checked By: AP
Date: 02/25/22
Sample No.: SK-1
Depth (ft.): 0-5
Visual Sample Description: Silty Sand w/traces of clay

METHOD: A
MOLD VOLUME (CU.FT): 0.0333

Compaction Method: [X] ASTM D1557 [ ] ASTM D698
Preparation Method: [ ] Moist [X] Dry

Wt. Comp. Soil + Mold (gm.)	3877	3891	3696	3820		
Wt. of Mold (gm.)	1844	1844	1844	1844		
Net Wt. of Soil (gm.)	2033	2047	1852	1976		
Container No.						
Wt. of Container (gm.)	142.53	150.62	149.70	154.79		
Wet Wt. of Soil + Cont. (gm.)	566.50	476.19	463.61	399.21		
Dry Wt. of Soil + Cont. (gm.)	521.00	435.09	437.99	363.68		
Moisture Content (%)	12.02	14.45	8.89	17.01		
Wet Density (pcf)	134.46	135.38	122.49	130.69		
Dry Density (pcf)	120.03	118.29	112.49	111.69		

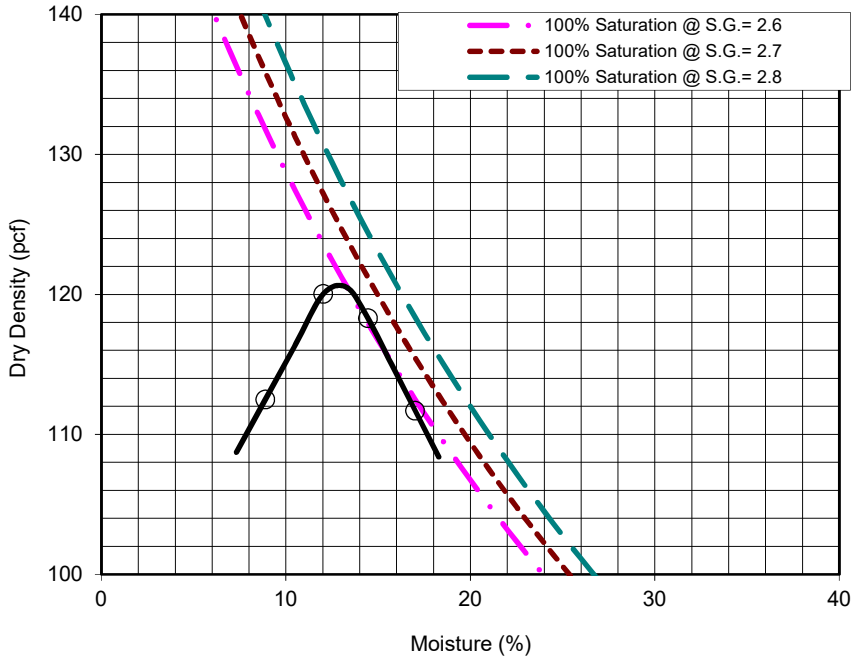
Maximum Dry Density (pcf): **120.5**
Maximum Dry Density w/ Rock Correction (pcf): **124.2**
Optimum Moisture Content (%): **12.8**
Optimum Moisture Content w/ Rock Correction (%): **11.5**

PROCEDURE USED

[X] *METHOD A: Percent of Oversize:* *10.4%*
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)

[ ] *METHOD B: Percent of Oversize:* *N/A*
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)

[ ] *METHOD C: Percent of Oversize:* *N/A*
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)



TETRA TECH

EXPANSION INDEX

ASTM D4829

Job Name:	Las Palmas Center	**Date Sampled:**	2/16/2022
Job Number:	CILA-22-04G	**Date Completed:**	2/22/2022
Tested By:	MG	**Sample Identification:**	B-1, SK-1
Note:		**Sample Depth:**	0-5 ft
Sample Description:	Dark Brown SC, Fill		

SAMPLE PROCESSING		
Percentage Passing #4 Sieve		
Total Air Dry Weight	*grams*	999.00
Weight Retained on #4	*grams*	1.00
*% Retained	*%*	0.10
***% Passing # 4 Sieve**	*%*	**99.9**

SAMPLE DIMENSIONS		
Sample Height	*inches*	1.00
Sample Diameter	*inches*	4.01

MOISTURE CALCS		INITIAL	FINAL
Tare ID or #		X55	X22
Wet Weight of Soil + Tare	*grams*	309.2	482.6
Dry Weight of Soil + Tare	*grams*	283.4	407.8
Weight of Tare	*grams*	10.5	10.5
* Moisture Weight	*grams*	25.8	74.8
* Weight of Dry Soil	*grams*	272.9	397.3
***Moisture Content**	*%*	**9.5**	**18.8**

AFTER REMOLDING		INITIAL	FINAL
Weight of Ring and Sample	*grams*	622.2	622.2
Weight of Ring	*grams*	197.0	197.0
*Remolded Wet Weight	*grams*	425.2	425.2
*Wet Density	*pcf*	128.2	127.8
*Dry Density	*pcf*	117.1	107.6
Assumed/Measured Specific Gravity		2.7	2.7
***Degree of Saturation**	*%*	**58.2**	**89.8**

EXPANSION INDEX TEST			
DATE	**TIME**	**DIAL**	**Δ H %**
2/19/2022	11:45 AM	0.0211	0.0
		0.0214	0.0
		0.0222	0.1
		0.0229	0.2
		0.0232	0.2
2/21/2022	4:30 PM	0.0241	0.3
2/21/2022	5:00 PM	0.0241	0.3
***Total**		**0.0241**	**0.3**

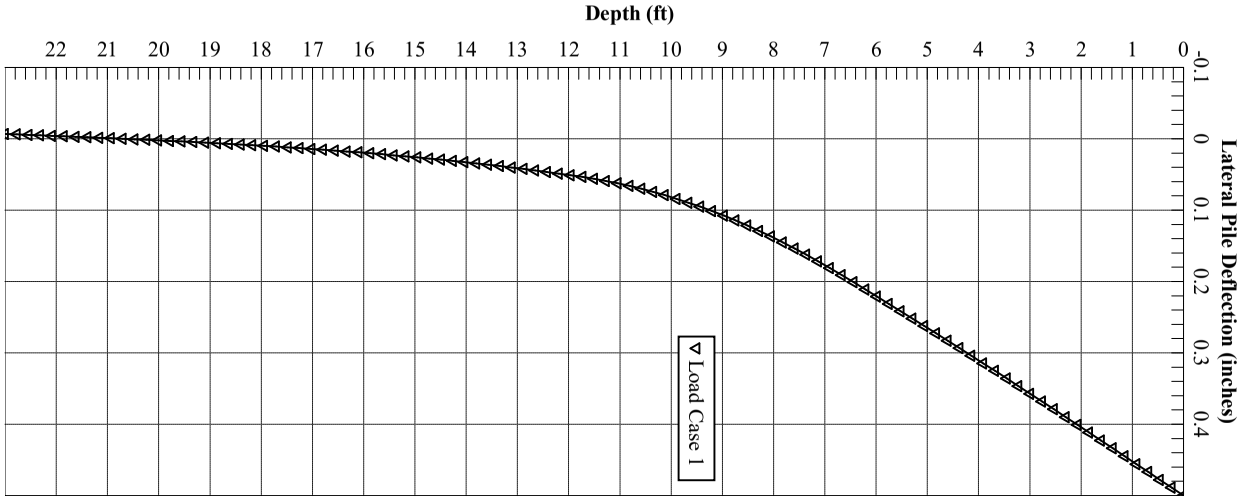
EI	Expansion Potential
0 to 20	Very Low
21 to 50	Low
51 to 90	Medium
90 to 130	High
>130	Very High

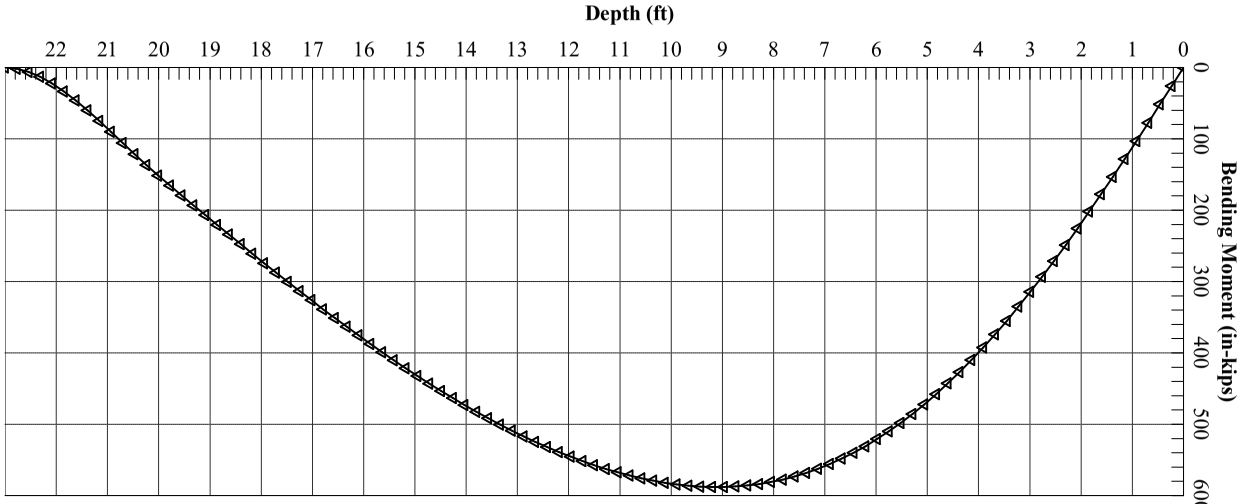
UNCORRECTED EXPANSION INDEX 3

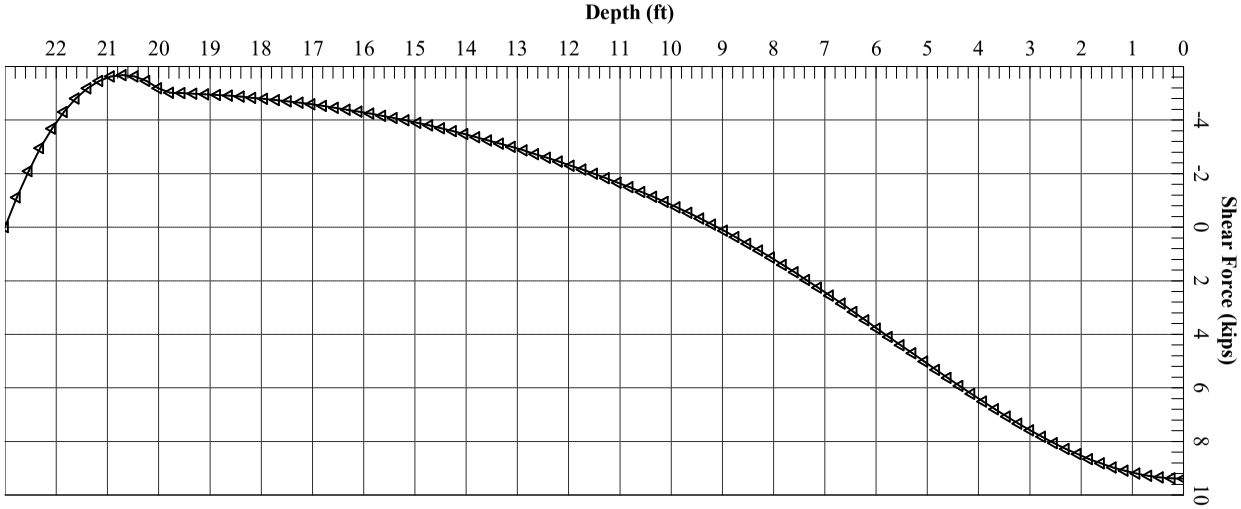
CORRECTED EXPANSION INDEX **6**

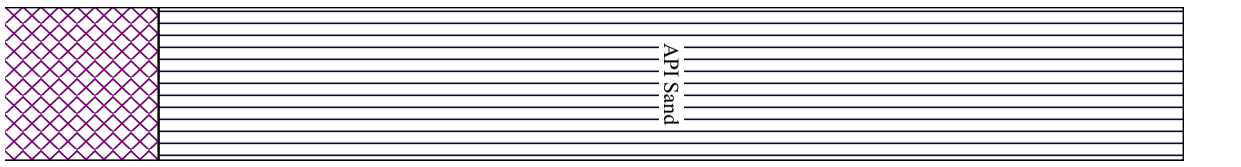
For degrees of Saturation ≠ 50%, >40% and <60%

APPENDIX C


Depth (ft)
22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
-0.1 0 0.1 0.2 0.3 0.4
Lateral Pile Deflection (inches)
Load Case 1


Depth (ft)
22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0 100 200 300 400 500 600
Bending Moment (in-kips)


Depth (ft)
22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
-4 -2 0 2 4 6 8 10
Shear Force (kips)


API Sand

==========

LPile for Windows(Beta), Version 2018-10.009

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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Files Used for Analysis

Path to file locations:
\PROJECTS\2021\21-159 Las Palmas Senior Center\

Name of input data file:
24-inch free head LPile (USCS units).lp10

Name of output report file:
24-inch free head LPile (USCS units).lp10

Name of plot output file:
24-inch free head LPile (USCS units).lp10

Name of runtime message file:
24-inch free head LPile (USCS units).lp10

Date and Time of Analysis

Date: April 18, 2022 Time: 11:36:46

Problem Title

Project Name: LAS PALMAS

Job Number: 21-159

Client: ARCH

Engineer: JOSE BERISTAIN

Description: SHADE STRUCTURE PILES

Program Options and Settings

Computational Options:
- Use unfactored loads in computations (conventional analysis)

Engineering Units Used for Data Input and Computations:
- US Customary System Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed	=	500
- Deflection tolerance for convergence	=	1.0000E-05 in
- Maximum allowable deflection	=	100.0000 in
- Number of pile increments	=	100

Loading Type and Number of Cycles of Loading:
- Static loading specified

- Use of p-y modification factors for p-y curves not selected

- Analysis uses layering correction (Method of Georgiadis)
- No distributed lateral loads are entered
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Input of moment resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

Number of pile sections defined = 1
Total length of pile = 23.000 ft
Depth of ground surface below top of pile = 0.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	24.0000
2	23.000	24.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a round drilled shaft, bored pile, or CIDH pile
Length of section = 23.000000 ft
Shaft Diameter = 24.000000 in
Shear capacity of section = 0.0000 lbs

Ground Slope and Pile Batter Angles

Ground Slope Angle	=	0.000 degrees
	=	0.000 radians
Pile Batter Angle	=	0.000 degrees
	=	0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 2 layers

Layer 1 is sand, p-y criteria by API RP-2A, 1987

Distance from top of pile to top of layer	=	0.0000 ft
Distance from top of pile to bottom of layer	=	20.000000 ft
Effective unit weight at top of layer	=	98.000000 pcf
Effective unit weight at bottom of layer	=	98.000000 pcf
Friction angle at top of layer	=	20.000000 deg.
Friction angle at bottom of layer	=	20.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 2 is cemented silt with cohesion and friction

Distance from top of pile to top of layer	=	20.000000 ft
Distance from top of pile to bottom of layer	=	40.000000 ft
Effective unit weight at top of layer	=	117.000000 pcf
Effective unit weight at bottom of layer	=	117.000000 pcf
Undrained cohesion at top of layer	=	250.000000 psf
Undrained cohesion at bottom of layer	=	250.000000 psf
Friction angle at top of layer	=	27.000000 deg.
Friction angle at bottom of layer	=	27.000000 deg.
Epsilon-50 at top of layer	=	0.0000
Epsilon-50 at bottom of layer	=	0.0000
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for Epsilon-50 will be computed for this layer.

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 17.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Undrained Cohesion psf	Angle of Friction deg.	E50 or kpy krm pci
1	API default Sand (default)	0.00	98.0000	--	20.0000	--
		20.0000	98.0000	--	20.0000	--
2	Cemented (default)	20.0000	117.0000	250.0000	27.0000	default
	Silt (default)	40.0000	117.0000	250.0000	27.0000	default

Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	4	y = 0.500000 in	M = 0.0000 in-lbs	0.0000000	N.A.

V = shear force applied normal to pile axis
M = bending moment applied to pile head
y = lateral deflection normal to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applied to pile head
Values of top y vs. pile lengths can be computed only for load types with
specified shear loading (Load Types 1, 2, and 3).
Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	23.000000 ft
Shaft Diameter	=	24.000000 in
Concrete Cover Thickness (to edge of long. rebar)	=	3.000000 in
Number of Reinforcing Bars	=	8 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	452.389342 sq. in.
Total Area of Reinforcing Steel	=	4.800000 sq. in.
Area Ratio of Steel Reinforcement	=	1.06 percent
Edge-to-Edge Bar Spacing	=	5.678454 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	7.57
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	1429.353 kips
Tensile Load for Cracking of Concrete	=	-178.179 kips
Nominal Axial Tensile Capacity	=	-288.000 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	0.875000	0.600000	8.562500	0.00000
2	0.875000	0.600000	6.054602	6.054602
3	0.875000	0.600000	0.00000	8.562500
4	0.875000	0.600000	-6.054602	6.054602
5	0.875000	0.600000	-8.562500	0.00000
6	0.875000	0.600000	-6.054602	-6.054602
7	0.875000	0.600000	0.00000	-8.562500
8	0.875000	0.600000	6.054602	-6.054602

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 5.678 inches
between bars 1 and 2.

Ratio of bar spacing to maximum aggregate size = 7.57

Concrete Properties:

Compressive Strength of Concrete	=	3000. psi
Modulus of Elasticity of Concrete	=	3122019. psi
Modulus of Rupture of Concrete	=	-410.791918 psi
Compression Strain at Peak Stress	=	0.001634
Tensile Strain at Fracture of Concrete	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	0.000

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
Position of neutral axis is measured from edge of compression side of pile.
Compressive stresses and strains are positive in sign.
Tensile stresses and strains are negative in sign.

Axial Thrust Force = 0.000 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Stiffness kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in	Run Msg
0.00000125	80.1278101	64102248.	11.9999672	0.00001500	-0.00001500	
0.0542954	-0.4306512					
0.00000250	159.7938121	63917525.	11.9999671	0.00003000	-0.00003000	
0.1080950	-0.8613024					
0.00000375	238.9980060	63732802.	11.9999670	0.00004500	-0.00004500	
0.1613988	-1.2919536					
0.00000500	317.7403918	63548078.	11.9999668	0.00006000	-0.00006000	
0.2142068	-1.7226048					
0.00000625	396.0209695	63363355.	11.9999667	0.00007500	-0.00007500	
0.2665189	-2.1532560					
0.00000750	473.8397392	63178632.	11.9999665	0.00009000	-0.00009000	
0.3183352	-2.5839072					
0.00000875	551.1967007	62993909.	11.9999664	0.0001050	-0.0001050	
0.3696556	-3.0145585					
0.00001000	551.1967007	55119670.	6.1106221	0.00006111	-0.0001789	
0.2159988	-5.1531196					C
0.00001125	551.1967007	48995262.	6.1131045	0.00006877	-0.0002012	
0.2425296	-5.7964496					C
0.00001250	551.1967007	44095736.	6.1155938	0.00007644	-0.0002236	
0.2689555	-6.4395972					C
0.00001375	551.1967007	40087033.	6.1180902	0.00008412	-0.0002459	
0.2952761	-7.0825615					C
0.00001500	551.1967007	36746447.	6.1205720	0.00009181	-0.0002682	
0.3214903	-7.7253511					C
0.00001625	551.1967007	33919797.	6.1229911	0.00009950	-0.0002905	
0.3475946	-8.3679904					C
0.00001750	551.1967007	31496954.	6.1254167	0.0001072	-0.0003128	
0.3735924	-9.0104510					C
0.00001875	551.1967007	29397157.	6.1278491	0.0001149	-0.0003351	
0.3994832	-9.6527320					C
0.00002000	551.1967007	27559835.	6.1302881	0.0001226	-0.0003574	
0.4252670	-10.2948328					C
0.00002125	551.1967007	25938668.	6.1327339	0.0001303	-0.0003797	

0.4509434 -10.9367527 C
0.00002250 551.1967007 24497631. 6.1351865 0.0001380 -0.0004020
0.4765123 -11.5784907 C
0.00002375 551.1967007 23208282. 6.1376460 0.0001458 -0.0004242
0.5019733 -12.2200463 C
0.00002500 551.1967007 22047868. 6.1401123 0.0001535 -0.0004465
0.5273264 -12.8614186 C
0.00002625 551.1967007 20997970. 6.1425855 0.0001612 -0.0004688
0.5525712 -13.5026068 C
0.00002750 551.1967007 20043516. 6.1450656 0.0001690 -0.0004910
0.5777075 -14.1436101 C
0.00002875 551.1967007 19172059. 6.1475527 0.0001767 -0.0005133
0.6027351 -14.7844279 C
0.00003000 551.1967007 18373223. 6.1500469 0.0001845 -0.0005355
0.6276537 -15.4250592 C
0.00003125 551.1967007 17638294. 6.1525481 0.0001923 -0.0005577
0.6524631 -16.0655032 C
0.00003250 551.1967007 16959898. 6.1550564 0.0002000 -0.0005800
0.6771630 -16.7057593 C
0.00003375 551.1967007 16331754. 6.1575719 0.0002078 -0.0006022
0.7017533 -17.3458264 C
0.00003500 551.1967007 15748477. 6.1600946 0.0002156 -0.0006244
0.7262336 -17.9857039 C
0.00003625 551.1967007 15205426. 6.1626245 0.0002234 -0.0006466
0.7506037 -18.6253910 C
0.00003750 551.1967007 14698579. 6.1651617 0.0002312 -0.0006688
0.7748634 -19.2648867 C
0.00003875 551.1967007 14224431. 6.1677061 0.0002390 -0.0006910
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0.00004000 551.1967007 13779918. 6.1702580 0.0002468 -0.0007132
0.8230504 -20.5433007 C
0.00004125 551.1967007 13362344. 6.1728173 0.0002546 -0.0007354
0.8469773 -21.1822173 C
0.00004250 551.1967007 12969334. 6.1753840 0.0002625 -0.0007575
0.8707928 -21.8209392 C
0.00004375 556.1552498 12712120. 6.1779582 0.0002703 -0.0007797
0.8944965 -22.4594655 C
0.00004500 571.8213027 12707140. 6.1805399 0.0002781 -0.0008019
0.9180883 -23.0977954 C
0.00004625 587.4743236 12702148. 6.1831292 0.0002860 -0.0008240
0.9415679 -23.7359279 C
0.00004750 603.1142620 12697142. 6.1857262 0.0002938 -0.0008462
0.9649350 -24.3738622 C
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0.9881894 -25.0115973 C
0.00005125 649.9550399 12682050. 6.1935632 0.0003174 -0.0009126
1.0343588 -26.2864670 C
0.00005375 681.1158869 12671923. 6.1988269 0.0003332 -0.0009568
1.0800741 -27.5605289 C
0.00005625 712.2231584 12661745. 6.2041223 0.0003490 -0.0010010

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1.1253332   -28.8337760 C
0.00005875   743.2764265     12651514.     6.2094497     0.0003648    -0.0010452
1.1701337   -30.1062006 C
0.00006125   774.2752568     12641229.     6.2148095     0.0003807    -0.0010893
1.2144736   -31.3777952 C
0.00006375   805.2192080     12630890.     6.2202021     0.0003965    -0.0011335
1.2583505   -32.6485519 C
0.00006625   836.1078318     12620496.     6.2256281     0.0004124    -0.0011776
1.3017622   -33.9184628 C
0.00006875   866.9406729     12610046.     6.2310876     0.0004284    -0.0012216
1.3447063   -35.1875198 C
0.00007125   897.7172686     12599541.     6.2365813     0.0004444    -0.0012656
1.3871805   -36.4557147 C
0.00007375   928.4371488     12588978.     6.2421095     0.0004604    -0.0013096
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1.4707098   -38.9894847 C
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1.5117599   -40.2550426 C
0.00008125        1020.     12556944.     6.2589059     0.0005085    -0.0014415
1.5523305   -41.5197042 C
0.00008375        1051.     12546147.     6.2645768     0.0005247    -0.0014853
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1.8226796   -50.3464631 C
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1.8954559   -52.8597879 C
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 0.0001088        1352.     12434737.     6.3233976     0.0006877    -0.0019223
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 0.0001138        1412.     12411663.     6.3356507     0.0007207    -0.0020093
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 0.0001163        1442.     12400019.     6.3418421     0.0007372    -0.0020528
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 0.0005288   2426.   4588778.   5.4689199   0.0028917   -0.0097983

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   2.9937909    60.0000000 CY
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   2.9970465    60.0000000 CY
    0.0005488         2428.      4424600.     5.4456969     0.0029883    -0.0101817
   2.9991134    60.0000000 CY
    0.0006088         2432.      3995340.     5.3887998     0.0032804    -0.0113296
   2.9987551    60.0000000 CYT
    0.0006688         2435.      3641390.     5.3432782     0.0035733    -0.0124767
   2.9950297    60.0000000 CYT
    0.0007288         2438.      3344812.     5.3099340     0.0038696    -0.0136204
   2.9896546    60.0000000 CYT


-------------------------------------------------------------------------------
   Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1
-------------------------------------------------------------------------------

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

 Load           Axial Thrust        Nominal Mom. Cap.      Max. Comp.
  No.              kips                 in-kip               Strain
 ----         ----------------     ------------------     ------------
   1                0.000              2428.166           0.00300000

Note that the values of moment capacity in the table above are not
factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether
the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to ACI 318, Section
9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding
bending stiffnesses computed for common resistance factor values used for
reinforced concrete sections.

Axial     Resist.       Nominal     Ult. (Fac)    Ult. (Fac)   Bend. Stiff.
Load      Factor      Moment Cap    Ax. Thrust    Moment Cap    at Ult Mom
 No.    for Moment      in-kips        kips         in-kips      kip-in^2
-----  ------------  ------------  ------------  ------------  ------------
   1       0.65             2428.        0.0000         1578.     12345105.

   1       0.70             2428.        0.0000         1700.     12294635.

   1       0.75             2428.        0.0000         1821.     12149882.
```

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	0.00	0.00	N.A.	No	0.00	237044.
2	20.0000	16.0449	No	No	237044.	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

Pile-head conditions are Displacement and Moment (Loading Type 4)
Displacement of pile head = 0.500000 inches
Moment at pile head = 0.0 in-lbs
Axial load at pile head = 0.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness in-lb^2	Soil Res. Es*h lb/inch	Soil Spr. Lat. Load lb/inch	Distrib. p lb/inch
0.00	0.5000	0.00	9394.	-0.00400	0.00	6.41E+10	0.00	0.00	0.00
0.2300	0.4890	25926.	9381.	-0.00400	0.00	6.41E+10	-9.0474	51.0702	0.00
0.4600	0.4779	51784.	9344.	-0.00400	0.00	6.41E+10	-17.8174	102.8987	0.00
0.6900	0.4669	77506.	9283.	-0.00400	0.00	6.41E+10	-26.2759	155.3361	0.00
0.9200	0.4558	103027.	9199.	-0.00399	0.00	6.40E+10			

```
-34.3964   208.2621       0.00
    1.1500     0.4448    128287.      9094.   -0.00399       0.00   6.40E+10
-42.1580   261.5786       0.00
    1.3800     0.4338    153225.      8967.   -0.00398       0.00   6.39E+10
-49.5443   315.2047       0.00
    1.6100     0.4228    177786.      8821.   -0.00398       0.00   6.39E+10
-56.5425   369.0720       0.00
    1.8400     0.4119    201916.      8656.   -0.00397       0.00   6.38E+10
-63.1425   423.1223       0.00
    2.0700     0.4009    225566.      8473.   -0.00396       0.00   6.38E+10
-69.3365   477.3042       0.00
    2.3000     0.3900    248687.      8274.   -0.00395       0.00   6.37E+10
-75.1181   531.5712       0.00
    2.5300     0.3791    271236.      8059.   -0.00394       0.00   6.36E+10
-80.4828   585.8797       0.00
    2.7600     0.3683    293171.      7830.   -0.00392       0.00   6.36E+10
-85.4266   640.1873       0.00
    2.9900     0.3575    314456.      7588.   -0.00391       0.00   6.36E+10
-89.9466   694.4508       0.00
    3.2200     0.3467    335056.      7334.   -0.00390       0.00   6.35E+10
-94.0403   748.6244       0.00
    3.4500     0.3360    354940.      7069.   -0.00388       0.00   6.35E+10
-97.7054   802.6567       0.00
    3.6800     0.3253    374079.      6795.   -0.00387       0.00   6.34E+10
-100.9398   856.4884       0.00
    3.9100     0.3146    392449.      6513.   -0.00385       0.00   6.34E+10
-103.7408   910.0478       0.00
    4.1400     0.3040    410029.      6223.   -0.00383       0.00   6.33E+10
-106.1051   963.2449       0.00
    4.3700     0.2935    426801.      5928.   -0.00381       0.00   6.33E+10
-108.0281      1016.       0.00
    4.6000     0.2830    442750.      5627.   -0.00379       0.00   6.32E+10
-109.5029      1068.       0.00
    4.8300     0.2725    457865.      5324.   -0.00378       0.00   6.32E+10
-110.5193      1119.       0.00
    5.0600     0.2621    472138.      5018.   -0.00375       0.00   6.32E+10
-111.0620      1169.       0.00
    5.2900     0.2518    485564.      4711.   -0.00373       0.00   6.31E+10
-111.3347      1220.       0.00
    5.5200     0.2415    498143.      4403.   -0.00371       0.00   6.31E+10
-112.2125      1282.       0.00
    5.7500     0.2313    509867.      4092.   -0.00369       0.00   6.31E+10
-112.6451      1344.       0.00
    5.9800     0.2211    520733.      3781.   -0.00367       0.00   6.31E+10
-112.6365      1406.       0.00
    6.2100     0.2111    530741.      3471.   -0.00364       0.00   6.30E+10
-112.1916      1467.       0.00
    6.4400     0.2010    539894.      3163.   -0.00362       0.00   4.68E+10
-111.3163      1528.       0.00
    6.6700     0.1911    548199.      2857.   -0.00357       0.00   2.80E+10
```

-110.0293	1589.	0.00				
6.9000	0.1813	555666.	2556.	-0.00350	0.00	1.77E+10
-108.3738	1650.	0.00				
7.1300	0.1717	562308.	2259.	-0.00340	0.00	1.27E+10
-106.4160	1710.	0.00				
7.3600	0.1625	568139.	1969.	-0.00328	0.00	1.27E+10
-104.2364	1770.	0.00				
7.5900	0.1537	573175.	1684.	-0.00315	0.00	1.27E+10
-101.8636	1830.	0.00				
7.8200	0.1451	577436.	1407.	-0.00303	0.00	1.27E+10
-99.3260	1889.	0.00				
8.0500	0.1369	580941.	1136.	-0.00290	0.00	1.27E+10
-96.6514	1948.	0.00				
8.2800	0.1291	583709.	873.3653	-0.00278	0.00	1.27E+10
-93.8672	2007.	0.00				
8.5100	0.1216	585761.	618.2486	-0.00265	0.00	1.27E+10
-91.0000	2065.	0.00				
8.7400	0.1145	587121.	371.1238	-0.00252	0.00	1.27E+10
-88.0760	2123.	0.00				
8.9700	0.1077	587810.	132.1124	-0.00239	0.00	1.27E+10
-85.1207	2181.	0.00				
9.2000	0.1013	587851.	-98.7336	-0.00227	0.00	1.27E+10
-82.1590	2239.	0.00				
9.4300	0.09519	587265.	-321.4296	-0.00214	0.00	1.27E+10
-79.2150	2297.	0.00				
9.6600	0.08946	586076.	-536.0571	-0.00201	0.00	1.27E+10
-76.3122	2354.	0.00				
9.8900	0.08409	584306.	-742.7617	-0.00188	0.00	1.27E+10
-73.4737	2412.	0.00				
10.1200	0.07906	581976.	-941.7511	-0.00176	0.00	1.27E+10
-70.7215	2469.	0.00				
10.3500	0.07439	579108.	-1133.	-0.00163	0.00	1.27E+10
-68.0774	2526.	0.00				
10.5800	0.07006	575720.	-1318.	-0.00151	0.00	1.27E+10
-65.5621	2583.	0.00				
10.8100	0.06608	571834.	-1495.	-0.00138	0.00	1.27E+10
-63.1962	2640.	0.00				
11.0400	0.06244	567466.	-1667.	-0.00126	0.00	1.27E+10
-60.9991	2696.	0.00				
11.2700	0.05914	562633.	-1832.	-0.00113	0.00	1.27E+10
-58.9901	2753.	0.00				
11.5000	0.05618	557351.	-1993.	-0.00102	0.00	1.43E+10
-57.1874	2810.	0.00				
11.7300	0.05351	551633.	-2148.	-9.28E-04	0.00	2.01E+10
-55.5707	2866.	0.00				
11.9600	0.05105	545492.	-2300.	-8.64E-04	0.00	2.91E+10
-54.0655	2923.	0.00				
12.1900	0.04874	538940.	-2447.	-8.21E-04	0.00	4.35E+10
-52.6130	2979.	0.00				
12.4200	0.04652	531986.	-2590.	-7.92E-04	0.00	6.30E+10

-51.1692 3036. 0.00
12.6500 0.04437 524643. -2729. -7.69E-04 0.00 6.31E+10
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-48.2274 3149. 0.00
13.1100 0.04025 508831. -2995. -7.24E-04 0.00 6.31E+10
-46.7352 3205. 0.00
13.3400 0.03828 500386. -3122. -7.02E-04 0.00 6.31E+10
-45.2324 3261. 0.00
13.5700 0.03637 491596. -3245. -6.80E-04 0.00 6.31E+10
-43.7216 3318. 0.00
13.8000 0.03452 482473. -3364. -6.59E-04 0.00 6.32E+10
-42.2052 3374. 0.00
14.0300 0.03273 473028. -3478. -6.38E-04 0.00 6.32E+10
-40.6854 3431. 0.00
14.2600 0.03100 463273. -3588. -6.18E-04 0.00 6.32E+10
-39.1645 3487. 0.00
14.4900 0.02932 453221. -3694. -5.98E-04 0.00 6.32E+10
-37.6445 3543. 0.00
14.7200 0.02770 442881. -3796. -5.78E-04 0.00 6.32E+10
-36.1270 3600. 0.00
14.9500 0.02613 432266. -3894. -5.59E-04 0.00 6.33E+10
-34.6139 3656. 0.00
15.1800 0.02461 421388. -3987. -5.40E-04 0.00 6.33E+10
-33.1067 3712. 0.00
15.4100 0.02315 410257. -4076. -5.22E-04 0.00 6.33E+10
-31.6068 3769. 0.00
15.6400 0.02173 398886. -4162. -5.05E-04 0.00 6.34E+10
-30.1153 3825. 0.00
15.8700 0.02036 387285. -4243. -4.88E-04 0.00 6.34E+10
-28.6335 3881. 0.00
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-24.2540 4050. 0.00
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-22.8182 4106. 0.00
17.0200 0.01419 326232. -4588. -4.10E-04 0.00 6.35E+10
-21.3951 4163. 0.00
17.2500 0.01307 313489. -4645. -3.96E-04 0.00 6.36E+10
-19.9849 4219. 0.00
17.4800 0.01200 300593. -4698. -3.83E-04 0.00 6.36E+10
-18.5876 4275. 0.00
17.7100 0.01096 287556. -4747. -3.70E-04 0.00 6.36E+10
-17.2029 4332. 0.00
17.9400 0.00996 274388. -4793. -3.58E-04 0.00 6.36E+10
-15.8306 4388. 0.00
18.1700 0.00899 261099. -4835. -3.46E-04 0.00 6.37E+10

```
-14.4703      4444.       0.00
   18.4000    0.00805    247701.     -4873.  -3.35E-04       0.00   6.37E+10
-13.1214      4500.       0.00
   18.6300    0.00714    234202.     -4907.  -3.25E-04       0.00   6.37E+10
-11.7830      4557.       0.00
   18.8600    0.00626    220613.     -4938.  -3.15E-04       0.00   6.38E+10
-10.4543      4613.       0.00
   19.0900    0.00540    206945.     -4965.  -3.06E-04       0.00   6.38E+10
-9.1342       4669.       0.00
   19.3200    0.00457    193207.     -4988.  -2.97E-04       0.00   6.38E+10
-7.8215       4725.       0.00
   19.5500    0.00376    179410.     -5008.  -2.89E-04       0.00   6.39E+10
-6.5149       4782.       0.00
   19.7800    0.00297    165563.     -5024.  -2.81E-04       0.00   6.39E+10
-5.2129       4838.       0.00
   20.0100    0.00221    151676.     -5193.  -2.75E-04       0.00   6.39E+10
-116.9350     146228.       0.00
   20.2400    0.00146    136898.     -5462.  -2.68E-04       0.00   6.39E+10
-78.3745      148323.       0.00
   20.4700   7.26E-04    121524.     -5625.  -2.63E-04       0.00   6.40E+10
-39.5662      150417.       0.00
   20.7000   8.07E-06    105848.     -5680.  -2.58E-04       0.00   6.40E+10
-0.4457       152512.       0.00
   20.9300  -6.97E-04     90169.     -5627.  -2.54E-04       0.00   6.41E+10
39.0590       154607.       0.00
   21.1600   -0.00139     74787.     -5464.  -2.50E-04       0.00   6.41E+10
79.0257       156702.       0.00
   21.3900   -0.00208     60007.     -5190.  -2.47E-04       0.00   6.41E+10
119.5354      158797.       0.00
   21.6200   -0.00276     46138.     -4803.  -2.45E-04       0.00   6.41E+10
160.6704      160892.       0.00
   21.8500   -0.00343     33492.     -4302.  -2.43E-04       0.00   6.41E+10
202.5118      162986.       0.00
   22.0800   -0.00410     22390.     -3684.  -2.42E-04       0.00   6.41E+10
245.1368      165081.       0.00
   22.3100   -0.00476     13154.     -2948.  -2.41E-04       0.00   6.41E+10
288.6165      167176.       0.00
   22.5400   -0.00543      6118.     -2090.  -2.41E-04       0.00   6.41E+10
333.0119      169271.       0.00
   22.7700   -0.00609      1618.     -1108.  -2.41E-04       0.00   6.41E+10
378.3716      171366.       0.00
   23.0000   -0.00676       0.00       0.00  -2.41E-04       0.00   6.41E+10
424.7274       86730.       0.00
```

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =     0.50000000 inches
Computed slope at pile head      =    -0.00400283 radians
Maximum bending moment           =        587851. inch-lbs
Maximum shear force              =          9394. lbs
Depth of maximum bending moment  =     9.20000000 feet below pile head
Depth of maximum shear force     =       0.000000 feet below pile head
Number of iterations             =             34
Number of zero deflection points =              1
```

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Case No.	Load Type	Load Pile-head	Load Type	Load Pile-head	Axial Loading	Pile-head Deflection	Pile-head Rotation	Max Shear in Pile	Max Moment in Pile
		Load 1		Load 2	lbs	inches	radians	lbs	in-lbs
1	y, in	0.5000	M, in-lb	0.00	0.00	0.5000	-0.00400	9394.	587851.

Maximum pile-head deflection = 0.5000000000 inches
Maximum pile-head rotation = -0.0040028305 radians = -0.229345 deg.

Summary of Warning Messages

The following warning was reported 2958 times

**** Warning ****

The input value for friction angle is either smaller than 29 degrees or
higher than 41 degrees and no value of k has been specified for a soil layer
defined using the API sand criteria. Program will assume an internal default value,
for k, but the friction angle is outside the range of data available.
Please check your input data for correctness.

The analysis ended normally.

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EXECUTIVE OFFICER

SOILS REPORT APPROVAL LETTER

August 26, 2023

LOG # 121834-01
SOILS/GEOLOGY FILE - 2
AP-Exempt

LA City
1820 N. Las Palmas Avenue
Los Angeles, CA. 90028

TRACT:	HOLLYWOOD OCEAN VIEW TRACT (M P 1-62)
BLOCK:	2
LOT(S):	FR 10
LOCATION:	1820 N. Las Palmas Avenue

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Soils Report	GED 21-159	07/24/2023	Geotechnical Engineering Div.

PREVIOUS REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Grading Dept. Review Letter	121834	06/23/2022	LADBS
Soils Report	GED 21-159	04/18/2022	Geotechnical Engineering Div.
Geotechnical Data Report	ciLA 22-04G	03/31/2022	Tetra Tech

The Grading Division of the Department of Building and Safety has reviewed the referenced repors that provides recommendations for the proposed pedestrian ramp, retaining wall, shade structure, outdoor seating, lighting, hardscape and trash enclosure. The site is currently a senior center building. The project does not include any additions or new foundation with the exiting building. Subsurface exploration performed by Tetra Tech consisted of 4 hollow stem auger borings to a maximum depth of 26.5 feet. The earth materials at the subsurface exploration locations consist of up to 20 feet of uncertified fill underlain by native.

The consultants recommend to support the proposed structure(s) on mat-type or drilled-pile foundations bearing on native undisturbed soils.

A "Request for Modification of Building Ordinances" (RFM) had been reviewed by the Department and approved to allow the proposed trash enclosure to be supported compacted fill placed over uncertified fill.

Engineering analyses provided by Geotechnical Engineering Division is based on field and laboratory testing performed by Tetra Tech. Geotechnical Engineering Division is accepting responsibility for use of the data in accordance to Code section 91.7008.5 of LABC.

The project is located within a Fault Zone identified by the State of California Alquist-Priolo Act. However, the proposed construction is currently exempt (P/BC 2020-044).

AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER

The referenced reports are acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2020 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. The soils engineer shall review and approve the detailed plans prior to issuance of any permit. This approval shall be by signature on the plans that clearly indicates the soils engineer has reviewed the plans prepared by the design engineer; and, that the plans included the recommendations contained in their reports (7006.1).

2. An on-site storm water infiltration system at the subject site shall not be implemented, as recommended.

3. All recommendations of the report(s) that are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

4. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans (7006.1). Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit.

5. A grading permit shall be obtained for all structural fill and retaining wall backfill (106.1.2).

6. All man-made fill shall be compacted to a minimum 90 percent of the maximum dry density of the fill material per the latest version of ASTM D 1557. Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density. Placement of gravel in lieu of compacted fill is only allowed if complying with LAMC Section 91.7011.3.

7. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill (1809.2, 7011.3).

8. Drainage in conformance with the provisions of the Code shall be maintained during and subsequent to construction (7013.12).

9. Grading shall be scheduled for completion prior to the start of the rainy season, or detailed temporary erosion control plans shall be filed in a manner satisfactory to the Grading Division of the Department and the Department of Public Works, Bureau of Engineering, B-Permit Section, for any grading work in excess of 200 cubic yards (7007.1).

   201 N. Figueroa Street 3rd Floor, LA (213) 482-7045

10. All loose foundation excavation material shall be removed prior to commencement of framing. Slopes disturbed by construction activities shall be restored (7005.3).

11. The applicant is advised that the approval of this report does not waive the requirements for excavations contained in the General Safety Orders of the California Department of Industrial Relations (3301.1).

12. Temporary excavations that remove lateral support to the public way, adjacent property, or adjacent structures shall be supported by shoring or constructed using ABC slot cuts. Note: Lateral support shall be considered to be removed when the excavation extends below a plane projected downward at an angle of 45 degrees from the bottom of a footing of an existing structure, from the edge of the public way or an adjacent property. (3307.3.1)

13. Where any excavation, not addressed in the approved reports, would remove lateral support (as defined in 3307.3.1) from a public way, adjacent property or structures, a supplemental report shall be submitted to the Grading Division of the Department containing recommendations for shoring, underpinning, and sequence of construction. Report shall include a plot plan and cross-section(s) showing the construction type, number of stories, and location of adjacent structures, and analysis incorporating all surcharge loads that demonstrate an acceptable factor of safety against failure. (7006.2 & 3307.3.2)

14. The soils engineer shall review and approve the shoring and/or underpinning plans prior to issuance of the permit (3307.3.2).

15. Prior to the issuance of the permits, the soils engineer and/or the structural designer shall evaluate the surcharge loads used in the report calculations for the design of the retaining walls and shoring. If the surcharge loads used in the calculations do not conform to the actual surcharge loads, the soil engineer shall submit a supplementary report with revised recommendations to the Department for approval.

16. Unsurcharged temporary excavation may be cut vertical up to 5 feet, as recommended.

17. Surcharged ABC slot-cut method may be used for temporary excavations with each slot-cut not exceeding 5.5 feet in height and not exceeding 7 feet in width, as recommended. The surcharge load shall not exceed the value given in the report. The soils engineer shall determine the clearance between the excavation and the existing foundation. The soils engineer shall verify in the field if the existing earth materials are stable in the slot-cut excavation. Each slot shall be inspected by the soils engineer and approved in writing prior to any worker access.

18. Shoring shall be designed for the lateral earth pressures specified in the section titled "Temporary Shoring" starting on page 9 of the 04/18/2022 report; all surcharge loads shall be included into the design.

19. Shoring shall be designed for a maximum lateral deflection of 1 inch, provided there are no structures within a 1:1 plane projected up from the base of the excavation. Where a structure is within a 1:1 plane projected up from the base of the excavation, shoring shall be designed for a maximum lateral deflection of ½ inch, or to a lower deflection determined by the consultant that does not present any potential hazard to the adjacent structure.

20. A shoring monitoring program shall be implemented to the satisfaction of the soils engineer.

21. All foundations shall derive entire support from native undisturbed soils, as recommended (and approved by the geologist and soils engineer by inspection).

22. Pile caisson and/or isolated foundation ties are required by LAMC Sections 91.1809.13 and/or 91.1810.3.13. Exceptions and modification to this requirement are provided in Information Bulletin P/BC 2020-030.

23. When water is present in drilled pile holes, the concrete shall be tremied from the bottom up to ensure minimum segregation of the mix and negligible turbulence of the water (1808.8.3).

24. Existing uncertified fill shall not be used for lateral support of deep foundations (1810.2.1).

25. The seismic design shall be based on a Site Class D, as recommended. All other seismic design parameters shall be reviewed by LADBS building plan check. According to ASCE 7-16 Section 11.4.8, the long period coefficient (Fv) may be selected per Table 11.4-2 in ASCE 7-16, provided that the value of the Seismic Response Coefficient (Cs) is determined by Equation 12.8-2 for values of the fundamental period of the building (T) less than or equal to 1.5Ts, and taken as 1.5 times the

value computed in accordance with either Equation 12.8-3 for T greater than 1.5Ts and less than or equal to TL or Equation 12.8-4 for T greater than TL. Alternatively, a supplemental report containing a site-specific ground motion hazard analysis in accordance with ASCE 7-16 Section 21.2 shall be submitted for review and approval.

26. Retaining walls up to 4 feet shall be designed for the lateral earth pressures specified in the section titled "Lateral Earth Pressures For Retaining Walls" starting on page 14 of the 04/18/2022 report. Note: All surcharge loads shall be included into the design.

27. All retaining walls shall be provided with a standard surface backdrain system and all drainage shall be conducted in a non-erosive device to the street in an acceptable manner (7013.11).

28. With the exception of retaining walls designed for hydrostatic pressure, all retaining walls shall be provided with a subdrain system to prevent possible hydrostatic pressure behind the wall. Prior to issuance of any permit, the retaining wall subdrain system recommended in the soils report shall be incorporated into the foundation plan which shall be reviewed and approved by the soils engineer of record (1805.4).

29. Installation of the subdrain system shall be inspected and approved by the soils engineer of record and the City grading/building inspector (108.9).

30. Basement walls and floors shall be waterproofed/damp-proofed with an LA City approved "Below-grade" waterproofing/damp-proofing material with a research report number (104.2.6).

31. Prefabricated drainage composites (Miradrain, Geotextiles) may be only used in addition to traditionally accepted methods of draining retained earth.

32. All roof, pad and deck drainage shall be conducted to the street in an acceptable manner in non-erosive devices or other approved location in a manner that is acceptable to the LADBS and the Department of Public Works (7013.10).

33. All concentrated drainage shall be conducted in an approved device and disposed of in a manner approved by the LADBS (7013.10).

34. The soils engineer shall inspect all excavations to determine that conditions anticipated in the report have been encountered and to provide recommendations for the correction of hazards found during grading (7008, 1705.6 & 1705.8).

35. All friction pile or caisson drilling and excavations shall be performed under the inspection and approval of the geologist and soils engineer. The geologist shall indicate the distance that friction piles or caissons penetrate into competent material in a written field memorandum. (1803.5.5, 1705.1.2)

36. Prior to pouring concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. The representative shall post a notice on the job site for the LADBS Inspector and the Contractor stating that the work inspected meets the conditions of the report. No concrete shall be poured until the LADBS Inspector has also inspected and approved the footing excavations. A written certification to this effect shall be filed with the Grading Division of the Department upon completion of the work. (108.9 & 7008.2)

37. Prior to excavation an initial inspection shall be called with the LADBS Inspector. During the initial inspection, the sequence of construction; shoring; pile installation; protection fences; and, dust and traffic control will be scheduled (108.9.1).

38. Installation of shoring, underpinning, slot cutting and/or pile excavations shall be performed under the inspection and approval of the soils engineer and deputy grading inspector (1705.6, 1705.8).

39. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. The representative shall post a notice on the job site for the LADBS Inspector and the Contractor stating that the soil inspected meets the conditions of the report. No fill shall be placed until the LADBS Inspector has also inspected and approved the bottom excavations. A written certification to this effect shall be included in the final compaction report filed with the Grading Division of the Department. All fill shall be placed under the inspection and approval of the soils engineer. A compaction report together with the approved soil report and Department approval letter shall be submitted to the Grading Division of the Department upon completion of the compaction. In addition, an Engineer's Certificate of Compliance with the legal description as indicated in the grading permit and the permit number shall be included (7011.3).

DAN RYAN EVANGELISTA
Structural Engineering Associate III

DRE/dre
Log No. 121834-01
213-482-0480

cc: Geotechnical Engineering Division, Project Consultant
Tetra Tech, Project Consultant
LA District Office

CITY OF LOS ANGELES
DEPARTMENT OF BUILDING AND SAFETY
Grading Division

District	LA	Log No.	121834-1

APPLICATION FOR REVIEW OF TECHNICAL REPORTS

INSTRUCTIONS

A. Address all communications to the Grading Division, LADBS, 201 N. Figueroa St., 3rd Fl., Los Angeles, CA 90012 Telephone No. (213)482-0480.
B. Submit two copies (three for subdivisions) of reports, one "pdf" copy of the report on a CD-Rom or flash drive, and one copy of application with items "1" through "10" completed.
C. Check should be made to the City of Los Angeles.

1. LEGAL DESCRIPTION
Tract: Hollywood Ocean View Tract
Block: 2 Lots: FR 10
3. OWNER: Los Angeles Dept. of Recreation and Parks
Address: 200 N Main Street, Room 709
City: LA Zip: 90012
Phone (Daytime): (213) 485-4730

2. PROJECT ADDRESS: 1820 North Las Palmas Avenue
4. APPLICANT City of LA, DPW, BOE, "GED"
Address: 1149 S Broadway
City: LA Zip: 90015
Phone (Daytime): (213) 847-0476
E-mail address: easton.forcier@lacity.org

5. Report(s) Prepared by: "GED"
6. Report Date(s): 7-24-23

7. Status of project: ☒ Proposed ☐ Under Construction ☐ Storm Damage
8. Previous site reports? ☒ YES if yes, give date(s) of report(s) and name of company who prepared report(s)
Geotechnical Report by GED dated 4-18-22

9. Previous Department actions? ☒ YES if yes, provide dates and attach a copy to expedite processing.
Dates: Review Letter dated 6-23-22 Log No. 121834

10. Applicant Signature: Easton Forcier Position: Geotechnical Engineer II

(DEPARTMENT USE ONLY)

REVIEW REQUESTED	FEES	REVIEW REQUESTED	FEES
☐ Soils Engineering		No. of Lots	
☐ Geology		No. of Acres	
☐ Combined Soils Engr. & Geol.		☐ Division of Land	
☒ Supplemental	181.50	Other	
☐ Combined Supplemental		☐ Expedite	
☐ Import-Export Route		☐ Response to Correction	
Cubic Yards:		☐ Expedite ONLY	
		Sub-total	
		One-Stop Surcharge	49.94
		TOTAL FEE	231.44

Fee Due: 231.44
Fee Verified By: AM Date:
(Cashier Use Only)

Los Angeles Department of Building and Safety
Metro 4th Floor 08/02/2023 1:21:55 PM
User ID: rrodriguez
Receipt Ref Nbr: 2023214001-91
Transaction ID: 2023214001-91-1
GRADING REPORT $181.50
SYSTEMS DEV SURCH $10.89
GEN PLAN MAINT SURCH $12.71
DEV SERV CENTER SURCH $5.45
CITY PLAN SURCH $10.89
MISC OTHER $10.00
Amount Paid: $231.44
PCIS Number: NA
Job Address: 1820 N. Las Palmas Ave
Owners Name: LA dept. of Rec and Parks

ACTION BY:

THE REPORT IS: ☐ NOT APPROVED
☐ APPROVED WITH CONDITIONS ☐ BELOW ☐ ATTACHED

For Geology Date

For Soils Date

28873

CITY LA DBS
DEPARTMENT OF BUILDING AND SAFETY

REQUEST FOR MODIFICATION OF BUILDING ORDINANCES

UNDER AUTHORITY OF L.A.M.C. SECTION 98.0403

PERMIT APP. #: N/A	DATE: 8-17-23	For City Dept. Use Only: Building, Zoning, Grading, Shoring, Mech., Elec., Plumb., Green, D.A., Misc.
JOB ADDRESS: 1820 N Las Palmas Avenue		
Tract: Hollywood Ocean View Tract (MB 1-62)	Block: 2 Lot: FR 10	
Owner: Los Angeles Dept. of Recreation and Parks	Petitioner: City of Los Angeles, DPW, BOE, "GED"	
Address: 200 N Main Street, Room 709	Address: 1149 S Broadway	
City: Los Angeles, State: CA, Zip: 90012, Phone: (213) 485-4730	City: Los Angeles, State: CA, Zip: 90015, Phone: (213) 847-0476	

REQUEST (SUBMIT PLANS OR ADDITIONAL SHEETS AS NECESSARY) — CODE SECTIONS:

1. For cast-in-drilled-hole (CIDH) piles that extend through existing uncertified fill, allow the existing fill to be used for lateral support.
2. For a secondary (i.e. non-habitable) trash enclosure structure, allow the placement of compacted fill over existing uncertified fill.

JUSTIFICATION (SUBMIT PLANS OR ADDITIONAL SHEETS AS NECESSARY)

1. The existing uncertified fill mostly consists of loose to medium dense clayey sand with gravel. In our report, we recommended a lateral bearing capacity value of 100 pcf (isolated piles = 200 pcf) In addition, the piles will be embedded at least 3 feet into the native soil.
2. The foundation will consist of a structural mat underlain by at least 3 feet of compacted fill

Owner/Petitioner Name (Print)	(Signature)	Position
Easton Forcier, PE, GE	Easton Forcier	Geotechnical Engineer II

FOR CITY DEPARTMENT'S USE ONLY BELOW THIS LINE

Concurrences required from the following Department(s)

			Approved	Denied
☐ Los Angeles Fire Department	Print Name	Sign	☐	☐
☐ Public Works Bureau of Engineering	Print Name	Sign	☐	☐
☐ Department of City Planning	Print Name	Sign	☐	☐
☐ Department of County Health	Print Name	Sign	☐	☐
☐ Other	Print Name	Sign	☐	☐

DEPARTMENT ACTION

☒ GRANTED ☐ ~~DENIED~~

Reviewed by: (Staff) (Print)	Sign	Date
Dan Evangelista	[signature]	8/22/23

Action taken by: (Supervisor) (Print)	Sign	Date
J. Adolfo Acosta	[signature]	8/23/23

NOTE: IN CASE OF DENIAL, SEE PAGE #2 OF THIS FORM FOR APPEAL PROCEDURES

CONDITIONS OF APPROVAL (Continued on Page 2):

1. All conditions of the Department Approval Letter, Log # 121834-01 shall apply.

For Cashiers Use Only
(PROCESS ONLY WHEN FEES ARE VERIFIED)

User ID: rkhachatryan
Receipt Ref Nbr: 2023233001-16
Transaction ID: 2023233001-16-1
BOARD APPLIC FEE $139.00
SYSTEMS DEV SURCH $20.82
DEV SERV CENTER SURCH $10.41
RESEARCH FEE $208.00
Amount Paid: $378.23
Request Date: 08/17/2023
PCIS Number: NA
Comments: 1820 N LAS PALMAS AVE

(DEPARTMENT USE ONLY)

FEES

Appeal Processing Fee ..(No. of Items) =	2	1X $130 + $39/addl	= 139.00
Inspection Fee .....(No of Insp.) =	0	X $ 84.00	= 0
Research Fee ... (Total Hours Worked) =	2	X $104.00	= 208.00
Subtotal.....			= 347.00
Development Services Center Surcharge		X 3%	= 10.41
Systems Development Surcharge.....		X 6%	= 20.82
Total Fees.....			= 378.23

Fees verified by:

Print and Sign D.Evangelista

Los Angeles Dept of Building and Safety
1828 Sawtelle Blvd., 2nd Floor
West Los Angeles, CA 90025

Reference Number: 2023233001-16
Date/Time: 08/21/2023 1:28:39 PM PST

User ID: rkhachatryan

MODIFICATION BOARD APPEAL
2023233001-16-1
Request Date: 08/17/2023
PCIS Number: NA
Comments: 1820 N LAS PALMAS AVE

BOARD APPLIC FEE	$139.00
SYSTEMS DEV SURCH	$20.82
DEV SERV CENTER SURCH	$10.41
RESEARCH FEE	$208.00
Total:	$378.23

LADBS IDO
2023233001-16-2
Comments: EASTON FORCIER 213-847-0476
LADBS IDO PAYMENT
Document Dept Code: 89
IDO Document ID: ID23302G014
Available Amount: 14502.03
Amount Applied: -378.23

Amount:	($378.23)
Total:	($378.23)
2 ITEMS TOTAL:	$0.00
TOTAL:	$0.00
Total Received:	$0.00



ATTACHMENT B

- HISTORICAL RESOURCE EVALUATION REPORT, DATED 1/2024

- CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), NOTICE OF EXEMPTION DATED 12/4/2025

- PALEONTOGICAL RECOMMENDATIONS MEMORANDUM, DATED 6/30/2023

1820 N. LAS PALMAS AVENUE

Los Angeles, California



Historical Resource Evaluation Report

Prepared by:

CONSULTING GPA

January 2024

EXECUTIVE SUMMARY

This report presents the results of a historical resource evaluation in anticipation of a proposed project at 1820 N. Las Palmas Avenue in the Hollywood Community Plan Area (CPA) of the City of Los Angeles. The property is owned by the City of Los Angeles Department of Recreation and Parks (RAP) and consists of one parcel corresponding with Assessor Parcel Number (APN) 5547-003-900 on the southeast corner of N. Las Palmas Avenue and Franklin Avenue (Project site). The Project site is improved with a one-story municipal recreational building, the Las Palmas Senior Citizen Center, constructed in 1961.

The property is not currently listed in the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), or designated as a City of Los Angeles Historical-Cultural Monument (LA HCM), nor was it previously identified in any historical resource surveys.

After careful inspection, investigation, and evaluation, GPA Consulting (GPA) concludes that the property does not appear to be individually eligible for listing in the National Register, California Register, or for designation as an LA HCM, due to a lack of significance and integrity. GPA also concludes that the property does not appear to contribute to a potential historic district under the federal, state, or local designation programs. The recommended status code for the property is 6Z, ineligible for national, state, and local designation through survey evaluation. As such, the property is not a historical resource for the purposes of the California Environmental Quality Act (CEQA).

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1. INTRODUCTION

1.1 Purpose

The purpose of this report is to analyze whether a proposed project (the Project) at 1820 N. Las Palmas Avenue in the City of Los Angeles (Project site) would impact historical resources as defined by the California Environmental Quality Act (CEQA). The Project site is comprised of one parcel, Assessor Parcel Number (APN) 5547-003-900, located in the Hollywood Redevelopment Area within the Hollywood Community Plan Area (CPA) of the City of Los Angeles (see **Figure 1**). The legal description is Lot 10, Block 2 of the Hollywood Oceanview Tract. The Project site is improved with the Las Palmas Senior Citizen Center, a one-story municipal recreational building constructed in 1961 for the City of Los Angeles Department of Recreation and Parks (RAP).

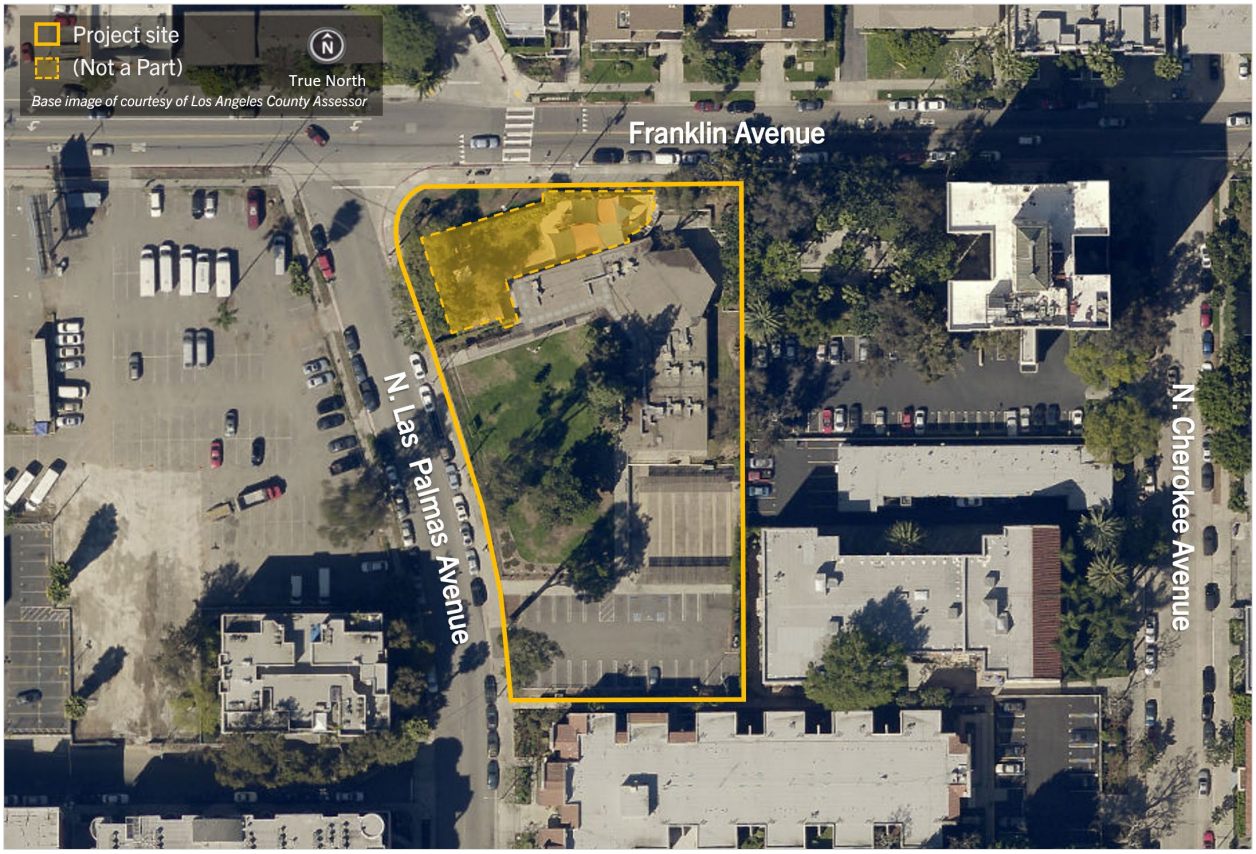

Figure 1: Location of the Project site.

1.2 Methodology

In preparing this report, GPA Consulting (GPA) performed the following tasks:

1. Reviewed existing information to determine if there are any listed or previously surveyed historical resources on the Project site. The following sources were consulted:
    a. The California Historic Resources Inventory System (CHRIS) via a records search request submitted to the South Central Coastal Information Center (SCCIC) by Bargas Environmental Consulting on May 8, 2023. The results of the records search were not received by the date of this report.

b. The Built Environment Resources Directory (BERD), maintained by the State Office of Historic Preservation (OHP), which includes information on cultural and historical resources reviewed for eligibility to the National Register of Historic Places (National Register) and the California Historical Landmarks (CHL) programs through federal and state environmental compliance laws, as well as resources nominated under federal and state registration programs.

c. Prior survey data, including the HistoricPlacesLA, maintained by the Los Angeles Office of Historic Resources (OHR), which includes information on designated and eligible historical resources identified during SurveyLA, as well as the *Historic Resources Survey Report: Hollywood Redevelopment Plan Area*, prepared by Architectural Resources Group (ARG), Historic Resources Group (HRG), and GPA Consulting in 2020. This survey was completed not as part of SurveyLA but utilized the methodology within SurveyLA to evaluate the properties within the Study Area. The above research confirmed that the building on the property comprising the Project site was not previously surveyed or designated.

Conducted a field inspection of the Project site. During the field inspection, GPA assessed the general condition and physical integrity of the building and features on the Project site. Digital photographs of the building and site were taken and are included throughout this report.

Concluded during the field inspection that the building on the does not contribute to a potential historic district.

Concluded during the field inspection that the subject building has undergone alterations since construction in 1961.

Therefore, the property comprising the Project site was evaluated individually as a potential historical resource according to the National Park Service, State Office of Historic Preservation, and City of Los Angeles Cultural Heritage Ordinance standards.

Conducted research into the history of the property. Sources referenced include building permit records, historic aerial photographs, Sanborn Fire Insurance maps, local historical society databases, and various newspaper archives.

Consulted the Historic Resources Survey Reports for the Hollywood CPA (2015) and the Hollywood Redevelopment Plan Area (2020) to gain an understanding of the history and development of the area in which the project site is located.

Consulted the Context/Theme/Property Type (CTP) eligibility standards formulated for the *Los Angeles Citywide Historic Context Statement* (*LACHCS*) to identify the appropriate CTPs under which to evaluate the property.

Reviewed and analyzed ordinances, statutes, regulations, bulletins, and technical materials relating to federal, state, and local historic preservation designations, and assessment processes and programs to analyze the integrity of the buildings on the Project site.

1.3 Qualifications of Preparers

Emma Haggerty, Associate Architectural Historian, and Amanda Duane, Senior Architectural Historian, were responsible for the preparation of this report. Jenna Kachour, Senior Associate Architectural Historian, was responsible for quality assurance and quality control. Audrey von Ahrens, Associate Architectural Historian was responsible for the digital photographs taken during the site visit. They fulfill the qualifications for a historic preservation professionals outlined in Title 36 of the Code of Federal Regulations, Part 61. Their résumés are included in Appendix A.

2. REGULATORY FRAMEWORK

Generally, a lead agency must consider a property a historical resource under CEQA if it is eligible for listing in the California Register. The California Register is modeled after the National Register. Furthermore, a property is presumed to be historically significant if it is listed in a local register of historical resources or has been identified as historically significant in a historic resources survey (provided certain statutory criteria and requirements are satisfied) unless a preponderance of evidence demonstrates that the property is not historically or culturally significant.[1] A lead agency may also treat a resource as historic if it meets statutory requirements and substantial evidence supports the conclusion. The National Register, California Register, and City designation programs are discussed below.

2.1 National Register of Historic Places

The National Register is "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment."[2]

Criteria

To be eligible for listing in the National Register, a property must be at least 50 years of age (unless the property is of "exceptional importance") and possess significance in American history and culture, architecture, or archaeology. A property of potential significance must meet one or more of the following four established criteria:[3]

A. Associated with events that have made a significant contribution to the broad patterns of our history; or

B. Associated with the lives of persons significant in our past; or

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Yield, or may be likely to yield, information important in prehistory or history.

Context

To be eligible for listing in the National Register, a property must be significant within a historic context. "National Register Bulletin 15" states that the significance of a historic property can be judged only when it is evaluated within its historic context. Historic contexts are "those patterns, themes, or trends in history by which a specific…property or site is understood and its meaning…is made clear."[4] A property must represent an important aspect of the area's history or prehistory and possess the requisite integrity to qualify for the National Register.

Integrity

In addition to possessing significance within a historic context, to be eligible for listing in the National Register a property must have integrity. Integrity is defined in "National Register Bulletin 15" as "the ability of a property to

[1] Public Resources Code §5024.1 and 14 California Code of Regulations §4850 & §15064.5(a)(2).
[2] Title 36 Code of Federal Regulations Part 60.2.
[3] Title 36 Code of Federal Regulations Part 60.4.
[4] Patrick Andrus and Rebecca Shrimpton, eds., (National Register Bulletin 15) *How to Apply the National Register Criteria for Evaluation* (US Department of the Interior, National Park Service, Cultural Resources: 1997), 7-8, accessed May 2023, https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

convey its significance."[5] Within the concept of integrity, the National Register recognizes the following seven aspects or qualities that in various combinations define integrity: feeling, association, workmanship, location, design, setting, and materials. Integrity is based on significance: why, where, and when a property is important. Thus, the significance of the property must be fully established before the integrity is analyzed.

2.2 California Register of Historical Resources

In 1992, Governor Wilson signed Assembly Bill 2881 into law establishing the California Register. The California Register is an authoritative guide used by state and local agencies, private groups, and citizens to identify historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse impacts.[6]

The California Register consists of properties that are listed automatically as well as those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the National Register and those formally Determined Eligible for the National Register;
- State Historical Landmarks from No. 0770 onward; and
- Those California Points of Historical Interest that have been evaluated by the State Office of Historic Preservation (OHP) and have been recommended to the State Historical Resources Commission for inclusion on the California Register.[7]

Criteria and Integrity

For those properties not automatically listed, the criteria for eligibility of listing in the California Register are based upon National Register criteria, but are identified as 1-4 instead of A-D. To be eligible for listing in the California Register, a property generally must be at least 50 years of age and must possess significance at the local, state, or national level, under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States; or
2. It is associated with the lives of persons important to local, California, or national history; or
3. It embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values; or
4. It has yielded, or has the potential to yield, information important in the prehistory or history of the local area, California, or the nation.

Properties eligible for listing in the California Register may include buildings, sites, structures, objects, and historic districts. A property less than 50 years of age may be eligible if it can be demonstrated that sufficient time has passed to understand its historical importance. While the enabling legislation for the California Register is less rigorous regarding the issue of integrity, there is the expectation that properties reflect their appearance during their period of significance.[8]

[5] Ibid., 44-45.
[6] Public Resources Code §5024.1 (a).
[7] Public Resources Code §5024.1 (d).
[8] Public Resources Code §4852.

The California Register may also include properties identified during historic resource surveys. However, the survey must meet all the following criteria:[9]

1. The survey has been or will be included in the State Historic Resources Inventory;
2. The survey and the survey documentation were prepared in accordance with office [OHP] procedures and requirements;
3. The resource is evaluated and determined by the office [OHP] to have a significance rating of Category 1 to 5 on a DPR Form 523; and
4. If the survey is five or more years old at the time of its nomination for inclusion in the California Register, the survey is updated to identify historical resources that have become eligible or ineligible due to changed circumstances or further documentation and those that have been demolished or altered in a manner that substantially diminishes the significance of the resource.

Office of Historic Preservation (OHP) Survey Methodology

The evaluation instructions and classification system prescribed by the OHP in its *Instructions for Recording Historical Resources* provide a Status Code for use in classifying potential historical resources. In 2003, the Status Codes were revised to address the California Register. These Status Codes are used statewide in the preparation of historical resource surveys and evaluation reports. The first code is a number that indicates the general category of evaluation. The second code is a letter that indicates whether the property is separately eligible (S), eligible as part of a district (D), or both (B). There is sometimes a third code that describes some of the circumstances or conditions of the evaluation. The general evaluation categories are as follows:

1. Listed in the National Register or the California Register.
2. Determined eligible for listing in the National Register or the California Register.
3. Appears eligible for listing in the National Register or the California Register through survey evaluation.
4. Appears eligible for listing in the National Register or the California Register through other evaluation.
5. Recognized as historically significant by local government.
6. Not eligible for listing or designation as specified.
7. Not evaluated or needs re-evaluation.

The specific Status Codes referred to in this report are as follows:

6Z Found ineligible for NR, CR or Local designation through survey evaluation.

2.3 Los Angeles Cultural Heritage Ordinance

The Los Angeles City Council adopted the Cultural Heritage Ordinance in 1962 and amended it in 2018 (Sections 22.171 et seq. of the Administrative Code). The Ordinance created a Cultural Heritage Commission and criteria for designating Historic-Cultural Monuments (HCM). The Commission is comprised of five citizens, appointed by the Mayor, who have exhibited knowledge of Los Angeles history, culture and architecture. A monument is any site, building, or structure of particular historic or cultural significance to the City of Los Angeles and may be designated if it meets at least one of the following criteria:

[9] Public Resources Code §5024.1.

- The proposed HCM is identified with important events of national, state, or local history, or exemplifies significant contributions to the broad cultural, economic or social history of the nation, state, city or community; or
- The proposed HCM is associated with the lives of historic personages important to national, state, city, or local history;
- The proposed HCM embodies the distinctive characteristics of a style, type, period, or method of construction; or represents; or represents a notable work of a master, designer, builder, or architect whose individual genius influenced his or her age.[10]

Unlike the National and California Registers, the Ordinance makes no mention of concepts such as physical integrity or period of significance. Moreover, properties do not have to reach a minimum age requirement, such as 50 years, to be designated as HCMs.

2.4 Los Angeles Historic Preservation Overlay Zone Ordinance

The Los Angeles City Council adopted the ordinance enabling the creation of Historic Preservation Overlay Zones (HPOZs) in 1979; Angelino Heights became Los Angeles' first HPOZ in 1983. An HPOZ is a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. According to Section 12.20.3 of the City of Los Angeles Municipal Code, the criteria for the designation of an HPOZ are:

1. Adds to the historic architectural qualities or historic associations for which a property is significant because it was present during the period of significance, and possesses historic integrity reflecting its character at that time; or
2. Owing to its unique location or singular physical characteristics, represents an established feature of the neighborhood, community or city; or
3. Retaining the building, structure, landscaping, or natural feature would contribute to the preservation and protection of a historic place or area of historic interest in the City.

[10] Los Angeles Administrative Code Section 22.171.7.

3. ENVIRONMENTAL SETTING

The Project site is in the Hollywood Redevelopment Area, within the Hollywood CPA of Los Angeles, at the southeast corner of N. Las Palmas Avenue and Franklin Avenue. Franklin Avenue is an east-west thoroughfare that runs parallel to Hollywood Boulevard to the south. North Las Palmas Avenue is a two-lane road that runs north to south. The built environment in the vicinity of the Project site consists primarily of multi-family residential buildings constructed as early as the 1900s and as recently as 2019.

3.1 Description and History of the Property

The Project site is currently improved with the Las Palmas Senior Citizen Center, a one-story municipal recreational building constructed for RAP in 1961. The building is situated in the northeast corner of the parcel with a deep setback from N. Las Palmas Avenue. The topography of the Project site matches the slope of N. Las Palmas Avenue and is higher at its north end. The building is surrounded by a flat area that is graded below Franklin Avenue. This topography, along with a retaining wall, vegetation, and fencing, partially obscures the north elevation from the public right-of-way. The northwest portion of the parcel is leased to an independent childcare facility and is not a part of the Project. The property is surrounded by a metal and chain-link fence and site features include concrete walkways, patios, and a lawn with mature trees. The southern portion of the parcel is occupied by a square, multi-lane shuffleboard court and an asphalt multi-stall parking lot that are both below grade of the main building due to the topography of the site.

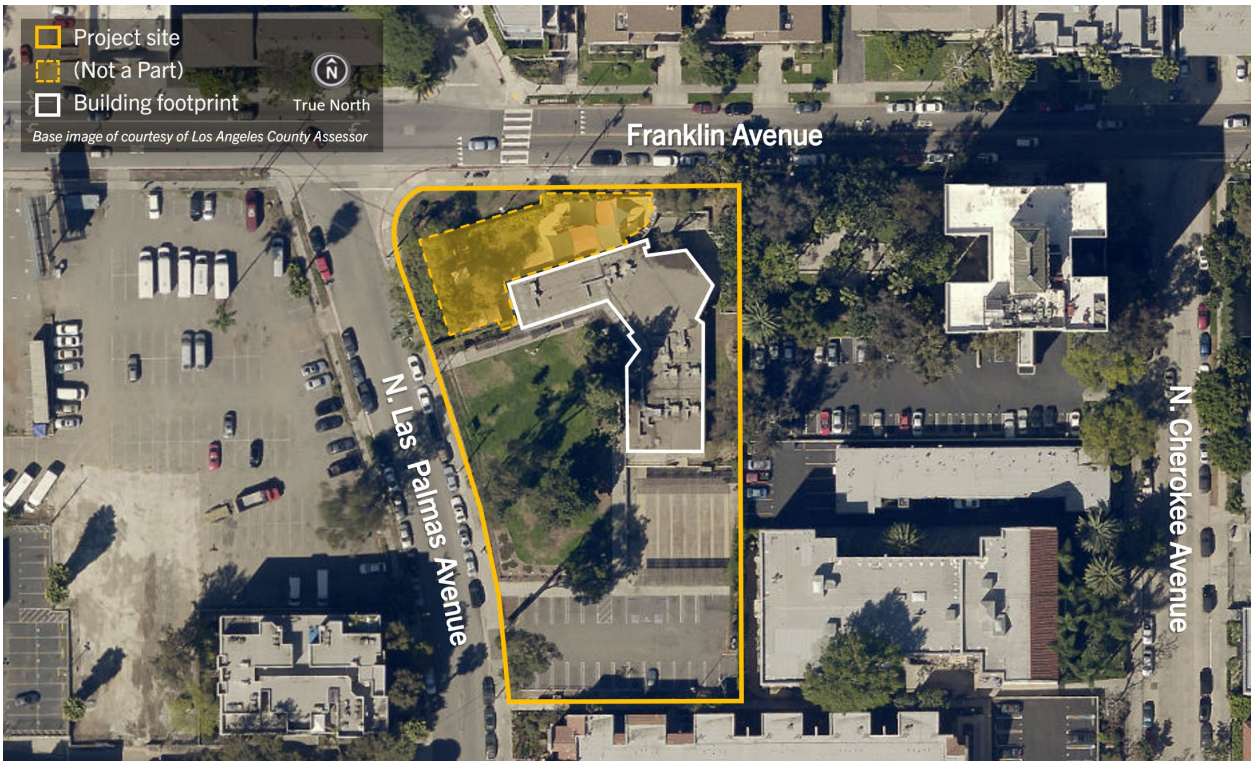

Figure 2: Location of the building on the Project site.

Architectural Description

The Senior Citizen Center is irregular in plan and generally comprises three volumes: a one story, rectangular volume with an east-west orientation (North Wing) that intersects a double-height hexagonal volume (noted as the Community Room on the original plans) that also intersected by another one-story, rectangular volume with

a north-south orientation (South Wing).[11] The building has a flat roof with overhanging, boxed eaves on the one-story wings and a low-sloped gabled roof with open eaves and bargeboards on the Community Room. The exterior of the building is clad in a combination of stucco with vertical scoring and vertical stack bond concrete masonry with raked joints that mimic the appearance of vertical panels. Some of the masonry units have decorative patterning. Fenestration consists of fixed metal single-light and multi-light windows, many of which extend from the floor to ceiling. Entryways consist of singular, hollow metal doors and fully glazed metal doors in singles and pairs. A wood trellis shelters the walkway that wraps around the west elevation of the building (see Figure 3).

North Wing

The North Wing is further divided into two, one-story volumes that are connected by a breezeway (see Figure 4). The south elevation of the western volume is clad in stucco with vertical scoring and has a rectangular clerestory window. The breezeway is enclosed by a non-original metal door and chain-link fencing. The south elevation of the eastern volume is also clad in stucco with vertical scoring, but there is no fenestration. The east elevation of the North Wing mostly intersects with the Community Room, but at its north end there is a shallow projection with two hollow metal doors that open onto a concrete patio area northeast of the building (see Figure 5). The north and west elevations of the North Wing were not accessible during the site visit, as they abut the leased portion of the site that is not a part of the Project.

Community Room

The Community Room is intersected by the North Wing to the west and the South Wing to the south. The main entrance is located roughly where the three volumes intersect and is oriented southwest towards N. Las Palmas Avenue. The entrance consists of a full-light, metal door with a single-light sidelight and transom. There are three multi-light, sliding metal doors to the left of the main entrance and two fixed single-light windows to the right (see Figure 6). The north elevation of the Community Room is clad in decorative concrete blocks and has a single hollow metal door that faces north towards Franklin Avenue (see Figure 7). The northeast elevation is clad in vertical stack bond concrete masonry and has an infilled clerestory window opening (see Figure 8). The southeast elevation of the Community Room is also clad in vertical stack bond concrete masonry and has a hollow metal door sheltered under a flat canopy (see Figure 9).

South Wing

The west elevation of the South Wing is clad in stucco and there is a secondary entry that consists of a pair of full-light, metal doors. There are five single-light, metal windows on either side of the entrance that are framed by four narrow rectangular columns (see Figure 10). The south elevation is clad in stucco with vertical scoring. There is a single and pair of hollow metal doors that open onto a landing for a staircase. The staircase has brick treads and a metal handrail and leads to the shuffleboard court (see Figure 11). The east elevation of the South Wing is clad in stucco with vertical scoring. There is a pair of hollow metal doors at the south end and another at the center of the elevation. The center doors are flanked by two fixed single-light metal windows (see Figure 12). The east elevation faces the neighboring property line with a narrow setback, forming a shallow grass lawn. The north end of the South Wing intersects with the remainder of the building.

Additional exterior photographs of the building's elevations and surrounding site can be found in Appendix E.

[11] The North Wing and South Wing terminology is used for the purposes of this report only.



Figure 3: Las Palmas Senior Citizen Center, view looking northeast (GPA, May 2023).



Figure 4: North Wing, south elevation, view facing north. West volume at left, enclosed breezeway at center, east volume at right (GPA, May 2023).



Figure 5: North Wing, east elevation, view facing west. Community Room at left (GPA, May 2023).



Figure 6: Main entrance, west elevation, looking northeast (GPA, May 2023).



Figure 7: Community Room, north elevation, view looking south (GPA, May 2023).



Figure 8: Community Room, northeast elevation, view looking southwest (GPA, May 2023).



Figure 9: Community Room, southeast elevation, view looking northwest (GPA, May 2023).



Figure 10: South Wing, west elevation, view looking east (GPA, May 2023).



Figure 11: South Wing, south elevation, view looking north (GPA, May 2023).



Figure 12: South Wing, east elevation, view looking northwest (GPA, May 2023).



Figure 13: Shuffleboard Court, view looking northwest (GPA, May 2023).



Figure 14: Parking lot, view looking southwest (GPA, May 2023).

Construction History

The Las Palmas Senior Citizen Center was constructed in 1961 for RAP and was designed by Carl B. Troedsson.[12] Troedsson was a Los Angeles-based architect who was born in Sweden in c. 1906. He relocated to the United States in 1923 when he was about 17 years old.[13] He graduated from Columbia University School of Architecture in New York and the Royal Institute of Technology in Stockholm, Sweden.[14] Prior to opening his own architecture firm, he was a professor as well as an author whose writing focused on urban planning issues related to the increased demand of the automobile.[15] One of the best-known examples of Troedsson's work includes the Tower Building in Long Beach, a 39-story circular apartment building with a revolving restaurant on the top floor.[16]

According to a *Los Angeles Evening Citizen News* newspaper article published in 1961, the Las Palmas Senior Citizen Center Building would be constructed of concrete block and stucco with a multi-sided "polyhedron" shaped community room between a north wing and a south wing.[17] The wings would include a foyer, club room, and a maintenance room connected by an open patio with a covered breezeway.[18] The original building permit could not be located, however, a copy of Troedsson's as-built plans from May 1961 were provided by the City and correspond to the description in the article (see Appendix C).

There are only three building permits on record for the building, listed in **Table 1,** below. While this is common for city-owned properties, only a few alterations are documented as a result. The oldest building permit on record for the property is from 2000 for interior and exterior construction including stairs, restroom, and parking lot remodel and the installation of an ADA-compliant wheelchair lift.[19] The wheelchair lift was removed to the scope in a subsequent 2001 permit.[20] The last available exterior building permit is from 2018 for the replacement of interior and exterior luminaries with LED.[21] Other permits are for mechanical, electrical, and/or plumbing work.

Table 1: Building Permit History

Date	Permit No.	Description	Builder	Owner
2000-12-14	00016-10000-01648	Stair, restroom, and parking remodel and ADA wheelchair lift installation.	Art Dungo	LA City
2001-02-01	00016-10001-01648	Scope change – omit ADA wheelchair lift	Art Dungo	LA City
2018-03-01	18041-10000-07572	Replacing indoor and outdoor luminaires with LED types.	N/A	LA City

Additional alterations were observed by GPA during their site visit in May 2023 based on a comparison of existing conditions and the original building construction plans from 1961. Observed alterations to the building not included in the building permit history are listed below.

North Wing:

- Added metal gate to breezeway at south elevation, unknown date (see **Figure 15**).

[12] Carl B. Troedsson, *Las Palmas Senior Citizen Center,* May 4, 1961, Sheet 1.
[13] "The International Tower," *Long Beach Heritage,* Spring 2011.
[14] "Architect Opens New Office Here," *Los Angeles Times,* December 14, 1958.
[15] Ibid.
[16] "Revolving Restaurant Unveiled in Long Beach," *Los Angeles Times,* July 18, 1965.
[17] "Okay Plans For Senior Center Here," *Los Angeles Evening Citizen News,* May 9, 1961.
[18] Ibid.
[19] City of Los Angeles Department of Building and Safety (LADBS), Building Permit No. 00016-10000-01648, December 14, 2000.
[20] LADBS, Building Permit No. 00016-10001-01648, February 1, 2001.
[21] LADBS, Building Permit No. 18041-10000-07572, March 1, 2018.

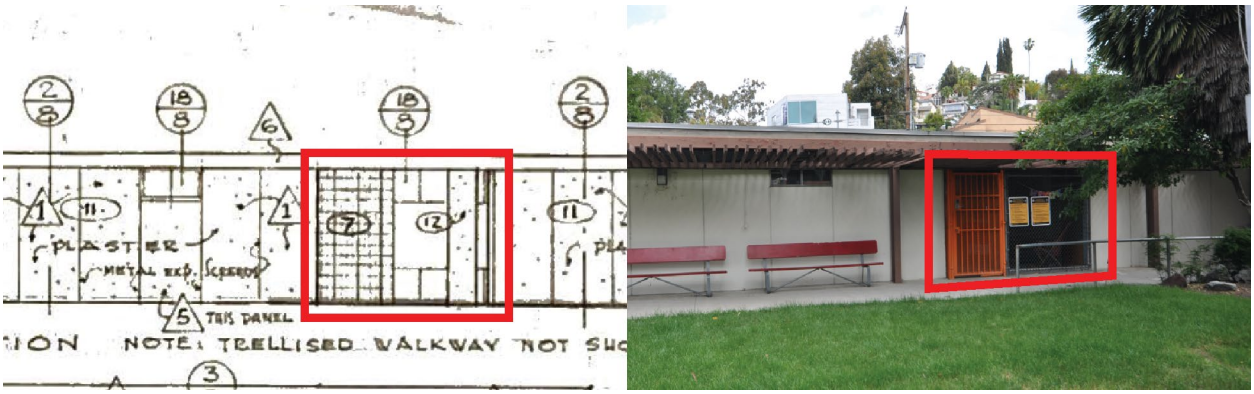

Figure 15: Observed alteration to breezeway on south elevation of North Wing (GPA, May 2023; Troedsson, Sheet 3).

Community Room:

- Infill of window opening and installation of hollow metal door on north elevation, unknown date (see Figure 16).
- Infill of louvered windows on northeast elevation, unknown date (see Figure 17).

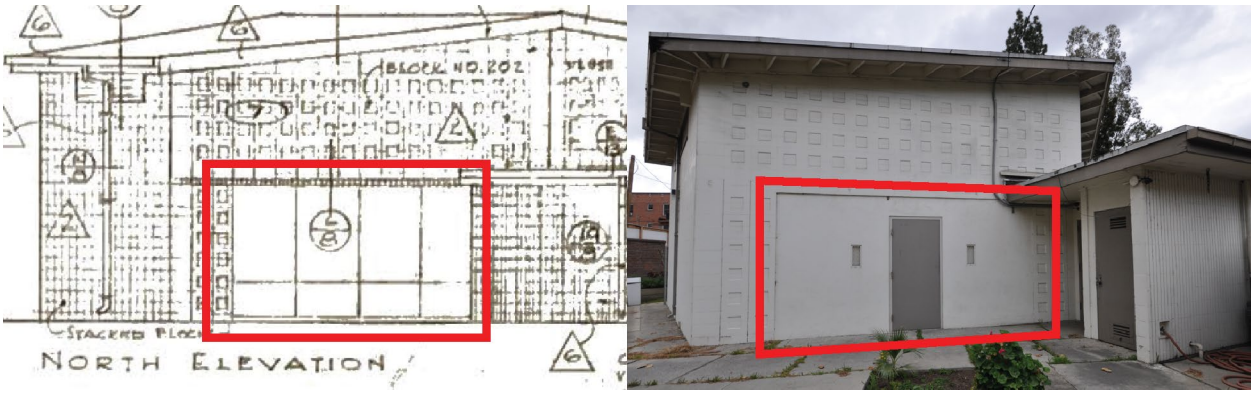

Figure 16: Observed alteration to opening on north elevation of Community Room (GPA, May 2023; Troedsson, Sheet 3).

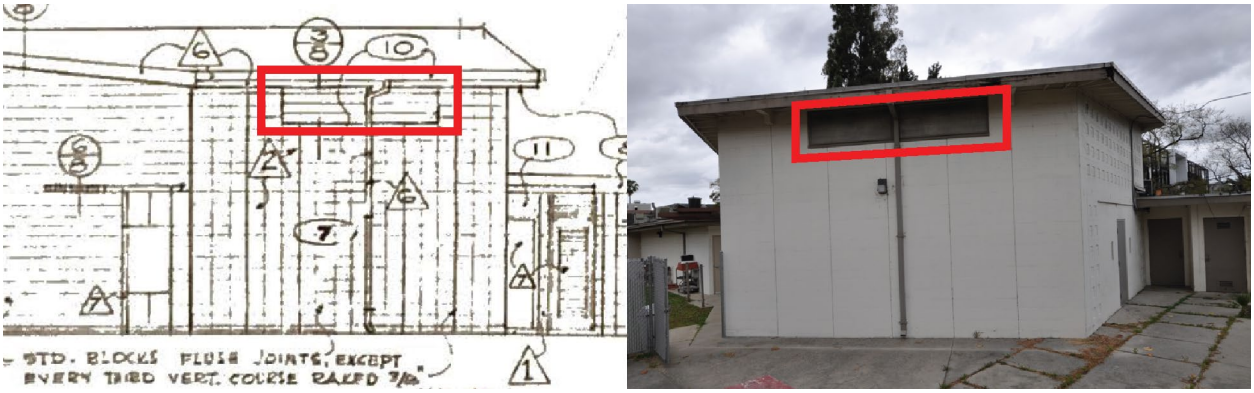

Figure 17: Observed alteration to metal louvers on northeast elevation of Community Room (GPA, May 2023; Troedsson, Sheet 3).

South Wing:

- Enclosed open entryway to patio on east elevation and replaced with metal doors and windows, unknown date (see Figure 18).
- Addition to south end of west elevation, unknown date.

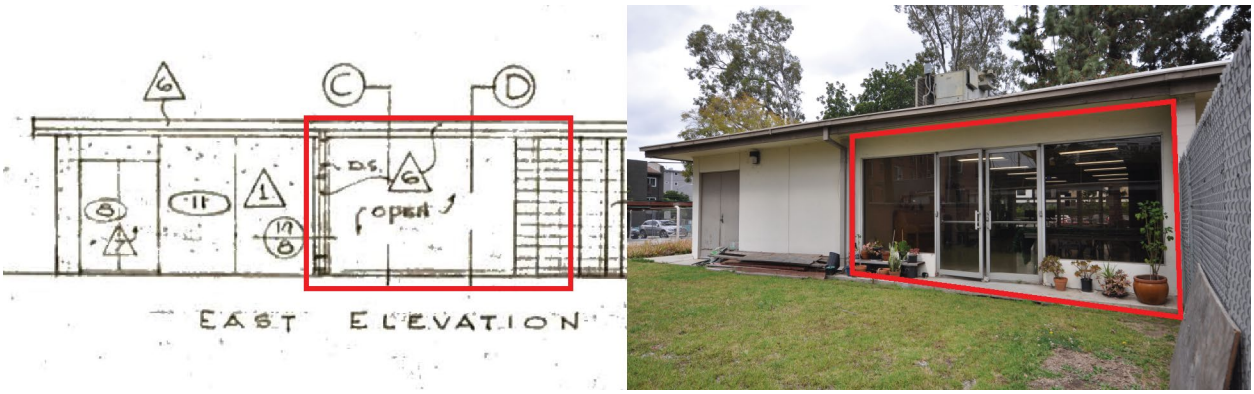

Figure 18: Observed alteration to east elevation of South Wing (GPA, May 2023; Troedsson, Sheet 3).

Ownership and Tenant History

The Las Palmas Senior Citizen Center was originally constructed for RAP.[22] The City has retained ownership and the building has been occupied by the senior citizen center since construction.

[22] Carl B. Troedsson, *Las Palmas Senior Citizen Center,* May 4, 1961. Sheet 1.

4. HISTORIC CONTEXTS

The significance of a property must be evaluated within its historic context(s). Historic contexts are those patterns or trends in history by which a specific property is understood. Because the property is located within the City of Los Angeles, the *LACHCS* was used as a framework for evaluating the buildings as potential historical resources. The *LACHCS* is organized into contexts, themes, and property types (CTP), and the most applicable CTPs were identified.

The relevant CTP for evaluating the significance of the property under Criteria A/1/1 and C/3/3 are the history of the Hollywood area and Public and Private Institutional Development and the theme of Municipal Parks, Recreation and Leisure, specifically the sub-theme of Municipal Recreational Facilities, 1932-1978. Properties significant within this sub-theme reflect trends in park and urban planning as municipalities worked to address a growing public need for people of all ages to have a place to exercise, socialize, and participate athletic events and recreational activities.

4.1 Development History of Hollywood

As previously mentioned, the Project site is located in Hollywood on the corner of Franklin Avenue and N. Las Palmas Avenue. The following information is excerpted from the *Historic Resources Survey Report: Hollywood Community Plan Area* prepared for the City of Los Angeles.

> The area that would become Hollywood was originally part of two former Spanish land grants – Rancho La Brea and Rancho Los Feliz. Hollywood began as a small agricultural community in the nineteenth century. Farmers, many of whom were European immigrants, experimented in cultivating a wide variety of exotic fruits, vegetables, and flowers. The agricultural character of the community changed in the early twentieth century as large real estate tracts were developed, transforming the community into a bustling suburb of Los Angeles.
>
> In 1900, the first electric streetcar track was completed along Hollywood Boulevard (then Prospect Avenue). Other streetcar lines soon followed, including along Melrose Avenue, La Brea Avenue, Santa Monica Boulevard, Highland Avenue, Vine Street, Western Avenue, Vermont Avenue, Virgil/Hillhurst Avenues, Kenmore Avenue, Fountain Avenue, Talmadge Street, Hyperion Avenue, Los Feliz Boulevard, and Beachwood Drive.
>
> In 1903 the City of Hollywood was officially incorporated, and in 1910 it was consolidated to the City of Los Angeles. The pre-consolidated area boundary is generally defined by the southernmost portion of Hollywood Hills to the north, Fountain Avenue to the south, Crescent Heights Boulevard to the west, and Mariposa Street to the east.
>
> The population of Hollywood during this early period was quite diverse, from cultural immigrants, such as French painter Paul de Longpre, to American transplants, such as Midwestern banker Gordon Wattles. Due to the large number of estates in the area, there was also a substantial local working class that was employed as caretakers and service workers; in Hollywood many of these were of Japanese and Scottish origin.
>
> The most significant factor in the development of Hollywood in the twentieth century was the entertainment industry. Film production began in Hollywood in 1911, and quickly grew into a significant economic force. As the popularity of motion pictures grew, more physical facilities related to motion picture production were constructed in Hollywood. In 1919 the City established a series of industrial zones specifically designated for motion picture use. The largest and most significant of these is located in the heart of the Hollywood Survey Area. Industrial resources include intact motion picture studio plants and a wide variety of support services dating to the 1920s. Due to its key role in the motion picture industry, Hollywood later became a center for radio, television, and record production. The burgeoning entertainment

industry brought about the development of thriving business districts along Hollywood Boulevard, Vine Street, and Sunset Boulevard.

From the 1910s through the boom of the 1920 s and into the 1930s, Hollywood experienced tremendous population growth. The rapidly expanding film business attracted migrants from around the United States and around the globe, resulting in a true "melting pot." For a period of time preceding World War II, the entertainment industry also became a refuge for émigrés from Eastern Europe. To accommodate the growing population of newcomers, there was a sharp increase in residential development. Concentrations of residential properties from this period are located adjacent to the major motion picture studios and include modest single-family residences along with a wide variety of multi-family housing types. The integrity of many of these properties is poor and intact neighborhoods of early twentieth-century studio-adjacent residences are now rare.

Density in Hollywood increased substantially following World War II. In the hillsides, residences were built on previously undeveloped lots. In the flatlands, inexpensive stucco-clad apartment buildings were erected as infill in previously established residential neighborhoods. Along the major commercial corridors, earlier buildings were updated or replaced with new construction. By the 1950s, entertainment industry-related properties began to spread out throughout the greater Los Angeles area, and the major industry in Hollywood shifted to tourism. During the late 1950s the infamous Capitol Records Building was constructed on Vine Street and the Hollywood Walk of Fame was created on Hollywood Boulevard as a tribute to actors, directors, and other contributors to the entertainment industry.

Also during this period, some of the nation's most important Modernist architects were working in Los Angeles, building sleek commercial buildings in the flatlands and highly innovative residential projects in the hillsides. The Hollywood Survey Area contains residential and commercial properties designed by a number of important Modernists, including Richard Neutra, Rudolph Schindler, Lloyd Wright, John Lautner, Craig Ellwood, Raphael Soriano, Gregory Ain, and Pierre Koenig.

In the 1960s-1970s Hollywood's population became more ethnically diverse, as new immigrant groups began settling in the area. In addition to a significant Latino population, Armenian and Thai immigrants began living and working in the East Hollywood area and opened shops and other businesses. Community and residential densities continued to increase, as original single-family houses, bungalow courts, and smaller apartment buildings were replaced with larger multi-family residential complexes.[23]

[23] Excerpted from HRG, *Historic Resources Survey Report: Hollywood Community Plan Area* (City of Los Angeles Office of Historic Resources, August 2011, Revised November 2015), 6-8.

4.2 Municipal Recreational Facilities, 1932-1978

As mentioned above, the Project site is a municipal recreational building used as a senior activity facility that has been owned by the City of Los Angeles Department of Recreation and Parks since its construction in 1961.

Origins of the Recreational Facility During the Great Depression, 1932-1945[24]

The concept of the recreational facility was a logical combination of what both the parks and the playgrounds had become by the early 1930s. The park had evolved from the bucolic landscape of the pleasure ground into what had become essentially an adult activity center, while the child-oriented playground had taken on elements, specifically enlarged club houses and swimming pools, which increasingly served an adult population.

The result was the idea of the recreational facility to serve all ages. It took the structures of the playground and combined them with the outdoor amenities of the park. Sacrificed was landscaping for its own sake. Site layout was shaped by the activities to be provided and, inevitably given the increasingly suburban location of the centers, by the need for parking.

One of the pioneers in this development was George Hjelte. Hjelte became the City's first general manager of the Playground and Recreation Department in 1926, a year after it was created out of the old City Playground Commission. He had previously been the superintendent for Berkeley's playgrounds and was chosen for Los Angeles after a nation-wide search. Hjelte remained general manager, first for the Playground and Recreation Department and then for the combined Recreation and Parks Department, until 1962.

During his tenure the City adopted the idea of the recreational facility. The larger parks, Hjelte believed, were fine for day-long excursions, generally taken on weekends or holidays and reached by automobile. But he believed that every neighborhood needed a recreational facility for convenient bouts of regular exercise. In terms of space, three acres of open space for every one thousand inhabitants was a good ratio, with one of those three dedicated to active recreation such as basketball and tennis.

The concept of the recreational facility was also becoming popular among city planners. It had been proposed for Los Angeles as early as 1930 by the landscape architects Olmsted Brothers and Harland Bartholomew Associates. The traditional playground, they believed, should be limited to schools and intended for student use alone. In its place, Olmsted and Bartholomew specified two types of recreational entities, the neighborhood center and the regional or district center. The neighborhood recreation center "should provide for people of all ages." It would include "sand piles and wading pools for the little tots" and playground equipment for older children, as well as tennis courts, ball fields and perhaps a swimming pool for everyone. A club house would provide space for community meetings.

It would also require parking. Olmsted and Bartholomew held that the traditional neighborhood playground, small and closely spaced in its distribution, might be appropriate for the older cities of the East and Midwest. But it made no sense in Los Angeles. "Nearly universal use of automobiles" meant that the centers, larger and containing parking, could be spread further apart.

[24] Excerpted from Daniel Prosser, "Public and Private Institutional Development, 1850-1980, Government Infrastructure and Services, 1850-1980: Municipal Parks, Recreation, and Leisure, 1886-1978," *Los Angeles Citywide Historic Context Statement* (City of Los Angeles Office of Historic Resources, December 2017), 25-27.

In addition to these neighborhood centers, there should be regional or district centers. These would focus on team athletic contests. In justifying the cost of these "sports parks," Olmsted and Bartholomew used the language of the earlier playground advocates. "The highly important social need for healthful outlets for the energies of youths of 'the dangerous age'" could be served by such a center "instead of forcing them in pernicious channels."

Here too Olmsted and Bartholomew were specific as to requirements. These regional centers needed large plots of nearly level land. Included were to be fields for baseball, football, and track events. Also to be included were tennis courts, a swimming pool, and a field house with locker and shower facilities.

Olmsted and Bartholomew were willing to impose their vision on existing parks. They ruled out Elysian and Griffith as too rugged and isolated. But Lincoln Park was fair game. They proposed incorporating a portion of the existing park together with adjacent land currently occupied by privately-owned uses considered undesirable, such as the Ascot Racetrack and an auto camp, in or Many of the proposals of Olmsted and Bartholomew were overlooked as the Depression took hold. But versions of their ideas were incorporated into the playground projects of the Works Progress Administration during the mid and late 1930s. Playground improvements, along with park landscaping, were ideal for the WPA and its program of government funded jobs for the unemployed. A great number could be put to work on construction, with club houses, bath houses, and swimming pools added to the more common landscape projects. der to create a larger parcel.

Early Postwar Recreational Facilities, 1945-1956[25]

In the orthodoxy of postwar urban planners, the recreational facility, particularly its neighborhood form, became a necessary requirement for a complete community. Such a facility was a public service, as important as fire and police protection and a local school. All citizens, regardless of class or age, were entitled to a publicly-funded place to play.

At the same time, during the early postwar years, recreation professionals continued to justify their projects with the older language of social work. Hjelte stressed the continued need for supervised play, particularly among young males. Once the war ended he extended this concern to young returning veterans.

In April of 1946, Hjelte presented a capital improvements program in excess of twelve million dollars. It included thirty new neighborhood recreation centers, thirteen district centers with swimming pools, a major sports center, and improvements to existing sites. This program became the basis of a bond issue that was placed on the ballot for May of 1947.

That May, Hjelte was more specific as to the different types of facilities. New neighborhood recreation centers were to be from three to seven acres in size. Each would have a community club house, consisting of a meeting hall, smaller club rooms, and a kitchen. The new district centers were to cover ten to twenty acres, and to have swimming pools, athletic fields, and recreational buildings large enough for indoor sports.

In campaigning for the measure, Hjelte continued to stress the importance of recreation as a means to "curb juvenile delinquency." At the same time, he promised new parks and playgrounds in all parts of the City, middle class as well as poor. With residential development

[25] Excerpted from Prosser, "Municipal Parks, Recreation, and Leisure," 29-31.

expanding into previously empty land, "now is the time for the City to acquire more playgrounds if it is ever to get them."

Comparatively good economic times and rapid population growth combined to encourage voters to approve the May 1947 bond issue. The issue was not limited to parks and recreation but addressed the needs of all the City's departments. Hjelte received the more than 12.5 million dollars he requested. At the same time, the fire department received 4.6 million dollars, while 6.5 million dollars went for health centers, 10 million dollars for sewers, and more than 18 million dollars for police buildings and jails.

Along with additional funds came reorganization. In 1947, the Parks Department merged with the Department of Recreation and Playgrounds to form a single Department of Recreation and Parks. Hjelte became the general manager of the new agency. He maintained, after the merger, that this move combined the expertise of the two agencies. "Employees formerly in the park service acquired added motivation from the consciousness that their work was oriented more toward people than before, while recreation personnel acquired ecological and horticultural sensitivity." He also maintained that all benefited. "In time, the playgrounds tended to become more park like, and the parks more functional for recreational activities."

By 1950, once the expansion program was well under way, Hjelte placed less emphasis on preventing juvenile delinquency and more on the benefits of City-supported recreation for all citizens. "Today recreation is recognized as a morale and efficiency measure." It is a "means of developing among Los Angeles' more than 2,000,000 citizens stronger community and family ties." In bringing the good life to all, "adequate recreation servicing is a prime factor socially, psychologically and culturally."

In August of 1952, Parks and Recreation provided a progress report. Twenty-six new recreational sites had been acquired, along with additional land for nine existing facilities. On these plots were constructed thirty-one new club houses, nine swimming pools, and seven field houses adjacent to athletic fields.

Late Postwar Recreational Facilities, 1957-1978[26]

By the mid-1950s, the Department of Recreation and Parks needed additional funds to maintain its construction program. In 1955 Hjelte placed a thirty-five million dollar bond issue on the June ballot. It managed to get a majority but failed to reach the necessary two-thirds. He returned again in 1957 with a request for 39.5 million dollars and this time won the needed super majority.

One of the significant aspects of the work done under the 1957 bond issue was an explicit parking requirement, which fit the suburban nature of most of the new sites. All new recreational facilities had to provide one space for every five patrons. The patron count was based on the fire marshal's ruling as to the occupancy allowed in club house meeting rooms, bath houses, bleachers, and other such entities.

By the end of 1959 Recreation and Parks had completed thirty-five projects and had an additional twenty-one underway. There were new swimming pools at the Northridge, Mar Vista, Sepulveda, Van Ness, and Orcutt Recreation Centers. Also constructed were parking lots at ten existing facilities.

[26] Excerpted from Prosser, "Municipal Parks, Recreation, and Leisure," 36-39.

Building projects at older sites ranged from a senior citizens center addition to the existing club house at the Yosemite Recreation Center in Eagle Rock to a new club house at the Sunland Recreation Center.

There were a few new projects that resembled the older compact playgrounds set in densely populated areas. One such was the Lemon Grove Recreation Center in Hollywood. Completed in 1959, it was a small site of 2.47 acres on a triangular piece of land bordered by Lemon Grove Avenue, Hobart Boulevard, and the 101 Freeway.

Lemon Grove consists of a standard club house – with multi-purpose meeting room, stage, kitchen, office, and restrooms – together with a play area for small children, a softball field, and the now required parking lot. The club house, is a single story concrete block structure topped by a slow-sloped gabled roof with extended beams, similar in style to the Sepulveda bath house discussed below. There is no architect of record on the building permit indicating that Recreation and Parks staff may have been responsible for the design.

But most new facilities were larger and located in suburban areas. Typical was the swimming pool and bath house at the Sepulveda Recreation Center in Panorama City. The Sepulveda center dates from the early postwar period and has one of the five 1948 club houses designed Gable and Wyant. It is similar to that at the Roberson Recreation Center discussed above and also appears to be generally intact.

Completed in 1959, the Sepulveda bath house is a good example of residential Mid-Century Modernism applied to an institutional building. The low-sloped gabled roofs of the concrete block building, complete with extended beams, are characteristic of the ranch houses of the era. It follows the standard bath house form of a central mass and side wings housing men's and women's facilities. But by breaking the building into three separate pavilions, the architects, H. L. Kahn and Edward Farrell, were able to maintain a domestic scale appropriate to the neighborhood.

In addition to recreational facilities, the City created some new parks that followed more traditional forms. Instead of focusing on serving a neighborhood with buildings such as club houses and swimming pools, they emphasized the older concept of the park as a place to experience nature. At the same time, they provide space for outdoor activities, thus resembling the Municipal Parks of the 1904 to 1931 period.

Representative is Chatsworth Park, now Chatsworth Park North, located at the western end of Chatsworth Street. It sits at the base of the Santa Susanna Mountains in the far northwest of the San Fernando Valley. Opened in 1963, it is divided into two sections, with athletic fields to the east and a natural area containing native trees and plants to the west. In the center is a Mid-Century Modern service building with a folded plate roof.

Recreation and Parks called upon the expertise of an outside landscape designer for Chatsworth Park. The firm responsible for the work was Cornell, Bridges and Troller. Ralph Cornell was one of the first professional landscape architects in the Los Angeles area. He worked on the development of the UCLA campus grounds, beginning in 1937. The firm of Cornell, Bridges and Troller was involved in designing the landscaping on such major works as Century City, the Los Angeles Civic Center, and the Music Center. Chatsworth Park was part of the City's effort to bring recreational facilities to the newer sections of the San Fernando Valley. In terms of size, the most significant park, or more accurately system of parks, in the western Valley was Porter Ranch. Developed in the late 1960s, its origins were much like those of the city's early parks. It was a case of a real estate developer, in the interest of promoting his investment, providing citizens with open space. The initial Porter Ranch development covered a 6.5 square mile area that extended from Reseda Boulevard on the east to Topanga Canyon

Boulevard on the west and from Devonshire Street on the south into the mountains. The Macco Realty Company bought the property in 1962 and laid out a series of subdivisions based on a master plan that called for a 423-acre complex of parks and golf courses. The proposed ten thousand single-family homes surrounding these open spaces were marketed to the managerial and professional upper-middle class. The original park within the larger setting was a sixty-three acre parcel donated by Macco Realty to the City and opened in 1966. A year later Macco approached the City with a proposition. The developer still owed 1.3 million dollars of the annexation fee, dating from the City's incorporation of the property. Macco offered to donate 403 acres of its green space in lieu of paying the balance. In March of 1967 the City Council approved the deal. The result is a chain of parks, including Aliso Creek (or Aliso Canyon), Eddleston, Limekiln Canyon, Porter Ridge, and Wilber-Tampa.

4.3 Eligibility Requirements

The eligibility requirements for Municipal Recreational Facilities are included in Table 2, below.

TABLE 2: MUNICIPAL RECREATIONAL FACILITIES, 1932-1978 [27]

Context: Public and Private Institutional Development, 1850-1980
Sub-Context: Government Infrastructure and Services, 1850-1980
Theme: Municipal Parks, Recreation, and Leisure, 1886-1978
Eligibility Standards
• Municipal Recreation Facility constructed between 1932 and 1978
• Includes active recreation areas such as athletic fields, tennis courts, golf courses, ball fields, horseshoe courts, activity lawns, game courts, outdoor pools, plunges, archery ranges, and facilities to support athletic events
• Is an excellent example of its type or style and/or represents the work of a significant landscape architect or designer
Character-Defining/Associative Features
• Present appearance resembles the original appearance and retains sufficient historic integrity to convey its historical association
• Retains a significant number of character-defining features, such that the visual, spatial, and contextual relationships of the property may be understood
• May include areas for social recreational functions (e.g., childcare facilities, children's play areas, senior activity centers, club houses, recreation centers, auditoriums, picnic tables, and grill areas)
• May include buildings and features that are significant examples of architectural styles of the period and/or the work of noted architects
• May provide indoor space to support a variety of activities including dancing, games, stage productions, food preparation, and dining
• May include support structures such as maintenance sheds and night lighting
• May represent more than one period of municipal park development
• May include improvements associated with WPA programs
• For the National Register, properties must possess exceptional importance if less than 50 years of age
Integrity Considerations:
• Should retain integrity of Design, Setting, Location, Feeling, and Association
• A sufficient number of original materials should be intact such that the historic fabric, character, and overall visual effect have been preserved
• Alterations, if reversible, may be acceptable
• Examples of original vegetation may have been replaced
• Individual design features may have been modified, altered, or replaced
• Original spaces for activities may have new uses

[27] Prosser, "Municipal Parks, Recreation, and Leisure," 53-55.

5. EVALUATION OF ELIGIBILITY

The property was evaluated under the applicable criteria for the National Register, California Register, and LA HCM designation using the eligibility requirements outlined in the CTP for Municipal Recreational Facilities, 1932-1978 within the *LACHCS*.

Criterion A/1/1

To be eligible under Criterion A/1/1, a property must have a direct association with events that have made a significant contribution to the broad patterns of history.

The Municipal Recreational Facilities sub-theme within the Public and Private Institutional Development context examines patterns of municipal recreational development from 1932-1978 and is the most applicable theme for evaluating the property under Criterion A/1/1.

The subject property was built during the late postwar continuation of a RAP construction program that was funded by two bond issues approved in 1947 and 1957. The program stemmed from a concept that emerged during the Great Depression and sought to provide recreational facilities for people of all ages. During the late postwar period, the most notable municipal recreational development was taking place in the suburbs, particularly in the San Fernando Valley, as RAP created large recreational facilities like Chatsworth Park. More densely populated communities, such as Hollywood, were already established by this time and had been largely built-out in the decades prior. New RAP improvements in these communities generally consisted of smaller facilities, like club houses, or updates to existing facilities to create parking lots. The subject property was one of at least five senior citizen centers developed and constructed in the early 1960s.[28]

While the subject property is associated with postwar municipal recreational development trends, as outlined in National Register Bulletin 15, "Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well. For example, a building historically in commercial use must be shown to have been significant in commercial history."[29] Research did not reveal evidence to suggest that the subject property was especially unique or significant in the history of municipal recreational development. Rather, it appears to be one of several similar, standard facilities constructed as a continuation of trends established years earlier. As such, it has an association with the historic trend, but the association itself is not important.

Research did not reveal an association with any other historic events or trends. Therefore, for all the reasons outlined above, the Las Palmas Senior Citizen Center does not appear to be eligible under Criterion A/1/1.

Criterion B/2/2

Criterion B/2/2 states that to be eligible, a property must be associated with the lives of persons significant in our past.

As noted in Section 3.1, the building has been owned and operated by the City of Los Angeles since construction. However, research did not reveal the names of any specific individuals associated with the property that might rise to the level of significance necessary for eligibility under Criterion B/2/2. While numerous people have been

[28] Others include the Felicia Mahood Senior Citizen Center in West Los Angeles, North Hollywood Senior Citizen Center, the Anderson Memorial Senior Citizen Center in San Pedro, and the Sherman Oaks East Valley Adult Center, all of which were constructed c. 1960-1963. Newspapers.com, various articles, accessed May 2023.
[29] National Register Bulletin 15, 12.

employed with the Las Palmas Senior Center through the City of Los Angeles, collective efforts like these are better evaluated under Criterion A.[30]

Therefore, the property does not appear to be eligible under Criterion B/2/2.

Criterion C/3/3

A property is eligible under Criterion C/3/3 if it embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or lastly, represents a significant and distinguishable entity whose components may lack individual distinction.

Although the building possesses features that reflect the era of its 1961 construction, like the decorative concrete block and full-height metal windows and doors, it does not embody any particular architectural style. However, the subject building was also evaluated as an example of its type under the Municipal Recreational Facilities, 1932-1978 sub-theme. The eligibility standards for this theme are included in Table 2.

To be eligible under this sub-theme, a property must be an excellent example of its type or style and/or represent the work of a significant landscape architect or designer with a date of construction between 1932-1978 and an active recreation area to support athletic events.[31] As mentioned, the subject building was constructed in 1961 and has a shuffleboard court to support athletic events. However, the property is not an excellent example of its type. It does not appear to be a rare, unique, or important example of the type, nor does it appear to reflect an important variation or evolution, and it does not appear to have had an impact on the design of later buildings.

Rather, the subject property is one of several such facilities constructed around the same time using common building materials and following design precedents and planning principles that were established several decades earlier. Additionally, it has been altered since its construction as noted in Section 3.1.

The original building plans identify Carl B. Troedsson as the architect of the building.[32] Research did not reveal evidence to suggest that Troedsson would be considered a master architect. Even if he were considered a master in his respective field, the subject property would be unlikely to be considered an important example of his work due to its simple design and common materials. Lastly, if it were an important example of his work, alterations after construction have diminished the integrity of Troedsson's original design.

The possession of high artistic values refers to a building's articulation of a particular concept of design so fully that it expresses an aesthetic ideal. A property eligible under this aspect of Criterion C would need to possess ornamentation and detail to lend it high artistic value, which is not the case for the subject building.

The last aspect of Criterion C/3/3 is generally applied to historic districts. As mentioned above, the property is not located within the boundaries of an HPOZ, nor within an area identified by SurveyLA or the Hollywood Redevelopment Project Survey as a potential historic district. These findings were confirmed during the field inspection conducted for this report, as there are not enough properties with shared physical characteristics or historical associations in the area to form a potential historic district. Therefore, the subject property does not appear to form or contribute to a distinguishable entity as a potential district does not appear to exist.

Therefore, for the reasons outlined above, the property does not appear to be eligible under any aspect of Criterion C/3/3.

---

[30] Beth Grosvenor Boland, (National Register Bulletin 32) *Guidelines for Evaluating and Documenting Properties Associated with Historic Persons* (US Department of the Interior, National Park Service, Cultural Resources: 1988), 5, accessed May 2023, https://www.nps.gov/subjects/nationalregister/upload/NRB32-Complete.pdf.
[31] Prosser, "Municipal Parks, Recreation, and Leisure," 53-55.
[32] Carl B. Troedsson, *Las Palmas Senior Citizen Center,* May 4, 1961, Sheet 1.

Criterion D/4

Criterion D/4 applies to the potential of the property to yield information important in prehistory or history. Criterion D generally applies to archaeological resources but may apply to a built resource in instances where a resource may contain important information about such topics as construction techniques or human activity. In any case, the resource must be the principal source of information. This is unlikely to be true for the subject property. Therefore, the property does not appear to be eligible under Criterion D/4.

Integrity

It is standard practice to assess a property's integrity as part of a historic evaluation. Integrity is a property's ability to convey its historic significance through its physical features. National Register Bulletin 15 defines seven aspects of integrity: Location, design, setting, materials, workmanship, feeling, and association. In order to convey significance, a property must retain some combination of these aspects of integrity from its period of significance. The aspects of integrity that are essential vary depending on the significance of the resource.

While the subject property does not appear to be eligible for listing in the National or California Registers, or as an LA HCM, it was examined against the seven aspects of integrity for further clarification.

Location: The place where the historic property was constructed or the place where the historic event occurred.

The subject property has not been moved since its construction and therefore retains integrity of location.

Design: The combination of elements that create the form, plan, space, structure, and style of a property.

While the property is still able to convey its original design intent, including its original function and use, the integrity of design has been diminished due to changes to the building over time, including the infilling and alteration of breezeways in multiple locations.

Setting: The physical environment of the historic property.

A review of historic aerials indicates that the immediate setting of the property on its site appears largely as it did at the time of construction. Although the surrounding setting has changed over time due to ongoing development, it does not detract from the subject property. Therefore, the property retains integrity of setting.

Materials: The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

While the original materials are apparent in the extant features and finishes from the time of construction, the integrity of materials has been diminished due to changes to the building over time, including installation of non-original doors and windows.

Workmanship: The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

While the original workmanship is still apparent in extant details such as the stacked bond concrete masonry, the integrity of workmanship has been diminished due to changes to the building over time.

Feeling: A property's expression of the aesthetic or historic sense of a particular period of time.

The property retains integrity of feeling as it is still able to convey the sense of a 1960s recreational facility.

Association: The direct link between an important event or person and a historic property.

The integrity of association does not apply to the property as there is no historic association for the physical integrity to convey.

Summary of Evaluation

For the reasons discussed above, the property does not appear to be eligible for listing in the National or California Registers, or for designation as an LA HCM due to diminished integrity and a lack of significance within the relevant context.

6. CONCLUSIONS

The Las Palmas Senior Citizen Center, located at 1820 N. Las Palmas Avenue, is not currently designated under any national, state, or local landmark program, nor was it previously identified in any historical resource surveys. After careful inspection, investigation, and evaluation, GPA concludes that the property does not appear to be eligible for listing in the National or California Registers, or for designation as an LA HCM due to diminished integrity and lack of significance within the relevant context. Additionally, it does not appear to contribute to a potential historic district. The recommended Status Code for the property is 6Z, ineligible for designation at the national, state, and local levels through survey evaluation. As such, the property is not a historical resource for the purposes of CEQA.

7. SOURCES

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Architectural Resources Group, Historic Resources Group, and GPA Consulting. *Historic Resources Survey Report: Historic Resources Survey Report: Hollywood Redevelopment Plan Area.* City of Los Angeles Office of Historic Resources, January 2020.

Boland, Beth Grosvenor. (National Register Bulletin 32) *Guidelines for Evaluating and Documenting Properties Associated with Historic Persons.* US Department of the Interior, National Park Service, Cultural Resources: 1988. Accessed May 2023. https://www.nps.gov/subjects/nationalregister/upload/NRB32-Complete.pdf

California Code of Regulations, California Office of Administrative Law, State of California Government.

California State Office of Historic Preservation, Department of Parks & Recreation. "Technical Assistance Bulletin #8: User's Guide to the California Historical Resource Status Codes & Historic Resources Inventory Directory." Accessed May 2023. http://ohp.parks.ca.gov/pages/1069/files/tab8.pdf.

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Historic Resources Group. *Historic Resources Survey Report: Hollywood Community Plan Area.* City of Los Angeles Office of Historic Resources, August 2011. Revised November 2015.

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"The International Tower." *Long Beach Heritage*. Spring 2011.

Los Angeles Office of Historic Resources. *Los Angeles Citywide Historic Context Outline and Summary Tables*. January 16, 2014. Accessed May 2023. https://planning.lacity.org/odocument/fbb3582b-b6b0-4fb7-b27a-dbabacd760aa/SurveyLA_HistoricContextStatementOutline_July2018.pdf.

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Prosser, Daniel. "Public and Private Institutional Development, 1850-1980, Government Infrastructure and Services, 1850-1980: Municipal Parks, Recreation, and Leisure, 1886-1978." *Los Angeles Citywide Historic Context Statement.* City of Los Angeles Office of Historic Resources, December 2017.

"Revolving Restaurant Unveiled in Long Beach." *Los Angeles Times.* July 18, 1965.

Troedsson, Carl B. *Las Palmas Senior Citizen Center*. May 4, 1961.

APPENDIX A – RÉSUMÉS

AMANDA DUANE



Amanda Duane is a Senior Architectural Historian at GPA. She has been involved in the field of historic preservation since 2011. Amanda graduated from Savannah College of Art and Design with a Bachelor of Fine Art degree in Historic Preservation. She has since worked in local government and private historic preservation consulting in California. Amanda joined GPA in 2012 and her experience has included the preparation of environmental compliance documents in accordance with the California Environmental Quality Act and Section 106 of the National Historic Preservation Act; Historic American Buildings Survey/Historic American Engineering Record recordation; large-scale historic resources surveys; Federal Rehabilitation Tax Credit and Mills Act applications; National Register Place nominations; local landmark applications; historic context statements; and evaluations of eligibility for a wide variety of projects and property types throughout California. She is experienced in expertly guiding property owners through the process of securing local and federal historic tax credits and working with local governments to develop design guidelines for administering local design reviews. Amanda is also highly skilled in graphic design as well as interpretation and exhibition design.

Educational Background:

- B.F.A, Historic Preservation, Savannah College of Art and Design, 2011

Professional Experience:

- GPA Consulting, Senior Architectural Historian, 2012-Present
- Architectural Resources Group, Intern, 2012
- City of Los Angeles, Office of Historic Resources, Intern, 2011-2012

Qualifications:

- Meets the Secretary of the Interior's Professional Qualification Standards for architectural history pursuant to the Code of Federal Regulations, 36 CFR Part 61, Appendix A.
- National Preservation Institute, Section 106: An Introduction

Professional Activities:

- California Preservation Foundation Conference Programs Committee, 2017

Selected Projects:

- 1500 W. Adams Boulevard, Los Angeles, CEQA Historical Resources Technical Report, 2022
- 1527 17th Street, Secretary of the Interior's Standards Compliance Memo, City of Santa Monica, 2018-21
- 3014 4th Street, City of Santa Monica, Local Landmark Assessment, 2022
- 325 Georgina Avenue, City of Santa Monica, Local Landmark Assessment, 2022
- 3443 Sepulveda Boulevard, Los Angeles, CEQA Historical Resources Technical Report, 2018
- 400-432 S. San Vicente Boulevard, City of Los Angeles, CEQA Historical Resource Evaluation Report, 2022
- 631 Colorado Avenue, City of Santa Monica, Local Landmark Assessment, 2021 –2021
- 867 10th Street, Los Angeles, CEQA Historical Resources Technical Report, 2018
- Bank of Italy Building, Los Angeles, Federal Tax Credit Application and National Register Nomination, 2015-2019
- Bartlett Building, Los Angeles, Historic-Cultural Monument Application and Mills Act Application, 2015
- Bradbury Building, Los Angeles, Tenant Improvement Guidelines, 2016-2017
- Carnegie Library, City of Yreka, Historic Structures Report, 2022
- Commonwealth Nursery Griffith Park, Los Angeles, Character-Defining Features Analysis and CEQA Historical Resource Technical Report, 2014
- Municipal Ferry Building, San Pedro, Secretary of the Interior's Standards Compliance Memo, 2019
- Nikkei Hall, Santa Monica, CEQA Historical Resources Technical Report, 2020

EMMA HAGGERTY



Emma Haggerty is an Associate Architectural Historian at GPA and has been involved in the field of historic preservation since 2016. Emma graduated from the University of Vermont with a Master of Science in Historic Preservation. She has since worked in the public sector in both New Jersey and California on a variety of projects. Emma joined GPA in 2021 and her experience has included review of environmental compliance documents in accordance with the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA); design review for consistency with the Secretary of the Interior's Standards (SOIS); and municipal code compliance. Additionally, Emma has experience reviewing Mills Act Applications, preparing Mills Act Contracts, and performing site inspections for properties under and interested in the Mills Act.

Educational Background:

- Master of Science, University of Vermont, 2018
- B.A., Planning and Public Policy, Rutgers University, 2016

Professional Experience:

- GPA Consulting, Associate Architectural Historian, 2021-Present
- City of San Diego, Historical Resources Senior Planner & Mills

  Act Coordinator, 2018-2021
- New Jersey Historic Preservation Office, Program Associate, 2018
- National Trust for Historic Preservation – Lyndhurst Mansion,

  Historic Preservation Intern, 2017

Qualifications:

- Meets the Secretary of the Interior's Professional Qualifications Standards for history and architectural history pursuant to the Code of Federal Regulations, 36 CFR Part 61, Appendix A.
- National Preservation Institute, Section 106: An Introduction

Selected Projects:

- 1102 Pacific Coast Highway, City of Huntington Beach, CEQA Historical Resource Technical Report, 2021
- 2501 Curtis Avenue, Redondo Beach, CEQA Historical Resource Evaluation Report, 2021 –2022
- 3014 4th Street, City of Santa Monica, Local Landmark Assessment, 2022
- 325 Georgina Avenue, City of Santa Monica, Local Landmark Assessment, 2022
- 400-432 S. San Vicente Boulevard, City of Los Angeles, CEQA Historical Resource Evaluation Report, 2022
- 631 Colorado Avenue, City of Santa Monica, Local Landmark Assessment, 2021 –2021
- 660-664 W. Wilson Avenue, City of Glendale, CEQA Historical Resource Evaluation Report, 2022
- Carnegie Library, City of Yreka, Historic Structures Report and Section 106 Finding of No Adverse Effect Report, 2022
- CEQA Significance Report Evaluations, Planner, City of San Diego, 2018- 2021
- Chula Vista Center, City of Chula Vista, CEQA Historical Resource Evaluation Report, 2021 –2022
- Ole Hanson Beach Club, City of San Clemente, Secretary of Interior's Standards Compliance, 2022
- Sewage Pumping Plant #669, Port of Los Angeles, Historical Resources Technical Memorandum, 2022
- Telfair Multi-Modal Bridge, City of Los Angeles, USACE Cultural Resources Assessment Report, 2022
- Whittier Citrus Association Packing House, Historic Preservation Treatment Plan, 2022

APPENDIX B – BUILDING PERMIT HISTORY

Home

Help

Parcel Profile Report

LADBS Home

LAHD Property Activity Report

Disclaimer

1820 N LAS PALMAS AVE 90028

PLEASE CLICK ON AN APPLICATION/PERMIT NUMBER TO GET MORE DETAILS:

APPLICATION/ PERMIT NUMBER	PC / JOB NUMBER	TYPE	STATUS	STATUS DATE	EXCERPT OF WORK DESCRIPTION
00016 10000 01648	--	Bldg-Alter/Repair	Permit Finaled	04/10/2002	Stair, restroom, and parking remodel an d wheelchair lift installation for ADA c
00016 10001 01648	--	Bldg-Alter/Repair	Permit Finaled	04/10/2002	Revise description of work under permit Number 00016-10000-01648 to: stair, rest
18041 10000 07572	E18LA00901	Electrical	Permit Finaled	05/04/2018	AT THE LAS PALMAS SENIOR CENTER, REPLACING INDOOR AND OUTDOOR LUMINAIRES WITH LE
19041 10000 33120	E19LA03739	Electrical	Permit Finaled	03/02/2021	NEW FIRE ALARM SYSTEM IN THE BUILDING WITH 54 DEVICES.
02042 10000 03624	--	Plumbing	Permit Finaled	04/04/2002	ADA TI WORK; ALTER RESTROOMS FOR ADA COMPLIANCE

BACK NEW SEARCH

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1820 N LAS PALMAS AVE 90028
APPLICATION / PERMIT NUMBER: 00016-10000-01648
PLAN CHECK / JOB NUMBER: --

Plan Check and Permit Information

GROUP:	Building				
TYPE:	Bldg-Alter/Repair				
SUB-TYPE:	Commercial				
PRIMARY USE:	(4) Recreation Building				
WORK DESCRIPTION:	Stair, restroom, and parking remodel an d wheelchair lift installation for ADA compliance.				
PERMIT ISSUED:	Yes	**PERMIT ISSUE DATE:**	12/19/2000	**ISSUING OFFICE:**	Metro
CURRENT STATUS:	Permit Finaled	**CURRENT STATUS DATE:**	04/10/2002		

Permit Application Status History

Issued	12/19/2000	MAUREEN O'CONNOR
Permit Finaled	04/08/2002	SAKO AGHAZARIAN

Permit Application Clearance Information

Project located in CRA area	Cleared	12/14/2000	MICHAEL MEAD
DAS Clearance	Cleared	12/19/2000	CHRISTINA YEE

Licensed Professional/Contractor Information

Contractor Information

Owner-Builder

Inspection Activity Information

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Inspector Information

JONATHAN QUACH, (213) 482-7357
Office Hours: 7:00-8:00 AM MON-FRI
SORIN CIRSTOIU, (213) 482-7357
Office Hours: 7:00-8:00 AM MON-FRI
RUSSELL BONVOULOIR, (213) 482-7357
Office Hours: 7:00-8:00 AM MON-FRI

Pending Inspection Request(s)

No data available

Inspection Request History

Final	04/08/2002	Permit Finaled	SAKO AGHAZARIAN

BACK NEW SEARCH

1820 N Las Palmas Ave

Permit #: **00016 - 10000 - 01648**
Plan Check #: Ref. #:
Event Code:

Bldg--Alter/Repair
Commercial
Over the Counter Permit

City of Los Angeles - Department of Building and Safety
APPLICATION FOR BUILDING PERMIT AND CERTIFICATE OF OCCUPANCY

Status: Ready to Issue
Status Date: 12/19/00
Printed on: 12/19/00 14:15:17

1. TRACT	BLOCK	LOT(s)	ARB	MAP REF #	PARCEL ID # (PIN)	2. BOOK/PAGE/PARCEL
HOLLYWOOD OCEAN V2		10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

BAS Branch Office - LA
Council District - 4
Community Plan Area - Hollywood
Census Tract - 1902.000
District Map - 150A185
Energy Zone - 9
Fire District - FBZ
Hillside Grading Area - YES
Earthquake-Induced Liquefaction Area - YES
Thomas Brothers Map Grid - 593

ZONE(S):

4. DOCUMENTS

CRA - ZI 1352 HOLLYWOOD

5. CHECKLIST ITEMS

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A City

Tenant:

Applicant (Relationship: Owner-Bldr)
Art Dungo - Owner-Builder 600 S. Spring St 200 LOS ANGELES, CA 90012 (213) 847-5334

7. EXISTING USE **PROPOSED USE**
4 Recreation Building

8. DESCRIPTION OF WORK
Stair, restroom, and parking remodel an
d wheelchair lift installation for ADA compliance.

9. # Bldgs on Site & Use:

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By:
OK for Cashier: Christina Yee
Signature: Christina Yee
DAS PC By: Mike Wood
Coord. OK:
Date: 12-19-00

For information and/or inspection requests originating within LA County.
Call toll-free (888) LA4BUILD
Outside LA County, call (213)-977-6941. (LA4BUILD = 524-2845)

For Cashier's Use Only W/O #: 01601648

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: $34,325 PC Valuation:

FINAL TOTAL Bldg--Alter/Repair	914.39
Permit Fee Subtotal Bldg--Alter/Rep	427.50
Handicapped Access	
Plan Check Subtotal Bldg--Alter/Rep	384.75
Fire Hydrant Refuse-To-Pay	
E.Q. Instrumentation	7.21
O.S. Surcharge	16.39
Sys. Surcharge	49.17
Planning Surcharge	24.37
Planning Surcharge Misc Fee	5.00
Permit Issuing Fee	0.00

Sewer Cap ID: Total Bond(s) Due:

12. ATTACHMENTS

LA Department of Building and Safety
LA 05 14 021408 12/19/00 03:24PM

BUILDING PERMIT COMM	$427.50
BUILDING PLAN CHECK	$384.75
EI COMMERCIAL	$7.21
ONE STOP SURCH	$16.39
SYSTEMS DEVT FEE	$49.17
CITY PLANNING SURCH	$24.37
MISCELLANEOUS	$5.00
Total Due:	$914.39
No Fee:	$914.39

NO FEE NO FEE NO FEE
Name: REC AND PKS
Addr: 1820 N LAS PALMAS
LA
Debk: BDANDO8096 LA 07454

U 7 3 1 0 0 1 3 7

13. STRUCTURE INVENTORY

14. APPLICATION COMMENTS

In the event that any box (i e. 1-16) is filled to capacity, it is possible that additional information that has been captured electronically is not printed. Nevertheless, the information printed herein exceeds that required by Section 19825 of the Health and Safety Code of the State of California.

15. Building Relocated From:

16. CONTRACTOR, ARCHITECT, & ENGINEER NAME	ADDRESS		CLASS	LICENSE#	PHONE #
(O) Owner-Builder	600 S. Spring St, 200	, 90012		0	2138475334

U 731 U 7 0 9 0 1 3 3

Unless a shorter period of time has been established by an official action, plan check approval expires one and a half years after the plan check fee has been paid. This permit expires two years after the building permit fee has been paid or 180 days after the fee has been paid and construction has not commenced or if work is suspended, discontinued or abandoned for a continuous period of 180 days (Sec 98 0602 LAMC). Claims for refund of fees paid must be filed within one year from the date of expiration for permits granted by the Dept. of Building & Safety (Sec. 22.12 & 22.13 LAMC).

17. LICENSED CONTRACTOR'S DECLARATION

I hereby affirm under penalty of perjury that I am licensed under the provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect. If doing work on a residential property, I certify that I hold a valid certification as a Home Improvement contractor per B&P Code, Section 7150.2e The following applies to B contractors only: I understand the limitations of Section 7057 related to my ability to take prime contracts or subcontracts involving specialty trades.

License Class: _____ Lic No: _____ Print: _____ Sign: _____

18. WORKERS' COMPENSATION DECLARATION

I hereby affirm, under penalty of perjury, one of the following declarations.

X I have and will maintain a certificate of consent to self insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☐ I have and will maintain workers's compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued My workers' compensation insurance carrier and policy number are:

Carrier: _____ Policy Number: _____

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Sign: ARTEMIO S. DUNGO Date: 12/19/00 ☐ Contractor X Authorized Agent ☐ Owner

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES

19. CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civil Code).

Lenders name: _____ Lenders address: _____

20. ASBESTOS REMOVAL

Notification of asbestos removal. X is not applicable ☐ Letter was sent to the AQMD or EPA Sign: ARTEMIO S. DUNGO Date: 12 19 00

21. OWNER-BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractors License Law for the following reason (Section 7031.5, Business and Professions Code Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 commencing with Sec. 7000 of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500))

X I, as the owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec 7044, Business & Professions Code The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his or her own employees, provided that such improvements are not intended or offered for sale If, however, the building or improvement is sold within one year from completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale)

☐ I, as the owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec 7044, Business & Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law.)

☐ I am exempt under Sec. _____, Bus. & Prof. Code for the following reason: _____

Print: ARTEMIO S. DUNGO Sign: ARTEMIO S. DUNGO Date: 12/19/00 ☐ Owner X Authorized Agent

22. FINAL DECLARATION

I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection purposes. I realize that this permit is an application for inspection and that it does not approve or authorize the work specified herein Also that it does not authorize or permit any violation or failure to comply with any applicable law. Furthermore, that neither the City of Los Angeles nor any board, department officer, or employee thereof, make any warranty, nor shall be responsible for the performance or results of any work described herein, nor the condition of the property nor the soil upon which such work is performed. I further affirm under penalty of perjury, that the proposed work will not destroy or unreasonably interfere with any access or utility easement belonging to others and located on my property, but in the event such work does destroy or unreasonably interfere with such easement, a substitute easement(s) satisfactory to the holder(s) of the easement will be provided (Sec 91.0106.4.3.4 LAMC).

Print: ARTEMIO S. DUNGO Sign: ARTEMIO S. DUNGO Date: 12/19/00 ☐ Owner ☐ Contractor X Author Agent

1820 N LAS PALMAS AVE 90028
APPLICATION / PERMIT NUMBER: 00016-10001-01648
PLAN CHECK / JOB NUMBER: --

Plan Check and Permit Information

GROUP:	Building
TYPE:	Bldg-Alter/Repair
SUB-TYPE:	Commercial
PRIMARY USE:	(23) Miscellaneous Bldg/Structure
WORK DESCRIPTION:	Revise description of work under permit Number 00016-10000-01648 to: stair, restroom and parking area remodel. Omit wheelchair lift installation.

PERMIT ISSUED:	Yes	**PERMIT ISSUE DATE:**	02/01/2001	**ISSUING OFFICE:**	Metro
CURRENT STATUS:	Permit Finaled	**CURRENT STATUS DATE:**	04/10/2002		

Permit Application Status History

Issued	02/01/2001	MIRIAM CROWDER
Permit Finaled	04/08/2002	SAKO AGHAZARIAN

Permit Application Clearance Information

DAS Clearance	Cleared	02/01/2001	CHRISTINA YEE
Project located in CRA area	Cleared	02/01/2001	MICHAEL MEAD

Licensed Professional/Contractor Information

Contractor Information

Owner-Builder

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Inspection Activity Information

Inspector Information

JONATHAN QUACH, (213) 482-7357
Office Hours: 7:00-8:00 AM MON-FRI
SORIN CIRSTOIU, (213) 482-7357
Office Hours: 7:00-8:00 AM MON-FRI
RUSSELL BONVOULOIR, (213) 482-7357
Office Hours: 7:00-8:00 AM MON-FRI

Pending Inspection Request(s)

No data available

Inspection Request History

Final	04/04/2002	Corrections Issued	SAKO AGHAZARIAN
Final	04/08/2002	Permit Finaled	SAKO AGHAZARIAN

BACK NEW SEARCH

1820 N Las Palmas Ave

Permit #: **00016 - 10001 - 01648**
Plan Check #:
Event Code:
Printed: 02/01/01 11:10 AM

Bldg--Alter/Repair
Commercial
Over the Counter Permit

City of Los Angeles - Department of Building and Safety

APPLICATION FOR BUILDING PERMIT AND CERTIFICATE OF OCCUPANCY

Last Status: Ready to Issue
Status Date: 02/01/2001

1. TRACT	BLOCK	LOT(s)	ARB	MAP REF #	PARCEL ID # (PIN)	2. BOOK/PAGE/PARCEL
HOLLYWOOD OCEAN V2		10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

BAS Branch Office - LA
Council District - 4
Community Plan Area - Hollywood
Census Tract - 1902.000
District Map - 150A185
Energy Zone - 9
Fire District - FBZ
Hillside Grading Area - YES
Earthquake-Induced Liquefaction Area - YES
Thomas Brothers Map Grid - 593

ZONE(S):

4. DOCUMENTS

CRA - Z: 1352 HOLLYWOOD

5. CHECKLIST ITEMS

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A City

Tenant:

Applicant: (Relationship: Owner-Bldr)
Art Dungo - Owner-Builder 600 S. Spring St 200 LOS ANGELES, CA 90012 (213) 847-5334

7.EXISTING USE / **PROPOSED USE**
23 Miscellaneous Bldg/Structure

8. DESCRIPTION OF WORK
Revise description of work under permit Number 00016-10000-01648 to: stair, restroom and parking area remodel. Omit wheelchair lift installation.

9. # Bldgs on Site & Use:

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By: Christina Yee
OK for Cashier: Christina Yee
Signature: Christina Yee
DAS PC By: Christina Yee
Coord. OK: _____
Date: 2/1/01

For information and/or inspection requests originating within LA County,
Call toll-free (888) LA4BUILD
Outside LA County, call (213)-977-6941. (LA4BUILD = 524-2845)

For Cashier's Use Only W/O #: **01601648**

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: $301 PC Valuation: $0

FINAL TOTAL Bldg--Alter/Repair	93.23
Permit Fee Subtotal Bldg--Alter/Rep	65.00
Plan Check Subtotal Bldg--Alter/Rep	0.00
Fire Hydrant Refuse-To-Pay	
E.Q. Instrumentation	0.50
O.S. Surcharge	1.59
Sys. Surcharge	4.77
Planning Surcharge	2.37
Planning Surcharge Misc Fee	5.00
Permit Issuing Fee	14.00
Permit Fee-Single Inspection Flag	

Sewer Cap ID: Total Bond(s) Due:

12. ATTACHMENTS

LA Department of Building and Safety
[illegible] 02/01/01 12:41PM

BUILDING PERMIT COMM	$65.00
[illegible]MERCIAL	$0.50
[illegible]LDING PLAN CHECK	$14.00
[illegible]UP SURCH	$1.59
TEMS DEVT FEE	$4.77
[illegible] PLANNING SURCH	$2.37
[illegible]CELLANEOUS	$5.00
Total Due:	$93.23
No Fee:	$93.23

NO FEE NO FEE NO FEE
Name: RECREATION & PARKS
[illegible]r: 1820 N. LAS PALMAS AVE
L.A.
Auth: IDO # 000964
[illegible]: REC & PARKS

[illegible] A 09154

13. STRUCTURE INVENTORY

14. APPLICATION COMMENTS

In the event that any box (i.e. 1-16) is filled to capacity, it is possible that additional information that has been captured electronically is not printed. Nevertheless, the information printed herein exceeds that required by Section 19825 of the Health and Safety Code of the State of California.

15. Building Relocated From:

16. CONTRACTOR, ARCHITECT, & ENGINEER NAME	ADDRESS	CLASS	LICENSE#	PHONE #
(O) Owner-Builder	600 S. Spring St., 200 , 90012		0	2138475334

Unless a shorter period of time has been established by an official action, plan check approval expires one and a half years after the plan check fee has been paid. This permit expires two years after the building permit fee has been paid or 180 days after the fee has been paid and construction has not commenced or if work is suspended, discontinued or abandoned for a continuous period of 180 days (Sec. 98.0602 LAMC). Claims for refund of fees paid must be filed within one year from the date of expiration for permits granted by the Dept. of Building & Safety (Sec. 22.12 & 22.13 LAMC).

17. LICENSED CONTRACTOR'S DECLARATION

I hereby affirm under penalty of perjury that I am licensed under the provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect. If doing work on a residential property, I certify that I hold a valid certification as a Home Improvement contractor per B&P Code, Section 7150.2c. The following applies to B contractors only: I understand the limitations of Section 7057 related to my ability to take prime contracts or subcontracts involving specialty trades.

License Class: _____ Lic. No.: _____ Print: _____ Sign: _____

18. WORKERS' COMPENSATION DECLARATION

I hereby affirm, under penalty of perjury, one of the following declarations:

☐ I have and will maintain a certificate of consent to self insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☐ I have and will maintain workers's compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier: _____ Policy Number: _____

☒ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Sign: A Dungo Date: 2/1/01 ☐ Contractor ☒ Authorized Agent ☐ Owner

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

19. CONSTRUCTION LENDING AGENCY

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civil Code).

Lender's name: _____ Lender's address: _____

20. ASBESTOS REMOVAL

Notification of asbestos removal: ☒ Is not applicable ☐ Letter was sent to the AQMD or EPA Sign: A Dungo Date: 2/1/01

21. OWNER-BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractors License Law for the following reason (Section 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 commencing with Sec. 7000 of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☒ I, as the owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business & Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his or her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year from completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale)

☐ I, as the owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business & Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law.)

☐ I am exempt under Sec. _____, Bus. & Prof. Code for the following reason: _____

Print: ARTEMIO S. DUNGO Sign: A Dungo Date: 2/1/01 ☐ Owner ☒ Authorized Agent

22. FINAL DECLARATION

I certify that I have read this application and state that the above information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection purposes. I realize that this permit is an application for inspection and that it does not approve or authorize the work specified herein. Also that it does not authorize or permit any violation or failure to comply with any applicable law. Furthermore, that neither the City of Los Angeles nor any board, department officer, or employee thereof, make any warranty, nor shall be responsible for the performance or results of any work described herein, nor the condition of the property nor the soil upon which such work is performed. I further affirm under penalty of perjury, that the proposed work will not destroy or unreasonably interfere with any access or utility easement belonging to others and located on my property, but in the event such work does destroy or unreasonably interfere with such easement, a substitute easement(s) satisfactory to the holder(s) of the easement will be provided (Sec. 91.0106 4.3.4 LAMC).

Print: ARTEMIO S. DUNGO Sign: A Dungo Date: 2/1/01 ☐ Owner ☐ Contractor ☒ Author. Agent

1820 N LAS PALMAS AVE 90028
APPLICATION / PERMIT NUMBER: 02042-10000-03624
PLAN CHECK / JOB NUMBER: --

Plan Check and Permit Information

GROUP:	Mechanical				
TYPE:	Plumbing				
SUB-TYPE:	Commercial				
PRIMARY USE:	N/A				
WORK DESCRIPTION:	ADA TI WORK; ALTER RESTROOMS FOR ADA COMPLIANCE				
PERMIT ISSUED:	Yes	**PERMIT ISSUE DATE:**	02/25/2002	**ISSUING OFFICE:**	Metro
CURRENT STATUS:	Permit Finaled	**CURRENT STATUS DATE:**	04/04/2002		

Permit Application Status History

Issued	02/25/2002	BOSCO TANG
Permit Finaled	04/03/2002	RICHARD NICHOLLS

Permit Application Clearance Information

No data available

Licensed Professional/Contractor Information

Contractor Information

Owner-Builder

Inspection Activity Information

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Inspector Information

No data available

Pending Inspection Request(s)

No data available

Inspection Request History

Rough	02/26/2002	Approved	RICHARD NICHOLLS
Final	04/03/2002	Permit Finaled	RICHARD NICHOLLS

BACK NEW SEARCH

Home
Help
Parcel Profile Report
LADBS Home
LAHD Property Activity Report
Disclaimer

1820 N LAS PALMAS AVE 90028
APPLICATION / PERMIT NUMBER: 18041-10000-07572
PLAN CHECK / JOB NUMBER: E18LA00901

Plan Check and Permit Information

GROUP:	Electrical
TYPE:	Electrical
SUB-TYPE:	Commercial
PRIMARY USE:	N/A
WORK DESCRIPTION:	AT THE LAS PALMAS SENIOR CENTER, REPLACING INDOOR AND OUTDOOR LUMINAIRES WITH LED TYPES. NO CHANGES TO EMERGENCY LUMINAIRES AND EXIT SIGNS. PLAN CHECK IS FOR TITLE 24

PERMIT ISSUED:	Yes	**PERMIT ISSUE DATE:**	03/01/2018	**ISSUING OFFICE:**	Metro
CURRENT STATUS:	Permit Finaled	**CURRENT STATUS DATE:**	05/04/2018		

Permit Application Status History

Submitted	03/01/2018	FRANCIS YSAGUIRRE
Assigned to Plan Check Engineer	03/01/2018	FRANCIS YSAGUIRRE
Issued	03/01/2018	LADBS
Permit Finaled	05/03/2018	JULIE HAZUKA

Permit Application Clearance Information

No data available

Licensed Professional/Contractor Information

Contractor Information

Electric Service & Supply Co Of Pasadena; Lic. No.: 169577-C10
2668 E FOOTHILL BLVD
PASADENA, CA 91107

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Inspection Activity Information

Inspector Information

DAVID HAENDLE, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
JIMMY MEJIA, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
DENNIS BROMMER, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
STEVE SMAY, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
MATTHEW COTTER, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
JAKE MARTINEK, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
ADAM POLDER, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
DAVID KOSKI, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
RODNEY LANE, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
ROBERT STUCZYNSKI, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
JOSE CONSUEGRA, (213) 482-0305

Office Hours: 7:00-8:00 AM MON-FRI
KEROP KETSOYAN, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI

Pending Inspection Request(s)

No data available

Inspection Request History

Underground	04/12/2018	Partial Approval	JULIE HAZUKA
Rough	04/16/2018	Partial Approval	JULIE HAZUKA
Special Equipment	04/16/2018	Partial Approval	JULIE HAZUKA
Final	05/03/2018	Permit Finaled	JULIE HAZUKA

BACK NEW SEARCH

1820 N LAS PALMAS AVE 90028
APPLICATION / PERMIT NUMBER: 19041-10000-33120
PLAN CHECK / JOB NUMBER: E19LA03739

Plan Check and Permit Information

GROUP:	Electrical				
TYPE:	Electrical				
SUB-TYPE:	Commercial				
PRIMARY USE:	N/A				
WORK DESCRIPTION:	NEW FIRE ALARM SYSTEM IN THE BUILDING WITH 54 DEVICES.				
PERMIT ISSUED:	Yes	**PERMIT ISSUE DATE:**	08/22/2019	**ISSUING OFFICE:**	Metro
CURRENT STATUS:	Permit Finaled	**CURRENT STATUS DATE:**	03/02/2021		

Permit Application Status History

Submitted	08/22/2019	BEHROOZ HOORIANI
Plan Check Approved	08/22/2019	BEHROOZ HOORIANI
Issued	08/22/2019	LADBS
Permit Finaled	03/02/2021	JIMMY MEJIA

Permit Application Clearance Information

No data available

Licensed Professional/Contractor Information

Contractor Information

First Fire Alarm Systems; Lic. No.: 541227-C10
5947 BURCHARD AVENUE SUITE 200
LOS ANGELES, CA 90034

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Inspection Activity Information

Inspector Information

DAVID HAENDLE, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
JIMMY MEJIA, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
DENNIS BROMMER, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
STEVE SMAY, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
MATTHEW COTTER, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
JAKE MARTINEK, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
ADAM POLDER, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
DAVID KOSKI, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
RODNEY LANE, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
ROBERT STUCZYNSKI, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI
JOSE CONSUEGRA, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI

KEROP KETSOYAN, (213) 482-0305
Office Hours: 7:00-8:00 AM MON-FRI

Pending Inspection Request(s)

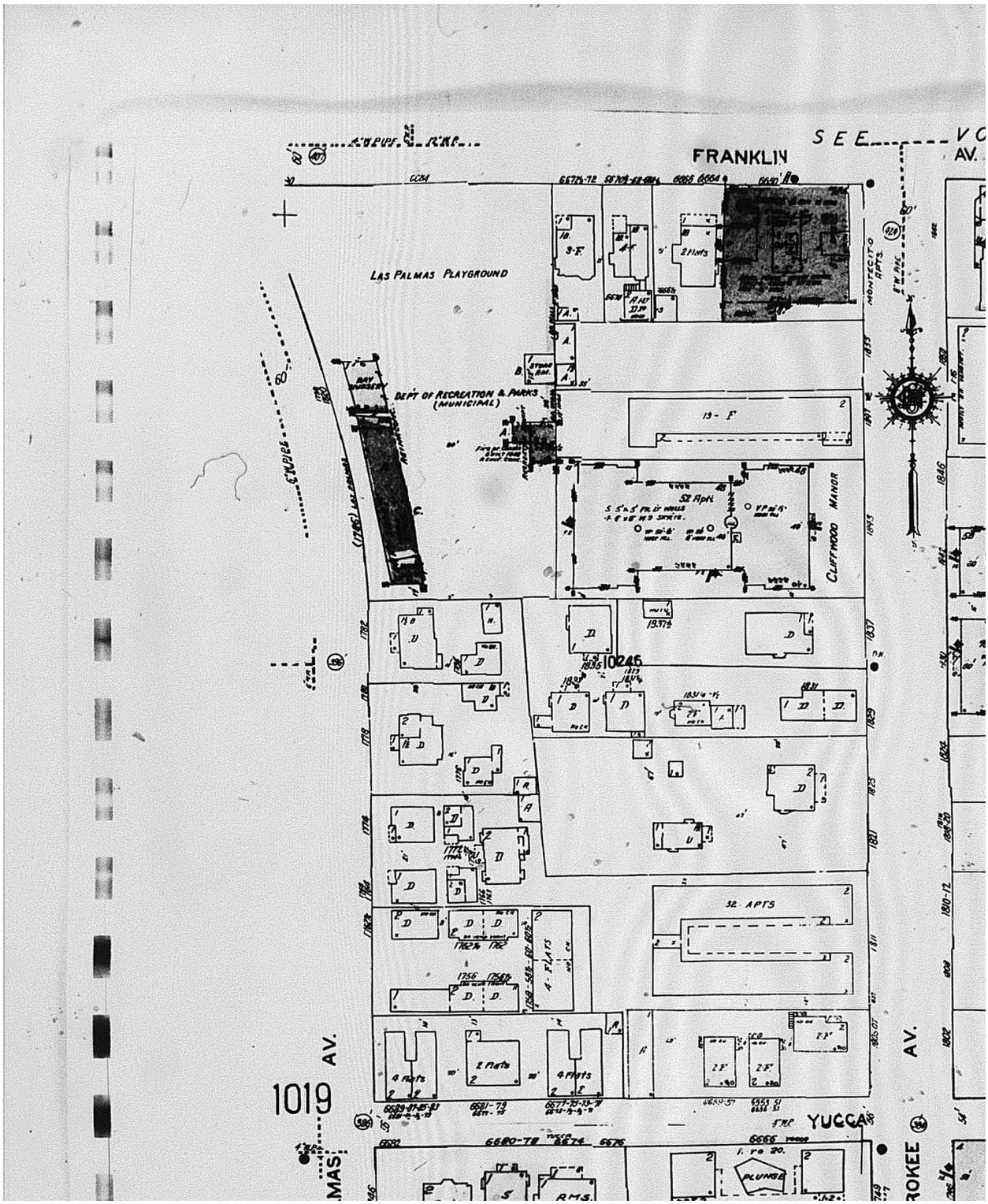
No data available

Inspection Request History

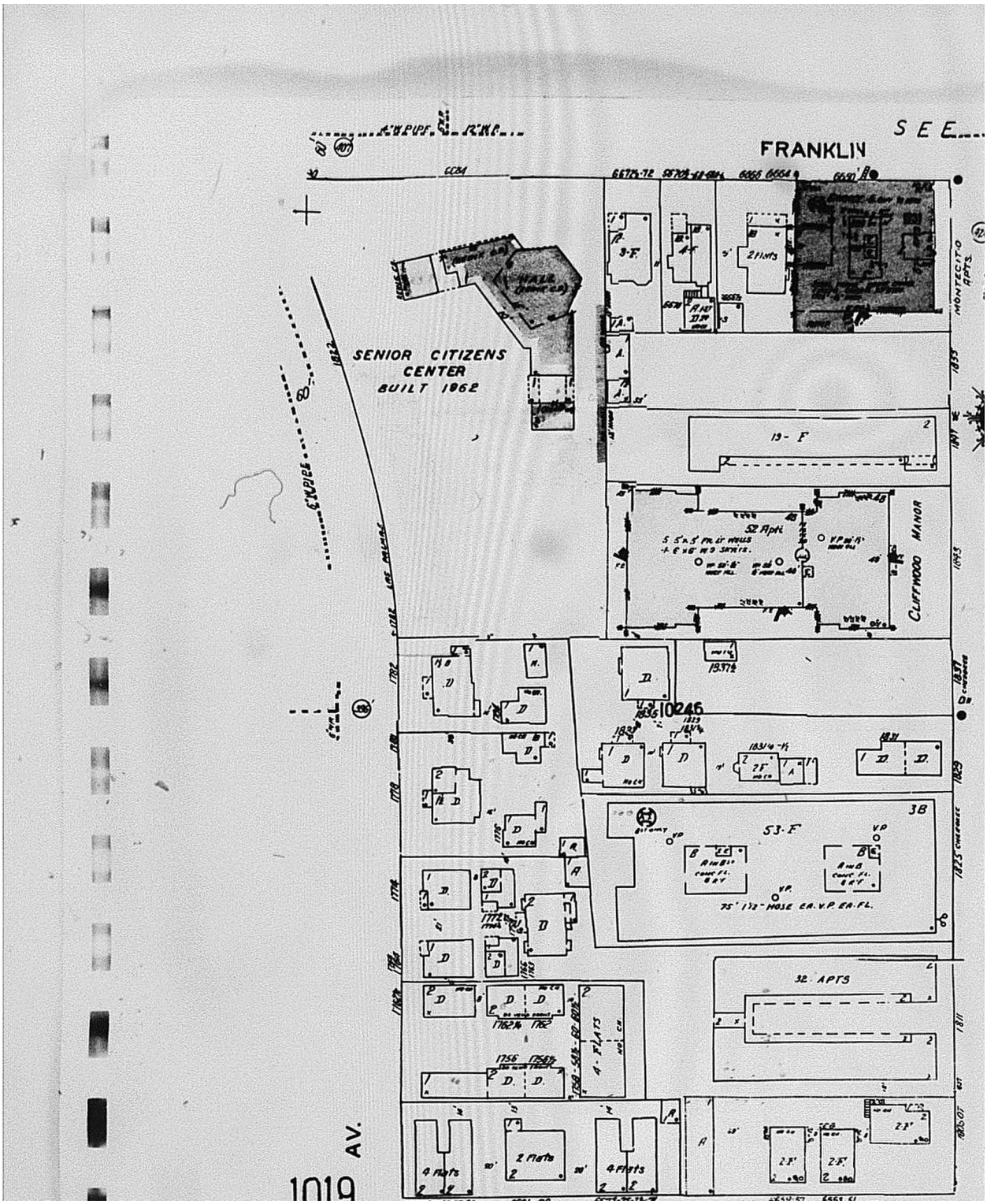
Final	12/11/2020	Not Ready for Inspection	DAVID HAENDLE
Life Safety	12/11/2020	Not Ready for Inspection	DAVID HAENDLE
Rough	12/11/2020	Not Ready for Inspection	DAVID HAENDLE
Final	02/12/2021	Not Ready for Inspection	DAVID HAENDLE
Rough	02/12/2021	Not Ready for Inspection	DAVID HAENDLE
Final	03/02/2021	Permit Finaled	JIMMY MEJIA
Life Safety	03/02/2021	Approved	JIMMY MEJIA
Rough	03/02/2021	Partial Approval	JIMMY MEJIA

BACK NEW SEARCH

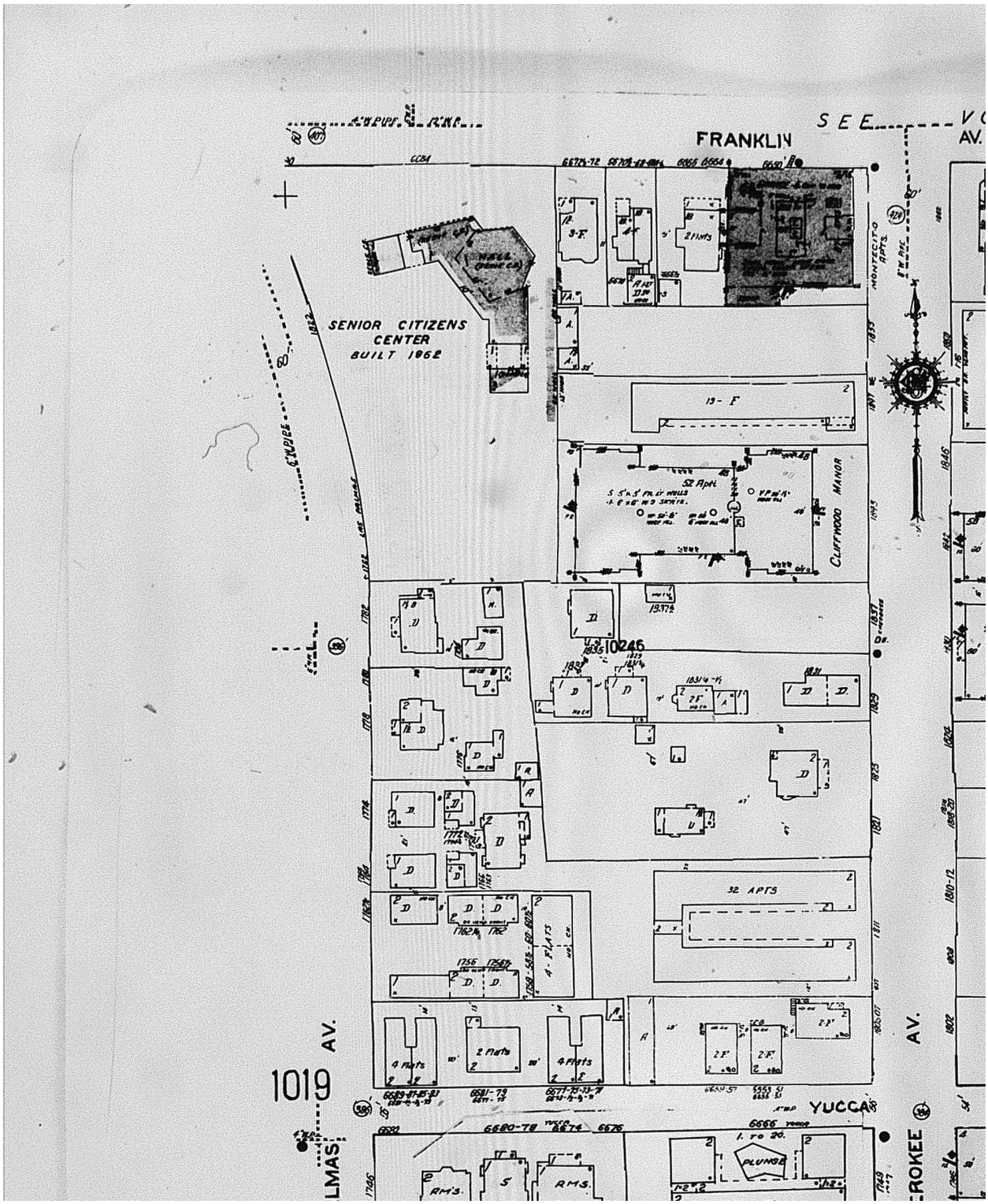
APPENDIX C – SANBORN FIRE INSURANCE MAPS (1960-1962)



Sanborn Map Company, *Los Angeles Volume 10,* Sheet 1020, 1960, accessed May 2023, Fire Insurance Maps Online.

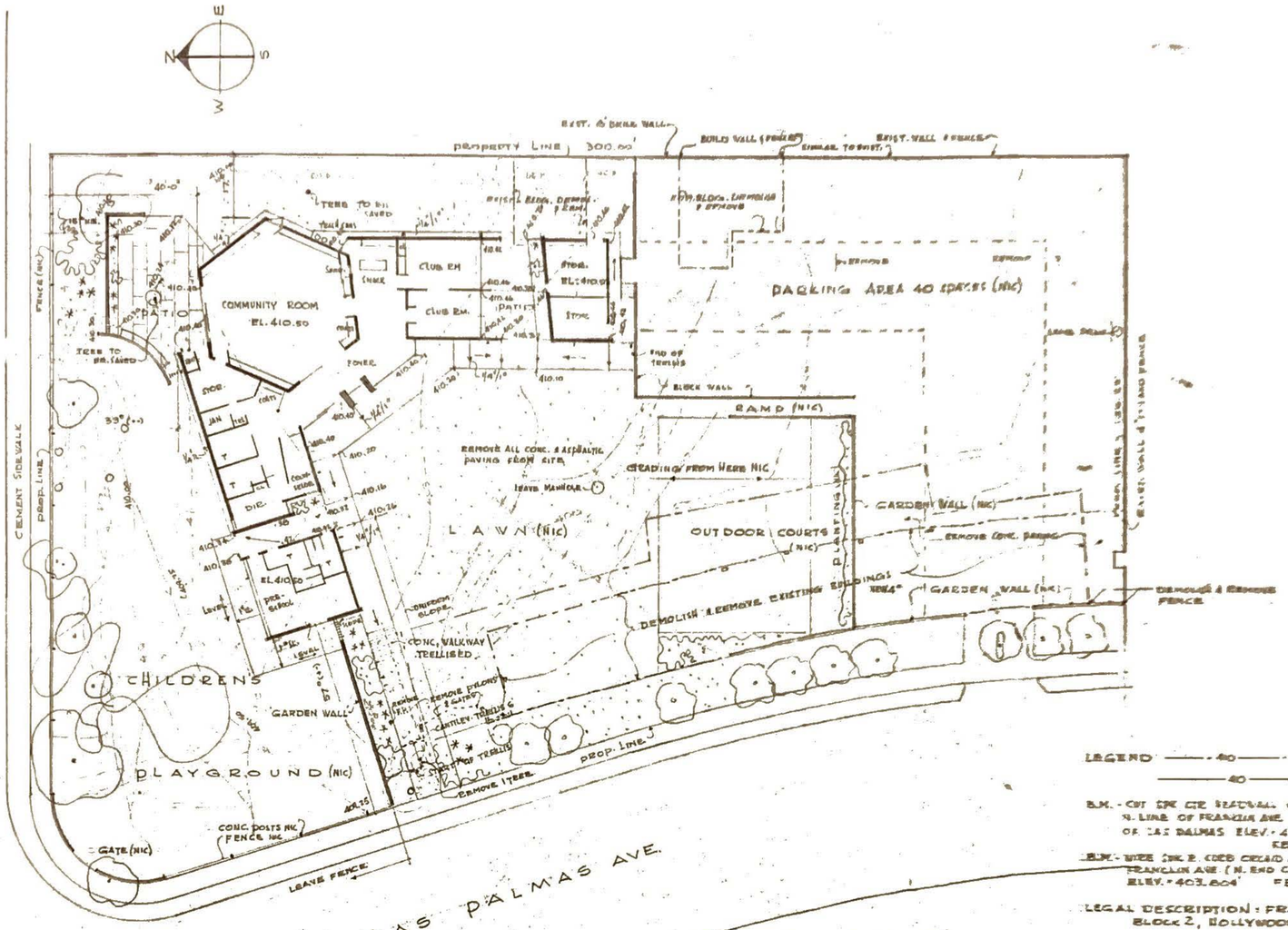


Sanborn Map Company, *Los Angeles Volume 10,* Sheet 1020, 1961, accessed May 2023, Fire Insurance Maps Online.



Sanborn Map Company, *Los Angeles Volume 10,* Sheet 1020, 1962, accessed May 2023, Fire Insurance Maps Online.

APPENDIX D – ORIGINAL BUILDING PLANS, 1961



LEGEND —— 40 —— EXIST. CONT.
—— 40 —— NEW CONTOUR

B.M. - CUT SPK CTR HEADWALL OF CULVERT N. LINE OF FRANKLIN AVE. 25' W CURB OF LAS PALMAS ELEV. = 412.402' F.B. 16904.47

B.M. - WIRE SPK E. CURB CROSS AVE. 8' N OF FRANKLIN AVE. (N. END C.B.) ELEV. = 403.804' F.B. 16904.47

LEGAL DESCRIPTION: FRACTION OF LOT 10 BLOCK 2, HOLLYWOOD OCEAN VIEW TRACT

INDEX TO DRAWINGS

1	PLOT PLAN
2	FLOOR PLAN INT. FINISH SCHEDULE
3	ELEVATIONS DOOR SCHEDULE
4	ROOF & FOUNDATION PLANS LAYOUT ANGLES
5	1/4" PLAN OF COMMUNITY ROOM & TOILETS
6	INTERIOR ELEVATIONS
7	DOOR DETAILS
8	SECTIONS 1 1/2" = 1'-0"
9	CLUBROOM DETAILS
10	ENTRANCE DETAILS
11	DIRECTOR & COUNSEL. OFFICE DETAILS
12	SNACKBAR DETAILS
13	DETAILS
14	WINDOW DETAILS
15	STRUCTURAL
16	STRUCTURAL
17	STRUCTURAL
18	PLUMBING & HEATING
19	ELECTRICAL
20	UTILITY PLOT PLAN & MISC. DETAILS

LAS PALMAS SENIOR CITIZENS CENTER

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

SUPERINTENDENT PARK DEVELOPMENT
SUPERINTENDENT OF RECREATION
SUPERINTENDENT OF ADMINISTRATION
GENERAL MANAGER

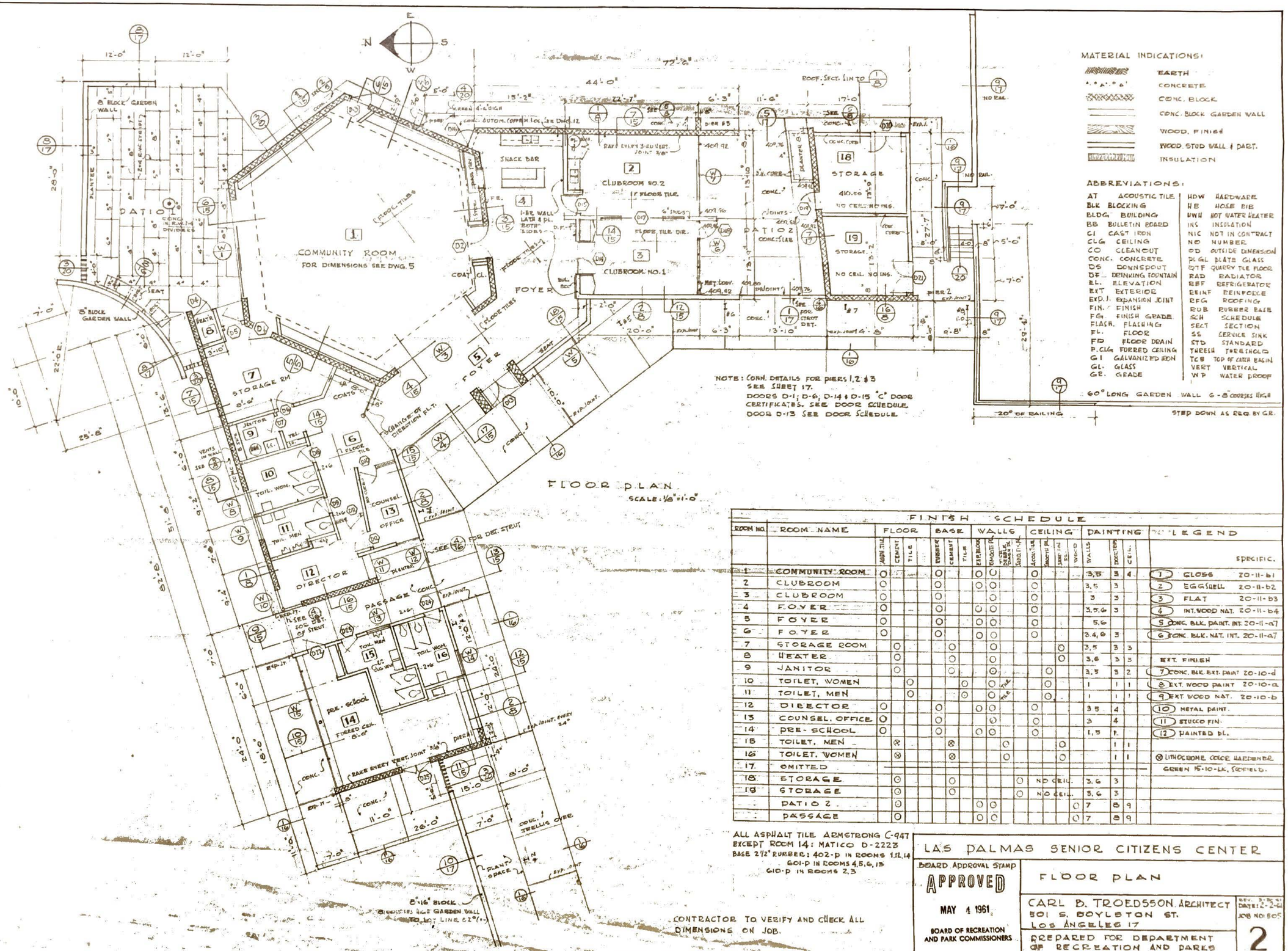
PLOT PLAN

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

1

554 A 1



FLOOR PLAN
SCALE: 1/8"=1'-0"

FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR: ASPH. TILE	FLOOR: CEMENT	FLOOR: TILE	BASE: RUBBER	BASE: CEMENT	BASE: TILE	WALLS: EXP. BLOCK	WALLS: CONCRETE	WALLS: PLYWOOD & BOARD FINISH	CEILING: ACOUSTICAL	CEILING: SMOOTH PL.	CEILING: SANITEX PL.	CEILING: WOOD	PAINTING: WALLS	PAINTING: DOOR/TRIM	PAINTING: CEIL.
1	COMMUNITY ROOM	O			O			O	O		O				3,5	3	4
2	CLUBROOM	O			O			O	O		O				3,5	3	
3	CLUBROOM	O			O			O	O		O				3	3	
4	FOYER	O			O			O	O		O				3,5,6	3	
5	FOYER	O			O			O	O		O				5,6		
6	FOYER	O			O			O	O		O				3,4,6	3	
7	STORAGE ROOM		O			O			O					O	3,5	3	3
8	HEATER		O			O			O					O	3,6	3	3
9	JANITOR		O			O			O			O			3,5	3	2
10	TOILET, WOMEN			O			O		O	TILE		O			1	1	1
11	TOILET, MEN			O			O		O	TILE		O			1	1	1
12	DIRECTOR	O			O			O	O		O				3,5	4	
13	COUNSEL. OFFICE	O			O				O		O				3	4	
14	PRE-SCHOOL	O			O			O	O		O				1,5	1	
15	TOILET, MEN		⊗			⊗				O				O		1	1
16	TOILET, WOMEN		⊗			⊗				O				O		1	1
17	OMITTED																
18	STORAGE		O			O					O	NO CEIL.			3,6	3	
19	STORAGE		O			O					O	NO CEIL.			3,6	3	
	PATIO 2		O					O	O					O	7	8	9
	PASSAGE		O					O	O					O	7	8	9

LEGEND

		SPECIFIC.
1	GLOSS	20-11-b1
2	EGGSHELL	20-11-b2
3	FLAT	20-11-b3
4	INT. WOOD NAT.	20-11-b4
5	CONC. BLK. PAINT. INT.	20-11-a7
6	CONC. BLK. NAT. INT.	20-11-a7
	EXT. FINISH	
7	CONC. BLK. EXT. PAINT	20-10-d
8	EXT. WOOD PAINT	20-10-a
9	EXT. WOOD NAT.	20-10-b
10	METAL PAINT.	
11	STUCCO FIN.	
12	PAINTED PL.	
⊗	LITHOCHROME COLOR HARDENER GREEN 15-10-LK, SCOFIELD.	

ALL ASPHALT TILE ARMSTRONG C-947
EXCEPT ROOM 14: MATICO D-2223
BASE 2½" RUBBER: 402-P IN ROOMS 1,12,14
601-P IN ROOMS 4,5,6,13
610-P IN ROOMS 2,3

CONTRACTOR TO VERIFY AND CHECK ALL DIMENSIONS ON JOB.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

FLOOR PLAN

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

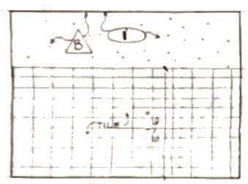
REV. 3-15-61
DATE: 2-2-61
JOB NO: 605

2

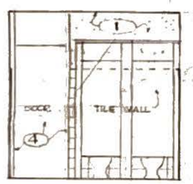
000120

554 A 1

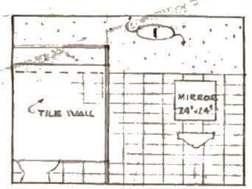
554 A 1



TOILET 10 EAST WALL

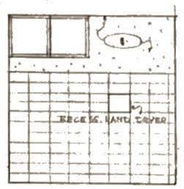


SOUTH WALL

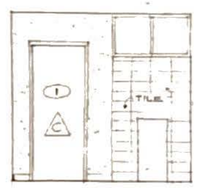


WEST WALL

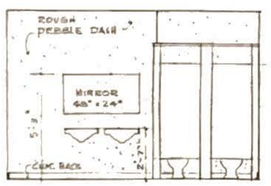
TOILET PARTITION SANYMETAL 93-GREEN



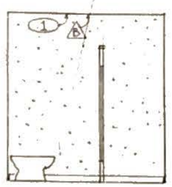
NORTH WALL



TOILET 15 EAST WALL

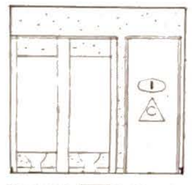


SOUTH WALL

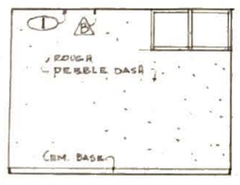


WEST WALL

TOILET PARTITION SANYMETAL COLOR 94-YELLOW



TOILET 12 EAST WALL

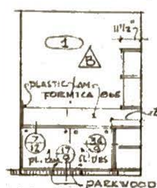


SOUTH WALL

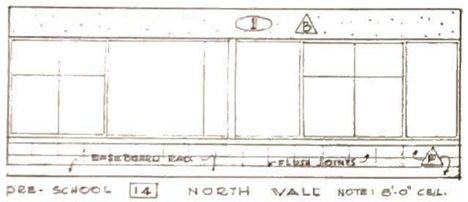


WEST WALL

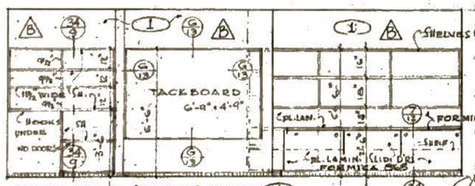
TOILET PARTITION SANYMETAL COLOR 43-RED



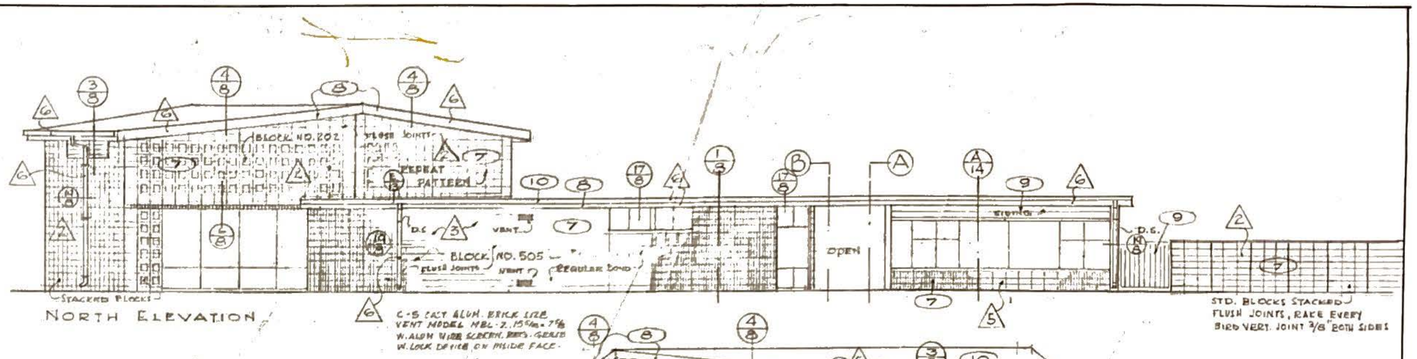
14 S. PART EAST WALL

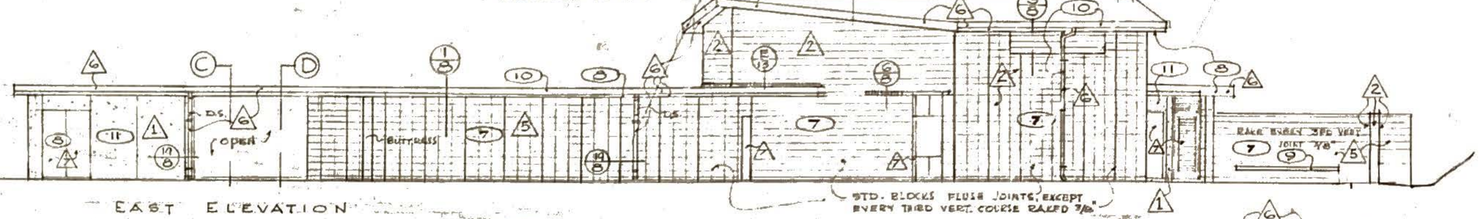


PRE-SCHOOL 14 NORTH WALL NOTE: 8'-0" CEIL.

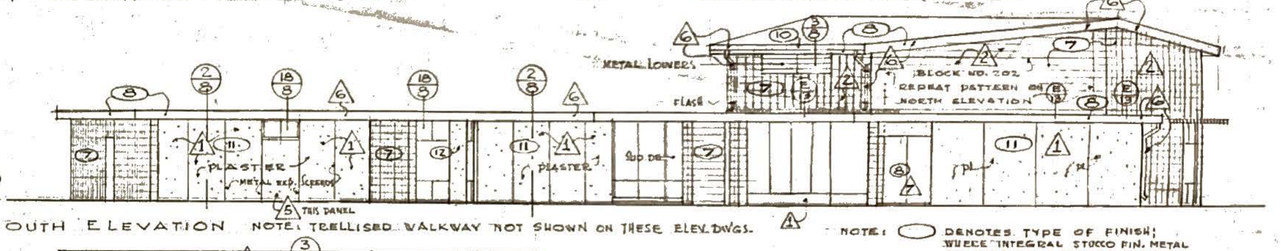


SOUTH WALLS; SHELVES FIN. NATURAL 4



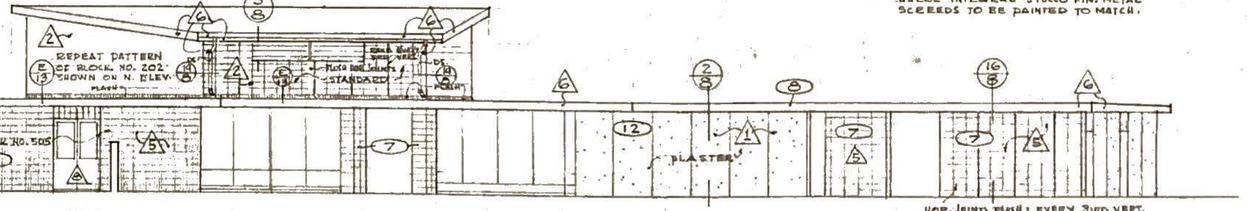


EAST ELEVATION

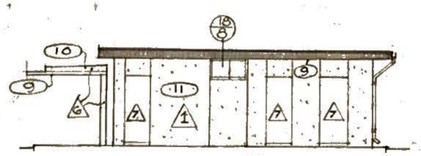


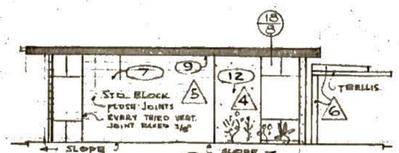
SOUTH ELEVATION NOTE: TRELLISED WALKWAY NOT SHOWN ON THESE ELEV. DWGS.

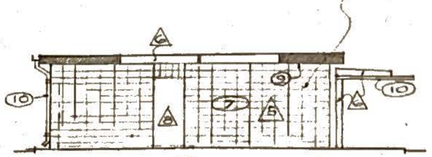
NOTE: ⬭ DENOTES TYPE OF FINISH; WHERE INTEGRAL STUCCO FIN. METAL SCREEDS TO BE PAINTED TO MATCH.

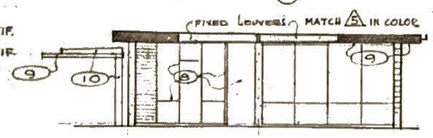


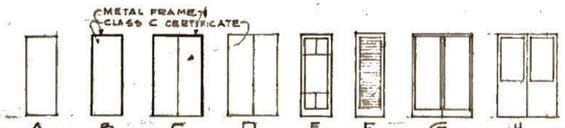
WEST ELEVATION NOTE: TRELLISED WALKWAY NOT SHOWN.











DOOR SCHEDULE

NUMBER	LOCATION-ROOM NUMBER	SIZE	TYPE	KIND	EXT-INT	REMARKS
1	1 - 7	3'-0" x 8'-2½"	B	W. 1¾	INT	SELF-CLOSING "C" CERTIFICATE
2	1 - 4	5'-0" x 8'-3"	D	W 1¾	INT	DOOR CLOS.
3	1 - EXIT DOOR	3'-7" x 8'-3½"	E	W. GL. 1¾	EXT.	PANIC HARDWARE OPENS 180°
4	8 - HEATER ROOM	3'-0" x 7'-0"	F	W. 1¾	EXT.	LOUVERED
5	7 - STORAGE RM	3'-0" x 7'-0"	A	W 1¾	EXT.	
6	7 - 6	2'-8" x 7'-0"	B	W 1¾	INT	SELF-CLOSING "C" CERTIF.
7	6 - 9	2'-8" x 7'-0"	B	W 1¾	INT.	SELF-CLOSING
8	6 - 10	2'-8" x 7'-0"	A	W 1¾	INT	DOOR CLOS.
9	6 - 11	2'-8" x 7'-0"	A	W 1¾	INT	DOOR CLOS
10	6 - 13	2'-6" x 8'-4"	A	W 1¾	INT	BIRCH FIN.
11	6 - 12	2'-6" x 8'-4"	A	W 1¾	INT	BIRCH FIN.
12	12 - 13	2'-6" x 8'-4"	A	W 1¾	INT	BIRCH FIN.
13	5 - FRONT DOORS	5'-8" x 6'-8"	G	MET GL.	EXT.	SELF-CLOS.
14	4 - 3	3'-0" x 8'-0"	C	W 1¾	INT	SELF-CLOSING "C" CERTIF.
15	4 - 2	2'-8" x 8'-0"	B	W 1¾	INT	SELF-CLOSING "C" CERTIF.
16	4 - OUTSIDE	2'-6" x 7'-0"	A	W 1¾	EXT.	
17	2 - 3	7'-0" x 8'-0"	D	W 1⅜	INT.	HOLLOW CORE, SLID.
18	3 - PATIO	2'-8" x 8'-3½"	A	W 1¾	EXT.	
19	18 - PATIO	3'-0" x 7'-0"	A	W 1¾	EXT.	
20	18 - OUTSIDE	3'-0" x 7'-0"	D	W 1¾	EXT.	BOLT TOP & BOT.
21	19 - OUTSIDE	3'-0" x 7'-0"	D	W 1¾	EXT	BOLT TOP & BOT.
22	14 - OUTSIDE	3'-0" x 7'-0"	A	W 1¾	EXT.	
23	15 - OUTSIDE	2'-8" x 7'-0"	A	W 1¾	EXT.	
24	16 - OUTSIDE	2'-8" x 7'-0"	A	W 1¾	EXT.	
25	14 - OUTSIDE	5'-0" x 7'-0"	H	W 1¾	EXT.	WIRE GL.

EXTERIOR COLOR CODE:

1. LA HABRA EXT. STUCCO X-52
2. GELVATEX BLUE FOX D7
3. -"- TAPESTRY C8
4. -"- JONQUIL 104-I1
5. SINCLAIR 1208 THALO BLUE, 1 PART BASE 16 PARTS WHITE
6. MATCH GELVATEX BARN RED 118-F2
7. PAINT DOOR TO MATCH WALL
8. PAINT DOOR TO MATCH 2

NOTE: ALL BLOCK WALLS LAID STACKED EXCEPT N. WALL OF ROOM 7, 8, 9, 10, 11, 12.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

ELEVATIONS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

REV. 7-26-61
DATE 7-7-61
JOB NO. 1005
3

000019 554 A 1

554 A 1

TYPICAL SHAPED RAFTERS ROOFS SLOPE 4"

SCALE: 3/4"=1'-0"

ROOF FRAMING PLAN

SCALE: 1/8"=1'-0"

FOUNDATION PLAN

SCALE: 1/8"=1'-0"

NOTE: FRAME FOR ALL REC. CEIL. FIXTURES

NOTE: POUR TRELLIS CAISSONS TO WITHIN 2 FT. OF FIN GR. BEFORE START OF BLDG.

BOT. OF CAISSON ELEV. 404.00

LAYOUT ANGLES

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

ROOF FRAME & FOUNDATION PLANS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE 2-1961
JOB NO. 606

4

554 A 1

554 A 1

PLAN OF COMMUNITY ROOM SCALE: 1/4"=1'-0"

DOST OCCUPANCY SIGN:
THIS ROOM IS APPROVED FOR THE FOLLOWING PURPOSE AND NUMBER OF OCCUPANTS:
RECREATION ROOM - 197 OCCUPANTS

SECTION (A)

EXT. ELEVATION OF N-EAST WALL

PLAN OF TOILETS, ETC. SCALE: 1/4"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

Board Approval Stamp
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

1/4" PLAN COMMUNITY ROOM & TOILETS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

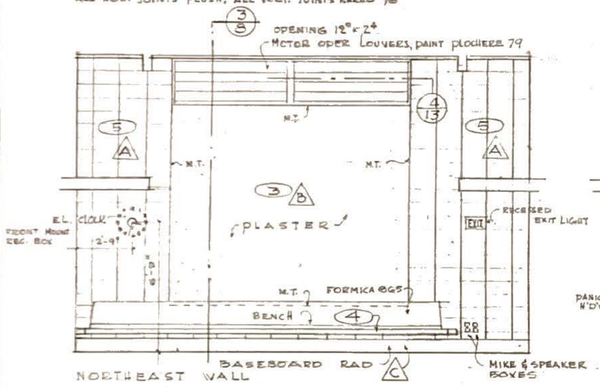
Rev. 9-26-61
DATE: 2-2-61
JOB NO. 505

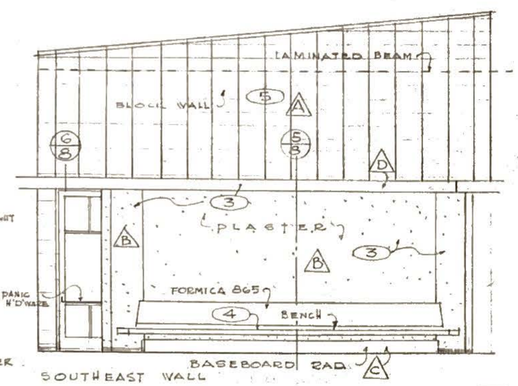
5

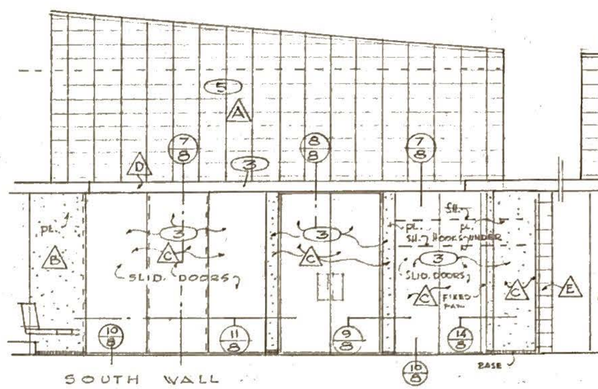
000018 554 A 1

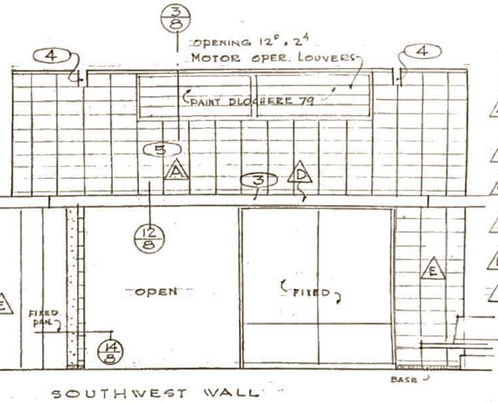
554 A 1

NOTE: IN COMMUNITY ROOM
ALL HOR. JOINTS FLUSH, ALL VERT. JOINTS RAKED 3/8"





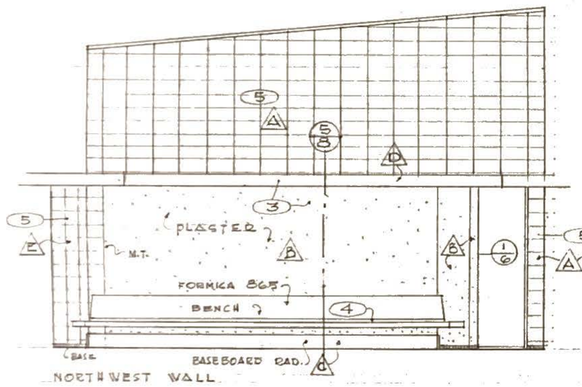


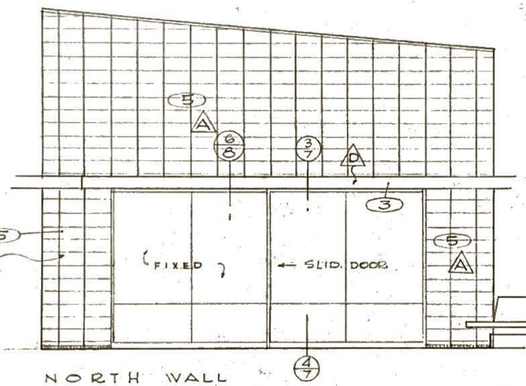


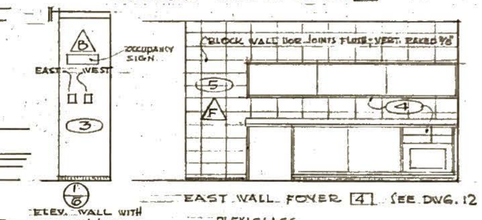
INTERIOR COLOR CODE:

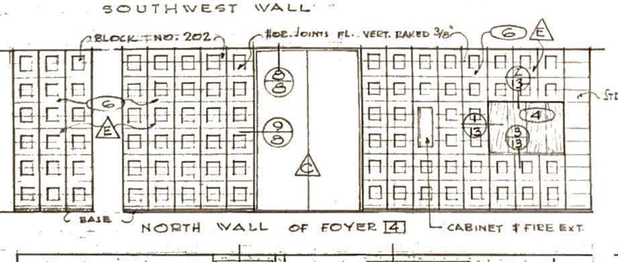
- A 2 PARTS GELVATEX TAPESTRY CB WITH 1 PART WHITE 101-XQ
- B PITTSBURGH 64-136 BONE WHITE
- C --- 150, WARM GRAY
- D --- 292, PLUM
- E NATURAL BLOCK COLOR
- F SAME AS 5

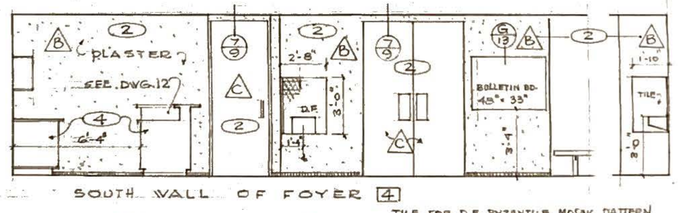
ELEVATIONS OF COMMUNITY ROOM 1
SCALE: 1/4"=1'-0"



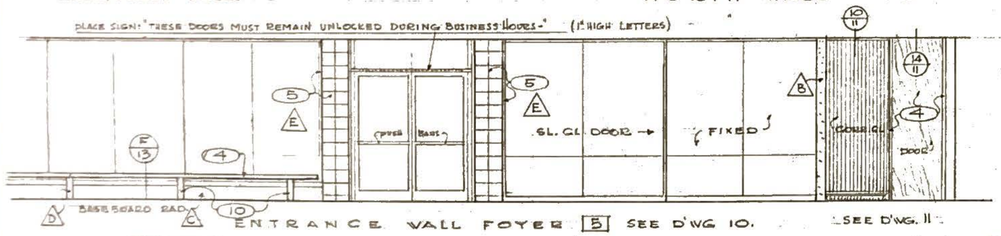


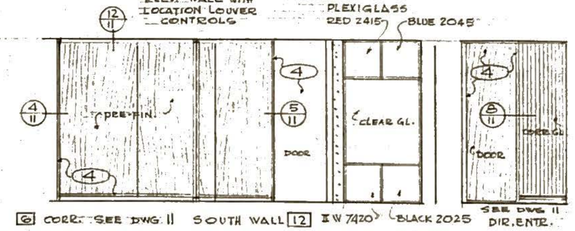


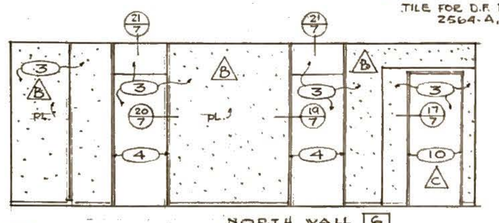


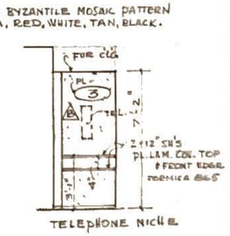


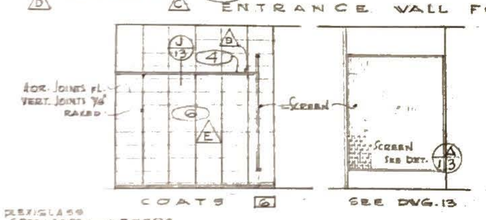
TILE FOR D.F. BYZANTILE MOSAIC PATTERN 2564-A, RED, WHITE, TAN, BLACK.

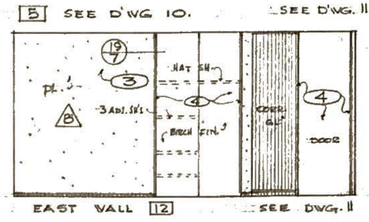


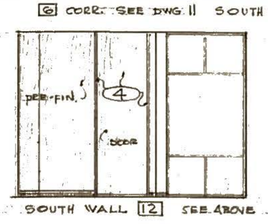


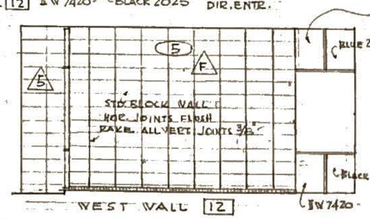


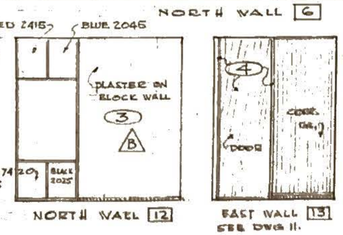


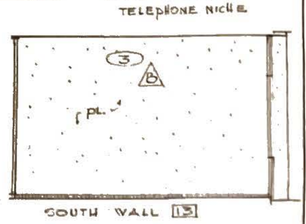


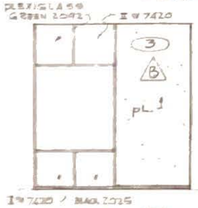


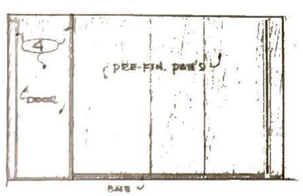


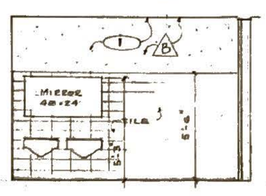


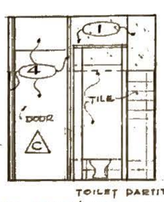


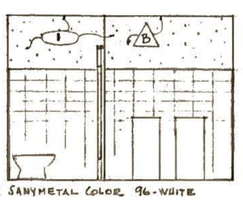


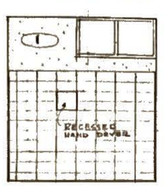












WALL TILE - HERMOSA -
TOILET 11 : H-201, BRITE WHITE
TOILET 10: H-277, TEA ROSE

FLOOR TILE: BYZANTILE
TOILET 11 : PATTERN 2678.
COLORS: BACKGROUND RED;
INLAYS: PEBBLE WHITE, BEIGE TAN, BLACK
TOILET 10: PATTERN 2677;
COLORS: BACKGROUND LT GREEN
INLAYS: PEBBLE WHITE, LIGHT LEGHORN BUFF, BLACK.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

INTERIOR ELEVATIONS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

REV. DATE: 7-24-61
JOB NO. 6006
6

000017 554 A 1

554 A 1

W1 — 4°x8°
W2 OMITTED
W3
W4
SEE DRAWING #10
W5
W6 — SEE DRAWING #9
W7
D-3 DOOR DET'S
W9 — 4°x2°
W10 — 2 - 3°x8°
CORNER W'DW
W11 — 4°x8°
W12 — 4°x8°
W14 — 4°x2°
W15
D1
D2
D3
D4
D5
D6 D7
D8
D9
D10
SEE DWG #11
D11
D12
D13
D14
D15
D16
D17
D18
D25
D22
D20 21
D23 24
SLIDING DOOR JAMBS
STORAGE ROOM
HEATER ROOM
HEADER
STORAGE
HEAD
EXTERIOR SILL
FLUSH THRESHOLD
METAL TRIM
BEAM
METAL LATH
1" NET MIN. LAP AT TOP
REMOVE HEAD TRIM W. FIN SCREWS & WASHERS
BIRCH NAT. FINISH F.S.
SLID. DOOR
SEE NOTE
JOIST HANGER
BEAM
TOP PL. ONLY
TOILET SIDE
FIXED DOOR
METAL ANCHORS SCREWED TO FRAME EMBEDDED IN GROUT. SET FRAME WITH BLOCK WORK & PROTECT
AT D-19
CARRY JAMB DOWN
FIN. FLOOR FLUSH
POSITION DOORS OPEN IN.
POSITION DOORS OPEN OUT
WELD 2" LONG BENT LUGS TO C - 12" O.C.
F.S. DETAIL

LAS PALMAS SENIOR CITIZENS CENTER

Board Approval Stamp
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

DOOR DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE 12-2-61
JOB NO. 505
7

000016554 A 1

554 A 1

GUTTER SEE A/8

NOTE: USE ALUMINUM NAILS FOR EXT. WOOD WITH NATURAL FINISH.

2×10 @ 7½"

HEATING PIPE

3⅝" MIN.

2" WIDE CONT. VENT SCREEN SUBSIDE

INSULATION

5/16" BOLT STRAP

WELD

2'-4"

A.T.

2×3 STRIPPING 12" O.C.

BLOCK WALL AT 16/8

BLOCK WALL

½" ANCHOR BOLT

2×4 16 GA STL TUBE DS

½" FIBER BOARD STRIP 3"W-2"Ø AT STRAPS

⅛"×2" STL. STRAP GALV AFTER FABR.

19/8

SCALE: 3"=1'-0"

13 COURSES @ 8" = 8'-8"

1/8

SEE H/13

PLYSCORED GRADE SHEATH, EXT. GRADE AT ALL ROOF OVERHANGS

ALL FASCIA JOINTS 45° MITER

HEATING PIPE

CONTINUOUS SUPERIOR VENT SCREEN

2×14

HANGERS

BEAM

17/8 SEE 1/14

18/8 SEE 18/14

2'-0"

SEE STRUCT. 15

2×8 RAFTERS 24" OC HORIZ

INSULATION

2×3 STRIPPING

LAMINATED BEAM

4½"

CAULK

3/4" 5½"

MOTOR OPERATED LOUVERS

SILL

½"

23 COURSES @ 8" = 15'-4"

19½ COURSES = 13'-0"

3/8

RADIATOR & SEAT SIMILAR 5/8

GRANT NO. 2200

12/8

SEE H/13

CUT BLOCKS TO SLOPE

2×4 STUDS

4/8

SLID. DOORS

3"

11/8

2×3 STUDS

SEE 16/8

9'-4"

7/8

4½" 4"

½"

24 GA. GALV. GUTTER

3/16"×1" STL. STRAP HANGERS 48" O.C. 2-#6 CTSK WD SCR.

REM. ¼" MESH G.I. STRAINER

⅛"×2" STL STRAP HANGER SCREW TO FASCIA.

⅛"×2" STL. STRAP GALV. AFTER FABR.

A/8

SCALE: 3"=1'-0"

NOTE: CONC. CURBS AT STUD WALLS AND PARTITIONS, EXCEPT WHERE NOTED.

SINGLE-LAMP OPEN TYPE COM. FLUOR.

pl. STOP MET.

1" OPENING

½" PLYW'D

OPEN

11¼" × 9½"

HUNG. ⅜" BOLTS

PAINT

MAT.

0'-5"

¾"

2'-0½"

¾"

0'-7"

3"

1¼"

3'-3"

2'-6" FROM BLOCK TO PNL.

15/8 TYPICAL

PLASTER

PLASTER STOPS HERE AT 3/8

BACK OF PLASTIC LAMINATE ON 1" PLYWOOD

1'-4"

SEAT OF ¾"×1½" V.G. OF LAMINATED

2½"

ROUND CORNERS

1'-0½"

1'-7½"

4

3

BASEBOARD RADIATION

1'-1½"

2×2×3/16 ∠'S

⅛" PL.

½" BOLTS SET IN CONC. STUD

2×2×3/16 ∠'S

5¾"

2¼"

BOLTS

⅛" FILLET WELD

⅛" PL.

BOLTS

30°

1'-5"

1'-0½"

1'-1½"

BRACKET FOR SEAT SEE PLAN FOR LOCATION

5/8 SECTIONS

SCALE: 1½"=1'-0"

2'-0"

SCRIBE

FIXED PANL

CONTINUE TRACKS & GUIDES 14/8

SLID. PANL

1'-3"

¼" SLOPE

#3 @ 18" ½" MAT.

1-#3 CONT.

6"

4'-0"

2'-9"

10

3"

⅜" GALV. BOLT W. WASH. GALV STOVE BOLT

2×4 BW @ 2'

BLOCK

GALV BOLT @ 6'-0" OC

6/8

SEE 15/8

METAL FRAME

13/8

SEE 15/8

8/8

SEE 15/8

BOLT TO WALL 2-⅝"Ø

PULLS PLACED SO DOORS CAN STAND OPEN

½"

1⅝"

9/8

PAIR 2'-6" DOORS

GRANT SHEAVES #1811

SLIDING DOORS

GRANT TRACK #1800

10/8

F. S. DETAIL

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

SECTIONS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

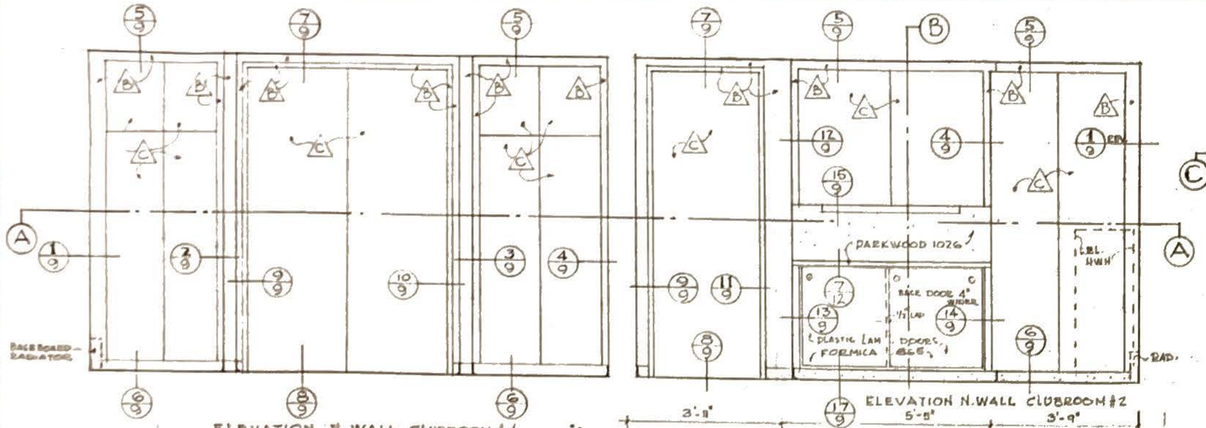
DRAWN: J. B. DATE: 7-24-61 JOB NO: 505

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

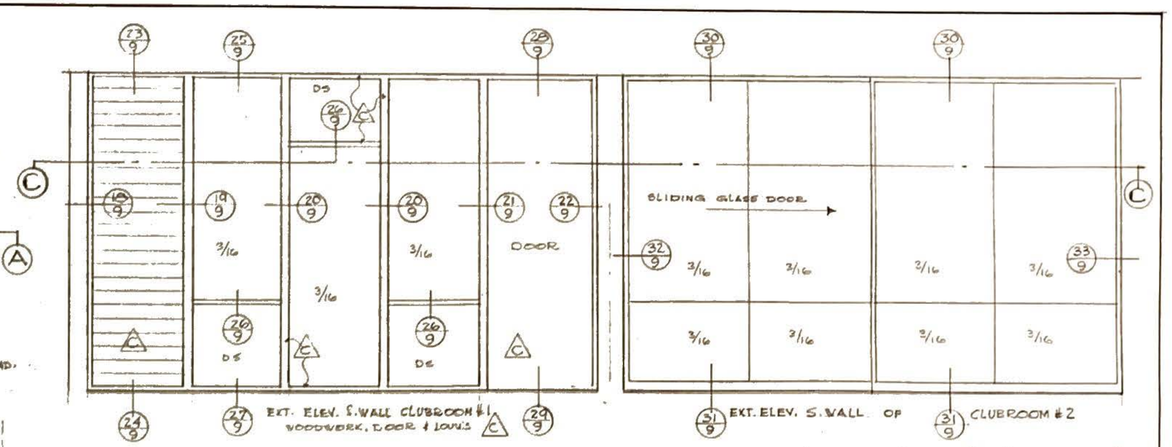
8

000015 554 A 1

554 A 1



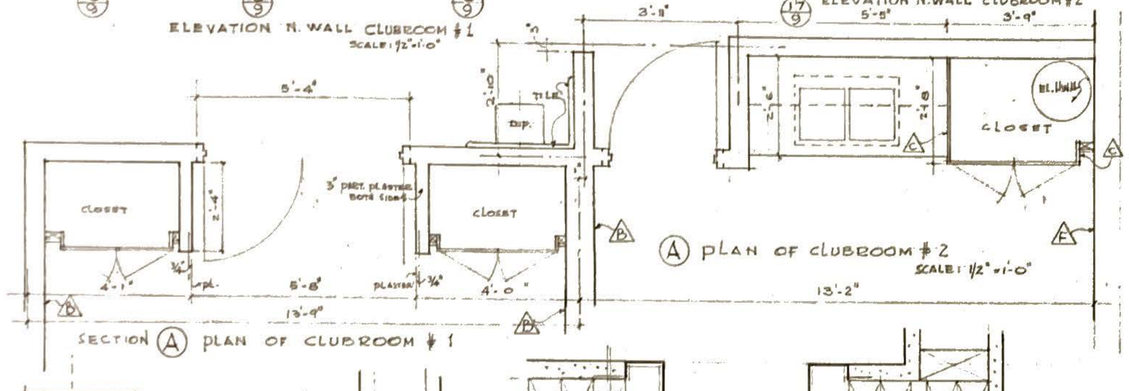
ELEVATION N. WALL CLUBROOM # 1
SCALE: 1/2"=1'-0"



EXT. ELEV. S. WALL CLUBROOM #1
WOODWORK, DOOR & LOUVS

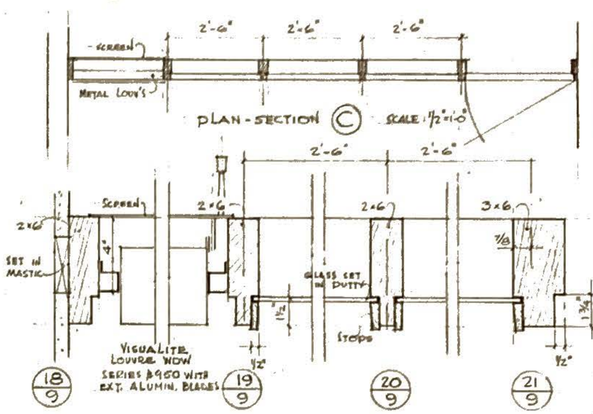
EXT. ELEV. S. WALL OF CLUBROOM # 2

ELEVATION N. WALL CLUBROOM # 2
5'-8" 3'-9"

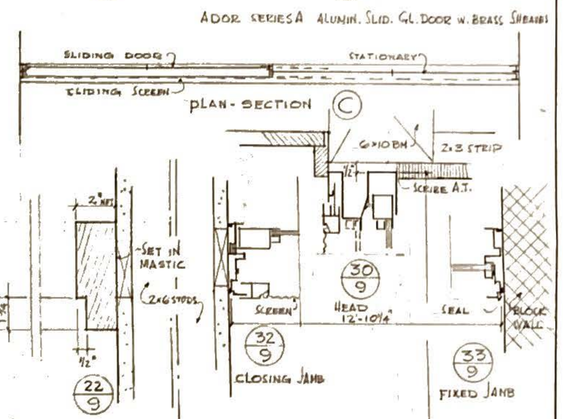


SECTION (A) PLAN OF CLUBROOM # 1

(A) PLAN OF CLUBROOM # 2
SCALE: 1/2"=1'-0"

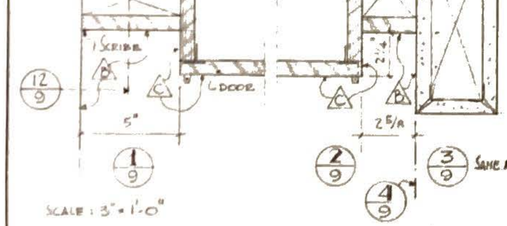


PLAN-SECTION (C) SCALE: 1/2"=1'-0"

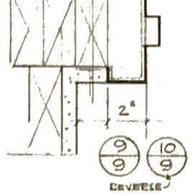


PLAN-SECTION (C)

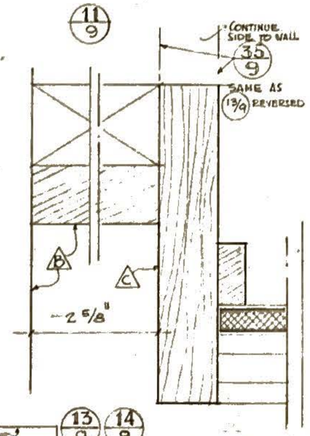
ADOR SERIES A ALUMIN. SLID. GL. DOOR W. BRASS SHRADS



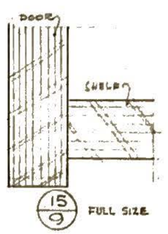
SCALE: 3"=1'-0"



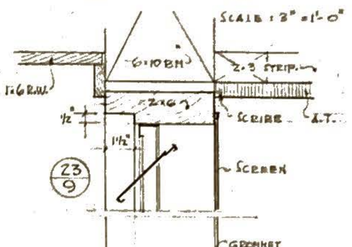


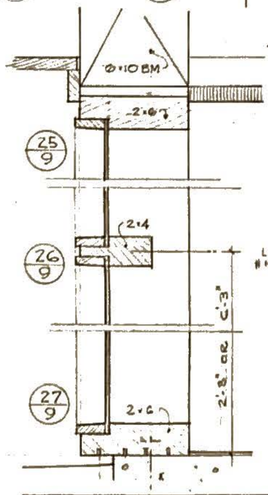


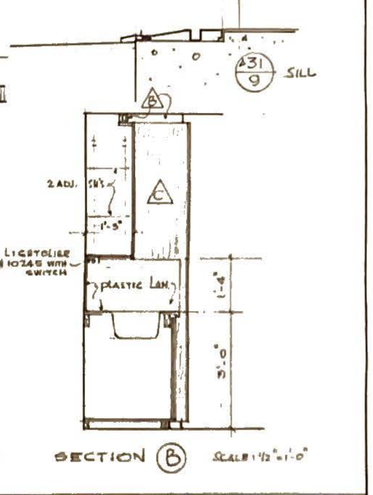
FULL SIZE



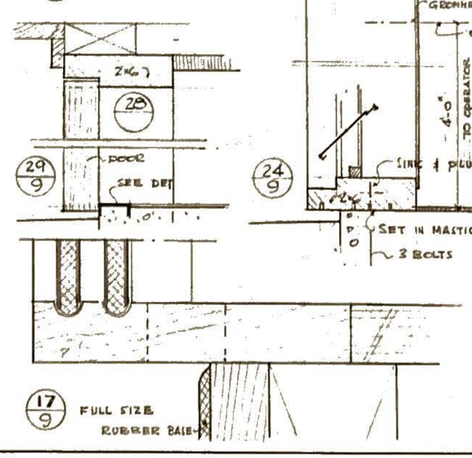
15/9 FULL SIZE



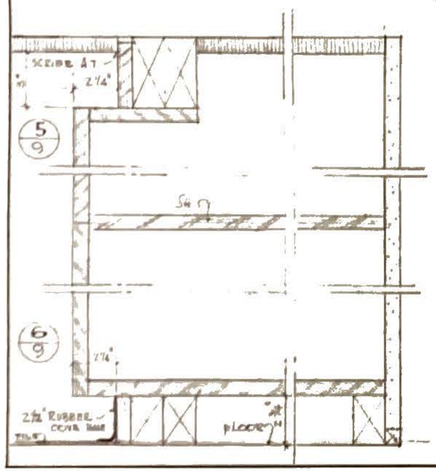


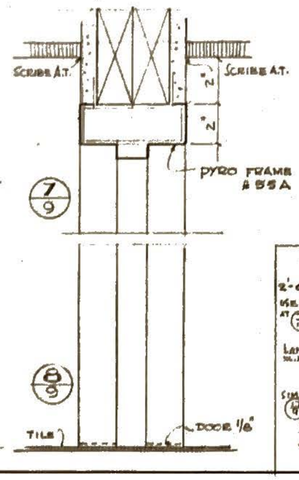


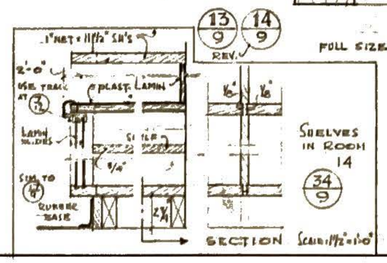
SECTION (B) SCALE: 1/2"=1'-0"



17/9 FULL SIZE RUBBER BASE







13/9 14/9 REV.

SECTION Scale: 1½"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 1 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

CLUBROOM DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE: 2-2-61
JOB NO 60-5

9

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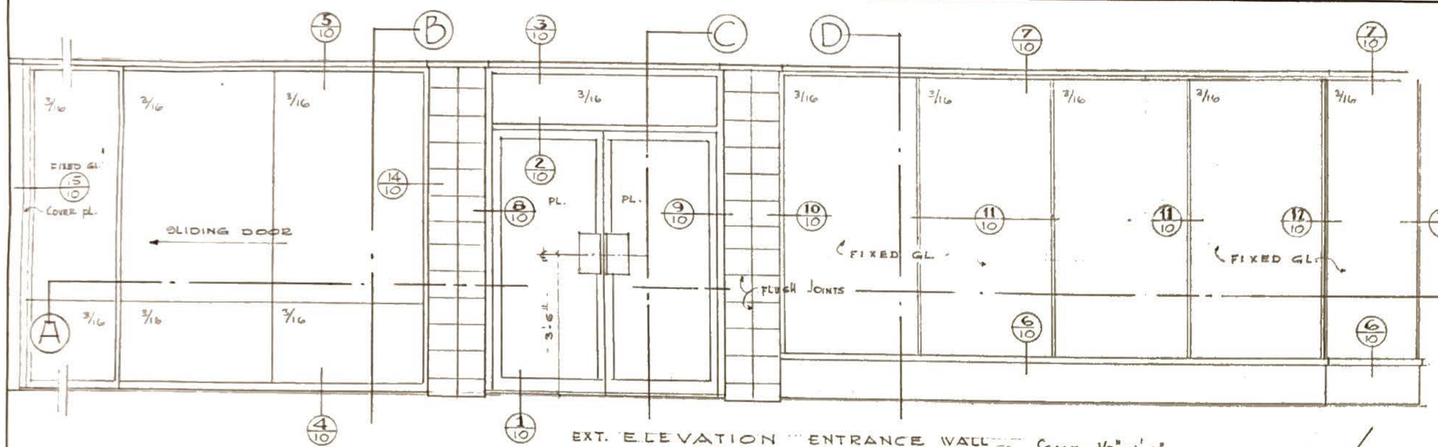
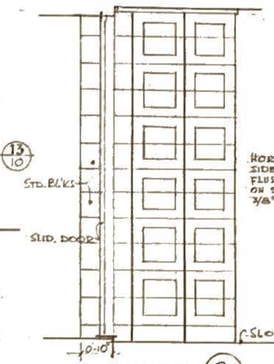
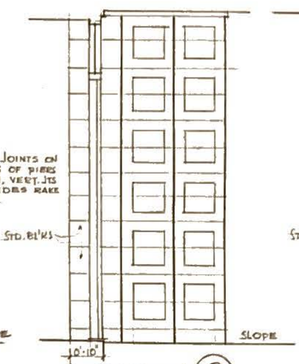
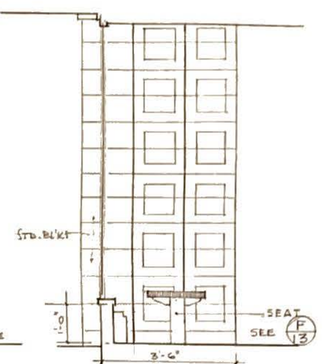
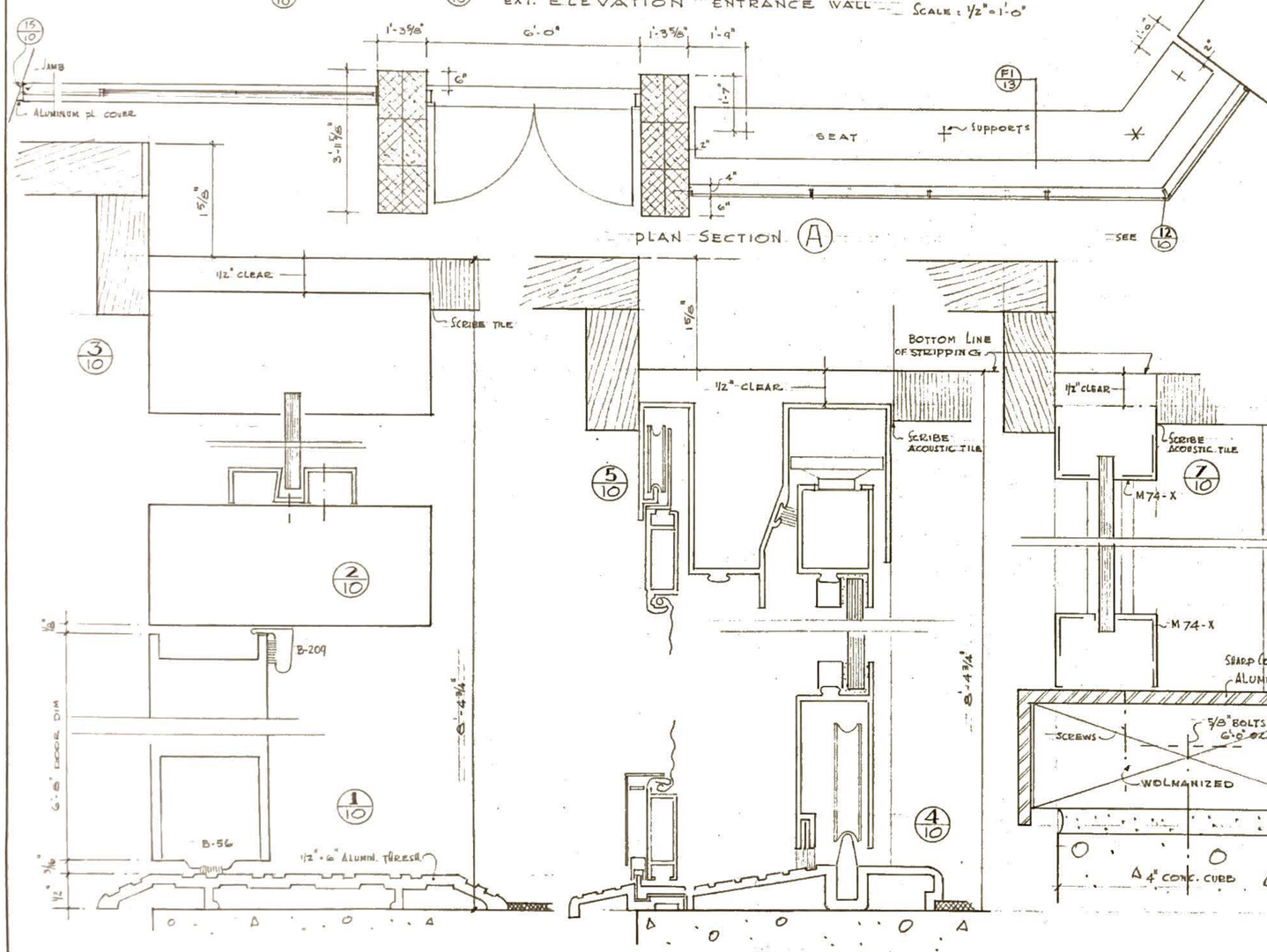
554 A 1

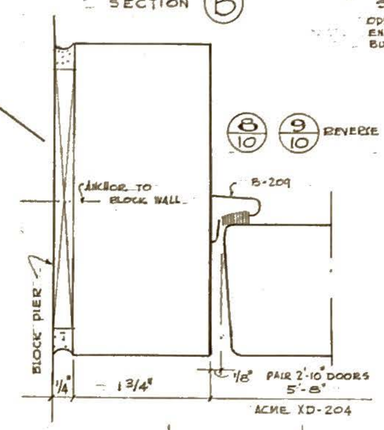












LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

ENTRANCE DETAILS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

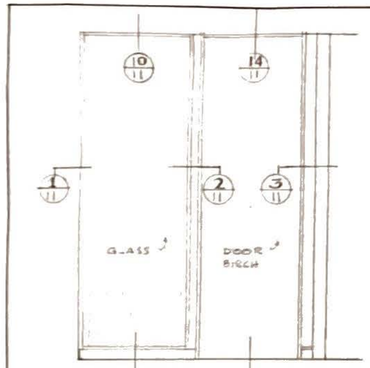
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

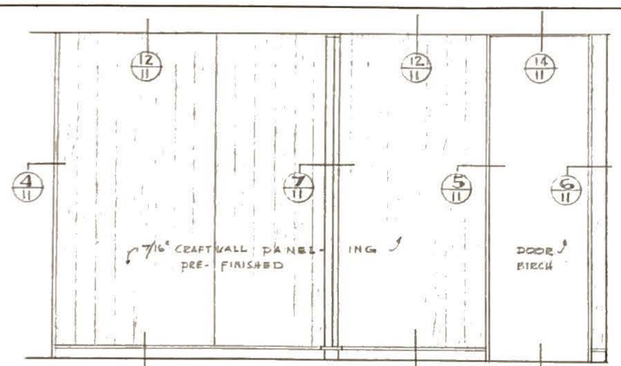
DATE 2-2-61
JOB NO. 505

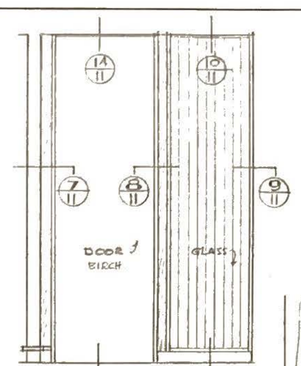
10

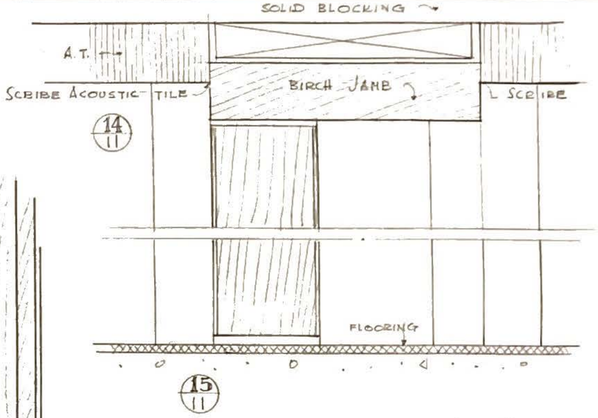
000013 554 A 1

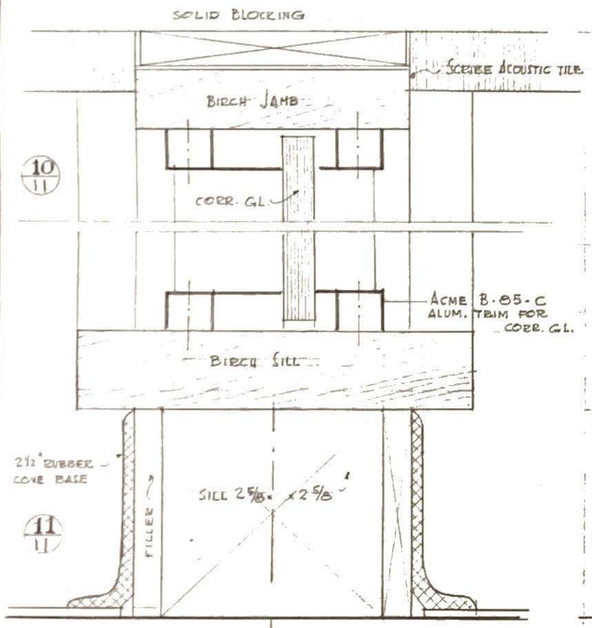
554 A 1

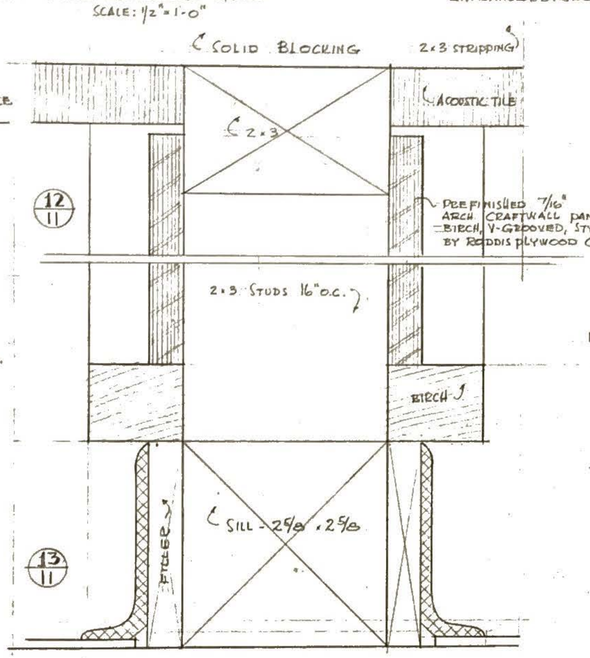


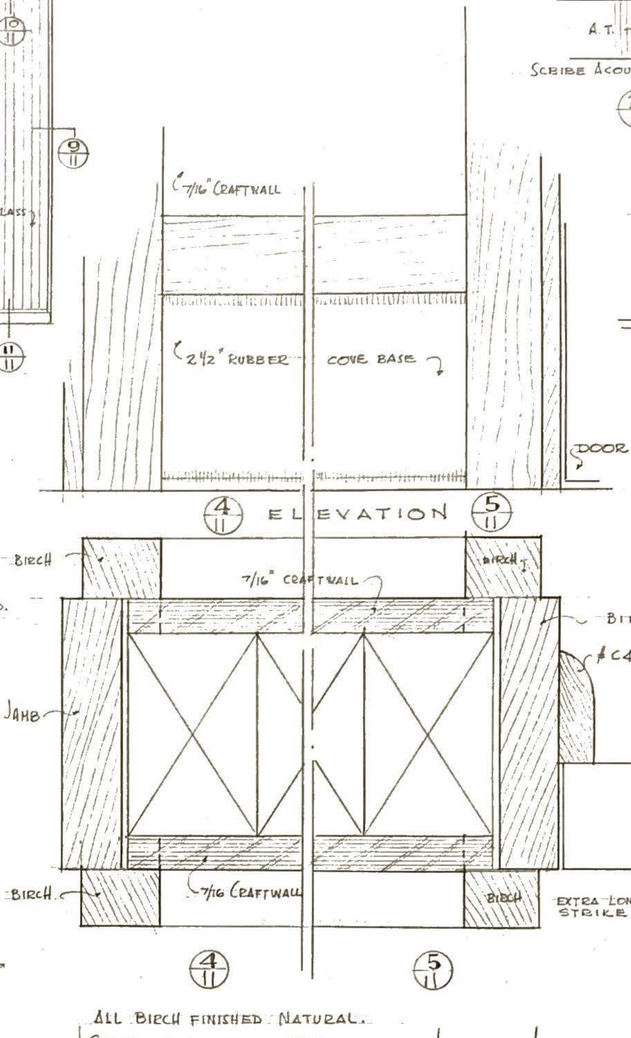


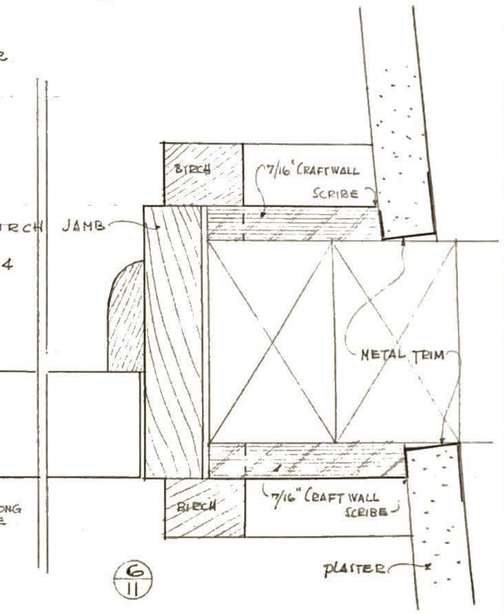


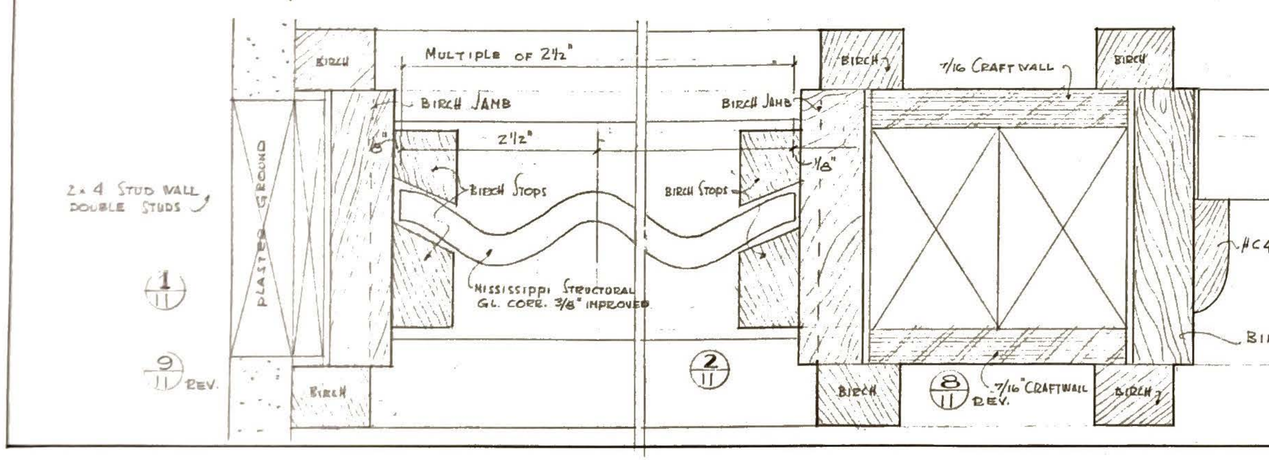




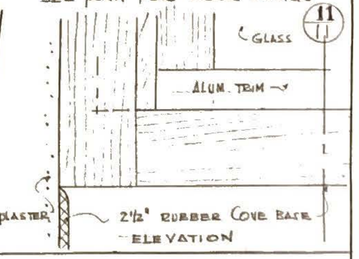








ALL BIRCH FINISHED NATURAL.
SCALE OF DETAILS: F.S.



LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

DIRECTOR & COUNSEL OFFICE DET'S

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

DATE: 2-7-61
JOB NO. 605

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

11

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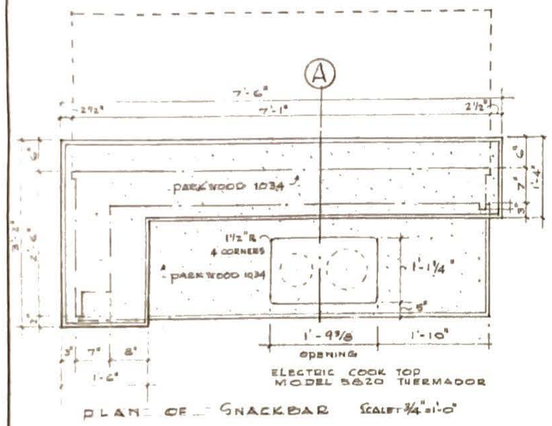
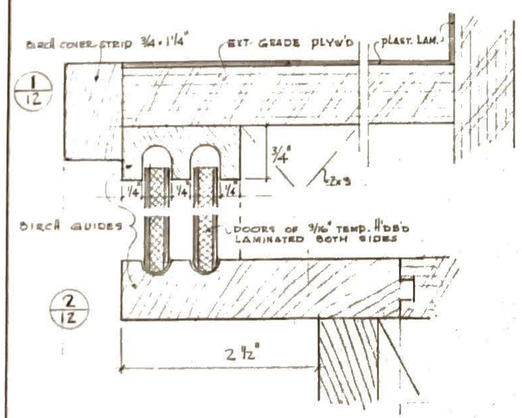
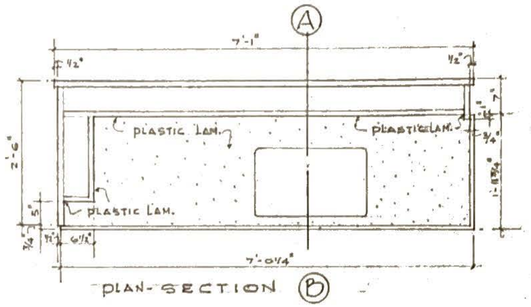


PLAN OF SNACKBAR SCALE: ¾"=1'-0"





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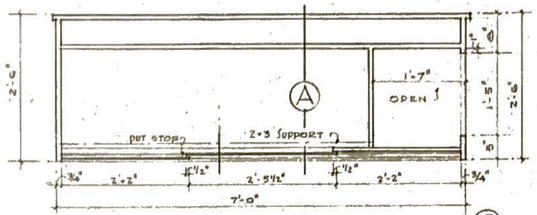

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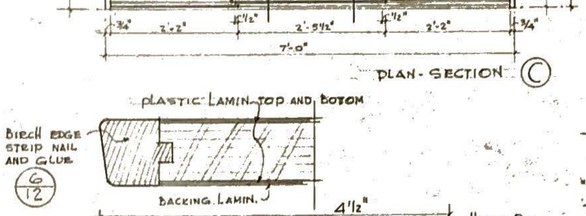
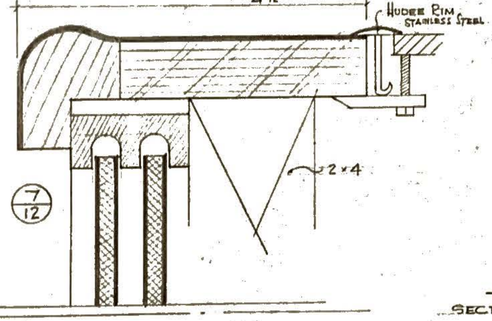
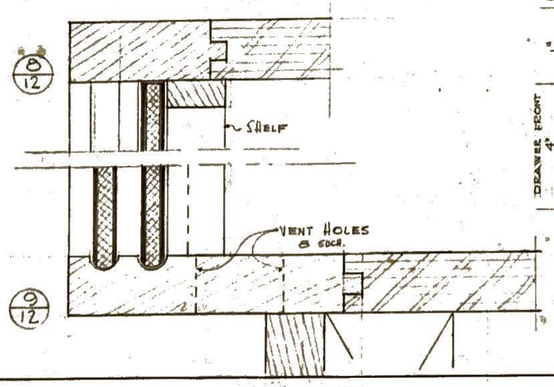
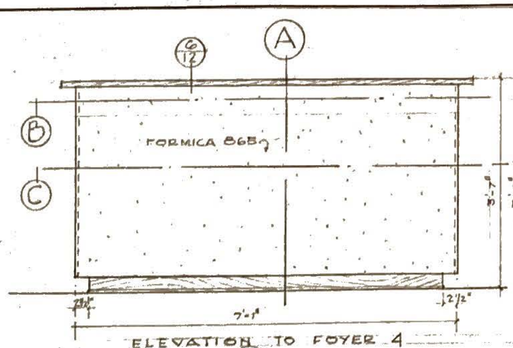
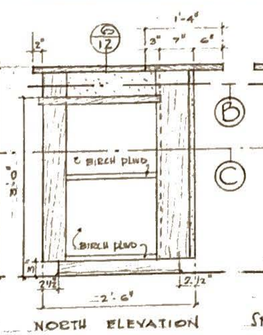




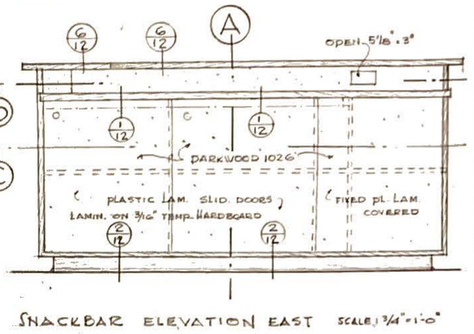




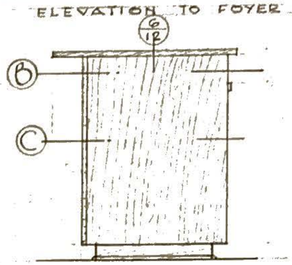
ELEVATION TO FOYER 4



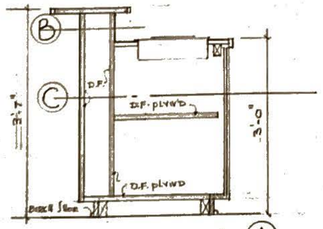
NORTH ELEVATION



SNACKBAR ELEVATION EAST SCALE: ¾"=1'-0"

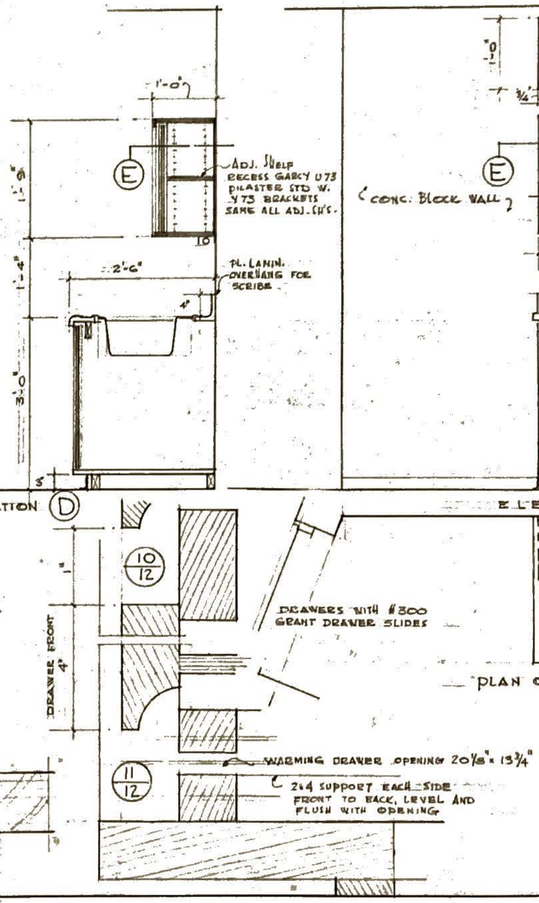


SOUTH ELEVATION

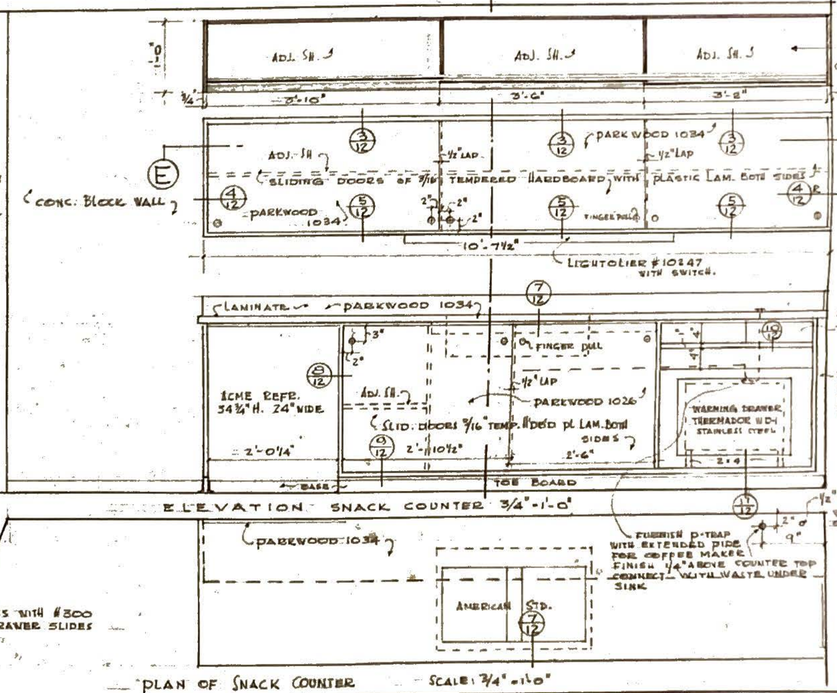


SECTION (A)

SNACKBAR AND SNACK COUNTER OF BIRCH WITH NATURAL FINISH. ALL EXPOSED PLYWOOD EDGES TO HAVE ¾" EDGE STRIPS OF BIRCH.



SECTION (D)



ELEVATION SNACK COUNTER ¾"-1'-0"

PLAN OF SNACK COUNTER SCALE: ¾"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

SNACKBAR DETAILS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

DATE 7-7-61
JOB NO. 505

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

12

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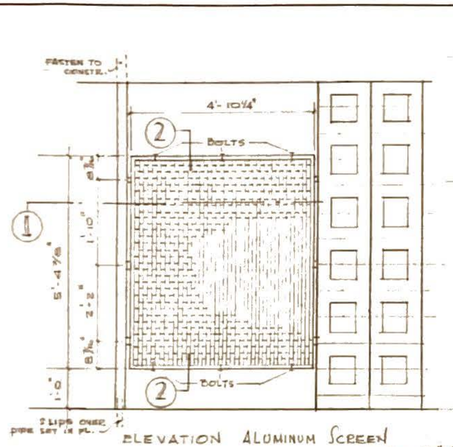
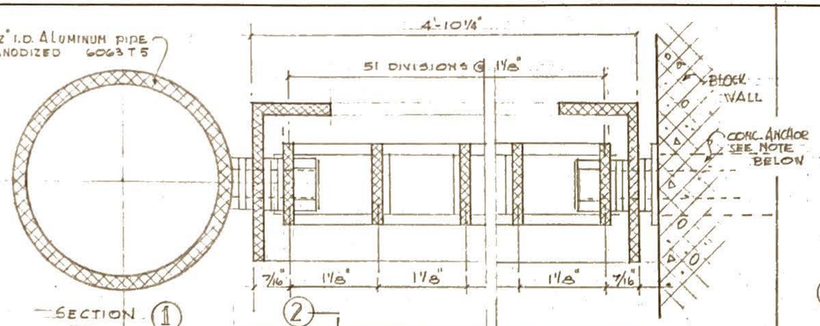
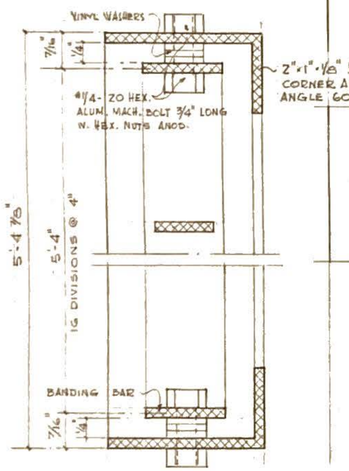


ELEVATION ALUMINUM SCREEN
SCALE: 1½"=1'-0"

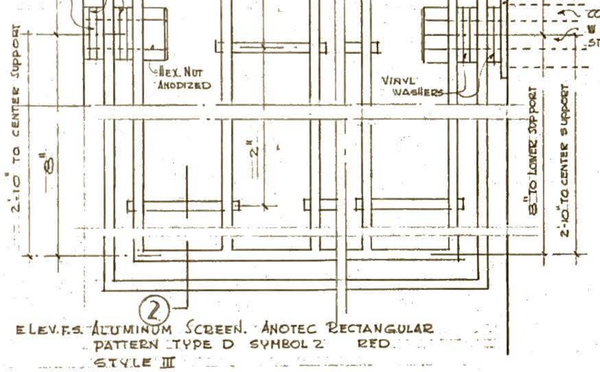


SECTION 1 F.S.

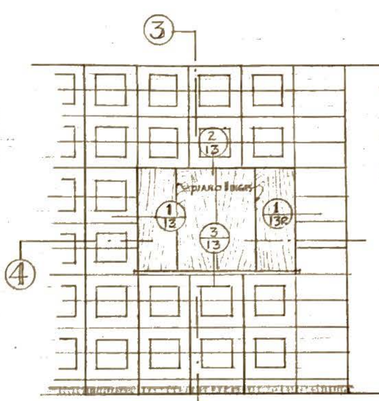


ELEVATION BOLT
PLACE BOLTS IN 4TH DIVISION FROM SIDES & IN CENTER DIV.

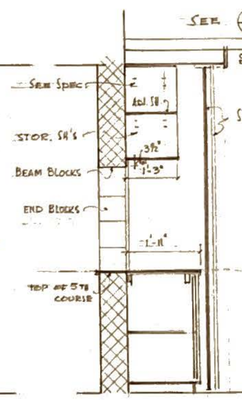
SECTION 2 F.S.
A/13



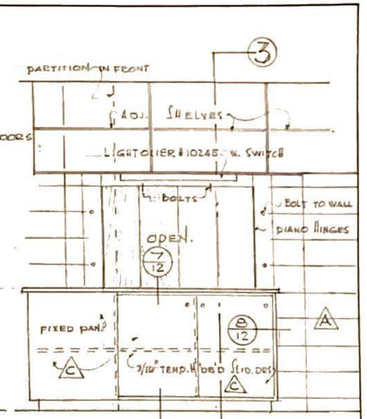
ELEV. F.S. ALUMINUM SCREEN. ANOTEC RECTANGULAR PATTERN TYPE D SYMBOL 2 RED. STYLE III



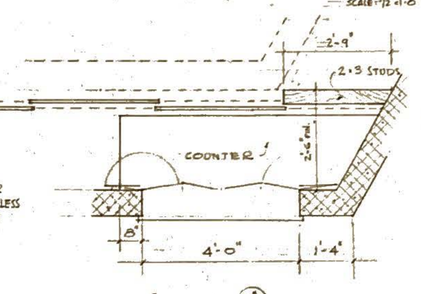
ELEVATION OF PASS-THRU SNACK-BAR SIDE
SCALE: ½"=1'-0"



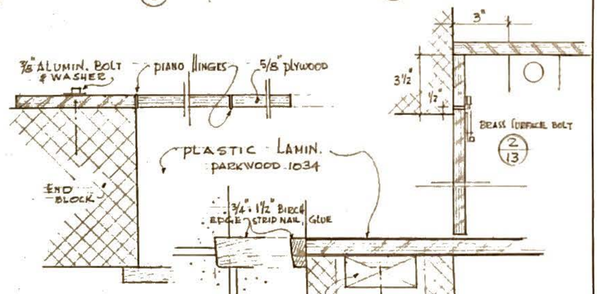
SECTION 3



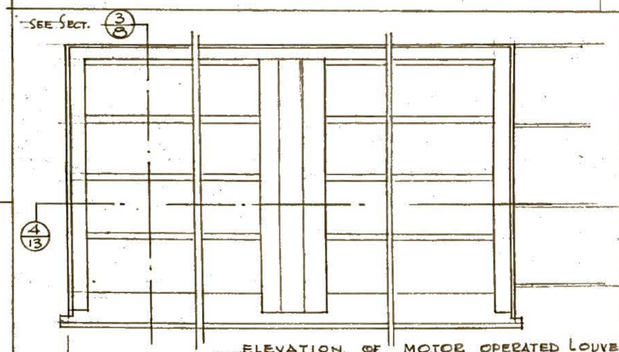
ELEV OF PASS-THRU COMMUN. ROOM SIDE
9/12



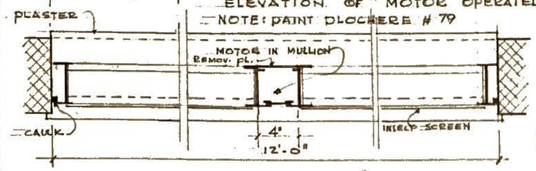
PLAN - SECTION 4
SCALE: ½"=1'-0"
B/13



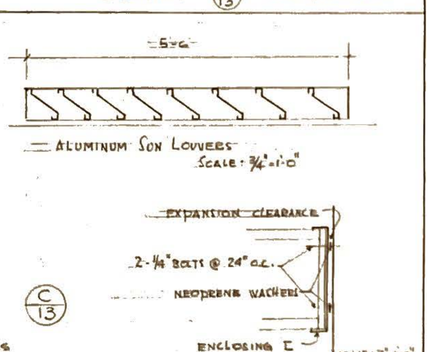
PLAN 1/13
ELEV.
SECTION 3/13
SCALE OF DET: 3"=1'-0"

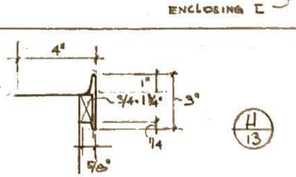


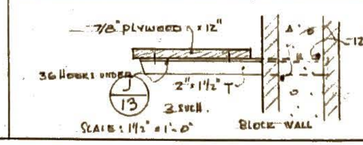
ELEVATION OF MOTOR OPERATED LOUVERS
NOTE: PAINT DLOCKERE # 79

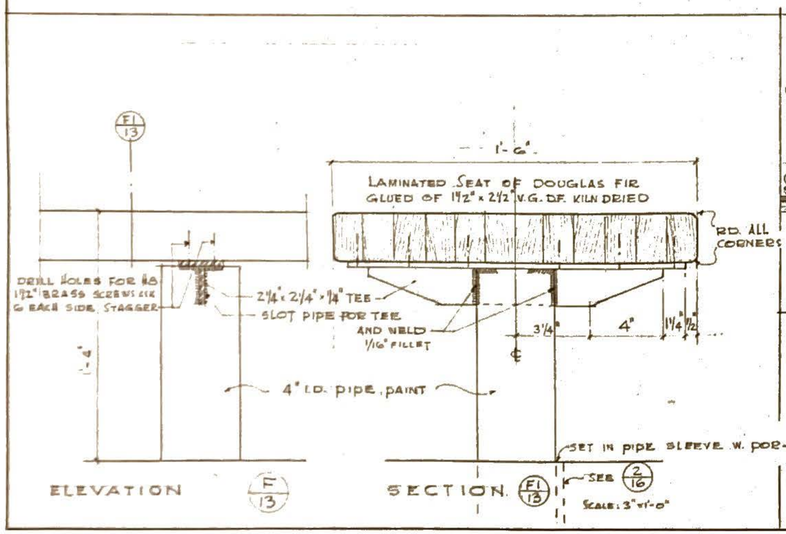


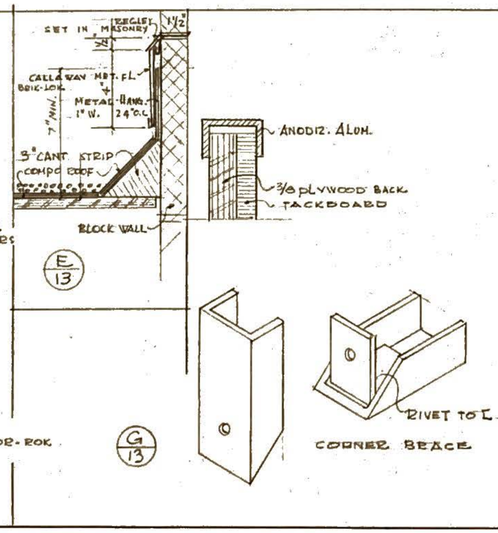
PLAN OF MOTOR OPERATED LOUVERS
SCALE: 1½"=1'-0"
4/13











LAS PALMAS SENIOR CITIZENS CENTER

Board Approval Stamp
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

DETAILS

CARL B. TROEDSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

DATE 7-7-61
JOB NO. 505

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

13

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PLATE
PLASTER OR ACOUST TILE
1/14
2/14
WHERE FIXED GL.
24/14 SLID. DAN. HERB OMIT L
WINDOW HEIGHT DIMENSION
3/14
4/14
CAULK
GROUT
CONC. BLOCK
5/14 CAULK WITH THIOKOL
9/14
CONC. BLOCK
JOINT
CAULK
CONC. BLOCK
CAULK WITH THIOKOL
2"x1"x1/8" ALUMINUM ∠ SHARP CORNERS: CUT TO SHAPE
MITER CORNERS
GROUT
FASTEN W. ALUMIN. SCREWS, 24" o.c. CSK
CONC. BLOCK
CAULK W. THIOKOL
6/14
CAULK W. THIOKOL
10/14
20/14 CORNER WINDOW W-10
CAULK
JOINT
2" TUBE
1/8"
WINDOW WIDTH DIMENSION
ROUGH OPENING 1/4" WIDER
1/8"
STUD
INT. PLASTER
BLDG. PAPER
EXT. PLASTER
12A/14
12/14
16A/14
BLDG. PAPER
FILLER PL.
17/14
WINDOW WIDTH
ROUGH OPENING 1 1/2" WIDER
16/14
LINE OF RAFTER
SIDING
FLASH 6" HIGH
APPR. EXT. CORNER METAL BEAD AT ALL EXT. PL. CORNERS
3/4x1 3/4
TOP PL.
18/14
BEAM
GALV. FLASHING
PAINT
WRAP BEAM WITH METAL LATH
PLASTER
13A/14
13/14
19/14
EXT. PLASTER
INT. PLASTER
SILL
BUILD PAPER
14A/14
EXPANSION MULLION TO EXTEND
THIOKOL
BLACK, SMOOTH SLATE 16" OR LONGER PIECES
3/4"
TROWEL SMOOTH
GROUT
1/2"
REINFORCED CONCRETE SILL
2 1/2"
3 1/4"
5 1/2"
1'-5"
8" BLOCK WALL
3 COURSES HIGH
3 1/2"
SECTION A/14 F.S. 14/14
7/14
WINDOW DIM. 1/8" WINDOW DIM.
VERTICAL BAR MULLION
WINDOW DIM. 1 1/4" WINDOW DIM.
EXPANSION MULLION
11/14
FIN. FL.
FILLER PL.
5 5/8" - 2 1/4" - 15/8 CAP
3/8" JOINT
8/14
BLOCK WALL
15/14

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

WINDOW DETAILS

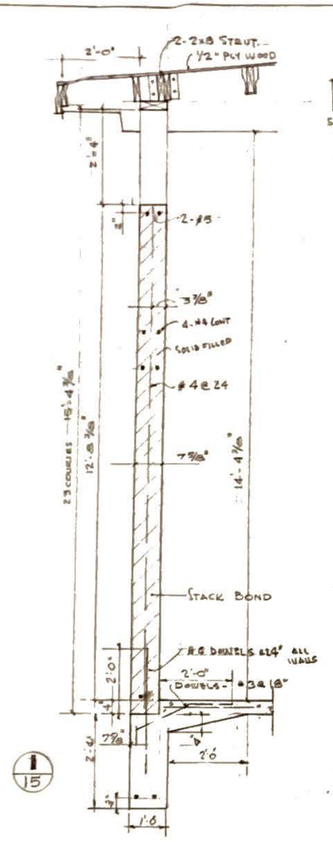
CARL B TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

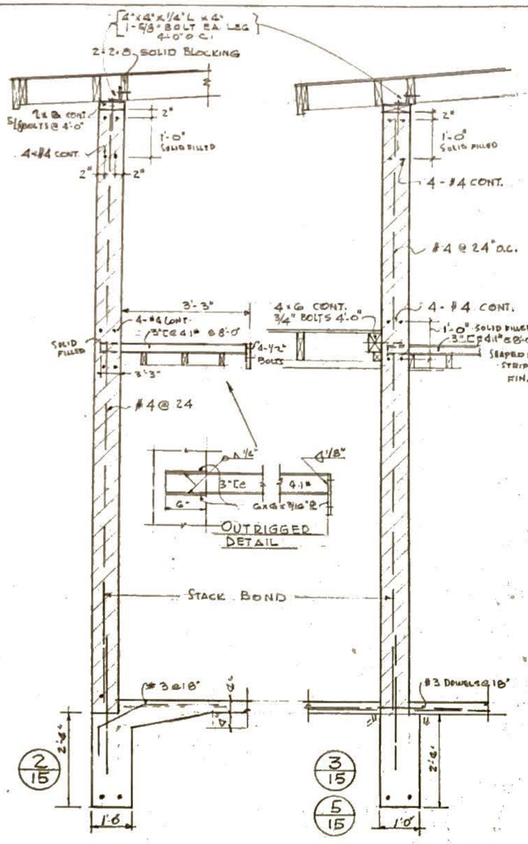
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

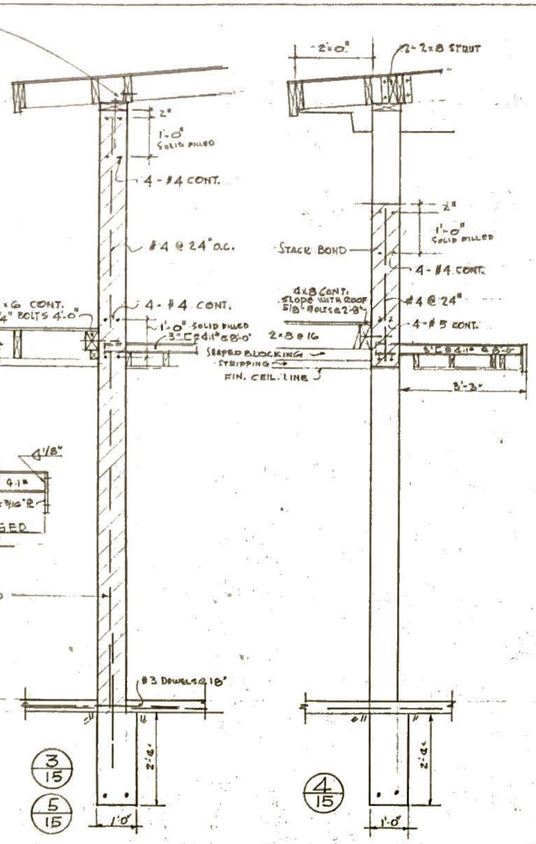
DATE 2-2-61
JOB NO. 6005
14

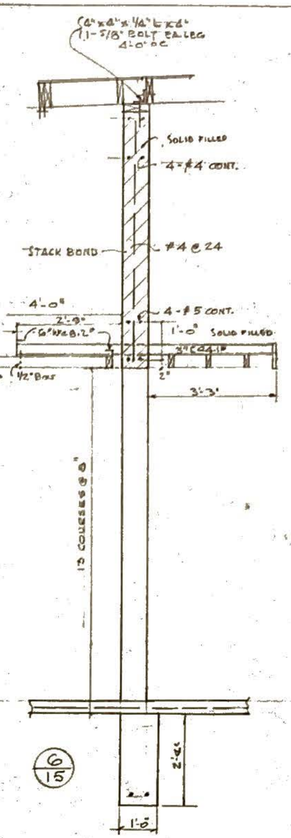
000009 554 A 1

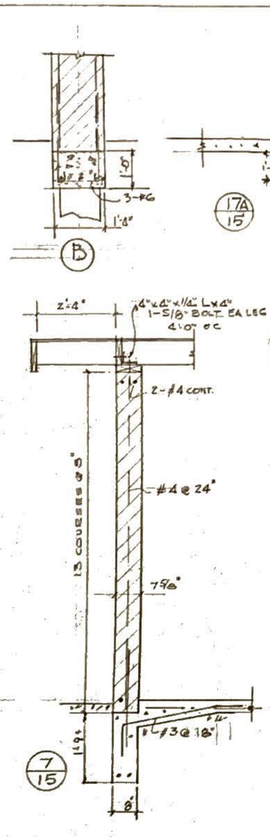
554 A 1

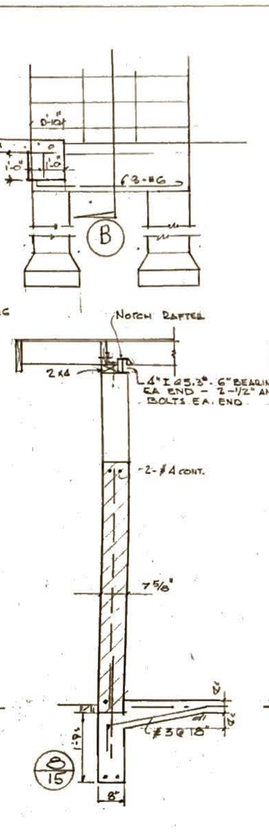


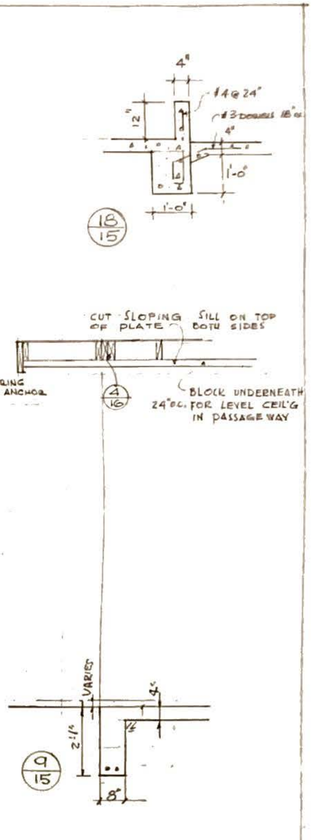




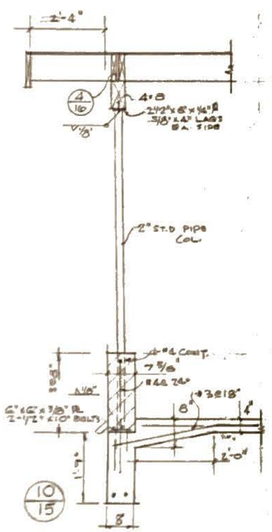


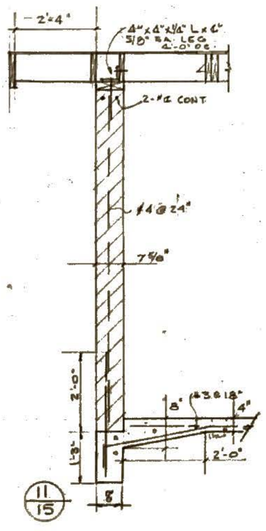


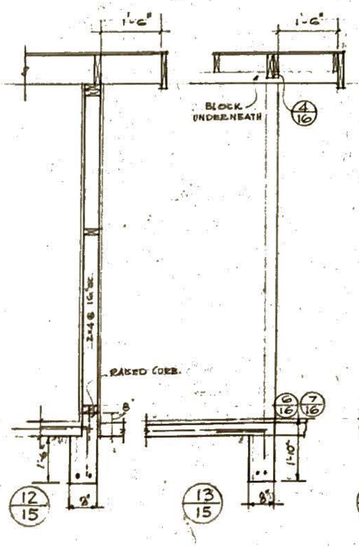


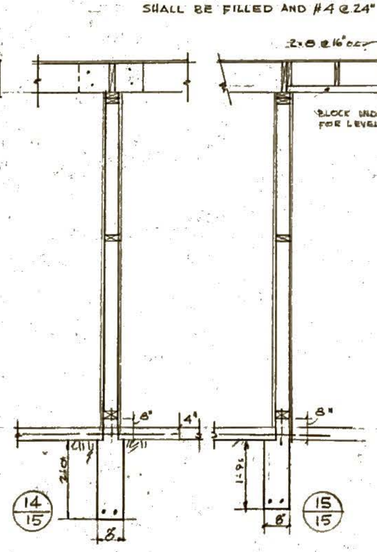


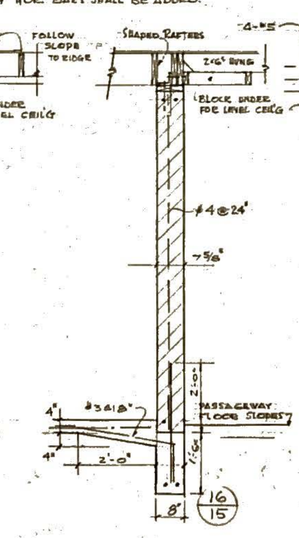
NOTE FOR STACKED BLOCKS:
ALL CELLS IN STACKED BLOCK WALLS
SHALL BE FILLED AND #4@24" HOR. BARS SHALL BE ADDED.

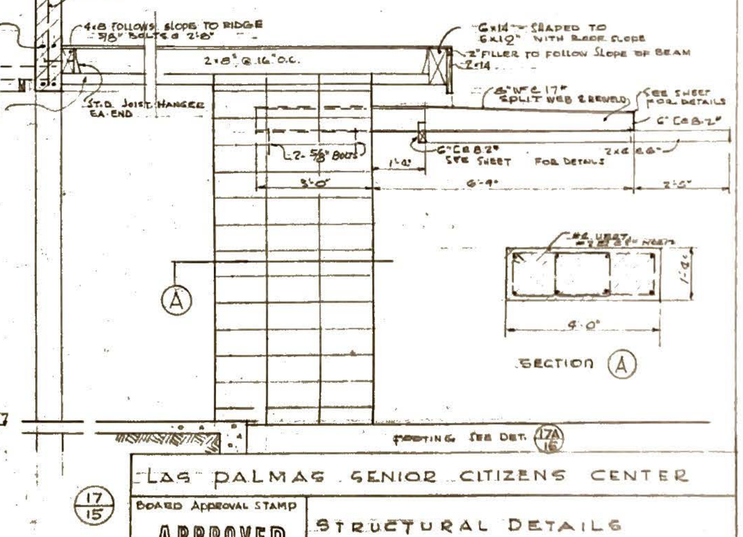












SCALE: 1/2"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

STRUCTURAL DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES. 17

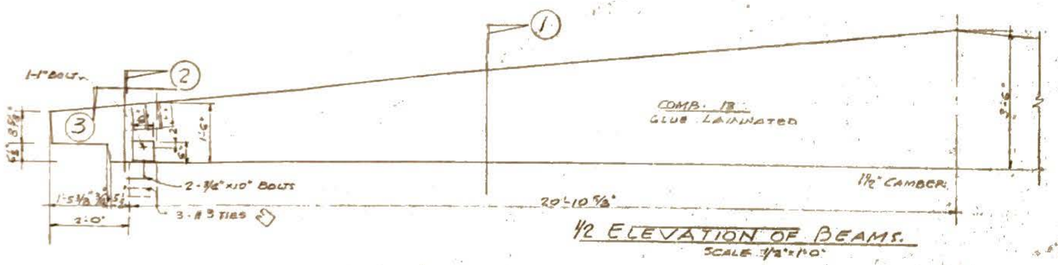
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

DATE 12-2-61
Job No. 505

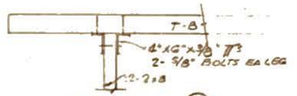
15

000008 554 A 1

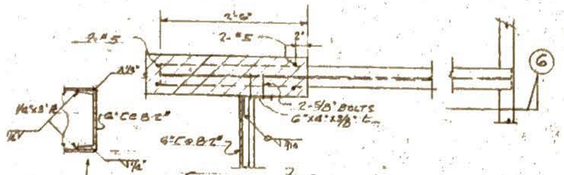
554 A 1

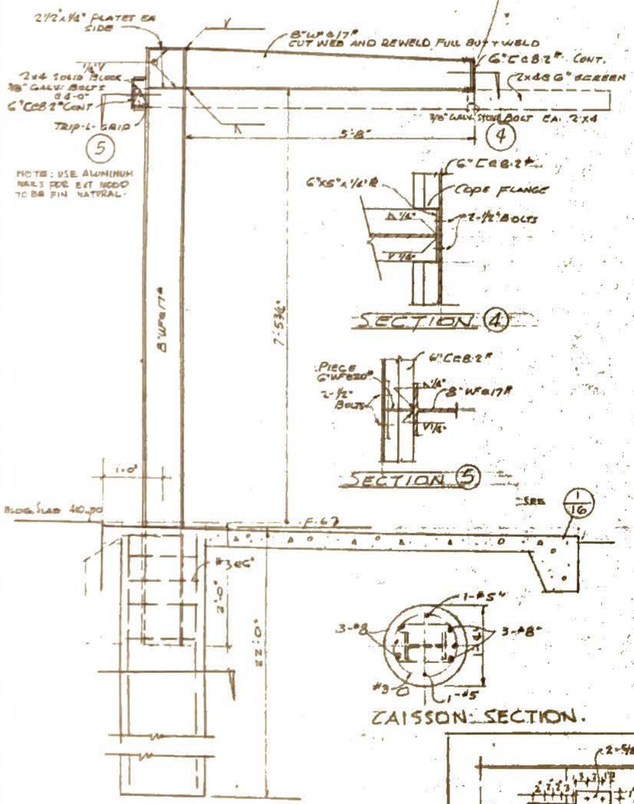


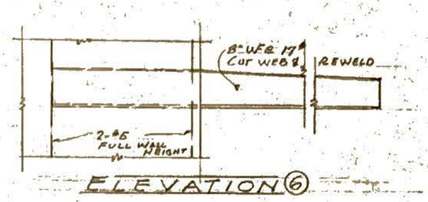
½ ELEVATION OF BEAMS.
SCALE: 1/2"=1'0"



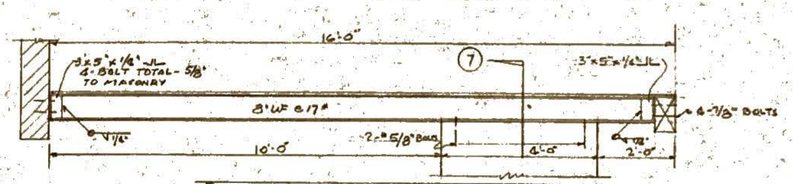
SECTION ③







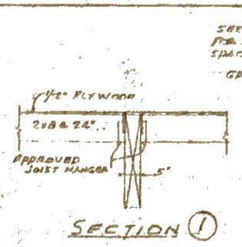
ELEVATION ⑥



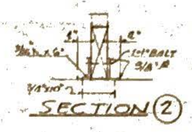
BEAMS AT SOUTH ENTRANCE



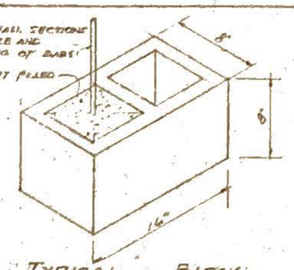
SECTION ⑦



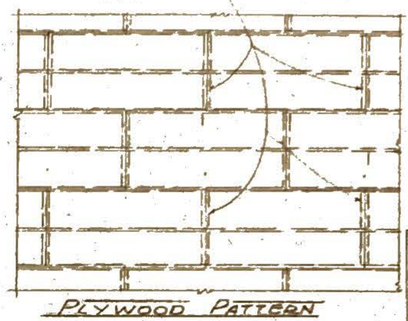
SECTION ①



SECTION ②



TYPICAL CONCRETE BLOCK.
(NOMINAL DIMENSIONS)



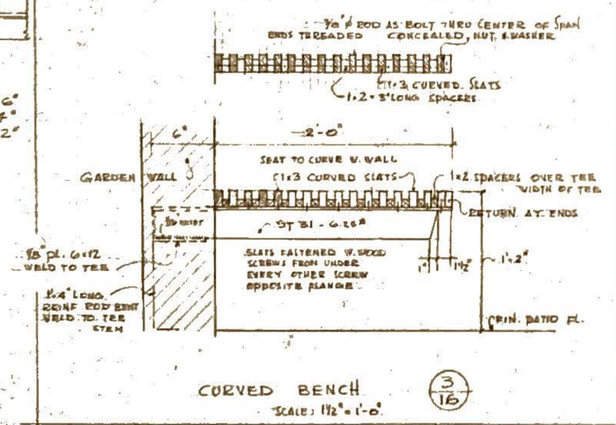
PLYWOOD PATTERN

	NAILING
PERIMETER	10d @ 16"
BOUNDARY	10 @ 4"
INTERMEDIATE	10 @ 12"

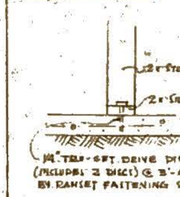
GENERAL NOTES.

1. SOIL IS OF TYPE SILTY SAND-3,000#/D - SEE SOIL REPORT.
2. ALL FOOTING SHALL BEAR ON FIRM UNDISTURBED SOIL.
3. CONCRETE ~~SEE BELOW~~ -16- ~~f'c 1½ having a minimum crushing strength of 2000 #/s² at the age of 28 days. Maximum water per sack of cement = 7½ gallons.~~
4. CEMENT IS TESTED CEMENT.
5. CONCRETE BLOCKS SHALL COMPLY WITH THE REQUIREMENTS OF THE A.S.T.M. SPECIFICATIONS C 90-52. CONT. INSPECTION REQUIRED.
6. MORTAR SHALL BE TYPE A MIX 1:3 WITH NOT MORE THAN ½ PART LIME PUTTY ADDED-MEET L.A. BUILDING CODE ON MORTAR.
7. GROUT SHALL BE OF 1:3 MIX WITH NOT MORE THAN 1/10 LIME ADDED.
8. PEA GRAVEL CONCRETE SHALL BE MIX 1:2:3 MIX.
9. REINFORCING STEEL SHALL BE DEFORMED BARS OF STRUCTURAL GRADE COMPLYING WITH A.S.T.M. SPECIFICATIONS A15-55-T A 305-55
10. ALL SPLICES SHALL BE 40 BAR DIAMETER.
11. STRUCTURAL STEEL SHALL COMPLY WITH A.S.T.M. SPECIFICATIONS A7-58.
12. ALL EXPOSED STAUCTURAL STEEL SHALL RECEIVE ONE SHOP COAT AND TWO FIELD COATS.
13. ALL HORIZONTAL LUMBER SHALL BE CONSTRUCTION GRADE 1350f GRADE MARKED
    ALL VERTICAL LUMBER SHALL BE STANDARD GRADE.
14. PLYWOOD SHALL BE "PLYSCORE" GRADEMARKED, EXTERIOR GRAIN FACES AT RT LS TO SUPPORT.
    PLYWOOD SHALL NOT BE COVERED UNTIL NAILING HAS BEEN INSPECTED.
15. WELDING SHALL BE DONE BY QUALIFIED WELDERS USING THE ELECTRIC ARC PROCESS, USING APPROVED ELECTRODES WELDING FULL STRESS - CONTINUOUS INSPECTION REQUIRED.

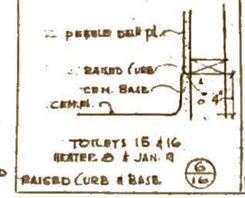
16. CONCRETE FOR BEAMS SHALL BE GRADE "B" 3,000# CONT INSPECTION REQ.
    " " SLABS ON EARTH " "C" 2,000#
    " " CAISSONS " "C" 2,000#

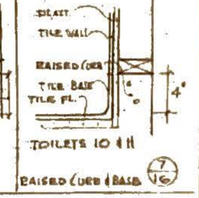


CURVED BENCH (3/16)
SCALE: 1½"=1'-0"

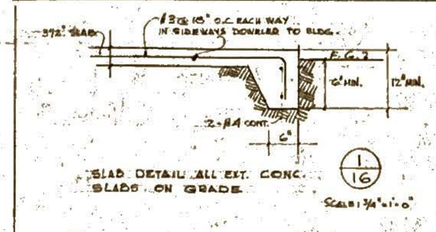


INTERIOR NON-BEARING FTG.

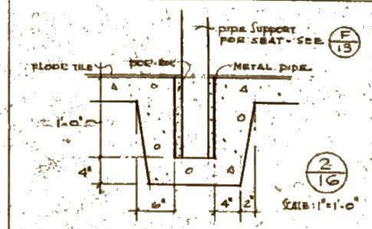




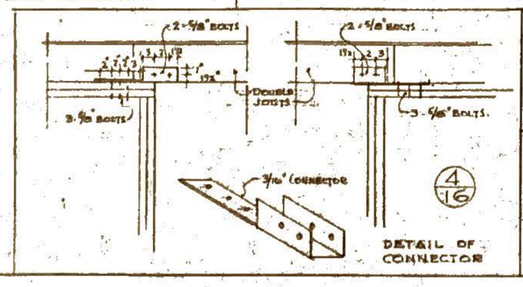
NOTE: RAISED CURBS AT STUD WALLS AND PARTITIONS UNLESS OTHERWISE NOTED.



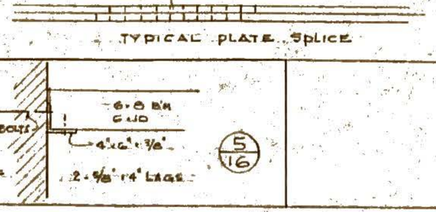
SLAB DETAIL ALL EXT. CONC. SLABS ON GRADE (1/16)
SCALE: ¾"=1'-0"



(2/16)
SCALE: 1"=1'-0"



DETAIL OF CONNECTOR (4/16)



(5/16)

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

STRUCTURAL DETAILS

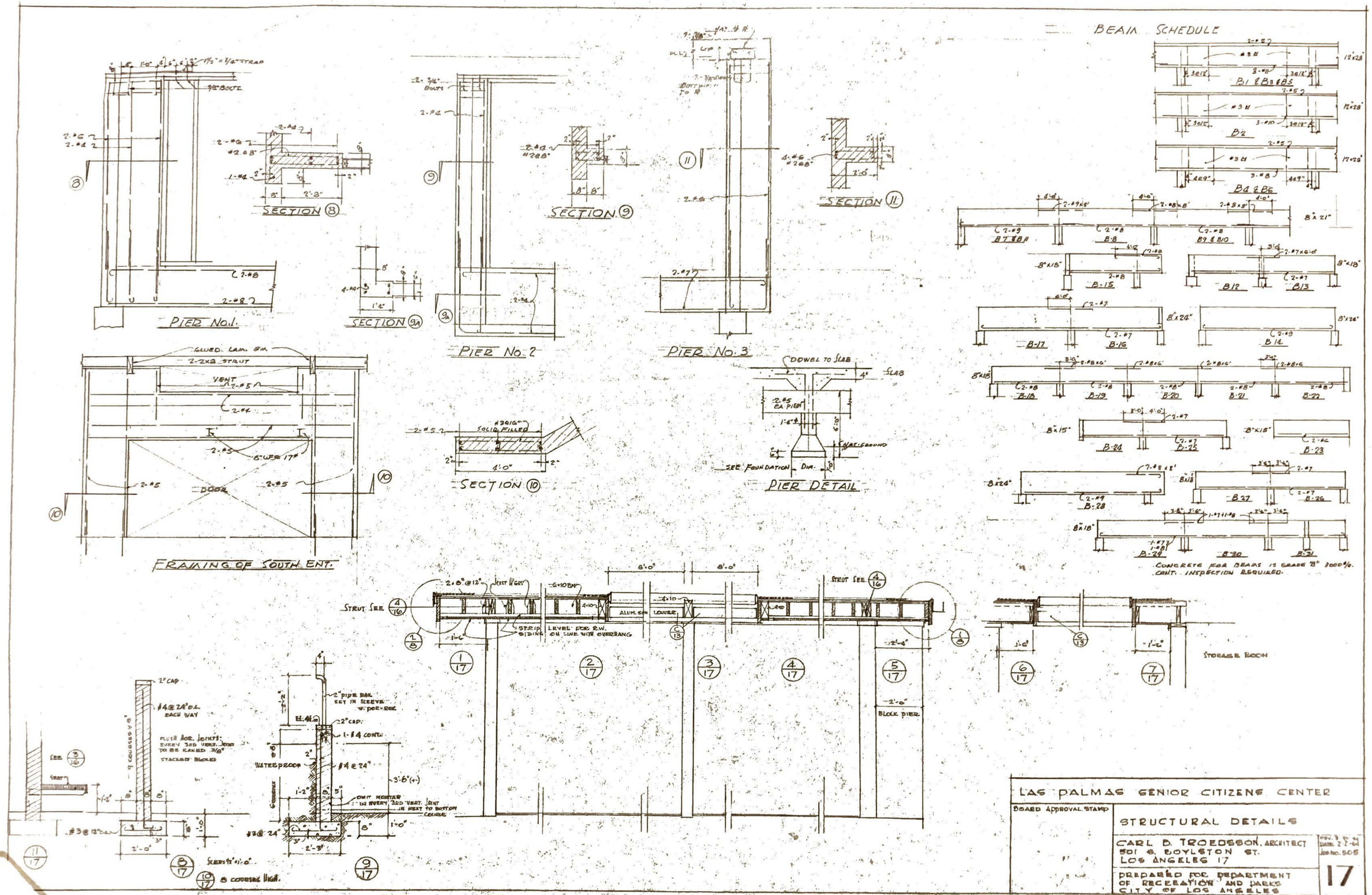
CARL B. TROEDSSON, ARCHITECT
901 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

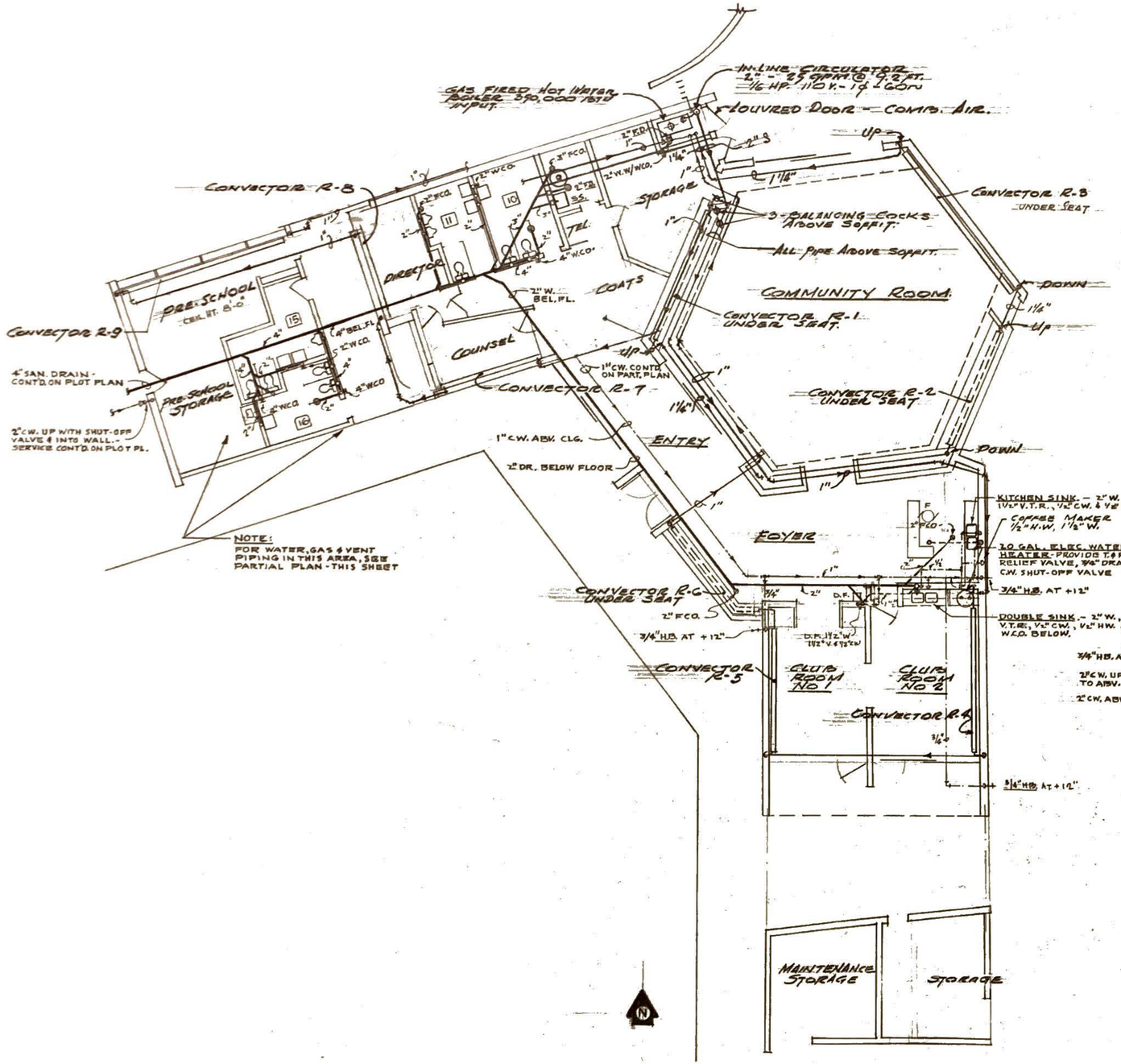
DATE 1-15-61
DATE 12-7-60
JOB NO. 5007

16

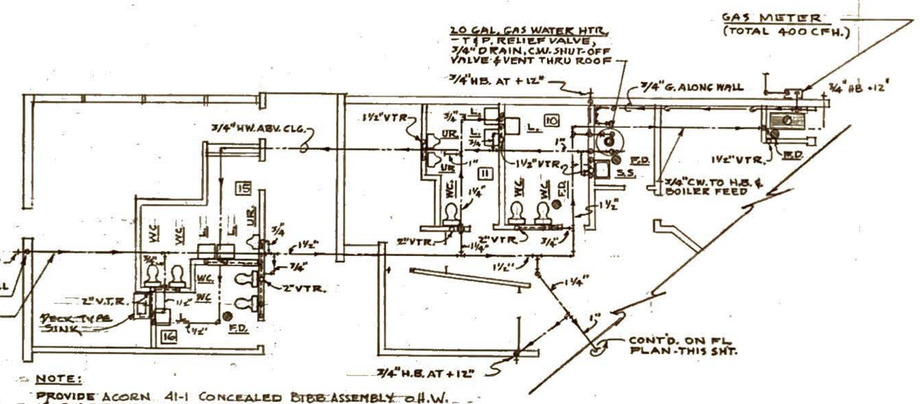
0100007 554 A 1


BEAM SCHEDULE
PIER No. 1
SECTION 8
SECTION 9A
PIER No. 2
SECTION 9
PIER No. 3
SECTION 11
FRAMING OF SOUTH ENT.
SECTION 10
PIER DETAIL
DOWEL TO SLAB
SLAB
SEE FOUNDATION DIM.
CONCRETE FOR BEAMS IS GRADE "B" 3000#/□" CONT. INSPECTION REQUIRED.
STRUT SEE
STRIP LEVEL FOR R.W. SIDING ON LINE WITH OVERHANG
ALUM. SUN LOUVER
BLOCK PIER
STORAGE ROOM
WATERPROOF
8 COURSES HIGH.
LAS PALMAS SENIOR CITIZENS CENTER
BOARD APPROVAL STAMP
STRUCTURAL DETAILS
CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES
17

554 A 1



CONVECTOR	BTU/LIN. FT.	LIN. FT.	BTU/HR.	CIRCUIT	TYPE
R-1	1890	18	34,020	A	
R-2	1890	16	30,240	A	
R-3	1890	23	43,470	A	
R-4	1260	18	22,600	B	
R-5	1260	17	21,340	B	
R-6	1890	16	30,240	B	
R-7	1260	10	12,600	C	
R-8	1260	10	12,600	C	
R-9	1260	20	25200	C	



NOTE:
PROVIDE ACORN 41-1 CONCEALED BIBB ASSEMBLY o/H.W. & C.W. BELOW ONE LAVATORY IN EACH TOILET RM. (4 TOIL. ROOMS)
NOTE: NO H.W. IN LAV'S OF TOIL. ROOMS 15 & 16

WATER, GAS & VENT PIPING ONLY

PARTIAL FLOOR PLAN

SCALE: 1/8" = 1'-0"

HEATING, VENTILATION, AND PLUMBING BUILDING FLOOR PLAN.

SCALE: 1/8" = 1'-0"

SYMBOLS		
ABB.	SYMBOL	DESCRIPTION
D or W	———	DRAIN OR WASTE
V	- - - - -	VENT
C.W.	—·—·—	COLD WATER
H.W.	—·—·—	HOT WATER
G.	—G—	GAS
F.C.O.	⊘	FLOOR CLEAN-OUT
W.C.O.	—‖—	WALL CLEAN-OUT
H.B.	+ H.B.	HOSE BIBB
F.	⌭	FAN, 150 CFM AT 1/4" STATIC PRESS.

PLUMBING FIXTURE & EQUIPT. SCHEDULE						
ABB.	FIXTURE	WASTE	VENT	C.W.	H.W.	DESCRIPTION
W.C.	WATER CLOS.	4"	2"	1/2"	—	
L.	LAVATORY	1 1/2"	1 1/2"	1/2"	1/2"	
U.R.	URINAL	2"	1 1/2"	3/4"	—	STALL FL. MTD.
S.S.	SERVICE SINK	3"	1 1/2"	1/2"	1/2"	
K.S.	KITCHEN SINK	2"	1 1/2"	1/2"	1/2"	
D.F.	DRINKING FOUNT.	1 1/2"	1 1/2"	1/2"	—	
F.D.	FLOOR DRAIN	2"	11 1/2"	—	—	
G.W.H.	GAS WATER HTR.	—	3"	1"	1"	28 CFH.
E.W.H.	ELEC. " "	—	—	3/4"	3/4"	5 KW

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

LAS PALMAS SENIOR CITIZENS CENTER
PLUMBING AND HEATING
CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS

REV. 8-20-61
DATE 2-24-61
JOB NO. 505

18

554 A 1

ELECTRICAL FLOOR PLAN

1/8" = 1'-0"

"A"

		ΦA	ΦB	
4	COMMUNITY RM.	800		1-20
10		1100		
7			1240	
9			980	
27	COVE LTG.	1300		
5	RECEPTACLES & TOILETS	1000		
5	TOIL. COAT RMS.	1000		
7	SPARE	500		
4	PATIO FLOODS	850		2-20
7	OUTSIDE LTG.	1320		1-20
4	PATIO LTS.	780		
7	OUTSIDE LTG.	1320		
1	TIME CLOCK	500		
6	RECEPTS.	720		
7	DIR. COUNCIL, JAN.	500		
5	RECEPTS.	900		
	WINDOW MOTOR	500		2-20
	HAND DRYER	1440		1-20
	SPARE	500		
	SER. CKT #18	1440		2-20
	HAND DRYER	1440		1-20
	SPARE	500		
	SER. CKT #21	1440		
	SPARE	500		1-20
	23,900W.	11,870	11,700	

SPLIT BUS ON CONTACTOR 60A, 2P, ASCO BUL 920 MT. ON WALL NR. PANEL. PUSH BUTTON IN DIR. OFF.

CIRCUITS #10, 11, 12 SHALL BE TIME CLOCK CONTROLLED

"B"

		ΦA	ΦB	
3	FOYER	700		1-20
4	CLUB RM #2	1160		
7	FOYER		1380	
5	CLUB RM #1		900	
5	FOYER	900		
	SPARE	500		
4	STO. RMS.		800	
7	RECEPTS.		1200	
	RANGE EXH.	600		1-20
	RANGE	1075		2-20
	SERVER, WARMER	700		1-20
	SEE CKT #10	1075		—
	WATER HTR	1400		2-20
	SPACE	—		—
	SEE CKT #19		1400	—
	SPACE	—		—
		—	—	—
		—	—	—
		15,850	8510	7340

SPLIT BUS ON CONTACTOR 30A-2P ASCO BUL 8922. MT. CONTACTOR IN PANEL (BEHIND DOOR).

FLOOR STANDING COMB. SERVICE & DISTRIBUTION SWITCHBOARD

120/240V. SERVICE 4 WIRE

STUB

PULL SECTION

400A. FRAME 200A. FUSE

400A. BUS

225 AF 125AT | 100AF 90AT | 100A. SPACE

2"C-3#1/0

1½"C-3#2

TIME CLOCK 2P-SINGLE THROW

A-18,20

CONTACTOR IN PANEL

PANEL "A"

PANEL "B"

SINGLE LINE DIAGRAM

SYMBOL LIST

- INDICATES FIXTURE TYPE, SEE FIXTURE SCHEDULE IN SPEC'S
- INCANDESCENT LIGHTING OUTLET & FIXTURE, CEILING MOUNTED
- RECESSED INCANDESCENT LIGHTING FIXTURE
- INCANDESCENT LIGHTING FIXTURE WALL MOUNTED
- FLUORESCENT LIGHTING FIXTURE PENDANT MOUNTED, SEE ARCH. PLANS FOR MOUNTING HEIGHTS
- FLUORESCENT STRIP LIGHTING FIXTURE
- RECESSED FLUORESCENT LIGHTING FIXTURE
- RECESSED INCANDESCENT LIGHTING FIXTURE
- FLOODLIGHT, WALL MOUNTED
- TELEPHONE OUTLET
- PUBLIC ADDRESS SPEAKER OUTLET
- MICROPHONE OUTLET
- MOTOR OUTLET
- DUPLEX RECEPTACLE, MOUNTED FLUSH IN WALL AT +1'3", GROUNDING TYPE; HUBBELL #5262-I, EQUAL BY ARROW-HART, BRYANT, SIERRA, CH.B.
- JUNCTION BOX, CEILING MOUNTED
- JUNCTION BOX, WALL MOUNTED
- TOGGLE SWITCH, QUIETTE TYPE; ARROW-HART # 1891-I, EQUAL BY BRYANT, CH.B., HUBBELL, SIERRA
- CLOCK, CROWN #C-325, 15" SATIN BRASS FRONT, RECESS. BOX
- MANUAL MOTOR STARTING SWITCH WITH THERMAL OVERLOAD, W.P. AT MOTOR.
- 1/2"C-2#12 IN CEILING OR WALL
- 1/2"C-3#12
- 3/4"C-4#12
- 3/4"C-5#12
- CONDUIT RUN TO PANEL
- CONDUIT RUN IN OR UNDER FLOOR OR BELOW GRADE
- CONDUIT RUN EXPOSED
- WALL MOUNTED EXIT LIGHTING FIXTURE
- MOMENTARY "ON" "OFF" PUSH BUTTON FOR CONTACTOR OPERATION, FLUSH MOUNTED.

GENERAL NOTES

1. ALL FLUORESCENT FIXTURES SHALL HAVE H.P.F. RAPID START BALLASTS.
2. ALL RECESSED FIXTURES SHALL BE COMPLETE WITH ATTACHED PULL BOXES & PLASTER RINGS WHERE REQUIRED.
3. FLUORESCENT LAMPS SHALL BE WARM WHITE.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD Approval STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

ELECTRICAL

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

REV. 8-28-61
DATE 2-7-61
JOB NO. 5505

19

000004 554 A 1

554 A 1

L.A. WATER D. - 12" - 22'S.N.

M.H.

8" SEWER

M.H.

FRANKLIN AVENUE

6" SEWER

L.A. GAS 4" 23' N.S.

L.A.W.D. 6" 21' N.S. (ABANDONED)

UTILITY CO. POLE

USE STEEL ON POLE & TERMINATE FOR UTILITY CO. REQUIREMENTS; VERIFY EXACT LOCATION IN FIELD

2" TEARRITE OR 1½" STEEL PIT. SERVICE

4" TEARRITE ELECTRIC SERVICE

4" STEEL, STUB BEYOND BLDG. & CAP

PATIO

GAS METER (SEE ELEC. SHTS. - S.C. GAS (G))

SWITCHBOARD

ST. BACKBOARD 4'-0" x 8'-0" PLYWD.

BUILDING

L.A.G. 4" 23' N.E.

SURFACE CLEANOUT

CONNECT TO STREET SEWER

3"G.W.

12

WATER METER BOX

LIGHTING FIXTURE CONTINUED ELECT. FLOOR PLAN

PATIO

STORAGE

LAS PALMAS AVENUE

L.A.W.D. 4" 22½' E.W.

L.A.W.D. 8" 25' E.W.

8" SEWER

OUTDOOR COURTS

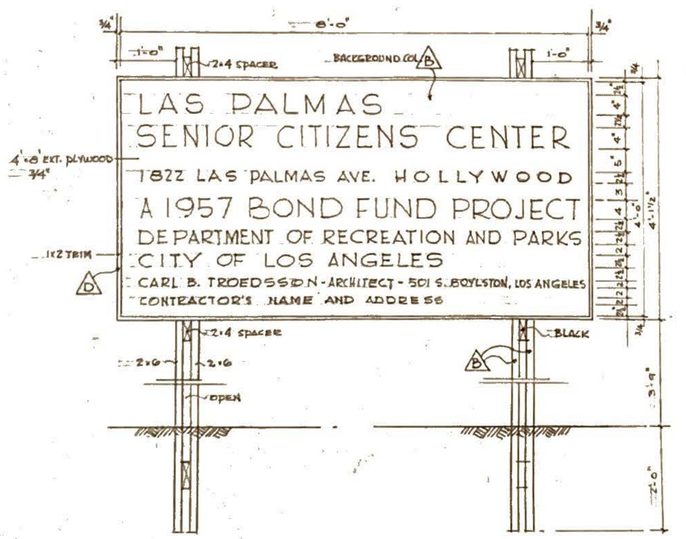
DRIVE WAY

PARKING

MH

UTILITY PLOT PLAN

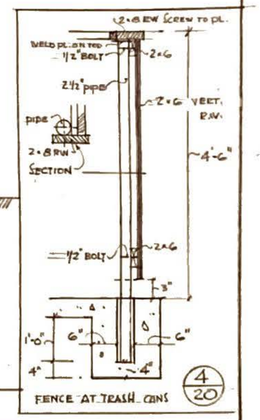
SCALE: 1" = 20'

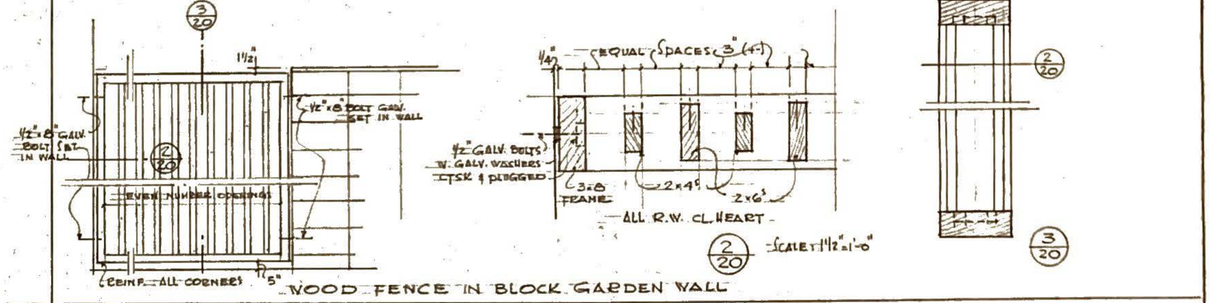


NOTE:
COLORS FOR SIGN TO BE COLOR COMBINATION USED FOR BUILDING PROJECT.

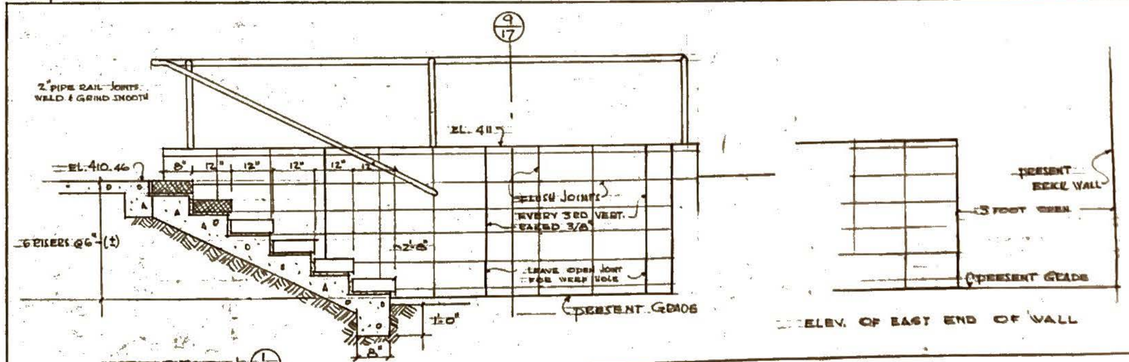
PROJECT SIGN
¾"=1'-0"

COLOR CHART: SEE D'WG 6
STYLE OF LETTERS: SAME AS CAPTION OF D'WG 1.
BLACK LETTERS

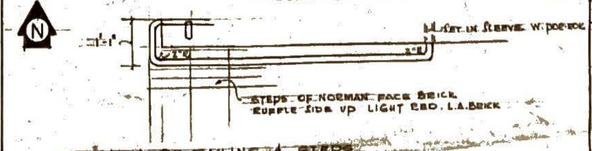




WOOD FENCE IN BLOCK GARDEN WALL



SECTION 1/20
SCALE: 1½"=1'-0"



PLAN OF RAILING & STEPS

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

UTILITY PLAN & MISCELLANEOUS DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

DRW. B. Jones
DATE 2-7-61
JOB NO. 505

20

000003 551 A 1

APPENDIX E – DPR Form Set

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6Z
Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 **of** 7 ***Resource Name or #:** (Assigned by recorder) Las Palmas Senior Citizen Center

P1. Other Identifier: _____

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**

***a. County** Los Angeles **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Hollywood **Date** 2018 **T** 1S ; **R** 14W ; Unsectioned portion of Rancho La Brea ; San Bernardino **B.M.**

c. Address 1820 N. Las Palmas Avenue City Los Angeles Zip 90028

d. UTM: (Give more than one for large and/or linear resources) Zone _____, _____ mE _____ m

e. Other Locational Data: APN 5547-003-900

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and

The Las Palmas Senior Center building is situated in the northeast corner of its parcel with a deep setback from N. Las Palmas Avenue. The topography of the Project site matches the slope of N. Las Palmas Avenue and is higher at its north end. The building is surrounded by a flat area that is graded below Franklin Avenue. This topography, along with a retaining wall, vegetation, and fencing, partially obscures the north elevation from the public right-of-way. The northwest portion of the parcel is leased to an independent childcare facility and is not a part of the Project. The property is surrounded by a metal and chain-link fence and site features include concrete walkways, patios, and a lawn with mature trees. The southern portion of the parcel is occupied by a square, multi-lane shuffleboard court and an asphalt multi-stall parking lot that are both below grade of the main building due to the topography of the site.

(See Continuation Sheet.)

***P3b. Resource Attributes:** (List attributes and codes) HP13. Community center/social hall

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects.)



***P4. Resources Present:**
☒ Building ☐ Structure ☐ Object ☐ Site

P5b. Description of Photo: (view, date, accession #) View looking NE, 05/2023

***P6. Date Constructed/Age and Source:** ☒ Historic ☐ Prehistoric ☐ Both
1961 LA County Tax Assessor

***P7. Owner and Address:**
City of Los Angeles

***P8. Recorded by:**
Amanda Duane , GPA Consulting
617 S Olive Street, Suite 910
Los Angeles, CA 90014

***P9. Date** 1/22/2024

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
GPA Consulting, *1820 N. Las Palmas Avenue, Los Angeles CA: Historical Resource Evaluation Report*, January 2024.

***Attachments:** ☐ NONE ☐ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record
☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record
☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record
☐ Oth _____

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # _____
HRI # _____

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z

Page 2 **of** 7 ***Resource Name or #:** (Assigned by recorder) Las Palmas Senior Citizen Center

B1. Historic Name: Las Palmas Senior Citizen Center
B2. Common Name: Same
B3. Original Use: Municipal Recreational Facility B4. Present Use: Municipal Recreational Facility
***B5. Architectural Style:**
***B6. Construction History:** (Construction date, alterations, and date of alterations)

1961: Constructed. 2000: Stair, restroom, and parking remodel. 018: Replace indoor and outdoor luminaries with LED.
Unknown Dates
North Wing: metal gate added to breezeway. Community Room: infill of window opening and installation of hollow metal door on north elevation; infill of louvered windows on northeast elevation. South Wing: Open entryway to patio on east elevation enclosed and replaced with metal doors and windows; addition to south end of west elevation.

***B7. Moved?** ☒ **No** ☐ **Yes** ☐ **Unknown** **Date** _____ **Original Location** _____
***B8. Related Features:**
None.
B9a. Architect: Carl B. Troedsson b. Builder: Unknown
***B10. Significance:** **Theme** Municipal Parks, Recreation, and Leisure **Area** Los Angeles
Period of Significance 1886-1978 **Property Type** Municipal Recreational Facility **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The property was evaluated under the applicable criteria for the National Register, California Register, and Los Angeles Historic-Cultural Monument (HCM) designation using the eligibility requirements outlined in the Context, Theme, Property Type (CTP) for Municipal Recreational Facilities, 1932-1978 within the Los Angeles Citywide Historic Context Statement (LACHCS). For the reasons discussed below, the property does not appear to be eligible for listing in the National or California Registers, or for designation as an LA HCM due to diminished integrity and a lack of significance within the relevant context.

Criterion A/1/1

To be eligible under Criterion A/1/1, a property must have a direct association with events that have made a significant contribution to the broad patterns of history. The Municipal Recreational Facilities sub-theme within the Public and Private Institutional Development context examines patterns of municipal recreational development from 1932-1978 and is the most applicable theme for evaluating the property under Criterion A/1/1.

(See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes) Choose an item. Choose an item.
***B12. References:**
See Continuation Sheet.

B13. Remarks:
None.

***B14. Evaluator:** Emma Haggerty, Associate Architectural Historian, GPA Consulting
***Date of Evaluation** 5/26/2023

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



***P3a. Description (Continued from Page 1)**

The Senior Citizen Center is irregular in plan and generally comprises three volumes: a one story, rectangular volume with an east-west orientation (North Wing, for the purposes of this evaluation only) that intersects a double-height hexagonal volume (noted as the Community Room on the original plans) that also intersected by another one-story, rectangular volume with a north-south orientation (South Wing, for the purposes of this evaluation only). The building has a flat roof with overhanging, boxed eaves on the one-story wings and a low-sloped gabled roof with open eaves and bargeboards on the Community Room. The exterior of the building is clad in a combination of stucco with vertical scoring and vertical stack bond concrete masonry with raked joints that mimic the appearance of vertical panels. Some of the masonry units have decorative patterning. Fenestration consists of fixed metal single-light and multi-light windows, many of which extend from the floor to ceiling. Entryways consist of singular, hollow metal doors and fully glazed metal doors in singles and pairs. A wood trellis shelters the walkway that wraps around the west elevation of the building.

North Wing

The North Wing is further divided into two, one-story volumes that are connected by a breezeway. The south elevation of the western volume is clad in stucco with vertical scoring and has a rectangular clerestory window. The breezeway is enclosed by a non-original metal door and chain-link fencing. The south elevation of the eastern volume is also clad in stucco with vertical scoring, but there is no fenestration. The east elevation of the North Wing mostly intersects with the Community Room, but at its north end there is a shallow projection with two hollow metal doors that open onto a concrete patio area northeast of the building. The north and west elevations of the North Wing were not accessible during the site visit, as they abut the leased portion of the site that is not a part of the Project.

Community Room

The Community Room is intersected by the North Wing to the west and the South Wing to the south. The main entrance is located roughly where the three volumes intersect and is oriented southwest towards N. Las Palmas Avenue. The entrance consists of a full-light, metal door with a single-light sidelight and transom. There are three multi-light, sliding metal doors to the left of the main entrance and two fixed single-light windows to the right. The north elevation of the Community Room is clad in decorative concrete blocks and has a single hollow metal door that faces north towards Franklin Avenue. The northeast elevation is clad in vertical stack bond concrete masonry and has an infilled clerestory window opening. The southeast elevation of the Community Room is also clad in vertical stack bond concrete masonry and has a hollow metal door sheltered under a flat canopy.

South Wing

The west elevation of the South Wing is clad in stucco and there is a secondary entry that consists of a pair of full-light, metal doors. There are five single-light, metal windows on either side of the entrance that are framed by four narrow rectangular columns. The south elevation is clad in stucco with vertical scoring. There is a single and pair of hollow metal doors that open onto a landing for a staircase. The staircase has brick treads and a metal handrail and leads to the shuffleboard court. The east elevation of the South Wing is clad in stucco with vertical scoring. There is a pair of hollow metal doors at the south end and another at the center of the elevation. The center doors are flanked by two fixed single-light metal windows. The east elevation faces the neighboring property line with a narrow setback, forming a shallow grass lawn. The north end of the South Wing intersects with the remainder of the building.

***B10. Significance (Continued from Page 2)**

The subject property was built during the late postwar continuation of a City of Los Angeles Department of Recreation and Parks (RAP) construction program that was funded by two bond issues approved in 1947 and 1957. The program stemmed from a concept that emerged during the Great Depression and sought to provide recreational facilities for people of all ages. During the late postwar period, the most notable municipal recreational development was taking place in the suburbs, particularly in the San Fernando Valley, as RAP created large recreational facilities like Chatsworth Park. More densely populated communities, such as Hollywood, were already established by this time and had been largely built-out in the decades prior. New RAP improvements in these communities generally consisted of smaller facilities, like club houses, or updates to existing facilities to create parking lots. The subject property was one of at least five senior citizen centers developed and constructed in the early 1960s.[1]

While the subject property is associated with postwar municipal recreational development trends, as outlined in National Register Bulletin 15, "Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A: the property's specific association must be considered important as well. For example, a building historically in commercial use must be shown to have been significant in commercial history."[2] Research did not reveal evidence to suggest that the subject property was especially unique or significant in the history of municipal recreational development. Rather, it appears to be one of several similar, standard facilities constructed as a continuation of trends established years earlier. As such, it has an association with the historic trend, but the association itself is not important.

Research did not reveal an association with any other historic events or trends. Therefore, for all the reasons outlined above, the Las Palmas Senior Citizen Center does not appear to be eligible under Criterion A/1/1.

Criterion B/2/2

Criterion B/2/2 states that to be eligible, a property must be associated with the lives of persons significant in our past.

The building has been owned and operated by the City of Los Angeles since construction. However, research did not reveal the names of any specific individuals associated with the property that might rise to the level of significance necessary for eligibility under Criterion B/2/2. While numerous people have been employed with the Las Palmas Senior Center through the City of Los Angeles, collective efforts like these are better evaluated under Criterion A.[3]

Therefore, the property does not appear to be eligible under Criterion B/2/2.

Criterion C/3/3

A property is eligible under Criterion C/3/3 if it embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or lastly, represents a significant and distinguishable entity whose components may lack individual distinction.

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[1] Others include the Felicia Mahood Senior Citizen Center in West Los Angeles, North Hollywood Senior Citizen Center, the Anderson Memorial Senior Citizen Center in San Pedro, and the Sherman Oaks East Valley Adult Center, all of which were constructed c. 1960-1963. Newspapers.com, various articles, accessed May 2023.

[2] Patrick Andrus and Rebecca Shrimpton, eds., (National Register Bulletin 15) *How to Apply the National Register Criteria for Evaluation* (US Department of the Interior, National Park Service, Cultural Resources: 1997), 7-8, accessed May 2023, https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.

[3] Beth Grosvenor Boland, (National Register Bulletin 32) *Guidelines for Evaluating and Documenting Properties Associated with Historic Persons* (US Department of the Interior, National Park Service, Cultural Resources: 1988), 5, accessed May 2023, https://www.nps.gov/subjects/nationalregister/upload/NRB32-Complete.pdf.

***B10. Significance (Continued from Page 2)**

Although the building possesses features that reflect the era of its 1961 construction, like the decorative concrete block and full-height metal windows and doors, it does not embody any particular architectural style. However, the subject building was also evaluated as an example of its type under the Municipal Recreational Facilities, 1932-1978 sub-theme.

To be eligible under this sub-theme, a property must be an excellent example of its type or style and/or represent the work of a significant landscape architect or designer with a date of construction between 1932-1978 and an active recreation area to support athletic events.[4] As mentioned, the subject building was constructed in 1961 and has a shuffleboard court to support athletic events. However, the property is not an excellent example of its type. It does not appear to be a rare, unique, or important example of the type, nor does it appear to reflect an important variation or evolution, and it does not appear to have had an impact on the design of later buildings.

Rather, the subject property is one of several such facilities constructed around the same time using common building materials and following design precedents and planning principles that were established several decades earlier. Additionally, it has been altered since its construction as noted in ***B6.**

The original building plans identify Carl B. Troedsson as the architect of the building.[5] Research did not reveal evidence to suggest that Troedsson would be considered a master architect. Even if he were considered a master in his respective field, the subject property would be unlikely to be considered an important example of his work due to its simple design and common materials. Lastly, if it were an important example of his work, alterations after construction have diminished the integrity of Troedsson's original design.

The possession of high artistic values refers to a building's articulation of a particular concept of design so fully that it expresses an aesthetic ideal. A property eligible under this aspect of Criterion C would need to possess ornamentation and detail to lend it high artistic value, which is not the case for the subject building.

The last aspect of Criterion C/3/3 is generally applied to historic districts. As mentioned above, the property is not located within the boundaries of an HPOZ, nor within an area identified by SurveyLA or the Hollywood Redevelopment Project Survey as a potential historic district. These findings were confirmed during the field inspection conducted for this report, as there are not enough properties with shared physical characteristics or historical associations in the area to form a potential historic district. Therefore, the subject property does not appear to form or contribute to a distinguishable entity as a potential district does not appear to exist.

Therefore, for the reasons outlined above, the property does not appear to be eligible under any aspect of Criterion C/3/3.

Criterion D/4

Criterion D/4 applies to the potential of the property to yield information important in prehistory or history. Criterion D generally applies to archaeological resources but may apply to a built resource in instances where a resource may contain important information about such topics as construction techniques or human activity. In any case, the resource must be the principal source of information. This is unlikely to be true for the subject property. Therefore, the property does not appear to be eligible under Criterion D/4.

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[4] Daniel Prosser, "Public and Private Institutional Development, 1850-1980, Government Infrastructure and Services, 1850-1980: Municipal Parks, Recreation, and Leisure, 1886-1978," *Los Angeles Citywide Historic Context Statement* (City of Los Angeles Office of Historic Resources, December 2017), 25-27.

[5] Carl B. Troedsson, *Las Palmas Senior Citizen Center,* May 4, 1961, Sheet 1.

***B10. Significance (Continued from Page 2)**

Integrity

It is standard practice to assess a property's integrity as part of a historic evaluation. Integrity is a property's ability to convey its historic significance through its physical features. National Register Bulletin 15 defines seven aspects of integrity: Location, design, setting, materials, workmanship, feeling, and association. In order to convey significance, a property must retain some combination of these aspects of integrity from its period of significance. The aspects of integrity that are essential vary depending on the significance of the resource.

While the subject property does not appear to be eligible for listing in the National or California Registers, or as an LA HCM, it was examined against the seven aspects of integrity for further clarification.

Location: The place where the historic property was constructed or the place where the historic event occurred.

The subject property has not been moved since its construction and therefore retains integrity of location.

Design: The combination of elements that create the form, plan, space, structure, and style of a property.

While the property is still able to convey its original design intent, including its original function and use, the integrity of design has been diminished due to changes to the building over time, including the infilling and alteration of breezeways in multiple locations.

Setting: The physical environment of the historic property.

A review of historic aerials indicates that the immediate setting of the property on its site appears largely as it did at the time of construction. Although the surrounding setting has changed over time due to ongoing development, it does not detract from the subject property. Therefore, the property retains integrity of setting.

Materials: The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

While the original materials are apparent in the extant features and finishes from the time of construction, the integrity of materials has been diminished due to changes to the building over time, including installation of non-original doors and windows.

Workmanship: The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

While the original workmanship is still apparent in extant details such as the stacked bond concrete masonry, the integrity of workmanship has been diminished due to changes to the building over time.

Feeling: A property's expression of the aesthetic or historic sense of a particular period of time.

The property retains integrity of feeling as it is still able to convey the sense of a 1960s recreational facility.

Association: The direct link between an important event or person and a historic property.

The integrity of association does not apply to the property as there is no historic association for the physical integrity to convey.

***B12. References (Continued from Page 2)**

"Architect Opens New Office Here." *Los Angeles Times.* December 14, 1958.

Architectural Resources Group, Historic Resources Group, and GPA Consulting. *Historic Resources Survey Report: Historic Resources Survey Report: Hollywood Redevelopment Plan Area.* City of Los Angeles Office of Historic Resources, January 2020.

Boland, Beth Grosvenor. (National Register Bulletin 32) *Guidelines for Evaluating and Documenting Properties Associated with Historic Persons.* US Department of the Interior, National Park Service, Cultural Resources: 1988. Accessed May 2023. https://www.nps.gov/subjects/nationalregister/upload/NRB32-Complete.pdf

California Code of Regulations, California Office of Administrative Law, State of California Government.

California State Office of Historic Preservation, Department of Parks & Recreation. "Technical Assistance Bulletin #8: User's Guide to the California Historical Resource Status Codes & Historic Resources Inventory Directory." Accessed May 2023. http://ohp.parks.ca.gov/pages/1069/files/tab8.pdf.

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Code of Federal Regulations, Title 36: Parks, Forests, and Public Property. Office of the Federal Register, National Archives and Records Administration, United States Government.

Historicaerials.com, Historic Aerial Photographs. Various Dates. Accessed May 2023. https://www.historicaerials.com.

Historic Resources Group. *Historic Resources Survey Report: Hollywood Community Plan Area.* City of Los Angeles Office of Historic Resources, August 2011. Revised November 2015.

How to Apply the National Register Criteria for Evaluation (National Register Bulletin 15). Edited by Patrick Andrus and Rebecca Shrimpton. US Department of the Interior, National Park Service, Cultural Resources: 1997. Accessed May 2023. https://www.nps.gov/subjects/nationalregister/upload/NRB-15_web508.pdf.\

"The International Tower." *Long Beach Heritage*. Spring 2011.

Los Angeles Office of Historic Resources. *Los Angeles Citywide Historic Context Outline and Summary Tables*. January 16, 2014. Accessed May 2023. https://planning.lacity.org/odocument/fbb3582b-b6b0-4fb7-b27a-dbabacd760aa/SurveyLA_HistoricContextStatementOutline_July2018.pdf.

Los Angeles Times. Various Dates.

Newspapers.com. Various Articles. Accessed May 2023.

Prosser, Daniel. "Public and Private Institutional Development, 1850-1980, Government Infrastructure and Services, 1850-1980: Municipal Parks, Recreation, and Leisure, 1886-1978." *Los Angeles Citywide Historic Context Statement.* City of Los Angeles Office of Historic Resources, December 2017.

"Revolving Restaurant Unveiled in Long Beach." *Los Angeles Times.* July 18, 1965.

Troedsson, Carl B. *Las Palmas Senior Citizen Center*. May 4, 1961.

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
1149 S. BROADWAY, 7th FLOOR
LOS ANGELES, CALIFORNIA 90015
CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION

(Articles II and III – City CEQA Guidelines)

COUNTY CLERK'S USE

Submission of this form is optional. The form shall be filed with the County Clerk, 12400 E. Imperial Highway, Norwalk, California, 90650 and with the State Clearinghouse in the Office of Planning and Research, if filed with the County Clerk, pursuant to Public Resources Code Section 21152(b). Pursuant to Public Resources Code Section 21167(d), the filing of this notice starts a 35-day statute of limitations on court challenges to the approval of the project.

LEAD CITY AGENCY AND ADDRESS: City of Los Angeles
c/o Bureau of Engineering
1149 S. Broadway, 6th Floor, MS 939
Los Angeles, CA 90015

COUNCIL DISTRICT
13

PROJECT TITLE: Las Palmas Senior Citizen Center - Renovation
(W.O. E1908358/ CIP No. G1163)

LOG REFERENCE

PROJECT LOCATION: The Project is located at 1820 N. Las Palmas Avenue on the southeast corner of Franklin Avenue and Las Palmas Avenue, in the Hollywood Community Plan Area of the City of Los Angeles, see also Parcel Profile Report from NavigateLA, Figure 1: Project Vicinity, and Figure 2: Project Location). Thomas Bros. Map Page 593, Grid E4

DESCRIPTION OF NATURE, PURPOSE, AND BENEFICIARIES OF PROJECT: The Las Palmas Senior Citizen Center - Renovation project (Project) consists of consists of renovating the interior of an approximately 5,504-square-foot senior community center, along with some exterior site improvements. Project beneficiaries include facility users, community members, and visitors who will have improved recreational facilities. Please see the Project Description Continuation in the narrative for more details. On December 1, 2025, the Bureau of Engineering (BOE) determined the Project is exempt under the California Environmental Quality Act (CEQA) and approved the Project design plans for indexing.

CONTACT PERSON	**CONTACT INFORMATION**
Maria Martin	maria.martin@lacity.org

EXEMPT STATUS:

CITY CEQA GUIDELINES	CATEGORICAL EXEMPTION*	Art. III, Sec. 1 Class 1 Cat. 1, 4 Art. III, Sec. 1 Class 3 Cat. 6 Art. III, Sec. 1 Class 4 Cat. 1
STATE CEQA GUIDELINES	CATEGORICAL EXEMPTION*	Sec. 15301 (a)(d) Sec. 15303 (e) Sec. 15304 (a)

* See Public Resources Code Sec. 21080 and set forth state and city guidelines provisions.

JUSTIFICATION FOR PROJECT EXEMPTION: This Project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Sections 15301 Existing Facilities (a: interior/exterior alterations), (d: restoration or rehabilitation of deteriorated or damaged structures); 15303 New Construction or Conversion of Small Structures (e: accessory structures such as carports and fences) and 15304 Minor Alterations to Land (a: grading). Additionally, the Project is exempt pursuant to the corresponding *City CEQA Guidelines (*Article III, Section 1, Classes 1-1, 1-4, 3-6, and 4-1). *None of the limitations set forth in State CEQA Guidelines 15300.2 apply (see attached narrative).*

IF FILED BY APPLICANT, ATTACH CERTIFIED DOCUMENT OF EXEMPTION FINDING

SIGNATURE:	TITLE:	DATE:
Maria Martin M E Martin	Environmental Affairs Officer Environmental Management Division	12/04/2025

FEE: $75.00	RECEIPT NO.	REC'D BY	DATE

DISTRIBUTION: (1) COUNTY CLERK; (2) STATE CLEARINGHOUSE; (3) AGENCY RECORD

CATEGORICAL EXEMPTION NARRATIVE

I. DESCRIPTION OF NATURE, PURPOSE, AND BENEFICIARIES OF PROJECT, CONTINUED

The Las Palmas Senior Citizen Center is operated by the City of Los Angeles Department of Parks and Recreation. The Project consists of a renovation of the building interior space (approx. 5,500 square feet), exterior within the existing footprint, and a modernization of the exterior features, Figures 1 – 3). Minor excavation and modification of grades may be needed for the patio area, trash enclosure, and Low Impact Development (LID) capture and reuse planters. The plans call for a reduction in total landscaping (approx. 2,600 square feet less) and a loss of three parking spaces (21, down from 24). Fencing will be installed along the perimeter and internally (306 linear feet total).

The new parking lot shade structure will be built using cast-in-place concrete piles (not driven) set with boreholes excavated to a maximum depth of 25 feet. The Project site is considered to have a high paleontological sensitivity at depths of 15 feet and greater. There is a potential to encounter significant paleontological resources during drilling activities that extend to impact native Pleistocene-age deposits (i.e., drilling that exceeds a depth of 15 feet). Therefore, a Paleontological Resources Monitoring and Treatment Plan (PRMTP) must be prepared and implemented prior to any ground disturbance at a depth of greater than 15 feet. The plan should specify the levels and types of mitigation efforts during drilling activities and should also include a description of the professional qualifications required of key staff, communication protocols to be followed during construction, unanticipated discovery protocols, fossil recovery protocols, sampling protocols for microfossils (if required), laboratory procedures, reporting requirements, and curation provisions for any collected fossil specimens.

The scope of the contractor's work includes:

- Implementation of PRMTP
- redesign interior spaces to add additional restrooms
- renovate floor and ceilings throughout
- upgrade existing roof (approx. 7,900 SF), lighting, mechanical systems, and electrify building
- upgrade existing windows
- redesign existing trellis
- renovate turf areas and irrigation system
- renovate existing concrete walkways and patio spaces to meet ADA requirements
- renovate existing shuffleboard area to multi-use exercise area with photovoltaic shade structure and reconfigure landscaping
- restripe existing parking lot
- construct a new trash enclosure at parking area
- add one dual EV charger, and one single EV charger (3 spaces) at the parking lot
- replace old fencing and add 43 linear feet of new fencing

Unless otherwise stated, the proposed Project will be designed, constructed and operated following all applicable laws, regulations, ordinances and formally adopted City standards including but not limited to:

- City of Los Angeles Municipal Code
- Bureau of Engineering Standard Plans
- Standard Specifications for Public Works Construction (Greenbook), including Additions and Amendments (Brownbook)
- Work Area Traffic Control Handbook

The Project includes best management practices (BMPs) for compliance with applicable regulatory requirements that protect cultural resources and for implementation of applicable "Greenbook" Standard Specifications for Public Works Construction that protect cultural resources as follows:

BMP-CUL-1: In the event that unanticipated historical artifacts were encountered, Greenbook, Section 6-6.2, (Greenbook, 2021) states: "If discovery is made of items of archaeological or paleontological interest, the Contractor shall immediately cease excavation in the area of discovery and shall not continue until ordered by the Engineer." Therefore, during activities in which there will be ground disturbances (i.e., digging, drilling, etc.) if any evidence of archaeological, cultural, or paleontological resources are found, all work within the vicinity of the find shall stop until a qualified archaeologist can assess the finds and make recommendations. No excavation of any finds should be attempted by Project personnel unless directed by a qualified archaeologist. Construction activities may continue in other areas. If the discovery proves significant under CEQA (Section 15064.5f; Public Resources Code [PRC] 21082), additional work such as testing, or data recovery may be warranted.

BMP-CUL-2: The discovery of human remains is always a possibility during ground disturbances; State of California Health and Safety Code Section 7050.5 states that if human remains are encountered, no further disturbance shall occur until the Los Angeles County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The Los Angeles County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

II. PROJECT HISTORY

The Project site is comprised of one parcel, Assessor Parcel Number (APN) 5547-003-900, located in the Hollywood Redevelopment Area within the Hollywood Community Plan Area (CPA) of the City of Los Angeles. The legal description is Lot 10, Block 2 of the Hollywood Oceanview Tract. The Project site is improved with the Las Palmas Senior Citizen Center, a one-story municipal recreational building constructed in 1961 for the City of Los Angeles Department of Recreation and Parks (RAP). The property is not currently listed in the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), or designated as a City of Los Angeles Historical-Cultural Monument (LA HCM), nor was it previously identified in any historical resource surveys.

The purpose of the renovation is to enhance the enjoyment of stakeholders. The current building is outdated and requires various repairs. The proposed work includes updates to existing building infrastructure including roofing, HVAC, and electrical systems. Unused outdoor space will be renovated to new multi-use exercise area. Uneven outdoor surfaces will be repaired. Limited landscape and

irrigation improvements will be provided. Interior space will be reconfigured for more efficient utilization of space and the addition of new restroom facilities. The interior and exterior finishes will be updated.

III. ENVIRONMENTAL REVIEW

A. Basis for Categorical Exemption

The Project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15301, Class 1 (a) and (d) *Existing Facilities* for operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use because the Project consists of:

- Interior or exterior alterations involving such things as interior partitions, plumbing, and electrical conveyances
- Restoration or rehabilitation of deteriorated or damaged structures, facilities, or mechanical equipment to meet current standards of public health and safety, unless it is determined that the damage was substantial and resulted from an environmental hazard such as earthquake, landslide, or flood

The Project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15303, Class 3 (e) *New Construction or Conversion of Small Structures* which consists of construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. The numbers of structures described in this section are the maximum allowable on any legal parcel. Examples of this exemption include, but are not limited to:

- Accessory (appurtenant) structures including garages, carports, patios, swimming pools, and fences

The Project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15304, Class 4 (a) *Minor alterations to land* which consists of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes. Examples include, but are not limited to:

- Accessory (appurtenant) structures including garages, carports, patios, swimming pools, and fences

Additionally, the Project is exempt from CEQA pursuant to the following City CEQA Guidelines from Article III, Section 1.

- Class 1-1: Interior or exterior alterations involving remodeling or minor construction where there be negligible or no expansion of use
- Class 1-4: Restoration or rehabilitation of deteriorated or damaged structures, facilities or mechanical equipment and systems to meet current standards of public health, safety and environmental protection
- Class 3-6: Accessory (appurtenant) structures including garages, carports, patios, swimming pools, fences, game courts (including tennis courts accessory to residential developments), play areas and retaining walls
- Class 4-1: Grading on land with a slope of less than ten percent (10%), except where it is to be located in a waterway, in any wetland, in an officially

designated (by federal, State, or local governmental action) scenic area or in an officially mapped areas of severe geologic hazard

B. Consideration of Potential Exceptions to use of a Categorical Exemption

The State CEQA Guidelines (CCR Sec 15300.2) limit the use of categorical exemptions in the following circumstances:

1. Location. Exemption Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located – a project that is ordinarily insignificant in its impact on the environment may be significant in a particularly sensitive environment. Therefore, these classes are considered to apply in all instances, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

As of December 4, 2025, the site was listed within a special grading area (BOE basic grid Map A-13372) and a liquefaction zone on ZIMAS. As of February 12, 2024, the site is not a listed as part of a high fire severity zone or an oil zone on NavigateLA.

According to the Department of Conservation California Geological Survey, the Project site is located within the Alquist-Priolo Earthquake Fault Zone. Alquist-Priolo earthquake fault zones are regulatory zones surrounding the surface traces of active faults in California. These zones were conceived in the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act), the intent of which is to reduce losses from surface fault rupture. Local agencies must regulate development projects within earthquake fault zones and demonstrate that proposed buildings will not be constructed on active faults. Projects include all land divisions and most structures for human occupancy.

The site lies within a designated liquefaction zone, an area mapped for “historic occurrence of liquefaction, or where local geological, geotechnical, and groundwater conditions indicate a potential for permanent ground displacements,” or where “previous occurrence of landslide movement, or local topographic, geological, geotechnical, and subsurface conditions indicate a potential for permanent ground displacements,” according to the Official Map of Seismic Hazards, released by the California Department of Conservation, California Geological Survey (CGS).

The proposed Project consists of renovation of an existing structure and addition of a small shade structure in a parking lot. No new structures for human habitation will be constructed. Repair and maintenance projects are common in the City and throughout areas deemed to be within the earthquake hazard zones, as such these repairs are not unusual circumstances. The Project would not potentially result in or increase vulnerability to damage caused by earthquakes and there is no reasonable possibility that the Project will have a significant effect due to unusual circumstances. All best management practices and building codes will be followed.

This Project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15301 *Existing Facilities* (a), (d); 15303 *New Construction or Conversion of Small Structures* (e); 15304 *Minor alterations to land* (a). However, it consists of renovation at an existing recreation facility in an area devoid of environmental resource of hazardous or critical concern. Therefore, the location exception does not apply.

2. Cumulative Impact. This exception applies when, although a project may not have a significant impact, the cumulative impact of successive projects of the same type in the same place, over time is significant.

As a preexisting structure, the Las Palmas Senior Citizens Center is not anticipated to need another renovation for another 30-40 years. Proceeding with this Project will not result in the renovation of many other related or similar or related projects within the state of California or City of Los Angeles. According

to NavigateLA, which includes information from the Public Way Reservation System, no other similar projects are proposed within the Project site or vicinity. Therefore, this exception has no application to this Project.

3. Significant Effect. This exception applies when, although the project may otherwise be exempt, there is a reasonable possibility that the project will have a significant effect due to unusual circumstances.

The community center has been in operation for at least 60 years. The facility will be closed during construction. This Project does not present any unusual circumstances. The borehole drilling for the parking lot shade structure will be actively monitored, and the spoils checked for paleolithic artefacts such as fossils, following the PRMTP.

The proposed Project consists of renovation to an existing building, landscaping, replacement of a fence, and addition of a shade structure in the parking lot. At the Project site, construction may require temporary traffic control. Motorists will be notified of traffic changes via temporary street signing and traffic control devices per the WATCH. It is anticipated that traffic in both directions will remain open.

The Project shall be performed in accordance with applicable WATCH as required by the California Manual on Uniform Traffic Control Devices (CA MUTCD) published by Caltrans, imposed on projects of this nature. City construction crews will coordinate with schools and the Department of Transportation according and provide flaggers when required. When the activity site encroaches upon a sidewalk, walkway or crosswalk area, pedestrians shall be provided advance warning if they are detoured away from the activity construction site.

The proposed Project shall be constructed following any or all the applicable measures below:

1. Construction could occur from 7 a.m. to 9 p.m. Monday through Friday and on Saturday from 8 a.m. to 6 p.m. as allowable by *LAMC § 41.10 - Construction Noise*.

2. Notify all adjacent property owners and land users of the construction length, duration, and hours of noise and vibration producing construction activities, in writing.

3. Provide and make available contact information for sidewalk and street repairs and replacement concerns, on construction activities, prior to and on-site during construction.

The equipment used on site will be tested to maintain noise levels at or below the City standard. Standard conditions and construction practices will be implemented for this Project. No unusual construction noise or traffic effects are anticipated. No reasonable possibility has been identified that the Project will have a significant effect due to unusual circumstances. As such, this exception does not apply.

Therefore, this exception has no application to this Project.

4. Scenic Highway. A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway. As of February 12, 2024, the proposed Project is not within a state designated scenic highway or within sight of any state designated scenic highway. Therefore, this exception has no application to this Project.

5. Hazardous Waste Site. This exception applies when a project is located on a site listed as a hazardous waste site under Government Code Section 65962.5. As of December 4, 2025, the Project site was not listed as a hazardous waste site on *Geotracker* or *Envirostor*. Therefore, this exception has no application to this Project.

6. Historical Resources. This exception applies when a project may cause a substantial adverse

change in the significance of a historical resource. This exception does not apply to the Project. GPA Consulting (GPA) submitted a technical cultural study which concludes that the Las Palmas Senior Citizens Center is not a historical resource for the purposes of CEQA. A paleontological memo authored by Bargas Environmental Consulting reports that no known paleontological resources were identified within a 1-mile buffer of the Project. The upper 15 to 20 feet of sediments consist of unmapped artificial fill, which have a low potential to contain significant paleontological resources due to their disturbed nature. However, the artificial fill is underlain by Pleistocene-age older alluvial sediments, which have a high paleontological potential since numerous vertebrate fossil-bearing localities have been recovered from Pleistocene-age sediments elsewhere in the vicinity of the Project. A Paleontological Resources Monitoring and Treatment Plan (PRMTP) must be prepared and implemented prior to ground disturbance.

The Project does not cause a substantial adverse change in the significance of a historical resource. This exception does not apply.

IV. REFERENCES

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Paleontological Recommendations Memorandum for the Las Palmas Senior Citizen Center Renovation (G1163) Project located in the City and County of Los Angeles, California. Courtney Richards. Bargas Consulting. pp 1-13. June 30, 2023.

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Public Resources Code. Section 5097.98.

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State Department of Toxic Substances Control. *Envirostor*. Retrieved February 12, 2024 and December 4, 2025 from www.envirostor.dtsc.ca.gov.

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Figure 1. Project Vicinity



NavigateLA Map retrieved 1/29/2024

Figure 2. Project Location



NavigateLA Map retrieved 1/29/2024

Figure 3. Las Palmas Senior Citizens Center



Google Earth Images accessed on 2/7/2024

Figure 3. Las Palmas Senior Citizens Center



Google Earth Images accessed on 2/7/2024

Figure 3. Las Palmas Senior Citizens Center



Google Earth Images accessed on 2/7/2024

BARGAS
A Decade of Excellence

June 30, 2023

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Subject: Paleontological Recommendations Memorandum for the Las Palmas Senior Citizen Center Renovation (G1163) Project located in the City and County of Los Angeles, California

Dear Jenna Kachour:

Bargas Environmental Consulting, LLC (Bargas) conducted a paleontological study and prepared this recommendations memorandum, on behalf of the City of Los Angeles Bureau of Engineering (BOE) and under contract with GPA Consulting, Inc. (GPA), for the Las Palmas Senior Citizen Center Renovation (G1163) (Project) in the City and County of Los Angeles, California. The purpose of the review was to determine if the Project has the potential to impact paleontological resources within the Project Site, and to provide recommendations to reduce impacts to less than significant levels. All work was completed in compliance with the California Environmental Quality Act (CEQA).

1 Project Location and Description

The Project includes renovations of the Las Palmas Senior Center located at 1820 North Las Palmas Avenue in the City and County of Los Angeles. The Project Site is bounded by Franklin Avenue to the north, North Las Palmas Avenue to the west, and private properties to the south and east. Specifically, the Project is in an unsectioned area of Township 1 South, Range 14 West of the U.S. Geological Survey's (USGS) 7.5-minute *Hollywood* quadrangle, San Bernardino Principal Meridian.

BOE proposes to renovate the outdated Las Palmas Senior Citizen Center focusing on updating the existing building and outdoor infrastructure. The existing structure consists of approximately 6,700 square feet on a lot comprised of approximately 49,836 square feet, or 1.144-acres. The Project components consist of the following:

- Renovating the existing shuffleboard area into usable space for outdoor exercise equipment and small group exercise classes, prefabricated storage, and exterior lighting (approximately 5,000 square feet)
- Restriping existing parking and constructing a trash enclosure
- Improving the street edge and corner with new fencing and landscaping
- Replacing existing roof on the entire structure (approximately 7,900 square feet)
- Renovating the interior space of the senior citizen center only (approximately 5,560 square feet)
- Completing electrification upgrades, which shall include these additional changes:
    - Upgrading windows
    - Upgrading gas appliances to electric
    - Installing PV panels on roof
    - Installing PV panels on a shade structure at the outdoor exercise area
    - Installing new electric vehicle (EV) charging at the parking lot
- Repairing uneven outdoor surfaces
- Completing limited landscape and irrigation improvements
- Reconfiguring interior spaces for more efficient space utilization
- Constructing new restroom facilities

The maximum depth of proposed excavation is 25 feet for installation of piles that will be bored and cast in place (not driven).

2 Methods

Bargas completed a desktop-level paleontological study that included reviews of geologic maps, the Project's geotechnical engineering report (City of Los Angeles 2022), and paleontological literature, and a records search at the Natural History Museum of Los Angeles County (NHMLA) to identify any known paleontological resources within the boundaries of the Project Site or from the same geologic unit within a 1-mile buffer. Paleontological sensitivity rankings were assigned to geologic units using the Society of Vertebrate Paleontology (SVP) criteria (SVP 2010; see Section 2.1). Paleontological recommendations were developed based on the results of the study and in accordance with SVP (2010) standards.

2.1 Paleontological Sensitivity Criteria

In general, paleontological resources are preserved in sedimentary rocks; however, they can occasionally be preserved in low-grade metamorphic rocks and can, on rare occasions, be preserved in volcanic rocks. Beyond acting as a vessel for the preservation of fossil remains, sedimentary strata record telltale information reflecting the environment in which they were deposited (e.g., sedimentary structures, maturity, and lithology). For example, fossil remains found within the fine-grained sediments of a floodplain deposit represent organisms that died and were later buried on an ancient floodplain. Because of the interwoven relationship between fossil remains and their geologic contexts, paleontological sensitivity is generally assigned to geologic units rather than to specific regions, areas, or localities. This assigned paleontological sensitivity classification or rank is based on the known or potential abundance of significant paleontological resources contained within that geologic unit. There are no superseding agency guidelines regarding paleontological sensitivity; therefore, many groups and agencies in California have developed their own sensitivity ranking systems. One of the most widely used was created by the SVP within the "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources" (SVP 2010). Under the SVP (2010) guidelines, geologic units are classified in one of four categories of paleontological resource sensitivity: no, low, undetermined, and high. Table 1 provides a summary of the SVP (2010) sensitivity criteria and the typical paleontological resources management requirements.

Table 1. SVP Paleontological Sensitivity Criteria

SVP Ranking	Description	Typical Management Requirements
High Sensitivity	Geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Geologic units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e.g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones). Paleontological potential consists of both (a) the potential for yielding abundant or significant vertebrate fossils	A field survey as well as onsite construction monitoring is required. Any significant specimens discovered will require preparation, identification, and curation, as well as eventual accession into an appropriate museum collection. A final report documenting the significance of any finds is required.

SVP Ranking	Description	Typical Management Requirements
	or for yielding a few significant fossils, large or small, vertebrate, invertebrate, plant, or trace fossils and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecologic, taphonomic, biochronologic, or stratigraphic data. Geologic units which contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and rock units which may contain new vertebrate deposits, traces, or trackways are also classified as having high potential.	
Undetermined Sensitivity	Geologic units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential.	A field survey is required to further assess the geologic unit's paleontological potential. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
Low Sensitivity	Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some geologic units have low potential for yielding significant fossils. Such geologic units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule (e.g., basalt flows or recent colluvium).	Mitigation is not typically required.
No Sensitivity	Some geologic units have no potential to contain significant paleontological resources, for instance high grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites).	No mitigation required.

Source: Modified from SVP 2010

3 Regulatory Framework

3.1 State Regulations

3.1.1 California Environmental Quality Act

The purpose of CEQA is to 1) inform governmental decision makers and the public about the potential, significant environmental effects of proposed projects; 2) identify ways to avoid or reduce environmental damage; 3) prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when feasible; and 4) disclose to the public the reason why a governmental agency approved the

project if significant environmental effects are involved (CEQA Guidelines, Article 1, Section 15002(a)). The CEQA Environmental Checklist Form includes one question regarding proposed project effects on paleontological resources:

> "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (CEQA Guidelines, Appendix G, Section VII, Part F)

The answer to this question must take account of the whole action involved, including on-site, off-site, direct, indirect, construction, operational, project-level, and cumulative impacts. If a project would result in significant adverse effects on paleontological resources, then alternative plans or mitigation measures must be considered. The level of consideration may vary with the importance of the paleontological resource.

3.1.2 California Public Resources Code

The California Public Resources Code (PRC) Section 5097.5 provides protection for paleontological resources located on public lands in California, which is defined as lands owned by, or under the jurisdiction of, the state, or any city, county district, authority, or public corporation, or any agency thereof. Under PRC Section 5097.5, it is a misdemeanor for a person to knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any vertebrate paleontological site, including fossilized footprints, or any other paleontological feature situated on public lands without the express permission of the public agency having jurisdiction of the lands.

3.2 Local Regulations

3.2.1 City of Los Angeles

The City of Los Angeles General Plan Conservation Element (2001) recognizes paleontological resources in Section 3: "Archeological and Paleontological" (II-3), specifically the La Brea Tar Pits, and identifies protection of paleontological resources as an objective (II-5). The General Plan identifies site protection as important, stating, "Pursuant to CEQA, if a land development project is within a potentially significant paleontological area, the developer is required to contact a bona fide paleontologist to arrange for assessment of the potential impact and mitigation of potential disruption of or damage to the site. Section 3 of the Conservation Element, adopted in September 2001, includes policies for the protection of paleontological resources. As stated therein, it is the City's policy that paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 sets as an objective the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during "land development, demolition, or property modification activities."

Additionally, Section 6-3.2 of the City of Los Angeles Standard Specifications for Public Works Construction requires that grading, excavation, or other ground disturbing activities for a public project be halted in the area of a paleontological find, until such time as a resource expert can review the find, determine its significance, and if required, determine appropriate mitigation measures.

4 Geological and Paleontological Setting

4.1 Regional Overview

At the regional scale, the Project is situated near the southern flank of the Santa Monica Mountains in the northern portion of the Los Angeles Basin, which is within the Peninsular Ranges Geomorphic Province at the junction with the Transverse Ranges. The Peninsular Ranges Geomorphic Province extends approximately 1,450 kilometers (km) (900 miles) from the Transverse Ranges to the tip of Baja Mexico and varies in width from 48 to 160 km (30 to 100 miles) (Norris and Webb 1990). The terrestrial (i.e., unsubmerged) portion of the Peninsular Ranges Province is characterized by a series of elongated northwest–southeast-trending mountains (Yerkes et al. 1965). These mountain ranges are composed dominantly of plutonic igneous rocks (often granites and granitoids) of Cretaceous age (approximately 120 to 90 million years ago [Ma])

and older metamorphic rocks of Jurassic to earliest Cretaceous age (approximately 200 to 140 Ma) (Gastil 1975; Krummenacher et al. 1975; Walawender 2000). In the basins and valleys beneath these mountain ranges, these igneous and metamorphic basement rocks are often overlain by sedimentary deposits of late Mesozoic to Cenozoic age (approximately 90 Ma to 10 thousand years ago [ka]) (Tweet et al. 2014). While the Los Angeles Basin is traditionally considered to be part of the Peninsular Ranges Geomorphic Province, its formation is also closely tied to the clockwise rotation and northward drift of the western Transverse Ranges, which opened the basin, and the subsequent uplift of the Transverse Ranges, which contributed to the rapid and thick accumulation of sediment in the basin (Harden 2004; Sylvester and O'Black Gans 2016).

Structurally, the Los Angeles Basin is divided into four major blocks that are bounded and divided by fault zones. The Project lies within the Central Block, which is wedge shaped and approximately 80 km (50 miles) in greatest length (northwest–southeast). The Central Block is generally bounded by the Whittier Fault Zone to the east and northeast, the Newport-Inglewood Fault Zone to the west and southwest, the Santa Monica Fault to the north, and the Santa Ana Mountains and San Joaquin Hills to the south and southeast (Yerkes et al. 1965). The sediments of the Central Block are relatively thick, especially at the western base of the Santa Ana Mountains, where sedimentary strata have been estimated at 9,754 meters (32,000 feet) in thickness. These sediments are late Cretaceous to Pleistocene in age (approximately 90 Ma to 10 ka) and are occasionally interbedded with Miocene volcanics (Yerkes et al. 1965). Strata within the Central Block were laid down in a variety of marine and terrestrial depositional contexts, which has given rise to a rich fossil record for the region.

4.2 Geologic Map and Paleontological Literature Review

Geologic mapping by Dibblee and Ehrenspeck (1991) indicates that the entirety of the Project Site is underlain by Pleistocene-age older alluvial sediments (Qae) (Figure 1), and the Project's geotechnical report (City of Los Angeles 2022) indicates that the native sediments within the Project Site are covered by an unmapped layer of modern artificial fill. Middle Miocene-age Upper Topanga Formation clay shale or claystone (Ttusi), middle Miocene-age Middle Topanga Formation basaltic volcanic rocks (Tvb), middle or early Miocene-age Lower Topanga Formation sandstone (Tts), Paleocene-age Santa Susana Formation sandstone (Tsu), late Cretaceous-age unnamed conglomerate (Kcg), late Cretaceous-age Trabuco Formation (Kcr), and Cretaceous-age quartz diorite (qd) are also mapped within a half-mile buffer of the Project Site (Dibblee and Ehrenspeck 1991; Figure 1). However, the additional geologic units in the half-mile buffer are not expected to be encountered during Project construction.

4.2.1 Artificial Fill (Not Mapped), Recent

Artificial fill deposits were placed as a result of human activities, such as construction activities. The composition of the deposits varies depending on the source of the material, but often contains construction debris in addition to sediments and clasts from the original source material. Based on the geotechnical report (City of Los Angeles 2022), the artificial fill within the Project Site generally consists of a 15- to 20-foot-thick layer of loose to medium dense, brown, yellowish brown, olive brown, and olive gray clayey sand with varying amounts of gravel and debris, such as glass, brick, and concrete fragments.

Artificial fill sediments could potentially contain fossil materials that were unintentionally introduced during earlier excavations; however, such fossil materials would be removed from their original geologic and stratigraphic contexts and thus would not be of paleontological interest or significance. Therefore, artificial fill deposits are considered to have low paleontological sensitivity.

4.2.2 Older Alluvial Sediments (Qae), Pleistocene

Older alluvial sediments in the region consist of slightly elevated and dissected clay, sand, and gravel and alluvial fans deposited during the late Pleistocene (approximately 11.7 ka to 126 ka) (Dibblee and Ehrenspeck 1991). Within the Project

Site, these sediments consist of medium dense, yellowish brown, fine- to coarse-grained silty sand with gravel and yellowish brown, fine- to coarse-grained sandy clay (Dibblee and Ehrenspeck 1991; City of Los Angeles 2022).

Pleistocene-age alluvial deposits have produced paleontological significant finds of well-preserved large-bodied land mammals throughout Los Angeles County, as well as in nearby Orange and Riverside Counties (Jefferson 1991). Such deposits have yielded remains of mammoths, mastodons, camels, bison, ground sloths, dire wolves, and American lions, among others. Plant remains, terrestrial invertebrates, and microfossils (especially micro-mammals) are also known from similar deposits throughout the Los Angeles Basin (Miller 1971).

Pleistocene-age old alluvial sediments (Qae) are considered to have high paleontological sensitivity due to the intermittent occurrence of significant paleontological resources.

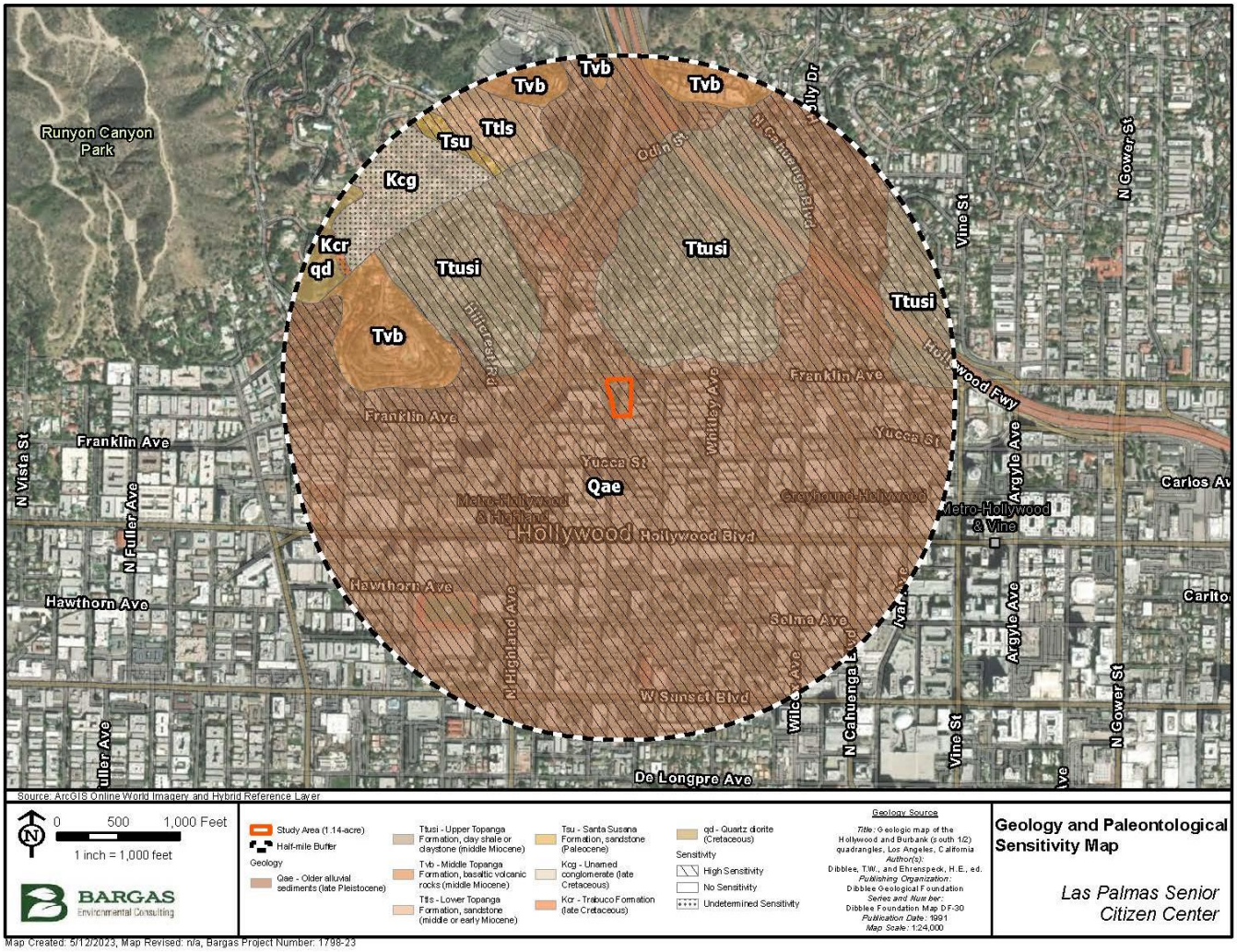

Figure 1. Project Geology and Paleontological Sensitivity Map

5 Records Search Results

A records search of the Project Site and a 1-mile buffer was completed by NHMLA staff member Dr. Alyssa Bell on May 21, 2023. Dr. Bell's report is summarized in Table 2 and provided in full in Appendix A. The search found no previously recorded

fossil localities directly underlying the Project Site. However, 10 paleontological localities were noted from the vicinity of the Project Site. Seven of these localities (LACM VP 6297-6300, 5845, 3371, 7673) occurred in Pleistocene-age deposits similar to those mapped within the Project Site and produced specimens of fossil horse (Equidae), mastodon (*Mammut americanum*, Mammutidae), bison (*Bison*), and camel (*Camelops*). The remaining reported localities were discovered in geologic units that are not anticipated to be encountered during Project construction. A single locality was identified from an unknown Eocene-age formation (LACM IP 3280), which produced a fossil snail (*Amaurellina clarki*). Finally, two localities (LACM IP 16840, 16841) were noted from the Miocene-age Puente Formation, which produced multiple unspecified invertebrates (Bell 2023; Appendix A; Table 2).

Table 1. Fossil Localities Reported within the Vicinity of the Project Site

Locality Number	Geologic Unit and Age	Common Name	Scientific Name	Location/Depth/ Proximity to Project
LACM IP 3280	Unknown formation (Eocene)	snail	*Amaurellina clarki*	North Gower Street, approximately 1 mile northeast of the Project Site. Unknown depth.
LACM VP 6297-6300	Older alluvium: pebble-gravel, sand, and clay (Pleistocene)	horse mastodon bison camel	*Equus* *Mammut americanum* *Bison* *Camelops*	Hollywood Boulevard between St. Andrews Place and Western Avenue, approximately 1.4 to 1.5 miles southeast of the Project Site. Discovered at a depth of 47 to 80 feet.
LACM IP 16840, 16841	Puente Formation (Miocene)	invertebrates	Invertebrata	MacArthur Park, approximately 4.5 miles southeast of the Project Site. Discovered at a depth of 60 feet.
LACM VP 5845	Unknown formation: unconsolidated yellow sediments (Pleistocene)	mastodon	Mammutidae	Intersection of Western Avenue and Council Street, approximately 2.5 miles southeast of the Project Site. Discovered at a depth of 5 to 6 feet.
LACM VP 3371	Unknown formation: green clay (Pleistocene)	bison	*Bison*	Intersection of Sierra Bonita Avenue and Oakwood Avenue, approximately 1.1 miles southwest of the Project Site. Discovered at a depth of 12 feet.
LACM VP 7673	Unknown formation: claystone (Pleistocene)	horse	*Equus*	Intersection of Rosewood Avenue and Westbourne Drive, approximately 3 miles southwest of the Project Site. Unknown depth.

Key: LACM = Natural History Museum of Los Angeles County; IP = Invertebrate Paleontology; VP = Vertebrate Paleontology;

Source: Bell 2023

6 Paleontological Impact Analysis

Impacts under CEQA are classified as direct, indirect, or cumulative. Direct impacts are the primary effects of a project. For paleontological resources, direct impacts are typically the result of ground-disturbing construction or maintenance activities that damage or destroy paleontological resources at the surface or in the subsurface. Indirect impacts are the secondary effects of a project, including project-induced changes such as increased public access to paleontologically sensitive areas and increased susceptibility of fossil-bearing geologic units to erosion due to activities like vegetation removal, which may result in adverse impacts to paleontological resources from illegal collection and damage from weathering, respectively. Cumulative impacts are the incremental effects of a project in combination with the effects of past, current, and probable future projects.

The City of Los Angeles CEQA Significance Thresholds Guide (2006) requires that the significance of impacts on paleontological resources be determined on a case-by-case basis, considering the following factors:

- Whether, or the degree to which, the project might result in the permanent loss of, or loss of access to, a paleontological resource; and
- Whether the paleontological resource is of regional or statewide significance.

The majority of proposed Project-related activities are shallow and anticipated to be entirely within unmapped artificial fill deposits in the upper 15 to 20 feet of the Project Site, which have a low potential to contain significant paleontological resources due to their disturbed nature. However, drilling for the installation of piles is expected to extend to depth of 25 feet into the underlying Pleistocene-age older alluvial sediments, which have a high paleontological potential since numerous vertebrate fossil-bearing localities have been recovered from Pleistocene-age sediments elsewhere in the vicinity of the Project Site and throughout Los Angeles County. Therefore, drilling activities have the potential to result in the permanent loss of scientifically important and regionally significant paleontological resources, including identifiable vertebrate fossils, uncommon invertebrate fossils, plant fossils, and trace fossils, which would represent a significant, adverse impact.

With implementation of regulatory compliance measures and standards, including City of Los Angeles Standard Specifications for Public Works Construction, Section 6-3.2, direct impacts on paleontological resources would be less than significant and the Project's potential to contribute to cumulative impacts would be negligible. Potential direct and cumulative impacts would be further reduced with implementation of the paleontological resource monitoring and treatment recommendations described in Section 7. Implementation of the Project would not increase public access or erosion; therefore, no indirect impacts to significant paleontological resources are anticipated.

7 Summary and Recommendations

Bargas completed a desktop-level paleontological study that included reviews of geologic maps and scientific literature, online locality database searches, and a records search at the NHMLA. No known paleontological resources were identified from within the Project Site or within a 1-mile buffer. However, seven paleontological localities were noted from Pleistocene-age deposits similar to those underlying the Project Site at a greater distance (Table 2). Paleontological potential rankings were assigned using the SVP classification for paleontological resource sensitivity (Table 1).

Based on the results of the geotechnical study (City of Los Angeles 2022), the upper 15 to 20 feet of sediments within the Project Site consist of unmapped artificial fill, which have a low potential to contain significant paleontological resources due to their disturbed nature. However, the artificial fill is underlain by Pleistocene-age older alluvial sediments, which have a high paleontological potential since numerous vertebrate fossil-bearing localities have been recovered from Pleistocene-age sediments elsewhere in the vicinity of the Project Site and throughout Los Angeles County. Therefore, the Project Site is

considered to have a low paleontological sensitivity from the surface to a depth of 15 feet and a high paleontological sensitivity at depths of 15 feet and greater.

The collected data indicate that there is a potential to encounter significant paleontological resources during drilling activities that extend to impact native Pleistocene-age deposits (i.e., drilling that exceeds a depth of 15 feet). Therefore, Bargas recommends that a Paleontological Resources Monitoring and Treatment Plan (PRMTP) be prepared and implemented prior to any Project ground disturbance. The plan should specify the levels and types of mitigation efforts during drilling activities, and should also include a description of the professional qualifications required of key staff, communication protocols to be followed during construction, unanticipated discovery protocols, fossil recovery protocols, sampling protocols for microfossils (if required), laboratory procedures, reporting requirements, and curation provisions for any collected fossil specimens.

Should you have any questions or comments regarding this study, please do not hesitate to contact me at (626) 899-3804 or crichards@bargasconsulting.com.

Sincerely,



Courtney Richards
Principal Paleontologist
Bargas Environmental Consulting, LLC

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Appendix A. Natural History Museum of Los Angeles County Records Search Results

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007

tel 213.763.DINO
www.nhm.org

Research & Collections

e-mail: paleorecords@nhm.org

May 21, 2023

Bargas Consulting

Attn: Courtney Richards

re: Paleontological resources for the Las Palmas Senior Citizen Center Project

Dear Courtney:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for proposed development at the Las Palmas Senior Citizen Center project area as outlined on the portion of the Hollywood USGS topographic quadrangle map that you sent to me via e-mail on May 12, 2023. We do not have any fossil localities that lie directly within the proposed project area, but we do have fossil localities nearby from the same sedimentary deposits that occur in the proposed project area, either at the surface or at depth.

The following table shows the closest known localities in the collection of the Natural History Museum of Los Angeles County (NHMLA).

Locality Number	Location	Formation	Taxa	Depth
LACM IP 3280	2443 N. Gower St	Unknown formation (Eocene)	*Amaurellina clarki* Stewart	unknown
LACM VP 6297-6300	Metro Rail Red Line Hollywood Blvd. subway tunnel, Hollywood Blvd from St. Andrews Place to Western Ave	Older alluvium (pebble-gravel; sand; sand & clay)	Horse (*Equus*), mastodon (*Mammut americanum*), bison (*Bison*), camel (*Camelops*)	47-80 feet bgs
LACM IP 16840, 16841	Wilshire Blvd in W MacArthur Park	Puente Formation	Invertebrates (unspecified)	60 feet bgs
LACM VP 5845	West side of Western Ave. just north of Council St	Unknown formation (Pleistocene, unconsolidated yellow sediments)	Mastodon (Mammutidae)	5-6 feet bgs
LACM VP 3371	Intersection of Sierra Bonita and Oakwood Ave	Unknown formation (Pleistocene; green clay)	Bison (*Bison*)	12 feet bgs (sewer replacement project)

LACM VP 7673	Intersection of Rosewood Ave. & Westbourne Dr	Undetermined (claystone; Pleistocene)	Horse (*Equus*)	Unrecorded (collected during Hollyhills Drain project)

VP, Vertebrate Paleontology; IP, Invertebrate Paleontology; bgs, below ground surface

This records search covers only the records of the NHMLA. It is not intended as a paleontological assessment of the project area for the purposes of CEQA or NEPA. Potentially fossil-bearing units are present in the project area, either at the surface or in the subsurface. As such, NHMLA recommends that a full paleontological assessment of the project area be conducted by a paleontologist meeting Bureau of Land Management or Society of Vertebrate Paleontology standards.

Sincerely,



Alyssa Bell, Ph.D.
Natural History Museum of Los Angeles County

enclosure: invoice

ATTACHMENT C

- HAZARDOUS MATERIAL SURVEY, DATED 6/8/2023

- LEAD OPERATIONS & MAINTENANCE PROGRAM, DATED 6/8/2023

- ASBESTOS OPERATIONS AND MAINTENANCE PROGRAM, DATED 3/31/2023

Hazardous Building Material Survey

Las Palmas Senior Center

1820 North Las Palmas Avenue

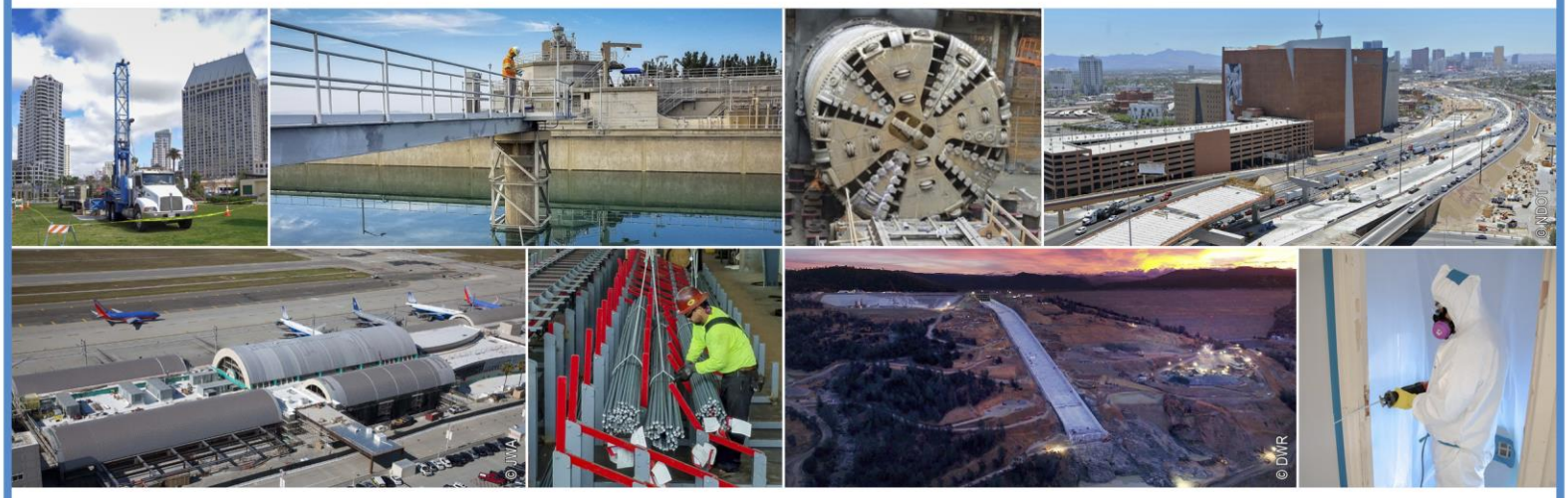
Los Angeles, California 90028

City of Los Angeles

Department of Recreation and Parks

221 North Figueroa Street, Suite 400 | Los Angeles, California 90012

June 8, 2023 | Project No. 209616018



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

35+ YEARS

Hazardous Building Material Survey

Las Palmas Senior Center

1820 North Las Palmas Avenue

Los Angeles, California 90028

City of Los Angeles

Department of Recreation and Parks

Ms. Lisa Walldez
Environmental Specialist
221 North Figueroa Street, Suite 400 | Los Angeles, California 90012

June 8 , 2023 | Project No. 209616018

David M. Kelly
Senior Project Environmental Scientist
Certified Asbestos Consultant No. 23-7217
Lead Sampling Technician No. 2285

William P. Larkin
Principal Environmental Scientist
Certified Asbestos Consultant No. 99-2688
Lead Inspector/Risk Assessor No. 1285

DMK/WPL/mlc

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FIGURE

1 – Site Location

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A – Consultant Certificates
B – California Department of Public Health Form 8552
C – Analytical Results and Chain-of-Custody Records
D – Photographs
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F – XRF Readings Summary

1 INTRODUCTION

In accordance with the City of Los Angeles, Department of Recreation and Parks authorization, Ninyo & Moore has performed a hazardous building material survey in support of upcoming renovation activities of the Las Palmas Senior Center located at 1820 North Las Palmas Avenue in Los Angeles, California (the site; Figure 1). This report has been prepared in accordance with generally accepted environmental science and engineering practices. This report is based on conditions at the site at the time of the sampling activities and provides documentation of our findings and recommendations.

2 PURPOSE AND SCOPE OF SERVICES

The objective of the survey is to provide information about current conditions within the site structures regarding the potential presence of asbestos-containing materials (ACM) and lead containing surfaces (LCS) within the structures which will require removal prior to the planned demolition activities. For the purposes of this assessment, LCS refers to lead-based paint (LBP), as defined by the California Department of Public Health (CDPH) and United States Department of Housing and Urban Development (HUD).

The scope of services we performed is summarized below:

- Reviewed the previous asbestos survey report, 1999, Integrity, Comprehensive Asbestos Survey, Las Palmas Senior Citizen Center and Daycare, 1820 North Las Palmas Avenue, Hollywood, California, dated April.
- Reviewed the previous asbestos abatement monitoring and lead paint stabilization report, 2006, Integrity, Las Palmas Senior Citizens Center, 1820 North Las Palmas Avenue, Hollywood, California, dated October 16 (Integrity Abatement Report).
- Performed a visual reconnaissance of the structure to evaluate the possible presence of ACM and LCS.
- Collected 78 bulk samples and submitted these samples to an independent laboratory for analysis of asbestos content. Samples were analyzed in accordance with the United States Environmental Protection Agency (EPA) recommended method of Polarized Light Microscopy (PLM) in accordance with EPA Test Method 600/R-93/116 July 93.
- Collected 121 X-Ray fluorescence (XRF) readings (including calibrations) of potential LCS.
- Performed a visual assessment and quantification of miscellaneous hazardous materials which may be affected by the renovations limited to heating, ventilation, and air-conditioning (HVAC) and refrigeration systems (possible chlorofluorocarbon [CFC] gas).
- Prepared a field drawing showing suspect ACM and positive LCS sampling locations.
- Prepared this report, which presents our data and summarizes field activities, evaluated materials, and locations. This report includes a field drawn sample location map, a general area building description, laboratory testing information, laboratory test results, and conclusions and recommendations.

3 SITE BUILDING DESCRIPTION

The Senior Center and Day Care Center are single-story structures on a slab-on-grade concrete foundation with a breezeway between connecting the two buildings. Both structures encompass approximately 6,650-square feet (SF). The structures' footprints include offices, a community room, restrooms, clubrooms, storage rooms, a kitchenette, an electrical room, and a day care. The interior walls within each structure are finished with plaster. The ceilings are finished with nailed on ceiling tiles and some areas are finished with plaster. Flooring finishes include vinyl floor tile with some areas finished with ceramic tile. The exterior wall finishes include stucco and concrete masonry units. The roofing systems are finished with a built-up tar and gravel roofing and some areas are finished with rolled on asphalt roofing. The exterior shuffle board area consists of concrete and shade canopies.

4 FIELD LIMITATIONS

Survey activities were limited to the aboveground structures of the subject site within our scope. Underground utilities, such as suspect cementitious water lines or suspect insulated/coated gas or electrical lines, were not assessed during survey activities.

Physical limitations, such as inaccessible rooms or spaces, were generally not encountered during survey activities. Since non-destructive sampling techniques were used, there is a possibility that additional suspect materials and/or surfaces may be encountered in inaccessible areas (e.g., interstitial wall and ceiling spaces and canopy soffits) during building renovation and/or demolition activities. For instance, untested thermal system insulation may be present within wall and ceiling cavities and/or behind plumbing and heating fixtures (e.g., sinks, boilers, and radiators). Suspect materials and/or surfaces encountered during building renovation and/or demolition activities that have not been assessed either may be assumed to be asbestos- and/or lead-containing and handled accordingly, or may be sampled and analyzed to assess whether they are asbestos- and/or lead-containing.

5 ASBESTOS SURVEY

The asbestos survey was performed on March 1, 2023, by Mr. David Kelly, a California Department of Occupational Safety and Health (DOSH) Certified Site Surveillance Technician (No. 17-6144) and a DOSH Certified Asbestos Consultant (CAC) (No. 23-7217). The work was performed under the supervision of Mr. William P. Larkin, a DOSH CAC (No. 99-2688). Consultant certificates are presented in Appendix A.

5.1 Asbestos Inspection, Sampling, and Quantification

The survey inspection and sampling procedures were performed in accordance with the guidelines published by the EPA in 40 Code of Federal Regulations (CFR) Part 763 Subpart E, October 30, 1987 (Asbestos Hazard Emergency Response Act [AHERA]); the EPA guidance document "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials (EPA 560/5-85-030a, October 1985); the National Emission Standards for Hazardous Air Pollutants (NESHAP; 40 CFR Part 61, subpart M); and the South Coast Air Quality Management District (SCAQMD) Rule 1403.

The survey consisted of three parts including: visual inspection, sampling, and quantification of the building materials.

5.1.1 Visual Inspection

Initial observations were made throughout the structures to evaluate the presence and condition of accessible suspect materials. Materials which were similar in general appearance were grouped into homogeneous sampling areas (areas in which the materials are uniform in color, texture, construction, or application date), as recommended by the EPA. Each homogeneous area was observed for material type, location, condition, and friability.

The definition of friability is any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. The EPA's NESHAP regulation has different material categories for ACMs. These categories are used when demolition or renovation projects are being conducted. Each identified suspect homogeneous material was placed in one of the following EPA categories:

- **Category I Non-friable** - NESHAP defines a Category I non-friable ACM as packing, gaskets, resilient floor covering (except sheet flooring products which are considered friable), and asphalt roofing products which contain more than one percent asbestos.
- **Category II Non-friable** - NESHAP defines a Category II non-friable ACM as any material, except for Category I non-friable ACM, which contains more than one percent asbestos and cannot be reduced to a powder by hand pressure when dry.
- **Regulated Asbestos Containing Material (RACM)** - is (a) friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

In accordance with the EPA and AHERA, suspect materials were placed in one of three classifications:

- **Surfacing Materials** - materials generally applied via sprayed or trowel methods,

- **Thermal Systems Insulation (TSI)** - materials generally applied to various mechanical systems, or
- **Miscellaneous Materials** - any materials which do not fit in the Surfacing or TSI classifications.

If asbestos is identified in a sample from a homogeneous area, the entire homogeneous area is considered to contain asbestos.

Representative samples were collected from each homogeneous area within the survey area, except areas that were inaccessible, or areas of assumed ACM, within the limitations of the survey.

5.1.2 Sampling Procedures

Following an initial walkthrough, the inspector collected selected samples of accessible materials identified as suspect ACM. EPA, AHERA, NESHAP, and SCAQMD guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous material. Samples of surfacing material were collected in general accordance with the EPA sampling protocol outlined in EPA 560/5-85-030a, October 1985. Representative samples were collected from already damaged areas or areas which were the least visible. Samples of miscellaneous materials were collected as randomly as possible, while attempting to sample already damaged areas so as to minimize disturbance of the material. Generally, one to three samples of each homogeneous material were collected of miscellaneous materials and TSI, if present.

5.1.3 Quantification

Quantities of accessible and/or exposed building materials that were suspected of containing asbestos were estimated by taking approximate measurements in the field. Quantities are presented in SF or linear feet to be used as a guide for contractor estimates on bidding for abatement activities. It is the abatement contractor's responsibility to confirm quantities prior to bidding and removal.

5.2 Asbestos Laboratory Analysis Procedures

Analysis was performed by Eurofins Built Environment Testing (Eurofins), located at 2841 Dow Avenue, Suite 300 in Tustin, California (Phone Number 866-888-6653). Eurofins is a National Volunteer Laboratory Accreditation Program (NVLAP) accredited laboratory (NVLAP No. 200757-0). A chain-of-custody, documenting the possession of the samples from the time they were collected until analyzed and stored, was submitted with the bulk samples. The original chain-

of-custody accompanied the materials at all times. Custody documentation began at the time samples were collected and each transferor retained a copy of the chain-of-custody record.

Analysis was performed by using the bulk sample for visual observation and slide preparation(s) for microscopic examination and identification. The samples were mounted on slides and then analyzed for asbestos (chrysotile, amosite, crocidolite, anthophyllite, and actinolite/tremolite), fibrous non-asbestos constituents (mineral wool, paper, etc.), and non-fibrous constituents. Refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation identified asbestos. The same characteristics were used to identify the non-asbestos constituents.

The microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample, using a stereoscope. The bulk samples were analyzed by PLM with dispersion staining as described by the method of the determination of asbestos in bulk insulation, EPA/600/R-93/116, July 1993. This is a standard method of analysis in optical mineralogy and the currently accepted method for the determination of asbestos in bulk samples. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The characteristic color displays which result enable mineral identification.

6 LCS SURVEY

The LCS survey was performed on March 1, 2023, by Mr. David Kelly, a CDPH Lead-Related Construction (LRC) Sampling Technician (No. 2285). Work was performed under the supervision of Mr. William P. Larkin, a CDPH LRC Inspector/Assessor (No. 1285). Consultant certificates are presented in Appendix A

The survey was conducted using a portable Sci-Aps X-550 Pb XRF analyzer in accordance with accepted environmental science and engineering practices. The protocol used for selecting components and sampling locations was that contained in the federal HUD “Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing” (Chapter 7 “Lead-Based Paint Inspection”), except the inspection was limited to accessible materials and, once a pattern was recognized for the component results, fewer readings for each component were collected.

The XRF analyzer used for the testing is a direct-reading instrument that determines the concentration of lead in painted surfaces by subjecting the surfaces to energy from a small radioactive source. When the instrument is placed against a surface, the energy from the XRF causes the surface to emit X-Rays that are indicative of the chemical make-up of the surface coating(s), which the XRF then analyzes. The instrument was calibrated to the manufacturer’s

specifications and the calibration was checked, at least every four hours and at the beginning and completion of each set of readings, against known lead sample standards produced by the National Institute of Standards and Testing. The XRF instrument measures lead in units of milligrams per square centimeter (mg/cm^2). A total of 121 XRF readings were collected (including calibration checks) over the course of the survey activities.

The CDPH requires that, after a lead evaluation is performed, a copy of CDPH form 8552 "Lead Hazard Evaluation Report" should be submitted. Ninyo & Moore has faxed this form to the CDPH and a copy is included in Appendix B.

7 INVENTORY OF UNIVERSAL WASTES

A visual evaluation of the structures was performed to quantify miscellaneous hazardous building materials. This included, but was not limited to, potential mercury-containing thermostats, switches, and fluorescent light tubes; items potentially containing polychlorinated biphenyls; potential tritium or battery-containing exit signs; and potential CFC-containing refrigeration systems within HVAC units.

8 SURVEY RESULTS

The following sections describe the survey and inventory results.

8.1 Asbestos Survey

A total of 78 samples of suspect ACM were collected and transferred under chain-of-custody procedures to Eurofins for analysis. The lower limit of reliable detection for asbestos using the PLM method is approximately 1 percent by volume. In the state of California, DOSH regulations define asbestos-containing construction materials (ACCM) if one sample from a homogeneous area contains asbestos content of greater than one tenth of 1 percent (>0.1 percent) which is confirmed by PLM point count analysis (PLM 400- or 1000-point count analysis). Materials in which no asbestos was detected are defined in the laboratory report as "None detected." Materials containing asbestos, but in amounts less than 1 percent, are defined as containing "trace" amounts and are considered to be ACM without PLM point count analysis. Inaccessible suspect ACM that are suspect of being ACM or ACCM, which were inaccessible are noted to be assumed asbestos-containing.

8.2 Asbestos Results Summary

Based on observations and the analytical results of bulk samples collected during the limited survey, ACM was detected at the subject property. The building materials which were sampled

and found to be ACM are summarized in Table 1. The building materials which were sampled and found to be non-asbestos-containing are summarized in Table 2. A copy of the laboratory analytical report and chain-of-custody records are presented in Appendix B. General photographic documentation of the structures and areas sampled are presented in Appendix C. The sample locations are shown on the field drawing presented in Appendix D.

Table 1 – Positive Asbestos Survey Results

Sample No. from COC	HA No.	Material	Location	ACM Category	Condition	Approximate Quantity/ Asbestos Content	Photograph No.
7 – 9	2	Roof Penetration Mastic	Roof	NESHAP Category II non-friable	G	600 SF Gray/black mastic: 5% CH Black mastic: ND	2-3
37 – 41	11 & 12	12" x 12" Beige VFT with yellow mastic over gray VFT with black mastic	Senior Center floors	NESHAP Category II non-friable	G	5,000 SF Beige VFT: ND Yellow mastic: ND Gray VFT: 3% CH Black mastic: 5% CH	4-5
NA	NA	Fire doors	Senior Center mechanical/ electrical room	NESHAP Category II non-friable	G	2 EA Assumed	6
NA	NA	Mirror mastic	Daycare restroom	NESHAP Category II non-friable	G	4 SF Assumed	7

Notes:
ACM – asbestos-containing material
CH - chrysotile
COC – chain of custody
G – good
HA – homogeneous
NA – not applicable
ND – none detected
No. – number
NESHAP – National Emission Standards for Hazardous Air Pollutants
SF – square feet
VFT – vinyl floor tile
& - and
" – inches

I, William Larkin, (CAC No. 99-2688) assume that the fire doors and the mirror mastic found at the site is ACM and is subject to SCAQMD Rule 1403.

Please note that quantities of ACMs are approximate. It is the abatement contractor's responsibility to confirm quantities prior to bidding and removal activities.

Table 2 – Non-Asbestos-Containing Materials Sampled

Sample No. from COC	HA No.	Sample Material Descriptions	Material Location
1 – 3	1	Tar and gravel roof core	Roof
4 – 6	2	Asphalt roof core	Roof
10 – 12	4	Gray sealant	HVAC ducting
13 – 19	5	12"x12" Ceiling tile (Nailed-on)	Senior Center ceilings
20 – 24	6	Plaster with skim coat	Senior Center and Daycare walls & ceilings
25 – 29	7	Plaster with texture	Senior Center electrical room, storage rooms 1 & 2, and Daycare office walls & ceilings

Table 2 – Non-Asbestos-Containing Materials Sampled			
Sample No. from COC	HA No.	Sample Material Descriptions	Material Location
30	8	Red fire stop	Senior Center electrical room conduit penetration
31 – 33	9	4" Black cove base with brown/beige mastic	Senior Center walls/floors
34 – 36	10	4" Brown cove base with black mastic	Senior Center kitchenette & entry walls/floors
42 – 45	13	12" x 12" Beige VFT with yellow mastic over blue 7 white VFT with yellow mastic	Senior Center kitchenette floor
46 – 48	14	4" white cove base with transparent mastic	Daycare walls/floors
49 – 51	15	12" x 12" green VFT with transparent mastic	Daycare restroom floor
52 – 54	16	12" x 12" blue/red VFT with yellow mastic	Daycare floor
55 – 57	17	White caulking	Throughout restrooms sinks, toilets, & urinals
58 – 60	18	Grout & thin set	Throughout restrooms walls & floors
61 – 63	19	CMU with mortar	Throughout perimeter walls
64 – 66	20	Stucco	Throughout exterior walls
67 – 69	21	Concrete	Shuffle board floor
70 – 72	22	Concrete	Exterior sidewalks & fence posts
73 – 75	23	Corrugated roof panels	Shuffle board canopy roof
76 – 78	24	Asphalt pavement	Parking lot

Notes:
COC – chain of custody
CMU – concrete masonry unit
HA – homogeneous
HVAC – heating, ventilation, and air conditioning
No. – number
VFT – vinyl floor tile
& – and
" – inches

8.3 Lead-Containing Surfaces Summary

Federal efforts to regulate LBP began with the LBP Poison Prevention Act in 1971. In 1973, the Consumer Product Safety Commission (CPSC) defined LBP as paint having lead content equal to or greater than 0.5 percent by weight (1.0 mg/cm^2 by XRF) in a dry film of newly applied paint. In 1978, the CPSC lowered the allowable lead levels in new paint to 0.06 percent which is considered lead containing paint. HUD developed guidelines relating to HUD facilities that specified lead content of 0.5 percent as an action level in determining the need for corrective action. However, a more stringent level is established by Los Angeles County Department of Health Services which defines "dangerous levels of lead-bearing substances" as paint or other surface coating with lead greater than 0.7 mg/cm^2 (Los Angeles County Code, Title 11, Chapter 11.28, Section 11.28.010 C). Federal and State DOSH do not define the amount of lead in paint to a regulatory requirement, rather the activities, or task, define when the regulation is in effect. Both Federal and State standards use the term "trigger task" activities. In the work place,

employers must make certain assumptions of the exposure levels and comply with regulations based on the level of disturbance rather than the lead level.

A total of 121 XRF readings were collected from the representative testing combinations (e.g., unique combination of room equivalent, building component, substrate, and color) within the planned renovations and demolition of the structures. LCS was detected within the planned renovation areas at the site. In addition, some building components were reported to have detectable amounts of lead and are subject to DOSH Lead in Construction Standard, Title 8 California Code of Regulations (CCR) 1532.1. The LCS building components are presented in Table 3. Photographic documentation is presented in Appendix C. A summary of all XRF readings is presented within Appendix E.

Table 3 – Lead Results Summary

Room/Area	Component	Substrate	Condition	Color	Result (mg/cm^2)	Approximate Quantity	Photograph No.
Exterior	Curb	Concrete	Intact	Yellow	3.1, 2.6	200 LF	8
Club room	Sink	Porcelain	Intact	White	7.5	1 EA	9
Women's restroom	Wall tile	Ceramic	Intact	Pink	6.8	300 SF	10
Men's and Child care center restrooms	Wall tile	Ceramic	Intact	White	6.5	340 SF	11-12

Notes
EA – each
LF – linear feet
mg/cm^2 – milligram per square centimeter
No.– number
SF – square feet

8.4 Universal Wastes Inventory

Universal wastes were found within the structures. The descriptions and locations of universal wastes found to be present are summarized in Table 4.

Table 4 – Universal Waste Inventory

Hazardous Material Location	Hazardous Material Description	Estimated Quantity
Senior Center auditorium	Fluorescent Light Ballasts	12 EA
Senior Center auditorium	Fluorescent Light Bulbs	24 EA
Senior Center auditorium	Halogen bulbs	4 EA
Throughout	Exit signs (metal halide & mercury vapor)	11 EA
Throughout	LED lighting with ballast	50 EA
Senior Center by storage room storage room 2	Mercury thermostat bulbs	2 EA
Throughout	Fire extinguishers	4 EA
Throughout	Refrigerators	2 EA
Exterior benches and shuffle board canopy	Pressure treated lumber	300 LF
Roof	HVAC units	10 EA

Notes:
EA – each
HVAC – heating, ventilation, and air-conditioning
LED – light emitting diode
LF – linear feet

9 RECOMMENDATIONS

The following recommendations are provided.

9.1 Asbestos

- The identified ACM in Table 1 should not be disturbed by unauthorized personnel. Prior to renovation activities which would disturb identified ACM, a licensed abatement removal contractor should remove the ACM. The licensed abatement contractor must maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal, or other regulated activities.

- Based on the referenced Integrity Abatement report, asbestos abatement was previously performed within the Kitchenette area of the Senior Center. With the current sampling activities and findings, it is recommended that the vinyl flooring materials within the Kitchenette to be removed within a containment in order to determine the extent of where the ACM vinyl floor tile and black mastic ends.

- Applicable laws and regulations should be followed, including those provisions requiring notification to regulatory agencies, building occupants, demolition contractors, and workers of the presence of asbestos.

- Asbestos abatement monitoring consulting services should be performed by a third-party environmental consultant, to include oversight of abatement contractor activities to be performed in accordance with the abatement specifications, daily air monitoring, clearances, verification of complete removal of hazardous materials, and preparation of a closeout report summarizing the abatement activities.

9.2 Lead

- The identified LCS within Table 3 should not be disturbed by unauthorized personnel. All disturbances and removal activities should be performed by a licensed abatement contractor with certified lead personnel. All lead related removal activities should be performed in accordance with the DOSH Lead in Construction Standard, Title 8 CCR 1532.1.

- Proper LCS waste stream categorization is required for lead components which will be removed. Prior to disposal, a composite sample of the representative LCS material should be analyzed for total lead for comparison with the Total Threshold Limit Concentration in accordance with EPA reference method SW-846. If the concentration of total lead is greater than or equal to 1,000 milligrams per kilogram (mg/kg), the LCS waste material must be disposed at a landfill which can receive such wastes. If the concentration is less than 50 mg/kg the sample may be disposed as construction debris, if it is to remain in California. If the total lead result is greater than or equal to 50 mg/kg and less than 1,000 mg/kg, the sample must be further analyzed for soluble lead by the Waste Extraction Test for comparison with the Soluble Threshold Limit Concentration as described in Title 22 CCR 66261.24a. Additionally, if the result is greater than or equal to 100 mg/kg the sample must be further analyzed for leachable lead by the Toxicity Characteristic Leaching Procedure for comparison with the Resource Conservation and Recovery Act (RCRA) limits. Based on the results of the soluble and leachable analysis the waste material may require disposal as a RCRA-Hazardous waste or non-RCRA- (California-) Hazardous waste.

9.3 Universal Wastes

Universal wastes discussed in this report (Table 4), should be removed and properly recycled or disposed by the contractor during renovation activities. Contractor should provide proper manifesting for all hazardous materials removed and recycled to prove the disposal of all materials was completed in accordance with local, state, and federal requirements.

10 LIMITATIONS

Ninyo & Moore's opinions and recommendations regarding environmental conditions, as presented in this report, are based on limited sampling and chemical analysis. Further assessment of potential adverse environmental impacts may be accomplished by a more comprehensive assessment. The samples collected and used for testing, and the observations made, are believed to be representative of the area(s) evaluated. However, if additional suspect ACMs or LCS are encountered during renovation activities, these materials should be sampled by qualified personnel, and analyzed for content prior to further disturbance. In addition, please note that quantities of ACMs are approximate. These numbers should be confirmed prior to removal or repair activities.

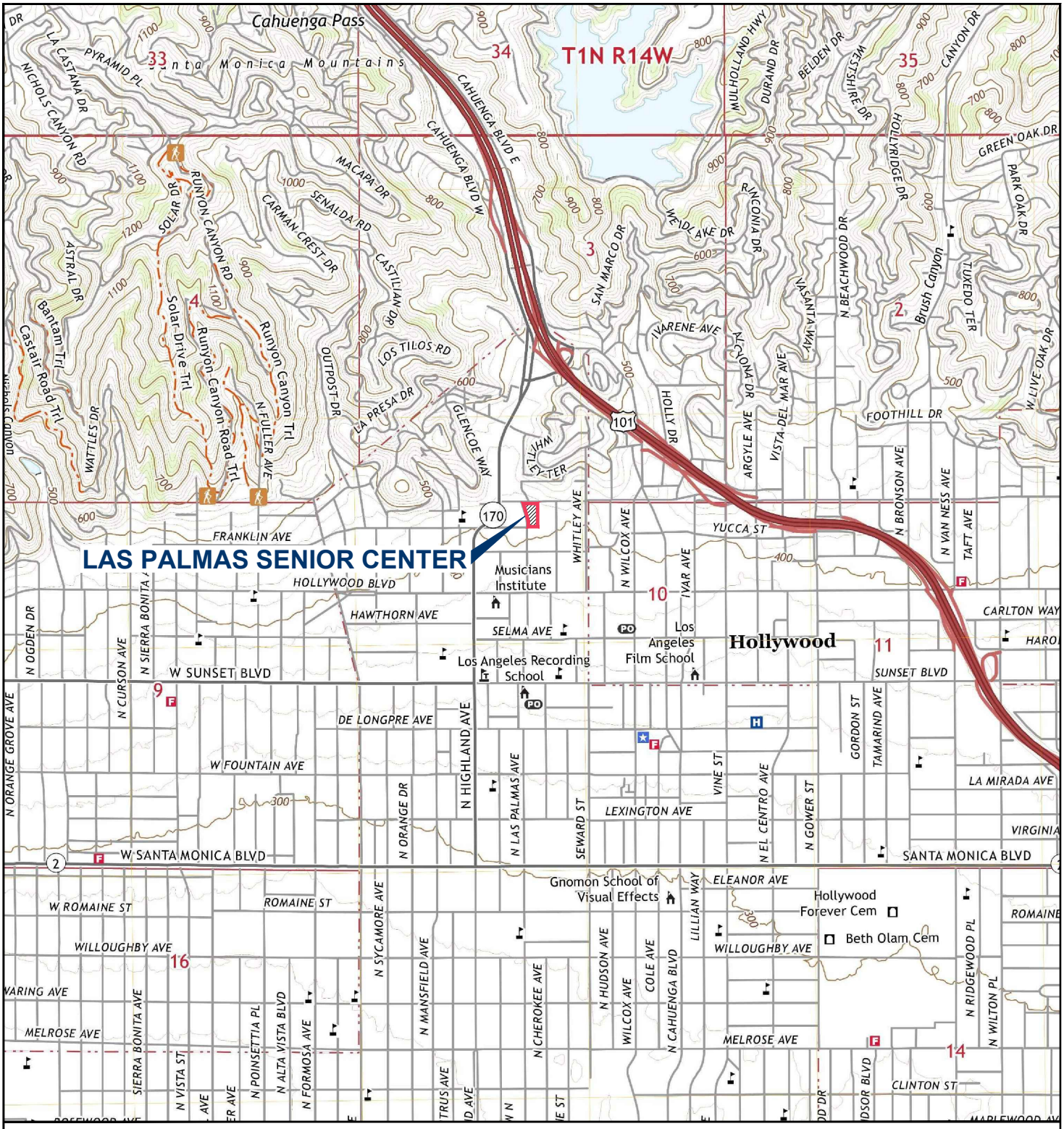
The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard-of-care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report. Variations in site conditions may exist and conditions not observed or described in this report may be encountered during subsequent activities.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires any additional information, or has questions regarding content, interpretations presented, or completeness of this document.

The environmental interpretations and opinions contained in this report are based on the results of laboratory tests and analyses intended to detect the presence and concentration of specific chemical or physical constituents in samples collected from the subject site. The testing and analyses have been conducted by an independent laboratory which is certified by the State of California to conduct such tests. Ninyo & Moore has no involvement in, or control over, such testing and analysis. Ninyo & Moore, therefore, disclaims responsibility for any inaccuracy in such laboratory results.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. It should be understood that the conditions of a site can change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

FIGURE



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2020.

N

FEET
0 2,000 4,000

209616018_SL.dwg 03/30/2023 JDP

FIGURE 1

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SITE LOCATION

LAS PALMAS SENIOR CENTER
1820 NORTH LAS PALMAS AVENUE
LOS ANGELES, CALIFORNIA
209616018 I 6/23

APPENDIX A

Consultant Certificates

STATE OF CALIFORNIA Gavin Newsom, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health-Asbestos Certification
1750 Howe Avenue, Suite 460
Sacramento, CA 95825
(916) 574-2993 Office http://www.dir.ca.gov/dosh/asbestos.html actu@dir.ca.gov

712196144T **430.2** **431**

February 08, 2023

David M Kelly
26015 Okuma Road
Menifee CA 92584

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address or email w any changes in your contact/mailing information within 15 days of the change.

Sincerely,

Kevin Graulich
Principal Safety Engineer

PAttachment: Certification Card

cc: File



Renewal – Card Attached

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
 **David Kelly**	Lead Sampling Technician	LRC-00002285	10/22/2023

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

William Patrick Larkin
Name



Certification No. **99-2688**

Expires on **12/08/23**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

California Department of PublicHealth

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
	Lead Inspector/Assessor	LRC-00001285	7/3/2023
	Lead Project Monitor	LRC-00001284	7/3/2023

William Larkin

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

APPENDIX B

California Department of Public Health Form 8552

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation 3/1/2023

Section 2 — Type of Lead Hazard Evaluation (Check one box only)

☑ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☐ Other (specify) _____

Section 3 — Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	Zip Code
1820 North Las Palmas Avenue	Los Angeles	Los Angeles	90028

Construction date (year) of structure	Type of structure	Children living in structure?
Unknown	☐ Multi-unit building ☑ School or daycare ☐ Single family dwelling ☑ Other Senior Center	☐ Yes ☑ No ☐ Don't Know

Section 4 — Owner of Structure (if business/agency, list contact person)

Name	Telephone number
Department of Recreation and Parks (Lisa Walldez)	213-202-2664

Address [number, street, apartment (if applicable)]	City	State	Zip Code
221 North Figuerora Street, Suite 400	Los Angeles	California	90012

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☐ No lead-based paint detected ☑ Intact lead-based paint detected ☐ Deteriorated lead-based paint detected

☐ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☐ Other _____

Section 6 — Individual Conducting Lead Hazard Evaluation

Name	Telephone number
David Kelly	949-753-7070

Address [number, street, apartment (if applicable)]	City	State	Zip Code
475 Goddard, Ste 200	Irvine	Califronia	92618

CDPH certification number	Signature	Date
#2285		3/15/2023

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

APPENDIX C

Analytical Results and Chain-of-Custody Records

eurofins | Built Environment Testing

Report for:

David Kelly
Ninyo & Moore - Irvine
475 Goddard
Suite 200
Irvine, CA 92618

Regarding: Eurofins EPK Built Environment Testing, LLC
Project: 209616018; Las Palmas Senior Center, 1820 N Las Palmas Ave
EML ID: 3184726

Approved by:



Approved Signatory
Danny Li

Dates of Analysis:
Asbestos PLM: 03-06-2023

Service SOPs: Asbestos PLM (EPA 40CFR App E to Sub E of Part 763 & EPA METHOD 600/R-93-116, SOP EM-AS-S-1267)
NVLAP Lab Code 200757-0

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the samples as received and tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

Eurofins EPK Built Environment Testing, LLC ("the Company"), a member of the Eurofins Built Environment Testing group of companies, shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Eurofins EPK Built Environment Testing, LLC
2841 Dow Avenue, Suite 300, Tustin, CA 92780
(866) 888-6653 www.eurofinsus.com/Built

Client: Ninyo & Moore - Irvine
C/O: David Kelly
Re: 209616018; Las Palmas Senior Center, 1820 N Las Palmas Ave

Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Total Samples Submitted:	78
Total Samples Analyzed:	78
Total Samples with Layer Asbestos Content > 1%:	6

Location: 1, Roof North, Tar and Gravel Roof Core

Lab ID-Version‡: 15414356-1

Sample Layers	Asbestos Content
Multicolored Rock	ND
Black Roofing Tar	ND
Composite Non-Asbestos Content:	7% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 2, Roof South, Tar and Gravel Roof Core

Lab ID-Version‡: 15414357-1

Sample Layers	Asbestos Content
Multicolored Rock	ND
Black Roofing Tar	ND
Composite Non-Asbestos Content:	7% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 3, Roof East, Tar and Gravel Roof Core

Lab ID-Version‡: 15414358-1

Sample Layers	Asbestos Content
Multicolored Rock	ND
Black Roofing Tar	ND
Composite Non-Asbestos Content:	7% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 4, Roof HVAC Island, Asphalt Roof Core

Lab ID-Version‡: 15414359-1

Sample Layers	Asbestos Content
Black Asphalt	ND
Composite Non-Asbestos Content:	40% Glass Fibers 35% Cellulose
Sample Composite Homogeneity:	Moderate

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by any agency of the federal government. The Company reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
‡ A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

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(866) 888-6653 www.eurofinsus.com/Built

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C/O: David Kelly
Re: 209616018; Las Palmas Senior Center, 1820 N Las Palmas Ave

Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 5, Roof Wall Flashing, Asphalt Roof Core Lab ID-Version‡: 15414360-1

Sample Layers	Asbestos Content
Black Asphalt	ND
Composite Non-Asbestos Content:	40% Glass Fibers 35% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 6, Roof HVA Island, Asphalt Roof Core Lab ID-Version‡: 15414361-1

Sample Layers	Asbestos Content
Black Asphalt	ND
Composite Non-Asbestos Content:	40% Glass Fibers 35% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 7, Roof Vent, Pen. Mastic (Grey/Black) Lab ID-Version‡: 15414362-1

Sample Layers	Asbestos Content
Gray/Black Roofing Mastic	5% Chrysotile
Black Roofing Mastic	ND
Sample Composite Homogeneity:	Moderate

Location: 8, Roof Vent Pipe, Pen. Mastic (Grey/Black) Lab ID-Version‡: 15414363-1

Sample Layers	Asbestos Content
Black Roofing Mastic	ND
Composite Non-Asbestos Content:	5% Cellulose
Sample Composite Homogeneity:	Moderate

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Client: Ninyo & Moore - Irvine
C/O: David Kelly
Re: 209616018; Las Palmas Senior Center, 1820 N Las Palmas Ave

Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 9, Roof Ducting Penetration, Pen. Mastic (Grey/Black) Lab ID-Version‡: 15414364-1

Sample Layers	Asbestos Content
Black Roofing Mastic	ND
Composite Non-Asbestos Content:	5% Cellulose
Sample Composite Homogeneity:	Moderate

Location: 10, HVAC Ducting, Ducting Sealant Lab ID-Version‡: 15414365-1

Sample Layers	Asbestos Content
Gray Sealant	ND
Sample Composite Homogeneity:	Good

Location: 11, HVAC Ducting, Ducting Sealant Lab ID-Version‡: 15414366-1

Sample Layers	Asbestos Content
Gray Sealant	ND
Sample Composite Homogeneity:	Good

Location: 12, HVAC Ducting, Ducting Sealant Lab ID-Version‡: 15414367-1

Sample Layers	Asbestos Content
Gray Sealant	ND
Sample Composite Homogeneity:	Good

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Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 13, Clubroom Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414368-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

Location: 14, Director's Office Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414369-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

Location: 15, Kitchenette Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414370-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

Location: 16, Community Room Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414371-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

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Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.
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Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 17, Community Room Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414372-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

Location: 18, Entry Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414373-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

Location: 19, Daycare Ceiling, 12"x12" Ceiling Tile (Nailed-On) Lab ID-Version‡: 15414374-1

Sample Layers	Asbestos Content
Brown Ceiling Tile	ND
Composite Non-Asbestos Content:	95% Cellulose
Sample Composite Homogeneity:	Good

Location: 20, Community Room Wall, Plaster w/ Skim Coat Lab ID-Version‡: 15414375-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

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Client: Ninyo & Moore - Irvine
C/O: David Kelly
Re: 209616018; Las Palmas Senior Center, 1820 N Las Palmas Ave

Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 21, Janitor Ceiling, Plaster w/ Skim Coat Lab ID-Version‡: 15414376-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Location: 22, Kitchenette Wall, Plaster w/ Skim Coat Lab ID-Version‡: 15414377-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Location: 23, N Storage Room Wall, Plaster w/ Skim Coat Lab ID-Version‡: 15414378-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Location: 24, Daycare Wall, Plaster w/ Skim Coat Lab ID-Version‡: 15414379-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

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Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 25, Elec. Room Ceiling, Plaster w/ Texture Lab ID-Version‡: 15414380-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Location: 26, Storage Room 2 Wall, Plaster w/ Texture Lab ID-Version‡: 15414381-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Location: 27, Storage Room 1 Wall, Plaster w/ Texture Lab ID-Version‡: 15414382-1

Sample Layers	Asbestos Content
White Skim Coat	ND
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Location: 28, Storage Room 2 Wall, Plaster w/ Texture Lab ID-Version‡: 15414383-1

Sample Layers	Asbestos Content
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Comments: Skim coat not detected.

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by any agency of the federal government. The Company reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

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Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 29, Daycare Office Wall, Plaster w/ Texture Lab ID-Version‡: 15414384-1

Sample Layers	Asbestos Content
Gray Plaster	ND
Sample Composite Homogeneity:	Moderate

Comments: Skim Coat not detected.

Location: 30, Electrical Room Conduit, Red Fire Stop Lab ID-Version‡: 15414385-1

Sample Layers	Asbestos Content
Red Fire Stop	ND
Sample Composite Homogeneity:	Good

Location: 31, Community Room, 4" Black Covebase w/ Mastic Lab ID-Version‡: 15414386-1

Sample Layers	Asbestos Content
Black Baseboard	ND
Brown/Beige Mastic	ND
Sample Composite Homogeneity:	Moderate

Location: 32, Entry, 4" Black Covebase w/ Mastic Lab ID-Version‡: 15414387-1

Sample Layers	Asbestos Content
Black Baseboard	ND
Brown/Beige Mastic	ND
Sample Composite Homogeneity:	Moderate

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2841 Dow Avenue, Suite 300, Tustin, CA 92780
(866) 888-6653 www.eurofinsus.com/Built

Client: Ninyo & Moore - Irvine
C/O: David Kelly
Re: 209616018; Las Palmas Senior Center, 1820 N Las Palmas Ave

Date of Sampling: 03-01-2023
Date of Receipt: 03-03-2023
Date of Report: 03-06-2023

ASBESTOS PLM REPORT

Location: 33, Clubroom, 4" Black Covebase w/ Mastic Lab ID-Version‡: 15414388-1

Sample Layers	Asbestos Content
Black Baseboard	ND
Brown/Beige Mastic	ND
Sample Composite Homogeneity:	Moderate

Location: 34, Kitchenette, 4" Brown Covebase w/ Mastic Lab ID-Version‡: 15414389-1

Sample Layers	Asbestos Content
Brown Baseboard	ND
Black Mastic	ND
Sample Composite Homogeneity:	Moderate

Location: 35, Kitchenette, 4" Brown Covebase w/ Mastic Lab ID-Version‡: 15414390-1

Sample Layers	Asbestos Content
Brown Baseboard	ND
Black Mastic	ND
Sample Composite Homogeneity:	Moderate

Location: 36, Kitchenette/Entry, 4" Brown Covebase w/ Mastic Lab ID-Version‡: 15414391-1

Sample Layers	Asbestos Content
Brown Baseboard	ND
Black Mastic	ND
Sample Composite Homogeneity:	Moderate

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ASBESTOS PLM REPORT

Location: 37, Hallway N Floor, Beige VFT w/ Mastic Over Grey VFT w/ Mastic Lab ID-Version‡: 15414392-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic	ND
Gray Floor Tile	ND
Black Mastic	5% Chrysotile
Sample Composite Homogeneity:	Good

Location: 38, Community Room Floor, Beige VFT w/ Mastic Over Grey VFT w/ Mastic

Lab ID-Version‡: 15414393-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic	ND
Beige Fibrous Material	ND
Gray Floor Tile	3% Chrysotile
Black Mastic	5% Chrysotile
Composite Non-Asbestos Content:	5% Cellulose
Sample Composite Homogeneity:	Good

Location: 39, Entry/Kitchenette Floor, Beige VFT w/ Mastic Over Grey VFT w/ Mastic Lab ID-Version‡: 15414394-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic	ND
Gray Floor Tile	3% Chrysotile
Black Mastic	5% Chrysotile
Sample Composite Homogeneity:	Good

Location: 40, Clubroom Floor, Grey VFT w/ Mastic (Under Beige VFT) Lab ID-Version‡: 15414395-1

Sample Layers	Asbestos Content
Gray Floor Tile	3% Chrysotile
Black Mastic (Trace)	< 1% Chrysotile
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 41, Directors Office Floor, Grey VFT w/ Mastic (Under Beige VFT) Lab ID-Version‡: 15414396-1

Sample Layers	Asbestos Content
Gray Floor Tile	ND
Black Mastic	5% Chrysotile
Sample Composite Homogeneity:	Good

Location: 42, Kitchenette N Floor, Beige VFT w/ Mastic Over Blue VFT w/ Mastic Lab ID-Version‡: 15414397-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic 1	ND
Blue Floor Tile	ND
Yellow Mastic 2	ND
Sample Composite Homogeneity:	Good

Location: 43, Kitchenette S Floor, Beige VFT w/ Mastic Over Blue VFT w/ Mastic Lab ID-Version‡: 15414398-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic 1	ND
Blue Floor Tile	ND
Yellow Mastic 2	ND
Sample Composite Homogeneity:	Good

Location: 44, Kitchenette N/W Floor, Beige VFT w/ Mastic Over White VFT w/ Mastic

Lab ID-Version‡: 15414399-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic 1	ND
White Floor Tile	ND
Yellow Mastic 2	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 45, Kitchenette N/E Floor, Beige VFT w/ Mastic Over White VFT w/ Mastic Lab ID-Version‡: 15414400-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic 1	ND
White Floor Tile	ND
Yellow Mastic 2	ND
Sample Composite Homogeneity:	Good

Location: 46, Daycare, 4" White Cove Base w/ Mastic Lab ID-Version‡: 15414401-1

Sample Layers	Asbestos Content
White Baseboard	ND
Transparent Mastic	ND
Sample Composite Homogeneity:	Good

Location: 47, Daycare, 4" White Cove Base w/ Mastic Lab ID-Version‡: 15414402-1

Sample Layers	Asbestos Content
White Baseboard	ND
Transparent Mastic	ND
Sample Composite Homogeneity:	Good

Location: 48, Daycare, 4" White Cove Base w/ Mastic Lab ID-Version‡: 15414403-1

Sample Layers	Asbestos Content
White Baseboard	ND
Transparent Mastic	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 49, Daycare Restroom Floor, Green VFT w/ Mastic Lab ID-Version‡: 15414404-1

Sample Layers	Asbestos Content
Green Floor Tile	ND
Transparent Mastic	ND
Sample Composite Homogeneity:	Good

Location: 50, Daycare Restroom Floor, Green VFT w/ Mastic Lab ID-Version‡: 15414405-1

Sample Layers	Asbestos Content
Green Floor Tile	ND
Transparent Mastic	ND
Sample Composite Homogeneity:	Good

Location: 51, Daycare Restroom Floor, Green VFT w/ Mastic Lab ID-Version‡: 15414406-1

Sample Layers	Asbestos Content
Beige Floor Tile	ND
Yellow Mastic	ND
Sample Composite Homogeneity:	Good

Location: 52, Daycare Floor, Blue VFT w/ Mastic (Mixed w/ Red VFT) Lab ID-Version‡: 15414407-1

Sample Layers	Asbestos Content
Blue Floor Tile	ND
Yellow Mastic	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 53, Daycare Floor, Blue VFT w/ Mastic (Mixed w/ Red VFT) Lab ID-Version‡: 15414408-1

Sample Layers	Asbestos Content
Blue Floor Tile	ND
Yellow Mastic	ND
Sample Composite Homogeneity:	Good

Location: 54, Daycare Floor, Blue VFT w/ Mastic (Mixed w/ Red VFT) Lab ID-Version‡: 15414409-1

Sample Layers	Asbestos Content
Blue Floor Tile	ND
Yellow Mastic	ND
Sample Composite Homogeneity:	Good

Location: 55, Men's Restroom, Caulking (Sinks, Toilets, Etc) Lab ID-Version‡: 15414410-1

Sample Layers	Asbestos Content
Beige Caulk	ND
Sample Composite Homogeneity:	Good

Location: 56, Women's Restroom, Caulking (Sinks, Toilets, Etc) Lab ID-Version‡: 15414411-1

Sample Layers	Asbestos Content
Beige Caulk	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 57, Daycare Restroom, Caulking (Sinks, Toilets, Etc) Lab ID-Version‡: 15414412-1

Sample Layers	Asbestos Content
Beige Caulk	ND
Sample Composite Homogeneity:	Good

Location: 58, Women's Restroom Wall, Grout and Thinset Lab ID-Version‡: 15414413-1

Sample Layers	Asbestos Content
Gray Cementitious Material	ND
Sample Composite Homogeneity:	Moderate

Location: 59, Women's Restroom Floor, Grout and Thinset Lab ID-Version‡: 15414414-1

Sample Layers	Asbestos Content
Gray Cementitious Material	ND
Sample Composite Homogeneity:	Moderate

Location: 60, Men's Restroom Wall, Grout and Thinset Lab ID-Version‡: 15414415-1

Sample Layers	Asbestos Content
Gray Cementitious Material	ND
Sample Composite Homogeneity:	Moderate

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ASBESTOS PLM REPORT

Location: 61, Perimeter Walls, CMU and Mortar Lab ID-Version‡: 15414416-1

Sample Layers	Asbestos Content
Gray Cementitious Material	ND
Sample Composite Homogeneity:	Good

Location: 62, Perimeter Walls, CMU and Mortar Lab ID-Version‡: 15414417-1

Sample Layers	Asbestos Content
Gray Cementitious Material	ND
Sample Composite Homogeneity:	Good

Location: 63, Perimeter Walls, CMU and Mortar Lab ID-Version‡: 15414418-1

Sample Layers	Asbestos Content
Gray Cementitious Material	ND
Sample Composite Homogeneity:	Good

Location: 64, Exterior Walls, Stucco Lab ID-Version‡: 15414419-1

Sample Layers	Asbestos Content
Gray Stucco	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 65, Exterior Walls, Stucco Lab ID-Version‡: 15414420-1

Sample Layers	Asbestos Content
Gray Stucco	ND
Sample Composite Homogeneity:	Good

Location: 66, Exterior Walls, Stucco Lab ID-Version‡: 15414421-1

Sample Layers	Asbestos Content
Gray Stucco	ND
Sample Composite Homogeneity:	Good

Location: 67, Shuffleboard Floor, Concrete Lab ID-Version‡: 15414422-1

Sample Layers	Asbestos Content
Gray Concrete	ND
Sample Composite Homogeneity:	Good

Location: 68, Shuffleboard Floor, Concrete Lab ID-Version‡: 15414423-1

Sample Layers	Asbestos Content
Gray Concrete	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 69, Shuffleboard Floor, Concrete Lab ID-Version‡: 15414424-1

Sample Layers	Asbestos Content
Gray Concrete	ND
Sample Composite Homogeneity:	Good

Location: 70, Exterior Sidewalks, Concrete Lab ID-Version‡: 15414425-1

Sample Layers	Asbestos Content
Gray Concrete	ND
Sample Composite Homogeneity:	Good

Location: 71, Exterior Sidewalks, Concrete Lab ID-Version‡: 15414426-1

Sample Layers	Asbestos Content
Gray Concrete	ND
Sample Composite Homogeneity:	Good

Location: 72, Exterior Fence Post, Concrete Lab ID-Version‡: 15414427-1

Sample Layers	Asbestos Content
Gray Concrete	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 73, Shuffleboard Canopy, Corrugated Roof Panels Lab ID-Version‡: 15414428-1

Sample Layers	Asbestos Content
Gray Non-Fibrous Material	ND
Sample Composite Homogeneity:	Good

Location: 74, Shuffleboard Canopy, Corrugated Roof Panels Lab ID-Version‡: 15414429-1

Sample Layers	Asbestos Content
Gray Non-Fibrous Material	ND
Sample Composite Homogeneity:	Good

Location: 75, Shuffleboard Canopy, Corrugated Roof Panels Lab ID-Version‡: 15414430-1

Sample Layers	Asbestos Content
Gray Non-Fibrous Material	ND
Sample Composite Homogeneity:	Good

Location: 76, Parking Lot, Asphalt Pavement Lab ID-Version‡: 15414431-1

Sample Layers	Asbestos Content
Black Asphalt Pavement	ND
Sample Composite Homogeneity:	Good

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ASBESTOS PLM REPORT

Location: 77, Parking Lot, Asphalt Pavement Lab ID-Version‡: 15414432-1

Sample Layers	Asbestos Content
Black Asphalt Pavement	ND
Sample Composite Homogeneity:	Good

Location: 78, Parking Lot, Asphalt Pavement Lab ID-Version‡: 15414433-1

Sample Layers	Asbestos Content
Black Asphalt Pavement	ND
Sample Composite Homogeneity:	Good

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ASBESTOS BULK SAMPLE DATA SHEET

Ninyo & Moore
475 Goddard, Suite 200
Irvine, CA 92618
Tel: (949) 753-7070
Fax: (949) 753-7071

Project Name: Las Palmas Senior Center
Address: 1820 N. Las Palmas Ave
Project No: 209616018
Project Manager: David Kelly

Date Sampled: 3/1/23
Sampled By: David Kelly

Laboratory: EM Lab

003184726

CHAIN OF CUSTODY INFORMATION: Email: dkelly@ninyoandmoore.com

Analysis: PLM EPA 600/R-93/116 TAT: Next Day

Relinquished By: (sign/print)	Company	Date	Time(24 hr.)	Received By: (sign/print)	Laboratory
David Kelly	Ninyo & Moore	3/2/23	1000am	John Tang	3/3/23 9:46 am

Sample ID	Building Number	Sample Location	HA No.	Sample Description	Quantity (SF/LF/EA)	Friable (Y/N)	Condition
1	1820	Roof North	1	Tar & Gravel Roof core	7,500 SF	N	G
2	↓	South	↓	↓	↓	↓	↓
3	↓	East	↓	↓	↓	↓	↓
4		Roof HVAC island	2	Asphalt roof core	600 SF	N	G
5		wall flashing	↓	↓	↓	↓	↓
6		HVA island	↓	↓	↓	↓	↓
7		Roof vent	3	Per. mastic (Grey/Black)	120 SF	N	G
8		vent pipe	↓	↓	↓	↓	↓
9		ducting penetration	↓	↓	↓	↓	↓
10		HVAC ducting	4	Ducting sealant	400 SF	N	G
11		↓	↓	↓	↓	↓	↓
12		↓	↓	↓	↓	↓	↓
13	↓	Club room ceiling	5	12"x12" ceiling tile (nailed-on)	6,000 SF	Y	G

ASBESTOS BULK SAMPLE DATA SHEET

Ninyo & Moore
475 Goddard, Suite 200
Irvine, CA 92618
Tel: (949) 753-7070
Fax: (949) 753-7071

Project Name: Las Palmas Senior Center
Address:
Project No: 209616018
Project Manager: David Kelly

Date Sampled: 3/1/23
Sampled By: David Kelly

Laboratory: EM Lab

003184726

CHAIN OF CUSTODY INFORMATION: Email: dkelly@ninyoandmoore.com

Analysis: PLM EPA 600/R-93/116 TAT: Next Day

Relinquished By: (sign/print)	Company	Date	Time (24 hr.)	Received By: (sign/print)	Laboratory
David Kelly	Ninyo & Moore	3/2/23	1000am	Johnny	3/3/23 9:46 am

Sample ID	Building Number	Sample Location	HA No.	Sample Description	Quantity (SF/LF/EA)	Friable (Y/N)	Condition
14	1820	Director's office ceiling	5	12"x12" ceiling tile (nailed-on)	600SF	Y	G
15		Kitchenette					
16		Community room					
17		↓					
18		Entry					
19		Day care	↓	↓	↓	↓	↓
20		Community Room wall	6	Plaster w/skim coat	4,900SF	N	G
21		Janitor ceiling					
22		Kitchenette wall					
23		N. Storage room wall					
24		Day care wall	↓	↓	↓	↓	↓
25		Elec. room ceiling	7	Plaster w/ Texture	3,500 SF	N	G
26	↓	Storage room 2 wall	↓	↓	↓	↓	↓

ASBESTOS BULK SAMPLE DATA SHEET

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475 Goddard, Suite 200
Irvine, CA 92618
Tel: (949) 753-7070
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Project Name : Las Palmas Senior Center
Address:
Project No: 209616018
Project Manager: David Kelly

Date Sampled: 3/1/23
Sampled By: David Kelly

Laboratory:
EM Lab

003184726

CHAIN OF CUSTODY INFORMATION: Email: dkelly@ninyoandmoore.com

Analysis: PLM EPA 600/R-93/116 TAT: Next Day

Relinquished By: (sign/print)	Company	Date	Time(24 hr.)	Received By: (sign/print)	Laboratory
/ David Kelly	Ninyo & Moore	3/2/23	1000 am	/ John Yang	3/3/23 9:46 am
/				/	

Sample ID	Building Number	Sample Location	HA No.	Sample Description	Quantity (SF/LF/EA)	Friable (Y/N)	Condition
27	1B20	Storage room 1 wall	7	Plaster w/ Texture	3,500 SF	N	G
28	↓	2 wall	↓	↓	↓	↓	↓
29	↓	Day care office wall	↓	↓	↓	↓	↓
30	↓	Electrical room conduit	8	Red fire stop	<1 SF	N	G
31	↓	Community room	9	4" Black cove base w/ mastic	130 SF	N	G
32	↓	Entry	↓	↓	↓	↓	↓
33	↓	Club room	↓	↓	↓	↓	↓
34	↓	Kitchenette	10	4" Brown cove base w/ mastic	30 SF	N	G
35	↓	↓	↓	↓	↓	↓	↓
36	↓	/ Entry	↓	↓	↓	↓	↓
37	↓	Hallway N. Floor	11 & 12	Beige VFT w/ mastic over Grey VFT w/ mastic	5,500 SF / 5,000 SF	N	G
38	↓	Community room Floor	↓	↓	↓	↓	↓
39	↓	Entry / Kitchenette Floor	↓	↓	↓	↓	↓

Ninyo & Moore

ASBESTOS BULK SAMPLE DATA SHEET

Ninyo & Moore
475 Goddard, Suite 200
Irvine, CA 92618
Tel: (949) 753-7070
Fax: (949) 753-7071

Project Name: Las Palmas Senior Center
Address:
Project No: 209616018
Project Manager: David Kelly

Date Sampled: 3/1/23
Sampled By: David Kelly

Laboratory: EM Lab

003184726

CHAIN OF CUSTODY INFORMATION: Email: dkelly@ninyoandmoore.com

Analysis: PLM EPA 600/R-93/116 TAT: Next Day

Relinquished By: (sign/print)	Company	Date	Time(24 hr.)	Received By: (sign/print)	Laboratory
David Kelly	Ninyo & Moore	3/2/23	1000am	Johnfang	3/3/23 9:46 am

Sample ID	Building Number	Sample Location	HA No.	Sample Description	Quantity (SF/LF/EA)	Friable (Y/N)	Condition
40	1820	Clubroom Floor	12	Grey VFT w/ mastic (Under Beige VFT)	5,000SF	N	G
41		Directors office Floor					
42		Kitchenette N. Floor	11&13	Beige VFT w/ mastic over Blue VFT w/ mastic	5,500SF / 500SF	N	G
43		S.					
44		N/W		over White VFT w/ mastic			
45		N/E					
46		Day care	14	4" white cove base w/ mastic	30 SF	N	G
47							
48							
49		Day care Restroom flor	15	Green VFT w/ mastic	110SF	N	G
50							
51							
52		Day care flor	16	Blue VFT w/ mastic (mixed w/ Red VFT)	130 SF	N	G

ASBESTOS BULK SAMPLE DATA SHEET

Ninyo & Moore
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Project Name : Las Palmas Senior Center
Address:

Project No: 209616018
Project Manager: David Kelly

Date Sampled: 3/1/23
Sampled By: David Kelly

Laboratory:
EM Lab

003184726

CHAIN OF CUSTODY INFORMATION: Email: dkelly@ninyoandmoore.com

Analysis: PLM EPA 600/R-93/116 TAT: Next Day

Relinquished By: (sign/print)	Company	Date	Time(24 hr.)	Received By: (sign/print)	Laboratory
David Kelly	Ninyo & Moore	3/2/23	1000am	John Tang	3/3/23 9:46 am

Sample ID	Building Number	Sample Location	HA No.	Sample Description	Quantity (SF/LF/EA)	Friable (Y/N)	Condition
53	1820	Daycare floor	16	Blue VFT w/ mastic (mixed w/ Red VFT)	130SF	N	G
54	↓	↓	↓	↓	↓	↓	↓
55		Men's Restroom	17	Caulking (sinks, toilets, etc)	8 SF	N	G
56		Women's Restroom	↓	↓	↓	↓	↓
57		Daycare Restroom	↓	↓	↓	↓	↓
58		Women's Restroom wall	18	Grout & thin set	500SF	N	G
59		↓ floor	↓	↓	↓	↓	↓
60		Men's Restroom wall	↓	↓	↓	↓	↓
61		Perimeter walls	19	CMU & Mortar	2,000SF	N	G
62		↓	↓	↓	↓	↓	↓
63		↓	↓	↓	↓	↓	↓
64		Exterior walls	20	Stucco	3,000SF	N	G
65	↓	↓	↓	↓	↓	↓	↓

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003184726

CHAIN OF CUSTODY INFORMATION: Email: dkelly@ninyoandmoore.com

Analysis: PLM EPA 600/R-93/116 TAT: Next Day

Relinquished By: (sign/print)	Company	Date	Time(24 hr)	Received By: (sign/print)	Laboratory
David Kelly	Ninyo & Moore	3/2/23	1000am	John Kang	3/3/23 9:46 am

Sample ID	Building Number	Sample Location	HA No.	Sample Description	Quantity (SF/LF/EA)	Friable (Y/N)	Condition
66	1820	Exterior walls	20	Stucco	3,000SF	N	G
67	"	Shuffleboard floor	21	Concrete	2,500SF	N	G
68	"	"	"	"	"	"	"
69	"	"	"	"	"	"	"
70	"	Exterior sidewalks	22	Concrete	2,000SF	N	G
71	"	"	"	"	"	"	"
72	"	Fence post	"	"	"	"	"
73	"	Shuffleboard canopy	23	Corrugated roof panels	700SF	N	G
74	"	"	"	"	"	"	"
75	"	"	"	"	"	"	"
76	"	Parking lot	24	Asphalt pavement	7,700SF	N	G
77	"	"	"	"	"	"	"
78	"	"	"	"	"	"	"

APPENDIX D

Photographs



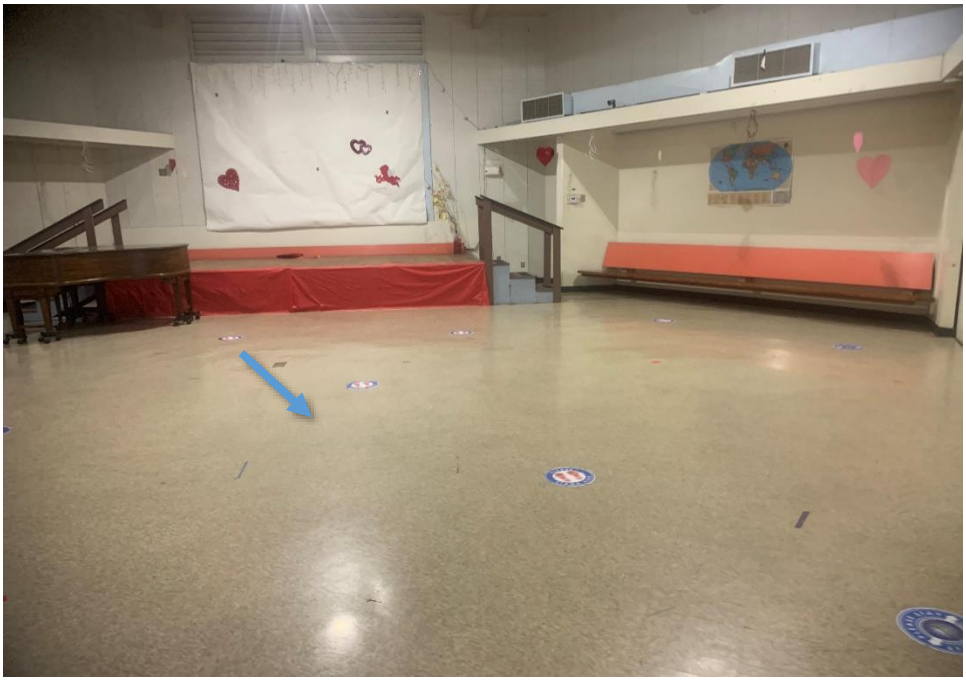
Photograph 1: **View of the Senior Center.**



Photograph 2: **View of the asbestos containing penetration mastic located on the roof.**



Photograph 3: **Another view of the asbestos containing penetration mastic located on the roof.**



Photograph 4: **View of the 12”x12” beige vinyl floor tile over the asbestos containing gray vinyl floor tile with black mastic within the Senior Center.**



Photograph 5: **Another view of the 12”x12” beige vinyl floor tile over the asbestos containing gray vinyl floor tile with black mastic within the Senior Center.**



Photograph 6: **Representative view of the assumed asbestos containing fire doors within the electrical room.**



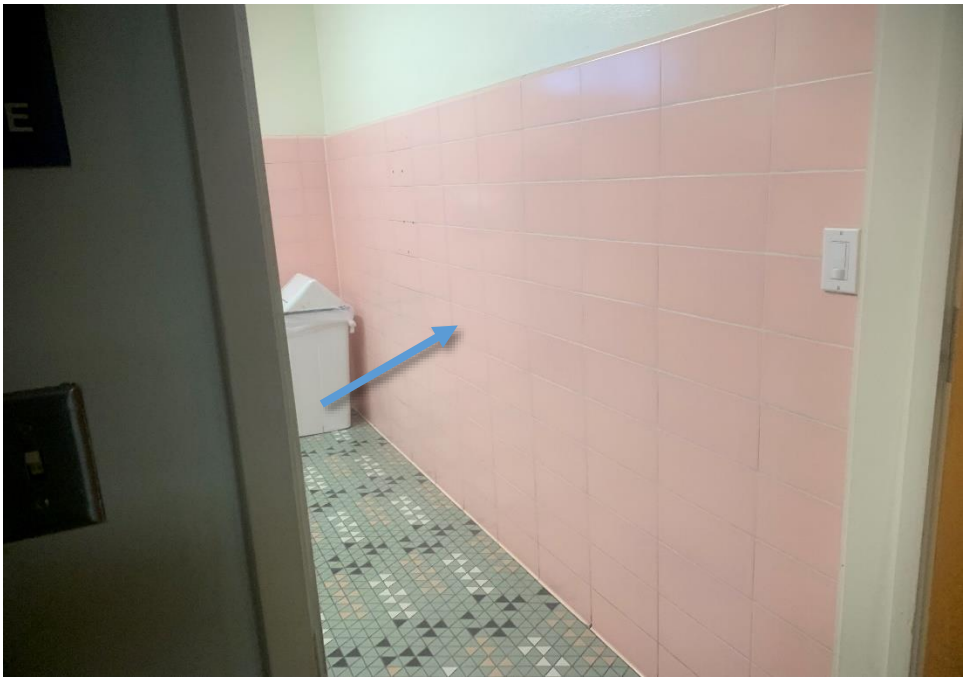
Photograph 7: **View of the assumed asbestos containing mirror mastic within the child care center restroom.**



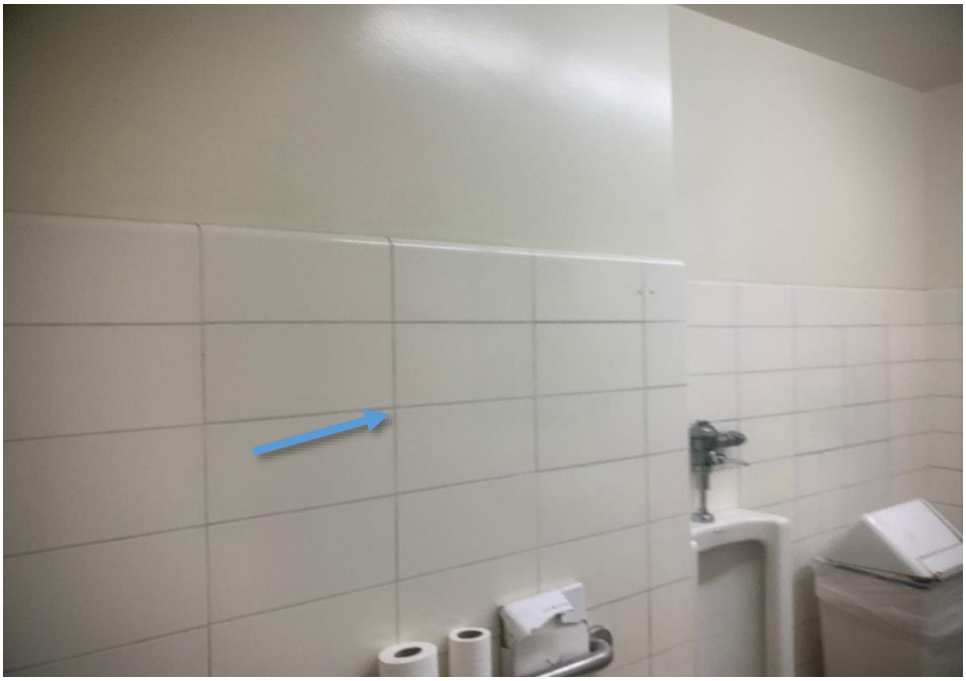
Photograph 8: **View of the lead containing curb of the shuffle board area.**



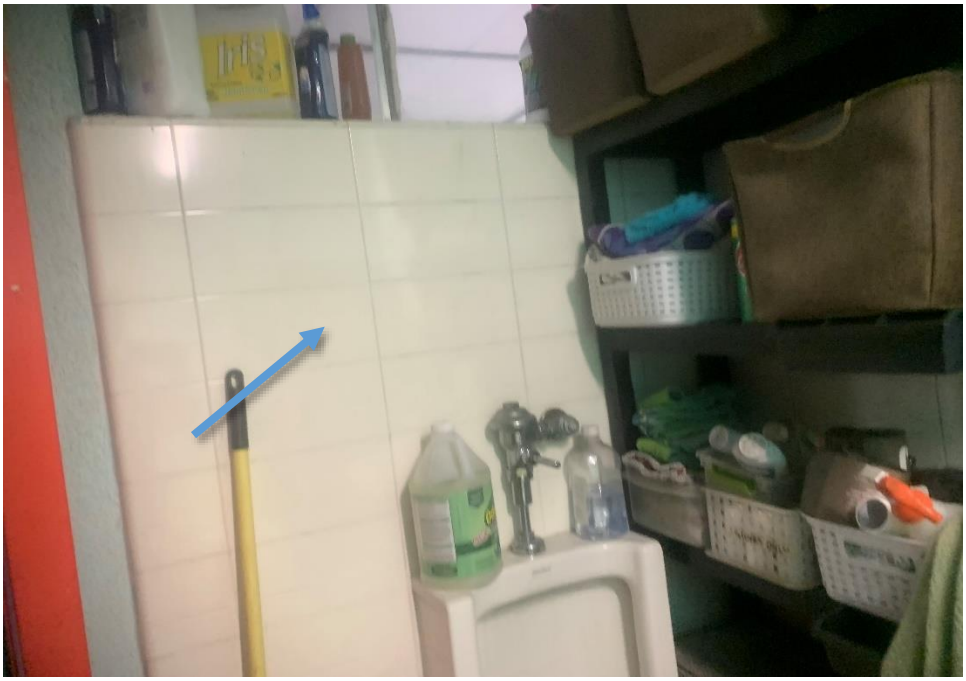
Photograph 9: View of the lead containing sink within the club room.



Photograph 10: View of the lead containing pink ceramic wall tile within the women's restroom.



Photograph 11: **View of the lead containing white ceramic wall tile within the men's restroom.**

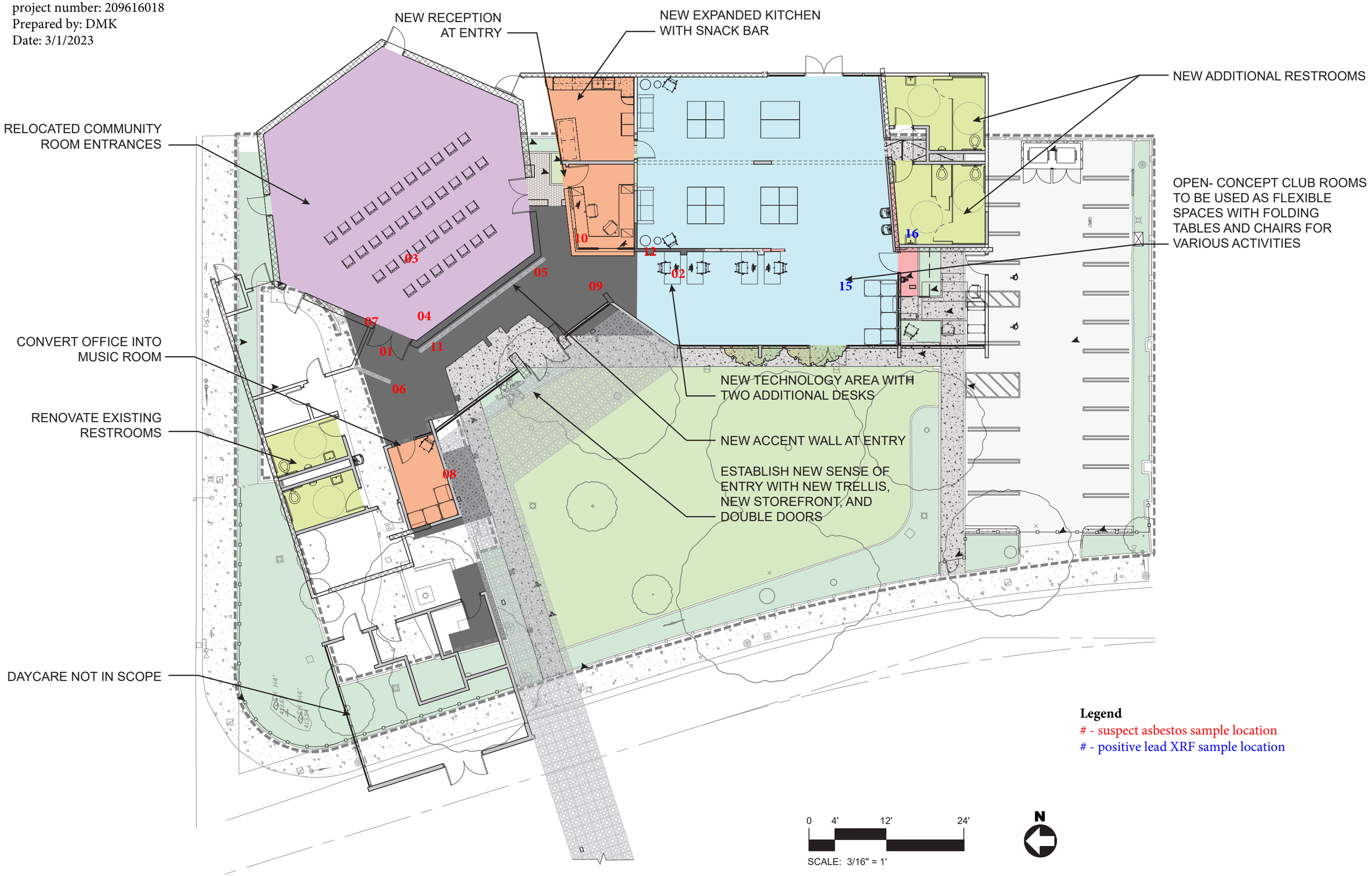


Photograph 12: **View of the lead containing white ceramic wall tile within the child care center restroom.**

APPENDIX E

Field Drawings

Project name: Las Palmas Senior Center
project number: 209616018
Prepared by: DMK
Date: 3/1/2023



Legend
- suspect asbestos sample location
- positive lead XRF sample location

0 4' 12' 24'
SCALE: 3/16" = 1'

N



PROPOSED FLOOR PLAN

0 4' 12' 24'

SCALE: 3/16" = 1'

N



1 A201 SITE PLAN - EXISTING
1/16" = 1'-0"

Project name: Las Palmas Senior Center
project number: 209616018
Prepared by: DMK
Date: 3/1/2023

Legend
- suspect asbestos sample location
- positive lead XRF sample location

N

Project Status
PROJECT ISSUE DATE: Issue Date

BUREAU OF ENGINEERING
CITY OF LOS ANGELES

NO.	REVISION DESCRIPTION	DATE	BY

BUILDING NO. -
INDEX NO.

DEPARTMENT OF PUBLIC
CITY OF LOS ANGELES

GARY LEE MOORE, PE, ENV SP
ARCHITECTURAL DIVISION
ARCHITECT: ARCHITECT LIC. NO.: LICENSE
DESIGNED BY: Designer
DRAWN BY: Author
CHECKED BY: Checker
APPROVED BY: MAHMOOD KARIMZADEH, AIA, PRINCIPAL ARCHITECT
CITY ENGINEER
DATE: Issue Date
Issue Date
Issue Date
Issue Date
Issue Date

VERTICAL CONTROL:
HORIZONTAL CONTROL:
SHEET TITLE: SITE PLAN - DEMO
PROJECT: Project Name
ADDRESS: Enter address here

WORK ORDER NO. Project Number
PLAN FILE NO.
DRAWING NO. A106
SHEET OF SHEETS

PLOTTED:12/2/2022 12:04:05 PM

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

TTLB TEMPLATE REVISION DATE: 02/2013
SHEET ISSUE DATE: 02/09/10
FILE PATH: C:\Users\398091\Documents\Central_Las Palmas Senior Cntr_RV22_2022_06_22_jenny.lim\SW9Y2.rvt
REVISION DATES (DESIGN STAGE ONLY)

APPENDIX F

XRF Readings

XRF Readings Summary

Reading No.	Room	Floor	Side	Component	Substrate	Condition	Color	Action Level (mg/cm^2)	Results	Approximate Quantity	Lead Reading (mg/cm^2)
1	Start			Standard Calibration Check 1.04 +/- 0.06 mg/cm^2				0.7	Positive	N/A	1.1
2				Standard Calibration Check 1.04 +/- 0.06 mg/cm^2				0.7	Positive	N/A	1.1
3				Standard Calibration Check 1.04 +/- 0.06 mg/cm^2				0.7	Positive	N/A	1.1
4	Exterior	1	A	Wall	Stucco	Intact	White	0.7	Negative	N/A	0.01
5	Exterior	1	A	Wall	CMU	Intact	White	0.7	Negative	N/A	0.03
6	Exterior	1	A	Pergola	Wood	Fair	Brown	0.7	Negative	N/A	0.2
7	Exterior	1	A	Pergola	Wood	Intact	Brown	0.7	Negative	N/A	0.2
8	Exterior	1	A	Pergola	Metal	Intact	Brown	0.7	Negative	N/A	0.3
9	Exterior	1	A	Fascia	Wood	Intact	Beige	0.7	Negative	N/A	0.04
10	Exterior	1	B	Wall	Concrete	Intact	White	0.7	Negative	N/A	0.0
11	Exterior	1	C	Rain gutter	Metal	Intact	Beige	0.7	Negative	N/A	0.1
12	Exterior	1	C	Eave	Wood	Intact	White	0.7	Negative	N/A	0.4
13	Exterior	1	C	Fascia	Wood	Intact	Beige	0.7	Negative	N/A	0.06
14	Exterior shuffle board area	1	D	Shade post	Metal	Intact	White	0.7	Negative	N/A	0.0
15	Exterior shuffle board area	1	A	Curb	Concrete	Intact	Yellow	0.7	Positive	200 LF	3.1
16	Exterior shuffle board area	1	D	Shade post	Metal	Intact	White	0.7	Negative	N/A	0.0
17	Exterior shuffle board area	1	D	Curb	Concrete	Intact	Yellow	0.7	Positive	See no. 18	2.6
18	Exterior	1	C	Mural wall	Stucco	Intact	Multi-color	0.7	Negative	N/A	0.0
19	Exterior	1	C	Door	Wood	Intact	Red	0.7	Negative	N/A	0.0
20	Exterior	1	C	Door casing	Wood	Intact	Red	0.7	Negative	N/A	0.0
21	Exterior	1	C	Wall	Stucco	Intact	Yellow	0.7	Negative	N/A	0.0
22	Exterior	1	D	Door	Metal	Poor	Beige	0.7	Negative	N/A	0.0
23	Exterior	1	D	Door casing	Wood	Intact	Tan	0.7	Negative	N/A	0.05
24	Senior center office	1	B	Door	Wood	Intact	White	0.7	Negative	N/A	0.0
25	Senior center office	1	B	Door casing	Wood	Intact	Grey	0.7	Negative	N/A	0.0
26	Senior center office	1	D	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0
27	Senior center office	1	D	Door	Wood	Intact	White	0.7	Negative	N/A	0.0
28	Senior center office	1	D	Door casing	Wood	Intact	White	0.7	Negative	N/A	0.0
29	Club room	1	D	Wall	CMU	Intact	White	0.7	Negative	N/A	0.0
30	Club room	1	D	Door	Wood	Intact	White	0.7	Negative	N/A	0.0
31	Club room	1	D	Door casing	Wood	Intact	White	0.7	Negative	N/A	0.0
32	Club room	1	B	Bifold door frame	Wood	Intact	White	0.7	Negative	N/A	0.0
33	Club room	1	B	Sink	Porcelain	Intact	White	0.7	Positive	1 EA	7.5
34	Club room	1	B	Cabinets	Wood	Intact	White	0.7	Negative	N/A	0.0
35	Club room	1	B	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0
36	Club room	1	B	Door	Wood	Intact	White	0.7	Negative	N/A	0.0

XRF Readings Summary

Reading No.	Room	Floor	Side	Component	Substrate	Condition	Color	Action Level (mg/cm^2)	Results	Approximate Quantity	Lead Reading (mg/cm^2)
37	Club room	1	A	Pocket door	Wood	Intact	White	0.7	Negative	N/A	0.0
38	Storage room 2	1	A	Cabinets	Wood	Intact	Teal	0.7	Negative	N/A	0.0
39	Storage room 2	1	A	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0
40	Senior center kichenette	1	B	Wall	CMU	Intact	White	0.7	Negative	N/A	0.0
41	Senior center kichenette	1	C	Upper cabinets	Wood	Intact	Stain	0.7	Negative	N/A	0.0
42	Senior center kichenette	1	C	Base cabinets	Wood	Intact	Stain	0.7	Negative	N/A	0.0
43	Community room	1	C	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.08
44	Community room	1	C	Stair railing	Wood	Intact	Brown	0.7	Negative	N/A	0.0
45	Community room	1	C	Stair steps	Wood	Intact	Brown	0.7	Negative	N/A	0.0
46	Community room	1	C	Stair stringer	Wood	Intact	Light blue	0.7	Negative	N/A	0.0
47	Community room	1	C	Ducting	Metal	Intact	Light blue	0.7	Negative	N/A	0.0
48	Community room	1	D	Trim	Wood	Intact	White	0.7	Negative	N/A	0.0
49	Community room	1	D	Door	Wood	Intact	White	0.7	Negative	N/A	0.0
50	Community room	1	A	Door	Wood	Intact	Stain	0.7	Negative	N/A	0.0
51	Electrical room	1	A	Door	Wood	Intact	Off-white	0.7	Negative	N/A	0.0
52	Electrical room	1	A	Door casing	Wood	Intact	Off-white	0.7	Negative	N/A	0.0
53	Electrical room	1	A	Ceiling	Plaster	Intact	Off-white	0.7	Negative	N/A	0.0
54	Electrical room	1	B	Wall	Plaster	Intact	Off-white	0.7	Negative	N/A	0.0
55	Janitors	1	A	Deep sink	Metal	Intact	White	0.7	Negative	N/A	0.0
56	Janitors	1	A	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0
57	Janitors	1	A	Ceiling	Plaster	Intact	White	0.7	Negative	N/A	0.0
58	Janitors	1	D	Door	Wood	Intact	Stain	0.7	Negative	N/A	0.0
59	Janitors	1	D	Door casing	Wood	Intact	White	0.7	Negative	N/A	0.0
60	**Women's restroom**	**1**	**B**	**Wall**	**Ceramic**	**Intact**	**Pink**	**0.7**	**Positive**	**300 SF**	**6.8**
61	Women's restroom	1	B	Hand dryer	Metal	Intact	White	0.7	Negative	N/A	0.2
62	Women's restroom	1	B	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0
63	Women's restroom	1	B	Ceiling	Plaster	Intact	White	0.7	Negative	N/A	0.0
64	Women's restroom	1	A	Sink	Porcelain	Intact	White	0.7	Negative	N/A	0.0
65	Women's restroom	1	A	Toilet	Porcelain	Intact	White	0.7	Negative	N/A	0.0
66	Women's restroom	1	C	Floor	Ceramic	Intact	Green	0.7	Negative	N/A	0.0
67	Women's restroom	1	C	Floor	Ceramic	Intact	White	0.7	Negative	N/A	0.0
68	Women's restroom	1	C	Floor	Ceramic	Intact	Black	0.7	Negative	N/A	0.0
69	Women's restroom	1	C	Floor	Ceramic	Intact	Tan	0.7	Negative	N/A	0.0
70	Men's restroom	1	C	Sink	Porcelain	Intact	White	0.7	Negative	N/A	0.0
71	**Men's restroom**	**1**	**C**	**Wall**	**Ceramic**	**Intact**	**White**	**0.7**	**Positive**	**340 SF**	**6.5**
72	Men's restroom	1	C	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0

XRF Readings Summary

Reading No.	Room	Floor	Side	Component	Substrate	Condition	Color	Action Level (mg/cm^2)	Results	Approximate Quantity	Lead Reading (mg/cm^2)
73	Men's restroom	1	C	Floor	Ceramic	Intact	Tan	0.7	Negative	N/A	0.0
74	Men's restroom	1	C	Floor	Ceramic	Intact	Black	0.7	Negative	N/A	0.0
75	Men's restroom	1	C	Floor	Ceramic	Intact	Red	0.7	Negative	N/A	0.0
76	Men's restroom	1	B	Hand dryer	Metal	Intact	White	0.7	Negative	N/A	0.5
77	Men's restroom	1	A	Urinal	Porcelain	Intact	White	0.7	Negative	N/A	0.0
78	Men's restroom	1	D	Toilet	Porcelain	Intact	White	0.7	Negative	N/A	0.0
79	Conference room	1	C	Door	Wood	Intact	Stain	0.7	Negative	N/A	0.0
80	Conference room	1	C	Door casing	Wood	Intact	Stain	0.7	Negative	N/A	0.0
81	Cooridor	1	A	Wall trim	Wood	Intact	Stain	0.7	Negative	N/A	0.0
82	Child care center office	1	B	Wall	Plaster	Intact	Yellow	0.7	Negative	N/A	0.0
83	Child care center office	1	B	Ceiling	Plaster	Intact	White	0.7	Negative	N/A	0.0
84	Child care center office	1	B	Floor	Concrete	Intact	Red	0.7	Negative	N/A	0.0
85	Child care center office	1	C	Base board	Wood	Intact	White	0.7	Negative	N/A	0.0
86	Child care center restroom	1	B	Wall	Plaster	Intact	Yellow	0.7	Negative	N/A	0.0
87	Child care center restroom	1	B	Wall	Plaster	Intact	Light blue	0.7	Negative	N/A	0.0
88	Child care center restroom	1	D	Toilet	Plaster	Intact	White	0.7	Negative	N/A	0.2
89	Child care center restroom	1	C	Sink	Plaster	Intact	White	0.7	Negative	N/A	0.4
90	**Child care center restroom**	**1**	**C**	**Wall**	**Ceramic**	**Intact**	**White**	**0.7**	**Positive**	**See no. 71**	**6.4**
91	Child care center restroom	1	C	Ceiling	Plaster	Intact	White	0.7	Negative	N/A	0.0
92	Child care center restroom	1	C	Floor	Ceramic	Intact	Tan	0.7	Negative	N/A	0.0
93	Child care center restroom	1	C	Floor	Ceramic	Intact	Black	0.7	Negative	N/A	0.0
94	Child care center restroom	1	C	Floor	Ceramic	Intact	Red	0.7	Negative	N/A	0.0
95	Child care center restroom	1	C	Urinal	Porcelain	Intact	White	0.7	Negative	N/A	0.0
96	Child care center	1	B	Wall	Plaster	Intact	Green	0.7	Negative	N/A	0.0
97	Child care center	1	A	Door	Wood	Intact	Orange	0.7	Negative	N/A	0.0
98	Child care center	1	A	Wall	Concrete	Intact	Green	0.7	Negative	N/A	0.0
99	Child care center	1	A	Door casing	Wood	Intact	White	0.7	Negative	N/A	0.0
100	Child care center kitchenette	1	A	Back splash	Ceramic	Intact	White	0.7	Negative	N/A	0.0
101	Child care center kitchenette	1	A	Counter top	Ceramic	Intact	White	0.7	Negative	N/A	0.0
102	Child care center kitchenette	1	A	Upper cabinets	Wood	Intact	Stain	0.7	Negative	N/A	0.0
103	Child care center kitchenette	1	A	Base cabinets	Wood	Intact	Stain	0.7	Negative	N/A	0.0
104	Child care center kitchenette	1	A	Wall	Plaster	Intact	Orange	0.7	Negative	N/A	0.0
105	Child care center	1	D	Shelfs	Wood	Intact	Brown	0.7	Negative	N/A	0.0
106	Child care center	1	D	Shelfs	Wood	Intact	Yellow	0.7	Negative	N/A	0.0
107	Maintenance room	1	A	Wall	Plaster	Intact	White	0.7	Negative	N/A	0.0
108	Maintenance room	1	A	Ladder	Metal	Intact	Grey	0.7	Negative	N/A	0.0

XRF Readings Summary

Reading No.	Room	Floor	Side	Component	Substrate	Condition	Color	Action Level (mg/cm^2)	Results	Approximate Quantity	Lead Reading (mg/cm^2)
109	Roof	1	A	Fascia	Wood	Poor	Beige	0.7	Negative	N/A	0.09
110	Roof	1	D	Rain gutter	Metal	Intact	Beige	0.7	Negative	N/A	0.0
111	Roof	1	D	Flashing	Metal	Intact	Grey	0.7	Negative	N/A	0.0
112	Senior center office 2	1	B	Wall	Wood	Intact	Stain	0.7	Negative	N/A	0.0
113	Senior center office 2	1	A	Window frame	Wood	Intact	Beige	0.7	Negative	N/A	0.09
114	Exterior	1	D	Fence	Metal	Intact	Grey	0.7	Negative	N/A	0.0
115	Parking lot	1	D	Curb	Concrete	Intact	White	0.7	Negative	N/A	0.0
116	Parking lot	1	D	Stripping	Asphalt	Intact	Blue	0.7	Negative	N/A	0.0
117	Parking lot	1	D	Stripping	Asphalt	Intact	White	0.7	Negative	N/A	0.0
118	Parking lot	1	C	Curb	Concrete	Intact	Aqua	0.7	Negative	N/A	0.0
119	End			Standard Calibration Check 1.04 +/- 0.06 mg/cm^2				0.7	Positive	N/A	1.0
120				Standard Calibration Check 1.04 +/- 0.06 mg/cm^2				0.7	Positive	N/A	0.9
121				Standard Calibration Check 1.04 +/- 0.06 mg/cm^2				0.7	Positive	N/A	1.1

Notes:

CMU - concrete masonry unit

EA - each

mg/cm^2 - milligrams per cubic centimeter

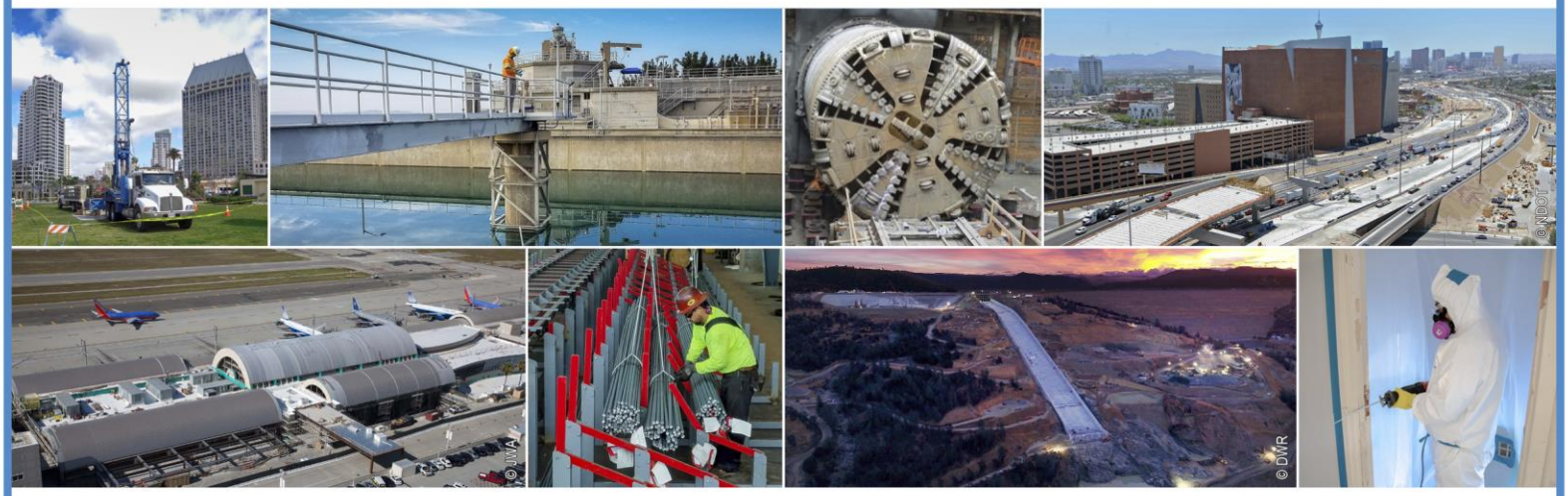
No. - number

N/A - not applicable

XRF - X-Ray fluorescence

& - and

" - inches



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Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

Lead Operations and Maintenance Program

Las Palmas Senior Center

1820 North Las Palmas Avenue

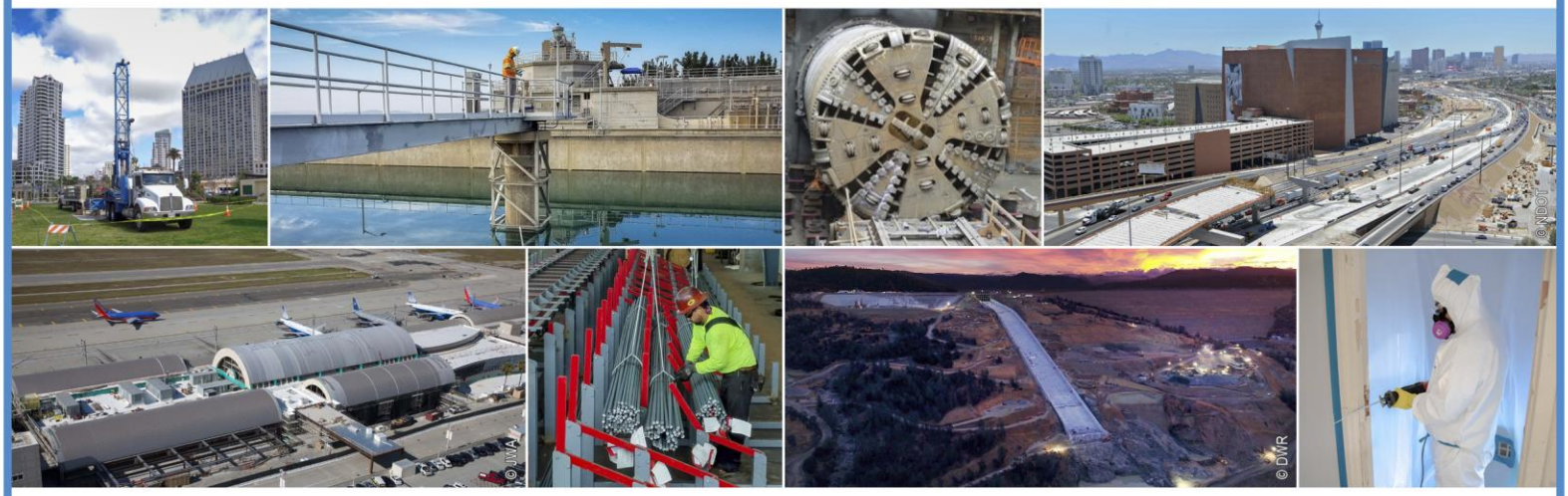
Los Angeles, California 90028

City of Los Angeles

Department of Recreations and Parks

221 North Figueroa Street, Suite 400 | Los Angeles, California 90012

June 8, 2023 | Project No. 209616018



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35+ YEARS

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DMK/WPL/mlc

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1 – Site Location

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A – Photographs

B – Lead Notification Form

C – Sample Record Keeping Forms

D – Lead Consultant Documentation

1. INTRODUCTION

Ninyo & Moore has prepared this Operations and Maintenance (O&M) Program for the existing lead-containing building components (LCBC) that are set to remain in place at the Las Palmas Senior Center located at 1820 North Las Palmas Avenue in Los Angeles, California (site; Figure 1).

The LCBC planned to remain in place on the structure and managed by this O&M Program are described in the Table 1 below. General photographic documentation of these components is provided in Appendix A.

Table 1 – Lead Containing Building Components Planned for Surveillance

Room Area	Component	Substrate	Color	Approximate Quantity	Photograph No.
Exterior	Curb	Concrete	Yellow	200 LF	2
Club room	Sink	Porcelain	White	1 EA	3
Women's restroom	Wall tile	Ceramic	Pink	300 SF	4
Men's and Child care center restrooms	Wall tile	Ceramic	White	340 SF	5-6

Notes:
EA – each
LF – linear feet
SF – square feet

This document has been prepared to assist in preventing potential exposures to lead. This plan is designed to be implemented and maintained by the Port of Long Beach with the assistance of a California Department of Public Health (CDPH) Lead Related Construction (LRC) Inspector/Assessor and Project Monitor (I/A & PM). It should be noted that this O&M Program is meant to be interactive in nature, and may be modified during implementation and operation.

2. THE PURPOSE AND ELEMENTS OF THE PROGRAM

The purpose of this Lead O&M Program is to minimize exposure of building occupants and employees to lead dust and debris which may occur from the LCBC within the structure. This program is designed to maintain LCBC in an intact condition, minimize future release of lead dust or debris by controlling access to LCBC, and utilize proper work practices around LCBC. The mere presence of LCBC in a building does not mean that the health of building occupants is endangered. Lead dust presents a potential lead hazard when lead paint gets old (deterioration) or damaged and releases small particles or dust. LCBC in an intact condition, which are not damaged or disturbed, are unlikely to release lead dust into the air. For this reason, this program has been designed to minimize the potential for future disturbance of LCBC.

As a rule, the degree of hazard that exists in a particular building depends on a number of factors, one of the most important being the nature of the lead products present. Lead paint in poor

condition, is typically the main source of lead debris or lead dust in the occupied spaces. LCBC in which the lead is firmly bonded or encased in another material generally pose very little hazard after installation; however, the sanding, grinding, or cutting of these materials, may release lead dust.

The specific elements of this Lead O&M Program include:

1. The Notification Practices and Procedures to inform workers and other building occupants where LCBC are present, and how and why to avoid disturbing the LCBC. Persons affected should be properly informed in writing.
2. Surveillance program
3. Work Controls and Permit System
4. Engineering and Work Practices Program
5. Recordkeeping System
6. Worker Protection Program
7. The Training Program for the assigned O&M Program Manager, maintenance personnel and building occupants.

3. LEAD CHARACTERISTICS AND HEALTH EFFECTS

Lead is a bluish-white lustrous metal. It is very soft, highly malleable, ductile, and is a relatively poor conductor of electricity. It is very resistant to corrosion but tarnishes upon exposure to air. Lead and lead compounds have been used in a wide variety of products used in building construction including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition and cosmetics.

Lead can be aspirated (breathed in), swallowed or absorbed through the skin. Once in the body, lead is absorbed and stored in our bones, blood and tissues. It does not stay there permanently, rather it is stored there as a source of continual internal exposure. As we age, our bones demineralize and the internal exposures may increase as a result of larger releases of lead from the bone tissue.

When a person is exposed to very high levels of lead over a short period of time or relatively low levels over long periods of time, health effects can include:

- Abdominal pain;
- Constipation;
- Tiredness;
- Headache;

- Irritability or depression;
- Loss of appetite;
- Memory loss;
- Pain or tingling in the hands and/or feet;
- Weakness.

Because these symptoms may occur slowly or may be caused by other things, lead poisoning can be easily overlooked. Exposure to high levels of lead may cause anemia, weakness and kidney and brain damage. Very high lead exposure can cause death.

4. LEAD O&M PROGRAM RESPONSIBILITIES

4.1 Lead Program Manager Responsibilities

The responsibility of implementing and maintaining the O&M Program should be undertaken by an assigned Lead Program Manager. This position may be held by a building engineer, superintendent, or manager of the building. The Lead Program Manager is not required to have any special qualifications but should at least have lead awareness training, as the plan is written to require work on the LCBC be done only by lead-certified contractors, and there are assumed to be no LCBC which might be especially difficult to manage.

Responsibilities of the Lead Program Manager include, but are not limited to, the following:

- Notifying building occupants regarding the presence and location of LCBC at the site and the implementation of an O&M Program;
- Responding to inquiries from building occupants, and contractors regarding LCBC at the site;
- Ensuring that outside contractors who may come in contact with lead in the building is provided with information regarding the location of the LCBC;
- Ensuring that all custodial and maintenance personnel are properly trained;
- Ensuring warning labels are properly posted at appropriate locations;
- Coordinating periodic surveillance and re-inspection activities;
- Coordinating lead removal, repair, and maintenance operations as required;
- Ensuring that no additional lead-containing building materials are inadvertently installed in the buildings;
- Maintaining records relating to all lead activities including training, periodic surveillance, air monitoring, and response actions.

4.2 Lead Employee/Worker Responsibilities

If it is determined that lead worker training is needed for certain maintenance personnel, each employee must have basic knowledge of the hazards associated with lead. Each employee is responsible for wearing assigned personal protective equipment; following good personal hygiene practices; and adhering to all work practices established for each specific job. Lead awareness training should be provided to maintenance personnel and key building occupants.

4.3 Building Occupant/Responsibilities

Building occupants are also responsible for complying with the elements of the O&M Program. Building occupants should be aware of where the LCBC is located, and ensure that they do not disturb the LCBC. Prior to allowing potential contractors into the structure to perform work, the Lead Program Manager should review Table 1 to determine if LCBC are planned for potential disturbance as part of the contractors planned work. The Lead Program Manager should notify the contractors who work in the buildings that a lead O&M Program is in place. Questions from contractors regarding LCBC should be directed to the Lead Program Manager.

In the event building occupants, contractors, maintenance, or service personnel encounter any material they suspect may contain lead which will be disturbed (and are not sure if the material is lead), they should immediately stop their activity and notify the Lead Program Manager for further instructions and review of Table 1 of this O&M document. The Lead Program Manager will be responsible for the final determination of whether the suspect material contains lead (based on the Table 1 of this O&M document), and what further actions are required before work can be continued.

5. NOTIFICATION PRACTICES AND PROCEDURES

Notification is a key element of the O&M Program. Building occupants in areas where a renovation and/or repair project is planned that will involve the disturbance of LCBC will be notified in advance of work of the potential hazards and the precautions that will be taken.

There are several important California Division of Occupational Safety and Health Administration (CAL-OSHA) regulations that are designed to protect workers. They are summarized here, as guidance. CAL-OSHA has specific requirements concerning worker protection and procedures used to control LCBC specified in 8 CCR Title 1532.1 (California Lead in Construction Standard).

- For most O&M activities in the building, where the LCBC are in an intact condition, applicable CAL-OSHA permissible exposure limits are not likely to be exceeded. However, it is possible that some O&M activities will disturb some LCBC (which may be in a damaged condition) to such an extent that the OSHA limits are exceeded, unless good work practices are followed.

- The OSHA standards require employers to address a number of items which are triggered by exposure of employees to lead dust. Exposure is discussed in terms of micrograms per cubic meter (µg/m^3) of air. Two main provisions of the regulation are applicable to airborne lead dust. They are:

    - Permissible Exposure Limit (PEL) - Eight-hour Time-Weighted Average limit (TWA) – 50 µg/m^3 of air based on an eight-hour TWA sampling period. This is the maximum level of airborne lead, on average, that any employee may be exposed to over an eight-hour period (normal work shift).

    - Action Level – Eight-hour TWA – 30 µg/m^3 of air based on an eight-hour TWA sampling period. Exceeding this level requires the employer to begin specific compliance activities including blood lead testing for exposed workers.

California licensed lead abatement contractors are familiar with the applicable laws and regulations and should be utilized as required and as outlined in the following sections of this O&M Program.

Labeling of all LCBC within the building is typically not possible, nor is it typically required under an O&M Program. However, LCBC located in routine maintenance areas (i.e., mechanical rooms, etc.) should be labeled. The warning labels should be posted on or near LCBC and be readily visible.

All outside licensed abatement contractors and/or certified renovators involved with a renovation and/or repair project that involves the disturbance of LCBC within the facility, must post signs at the entrance and the perimeter of the regulated area of the project. All signs and postings of the project must be in accordance with the CAL-OSHA standards and all other applicable regulations. The following warning signs are required in each regulated area or work area where an employee's exposure to lead is above the PEL:

WARNING
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA

The following notification shall be given to all existing building occupants, new occupants, present maintenance and management personnel, newly hired or new to the building maintenance and management personnel, and contractors or utility company personnel who need to work on the building. The signed forms shall be maintained in the permanent lead program files by the Lead Program Manager.

LEAD NOTIFICATION

LCBC are present in the building due to the building construction date. LCBC only present a health hazard when lead dust (often not visible to the naked eye) is inhaled or swallowed. The mere presence of LCBC does not represent a health hazard.

DO NOT disturb LCBC! This includes cutting, sawing, sanding, or breaking painted surfaces within the building.

Please report any disturbance or damage of the LCBC which are present, any dust or debris that might have come from the LCBC, any change in the condition of the LCBC or any improper action with LCBC to the Lead Program Manager.

Maintenance and other personnel are taking special precautions during their work to properly clean up any lead debris (if present) and to guard against disturbing LCBC. All LCBC are inspected periodically and additional measures have been and will be taken if needed to protect the health of building occupants.

I have read and understand the above:

Date: _____

Name: _____ Signature: _____

Note: This notification is included within Appendix B.

6. THE SURVEILLANCE PROGRAM

Periodic surveillance is recommended from the date the O&M Program begins. Identified LCBS should be inspected annually or whenever personnel access an area for maintenance purposes in an area with LCS. This periodic inspection should be conducted by the Lead Program Manager or other individual with the proper training. The purpose of the periodic surveillance is to ensure that changes in material condition are documented. If maintenance personnel note a change, the change will be documented.

A LCBC log form or adequately backed-up computer file noting the LCBC, the location within the building of LCBC, and the date of the last inspection shall be maintained and updated accordingly or as changes are made or discovered by the Lead Program Manager. An example form is provided in Appendix C.

A CDPH LRC I/A & PM may initially be retained to assist with implementation of this O&M Program. A CDPH LRC I/A & PM may also subsequently be hired to reassess the condition of the LCBC and to make any recommendations for immediate actions or changes to the O&M Program.

The Lead Program Manager shall inform the maintenance personnel that they are to promptly report any damage, deterioration or disturbance of building materials and suspected LCBC which they see during the course of their normal duties. Newly hired personnel shall be asked to read and sign the above Lead notification form and shall be briefed by the Lead Program Manager on the program and their duties and responsibilities with regard to the LCBC.

7. THE WORK CONTROLS AND PERMIT SYSTEM

The work control and permit system are designed to avoid inadvertent and/or improper disturbance of LCBC during the course of any maintenance or repair work on the site. One goal of the system is to avoid introducing substantial delays or high added costs to the O&M of the site.

In most cases, a semi-formal permit system is appropriate. However, the Lead Program Manager, must first be contacted whenever any maintenance or repair work occurs. It is important that all persons on the management and maintenance staff understand that this is now required. It would be appropriate to write this requirement into the job descriptions and the performance reviews of the employees.

Whenever maintenance personnel plan a maintenance or repair project, they must first contact the Lead Program Manager to indicate the location and nature of the work to be performed. If any substantial change occurs in the work once it is underway, the Lead Program Manager should again be contacted. This also applies to work to be done by outside contractors or utility company personnel.

After the maintenance person(s) indicate to the Lead Program Manager the type and location of the work, the Lead Program Manager shall review this plan to determine if LCBC are present in the area where the work will occur. Example forms to utilize for this communication to the Lead Program Manager and the Lead Program Manager response are included in Appendix C:

- If there are no LCBC the Lead Program Manager shall convey that information to the maintenance or repair person(s) and the work may proceed. If it is unknown if lead is present, sampling of building materials to be disturbed and laboratory analysis for lead should occur prior to disturbance.

- If there are LCBC, but it is not anticipated that the LCBC will be disturbed, the Lead Program Manager shall inform the maintenance or repair person(s) of the presence of the LCBC and the importance of not disturbing it.

- If there are LCBC and it is anticipated that they will be disturbed, the Lead Program Manager shall contact one or more licensed lead contractors to obtain prices for their services to assist in the work, such as utilizing High Efficiency Particulate Air-vacuum equipped tools and/or other lead control measures including the construction of negative pressure enclosures. For substantial work, an environmental consulting company with CDPH LRC I/A & PMs should be hired to develop specifications/work plan documents, assist with the evaluation of bids, oversee (monitor) the work activities of a licensed lead contractor, perform air monitoring, and air clearances for re-occupancy. An abatement closeout report should be prepared summarizing the abatement activities. All records from any such work should be placed in the permanent lead record files.

The job descriptions of the maintenance persons and the Lead Program Manager shall be updated to reflect their responsibilities in dealing with lead issues.

8. THE ENGINEERING AND WORK PRACTICES PROGRAM

Based upon the types of LCBC and the cost of medical surveillance, respiratory protection programs, and insurance, it is recommended that most work with lead be performed by licensed lead contractors with trained personnel. It is important that the Lead Program Manager, maintenance personnel, and outside contractors who will work on the buildings understand that they are not to work with or disturb the LCBC. CAL-OSHA regulations require a respiratory protection program (and medical surveillance program) and protective clothing whenever workers are exposed or are likely to be exposed to lead above the current action level of 30 µg/m^3 on an 8-hour time-weighted average.

As long as LCBC remain in a building there is potential for a release of lead-contaminated dust. These release episodes can occur during maintenance and renovation projects, or from the disturbance of materials by untrained personnel. Tenants, custodians, outside contractors and/or maintenance workers should immediately report any evidence of possible lead dust release to the Lead Program Manager. Even minor release episodes must be treated seriously and proper procedures should be followed. Upon discovery of the release, access to the area should be restricted, and the Lead Program Manager should be contacted immediately. Under no circumstances should untrained building tenants, maintenance or custodial personnel, or outside contractors cleanup lead-containing debris. Conventional cleaning, such as sweeping with dry brooms, dusting with dry cloths, and vacuuming with standard vacuum cleaners may simply suspend lead fibers in the air. Cleaning of lead-containing debris should be conducted by properly trained and licensed personnel who are equipped with proper respiratory protection.

9. THE RECORD KEEPING SYSTEM

Accurate records will be established and maintained for the program including medical and exposure records, locations of identified LCBC and incident reports. Affected employees, former

employees, and their designated representatives can obtain access to exposure records by providing a written request to Port of Long Beach

All records of work done on the LCBC, updates to this O&M Program, lead survey reports, and periodic inspection reports, shall be kept permanently in files maintained at the office of the Lead Program Manager. All lead abatement activities (Abatement Closeout Reports) shall be kept permanently in files maintained in this office.

The maintenance of these records shall be added to the job descriptions of the Lead Program Manager, and new persons hired or promoted to fill this position shall be made aware in writing of their responsibility to perform these duties. Such updates of job descriptions and other duties shall be performed by the site manager and/or the Lead Program Manager.

10. THE WORKER PROTECTION PROGRAM

This O&M Program has been designed to avoid having most personnel on the operations or maintenance staff work with lead. For those individuals, the worker protection program shall consist solely of following the procedures outlined by this O&M Program. For those individuals identified as having potential exposure above the action level of 30 µg/m^3 however, personal protective equipment (PPE) will be required for some tasks. PPE should be worn at all times where there may be potential exposure to lead-containing materials including the initial exposure assessment phase. Where PPE is used, the following will apply:

- Wear respirators as an interim protection for tasks until exposure assessments can be completed.
- Wear respirators in work situations where engineering and work practice controls are not sufficient to reduce employee exposures below the PEL.
- Do not wear coveralls contaminated with lead outside of the regulated area.
- Wear gloves if they do not interfere with the work being performed.
- Wear eye protection meeting the ANSI Z87.1 standard while performing construction activities.

11. THE TRAINING PROGRAM

11.1 Employee General Awareness Training

For each employee in a work environment where LCBC are present, training will be conducted initially upon job assignment. Training will consist of, as a minimum, an overview of the hazards

of lead; warning signs/labels; relevant information from a Safety Data Sheet; and the contents of the Lead O&M Program.

11.2 Lead Worker Training

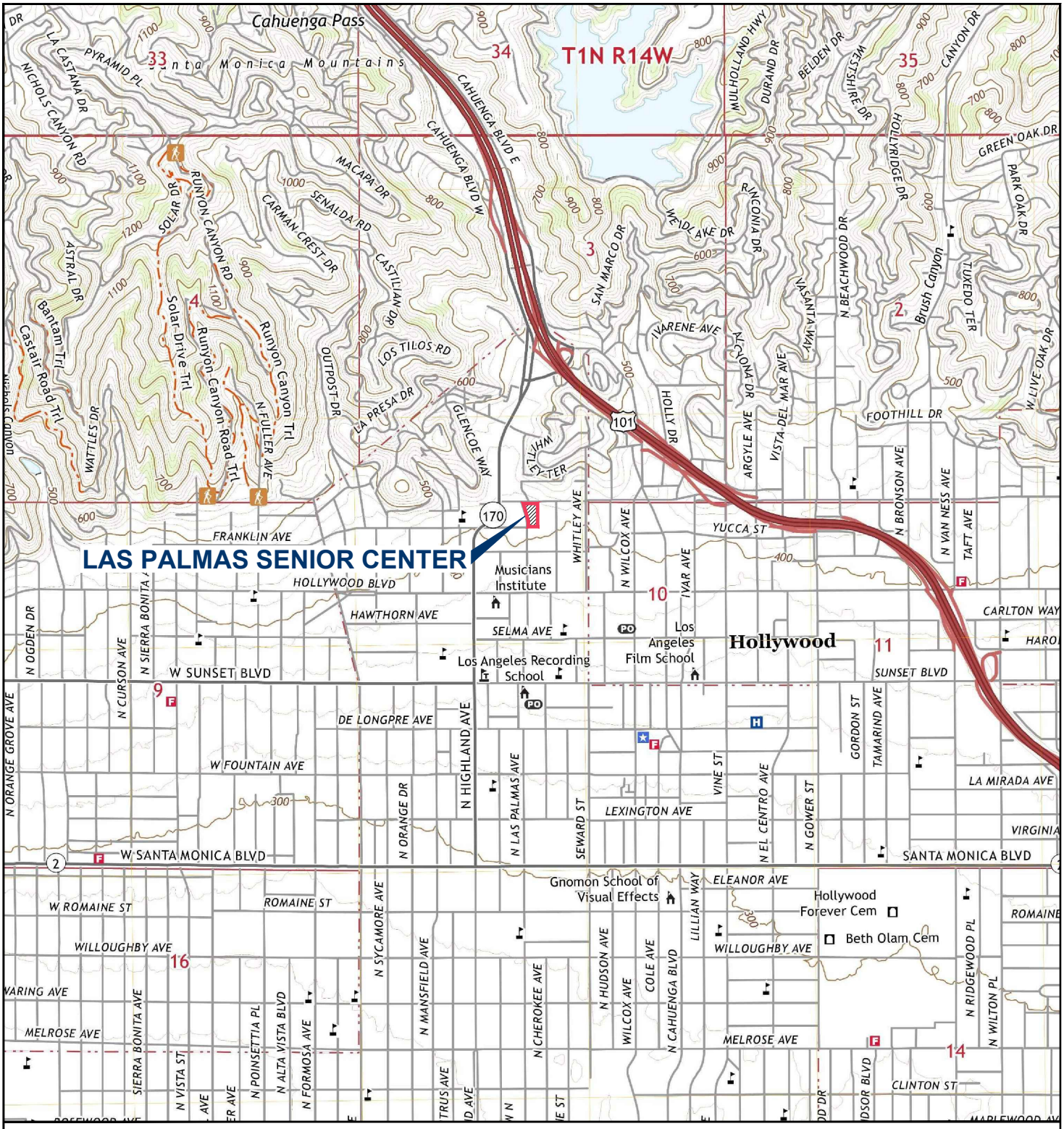
If applicable, and in addition to general awareness training, the Lead Program Manager, maintenance personnel (if assigned to work with or clean up lead hazards), and any other worker potentially exposed to an airborne concentration of lead above the action level of 30 µg/m^3 (micrograms per cubic meter) shall receive at least annually, information concerning:

- Specific jobs that could result in an exposure above the action level
- The use of personal protective equipment including the use of air purifying respirators
- Proper use of engineering controls and work practice controls
- Medical surveillance/removal program
- Use of chelating agents
- Access to medical/exposure records/training materials
- Content of Cal/OSHA's Lead in Construction Standard, Title 8, Section 1532.1.

12. LEAD CONSULTANT DOCUMENTATION

This O&M Program was prepared by Mr. Daivd Kelly, a CDPH LRC, Mr. William Larkin, a CDPH LRC I/A & PM and Mr. Stephen Waide an Certified Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. Certification documentation is provided in Appendix D.

FIGURE



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2020.

N

FEET
0 2,000 4,000

209616018_SL.dwg 03/30/2023 JDP

FIGURE 1

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

SITE LOCATION

LAS PALMAS SENIOR CENTER
1820 NORTH LAS PALMAS AVENUE
LOS ANGELES, CALIFORNIA
209616018 I 6/23

APPENDIX A

Photographs



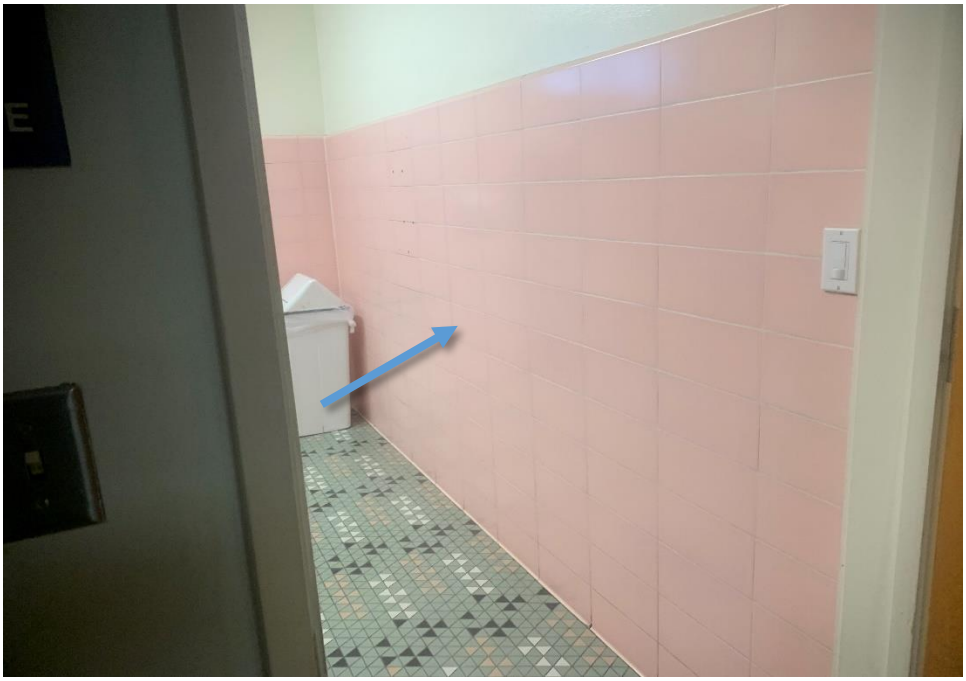
Photograph 1: **View of the Senior Center.**



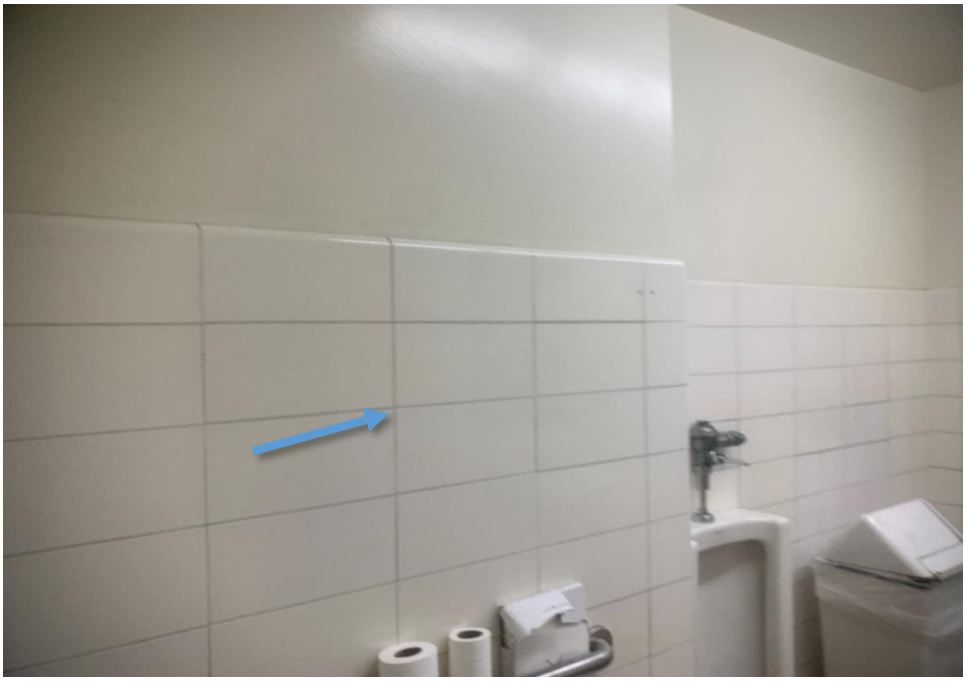
Photograph 2: **View of the lead containing curb of the shuffle board area.**



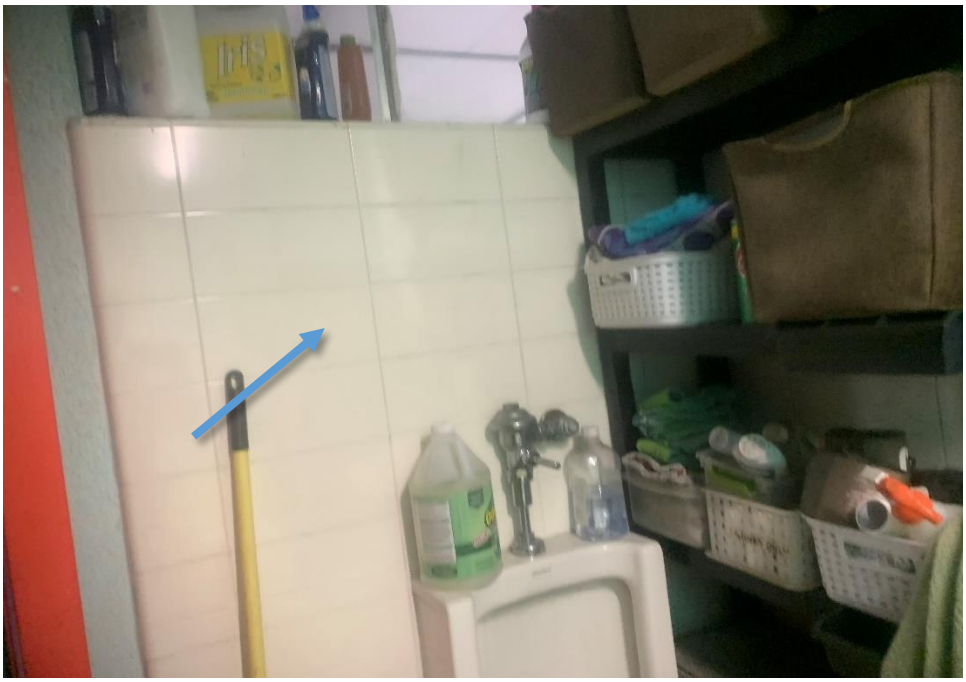
Photograph 3: View of the lead containing sink within the club room.



Photograph 4: View of the lead containing pink ceramic wall tile within the women's restroom.



Photograph 5: View of the lead containing white ceramic wall tile within the men's restroom.



Photograph 6: View of the lead containing white ceramic wall tile within the child care center restroom.

APPENDIX B

Lead Notification Form

LEAD NOTIFICATION

LCBC are present in the building due to the building construction date. LCBC only present a health hazard when lead dust (often not visible to the naked eye) is inhaled or swallowed. The mere presence of LCBC does not represent a health hazard.

DO NOT disturb LCBC! This includes cutting, sawing, sanding, or breaking painted surfaces within the building.

Please report any disturbance or damage of the LCBC which are present, any dust or debris that might have come from the LCBC, any change in the condition of the LCBC or any improper action with LCBC to the Lead Program Manager.

Maintenance and other personnel are taking special precautions during their work to properly clean up any lead debris (if present) and to guard against disturbing LCBC. All LCBC are inspected periodically and additional measures have been and will be taken if needed to protect the health of building occupants.

I have read and understand the above:

Date: _____

Name: _____ Signature: _____

APPENDIX C

Sample Record Keeping Forms

Annual inspection of Lead-Containing Building Components Form

Location of lead-containing building component (area in building, room, or general description):

_____

_____

_____

_____

Type of Lead-Containing Material(s):

_____

_____

Abatement Status:

1. The material has been encapsulated ____ enclosed ____, neither ____, removed ____

Assessment:

I. Evidence of physical damage: _____

_____

2. Evidence of water damage: _____

_____

3. Evidence of delamination or other damage: _____

_____

4. Degree of accessibility of the material: _____

_____

5. Degree of activity near the material: _____

_____

6. Location in an air plenum, air shaft, or airstream: _____

_____

7. Other observations (including the condition of the encapsulant or enclosure, if any): _____

_____

Recommended Action: _____

Signed:_____ Date: _____
(Evaluator)

Job Request Form for Maintenance Work

Name: _____ Date: _____

Telephone No. _____ Job Request No : _____

Requested starting date: _____ Anticipated finish date: _____

Address, building, and room number(s) (or description of area) where work is to be performed:

_____

_____

_____

_____

Description of work:

_____

_____

_____

_____

Description of any lead-containing material that might be affected, if known (include location and type):

_____

_____

_____

_____

Name and telephone number of requestor: _____

_____

Name and telephone number of supervisor: _____

Submit this application to: _____

_____

(The Lead Program Manager)

NOTE: An application must be submitted for all maintenance work whether or not lead-containing surfaces might be affected. An authorization must then be received before any work can proceed.

____ Granted Job Request No.

____ With conditions

____ Denied

*Conditions: _____

Maintenance Work Authorization Form

AUTHORIZATION

Authorization is given to proceed with the following maintenance work:

_____

_____

_____

_____

PRESENCE OF LEAD-CONTAINING SURFACES

____ Lead-containing surfaces are not present in the vicinity of the maintenance work.

____ Lead-containing surfaces are present, but their disturbance is not anticipated; however, if conditions change, the Lead Program Manager will re-evaluate the work request prior to proceeding.

____ Lead-containing surfaces are present, and may be disturbed.

Work Practices if Lead-Containing Surfaces Are Present

The following work practices shall be employed to avoid or minimize disturbing lead:

_____

_____

_____

Personal Protection if Lead-Containing Surfaces Are Present

The following equipment/clothes shall be used/worn during the work to protect workers:

_____

_____

_____

(manuals on personal protection can be referenced)

Special Practices and/or Equipment Required:

_____

_____

_____

Signed:_____ Date: _____
(Lead Program Manager)

Evaluation of Work Affecting Lead-Containing Surfaces

This evaluation covers the following maintenance work:

Location of work (address, building, room number(s), or general description):

_____

_____

_____

_____

Date(s) of work:_____

Description of work: _____

Work approval form number: _____

Evaluation of work practices employed to minimize disturbance of lead: _____

Evaluation of work practices employed to contain released dust and to clean up the work area:

_____

_____

_____

_____

_____

Evaluation of equipment and procedures used to protect workers:

_____

_____

_____

_____

Personal air monitoring results; (in-house worker or contract?)

Worker name _____Results_____

Worker name _____Results_____

Handling or storage of lead waste _____

Signed:_____ Date: _____

(Lead Program Manager)

APPENDIX D

Lead Consultant Documentation

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
 **David Kelly**	Lead Sampling Technician	LRC-00002285	10/22/2023

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD

California Department of PublicHealth

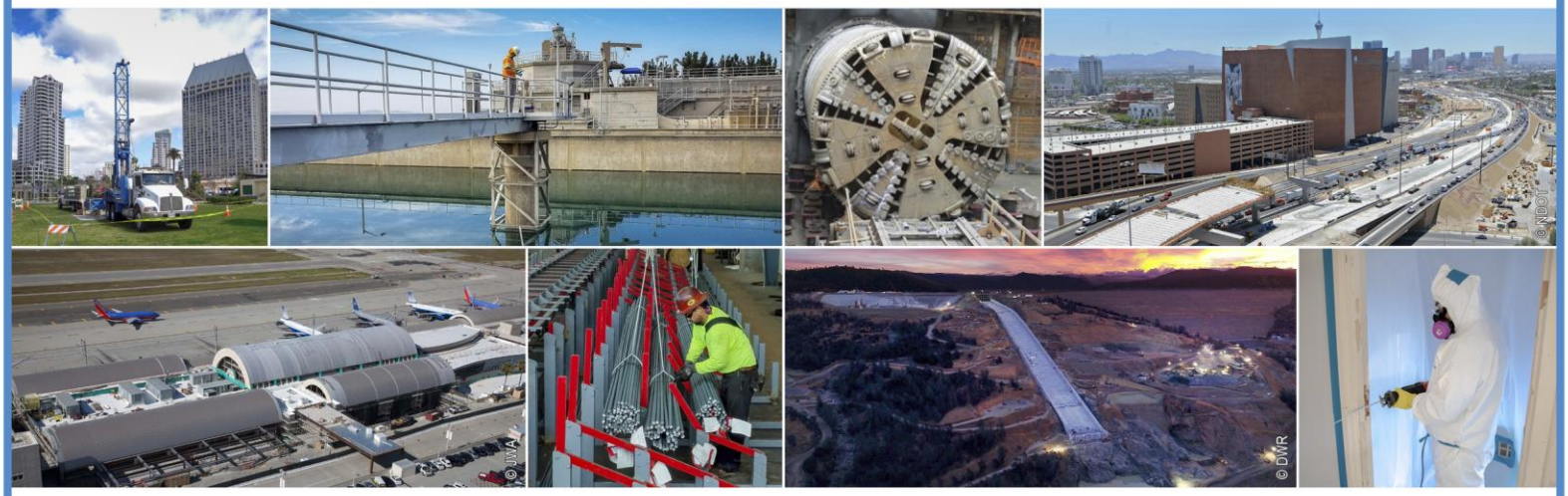
STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
	Lead Inspector/Assessor	LRC-00001285	7/3/2023
	Lead Project Monitor	LRC-00001284	7/3/2023

William Larkin

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD



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ninyoandmoore.com

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

Asbestos Operations and Maintenance Program

Las Palmas Senior Center

1820 North Las Palmas Avenue

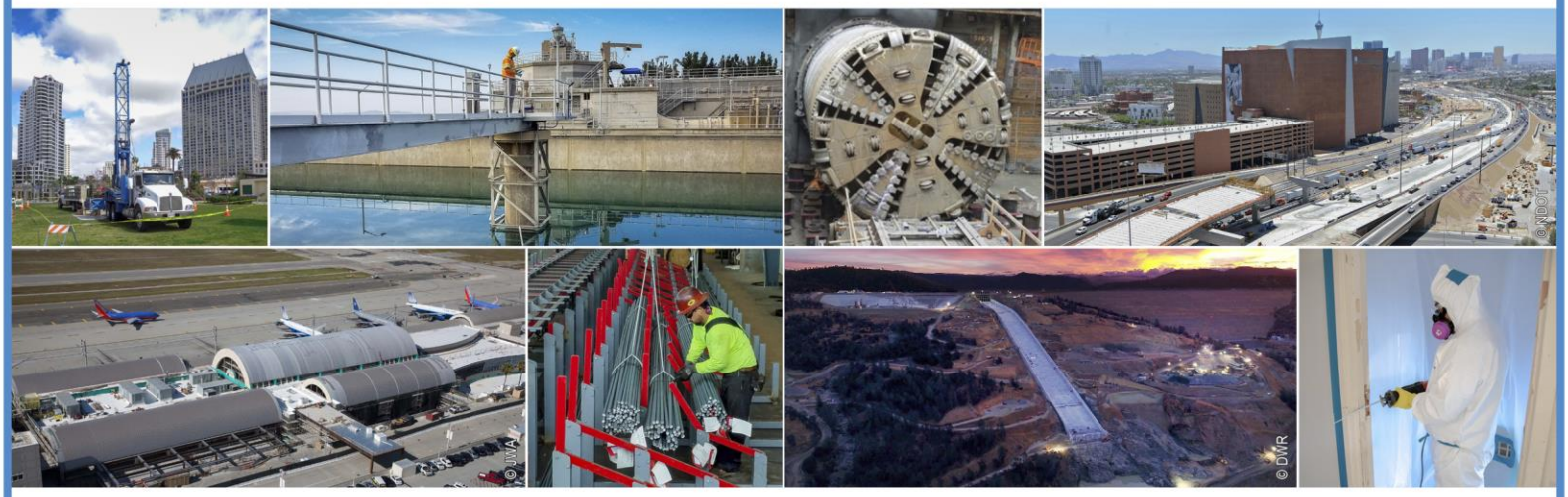
Los Angeles, California 90028

City of Los Angeles

Department of Recreation and Parks

221 North Figueroa, Suite 400 | Los Angeles, California 90012

March 31, 2021 | Project No. 209616018



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35+ YEARS

Asbestos Operations and Maintenance Program
D48-50 Transit Shed
Port of Long Beach
Long Beach, California

Mr. Todd Graham
KPFF Consulting Engineers
400 Oceangate, Suite 500 | Long Beach, California 90802

March 31, 2023 | Project No. 209616018

David M. Kelly
Project Environmental Scientist
Certified Site Surveillance Technician #17-6144

William P. Larkin
Project Environmental Scientist
Certified Asbestos Consultant No. 99-2688

DMK/SJW/mlc

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1 INTRODUCTION

Ninyo & Moore has prepared this Operations and Maintenance (O&M) Program for the existing asbestos-containing materials (ACMs) that are planned to be left in place at the Las Palmas Senior Center located at 1820 North Las Palmas Avenue, Los Angeles, California (site; Figure 1).

The ACMs planned to remain in place on the structure and managed by this O&M Program are described in the Table 1 below. General photographic documentation of these materials and associated building components is provided in Appendix A.

Table 1 – Asbestos Containing Materials Planned for Surveillance

Material	Location	Quantity	Photograph No.
Roof Penetration Mastic	Roof	600 SF	2-3
12” x 12” Beige VFT with yellow mastic over gray VFT with black mastic	Senior Center floors	5,000 SF	4-5
Fire doors	Senior Center mechanical/ electrical room	2 EA	6
Mirror mastic	Daycare restroom	4 SF	7

Notes:
EA- each
NA – not applicable
No. - number
SF – square feet
VFT – vinyl floor tile
“ - inches

This document has been prepared to assist in preventing potential exposures to asbestos and is designed to be implemented and maintained with the assistance of a California Division of Occupational Safety and Health Certified Asbestos Consultant (CAC). It should be noted that this O&M Program is interactive in nature, and may be modified during implementation and operation.

2 THE PURPOSE AND ELEMENTS OF THE PROGRAM

The purpose of the Asbestos O&M Program is to minimize exposure of building occupants and employees to asbestos fibers from known and suspect ACMs within the structure. This program is designed to maintain ACMs in good condition, minimize future asbestos fiber release by controlling access to ACMs, and utilize proper work practices around ACMs. The mere presence of ACMs in a building does not mean that the health of building occupants is endangered. Asbestos fibers present a health hazard when they become airborne after being released from the material they are bound within. ACMs in good condition, which are not damaged or disturbed, are unlikely to release asbestos fibers into the air. For this reason, this program has been designed to minimize the potential for future disturbance of ACMs.

As a rule, the degree of hazard that exists in a particular building depends on a number of factors, one of the most important being the nature of the asbestos products present. ACMs such as asbestos-cement pipe and shingles, rolled roofing felts, asphalt roof shingles, and vinyl floor tiles in which the asbestos fibers are firmly bonded or encased in another material generally pose very little hazard after installation; however, the sanding, grinding, or cutting of these materials, may release asbestos fibers. Those types of materials are classified as Category I Non-Friable by the United States Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP; 40 CFR Part 61, subpart M). Category II Non-Friable materials are all other non-friable materials, different from Category I Non-Friable. Examples include plaster, and wall base-boards. Those materials pose the lowest hazard, as the release of the asbestos fibers would require destruction of the material by, for example, burning or dissolving of the material with a solvent.

Asbestos fibers are more readily released from friable materials like spray-applied fireproofing. Friable materials are considered regulated asbestos-containing materials (RACM) by the EPA, and can potentially become a hazard if they are not kept in an intact (good) condition. RACM is defined as (a) friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations. A material is considered friable if, when dry, it can be easily crumbled, pulverized, or reduced to powder by hand. Friable materials can represent a serious potential health hazard in buildings. This does not mean, however, that friable materials containing asbestos pose a serious enough hazard to justify immediate corrective action.

The seven elements of the O&M Program are:

1. The Notification System to inform workers, tenants and building occupants where ACMs are present, and how and why to avoid disturbing the ACMs. Persons affected should be properly informed in writing.
2. The Surveillance Program to provide for regular ACM inspection to note, assess and document any changes in the condition of the ACMs.
3. The Work Control and Permit System to control activities which might disturb ACMs.
4. The Work Practices Program to avoid or minimize fiber release during activities affecting the ACMs.
5. The Record Keeping System to provide for documentation of O&M activities.
6. The Worker Protection Program to provide for medical and respiratory protection, as applicable.

7. The Training Program to provide for designation of an Asbestos Program Manager, as well as training for the manager and maintenance foreman.

3 ASBESTOS CHARACTERISTICS AND HEALTH EFFECTS

3.1 Characteristics of Asbestos

Asbestos is a naturally occurring mineral. It is distinguished from other minerals by the fact that its crystals form into long, thin fibrous bundles composed of minute hollow fibers. Deposits of asbestos are found throughout the world. Asbestos minerals are divided into two groups: 1) serpentine, which has a sheet or layered structure, and 2) amphibole, which has a chain-like crystal structure. Chrysotile, the only mineral in the serpentine group, is the most commonly used type of asbestos and accounts for approximately 95 percent of the asbestos found in buildings in the United States. Chrysotile is commonly known as “white asbestos,” so named for its natural color. Five types of asbestos are found in the amphibole group. Amosite, the second most likely type to be found in buildings, is often referred to as “brown asbestos” and its resistance to acid and heat is very high. Crocidolite, “blue asbestos,” is also an amphibole and is also very resistant to acid and to the effects of outdoor exposure. Crocidolite was utilized in high temperature insulation applications. The remaining three types of asbestos in the amphibole group are: anthophyllite, tremolite, and actinolite. These are extremely rare, and of little commercial value.

3.2 Use of Asbestos

Asbestos has been used in literally hundreds of products. EPA and others distinguish between friable and non-friable forms of ACMs. Friable ACMs can be “crumbled or reduced to powder by hand pressure.” Other things being equal, friable ACMs are thought to release fibers into the air more readily. However, many types of non-friable ACMs can also release fibers if disturbed. Asbestos gained wide spread use because it is plentiful, readily available, low in cost and because of its unique properties – it does not burn, it is strong, it conducts heat and electricity poorly, and it is impervious to chemical corrosion.

One of the most common uses for asbestos was as a fireproofing material. Chrysotile was the commonly used asbestos constituent, comprising up to 95 percent of the fireproofing mixture, and was used in conjunction with materials such as vermiculite, sand, cellulose fibers, gypsum and a binder such as calcium carbonate. These materials are soft and may be fluffy in appearance and to the touch. They vary in color from white to dark gray; occasionally they have been painted or encapsulated with a clear or color sealant.

Asbestos is added to a variety of building materials to enhance strength. It is found in concrete and concrete-like products. Asbestos cement products generally contain Portland cement,

aggregate, and chrysotile fibers. Asbestos cement products are used as siding and roofing shingles; as wallboard; as corrugated and flats sheets for roofing, cladding, and partitions or decorative panels; and as pipes for a variety of applications above and below ground. Asbestos has also been added to asphalt, vinyl and other materials to make products like roofing felts, exterior siding, floor tile, joint compounds and adhesives.

Fibers in asbestos cement, asphalt and vinyl are usually firmly bound in the cement and will be released if the material is mechanically damaged, for example by drilling, cutting, or sanding. Roofing shingles and siding may also show slow deterioration due to weathering. Studies have also shown that dry buffing of bare vinyl-asbestos floor tile during routine maintenance will release unacceptable quantities of airborne fibers.

As an insulator, asbestos received wide spread use for thermal insulation and condensation control. It was usually spray applied, trowel applied, or manually installed after prefabrication.

Asbestos can also be component of acoustical plaster. The material was applied by trowel or by spraying on ceilings and sometimes walls. Similarly, as a decorative product, asbestos was mixed with other materials and sprayed on ceilings and walls to produce a soft, textured appearance.

The following tables summarize typical ACM uses:

Table 2 – Ceiling, Walls, and Insulation

Product	How Fibers Are Released	Comments
Sprayed-on or troweled on insulation (on ceilings, walls, and steelwork) Acoustical Fireproofing Decoration Condensation prevention	Water damage, deterioration, contact damage	In use from 1935 to 1978. EPA banned nearly all uses in 1978.
Fire doors	Drilling, demolition	
Caulking putties	Sanding, scraping	
Vinyl wall covering	Sanding, scraping, tearing	
Insulation under/around heat sources such as stoves and fireplaces (asbestos-containing cement sheets or paper)	Sanding, scraping, cutting	
Patching or taping compound	Sanding, scraping	In use from 1945 to 1977. Banned use in 1977, but in 1980 many industrial joint-taping compounds still contained asbestos.
Some types of fireproof wallboard	Cutting, contact damage	Typically 1930-1950
Insulation “sandwiched” between plaster walls and behind ceilings and blown in or loose insulation	Disturbing during renovation or demolition. If located in air stream, may be disturbed by air-flow, releasing fibers throughout building.	Typically 1930-1950
Electrical insulation (around wiring)	Damage, fraying, or other deterioration	Usually in panel boards or heating appliances.
Some textured paints (small amounts)	Sanding	Typically on roofs
HVAC duct insulation and flexible/expansion joints	Cutting, fraying, or other deterioration	

Table 3 – Flooring		
Product	How Fibers Are Released	Comments
Vinyl tiles (binding agent)	Routine maintenance of large areas using power buffing machines	In use since 1950
Asphalt tiles (binding agent)	Removal, sanding	In use since 1920
Floor tile mastics	Dry-scraping, cutting	In use since 1920
Vinyl sheet flooring backing	Removal, sanding	In use since 1950

Table 4 – Roofing and Siding		
Product	How Fibers Are Released	Comments
Roofing and siding (binding agent is asphalt)	Replacing, repairing, demolishing	In use since early 1900s.
Shingles	Replacing, repairing, demolishing	In use since early 1900s.
Sheets	Replacing, repairing, demolishing	In use since early 1900s.
Roofing felt	Replacing, repairing, demolishing	In use since early 1900s.
Roofing mastics	Replacing, repairing, demolishing	In use since early 1900s.

3.3 Asbestos and Health

Several types of disease can result from exposure to asbestos. Some workers who had done shipyard work with asbestos for only a few weeks during World War II developed asbestos-related disease in the 1960s. Workers in the construction, renovation, and demolition trades who encounter asbestos on the job are among the higher risk groups. Family members of asbestos workers have contracted disease from exposure to asbestos fibers brought home on the worker's clothing. Authorities believe there is no safe level of exposure, although the higher the exposure to asbestos, the higher the risk of disease.

Material containing friable asbestos is especially hazardous because asbestos fibers are easily released into the air by impact and deterioration, or even by air flow across the material. Some asbestos is bound with other materials in products such as roofing shingles or vinyl-asbestos floor tiles. In these products, asbestos fiber is not released so easily. However, fibers in bound asbestos may be released when the material is cut, drilled, scraped, or sanded or when it is badly deteriorated.

Exposure to asbestos occurs when asbestos fibers of various sizes are released into the air and are inhaled. The smaller fibers can remain in the air for long periods of time. These fibers are so small that they are only visible with a microscope. In fact, it takes 600 asbestos fibers bundled together to equal the thickness of a human hair. Some of the large fiber bundles may lodge in the nose, but the smaller ones travel through the upper airways and become embedded in the lungs. The body has no effective mechanism for removing these fibers.

Exposure to asbestos may cause several types of diseases, including the following:

3.3.1 Asbestosis

Asbestosis occurs when asbestos fibers become lodged in the lungs, irritating the lung tissues and inflaming the small air tubes and sacs in the lungs. As the inflammation heals, permanent scar tissue (called fibrosis) remains. The scarring will cause shortness of breath, which grows worse over time, even after exposure ceases. Eventually, it may be impossible for the victim to inhale enough air, and heart failure may result. There is no cure for asbestosis.

What we know about the relationship between exposure to asbestos and asbestosis has been learned from studies of people who were heavily exposed. Usually, asbestosis is found in people who have been exposed to asbestos over a long period of time. The disease is much less likely to occur if proper precautions are taken.

3.3.2 Lung Cancer

Lung cancer is five times more common in people exposed to asbestos than in individuals who have not been exposed. Early symptoms are coughing, chest pains, and coughing up blood. Smoking greatly increases the risk of developing lung cancer from exposure to asbestos. A smoker who is heavily exposed to asbestos is 30 to 90 times more likely to develop lung cancer than a nonsmoker. However, as with asbestosis, proper precautions can help to reduce the risk of contracting asbestos-related lung cancer. There is usually no cure for this disease, but if the cancer is detected early, it may be surgically treated.

3.3.3 Mesothelioma

Mesothelioma is an extremely rare and deadly form of cancer that is almost always caused by exposure to asbestos. It is an “asbestos cancer,” and may result from relatively light exposure to asbestos.

This cancer occurs in the lining of the chest and abdomen. Early symptoms are shortness of breath or pain in the chest or abdomen. Mesothelioma would be expected to occur in only one out of 100,000 people not exposed to asbestos, but one study found that ten of 124 deaths of asbestos insulation workers were caused by mesothelioma. There is no cure for this disease, and most of the victims die within the first year of diagnosis.

3.3.4 Other Cancers

Exposure to asbestos is also thought to result in cancers of the gastrointestinal tract. These diseases may be caused by the victim swallowing some of the longer asbestos fibers that have been caught in the upper air passages or by fibers traveling through the body.

The likelihood of developing asbestos-related diseases depends on the amount to which one is exposed, the length of time, and the number of exposures. The greater the total exposure, the greater probability of illness.

Usually, asbestos-related disease will not show up for 15 to 40 years after exposure. The typically long period between exposure and noticeable disease is one of the greatest problems in convincing people of the danger of asbestos exposure.

4 ASBESTOS PROGRAM RESPONSIBILITIES

4.1 Asbestos Program Manager Responsibilities

The responsibility of implementing and maintaining the O&M Program should be undertaken by an Asbestos Program Manager. This position may be held by a building engineer, superintendent, or manager of the building. The Asbestos Program Manager is not required to have any special qualifications, as the plan is written to require work on the ACMs be done only by asbestos contractors, and there are assumed to be no ACMs which might be especially difficult to manage.

Responsibilities of the Asbestos Program Manager include, but are not limited to, the following:

- Notifying building occupants regarding the presence of ACMs within the building and the implementation of an O&M Program;
- Responding to inquiries from building occupants, and contractors regarding ACMs at the site;
- Ensuring that outside contractors who may come in contact with asbestos in the building are provided with information regarding the location of ACMs;
- Ensuring that all custodial and maintenance personnel are properly trained;
- Ensuring warning labels are properly posted;
- Coordinating periodic surveillance and re-inspection activities;
- Coordinating asbestos removal, repair, and maintenance operations as required;
- Maintaining records relating to all asbestos activities including training, periodic surveillance, air monitoring, and response actions.

4.2 Building Occupant/Responsibilities

Building occupants are also responsible for complying with the elements of the O&M Program. Building occupants should ensure that they do not disturb ACMs and should notify their contractors who work in the buildings that an asbestos O&M Program is in place. Questions from contractors regarding ACMs should be directed to the Asbestos Program Manager.

In the event building occupants, contractors, maintenance, or service personnel encounter any material they suspect may contain asbestos which will be disturbed, they should immediately stop their activity and notify the Asbestos Program Manager for further instructions. The Asbestos Program Manager will be responsible for determining whether the suspect material contains asbestos, and what further actions are required before work can be continued.

5 THE NOTIFICATION SYSTEM

The client may wish to consult with an attorney who has experience in dealing with asbestos issues in order to comply with all applicable laws and regulations regarding disclosures. This O&M Program document is not and cannot be legal advice. The applicable laws and regulations may have additional requirements beyond those addressed by this O&M Program, and there may be changes in applicable laws and/or regulations following implementation of this program. However, some of the laws and/or regulations applicable at the time of preparation of this O&M Program document are:

- EPA NESHAP, implemented locally by the local Air Quality Management District (e.g., South Coast Air Quality Management District [SCAQMD]). The EPA's rules concerning the application, removal, and disposal of ACMs, as well as manufacturing, spraying and fabricating of ACMs, were issued under the asbestos NESHAP. The asbestos NESHAP regulation governs asbestos demolition and renovation projects in all facilities. In order to comply, a building owner or operator must have the facility, or affected portion of the facility, inspected for asbestos prior to conducting a renovation or demolition. Further, the NESHAP rule requires owners or operators to have ACMs removed before a building is demolished, and may require its removal before a renovation. For renovation projects where friable ACMs will be disturbed, the NESHAP rule requires appropriate work practices or procedures for the control of emissions. EPA must be notified before a building is demolished or renovated.

- SCAQMD requirements (Rule 1403) for demolitions and renovations which follow EPA and NESHAP guidelines;

- The California Business and Professions Code regarding certification and training of asbestos professionals;

- The California Code of Regulations (CCR), Title 8, regarding asbestos practices;

- California Proposition 65 (CCR, Title 22, Chapter 3, Article 6, Section 12601), regarding notifications;

- California AB 3713 (CCR, Title 22, Chapter 10.4, Section 25915), regarding notifications; and (but not limited to);

- Occupational Safety and Health Administration (OSHA) Regulations: There are several important OSHA regulations that are designed to protect workers. They are summarized here, as guidance. OSHA has specific requirements concerning worker protection and procedures used to control ACMs specified in 29 Code of Federal Regulations 1926.1101.

    - For most operations and maintenance activities in building areas where only non-friable ACMs are present or where friable ACMs are in good condition, applicable OSHA

permissible exposure limits are not likely to be exceeded. However, it is possible that some O&M activities will disturb ACMs to such an extent that the OSHA limits are exceeded, unless good work practices are followed.

- The OSHA standards require employers to address a number of items which are triggered by exposure of employees to asbestos fibers. Exposure is discussed in terms of fibers per cubic centimeter (f/cc) of air. A cc is a volume approximately equivalent to that of a sugar cube. Two main provisions of the regulation fall into the general category of "Permissible Exposure Limits (PELs)" to airborne asbestos fibers. They are:

  - Eight-hour Time-Weighted Average limit (TWA) – 0.1 f/cc of air based on an eight-hour TWA sampling period. This is the maximum level of airborne asbestos, on average, that any employee may be exposed to over an eight-hour period (normal work shift).

  - Excursion limit – 1.0 f/cc as averaged over a sampling period of 30 minutes.

- These levels trigger mandatory requirements, which include the use of respirators and protective clothing, the establishment of "regulated areas," the posting of danger signs as well as the use of engineering controls and specific work practices.

California CACs and licensed asbestos abatement contractors are familiar with the applicable laws and regulations and should be utilized as required and as outlined in the following sections of this O&M Program.

Labeling of all ACMs within building is not possible, nor is it typically required under an O&M Program. However, if labeling should be desired at some future date, labels should be prepared as indicated below. Friable materials which are in a state where asbestos may be readily released, regardless of location, and most ACMs located in routine maintenance areas (i.e., mechanical rooms, etc.) should be labeled. The warning labels should be posted on or near ACMs. The warning labels should be readily visible and read as follows:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD.
AUTHORIZED PERSONNEL ONLY.

The following notification shall be given to all existing building occupants, new occupants, present maintenance and management personnel, newly hired or new to the complex maintenance and management personnel, and contractors or utility company personnel who need to work on the buildings. The signed forms shall be maintained in the permanent asbestos program files by the Asbestos Program Manager.

ASBESTOS NOTIFICATION

Asbestos-containing materials (ACMs) may be present in the building due to the building construction date. ACMs only present a health hazard (cancer and lung disease) when asbestos fibers (not visible to the naked eye) are inhaled or swallowed. The mere presence of ACMs does not represent a health hazard.

DO NOT disturb the ACMs! This includes screwing fasteners or other objects into an ACM, rubbing or pushing objects against the ACM and cutting, sawing, sanding, or breaking the ACM.

Please report any disturbance or damage of the ACMs, any dust or debris that might have come from the ACMs, any change in the condition of the ACMs or any improper action with ACMs to the Asbestos Program Manager.

Maintenance and other personnel are taking special precautions during their work to properly clean up any asbestos debris (if present) and to guard against disturbing ACMs. All ACMs are inspected periodically and additional measures have been and will be taken if needed to protect the health of building occupants.

I have read and understand the above:

Date: _____

Name: _____ Signature: _____

Note: This notification is included within Appendix B.

6 THE SURVEILLANCE PROGRAM

There are two types of surveillance. The first is that which is done by the Asbestos Program Manager or assigned trained personnel (6-month assessment), the second is that which is done by maintenance personnel during the course of their other work at the building.

The Asbestos Program Manager or assigned trained personnel should inspect all ACMs every six months in accordance with the Asbestos Hazard Emergency Response Act (Code of Federal Regulations, 763 Subpart E). A log form or adequately backed-up computer file noting the ACMs, the location within the building of ACMs, and the date of the last inspection shall be maintained and updated accordingly or as changes are made or discovered by the Asbestos Program Manager.

A CAC may initially be retained to assist with implementation of this O&M Program. A CAC may also subsequently be hired to reassess the condition of the ACMs and to make any recommendations for immediate actions or changes to the O&M Program.

The Asbestos Program Manager shall inform the maintenance personnel that they are to promptly report any damage, deterioration or disturbance of building materials and suspected ACMs which they see during the course of their normal duties. Newly hired personnel shall be asked to read and sign the above notification form and shall be briefed by the Asbestos Program Manager on the program and their duties and responsibilities with regard to the ACMs.

7 THE WORK CONTROLS AND PERMIT SYSTEM

The work control and permit system is designed to avoid inadvertent and/or improper disturbance of ACMs during the course of any maintenance or repair work on the site. This may represent a fundamental change in the way that such work is done at the site. However, one goal of the system is to avoid introducing substantial delays or high added costs to the operation and maintenance of the site.

It should be noted that the SCAQMD rules regarding disturbance or removal of ACMs lists several requirements for work involving disturbance/removal of ACMs greater than specific threshold quantities, and provide for fines for violations.

In most cases, a semi-formal permit system is appropriate. However, the Asbestos Program Manager, must first be contacted whenever any maintenance or repair work occurs. This may be a significant change from present practice, but it is important that all persons on the management and maintenance staff understand that this is now required. It would be appropriate to write this requirement into the job descriptions and the performance reviews of the employees.

Whenever maintenance personnel plan a maintenance or repair project, they must first contact the Asbestos Program Manager to indicate the location and nature of the work to be performed. If any substantial change occurs in the work once it is underway, the Asbestos Program Manager should again be contacted. This also applies to work to be done by outside contractors or utility company personnel.

After the maintenance person(s) indicate to the Asbestos Program Manager the type and location of the work, the Asbestos Program Manager shall review this plan to determine if ACMs are present in the area where the work will occur. Example forms to utilize for this communication to the Asbestos Program Manager and the Asbestos Program Manager response are included in Appendix C:

- If there are no ACMs the Asbestos Program Manager shall convey that information to the maintenance or repair person(s) and the work may proceed. If it is unknown if asbestos is present, sampling of building materials to be disturbed and laboratory analysis for asbestos should occur prior to disturbance.

- If there are ACMs, but it is not anticipated that the ACMs will be disturbed, the Asbestos Program Manager shall inform the maintenance or repair person(s) of the presence of the ACMs and the importance of not disturbing it.

- If there are ACMs and it is anticipated that they will be disturbed, the Asbestos Program Manager shall contact one or more licensed asbestos contractors to obtain prices for their services to assist in the work, such as utilizing High Efficiency Particulate Air-vacuum equipped tools and/or other asbestos control measures including the construction of negative pressure enclosures. For substantial work, an environmental consulting company with CACs should be hired to develop specifications/work plan documents, assist with the evaluation of bids, oversee (monitor) the work activities of a licensed asbestos contractor, perform air monitoring, and air clearances for re-occupancy. An abatement closeout report should be prepared summarizing the abatement activities. All records from any such work should be placed in the permanent asbestos record files.

The job descriptions of the maintenance persons and the Asbestos Program Manager shall be updated to reflect their responsibilities in dealing with ACM issues.

8 THE WORK PRACTICES PROGRAM

Based upon the types of ACMs and the cost of medical surveillance, respiratory protection programs, and insurance, it is recommended that most work with ACMs be performed by licensed asbestos contractors. It is important that the Asbestos Program Manager, maintenance people, outside contractors or utility personnel who will work on the buildings understand that they are not to work with or disturb ACMs. OSHA regulations require a respiratory protection program (and therefore a medical surveillance program) and protective clothing whenever workers are exposed or are likely to be exposed to asbestos fibers above the current PEL on an 8-hour time-weighted average or the current 30-minute Excursion Limit. The training and record keeping necessary to allow for work with asbestos by maintenance personnel would be an ongoing and significant expense, which is not necessary due to the anticipated infrequent need to disturb the limited amount of ACMs present.

As long as ACMs remain in a building there is potential for a fiber release episode. Fiber release episodes can occur during maintenance and renovation projects, or from the disturbance of materials by untrained personnel. Tenants, custodians, outside contractors and/or maintenance workers should immediately report any evidence of possible fiber release to the Asbestos Program Manager. Even minor fiber release episodes of friable materials must be treated seriously and proper procedures should be followed. Upon discovery of the fiber release, access to the area should be restricted, and the Asbestos Program Manager should be contacted

immediately. Under no circumstances should building tenants, maintenance or custodial personnel, or outside contractors cleanup asbestos-containing debris. Conventional cleaning, such as sweeping with dry brooms, dusting with dry cloths, and vacuuming with standard vacuum cleaners may simply suspend asbestos fibers in the air. Cleaning of asbestos-containing debris should be conducted by properly trained and licensed personnel who are equipped with proper respiratory protection.

9 THE RECORD KEEPING SYSTEM

As this O&M Program has been designed to avoid having personnel on the operations or maintenance staff work with asbestos, no records of medical monitoring, personnel air monitoring, or training should be necessary.

All records of work done on the ACMs, updates to this O&M Program, asbestos survey reports, and periodic inspection reports, shall be kept permanently in files maintained at the office of the Asbestos Program Manager. All asbestos abatement activities (Abatement Closeout Reports) shall be kept permanently in files maintained at the office of the Asbestos Program Manager.

The maintenance of these records shall be added to the job descriptions of the Asbestos Program Manager, and new persons hired or promoted to fill this position shall be made aware in writing of their responsibility to perform these duties. Such updates of job descriptions and other duties shall be performed by the site manager and/or the Asbestos Program Manager.

Ninyo & Moore has included four forms adapted from an EPA publication. In order to provide examples of the types of forms (paper and/or electronic) the forms are presented in Appendix C.

10 THE WORKER PROTECTION PROGRAM

As this O&M Program has been designed to avoid having personnel on the operations or maintenance staff work with asbestos, the worker protection program shall consist of following the procedures outlined by this O&M Program. No respiratory protection component of the worker protection program is required beyond following the procedures outlined by this O&M Program, which avoids having personnel work with asbestos.

11 THE TRAINING PROGRAM

The Asbestos Program Manager and maintenance personnel shall be required to receive general awareness training on asbestos, during implementation of this O&M Program, and newly hired or assigned personnel shall be required to receive the same or similar training. This training involves a taking a two-hour training class. General awareness training includes the following:

- Information regarding asbestos and its various uses and forms
- Information on the health effects associated with asbestos exposure
- Location of asbestos-containing building materials within the structure in which the employee works
- Name and phone number of the Asbestos Program Manager and location of the Management Plan Documents
- Recognition of damage, deterioration, and delamination of ACMs
- Proper response to fiber release episodes
- Requirements of the OSHA standard in regards to housekeeping

New or promoted employees in these positions shall receive such training within two weeks in the positions, or, preferably, before they assume the position.

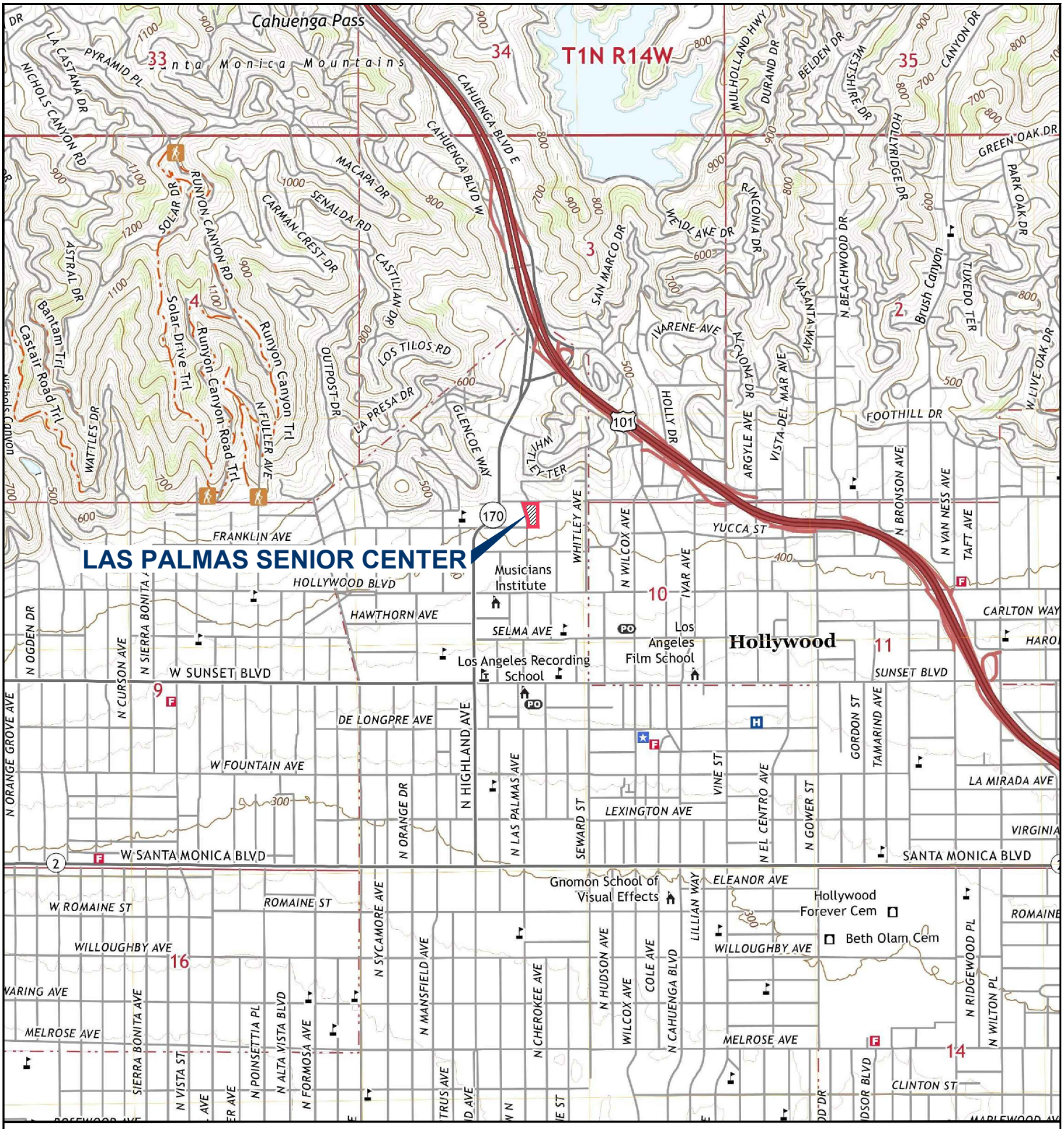
The Asbestos Program Manager is considered a competent person and under OSHA regulatory requirements, additional training is required in Asbestos Operations and Maintenance training. This training involves a full two-day course. This course includes the following:

- Descriptions of the proper methods of handling ACMs
- Information on the use of respiratory equipment and other personal protective measures
- Provisions of AHERA, NESHAP, EPA Worker Protection Rule, and the OSHA Asbestos in the Construction Industry Standard
- Hands-on training in the use of respiratory protection, other person protective measures, and good work practices

12 ASBESTOS CONSULTANT DOCUMENTATION

This O&M Program was prepared by Mr. David Kelly, a California Division of Occupational Safety and Health (DOSH) Certified Site Surveillance Technician and Mr. William Larkin, a DOSH Certified Asbestos Consultant. Consultant certificates are provided in Appendix D.

FIGURE



NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: USGS, 2020.

N

FEET
0 2,000 4,000

209616018_SL.dwg 03/30/2023 JDP

FIGURE 1

SITE LOCATION

LAS PALMAS SENIOR CENTER
1820 NORTH LAS PALMAS AVENUE
LOS ANGELES, CALIFORNIA
209616018 I 3/23

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

APPENDIX A

Photographs



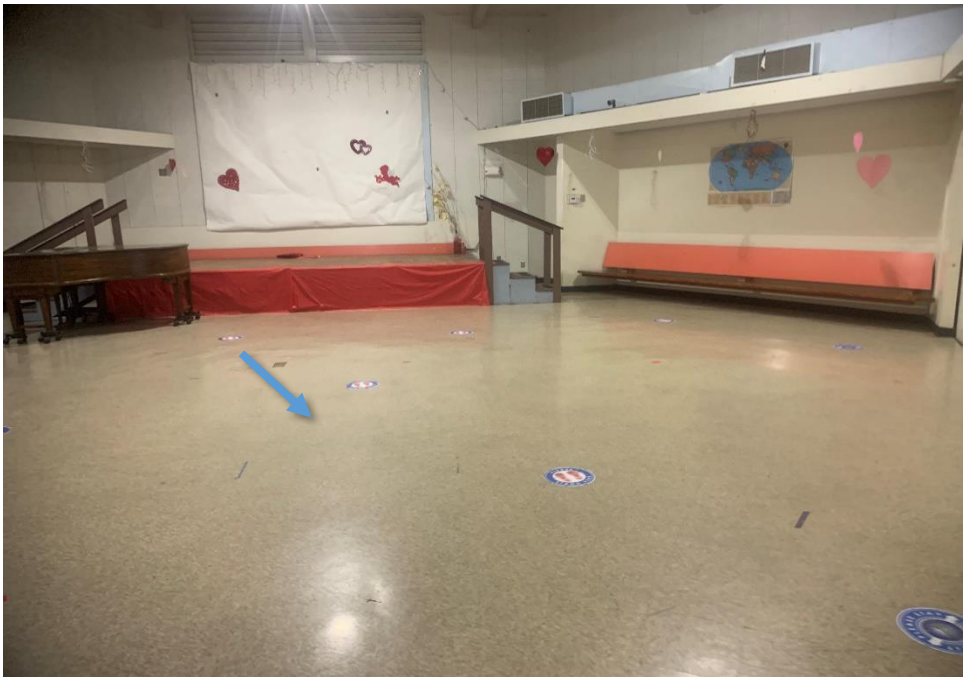
Photograph 1: **View of the Senior Center.**



Photograph 2: **View of the asbestos containing penetration mastic located on the roof.**



Photograph 3: **Another view of the asbestos containing penetration mastic located on the roof.**



Photograph 4: **View of the 12”x12” beige vinyl floor tile over the asbestos containing gray vinyl floor tile with black mastic within the Senior Center.**



Photograph 5: **Another view of the 12”x12” beige vinyl floor tile over the asbestos containing gray vinyl floor tile with black mastic within the Senior Center.**



Photograph 6: **Representative view of the assumed asbestos containing fire doors within the electrical room.**



Photograph 7: **View of the assumed asbestos containing mirror mastic within the child care center restroom.**

APPENDIX B

Asbestos Notification Form

ASBESTOS NOTIFICATION

Asbestos containing materials (ACMs) may be present in the building due to the building construction date. ACMs only present a health hazard (cancer and lung disease) when asbestos fibers (not visible to the naked eye) are inhaled or swallowed. The mere presence of ACMs does not represent a health hazard.

DO NOT disturb the ACMs! This includes screwing fasteners or other objects into an ACM, rubbing or pushing objects against the ACM and cutting, sawing, sanding, or breaking the ACM.

Please report any disturbance or damage of the ACMs, any dust or debris that might have come from the ACMs, any change in the condition of the ACMs or any improper action with ACMs to the Asbestos Program Manager.

Maintenance and other personnel are taking special precautions during their work to properly clean up any asbestos debris (if present) and to guard against disturbing ACMs. All ACMs are inspected periodically and additional measures have been and will be taken if needed to protect the health of building occupants.

I have read and understand the above:

Date: _____

Name: _____ Signature: _____

APPENDIX C

Sample Record Keeping Forms

6-month Re-inspection of Asbestos-Containing Materials Form

Location of asbestos-containing material (address, building, room, or general description):

_____
_____
_____
_____

Type of Asbestos-Containing Material(s):
1. Sprayed- or troweled-on ceilings or walls
2. Sprayed- or troweled-on structural members
3. Insulation on pipes, tanks, or boiler
4. Other (describe):

_____
_____

Abatement Status:

1. The material has been encapsulated ____ enclosed ____, neither ____, removed ____

Assessment:

I. Evidence of physical damage: _____

_____

2. Evidence of water damage: _____

_____

3. Evidence of delamination or other damage: _____

_____

4. Degree of accessibility of the material: _____

_____

5. Degree of activity near the material: _____

_____

6. Location in an air plenum, air shaft, or airstream: _____

_____

7. Other observations (including the condition of the encapsulant or enclosure, if any): _____

_____

Recommended Action: _____

Signed:_____ Date: _____
(Evaluator)

Job Request Form for Maintenance Work

Name: _____ Date: _____

Telephone No. _____ Job Request No : _____

Requested starting date: _____ Anticipated finish date: _____

Address, building, and room number(s) (or description of area) where work is to be performed:

_____

_____

_____

_____

Description of work:

_____

_____

_____

_____

Description of any asbestos-containing material that might be affected, if known (include location and type):

_____

_____

_____

_____

Name and telephone number of requestor: _____

_____

Name and telephone number of supervisor: _____

Submit this application to: _____

_____

(The Asbestos Program Manager)

NOTE: An application must be submitted for all maintenance work whether or not asbestos-containing material might be affected. An authorization must then be received before any work can proceed.

____ Granted Job Request No.

____ With conditions

____ Denied

*Conditions: _____

Maintenance Work Authorization Form

AUTHORIZATION

Authorization is given to proceed with the following maintenance work:

_____

_____

_____

_____

PRESENCE OF ASBESTOS-CONTAINING MATERIALS

____ Asbestos-containing materials are not present in the vicinity of the maintenance work.

____ Asbestos-containing materials are present, but their disturbance is not anticipated; however, if conditions change, the Asbestos Program Manager will re-evaluate the work request prior to proceeding.

____ Asbestos-containing materials are present, and may be disturbed.

Work Practices if Asbestos-Containing Materials Are Present

The following work practices shall be employed to avoid or minimize disturbing asbestos:

_____

_____

_____

Personal Protection if Asbestos-Containing Materials Are Present

The following equipment/clothes shall be used/worn during the work to protect workers:

_____

_____

_____

(manuals on personal protection can be referenced)

Special Practices and/or Equipment Required:

_____

_____

_____

Signed:_____ Date: _____
(Asbestos Program Manager)

Evaluation of Work Affecting Asbestos-Containing Materials

This evaluation covers the following maintenance work:

Location of work (address, building, room number(s), or general description):

_____

_____

_____

_____

Date(s) of work:_____

Description of work: _____

Work approval form number: _____

Evaluation of work practices employed to minimize disturbance of asbestos: _____

Evaluation of work practices employed to contain released fibers and to clean up the work area:

_____

_____

_____

_____

_____

Evaluation of equipment and procedures used to protect workers:

_____

_____

_____

_____

Personal air monitoring results; (in-house worker or contract?)

Worker name _____Results_____

Worker name _____Results_____

Handling or storage of ACM waste _____

Signed:_____ Date: _____

(Asbestos Program Manager)

APPENDIX D

Asbestos Consultant Documentation

STATE OF CALIFORNIA Gavin Newsom, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health-Asbestos Certification
1750 Howe Avenue, Suite 460
Sacramento, CA 95825
(916) 574-2993 Office http://www.dir.ca.gov/dosh/asbestos.html actu@dir.ca.gov

712196144T **430.2** **431**

February 08, 2023

David M Kelly
26015 Okuma Road
Menifee CA 92584

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

Please contact our office at the above address or email w any changes in your contact/mailing information within 15 days of the change.

Sincerely,

Kevin Graulich
Principal Safety Engineer

PAttachment: Certification Card

cc: File



Renewal – Card Attached

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

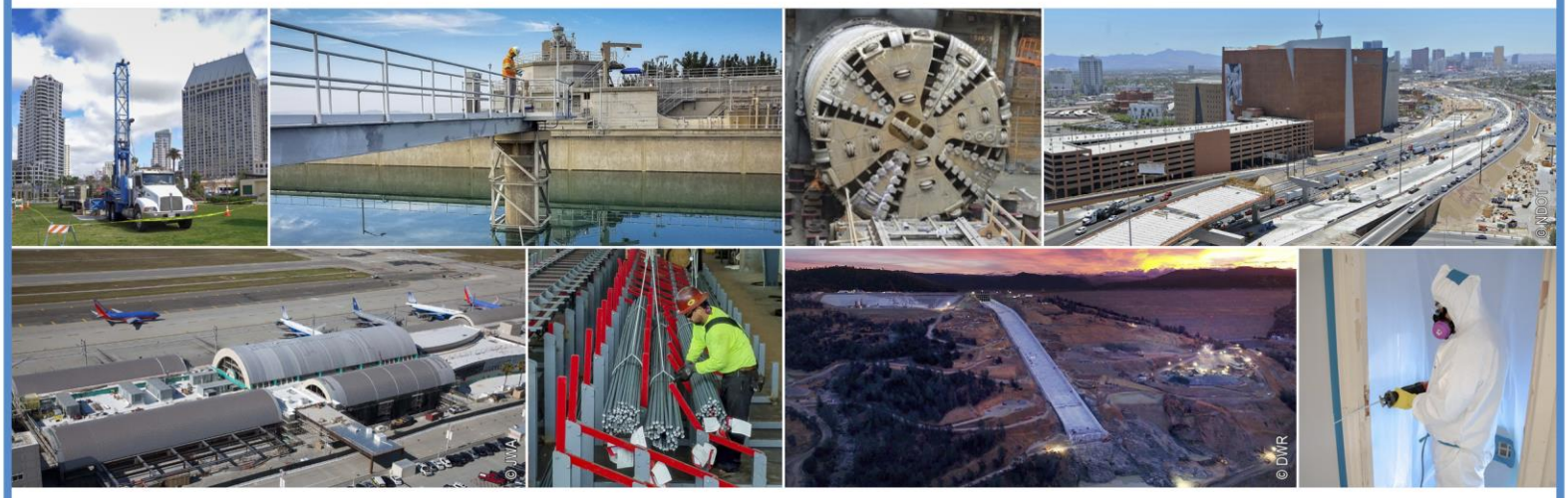
William Patrick Larkin
Name



Certification No. **99-2688**

Expires on **12/08/23**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.



475 Goddard, Suite 200 | Irvine, California 92618 | p. 949.753.7070

ARIZONA | CALIFORNIA | COLORADO | NEVADA | TEXAS | UTAH

ninyoandmoore.com

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

ATTACHMENT D

- SURVEY CONTROL PLAT, DATED 1/12/23

- SITE SURVEY, DATED 3/20/23

Surveyed by C.TWOMEY Date 1/12/23 F.B. 41110 Pg. 701 A

Reviewed by M.ROSALES Date 1/12/23 W.O. E1908358

Type of Survey TOPO

Job Number 100258 Title page X Sheet 1 of 1

LAS PALMAS SENIOR CITIZENS CENTER

1820 N. LAS PALMAS AVE.

REFERENCE:

HORIZONTAL:
FB 41110 PG 701

VERTICAL:
FB 41110 PG 701

SURVEY CREW:

C.TWOMEY
M.ROSALES
V.RICO

BASIS OF BEARINGS STATEMENT:

HELD THE NAVIGATE LA/ICM COORDINATES ON **CP** 1 AT THE C/L INTERSECTION OF FRANKLIN AVE AND LAS PALMAS FOR **POSITION.**

HELD THE NAVIGATE LA/ICM COORDINATES ON **CP** 501 AT THE C/L INTERSECTION OF FRANKLIN AVE AND CHEROKEE AVE FOR **BEARING ONLY.**

FOR A BASIS OF BEARINGS OF N 89°47'31" E .

SEE SHEET 2 FOR COORDINATES.

REQUESTOR: GREGORY MOESER
JENNY LIM

TELEPHONE: N/A

DIVISION: BOE

DELIVERY DATE: 3/22/2023

METHOD: Email:

CAD MAP PRODUCED AND SAVED AS
Las Palmas Senior Center.dwg

IN FILE No. 2334 - CENTRAL CAD ARCHIVE. TERENCE RIVERA 3.22.2023

Date geocoded and digital copy sent to Central Records

NOTE: Additions or changes must be initialed, and dated.

Return original to
BUREAU OF ENGINEERING
SURVEY DIVISION
201 N. Figueroa St., Suite 1100, Los Angeles 90012

ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS OTHERWISE STATED

Eng. 3.883B - Rev. 6-09

Surveyed by E.F. HERNANDEZ Date 1/24/23 F.B. 183–125 Pg. 148

Reviewed by A. HEMEON Date 1/24/23 W.O. E1908358

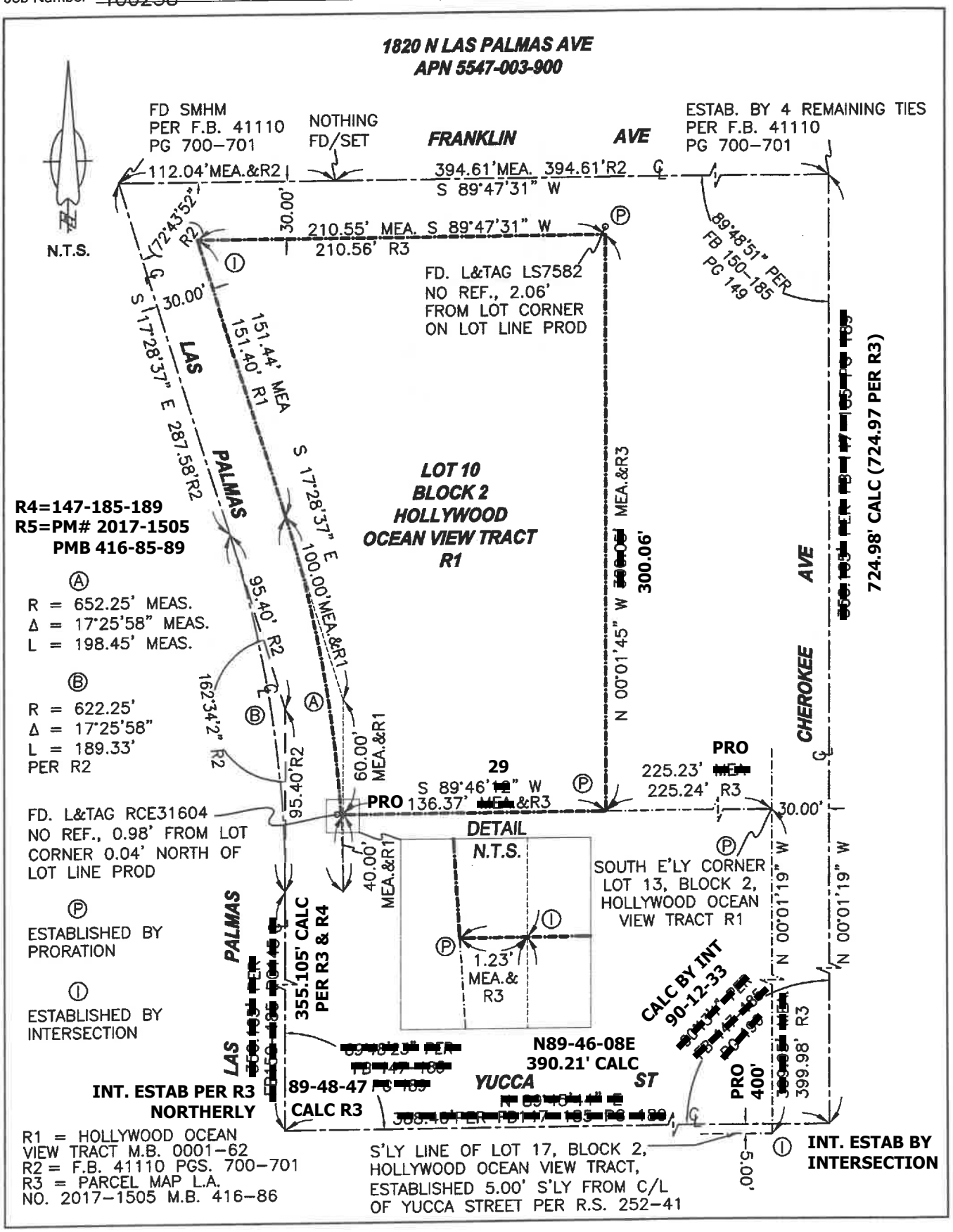
Type of Survey BOUNDARY SURVEY

Job Number 100258 Title page _____ Sheet 1 of 1

NOTE: Additions or changes must be initialed, and dated.

Return original to
BUREAU OF ENGINEERING
SURVEY DIVISION
201 N. Figueroa St., Suite 1100, Los Angeles 90012

ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS OTHERWISE STATED



Eng. 3.883B - Rev. 6-09

Date geocoded and digital copy sent to Central Records _____

Surveyed by JOYCE, M. Date 04/11/18 F.B. 41110 Pg. 700

Reviewed by PRIETO, C. Date 04/11/18 W.O. E1908358

Type of Survey PRELIMINARY

Job Number 100258 Title page 700 Sheet 1 of 2

LAS PALMAS SENIOR CITIZENS CENTER

1820 N. LAS PALMAS AVE.

NOTE: Additions or changes must be initialed, and dated.

REFERENCE:

HORIZONTAL: F.B. 150-185, PGS. 147-149, 193

SURVEY CREW:
JOYCE, M.
PRIETO, C.

VERTICAL: NAVD '88, 2000 ADJ.
BM 12-20810, EL=416.204

BASIS OF BEARINGS STATEMENT:

HELD THE NAVIGATE LA/ICM COORDINATES ON **CP #1** AT THE C/L INTERSECTION OF FRANKLIN AVE. AND LAS PALMAS AVE. (SOUTH) FOR **POSITION**.

HELD THE NAVIGATE LA/ICM COORDINATES ON **CP #2NAV** AT THE C/L INTERSECTION OF FRANKLIN AVE. AND CHEROKEE AVE. FOR **BEARING ONLY**.

FOR A BASIS OF BEARINGS OF N 89° 47' 31" E.

SEE SHEET #2 FOR COORDINATES.

REQUESTOR: JAIME CONTRERAS

TELEPHONE: 213-847-4710

DIVISION: ARCH

DELIVERY DATE: 05/22/2018

METHOD: E-MAIL

CAD MAP PRODUCED AND SAVED AS

Las Palmas Sr Citizen Center.dwg

IN FILE No. 2334 - CENTRAL CAD ARCHIVE.
GORDON TRIM 05/22/2018

Return original to
BUREAU OF ENGINEERING
SURVEY DIVISION
201 N. Figueroa St., Suite 1100, Los Angeles 90012

ALL DISTANCES SHOWN ARE GROUND DISTANCES UNLESS OTHERWISE STATED

Eng. 3.883B - Rev. 6-09

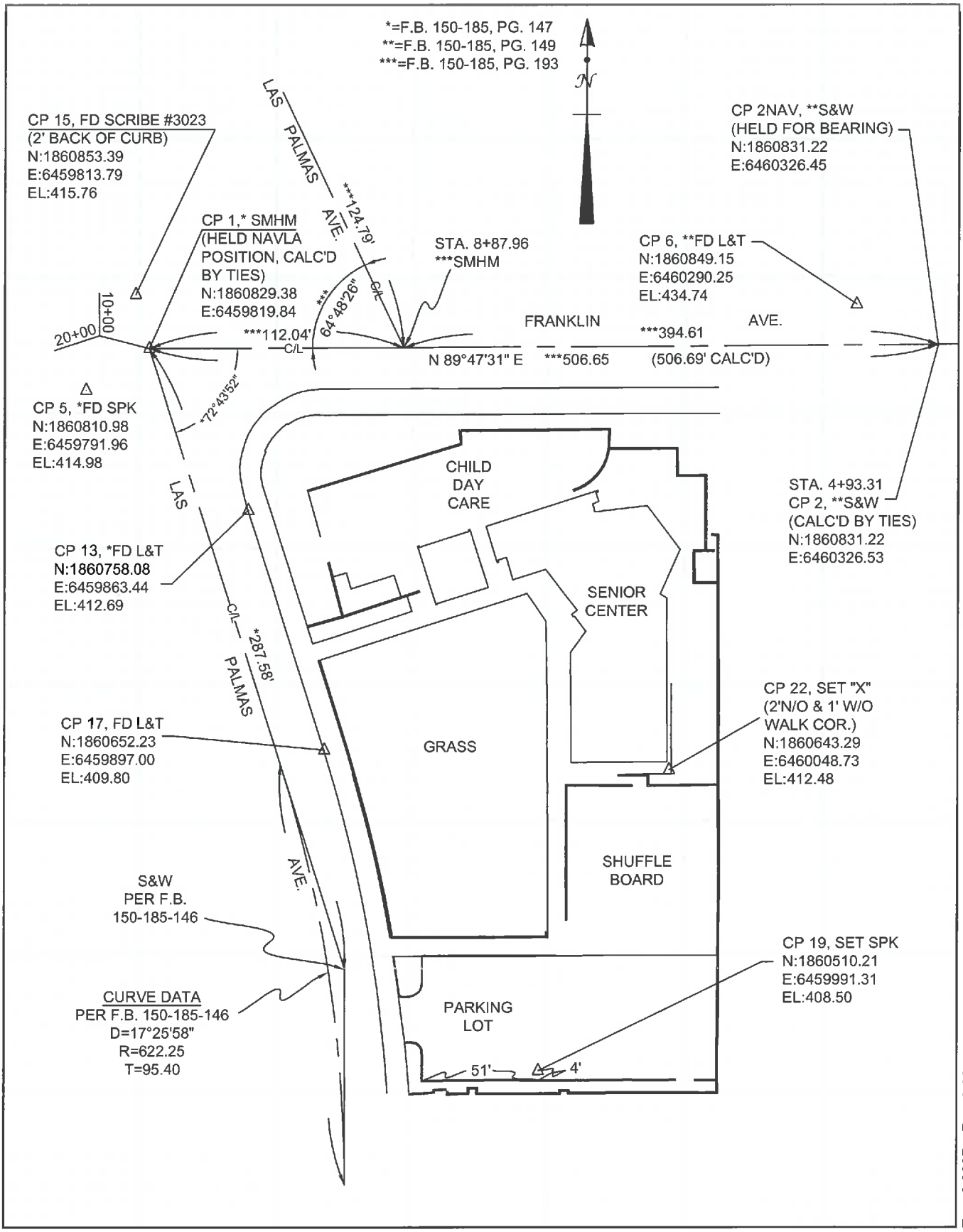
Date geocoded and digital copy sent to Central Records

Surveyed by JOYCE, M. Date 04/11/18 F.B. 41110 Pg. 701

Reviewed by PRIETO, C. Date 04/11/18 W.O. E1908358

Type of Survey PRELIMINARY

Job Number 100258 Title page 700 Sheet 2 of 2



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SURVEY DIVISION
201 N. Figueroa St., Suite 1100, Los Angeles 90012

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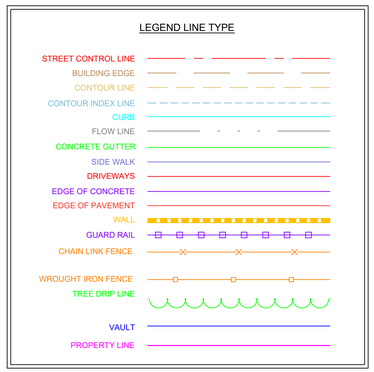
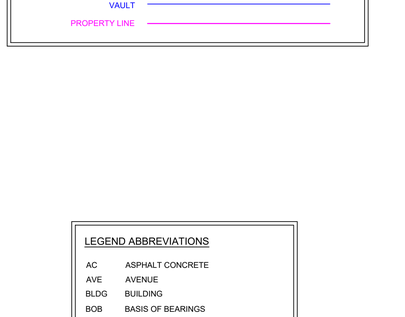
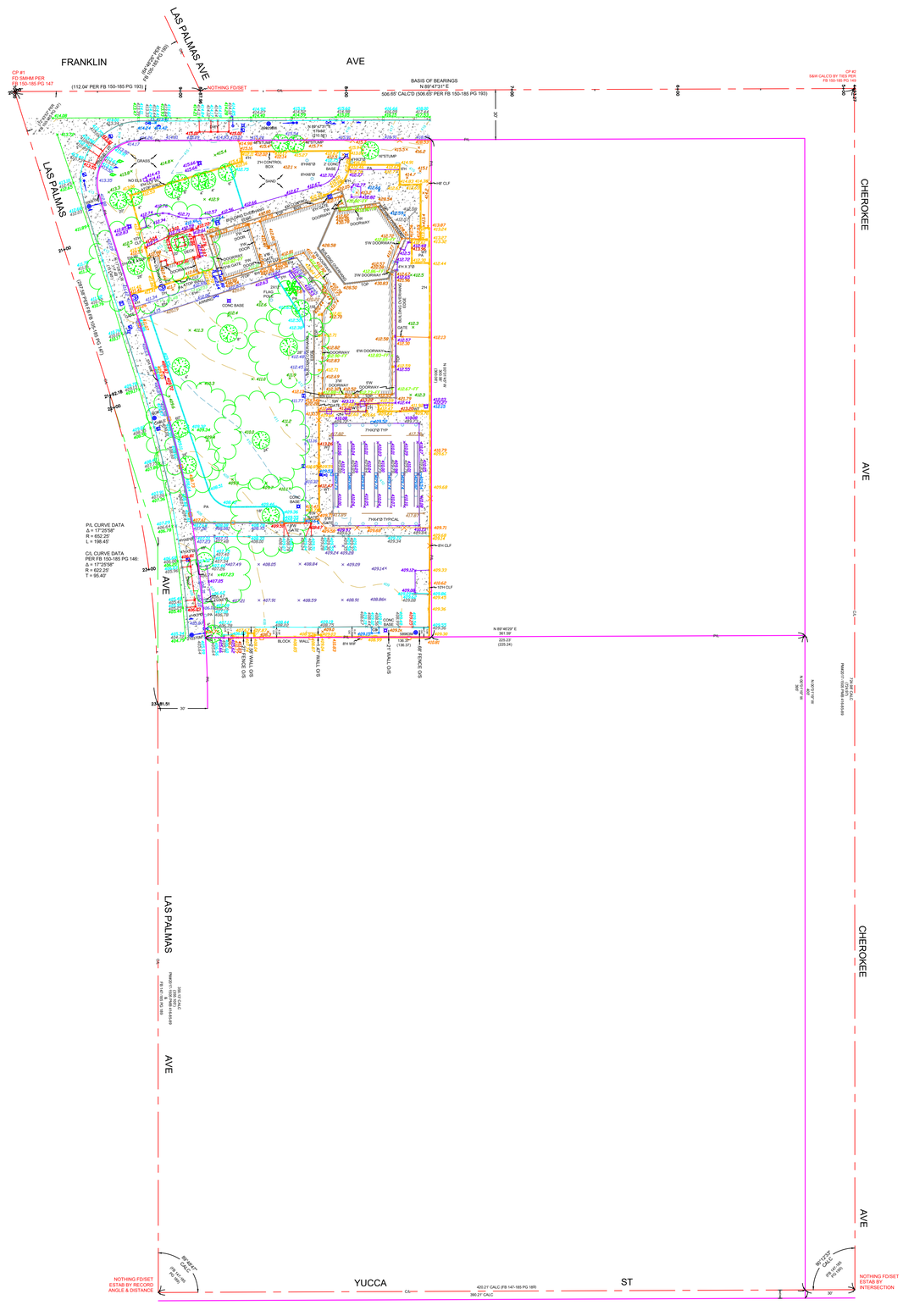


LEGEND ABBREVIATIONS

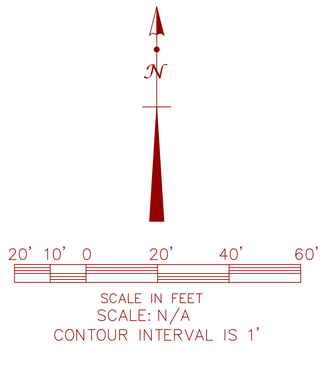
AC	ASPHALT CONCRETE
AVE	AVENUE
BLDG	BUILDING
BOB	BASIS OF BEARINGS
C	CURB
C/L	CONTROL LINE
CALC'D	CALCULATED
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CONC	CONCRETE
CP	CONTROL POINT
DT	DIRT
DWY	DRIVE WAY
FB	FIELD BOOK
FD	FOUND
H	HEIGHT
L	ARC LENGTH
NLA	NAVIGATE LA
NO	NUMBER
O/S	OFFSET
P/L	PROPERTY LINE
PA	PLANTER AREA
PG	PAGE
S&W	SPIKE AND WASHER
SMHM	SEWER MAINTENANCE HOLE MONUMENT
W	WIDTH
WIF	WROUGHT IRON FENCE
WT	WALL TOP
#	NUMBER
Ø	DIAMETER
Δ	DELTA





NOTE:

STREET RIGHT OF WAY
STREET RIGHT OF WAYS ON THIS MAP WERE LOCATED BY FIELD SURVEY BY RETRACEMENT OF CITY ENGINEER FIELD BOOKS AS REFERENCED HEREON.



THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REVISION DATES: (DESIGN STAGE ONLY)

Sheet Version 2.01

BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISIONS:	DATE:	BY:

SURVEY NO.
100258

INDEX NO.

DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES

GARY LEE MOORE, P.E. CITY ENGINEER
SURVEY DIVISION

		DATE:
P.L.S.		1/12/2023
SURVEYOR:	ERIC RAMOS	3/20/2023
FIELD SURVEYOR:	ED HERNANDEZ	3/21/2023
DRAWN BY:	TERENCE RIVERA	
CHECKED BY:	ED HERNANDEZ	
APPROVED BY:		

VERTICAL CONTROL: FB #41110 PGS 70/A
HORIZONTAL CONTROL: FB #41110 PGS 70/A

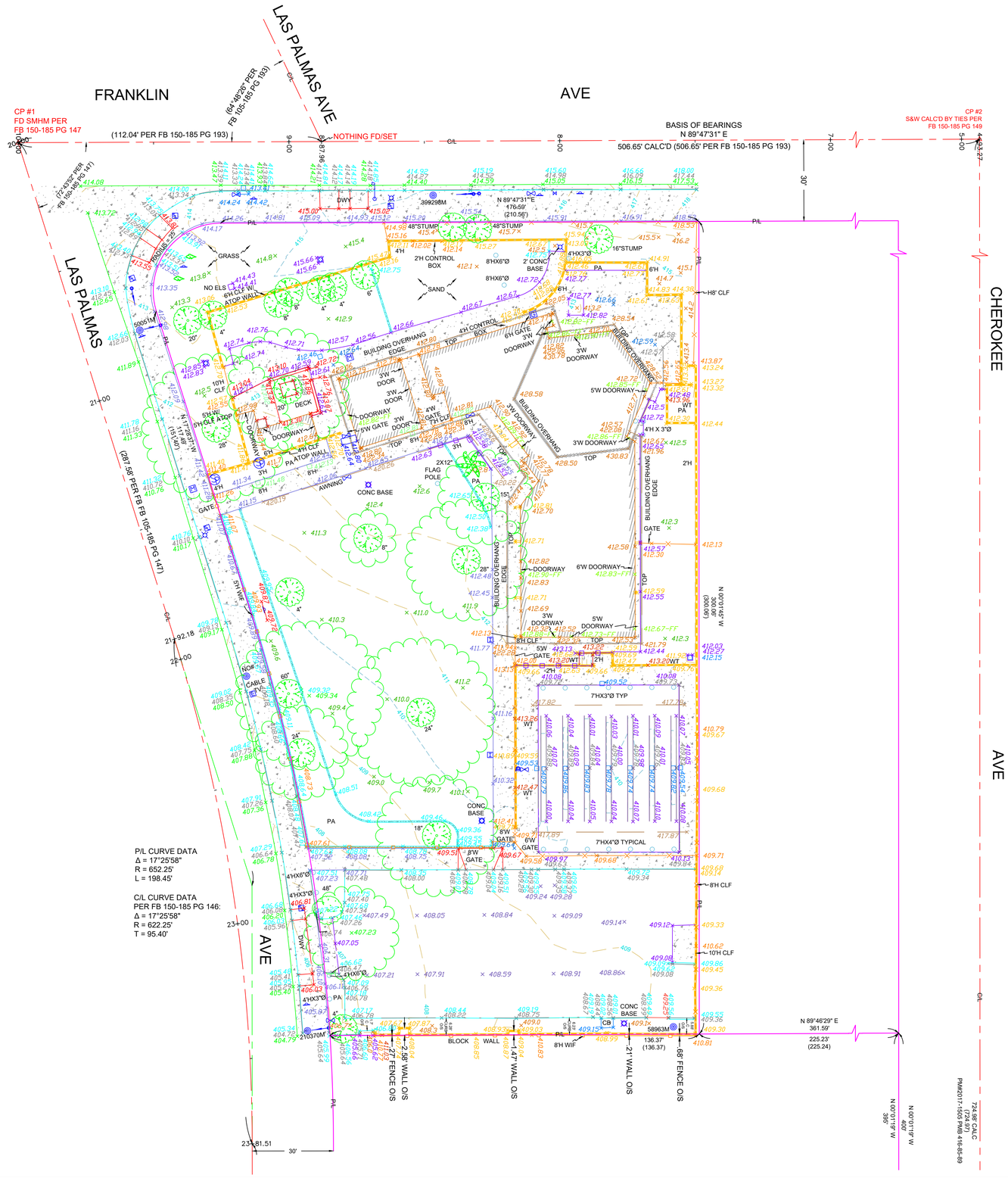
SHEET TITLE: SITE SURVEY

PROJECT: LAS PALMAS SENIOR CITIZEN CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE
LOS ANGELES, CA 90028

WORK ORDER NO.
E1908358
DRAWING NO.
1

SHEET 1 OF 3 SHEETS



LEGEND LINE TYPE

- STREET CONTROL LINE
- BUILDING EDGE
- CONTOUR LINE
- CONTOUR INDEX LINE
- CURB
- FLOW LINE
- CONCRETE GUTTER
- SIDE WALK
- DRIVEWAYS
- EDGE OF CONCRETE
- EDGE OF PAVEMENT
- WALL
- GUARD RAIL
- CHAIN LINK FENCE
- WROUGHT IRON FENCE
- TREE DRIP LINE
- VAULT
- PROPERTY LINE

LEGEND ABBREVIATIONS

AC	ASPHALT CONCRETE
AVE	AVENUE
BLDG	BUILDING
BOB	BASIS OF BEARINGS
C	CURB
C/L	CONTROL LINE
CALC'D	CALCULATED
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CONC	CONCRETE
CP	CONTROL POINT
DT	DIRT
DWY	DRIVE WAY
FB	FIELD BOOK
FD	FOUND
H	HEIGHT
L	ARC LENGTH
NLA	NAVIGATE LA
NO	NUMBER
O/S	OFFSET
P/L	PROPERTY LINE
PA	PLANTER AREA
PG	PAGE
S&W	SPIKE AND WASHER
SMHM	SEWER MAINTENANCE HOLE MONUMENT
W	WIDTH
WIF	WROUGHT IRON FENCE
WT	WALL TOP
#	NUMBER
Ø	DIAMETER
Δ	DELTA

SYMBOL LEGEND

- STREET LIGHT PULLBOX
- ELECTRIC PULLBOX
- IRRIGATION CONTROL BOX
- WATER METER
- GAS VALVE
- WATER VALVE
- GAS METER
- STAND PIPE
- DRINKING FOUNTAIN
- POST
- SURFACE DRAIN
- COLUMN
- LIGHT STANDARD
- TRAFFIC STANDARD
- SIGN
- POWER POLE
- GUY WIRE
- CONTROL POINT
- TREE
- PALM TREE
- SHRUB
- CONCRETE

NOTE:

STREET RIGHT OF WAY
STREET RIGHT OF WAYS ON THIS MAP WERE LOCATED BY FIELD SURVEY BY RETRACEMENT OF CITY ENGINEER FIELD BOOKS AS REFERENCED HEREON.

20' 10' 0 20' 40' 60'

SCALE IN FEET
SCALE: 1"=20'
CONTOUR INTERVAL IS 1'

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

REVISION DATES (DESIGN STAGE ONLY)

Sheet Version 2.01

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING

ENGINEERING
CITY OF LOS ANGELES

NO.	REVISIONS:	DATE:	BY:

SURVEY NO. 100258

INDEX NO.

GARY LEE MOORE, P.E. CITY ENGINEER

SURVEY DIVISION

		DATE:
SURVEYOR: ERIC RAMOS	P.L.S:	
FIELD SURVEYOR: ED HERNANDEZ		1/12/2023
DRAWN BY: TERENCE RIVERA		3/20/2023
CHECKED BY: ED HERNANDEZ		3/21/2023
APPROVED BY:		

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: SITE SURVEY

PROJECT: LAS PALMAS SENIOR CITIZEN CENTER

ADDRESS: 1820 NORTH LAS PALMAS AVE
LOS ANGELES, CA 90028

WORK ORDER NO. E1908358

DRAWING NO. 2

SHEET 2 OF 3 SHEETS

THE CITY OF LOS ANGELES OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ELECTRONIC COPIES OF THIS PLAN SHEET.

LEGEND LINE TYPE

- STREET CONTROL LINE
- BUILDING EDGE
- CONTOUR LINE
- CONTOUR INDEX LINE
- CURB
- FLOW LINE
- CONCRETE GUTTER
- SIDE WALK
- DRIVEWAYS
- EDGE OF CONCRETE
- EDGE OF PAVEMENT
- WALL
- GUARD RAIL
- CHAIN LINK FENCE
- WROUGHT IRON FENCE
- TREE DRIP LINE
- VAULT
- PROPERTY LINE

LEGEND ABBREVIATIONS

AC	ASPHALT CONCRETE
AVE	AVENUE
BLDG	BUILDING
BOB	BASIS OF BEARINGS
C	CURB
C/L	CONTROL LINE
CALC'D	CALCULATED
CB	CATCH BASIN
CLF	CHAIN LINK FENCE
CONC	CONCRETE
CP	CONTROL POINT
DT	DIRT
DWY	DRIVE WAY
FB	FIELD BOOK
FD	FOUND
H	HEIGHT
L	ARC LENGTH
NLA	NAVIGATE LA
NO	NUMBER
O/S	OFFSET
P/L	PROPERTY LINE
PA	PLANTER AREA
PG	PAGE
S&W	SPIKE AND WASHER
SMHM W	SEWER MAINTENANCE HOLE MONUMENT
WIF	WIDTH
WT	WROUGHT IRON FENCE
#	WALL TOP
Ø	NUMBER
Δ	DIAMETER
	DELTA

SYMBOL LEGEND

- STREET LIGHT PULLBOX
- ELECTRIC PULLBOX
- IRRIGATION CONTROL BOX
- WATER METER
- GAS VALVE
- WATER VALVE
- GAS METER
- STAND PIPE
- DRINKING FOUNTAIN
- POST
- SURFACE DRAIN
- COLUMN
- LIGHT STANDARD
- TRAFFIC STANDARD
- SIGN
- POWER POLE
- GUY WIRE
- CONTROL POINT
- TREE
- PALM TREE
- SHRUB
- CONCRETE

NOTE:

STREET RIGHT OF WAY
STREET RIGHT OF WAYS ON THIS MAP WERE LOCATED BY FIELD SURVEY BY RETRACEMENT OF CITY ENGINEER FIELD BOOKS AS REFERENCED HEREON.

LAS PALMAS AVE

YUCCA

CHEROKEE AVE

89°48'47" CALC (FB 147-185 PG 189)

NOTHING FD/SET ESTAB BY RECORD ANGLE & DISTANCE

420.21' CALC (FB 147-185 PG 189)
390.21' CALC

90°12'33" CALC (FB 147-185 PG 189)

NOTHING FD/SET ESTAB BY INTERSECTION

SCALE IN FEET
SCALE: 1"=20'
CONTOUR INTERVAL IS 1'

CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
ENGINEERING
CITY OF LOS ANGELES

GARY LEE MOORE, P.E. CITY ENGINEER
SURVEY DIVISION

		DATE:
P.L.S.		
SURVEYOR: ERIC RAMOS		1/12/2023
FIELD SURVEYOR: ED HERNANDEZ		3/20/2023
DRAWN BY:	TERENCE RIVERA	3/21/2023
CHECKED BY:	ED HERNANDEZ	
APPROVED BY:		

VERTICAL CONTROL: FB #41110 PGS 701A
HORIZONTAL CONTROL: FB #41110 PGS 701A

SHEET TITLE: SITE SURVEY
PROJECT: LAS PALMAS SENIOR CITIZEN CENTER
ADDRESS: 1820 NORTH LAS PALMAS AVE LOS ANGELES, CA 90028

WORK ORDER NO. E1908358
DRAWING NO. 3
SHEET 3 OF 3 SHEETS

NO. REVISIONS: DATE: BY:

SURVEY NO. 100258
INDEX NO.

REVISION DATES (DESIGN STAGE ONLY)

Sheet Version 2.01

ATTACHMENT E

- READY TO ISSUE PLAN CHECK LETTER AND PLOT PLANS

REQUEST FOR MODIFICATION OF BUILDING ORDINANCES

UNDER AUTHORITY OF L.A.M.C. SECTION 98.0403

PERMIT APP. #: 23016-10000-17906	**MODIFICATION#:** 7481	**DATE:** 12/03/2025	**For City Dept. Use Only**
JOB ADDRESS: 1820 N LAS PALMAS AVE			**Plan Check**
Tract: HOLLYWOOD OCEAN VIEW TRACT	**Block:** 2		**Building**
	Lot: 10		

Owner	Petitioner
L A CITY - RECREATION AND PARK	Lim, Jenny
Address: 221 N. FIGUEROA, SUITE 400	Address: 1149 S. BROADWAY SUITE 830
City: LOS ANGELES State: CA Zip: 90012 Phone: 213-202-2653	City: LOS ANGELES State: CA Zip: 90015 Phone: 213-485-4730

REQUEST (SUBMIT PLANS OR ADDITIONAL SHEETS AS NECESSARY)

CODE SECTIONS: L.A.M.C 98.0603

1. To allow an extension of time until __06_ /_01__ /_2026_____ in which to obtain a building permit for plans filed for checking on _06__ /_01__ /__2023____ under plan check number _B22LA03207.

JUSTIFICATION (SUBMIT PLANS OR ADDITIONAL SHEETS AS NECESSARY)

Additional time required to obtain contractor on board to pull permit.

Lim, Jenny	*Lim, Jenny*	Architect
Owner/Petitioner Name (Print)	**(Electronic Signature via Online Modification)**	**Position**

FOR CITY DEPARTMENT'S USE ONLY BELOW THIS LINE

DEPARTMENT ACTION

☒ **GRANTED** ☐ **DENIED**

Michael Lopez	12/08/2025
Reviewed by: (Staff) (Print)	***Date***
Michael Perez	12/09/2025
Action taken by: (Supervisor) (Print)	***Date***

NOTE: IN CASE OF DENIAL, SEE PAGE #3 OF THIS FORM FOR APPEAL PROCEDURES

CONDITIONS OF APPROVAL (Continued on Page 2):

FEES (DEPARTMENT USE ONLY)

Appeal Processing Fee ..(No. of Items) =	1	X $130 + $39/addl	= $	130.00
Inspection Fee .....(No of Insp.) =	0	X $ 84.00	= $	0.00
Research Fee ... (Total Hours Worked) =	2	X $104.00	= $	208.00
Subtotal.....			= $	338.00
Development Services Center Surcharge		X 3%	= $	10.14
Systems Development Surcharge.....		X 6%	= $	20.28
Total Fees			= $	**368.42**

Fees verified by: Michael Lopez

For Cashiers Use Only
(PROCESS ONLY WHEN FEES ARE VERIFIED)

Payment Date: 12/04/2025

Receipt Number: 202533800281

Total Fees: $368.42

CONDITIONS OF APPROVAL (Continued from Page 1)

1. This extension approval is contingent upon the project being updated to comply with Correct Zoning, Building and Green Building Code requirements. The plans may be required to be re-submitted, as determined by the Department, to recheck and verify compliance with the Current Code requirements. Additional plan check fees, based on the plan review and verification time, will be assessed by the Department.
2. The date the plans are resubmitted for recheck shall be construed as the plan check submittal date for the purpose of determining the applicability of Current Code (laws, regulations, and ordinances).
3. The date the plans are resubmitted for recheck shall be construed as the plan check submittal date for the purpose of determining the applicability of Current Code (laws, regulations, and ordinances). If the plans are not required to be submitted, the vesting date shall be the previous expiration date.
4. This extension approval is contingent upon the owner re-obtaining required clearances for any expired agencies' approval plus any additional clearances due to new regulations.
regulations.

CONCURRENCES REQUIRED

Concurrences required from the following Department(s):		Approved	Denied
☐ Los Angeles Fire Department		☐	☐
☐ Public Works Bureau of Engineering		☐	☐
☐ Department of City Planning		☐	☐
☐ Department of County Health		☐	☐
☐ Coastal Commission		☐	☐
☐ Public Works Bureau of Sanitation		☐	☐
☐ LADBS Permit and Engr		☐	☐
☐ LADBS Inspection, Residential		☐	☐
☐ LADBS Inspection, Commercial		☐	☐
☐		☐	☐
☐		☐	☐
☐		☐	☐

CITY OF LOS ANGELES
BOARD OF BUILDING AND SAFETY/DISABLED ACCESS COMMISSION APPEAL FORM

(Must be Attached to the Modification Request Form, Page 1)

AFFIDAVIT – LADBS BOARD OF BUILDING AND SAFETY COMMISSIONERS – RESOLUTION NO. 832-93

I,_____ do state and swear as follows:
(Print or Type Name of the Person Signing this Form)

1. The name and mailing address of the owner of the property (as defined in the resolution 832-93) at_____ as shown on the appeal application (LADBS Com 31) are correct, and
2. The owner of the property as shown on the appeal application will be made aware of the appeal and will receive a copy of the appeal.

I declare under PENALTY OF PERJURY that the forgoing is true and correct.

Owner's Name(s) _____ _____
(Please Type or Print) (Please Type or Print)

Owner's Signature(s)_____ (Two Officers' Signatures Required for Corporations)
(Please Sign)

Name of Corporation _____ _____
(Please Print Name of Corporation) (Please Type or Print)

Dated this_____ day of_____ 20_____

CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT ---------- SIGNATURE(S) MUST BE NOTARIZED

State of CALIFORNIA County of_____ on_____

before me,_____, personally appeared_____,
Name, Title of Officer (e.g. Jane Doe, Notary Public) Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument in person(s), or the entity upon behalf of which the person(s) acted, executed the instrument. **I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing is true and correct.**

WITNESS my hand and official seal. Signature _____

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

APPEAL OF DEPARTMENT ACTION TO THE BOARD OF BUILDING AND SAFETY COMMISSIONERS/DISABLED ACCESS APPEALS COMMISSION

_____ _____
Applicant's Name Applicant's Title

_____ _____
Signature Date

FEES (DEPARTMENT USE ONLY)

Board Fee .....(No. of Items)	X	$130.00	=	0.00
Inspection Fee..... (No of Insp.) =	X	$84.00	=	0.00
Research Fee.... (Total Hours Worked) =	X	$104.00	=	0.00
Subtotal.....			=	0.00
Development Services Center Surcharge	X	3%	=	0.00
Systems Development Surcharge.....	X	6%	=	0.00
Total Fees			=	0.00

Fees verified by:
Print and Sign _____

For Cashiers Use Only
(PROCESS ONLY WHEN FEES ARE VERIFIED)

REQUEST FOR MODIFICATION OF BUILDING ORDINANCES

UNDER AUTHORITY OF L.A.M.C. SECTION 98.0403

LA DBS — DEPARTMENT OF BUILDING AND SAFETY

PERMIT APP. #: 24020-10000-00578	**MODIFICATION#:** 7482	**DATE:** 12/03/2025	**For City Dept. Use Only**
JOB ADDRESS: 1820 N LAS PALMAS AVE			**Plan Check**
Tract: HOLLYWOOD OCEAN VIEW TRACT	**Block:** 2		**Building**
	Lot: 10		

Owner	Petitioner
L A CITY - RECREATION AND PARK	Lim, Jenny
Address: 221 N. FIGUEROA, SUITE 400	Address: 1149 S. BROADWAY SUITE 830
City: LOS ANGELES State: CA Zip: 90012 Phone:	City: LOS ANGELES State: CA Zip: 90015 Phone: 213-485-4730

REQUEST (SUBMIT PLANS OR ADDITIONAL SHEETS AS NECESSARY)

CODE SECTIONS: L.A.M.C 98.0603

To allow an extension of time until 04/15/2026 in which to obtain a building permit for plans filed for checking on 4/15/2024 under plan check number B24LA06577.

JUSTIFICATION (SUBMIT PLANS OR ADDITIONAL SHEETS AS NECESSARY)

ADDITIONAL TIME REQUIRED TO BRING CONTRACTOR ON BOARD TO PULL PERMIT

Lim, Jenny	*Lim, Jenny*	Architect
Owner/Petitioner Name (Print)	**(Electronic Signature via Online Modification)**	**Position**

FOR CITY DEPARTMENT'S USE ONLY BELOW THIS LINE

DEPARTMENT ACTION

☒ **GRANTED** ☐ **DENIED**

Young Kim	12/09/2025
Reviewed by: (Staff) (Print)	***Date***
Minye Pak	12/10/2025
Action taken by: (Supervisor) (Print)	***Date***

NOTE: IN CASE OF DENIAL, SEE PAGE #3 OF THIS FORM FOR APPEAL PROCEDURES

CONDITIONS OF APPROVAL (Continued on Page 2):

FEES

(DEPARTMENT USE ONLY)

Appeal Processing Fee ..(No. of Items) =	1	X $130 + $39/addl	= $	130.00
Inspection Fee .....(No of Insp.) =	0	X $ 84.00	= $	0.00
Research Fee ... (Total Hours Worked) =	1	X $104.00	= $	104.00
Subtotal.....			= $	234.00
Development Services Center Surcharge		X 3%	= $	7.02
Systems Development Surcharge.....		X 6%	= $	14.04
Total Fees			= $	**255.06**

Fees verified by: Young Kim

For Cashiers Use Only

(PROCESS ONLY WHEN FEES ARE VERIFIED)

Payment Date: 12/03/2025

Receipt Number: 20253390037

Total Fees: $255.06

CONDITIONS OF APPROVAL (Continued from Page 1)

1. This extension approval is contingent upon the project being updated to comply with Current Zoning, Building and Green Building Code requirements. The plans may be required to be re-submitted, as determined by the Department, to recheck and verify compliance with the Current Code requirements. Additional plan check fees, based on the plan review and verification time, will be assessed by the Department.
2. The approval of this extension does not waive the project from complying with the current ADA and federal accessibility requirements.
3. This extension does NOT extend to the compliance date of any Order to Comply that have been issued to this site by LADBS for Code violation.
4. This extension approval is contingent upon the owner re-obtaining required clearances for any expired agencies' approval plus any additional clearances due to new regulations.

CONCURRENCES REQUIRED

Concurrences required from the following Department(s):		Approved	Denied
☐ Los Angeles Fire Department		☐	☐
☐ Public Works Bureau of Engineering		☐	☐
☐ Department of City Planning		☐	☐
☐ Department of County Health		☐	☐
☐ Coastal Commission		☐	☐
☐ Public Works Bureau of Sanitation		☐	☐
☐ LADBS Permit and Engr		☐	☐
☐ LADBS Inspection, Residential		☐	☐
☐ LADBS Inspection, Commercial		☐	☐
☐		☐	☐
☐		☐	☐
☐		☐	☐

CITY OF LOS ANGELES
BOARD OF BUILDING AND SAFETY/DISABLED ACCESS COMMISSION APPEAL FORM

(Must be Attached to the Modification Request Form, Page 1)

AFFIDAVIT – LADBS BOARD OF BUILDING AND SAFETY COMMISSIONERS – RESOLUTION NO. 832-93

I,_____ do state and swear as follows:
(Print or Type Name of the Person Signing this Form)

1. The name and mailing address of the owner of the property (as defined in the resolution 832-93) at_____ as shown on the appeal application (LADBS Com 31) are correct, and
2. The owner of the property as shown on the appeal application will be made aware of the appeal and will receive a copy of the appeal.

I declare under PENALTY OF PERJURY that the forgoing is true and correct.

Owner's Name(s) _____ _____
(Please Type or Print) (Please Type or Print)

Owner's Signature(s)_____ (Two Officers' Signatures Required for Corporations)
(Please Sign)

Name of Corporation _____ _____
(Please Print Name of Corporation) (Please Type or Print)

Dated this_____ day of_____ 20_____

CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT ---------- SIGNATURE(S) MUST BE NOTARIZED

State of CALIFORNIA County of_____ on_____

before me,_____, personally appeared_____,
Name, Title of Officer (e.g. Jane Doe, Notary Public) Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument in person(s), or the entity upon behalf of which the person(s) acted, executed the instrument. **I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing is true and correct.**

WITNESS my hand and official seal. Signature _____

As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

APPEAL OF DEPARTMENT ACTION TO THE BOARD OF BUILDING AND SAFETY COMMISSIONERS/DISABLED ACCESS APPEALS COMMISSION

_____ _____
Applicant's Name Applicant's Title

_____ _____
Signature Date

FEES (DEPARTMENT USE ONLY)

Board Fee .....(No. of Items)	X	$130.00	=	0.00
Inspection Fee..... (No of Insp.) =	X	$84.00	=	0.00
Research Fee.... (Total Hours Worked) =	X	$104.00	=	0.00
Subtotal.....			=	0.00
Development Services Center Surcharge	X	3%	=	0.00
Systems Development Surcharge.....	X	6%	=	0.00
Total Fees			=	0.00

Fees verified by:
Print and Sign _____

For Cashiers Use Only
(PROCESS ONLY WHEN FEES ARE VERIFIED)

CITY LA DBS DEPARTMENT OF BUILDING AND SAFETY

READY-TO-ISSUE SHEET
PERMIT ISSUANCE PROCEDURE

☐ OTC
☐ ECPC
☒ REGULAR

RTI

Plan Check Engineer: MICHAEL LOPEZ ML (Initials) Date 8/6/25

PC engineer contact information: _____@lacity.org (email address) ( ) - (phone number)

Job Address: 1820 N LAS PALMAS AVE PC Exp Date 12/01/25

PCIS #(s): 23016-10000-17406 Plan Check #(s): B23LA10156

Permit(s) will not be issued if all relevant checked items below are not provided. Please print legibly all pertinent information required below. Please contact the plan check engineer if the permit(s) has not been issued prior to the above expiration dates or if revisions have been made to the RTI approved set of plans.

☒ 2 Sets of wet-stamped "RTI" plans
circle: **customer copy, microfilm** *(plan maintenance fee collected)*, **and/or LA County Assessors**

☒ Approved and initialed Plot Plan *(attached)* 4 plot plans

☐ Clearance from PW-Bureau of Engineering for Sewer availability, call (213) 482-7030

☐ Identity of who will be pulling the permit: *(circle)* Contractor, Owner, or Agent
(see below for required information from Contractor, Owner, and Agents)

☐ Name: _____

☐ Phone Number: ( ) -

☐ Email address: _____

☐ cc Email addresses: _____

☐ Complete and sign attached "Signature Declaration Attached Form"

☐ Sign attached "Plan Maintenance Target" sheet

Do not issue RTI until Grading Bond complete.

ATTENTION CONTRACTOR OR AGENT FOR CONTRACTOR

☐ A copy of valid Identification

☐ Contractor license# _____

☐ Copy of Los Angeles City Business Tax License or # _____
To apply for new Business Tax License, visit finance.lacity.org

READY TO ISSUE BY MICHAEL LOPEZ AUG 06 2025 Signature

☐ Copy of Worker's Compensation Insurance coverage *(Section 3800 of CA Labor Code)*

☐ Solid Waste Hauler information (License #) _____
For more info, visit rdms.lacity.org/report/cache/Haulerlist.pdf

☐ **Agent:** Copy of a Notarized Letter of Authorization dated within a year from current date

ATTENTION OWNER or AGENT FOR OWNER

☐ Solid Waste Hauler information (License #) _____
For more information, visit rdms.lacity.org/report/cache/Haulerlist.pdf

☐ Owner-Builder Declaration form - *To Obtain a copy, visit ladbs.org/forms.*

☐ **Agent:** Copy of a Notarized Letter of Authorization dated within a year from current date

Drop-off and Pick-up areas in each office are open **8:00** am - **4:00** pm Monday - Friday.

Permit can be issued at any of the following offices. For efficiency, returning to the office where the RTI was issued is highly recommended.

METRO	VAN NUYS	WEST LA
201 N Figueroa	6262 Van Nuys Bl	1828 Sawtelle Bl

Development Services Centers are not currently available to the public. Place this RTI sheet on top of the package that will be dropped off at the Metro, Van Nuys, or West LA Office Drop-Off Area.

1820 N Las Palmas Ave

Application #: **23016 - 10000 - 17906**
Plan Check #: B23LA10156 Printed: 08/06/25 02:33 PM
Event Code:

Bldg-Alter/Repair **GREEN - MANDATORY**
Commercial
Regular Plan Check
Plan Check

City of Los Angeles - Department of Building and Safety

APPLICATION FOR BUILDING PERMIT AND CERTIFICATE OF OCCUPANCY

Last Status: PC Info Complete
Status Date: 08/06/2025

1. TRACT	BLOCK	LOT(s)	ARB	COUNTY MAP REF #	PARCEL ID # (PIN #)	2. ASSESSOR PARCEL #
HOLLYWOOD OCEAN VIEW	2	10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

Alquist Priolo - YES	Census Tract - 1902.02	Area Planning Commission - Central
LADBS Branch Office - LA	District Map - 150A185	Earthquake-Induced Liquefaction Area - Yes
Council District - 13	Energy Zone - 9	Community Plan Area - Hollywood
Cmpt. Fill Grd. - FG	Hillside Grading Area - YES	Near Source Zone Distance - 0.1
Certified Neighborhood Council - Hollywood Hills West	Thomas Brothers Map Grid - 593-E4	Redevelopment Plan Area - Hollywood

ZONES(S): OS-1XL

4. DOCUMENTS

ZI - ZI-2374 State Enterprise Zone: Los .	ZA - ZA-20256	ORD - ORD-169423-SA330	CPC - CPC-1986-835-GPC
ZI - ZI-2441 Alquist-Priolo Earthquake I	ZA - ZA-2540	ORD - ORD-173562	CPC - CPC-1990-596-GPC
ZI - ZI-2452 Transit Priority Area in the	ORD - ORD-129279	ORD - ORD-175038	CPC - CPC-1999-2293-ICO
ZI - ZI-2488 Redevelopment Project Are	ORD - ORD-165656-SA200	CRA - ZI 1352 HOLLYWOOD	CPC - CPC-1999-324-ICO

5. CHECKLIST ITEMS

Special Inspect - Concrete>2.5ksi	Special Inspect - Grade Beam/Caisson	Fabricator Reqd - Shop Welds
Special Inspect - Epoxy Bolts	Special Inspect - Structural Observation	Fabricator Reqd - Structural Steel
Special Inspect - Field Welding	Special Inspect - Structural Wood (periodic)	Permit Flag - Fire Life Safety by LADBS

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A CITY
0 0

Applicant: (Relationship: Agent for Owner)
JENNY LIM -

(213) 485-4730

8. DESCRIPTION OF WORK

PROPOSED BUILDING RENOVATION WITHIN EXISTING BUILDING FOOTPRINT. UPGRADE ROOF AND WINDOWS. REDESIGN INTERIOR SPACES/ADDITTIONAL RESTROOMS. 1 OF 4

7. EXISTING USE

(23) Patio Cover
(04) Community Center operated by private agency

PROPOSED USE

9. # Bldgs on Site & Use: 1 OF 4

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By: Michael Lopez DAS PC By: Eddie Garin
OK for Cashier: Coord. OK:
Signature: _____ Date: _____

For inspection requests, call toll-free **(888) LA4BUILD (524-2845)**, or request inspections via **www.ladbs.org.** To speak to a Call Center agent, call **311**. Outside LA County, call (213) 473-3231.

For Cashier's Use Only **W/O #: 31617906**

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: $500,000 PC Valuation:

FINAL TOTAL Bldg-Alter/Repair	3,388.31	Linkage Fee	0.00
Permit Fee Subtotal Bldg-Alter/Re	2,627.63		
Handicapped Access			
Plan Check Subtotal Bldg-Alter/R	0.00		
E.Q. Instrumentation	140.00		
D.S.C. Surcharge	83.03		
Sys. Surcharge	166.06		
Planning Surcharge	157.66		
Planning Surcharge Misc Fee	10.00		
Planning Gen Plan Maint Surcharg	183.93		
CA Bldg Std Commission Surchar	20.00		
Green Building			
Permit Issuing Fee	0.00		

Sewer Cap ID: Total Bond(s) Due: $0.00

Project:

Payment Date:
Receipt No:
Amount:
Method:

12. ATTACHMENTS

Plot Plan

* 0 8 0 0 1 2 3 0 1 6 1 0 0 0 0 1 7 9 0 6 F N *

13. STRUCTURE INVENTORY (Note: Numeric measurement data in the format "number / number" implies "change in numeric value / total resulting numeric value") **23016 - 10000 - 17906**

14. APPLICATION COMMENTS: **PDPP Project's Total Valuation $ 0.00**

** Approved Seismic Gas Shut-Off Valve may be required. ** -EXISTING USE IS SENIOR CITIZEN PER 1978LA65622. -MOD FOR PLAN CHECK EXTENSION, EXP 06/01/25. -MOD FOR PLAN CHECK EXTENSION, EXP 12/01/25. -STORE FRONT UNDER DEFFERED ITEM.

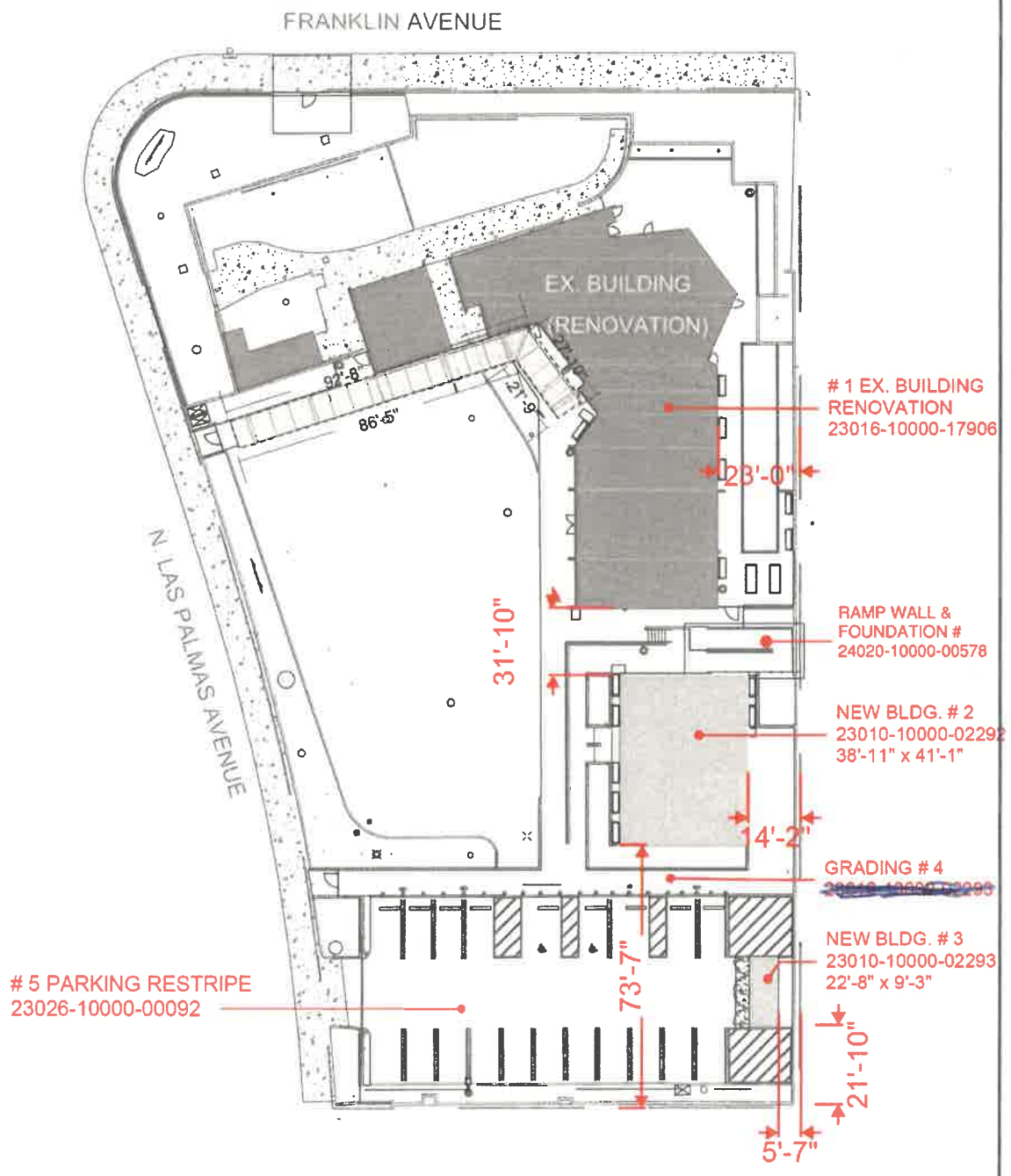
15. BUILDING RELOCATED FROM:

16. CONTRACTOR, ARCHITECT & ENGINEER NAME	ADDRESS		CLASS	LICENSE #	PHONE #
(E) BHALJA,, MANAN	4983 GLENVIEW STREET,	CHINO HILLS, CA 91709		S6573	
(E) CHAE,, JIN	11102 BUNKER LANE,	WHITTIER, CA 90604		C90554	
(E) CUENCA,, FERNANDO	1586 W SIM PLACE,	ANAHEIM, CA 92802		GE3128	
(E) FORCIER,, EASTON RENE	233 TULANE ROAD,	COSTA MESA, CA 92626		GE2948	
(E) SKOPEK,, PETER	5520 DELACROIX WY,	YORBA LINDA, CA 92887		GE2635	

1820 N Las Palmas Ave Permit Application # : **23016 - 10000 - 17906**

Bldg-Alter/Repair Commercial Plan Check	City of Los Angeles - Department of Building and Safety **PLOT PLAN ATTACHMENT**	Plan Check #: B23LA10156 Initiating Office: METRO Printed on: 08/06/25 14:33:18

(DO NOT DRAW, WRITE, OR PASTE ATTACHMENTS OUTSIDE BORDER)



READY TO ISSUE
BY MICHAEL LOPEZ
AUG 08 2025

COUNCIL DISTRICT: 13 INSPECTION DISTRICT: BIGIM2 PLOT PLAN

1820 N Las Palmas Ave

Application #: **23010 - 10000 - 02293**
Plan Check #: B23LA10156 Printed: 08/06/25 02:34 PM
Event Code:

Bldg-New **GREEN - MANDATORY**
Commercial
Regular Plan Check
Plan Check

City of Los Angeles - Department of Building and Safety

APPLICATION FOR BUILDING PERMIT AND CERTIFICATE OF OCCUPANCY

Last Status: PC Approved
Status Date: 08/06/2025

1. TRACT	BLOCK	LOT(s)	ARB	COUNTY MAP REF #	PARCEL ID # (PIN #)	2. ASSESSOR PARCEL #
HOLLYWOOD OCEAN VIEW	2	10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

Alquist Priolo - YES
LADBS Branch Office - LA
Council District - 13
Cmpt. Fill Grd. - FG
Certified Neighborhood Council - Hollywood Hills West
Census Tract - 1902.02
District Map - 150A185
Energy Zone - 9
Hillside Grading Area - YES
Thomas Brothers Map Grid - 593-E4
Area Planning Commission - Central
Earthquake-Induced Liquefaction Area - Yes
Community Plan Area - Hollywood
Near Source Zone Distance - 0.1
Redevelopment Plan Area - Hollywood

ZONES(S): OS-1XL

4. DOCUMENTS

ZI - ZI-2374 State Enterprise Zone: Los .	ZA - ZA-20256	ORD - ORD-169423-SA330	CPC - CPC-1986-835-GPC
ZI - ZI-2441 Alquist-Priolo Earthquake I	ZA - ZA-2540	ORD - ORD-173562	CPC - CPC-1990-596-GPC
ZI - ZI-2452 Transit Priority Area in the	ORD - ORD-129279	ORD - ORD-175038	CPC - CPC-1999-2293-ICO
ZI - ZI-2488 Redevelopment Project Are	ORD - ORD-165656-SA200	CRA - ZI 1352 HOLLYWOOD	CPC - CPC-1999-324-ICO

5. CHECKLIST ITEMS

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A CITY
0 0

Applicant: (Relationship: Agent for Owner)
JENNY LIM -

(213) 485-4730

8. DESCRIPTION OF WORK
PROPOSED TRASH ENCLOSURE. 2 OF 4

7. EXISTING USE

PROPOSED USE
(23) Miscellaneous Bldg/Structure

9. # Bldgs on Site & Use: 2 OF 4

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By: Michael Lopez
DAS PC By: Eddie Garin
OK for Cashier:
Coord. OK:
Signature: _____ Date: _____

For inspection requests, call toll-free **(888) LA4BUILD (524-2845)**, or request inspections via **www.ladbs.org.** To speak to a Call Center agent, call **311**. Outside LA County, call (213) 473-3231.

For Cashier's Use Only **W/O #: 31002293**

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: $55,000 PC Valuation:

FINAL TOTAL Bldg-New	1,573.86	CA Bldg Std Commission Surchar	3.00
Permit Fee Subtotal Bldg-New	659.19	Green Building	
Energy Surcharge		Permit Issuing Fee	0.00
Handicapped Access		Linkage Fee	0.00
Plan Check Subtotal Bldg-New	593.27		
Plan Maintenance	13.18		
E.Q. Instrumentation	15.40		
D.S.C. Surcharge	38.43		
Sys. Surcharge	76.86		
Planning Surcharge	75.94		
Planning Surcharge Misc Fee	10.00		
Planning Gen Plan Maint Surcharg	88.59		
School District Commercial Area	0.00		

Sewer Cap ID: Total Bond(s) Due: $0.00

Project:

Payment Date:
Receipt No:
Amount:
Method:

12. ATTACHMENTS
Plot Plan



13. STRUCTURE INVENTORY (Note: Numeric measurement data in the format "number / number" implies "change in numeric value / total resulting numeric value") **23010 - 10000 - 02293**

(P) Floor Area (ZC): +160 Sqft / 160 Sqft
(P) Height (ZC): +9.33 Feet / 9.33 Feet
(P) Length: +22.67 Feet / 22.67 Feet
(P) Stories: +1 Stories / 1 Stories
(P) Width: +9.25 Feet / 9.25 Feet
(P) U Occ. Group: +160 Sqft / 160 Sqft
(P) Parking Req'd for Bldg (Auto+Bicycle): 0 Stalls / 0 St
(P) Type II-B Construction

14. APPLICATION COMMENTS: **PDPP Project's Total Valuation** **$ 0.00**

** Approved Seismic Gas Shut-Off Valve may be required. **

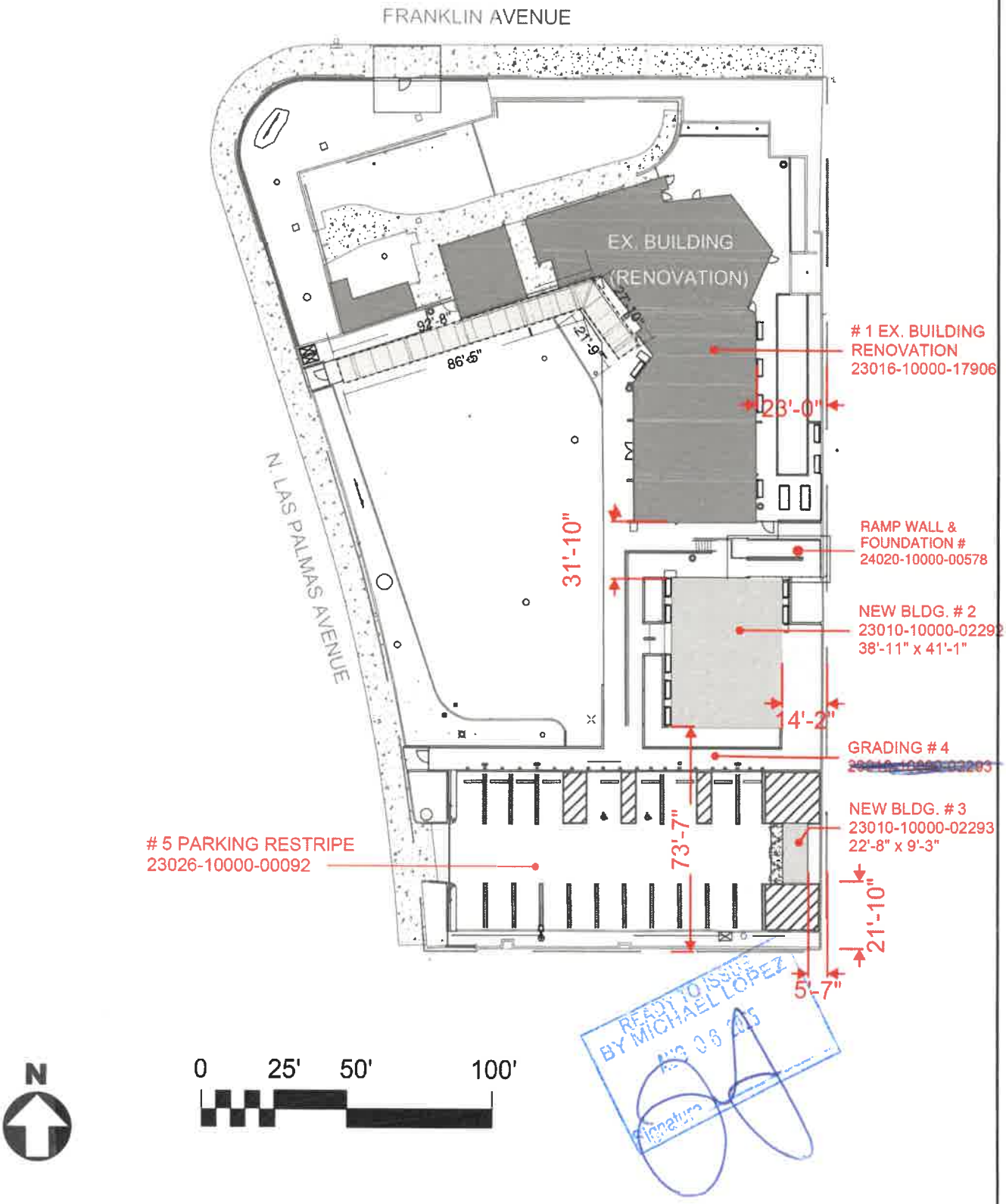
15. BUILDING RELOCATED FROM:

16. CONTRACTOR, ARCHITECT & ENGINEER NAME	ADDRESS	CLASS	LICENSE #	PHONE #

1820 N Las Palmas Ave Permit Application # : **23010 - 10000 - 02293**

Bldg-New Commercial Plan Check	City of Los Angeles - Department of Building and Safety **PLOT PLAN ATTACHMENT**	Plan Check #: B23LA10156 Initiating Office: METRO Printed on: 08/06/25 14:34:14

(DO NOT DRAW, WRITE, OR PASTE ATTACHMENTS OUTSIDE BORDER)



COUNCIL DISTRICT: 13 INSPECTION DISTRICT: BIMSM2 PLOT PLAN

1820 N Las Palmas Ave

Application #: **23030 - 10000 - 03462**
Plan Check #: B23LA10156 Printed: 08/06/25 02:34 PM
Event Code:

Grading **GREEN - NONE**
Commercial
Regular Plan Check
Plan Check

City of Los Angeles - Department of Building and Safety

APPLICATION FOR GRADING PERMIT AND GRADING CERTIFICATE

Last Status: PC Approved
Status Date: 08/06/2025

1. TRACT	BLOCK	LOT(s)	ARB	COUNTY MAP REF #	PARCEL ID # (PIN #)	2. ASSESSOR PARCEL #
HOLLYWOOD OCEAN VIEW	2	10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

Alquist Priolo - YES
LADBS Branch Office - LA
Council District - 13
Cmpt. Fill Grd. - FG
Certified Neighborhood Council - Hollywood Hills West
Census Tract - 1902.02
District Map - 150A185
Energy Zone - 9
Hillside Grading Area - YES
Thomas Brothers Map Grid - 593-E4
Area Planning Commission - Central
Earthquake-Induced Liquefaction Area - Yes
Community Plan Area - Hollywood
Near Source Zone Distance - 0.1
Redevelopment Plan Area - Hollywood

ZONES(S): OS-1XL

4. DOCUMENTS

ZI - ZI-2374 State Enterprise Zone: Los .
ZI - ZI-2441 Alquist-Priolo Earthquake I
ZI - ZI-2452 Transit Priority Area in the
ZI - ZI-2488 Redevelopment Project Are
ZA - ZA-20256
ZA - ZA-2540
ORD - ORD-129279
ORD - ORD-165656-SA200
ORD - ORD-169423-SA330
ORD - ORD-173562
ORD - ORD-175038
CRA - ZI 1352 HOLLYWOOD
CPC - CPC-1986-835-GPC
CPC - CPC-1990-596-GPC
CPC - CPC-1999-2293-ICO
CPC - CPC-1999-324-ICO

5. CHECKLIST ITEMS

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A CITY
0 0

Applicant: (Relationship: Agent for Owner)
JENNY LIM -

(213) 485-4730

8. DESCRIPTION OF WORK

PROPOSED GRADING TO RENOVATE SURROUNDING EXTERIOR SITE WALKWAYS AND PATIOS 3 OF 4

7. EXISTING USE

PROPOSED USE
(70) Grading - Hillside

9. # Bldgs on Site & Use: 3 OF 4

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By: Michael Lopez
DAS PC By: Eddie Garin
OK for Cashier:
Coord. OK:
Signature: _____ Date: _____

For inspection requests, call toll-free **(888) LA4BUILD** (524-2845), or request inspections via **www.ladbs.org.** To speak to a Call Center agent, call **311**. Outside LA County, call (213) 473-3231.

For Cashier's Use Only **W/O #: 33003462**

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: 380 cu yd PC Valuation:

FINAL TOTAL Grading	1,144.00
Permit Fee Subtotal Grading	565.00
Plan Check Subtotal Grading	364.50
D.S.C. Surcharge	27.89
Sys. Surcharge	55.77
Planning Surcharge	55.77
Planning Surcharge Misc Fee	10.00
Planning Gen Plan Maint Surcharg	65.07
Permit Issuing Fee	0.00

Sewer Cap ID: Total Bond(s) Due: $0.00

Project:

Payment Date:
Receipt No:
Amount:
Method:

12. ATTACHMENTS

Plot Plan



13. STRUCTURE INVENTORY (Note: Numeric measurement data in the format "number / number" implies "change in numeric value / total resulting numeric value") **23030 - 10000 - 03462**

(P) Cut: 380 Cuyd
(P) Export: 359 Cuyd
(P) Fill: 21 Cuyd

14. APPLICATION COMMENTS: **PDPP Project's Total Valuation** **$ 0.00**

15. BUILDING RELOCATED FROM:

16. CONTRACTOR, ARCHITECT & ENGINEER NAME **ADDRESS** **CLASS** **LICENSE #** **PHONE #**

1820 N Las Palmas Ave Permit Application # : **23030 - 10000 - 03462**

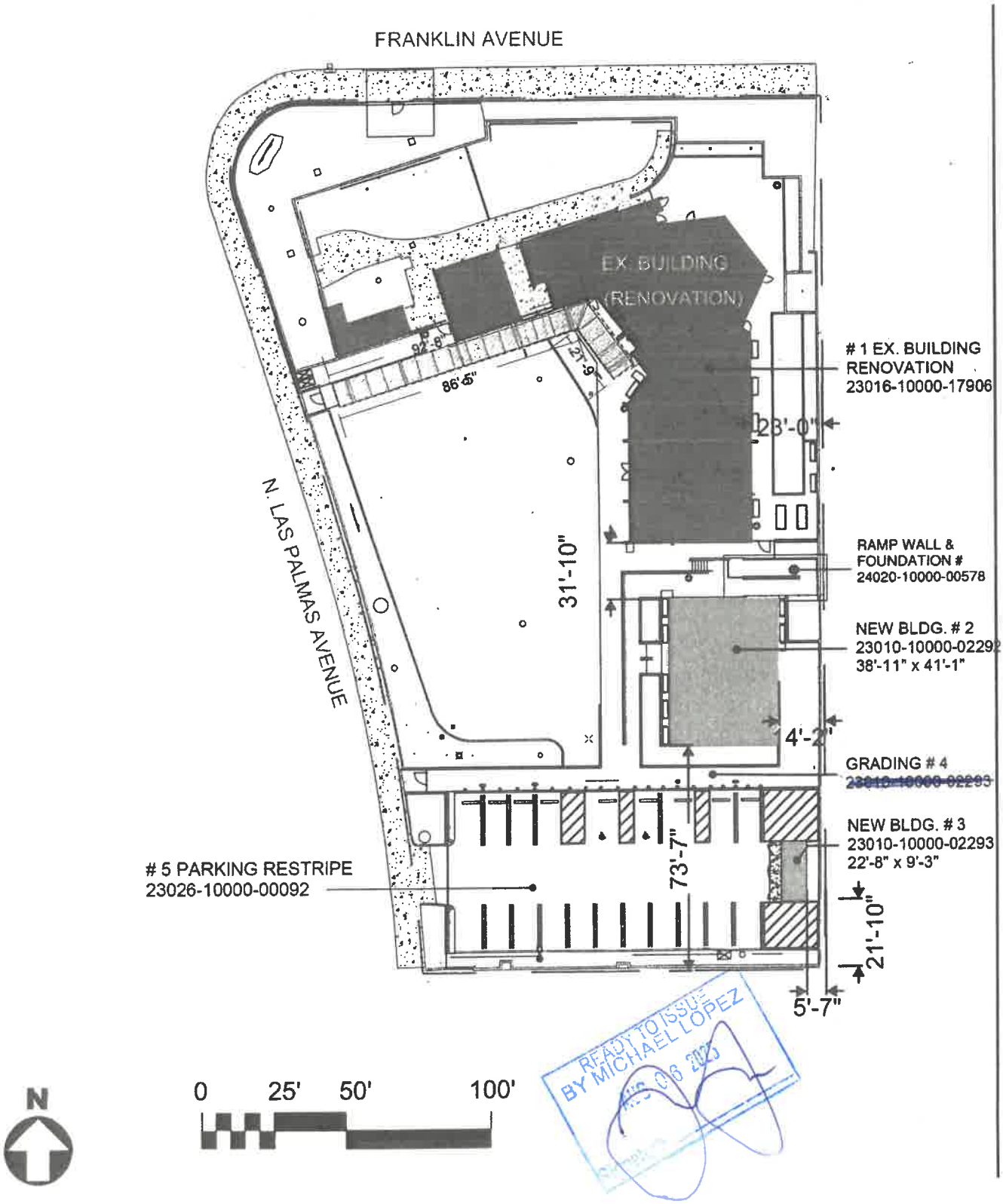
Grading
Commercial
Plan Check

City of Los Angeles - Department of Building and Safety

PLOT PLAN ATTACHMENT

Plan Check #: B23LA10156
Initiating Office: METRO
Printed on: 08/06/25 14:34:42

(DO NOT DRAW, WRITE, OR PASTE ATTACHMENTS OUTSIDE BORDER)



COUNCIL DISTRICT: 13 INSPECTION DISTRICT: STGRDM4 PLOT PLAN

1820 N Las Palmas Ave

Application #: **23026 - 10000 - 00092**
Plan Check #: B23LA10156 Printed: 08/06/25 02:35 PM
Event Code:

Nonbldg-Alter/Repair **GREEN - NONE**
Commercial
Regular Plan Check
Plan Check

City of Los Angeles - Department of Building and Safety

APPLICATION FOR BUILDING PERMIT AND CERTIFICATE OF OCCUPANCY

Last Status: PC Approved
Status Date: 08/06/2025

1. TRACT	BLOCK	LOT(s)	ARB	COUNTY MAP REF #	PARCEL ID # (PIN #)	2. ASSESSOR PARCEL #
HOLLYWOOD OCEAN VIEW	2	10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

Alquist Priolo - YES
LADBS Branch Office - LA
Council District - 13
Cmpt. Fill Grd. - FG
Certified Neighborhood Council - Hollywood Hills West
Census Tract - 1902.02
District Map - 150A185
Energy Zone - 9
Hillside Grading Area - YES
Thomas Brothers Map Grid - 593-E4
Area Planning Commission - Central
Earthquake-Induced Liquefaction Area - Yes
Community Plan Area - Hollywood
Near Source Zone Distance - 0.1
Redevelopment Plan Area - Hollywood

ZONES(S): OS-1XL

4. DOCUMENTS

ZI - ZI-2374 State Enterprise Zone: Los .	ZA - ZA-20256	ORD - ORD-169423-SA330	CPC - CPC-1986-835-GPC
ZI - ZI-2441 Alquist-Priolo Earthquake I	ZA - ZA-2540	ORD - ORD-173562	CPC - CPC-1990-596-GPC
ZI - ZI-2452 Transit Priority Area in the	ORD - ORD-129279	ORD - ORD-175038	CPC - CPC-1999-2293-ICO
ZI - ZI-2488 Redevelopment Project Are	ORD - ORD-165656-SA200	CRA - ZI 1352 HOLLYWOOD	CPC - CPC-1999-324-ICO

5. CHECKLIST ITEMS

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A CITY
0 0

Applicant: (Relationship: Agent for Owner)
JENNY LIM -

(213) 485-4730

8. DESCRIPTION OF WORK

RESTRIP PARKING LOT. 4 OF 4

7. EXISTING USE

(61) Open Parking Lot

PROPOSED USE

9. # Bldgs on Site & Use: 4 OF 4

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By: Michael Lopez
DAS PC By: Eddie Garin
OK for Cashier:
Coord. OK:
Signature: _____ Date: _____

For inspection requests, call toll-free **(888) LA4BUILD (524-2845)**, or request inspections via **www.ladbs.org.** To speak to a Call Center agent, call **311**. Outside LA County, call (213) 473-3231.

For Cashier's Use Only **W/O #: 32600092**

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: $45,000 PC Valuation:

FINAL TOTAL Nonbldg-Alter/Re	1,045.66
Permit Fee Subtotal Nonbldg-Alte	440.00
Plan Check Subtotal Nonbldg-Alte	396.00
E.Q. Instrumentation	12.60
D.S.C. Surcharge	25.46
Sys. Surcharge	50.92
Planning Surcharge	50.16
Planning Surcharge Misc Fee	10.00
Planning Gen Plan Maint Surcharg	58.52
CA Bldg Std Commission Surchar	2.00
Permit Issuing Fee	0.00

Sewer Cap ID: Total Bond(s) Due: $0.00

Project:

Payment Date:
Receipt No:
Amount:
Method:

12. ATTACHMENTS

Plot Plan

0800123026100000000092FN

13. STRUCTURE INVENTORY (Note: Numeric measurement data in the format "number / number" implies "change in numeric value / total resulting numeric value") **23026 - 10000 - 00092**

(P) Floor Area (ZC): 0 Sqft / Sqft
(P) Provided Compact for Site: +1 Stalls / 1 Stalls
(P) Provided Disabled for Site: 0 Stalls / 2 Stalls
(P) Provided Standard for Site: -5 Stalls / 17 Stalls
(P) Misc. Occ. Group: 0 Sqft / Sqft

14. APPLICATION COMMENTS: **PDPP Project's Total Valuation** **$ 0.00**

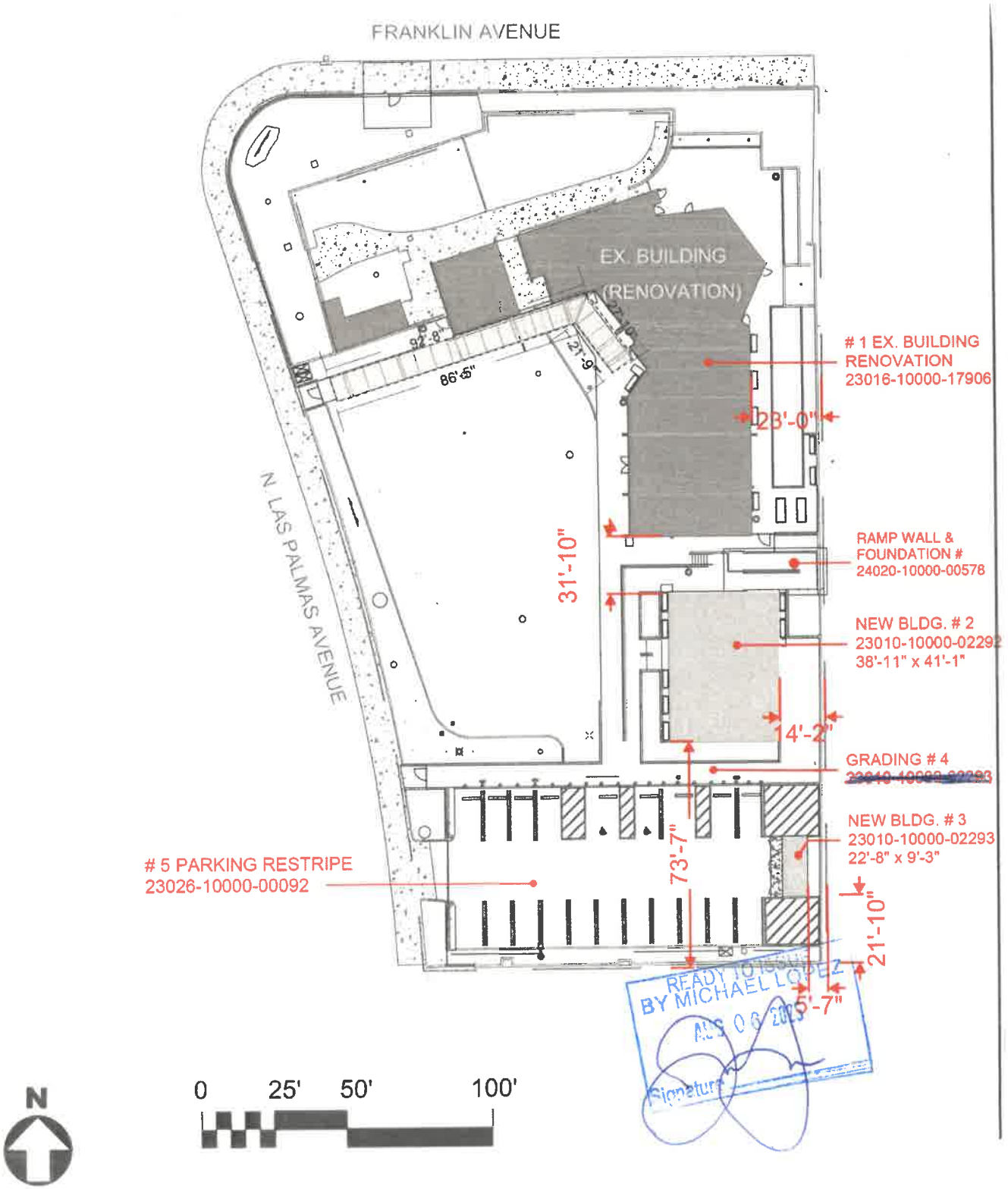
15. BUILDING RELOCATED FROM:

16. CONTRACTOR, ARCHITECT & ENGINEER NAME	ADDRESS	CLASS	LICENSE #	PHONE #

1820 N Las Palmas Ave Permit Application # : **23026 - 10000 - 00092**

Nonbldg-Alter/Repair Commercial Plan Check	City of Los Angeles - Department of Building and Safety **PLOT PLAN ATTACHMENT**	Plan Check #: B23LA10156 Initiating Office: METRO Printed on: 08/06/25 14:35:03

(DO NOT DRAW, WRITE, OR PASTE ATTACHMENTS OUTSIDE BORDER)



COUNCIL DISTRICT: 13 INSPECTION DISTRICT: BIGIM2 PLOT PLAN

LA DBS READY-TO-ISSUE SHEET
PERMIT ISSUANCE PROCEDURE

DEPARTMENT OF BUILDING AND SAFETY

☐ OTC
☐ ECPC
☒ REGULAR

RTI

Plan Check Engineer: Young Kim _____ Initials _____ Date 10/10/2024

PC engineer contact information: young.kim@lacity.org (email address) (213) 482-0428 (phone number)

Job Address: 1820 N Las Palmas Ave PC Exp Date 10/15/2025

PCIS #(s): 24020-10000-00578 Plan Check #(s): B24LA06577

Permit(s) will not be issued if all relevant checked items below are not provided. Please print legibly all pertinent information required below. Please contact the plan check engineer if the permit(s) has not been issued prior to the above expiration dates or if revisions have been made to the RTI approved set of plans.

☒ 2 Sets of wet-stamped "RTI" plans
circle: **customer copy, microfilm** *(plan maintenance fee collected)*, **and/or LA County Assessors**

☒ Approved and initialed Plot Plan *(attached)*

☐ Clearance from PW-Bureau of Engineering for Sewer availability, call (213) 482-7030

CUSTOMER TO COMPLETE

☐ Identity of who will be pulling the permit: ***(circle)*** Contractor, Owner, or Agent

☐ ***(see below for required information from Contractor, Owner, and Agents)***

☐ Name: _____

☐ Phone Number: ( ) -

☐ Email address: _____

cc Email addresses: _____

☐ Complete and sign attached "Signature Declaration Attached Form"

ATTENTION CONTRACTOR OR AGENT FOR CONTRACTOR

☐ A copy of valid Identification

☐ Contractor license# _____

☐ Copy of Los Angeles City Business Tax License or # _____
To apply for new Business Tax License, visit finance.lacity.org.

☐ Copy of Worker's Compensation Insurance coverage *(Section 3800 of CA Labor Code)*

☐ Solid Waste Hauler information (License #) _____
For more info, visit https://srmanagement.lacitysan.org/ReportManager/PermittedHaulerList.pdf

☐ **Agent:** Copy of a Notarized Letter of Authorization dated within a year from current date

ATTENTION OWNER or AGENT FOR OWNER

☐ Solid Waste Hauler information (License #) _____
For more info, visit https://srmanagement.lacitysan.org/ReportManager/PermittedHaulerList.pdf

☐ Owner-Builder Declaration form - ***To Obtain a copy, visit ladbs.org/forms.***

☐ **Agent:** Copy of a Notarized Letter of Authorization dated within a year from current date

Appointment is required for the Ready to Issue service to obtain the permit. Appointments can be made at https://appointments.lacity.org/
For efficiency, returning to the office where the RTI was provided is highly recommended.

METRO	VAN NUYS	WEST LA	SAN PEDRO	South LA
201 N Figueroa St Los Angeles, CA 90012	6262 Van Nuys Bl Van Nuys, CA 91401	1828 Sawtelle Bl West Los Angeles, CA 90025	638 S. Beacon St San Pedro, CA 90731	8475 S. Vermont Ave Los Angeles, CA 90044

Revised 10-8-2024

1820 N Las Palmas Ave

Application #: **24020 - 10000 - 00578**
Plan Check #: B24LA06577 Printed: 10/10/24 09:17 AM
Event Code:

Nonbldg-New **GREEN** - Commercial
Regular Plan Check
Plan Check

City of Los Angeles - Department of Building and Safety

APPLICATION FOR BUILDING PERMIT AND CERTIFICATE OF OCCUPANCY

Last Status: PC Info Complete
Status Date: 10/10/2024

1. TRACT	BLOCK	LOT(s)	ARB	COUNTY MAP REF #	PARCEL ID # (PIN #)	2. ASSESSOR PARCEL #
HOLLYWOOD OCEAN VIEW 2		10		M B 1-62	150A185 262	5547 - 003 - 900

3. PARCEL INFORMATION

Alquist Priolo - YES
LADBS Branch Office - LA
Council District - 13
Cmpt. Fill Grd. - FG
Certified Neighborhood Council - Hollywood Hills West
Census Tract - 1902.02
District Map - 150A185
Energy Zone - 9
Hillside Grading Area - YES
Thomas Brothers Map Grid - 593-E4
Area Planning Commission - Central
Earthquake-Induced Liquefaction Area - Yes
Community Plan Area - Hollywood
Near Source Zone Distance - 0.1
Redevelopment Plan Area - Hollywood

ZONES(S): OS-1XL

4. DOCUMENTS

ZI - ZI-2374 State Enterprise Zone: Los . ZA - ZA-20256
ZI - ZI-2441 Alquist-Priolo Earthquake I ZA - ZA-2540
ZI - ZI-2452 Transit Priority Area in the SPA - ADAPTIVE REUSE INCENTIVE
ZI - ZI-2488 Redevelopment Project Are ORD - ORD-129279
ORD - ORD-165656-SA200
ORD - ORD-169423-SA330
ORD - ORD-173562
ORD - ORD-175038
CRA - ZI 1352 HOLLYWOOD
CPC - CPC-1986-835-GPC
CPC - CPC-1990-596-GPC
CPC - CPC-1999-2293-ICO

5. CHECKLIST ITEMS

Special Inspect - Concrete>2.5ksi
Special Inspect - Grade Beam/Caisson

6. PROPERTY OWNER, TENANT, APPLICANT INFORMATION

Owner(s):
L A CITY 0 0

Tenant:

Applicant: (Relationship: Architect)
GREG MOESER - 1149 S. BROADWAY SUITE 830 LOS ANGELES, CA 90015 (323) 365-1050

7. EXISTING USE

PROPOSED USE
(23) Retaining Wall

8. DESCRIPTION OF WORK
RETAINING WALL FOR ADA RAMP.

9. # Bldgs on Site & Use:

10. APPLICATION PROCESSING INFORMATION

BLDG. PC By: Young Kim
OK for Cashier:
DAS PC By: Eddie Garin
Coord. OK:
Signature: _____ Date: _____

For inspection requests, call toll-free **(888) LA4BUILD** (524-2845), or request inspections via **www.ladbs.org.** To speak to a Call Center agent, call **311**. Outside LA County, call (213) 473-3231.

For Cashier's Use Only **W/O #: 42000578**

11. PROJECT VALUATION & FEE INFORMATION Final Fee Period

Permit Valuation: $75,000	PC Valuation:
FINAL TOTAL Nonbldg-New	791.87
Permit Fee Subtotal Nonbldg-New	607.50
Plan Check Subtotal Nonbldg-Nev	0.00
Plan Maintenance	12.15
E.Q. Instrumentation	21.00
D.S.C. Surcharge	19.22
Sys. Surcharge	38.44
Planning Surcharge	37.18
Planning Surcharge Misc Fee	10.00
Planning Gen Plan Maint Surcharg	43.38
CA Bldg Std Commission Surchar	3.00
Permit Issuing Fee	0.00

Sewer Cap ID: Total Bond(s) Due: $0.00

Project:

Payment Date:
Receipt No:
Amount:
Method:

12. ATTACHMENTS

Plot Plan

08001240201000000578FN

13. STRUCTURE INVENTORY (Note: Numeric measurement data in the format "number / number" implies "change in numeric value / total resulting numeric value") **24020 - 10000 - 00578**

14. APPLICATION COMMENTS: **PDPP Project's Total Valuation** **$ 0.00**

1] Overall project under the permit: 23016-10000-17906 2] Grading permit #23030-10000-03462.

15. BUILDING RELOCATED FROM:

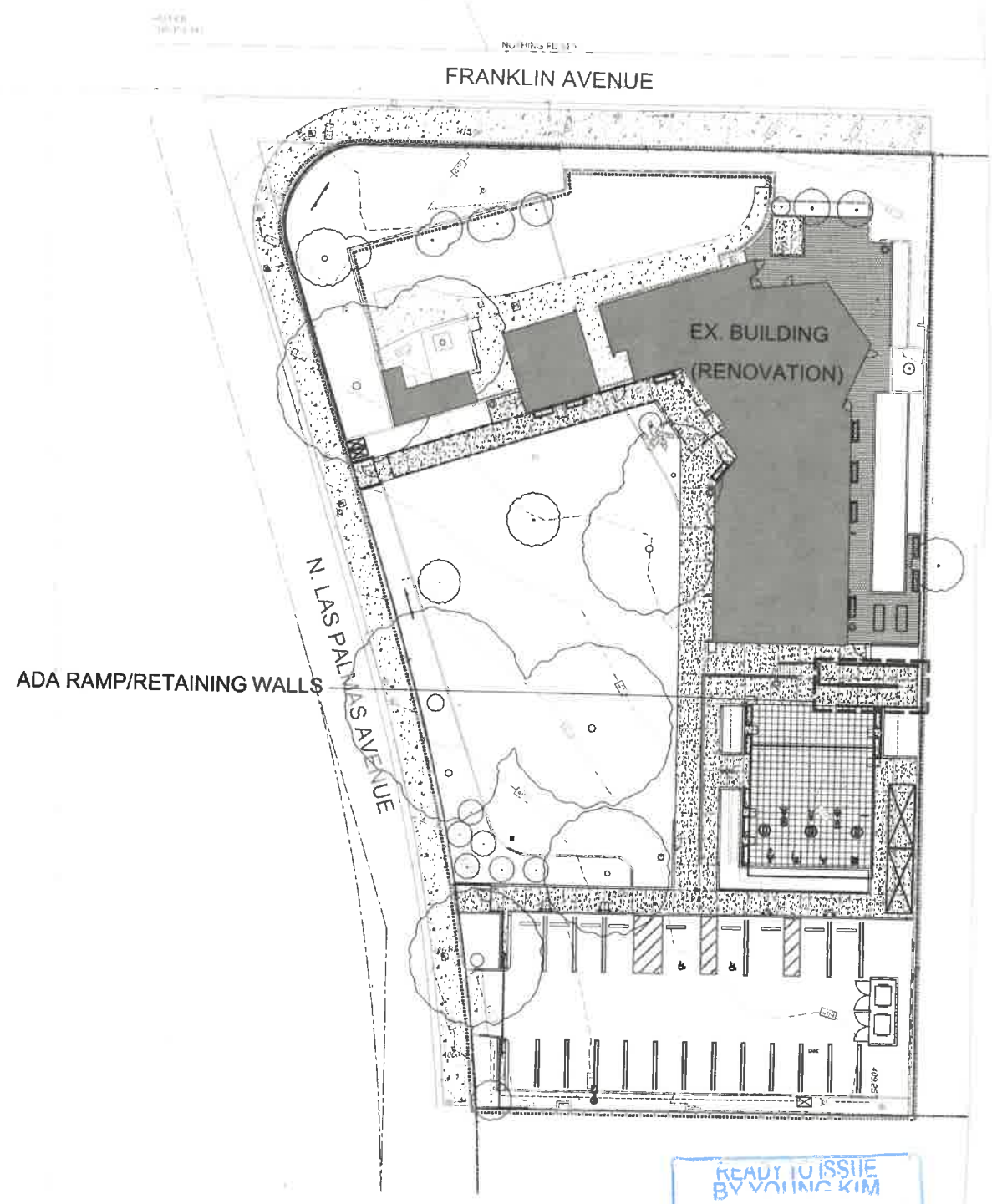
16. CONTRACTOR, ARCHITECT & ENGINEER NAME	ADDRESS		CLASS	LICENSE #	PHONE #
(E) BHALJA,, MANAN	4983 GLENVIEW STREET,	CHINO HILLS, CA 91709		S6573	
(E) FORCIER,, EASTON RENE	233 TULANE ROAD,	COSTA MESA, CA 92626		GE2948	
(L) MOESER,, GREGORY ROBERT	7725 YARMOUTH AVE,	RESEDA, CA 91335		L6260	

1820 N Las Palmas Ave

Permit Application # : **24020 - 10000 - 00578**

Nonbldg-New Commercial Plan Check	City of Los Angeles - Department of Building and Safety **PLOT PLAN ATTACHMENT**	Plan Check #: B24LA06577 Initiating Office: METRO Printed on: 05/02/24 07:37:04

(DO NOT DRAW, WRITE, OR PASTE ATTACHMENTS OUTSIDE BORDER)



READY TO ISSUE
BY YOUNG KIM
OCT 10 2024
Signature

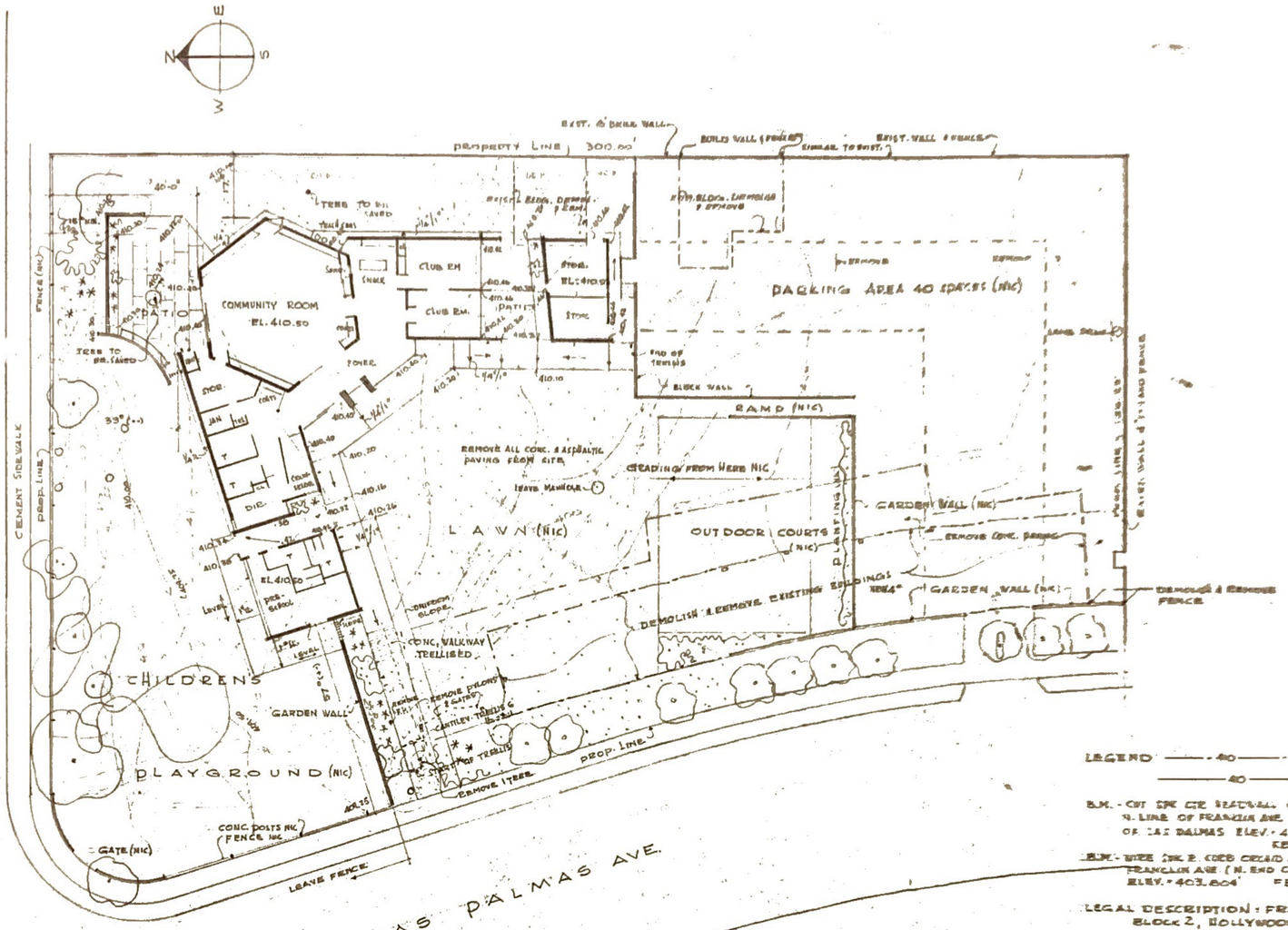
COUNCIL DISTRICT: 13 INSPECTION DISTRICT: BIGIM2 PLOT PLAN

ATTACHMENT F

-RECORD DRAWINGS
1961, 1963, 1964, 1976, 1979, 1999, 2019

RECORD DRAWINGS
1961

554 A 1



SCALE: 1" = 20'-0"

INDEX TO DRAWINGS

1	PLOT PLAN
2	FLOOR PLAN INT. FINISH SCHEDULE
3	ELEVATIONS DOOR SCHEDULE
4	ROOF & FOUNDATION PLANS LAYOUT ANGLES
5	¼" PLAN OF COMMUNITY ROOM & TOILETS
6	INTERIOR ELEVATIONS
7	DOOR DETAILS
8	SECTIONS 1½"=1'-0"
9	CLUBROOM DETAILS
10	ENTRANCE DETAILS
11	DIRECTOR & COUNSEL. OFFICE DETAILS
12	SNACKBAR DETAILS
13	DETAILS
14	WINDOW DETAILS
15	STRUCTURAL
16	STRUCTURAL
17	STRUCTURAL
18	PLUMBING & HEATING
19	ELECTRICAL
20	UTILITY PLOT PLAN & MISC. DETAILS.

LEGEND ——— 410 ——— EXIST. CONT.
——— 410 ——— NEW CONTOUR

B.M. - CUT SPK. CTR. HEADWALL OF CULVERT N. LINE OF FRANKLIN AVE. 25' W. CORR. OF LAS PALMAS ELEV. = 417.402' EE. 16-04.47

B.M. - BURR IN N. SIDE CURB AT E. END OF RADIUS AT NW. COR. OF FRANKLIN AVE. & LAS PALMAS AVE. (N. END C.B.) ELEV. = 403.804' FB. 16-04.47

LEGAL DESCRIPTION: FRACTION OF LOT 10 BLOCK 2, HOLLYWOOD OCEAN VIEW TRACT

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

SUPERINTENDENT PARK DEVELOPMENT

SUPERINTENDENT OF RECREATION

SUPERINTENDENT OF ADMINISTRATION

GENERAL MANAGER

LAS PALMAS SENIOR CITIZENS CENTER

PLOT PLAN

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

1

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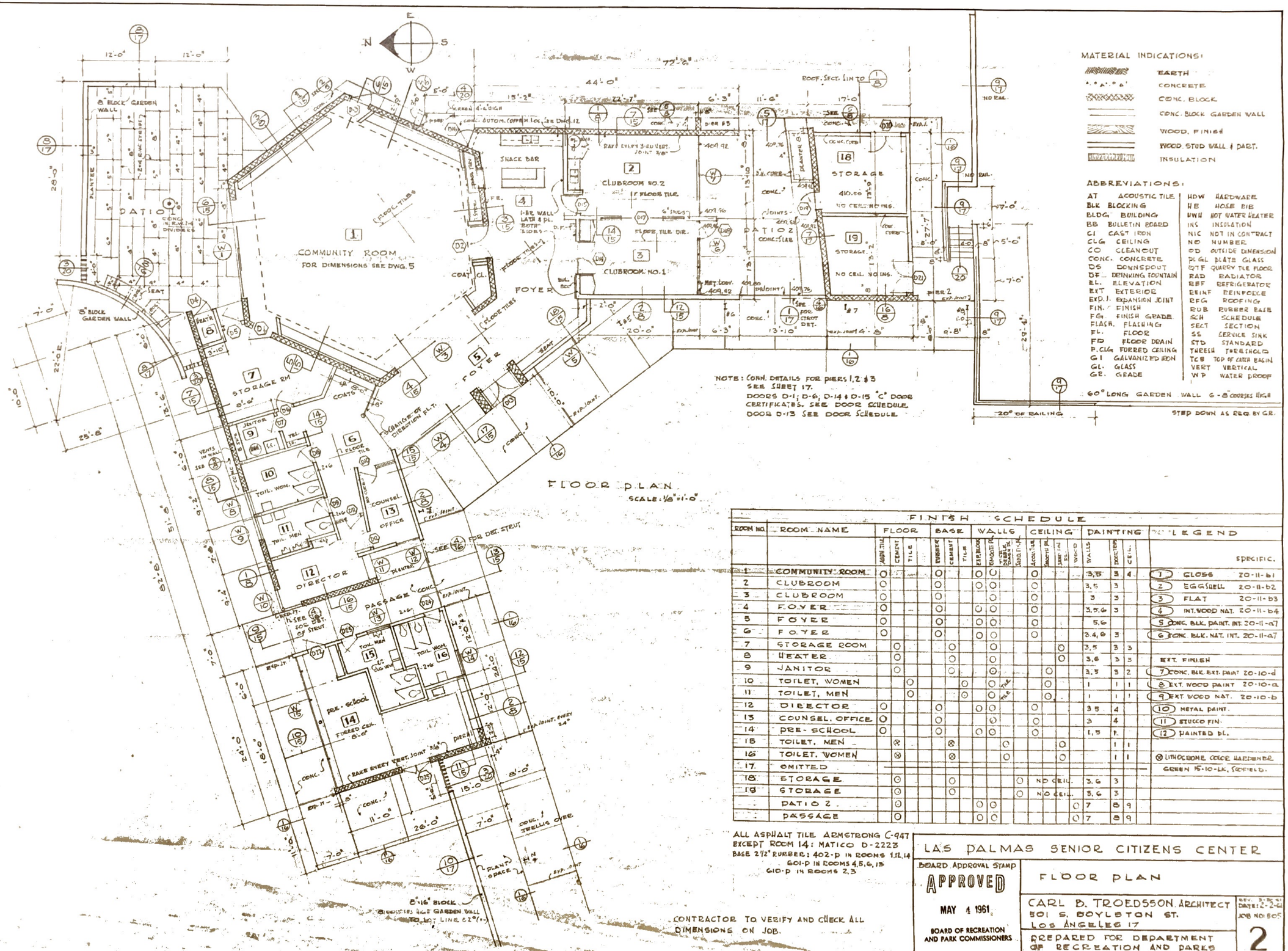

MATERIAL INDICATIONS:

EARTH
CONCRETE
CONC. BLOCK
CONC. BLOCK GARDEN WALL
WOOD, FINISH
WOOD STUD WALL & PART.
INSULATION

ABBREVIATIONS:

AT	ACOUSTIC TILE	HDW	HARDWARE
BLK	BLOCKING	HB	HOSE BIB
BLDG	BUILDING	HWH	HOT WATER HEATER
BB	BULLETIN BOARD	INS	INSULATION
CI	CAST IRON	NIC	NOT IN CONTRACT
CLG	CEILING	NO	NUMBER
CO	CLEANOUT	OD	OUTSIDE DIMENSION
CONC.	CONCRETE	PLGL	PLATE GLASS
DS	DOWNSPOUT	QTF	QUARRY TILE FLOOR
DF	DRINKING FOUNTAIN	RAD	RADIATOR
EL.	ELEVATION	REF	REFRIGERATOR
EXT	EXTERIOR	REINF	REINFORCE
EXP. J.	EXPANSION JOINT	RFG	ROOFING
FIN.	FINISH	RUB	RUBBER BASE
FG	FINISH GRADE	SCH	SCHEDULE
FLASH.	FLASHING	SECT	SECTION
FL.	FLOOR	SS	SERVICE SINK
FD	FLOOR DRAIN	STD	STANDARD
F.CLG	FURRED CEILING	THRESH	THRESHOLD
GI	GALVANIZED IRON	TCB	TOP OF CATCH BASIN
GL.	GLASS	VERT	VERTICAL
GR.	GRADE	WP	WATER PROOF

FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR: ASPH. TILE	FLOOR: CEMENT	FLOOR: TILE	BASE: RUBBER	BASE: CEMENT	BASE: TILE	WALLS: EXP. BLOCK	WALLS: CONCRETE	WALLS: PLYWOOD & BOARD FIN.	WALLS: SCRATCH COAT & FIN.	CEILING: ACOUSTIC TILE	CEILING: SMOOTH FIN.	CEILING: SAND FINISH PLASTER	CEILING: WOOD	PAINTING: WALLS	PAINTING: DOOR/TRIM	PAINTING: CEIL.
1	COMMUNITY ROOM				O				O	O		O				3,5	3	4
2	CLUBROOM	O			O				O	O		O				3,5	3	
3	CLUBROOM	O			O				O	O		O				3	3	
4	FOYER	O			O			O		O		O				3,5,6	3	
5	FOYER	O			O				O	O		O				5,6		
6	FOYER	O			O				O	O		O				3,4,6	3	
7	STORAGE ROOM		O			O			O						O	3,5	3	3
8	HEATER		O			O			O						O	3,6	3	3
9	JANITOR		O			O			O				O			3,5	3	2
10	TOILET, WOMEN			O			O		O		TILE		O			1	1	1
11	TOILET, MEN			O			O		O		TILE		O			1	1	1
12	DIRECTOR	O			O			O	O			O				3,5	4	
13	COUNSEL. OFFICE	O			O				O			O				3	4	
14	PRE-SCHOOL	O			O			O	O			O				1,5	1	
15	TOILET, MEN		⊗			⊗					O				O		1	1
16	TOILET, WOMEN		⊗			⊗					O				O		1	1
17	OMITTED																	
18	STORAGE		O			O						O	NO CEIL.			3,6	3	
19	STORAGE		O			O						O	NO CEIL.			3,6	3	
	PATIO 2		O					O	O						O	7	8	9
	PASSAGE		O					O	O						O	7	8	9

FINISH LEGEND

		SPECIFIC.
1	GLOSS	20-11-b1
2	EGGSHELL	20-11-b2
3	FLAT	20-11-b3
4	INT. WOOD NAT.	20-11-b4
5	CONC. BLK. PAINT. INT.	20-11-a7
6	CONC. BLK. NAT. INT.	20-11-a7
	EXT. FINISH	
7	CONC. BLK. EXT. PAINT	20-10-d
8	EXT. WOOD PAINT	20-10-a
9	EXT. WOOD NAT.	20-10-b
10	METAL PAINT.	
11	STUCCO FIN.	
12	PAINTED PL.	
⊗	LITHOCHROME COLOR HARDENER GREEN 15-10-LK, SCOFIELD.	

ALL ASPHALT TILE ARMSTRONG C-947
EXCEPT ROOM 14: MATICO D-2223
BASE 2½" RUBBER: 402-P IN ROOMS 1,12,14
601-P IN ROOMS 4,5,6,15
610-P IN ROOMS 2,3

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

FLOOR PLAN

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501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

REV. 3-15-61
DATE: 2-2-61
JOB NO: 605

2

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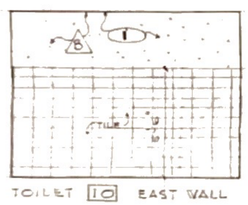
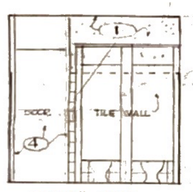
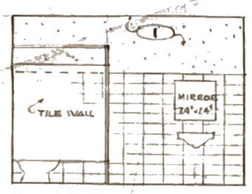


TOILET 10 EAST WALL

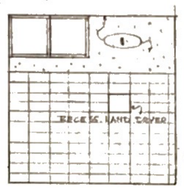


SOUTH WALL



WEST WALL

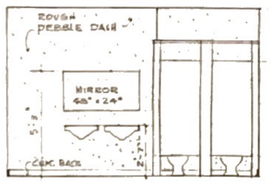
TOILET PARTITION SANYMETAL 93-GREEN



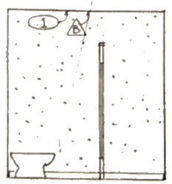
NORTH WALL



TOILET 15 EAST WALL

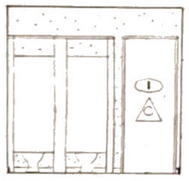


SOUTH WALL

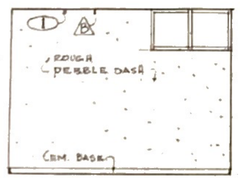


WEST WALL

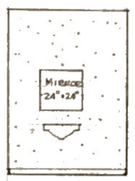
TOILET PARTITION SANYMETAL COLOR 94-YELLOW



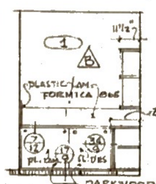
TOILET 12 EAST WALL



SOUTH WALL

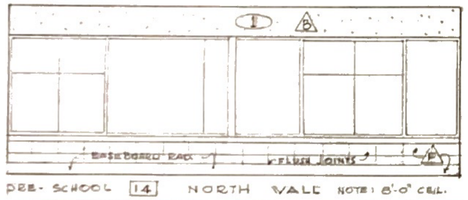


WEST WALL

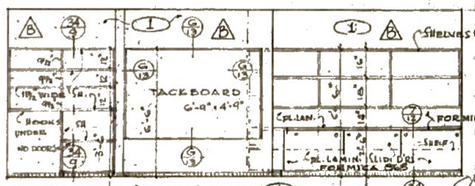


14 S. PART EAST WALL

TOILET PARTITION SANYMETAL COLOR 43-RED



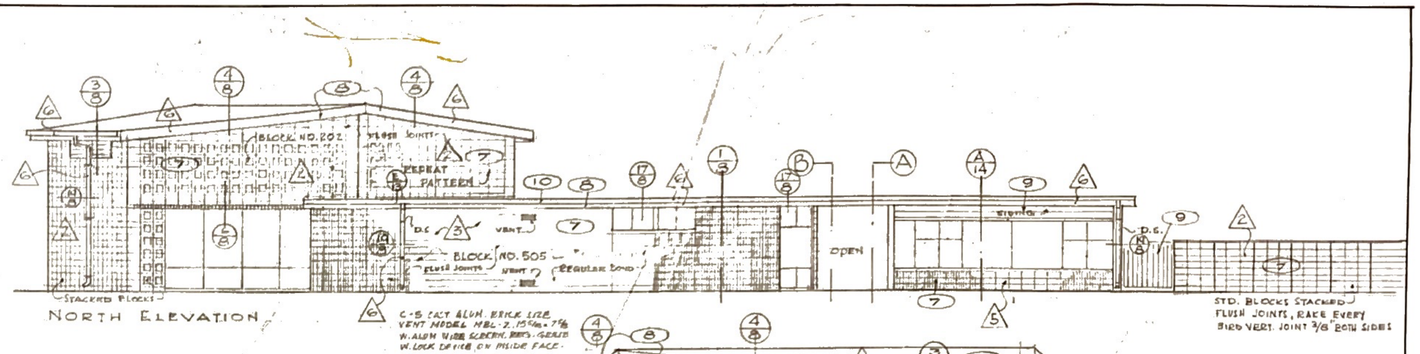
PRE-SCHOOL 14 NORTH WALL NOTE: 8'-0" CEIL.



SOUTH WALLS; SHELVES FIN. NATURAL 4

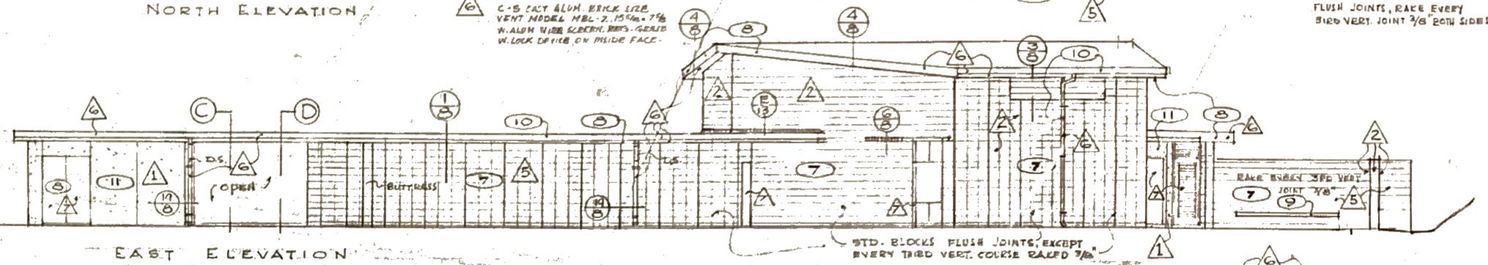
DOOR SCHEDULE

NUMBER	LOCATION-ROOM NUMBER	SIZE	TYPE	KIND	EXT-INT	REMARKS
1	1 - 7	3'-0" - 8'-2½"	B	W. 1¾	INT	SELF-CLOSING "C" CERTIFIED
2	1 - 4	5'-0" x 8'-3"	D	W 1¾	INT	DOOR CLOS.
3	1 - EXIT DOOR	3'-7" x 8'-3½"	E	W. GL. 1¾	EXT.	PANIC HARDWARE OPENS 180°
4	8 - HEATER ROOM	3'-0" x 7'-0"	F	W. 1¾	EXT.	LOUVERED
5	7 - STORAGE RM	3'-0" x 7'-0"	A	W 1¾	EXT.	
6	7 - 6	2'-8" x 7'-0"	B	W 1¾	INT	SELF-CLOSING "C" CERTIFIED
7	6 - 9	2'-6" x 7'-0"	B	W 1¾	INT.	SELF-CLOSING
8	6 - 10	2'-8" x 7'-0"	A	W 1¾	INT	DOOR CLOS.
9	6 - 11	2'-8" x 7'-0"	A	W 1¾	INT	DOOR CLOS
10	6 - 13	2'-6" x 8'-4"	A	W 1¾	INT	BIRCH FIN.
11	6 - 12	2'-6" x 8'-4"	A	W 1¾	INT	BIRCH FIN.
12	12 - 13	2'-6" x 8'-4"	A	W 1¾	INT	BIRCH FIN.
13	5 - FRONT DOORS	5'-8" x 2'-8"	G	MET GL.	EXT.	SELF-CLOS.
14	4 - 3	3'-0" x 8'-0"	C	W 1¾	INT	SELF-CLOSING "C" CERTIF.
15	4 - 2	2'-8" x 8'-0"	B	W 1¾	INT	SELF-CLOSING "C" CERTIF.
16	4 - OUTSIDE	2'-6" x 7'-0"	A	W 1¾	EXT.	
17	2 - 3	7'-0" x 8'-0"	D	W 1⅜	INT.	HOLLOW CORE, SLID.
18	3 - PATIO	2'-8" x 8'-3½"	A	W 1¾	EXT.	
19	18 - PATIO	3'-0" x 7'-0"	A	W 1¾	EXT.	
20	18 - OUTSIDE	3'-0" x 7'-0"	D	W 1¾	EXT.	BOLT TOP & BOT.
21	19 - OUTSIDE	3'-0" x 7'-0"	D	W 1¾	EXT	BOLT TOP & BOT.
22	14 - OUTSIDE	3'-0" x 7'-0"	A	W 1¾	EXT.	
23	15 - OUTSIDE	2'-8" x 7'-0"	A	W 1¾	EXT.	
24	16 - OUTSIDE	2'-8" x 7'-0"	A	W 1¾	EXT.	
25	14 - OUTSIDE	5'-0" x 7'-0"	H	W 1¾	EXT.	WIRE GL.

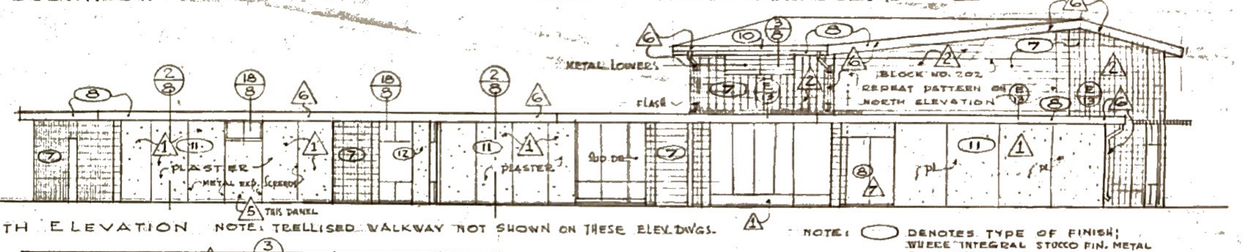


NORTH ELEVATION

C-S CAST ALUM. BRICK LITE VENT MODEL NBL-7, 15⅝" x 7⅝" W. ALUM WIRE SCREEN, BIRD-GUARD W. LOCK DEVICE ON INSIDE FACE.

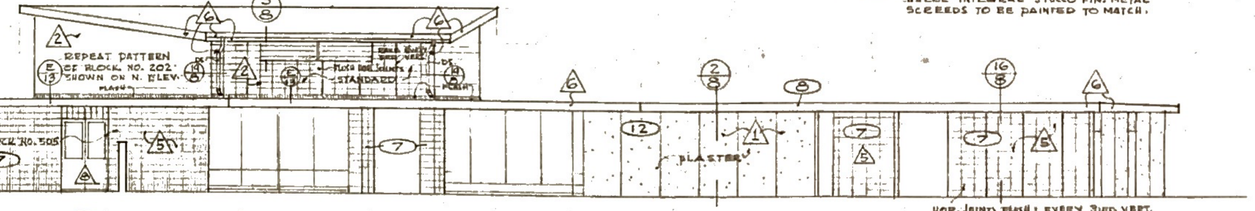


EAST ELEVATION

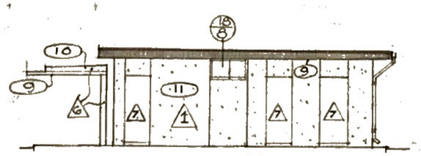


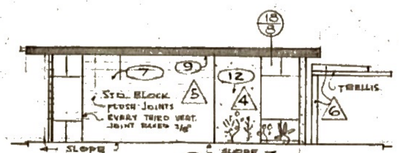
SOUTH ELEVATION NOTE: TRELLISED WALKWAY NOT SHOWN ON THESE ELEV. DWGS.

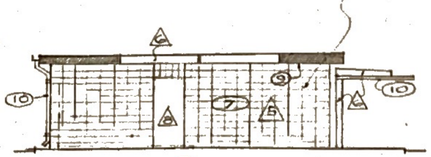
NOTE: ○ DENOTES TYPE OF FINISH; WHERE INTEGRAL STUCCO FIN. METAL SCREEDS TO BE PAINTED TO MATCH.



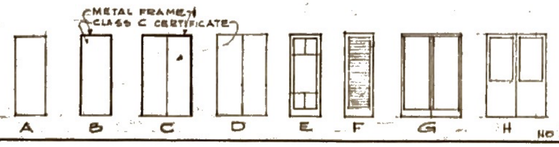
WEST ELEVATION NOTE: TRELLISED WALKWAY NOT SHOWN.











EXTERIOR COLOR CODE:

1. LA HABRA EXT. STUCCO X-52
2. GELVATEX BLUE FOX D7
3. -"- TAPESTRY C8
4. -"- JONQUIL 104-11
5. SINCLAIR 1208 THALO BLUE, 1 PART BASE 16 PARTS WHITE
6. MATCH GELVATEX BARN RED 118-F2
7. PAINT DOOR TO MATCH WALL
8. PAINT DOOR TO MATCH 2

NOTE: ALL BLOCK WALLS LAID STACKED EXCEPT N. WALL OF ROOM 7, 8, 9, 10, 11, 12.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

ELEVATIONS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

REV. 3 DATE 7-12-61
JOB NO. 1005
3

000019 554 A 1

554 A 1

TYPICAL SHAPED RAFTERS ROOFS SLOPE 4"

SCALE: 3/4"=1'-0"

ROOF FRAMING PLAN

SCALE: 1/8"=1'-0"

FOUNDATION PLAN

SCALE: 1/8"=1'-0"

LAYOUT ANGLES

NOTE: POUR TRELLIS CAISSONS TO WITHIN 2 FT. OF FIN GR. BEFORE START OF BLDG.

BOT. OF CAISSON ELEV. 404.00

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

ROOF FRAME & FOUNDATION PLANS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

DATE 2-24-61
JOB NO. 806

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

4

554 A 1

554 A 1

PLAN OF COMMUNITY ROOM SCALE: 1/4"=1'-0"

SECTION Ⓐ

EXT. ELEVATION OF N-EAST WALL

DOST OCCUPANCY SIGN:
THIS ROOM IS APPROVED FOR THE FOLLOWING PURPOSE AND NUMBER OF OCCUPANTS:
RECREATION ROOM - 197 OCCUPANTS

PLAN OF TOILETS, ETC. SCALE: 1/4"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

Board Approval Stamp
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

1/4" PLAN COMMUNITY ROOM & TOILETS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

Rev. 8-26-61
DATE: 2-2-61
JOB NO. 505

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

5

000018 554 A 1

554 A 1

NOTE: IN COMMUNITY ROOM
ALL HOR. JOINTS FLUSH, ALL VERT. JOINTS RAKED 3/8"

INTERIOR COLOR CODE:

- A 2 PARTS GELVATEX TAPESTRY CB WITH 1 PART WHITE 101-XQ
- B PITTSBURGH 64-136 BONE WHITE
- C --- 150, WARM GRAY
- D --- 292, PLUM
- E NATURAL BLOCK COLOR
- F SAME AS B

ELEVATIONS OF COMMUNITY ROOM 1
SCALE: 1/4"=1'-0"

TILE FOR D.F. BYZANTILE MOSAIK PATTERN 2564-A, RED, WHITE, TAN, BLACK.

WALL TILE - HERMOSA -
TOILET 11 : H-201, BRITE WHITE
TOILET 101 H-277, TEA ROSE.

FLOOR TILE: BYZANTILE
TOILET 11 : PATTERN 2578.
COLORS: BACKGROUND RED;
INLAYS: PEBBLE WHITE, BEIGE TAN, BLACK
TOILET 10: PATTERN 2577;
COLORS: BACKGROUND LT GREEN
INLAYS: PEBBLE WHITE, LIGHT LEGHORN BUFF, BLACK.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

INTERIOR ELEVATIONS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

REV. DATE: 7-21
JOB NO 806

6

000017 554 A 1

554 A 1

W1 — 8'-4"(±) — 15'-11⅞" SCREEN — FIXED GL. — 3/16

W2 OMITTED — 4'x8'

W3 — FIXED GL. — OPEN

W4 — FIXED GL. — SEE DRAWING #10

W5 — FIXED GL.

W6 — DOOR — SEE DRAWING #9

W7 — D-3 DOOR DET'S

W9 — 4'x2' — FRONT / FROSTED

W10 — 2-3'x8'4" CORNER W'DW — FIXED GLASS

W11 — 4'x8'4"

W13 — 4'x2' — FROSTED

W14 — 4'x2' — FROSTED

W15 — GREEN 2030 — IW 7138 — BLUE 2051 — ORANGE 2119 — FIXED GL. — VERT. DIV. BAR IN CENTER — FDP 10050 — GREY 2046 — RED 2415 — YELLOW 2037 — IW 7420

D1 — D2 — D3 — D4 — METAL LOUVS — D5 — D6 — D7 — D8 — D9 — D10 — CORE GL. — SEE DWG #11

D11 — CORR. GL. — D12 — D13 — PL. — D14 — D15 — D16 — D19 3°-7° — D17 — BOTH SIDES — D18 — D25 — MISCO OR NUTWELD GL. — D22 — D20 — D21 — ASTRAGAL — D23-24

JOIST HANGER — BEAM — JOIST HANGER — 2x3 STRIPPING — TOP PL. ONLY — TOILET SIDE — 1¼"x7" — ½"x1 5/8 — FIXED DOOR — AT D-19

3'-5" — 2'-6 DOOR — 8" — METAL ANCHORS SCREWED TO FRAME EMBEDDED IN GROUT. SET FRAME WITH BLOCK WORK & PROTECT

SLIDING DOOR JAMBS — 15'-11⅜" DOOR DIM. — 16'-0⅜" — 1½"

COMMUNITY ROOM — METAL FRAME — STORAGE ROOM — ANCHORS — HEATER ROOM

HEADER — METAL FRAME — STORAGE

R.O. — D.O. — METAL TRIM — 1¼"x7" — 1½"x15/8

HEAD — 8'-4¾" — METAL TRIM — 17/8 — 15/8

METAL LATH — BEAM — LAG BOLTS — ¾" EXT PLYWOOD BOTH SIDES — 1" NET MIN. LAP AT TOP ¼" — REMOV. HEAD TRIM W. FIN SCREWS & WASHERS

BOLT TO WALL — 2¾" — 2¾" — BIRCH NAT. FINISH F.S.

HARDWOOD STOPS SET IN PUTTY — F.S.

SLOPE — TILE — 1½" — PATIO SLAB — EXTERIOR SILL — FLUSH THRESHOLD

FLOOR TILE — ⅛" — FIN FL. — CARRY JAMB DOWN — SEE

SLID. DOOR — SEE NOTE

11 COURSES — FIN. FL. — CARRY JAMB DOWN — SEE

5'-4" R.O. — 2" — 2⅛" — ⅜"

1½" = 9/16 = 3/16 E — POSITION DOORS OPEN IN. — FIN. FLOOR FLUSH — POSITION DOORS OPEN OUT — 5/8 — WELD 2" LONG BENT LUGS TO E-12" O.C. — F.S. DETAIL

LAS PALMAS SENIOR CITIZENS CENTER

Board Approval Stamp: APPROVED — MAY 4 1961 — BOARD OF RECREATION AND PARK COMMISSIONERS

DOOR DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE: 12-2-61
JOB NO. 608
7

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GUTTER SEE A/8

NOTE: USE ALUMINUM NAILS FOR EXT. WOOD WITH NATURAL FINISH.

2×10 @ 7½" — HEATING PIPE — 3⅝ MIN. — INSULATION — 2" WIDE CONT. VENT SCREEN SUPPLIED — 5/16" BOLT STRAP — WELD — 2'-4" — 4½" — 3/4 A.T. — 2×3 STRIPPING 12" o.c.

BLOCK WALL AT 16/8

WELD 19/8

BLOCK WALL — ½" ANCHOR BOLT — 2×4 - 16 GA STL TUBE DS — ½" FIBER BOARD STRIP 3"W-2"D AT STRAPS — 3/8"×2" STL. STRAP GALV AFTER FABR. — 19/8 — SCALE: 3"=1'-0"

8'-8⅜" = 5'-8" — 13 COURSES @ 8" — 1'-0" — 3" — 1'-4" — 3/4"

1/8

SEE H/13 — 6 — 10 — 9 — 8 — 6

PLYSCORED "GRADE STRAIT" EXT. GRADE AT ALL ROOF OVERHANGS — ALL FASCIA JOINTS 45° MITER

HEATING PIPE — 11½" — 2×14 — CONTINUOUS SUPERIOR VENT SCREEN #15 — 3/4×1¾ 1'-6" — HANGERS — BEAM — BEAM

SEE 17/8 — SEE 1/14 — SEE 18/8 — SEE 1/14

GUTTER SEE A/8 — 2'-0" — SEE STRUCT. 15 — 2×8 RAFTERS 24" OC. HUNG — INSULATION — 2×3 STRIPPING — CAULK — LAMINATED BEAM — 4½" — 3/4" — 5½" — 4

MOTOR OPERATED LOUVERS — 23 COURSES @ 8" = 15'-4" — SILL — ½" — 19½ COURSES = 13'-0"

RADIATOR & SEAT SIMILAR AS 5/8

GRANT NO. 2200 — 12/8

SEE H/13 — CUT BLOCKS TO SLOPE — 2×4 STUDS — SLID. DOORS — 3" — 11/8 — 2×3 STUDS — 4/8

SEE 16/8

4½" — 4" — ½" — 24 GA. GALV. GUTTER — 3/16"×1" STL. STRAP HANGERS 48" O.C. — 2-1/4" CTSK WD SCR. — REM. ¼" MESH G.I. STRAINER — ⅛"×2" STL STRAP HANGER SCREW TO FASCIA. — ⅛"×2" STL. STRAP GALV. AFTER FABR. — A/8 — SCALE: 3"=1'-0"

SINGLE-LAMP OPEN TYPE COM. FLUOR.

pl. STOP MET. — 1" OPENING — ½" PLYW'D — OPEN — 11¼" × 9½" — HUNG ⅜" BOLTS — PAINT — MAT. — 0'-5" — 3/4" — 2'-0½" — 3/4" — 0'-7" — 3" — 1¼" — 15/8 TYPICAL — 3'-3" — 2'-6" FROM BLOCK TO PNL. — PLASTER

2×2×3/16 ∠ — ⅛" PL. — ½" BOLTS SET IN CONC. STUD — 2×2×3/16 ∠

PLASTER STOPS HERE AT 3/8 — BACK OF PLASTIC LAMINATE ON 1" PLYWOOD — 1'-4" — 4 — SEAT OF ¾"×1½" V.G. OF LAMINATED — 2½" — ROUND CORNERS — 1'-0½" — 1'-7½" — 3 — BASEBOARD RADIATION — 1'-1½"

BOLTS — ⅛" FILLET WELD — ⅜" PL. — 5¾" — 2¼" — 1'-3" — 30° — 1'-5" — 1'-0½" — 1'-1½"

BRACKET FOR SEAT SEE PLAN FOR LOCATION

5/8 SECTIONS — SCALE: 1½"=1'-0"

2'-0" — SCRIBE — FIXED PANL — CONTINUE TRACKS & GUIDES — 14/8 — SLID. PANL

1'-3" — ¼" SLOPE — #3 @ 18" — ½" MIN. — 1-#3 CONT. — 6"

4'-0" — 2'-9" — 10 — 3" — ⅜" GALV. BOLT W. WASH. GALV STOVE BOLT — 2×4 8W @ 2' — BLOCK GALV BOLT @ 6' o.c. — 4 — 6/8

SEE 15/8 — METAL FRAME — 13/8

GRANT SHEAVES #1811 — 6'-4" — SLIDING DOORS — GRANT TRACK #1800 — 10/8

2" — 3" AT — 11/8

SEE 15/8

BOLT TO WALL 2-⅝"×8" — PULLS PLACED SO DOORS CAN STAND OPEN — ½" — 1⅝" — PAIR 2" DOORS — 9/8

F. S. DETAIL

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP — APPROVED — MAY 4 1961 — BOARD OF RECREATION AND PARK COMMISSIONERS

SECTIONS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

DATE: 7-24
JOB NO: 505

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

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ELEVATION N. WALL CLUBROOM # 1
SCALE: 1/2"=1'-0"

ELEVATION N. WALL CLUBROOM #2
SCALE: 1/2"=1'-0"

EXT. ELEV. S. WALL CLUBROOM #1
WOODWORK, DOOR & LOUVS

EXT. ELEV. S. WALL OF CLUBROOM #2

ADOR SERIES A ALUMIN. SLID. GL. DOOR W. BRASS SHEARS

SECTION (A) PLAN OF CLUBROOM # 1

(A) PLAN OF CLUBROOM # 2
SCALE: 1/2"=1'-0"

PLAN-SECTION (C) SCALE: 1/2"=1'-0"

SECTION (B) SCALE: 1/2"=1'-0"

SCALE: 3"=1'-0"

FULL SIZE

FULL SIZE RUBBER BASE

SECTION SCALE: 1/2"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 1 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

CLUBROOM DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

DATE: 2-2-61
JOB NO 605

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

9

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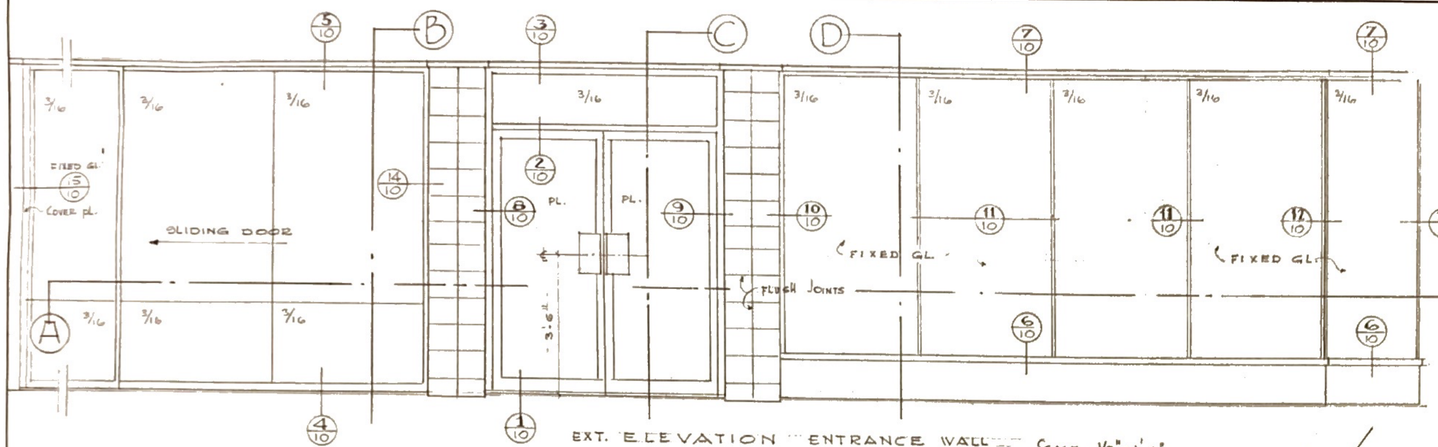

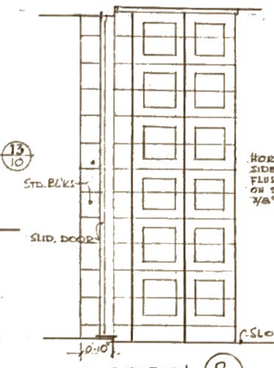

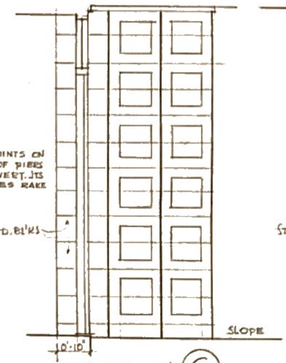

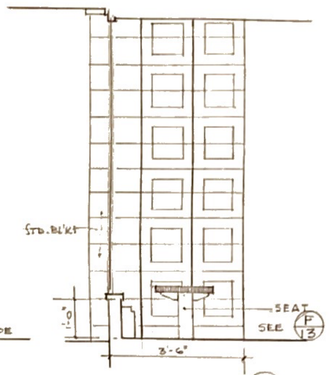

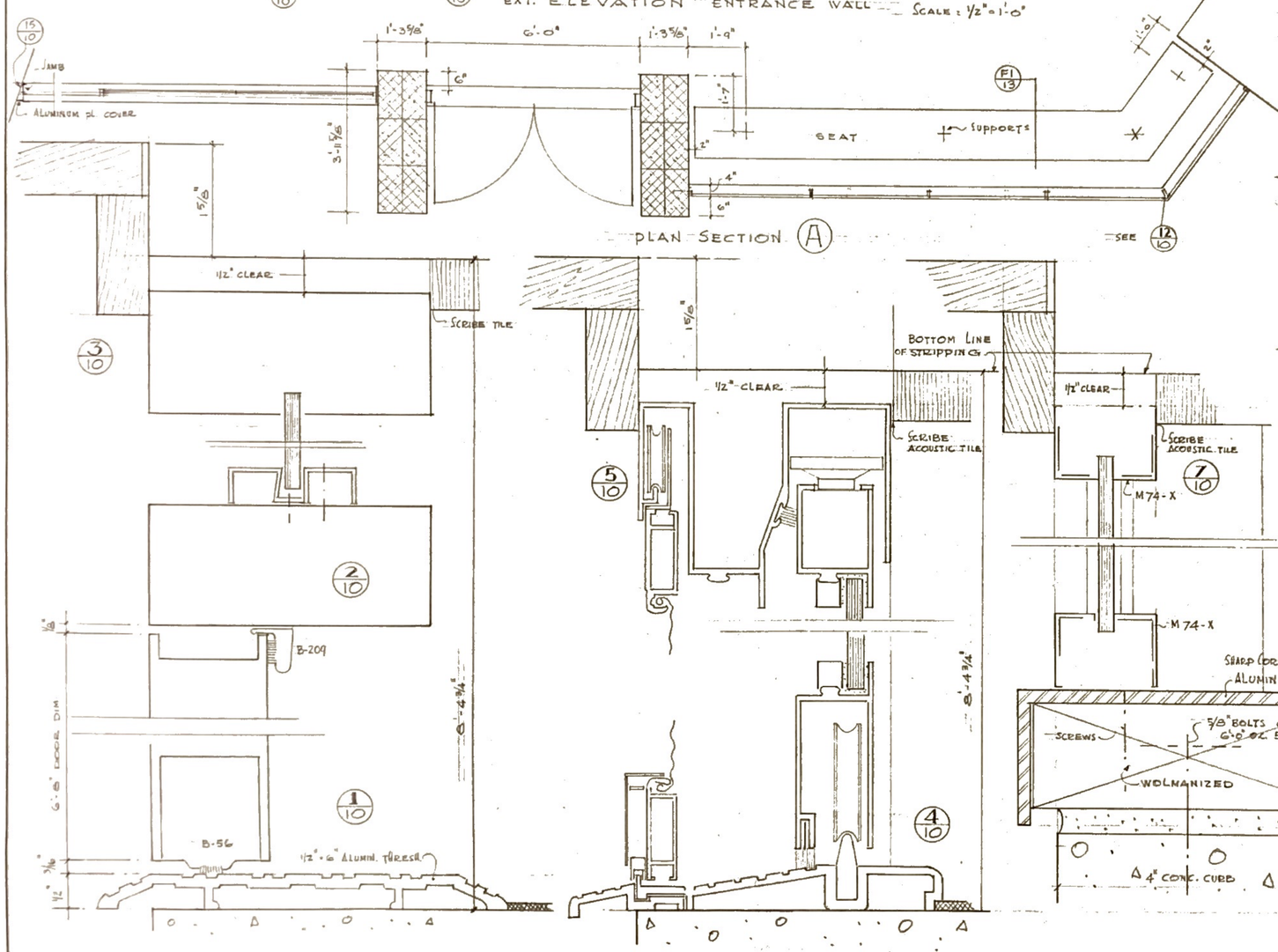

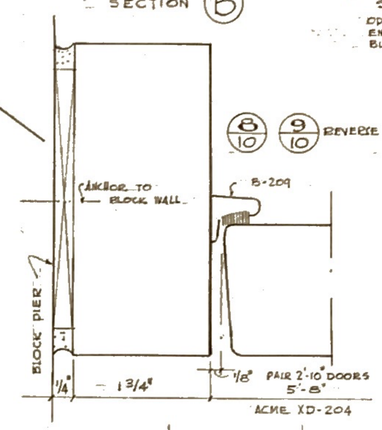

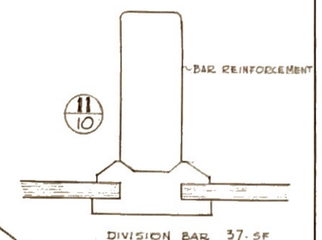

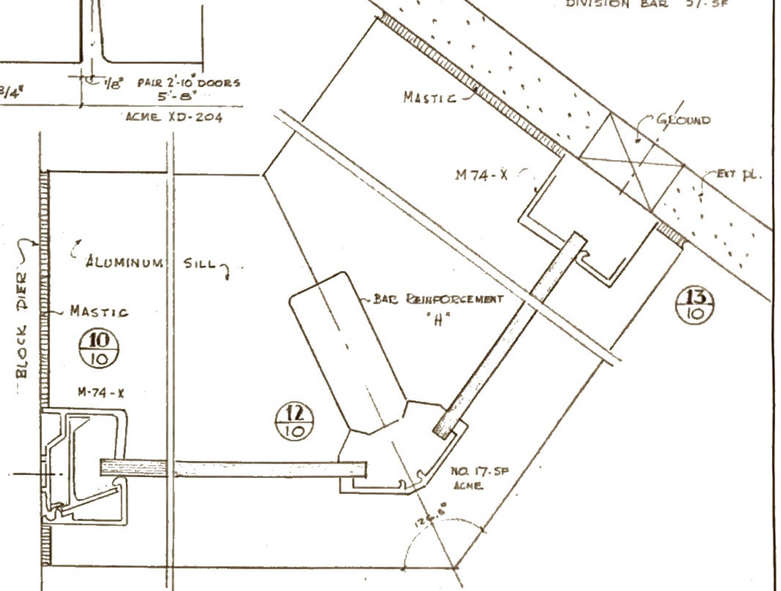

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

ENTRANCE DETAILS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE 2-2-61
JOB NO. 505

10

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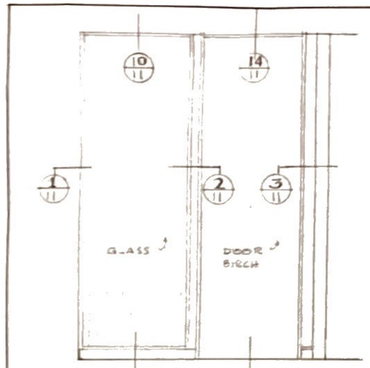
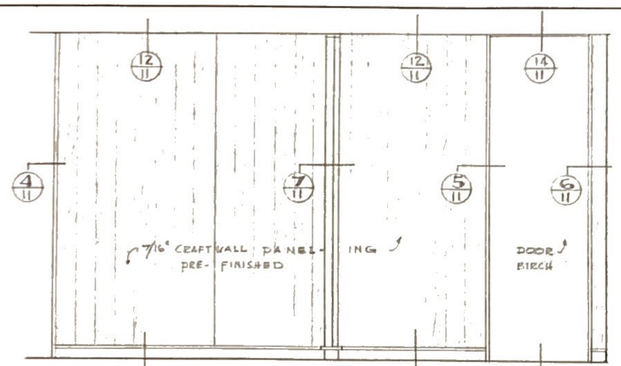
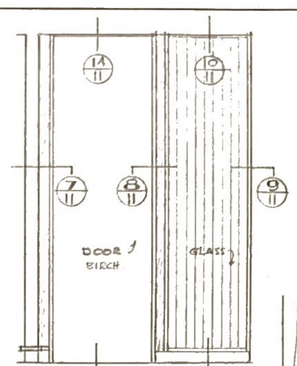
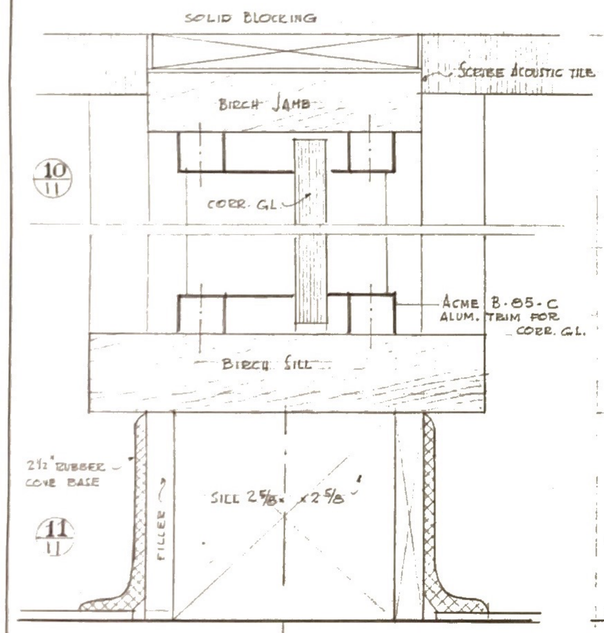
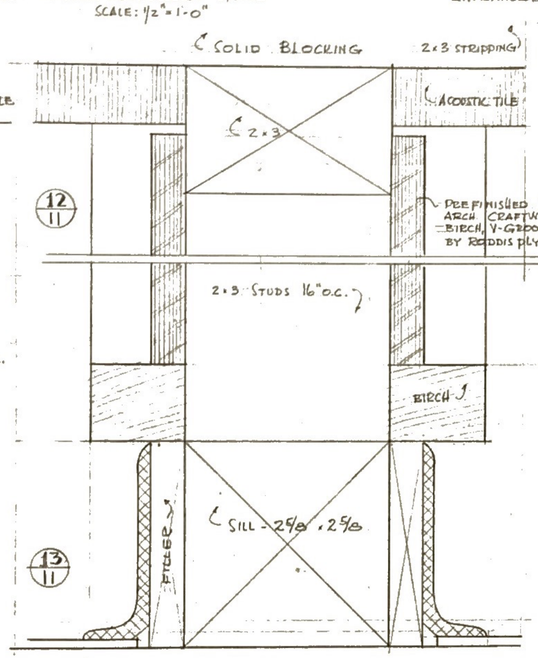


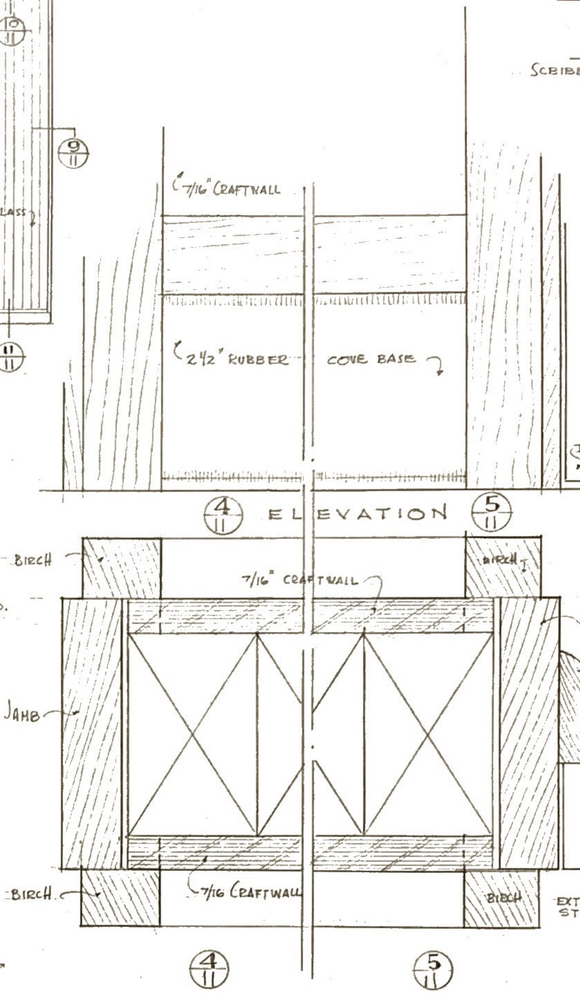


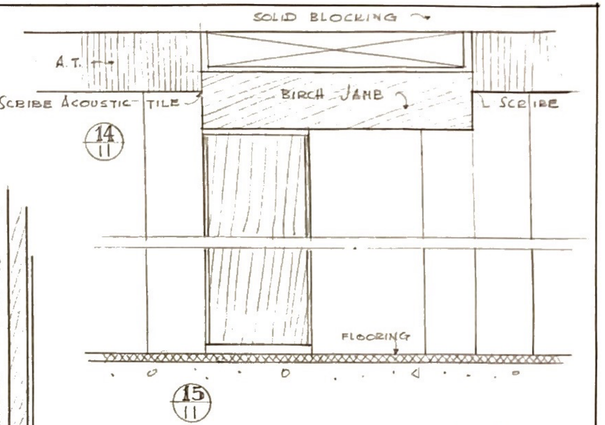
SCALE: 1/2"=1-0"

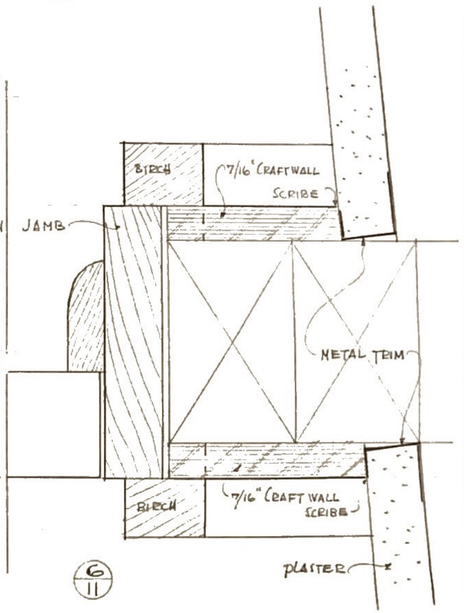




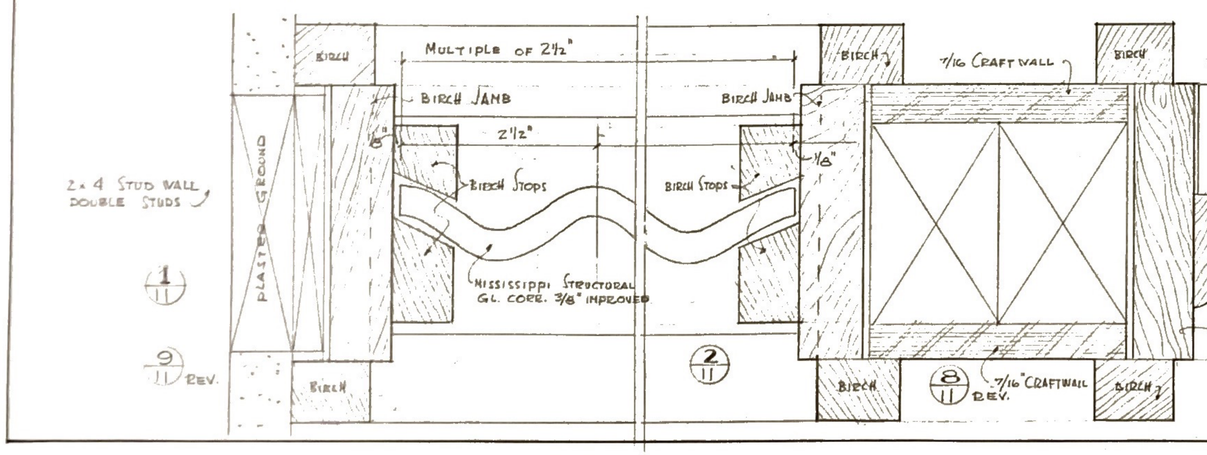


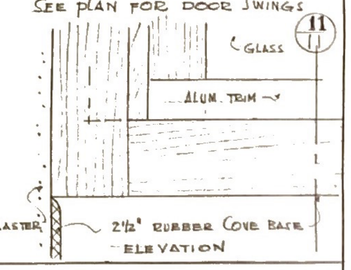






ALL BIRCH FINISHED NATURAL.
SCALE OF DETAILS: F.S.





LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

DIRECTOR & COUNSEL OFFICE DET'S

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

DATE: 2-7-61
JOB NO. 605

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

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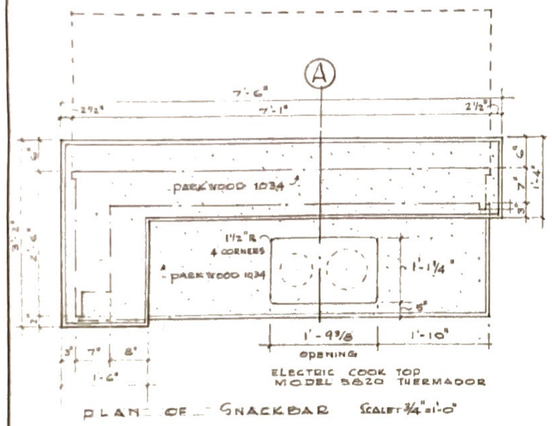
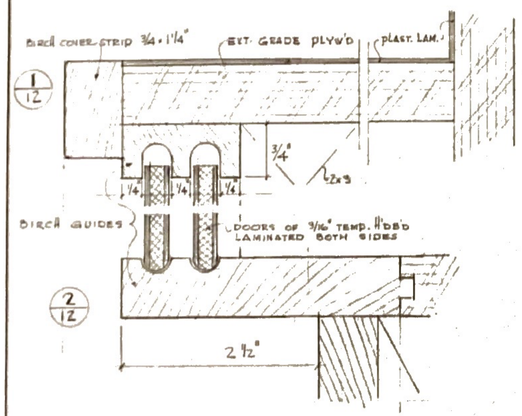
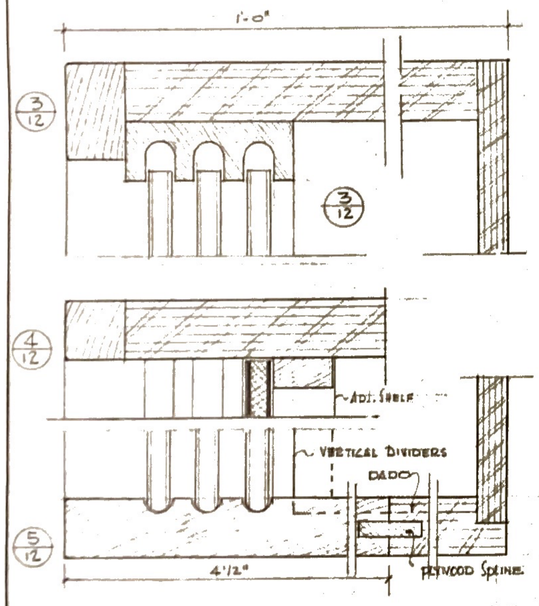
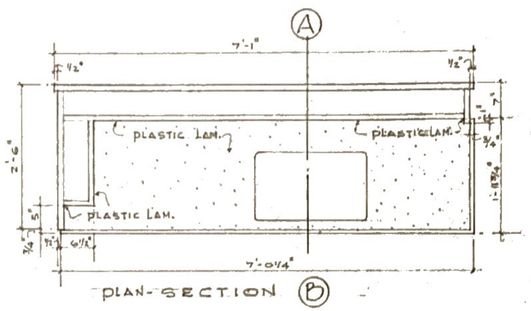


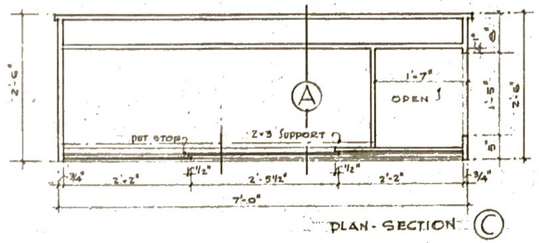
PLAN OF SNACKBAR SCALE: ¾"=1'-0"







PLAN-SECTION (B)



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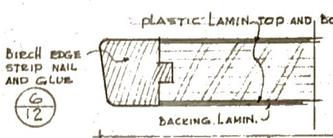
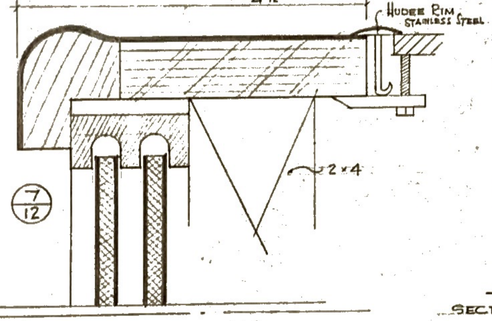
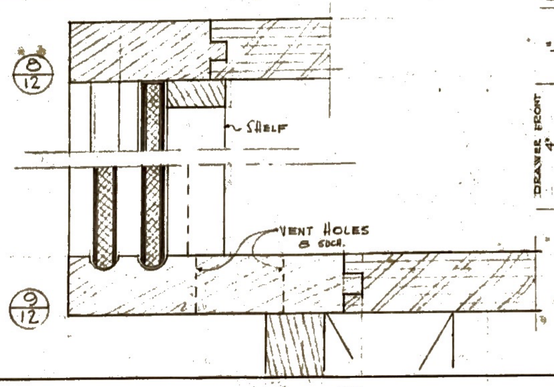
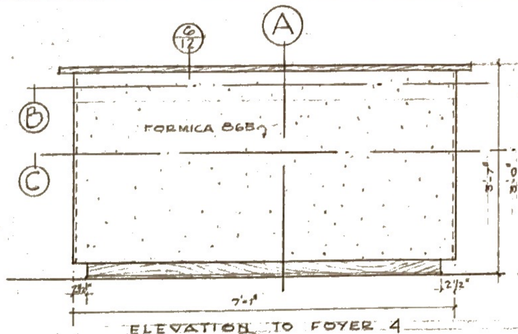
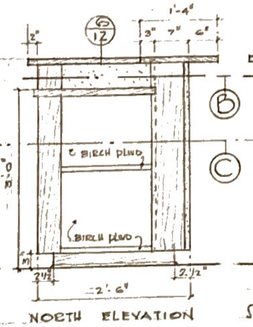




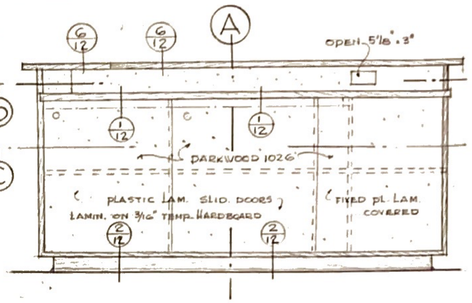




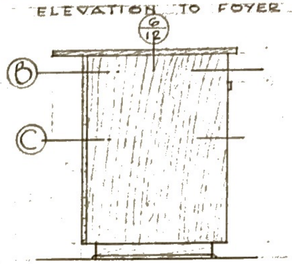
ELEVATION TO FOYER 4



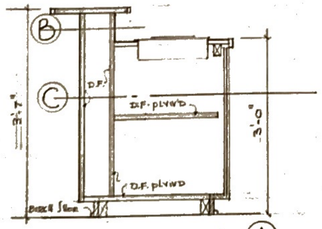
NORTH ELEVATION



SNACKBAR ELEVATION EAST SCALE: ¾"=1'-0"

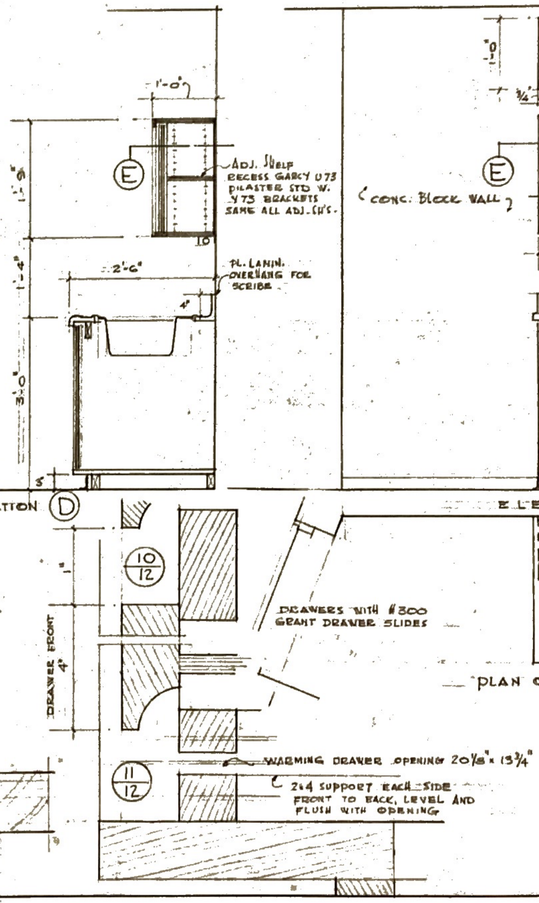


SOUTH ELEVATION



SECTION (A)

SNACKBAR AND SNACK COUNTER OF BIRCH WITH NATURAL FINISH. ALL EXPOSED PLYWOOD EDGES TO HAVE ¾" EDGE STRIPS OF BIRCH.



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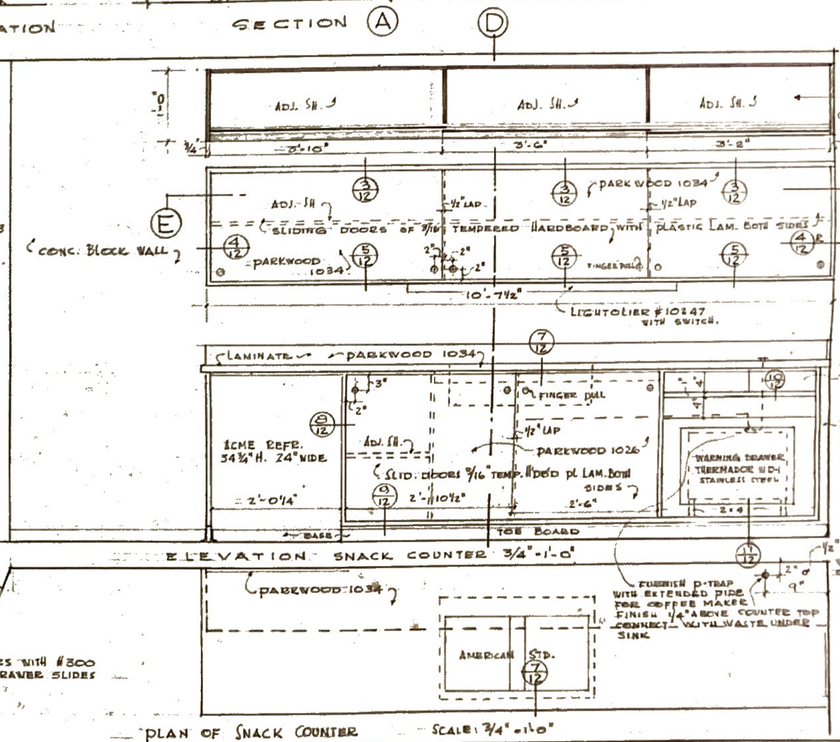

ELEVATION SNACK COUNTER ¾"=1'-0"

PLAN OF SNACK COUNTER SCALE: ¾"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

SNACKBAR DETAILS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE 7-7-61
JOB NO. 505
12

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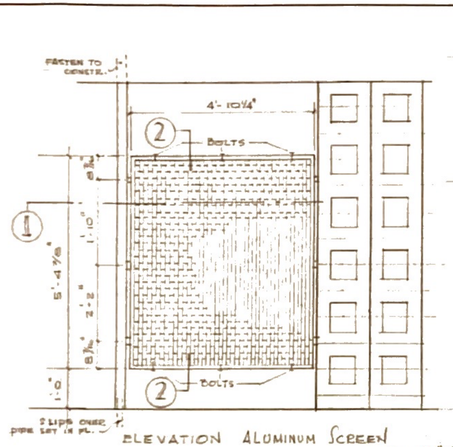
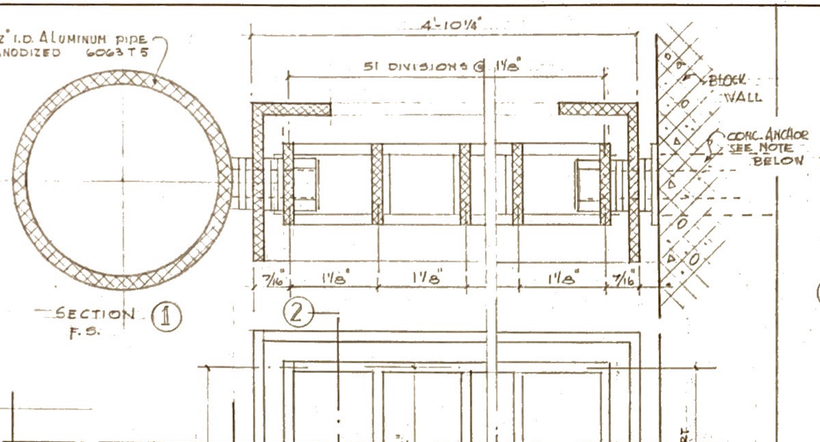


ELEVATION ALUMINUM SCREEN
SCALE: 1½"=1'-0"



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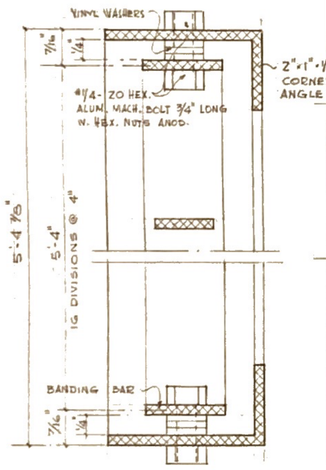

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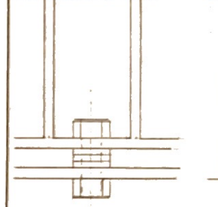
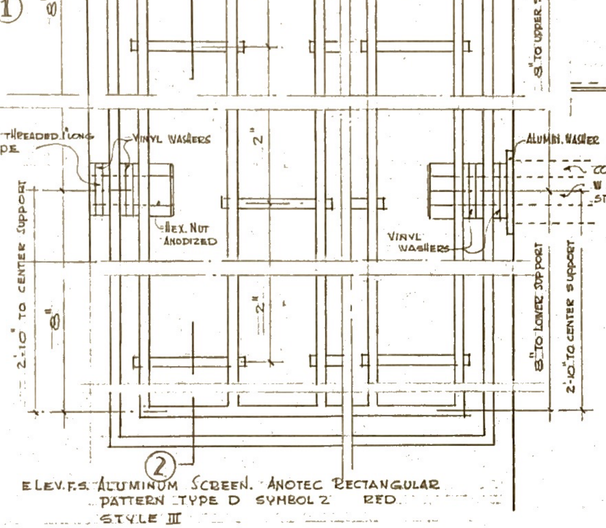
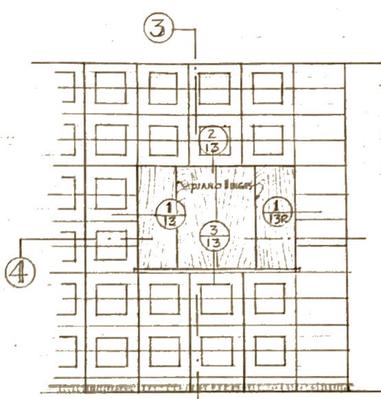


ELEVATION BOLT
PLACE BOLTS IN 4TH DIVISION FROM SIDES & IN CENTER DIV.



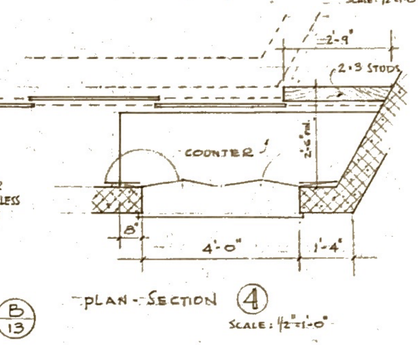
ELEV. F.S. ALUMINUM SCREEN. ANOTEC RECTANGULAR PATTERN TYPE D SYMBOL 2 RED. STYLE III



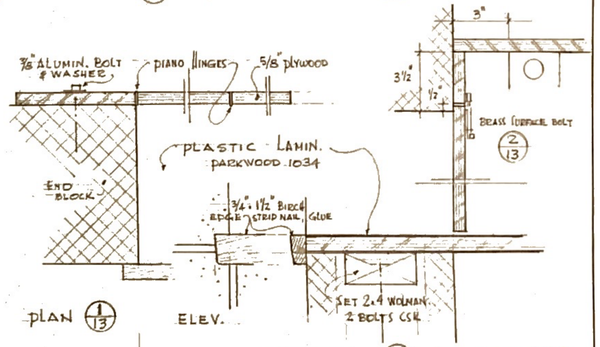
ELEVATION OF PASS-THRU SNACK-BAR SIDE
SCALE: ½"=1'-0"

SECTION (3)

ELEV OF PASS-THRU (9/12) COMMUN. ROOM SIDE

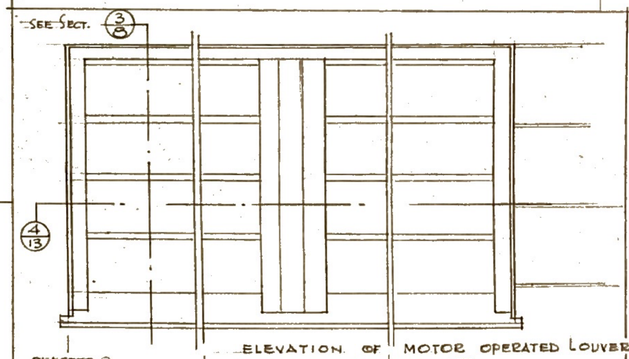


PLAN-SECTION (4)
SCALE: ½"=1'-0"

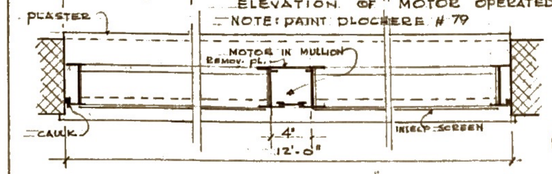


PLAN (1/13) ELEV.

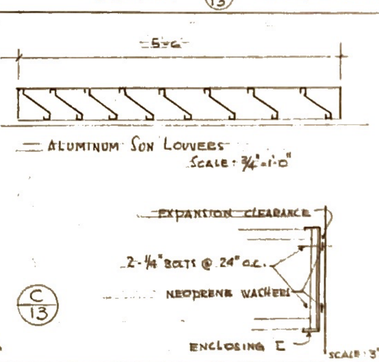
SECTION (3/13) SCALE OF DET: 3"=1'-0"



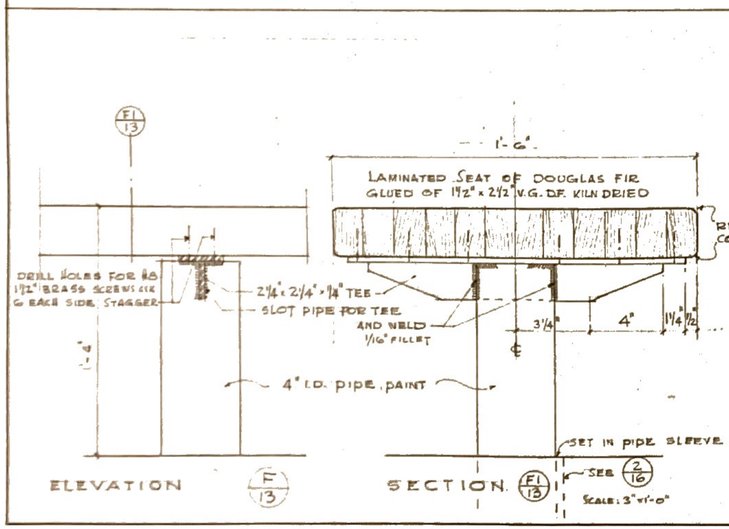
ELEVATION OF MOTOR OPERATED LOUVERS
NOTE: PAINT DLOCKERE # 79



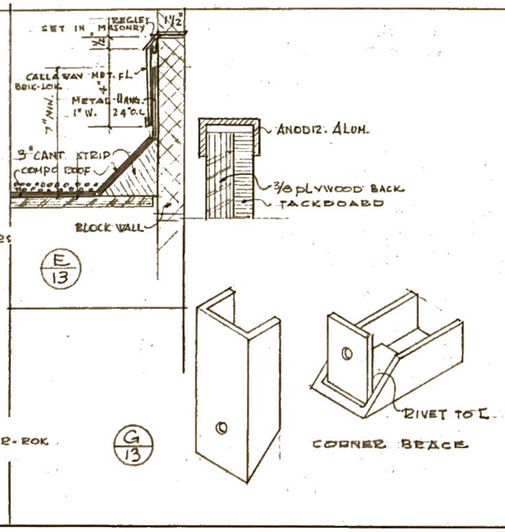
PLAN OF MOTOR OPERATED LOUVERS (4/13)
SCALE: 1½"=1'-0"

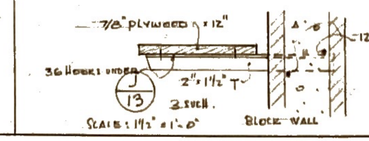


C/13 H/13



ELEVATION (F/13) SECTION (E1/13)





J/13 SCALE: 1½"=1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

DETAILS

CARL B. TROEDSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17.

DATE 7-7-61
JOB NO. 5015

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

13

000010 554 A 1

554 A 1

PLATE
PLASTER OR ACOUST TILE
1/14
2/14
WEEP FIXED GL.
24/14 SLID. DAN. HERB OMIT ∠
WINDOW HEIGHT DIMENSION
3/14
4/14
CAULK
GROUT
CONC. BLOCK
5/14 CAULK WITH THIOKOL
CONC. BLOCK
JOINT
CAULK
CONC. BLOCK
CAULK WITH THIOKOL
9/14
2"x1"x1/8" ALUMINUM ∠ SHARP CORNERS; CUT TO SHAPE
MITER CORNERS
GROUT
FASTEN W. ALUMIN. SCREWS, 24" OC. CSK
CONC. BLOCK
CAULK W. THIOKOL
6/14
CAULK W. THIOKOL
10/14
20/14 CORNER WINDOW W-10
CAULK
JOINT
2" TUBE
1/8"
WINDOW WIDTH DIMENSION
ROUGH OPENING 1/4" WIDER
1/8"
7/14
WINDOW DIM. 1/8" WINDOW DIM.
VERTICAL BAR MULLION
WINDOW DIM. 1 1/4" WINDOW DIM.
EXPANSION MULLION
11/14
FIN. FL.
FILLER PL.
5 5/8" - 2 1/4" - 15/8 CAP
3/8" JOINT
8/14
BLOCK WALL
INT. PLASTER
STUD
BLDG. PAPER
EXT. PLASTER
12A/14
12/14
WINDOW WIDTH
ROUGH OPENING 1 1/2" WIDER
SIDING
FLASH 6" HIGH
BEAM
GALV. FLASHING
PAINT
WRAP BEAM WITH METAL LATH
PLASTER
13A/14
13/14
16A/14
BLDG. PAPER
FILLER PL.
17/14
APPR. EXT. CORNER METAL BEAD AT ALL EXT. PL. CORNERS
LINE OF RAFTER
TOP PL.
3/4 x 1 3/4
16/14
19/14
EXT. PLASTER
INT. PLASTER SILL
BUILD. PAPER
14A/14
EXPANSION MULLION TO EXTEND
THIOKOL
BLACK, SMOOTH SLATE 16" OR LONGER PIECES
3/4"
TROWEL SMOOTH
GROUT
1/2"
REINFORCED CONCRETE SILL
2 1/2"
3 1/4"
5 1/2"
8" BLOCK WALL
3 COURSES HIGH
3 1/2"
1'-5"
SECTION A/14 F.S. 14/14
15/14

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

WINDOW DETAILS

CARL B TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

DATE 7-1-61
JOB NO. 6015
14

000009 554 A 1

554 A 1

NOTE FOR STACKED BLOCKS:
ALL CELLS IN STACKED BLOCK WALLS
SHALL BE FILLED AND #4 @ 24" HOR. BARS SHALL BE ADDED.

SCALE: 1/2" = 1'-0"

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

STRUCTURAL DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES. 17

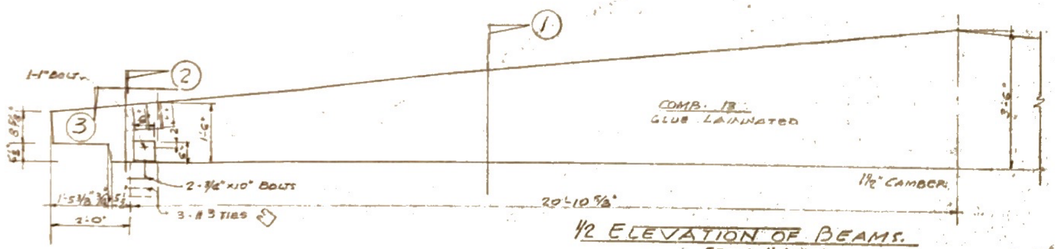
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS
CITY OF LOS ANGELES

DATE 12-2-61
Job No. 505

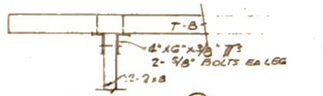
15

000008 554 A 1

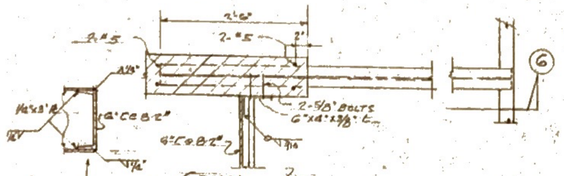
554 A 1



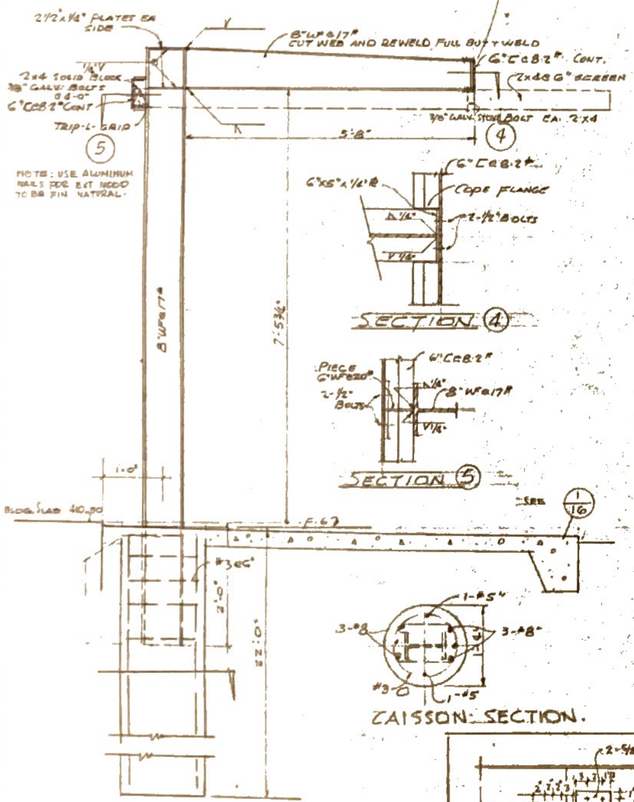
½ ELEVATION OF BEAMS.
SCALE: 1/2"=1'0"

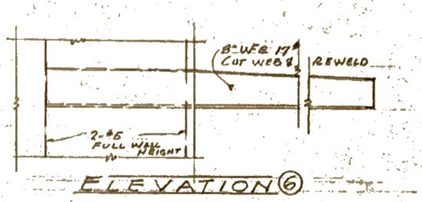


SECTION ③

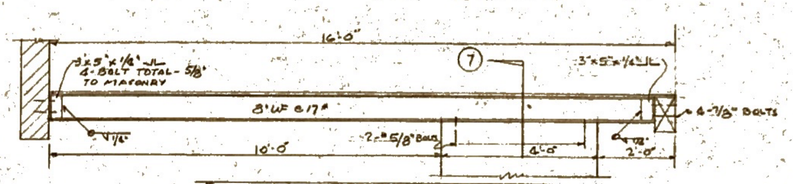


CONN. 2

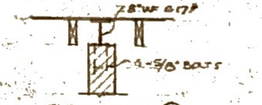




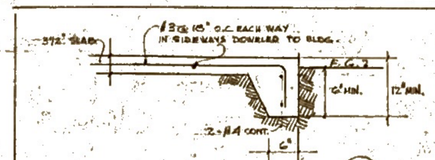
ELEVATION ⑥



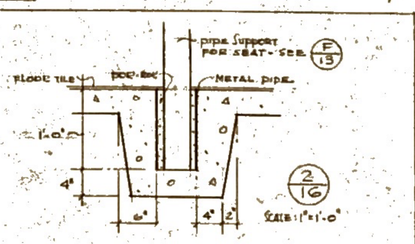
BEAMS AT SOUTH ENTRANCE



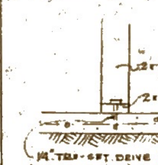
SECTION ⑦



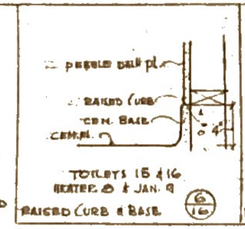
SLAB DETAIL ALL EXT. CONC. SLABS ON GRADE
1/16
SCALE: 3/4"=1'-0"

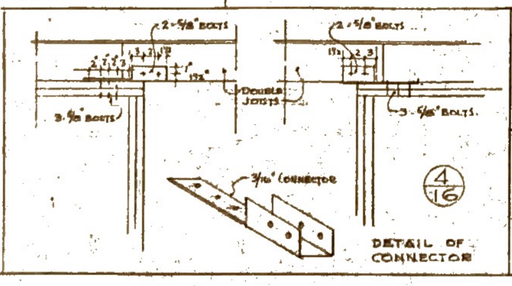


2/16
SCALE: 1"=1'-0"

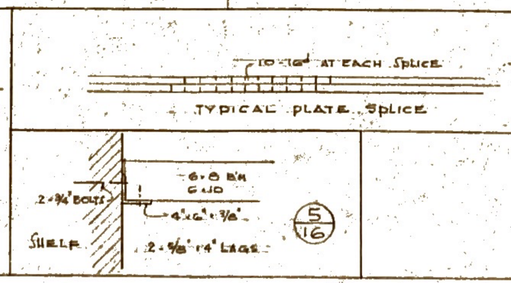


INTERIOR NON-BEARING FTG.

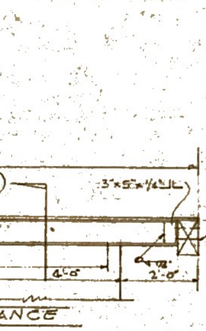




DETAIL OF CONNECTOR



TYPICAL BLOCK.
(NOMINAL DIMENSIONS)



SECTION ①

SECTION ②

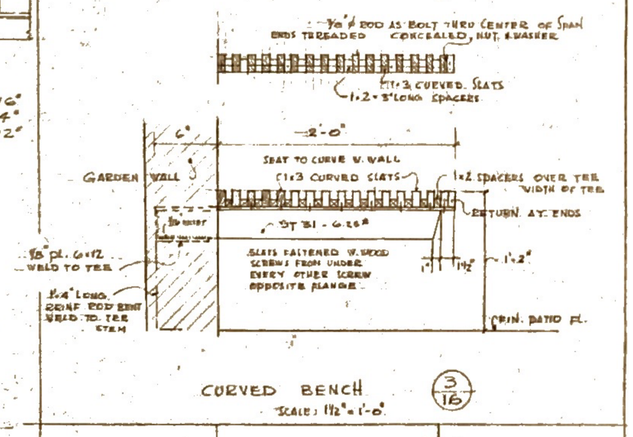
PLYWOOD PATTERN

	NAILING
PERIMETER	10d @ 16"
BOUNDARY	10 @ 4"
INTERMEDIATE	10 @ 12"

GENERAL NOTES.

1. SOIL IS OF TYPE SILTY SAND-3,000#/□ - SEE SOIL REPORT.
2. ALL FOOTING SHALL BEAR ON FIRM UNDISTURBED SOIL.
3. CONCRETE ~~SEE BELOW.-16.~~ ~~#2 1/2 HAVING A MINIMUM CRUSHING STRENGTH OF 2000 #/□" AT THE AGE OF 28 DAYS. MAXIMUM WATER PER SACK OF CEMENT = 7 1/2 GALLONS.~~
4. CEMENT IS TESTED CEMENT.
5. CONCRETE BLOCKS SHALL COMPLY WITH THE REQUIREMENTS OF THE A.S.T.M. SPECIFICATIONS C 90-52. CONT. INSPECTION REQUIRED.
6. MORTAR SHALL BE TYPE A MIX 1:3 WITH NOT MORE THAN ½ PART LIME PUTTY ADDED-MEET L.A. BUILDING CODE ON MORTAR.
7. GROUT SHALL BE OF 1:3 MIX. WITH NOT MORE THAN 1/10 LIME ADDED.
8. PEA GRAVEL CONCRETE SHALL BE MIX 1:2:3 MIX.
9. REINFORCING STEEL SHALL BE DEFORMED BARS OF STRUCTURAL GRADE COMPLYING WITH A.S.T.M. SPECIFICATIONS A15-55-T A 305-55
10. ALL SPLICES SHALL BE 40 BAR DIAMETER.
11. STRUCTURAL STEEL SHALL COMPLY WITH A.S.T.M. SPECIFICATIONS A7-58.
12. ALL EXPOSED STAUCTURAL STEEL SHALL RECEIVE ONE SHOP COAT AND TWO FIELD COATS.
13. ALL HORIZONTAL LUMBER SHALL BE CONSTRUCTION GRADE 1350f GRADE MARKED
    ALL VERTICAL LUMBER SHALL BE STANDARD GRADE.
14. PLYWOOD SHALL BE "PLYSCORE" GRADEMARKED, EXTERIOR GRAIN FACES AT RT LS TO SUPPORT.
    PLYWOOD SHALL NOT BE COVERED UNTIL NAILING HAS BEEN INSPECTED.
15. WELDING SHALL BE DONE BY QUALIFIED WELDERS USING THE ELECTRIC ARC PROCESS, USING APPROVED ELECTRODES WELDING FULL STRESS - CONTINUOUS INSPECTION REQUIRED.

16. CONCRETE FOR BEAMS SHALL BE GRADE 'B' 3,000# CONT INSPECTION REQ.
    " " SLABS ON EARTH " 'C' 2,000#
    " " CAITSSONS " 'C' 2,000#



CURVED BENCH
SCALE: 1½"=1'-0"
3/16

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

STRUCTURAL DETAILS

CARL B. TROEDSSON, ARCHITECT
901 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

DRAWN: J.S.J.
DATE: 12-7-60
JOB NO. 5007

16

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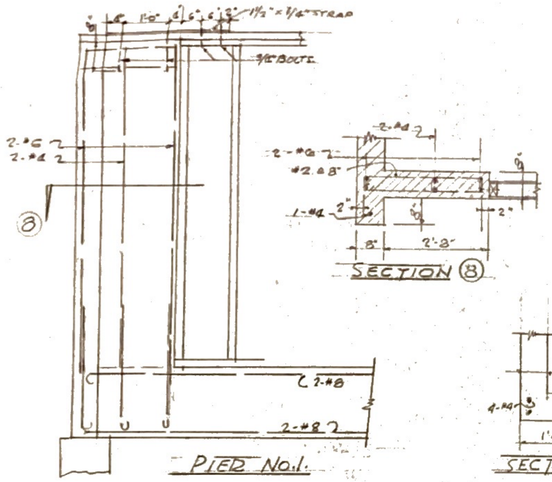
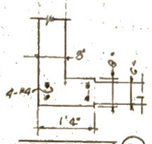
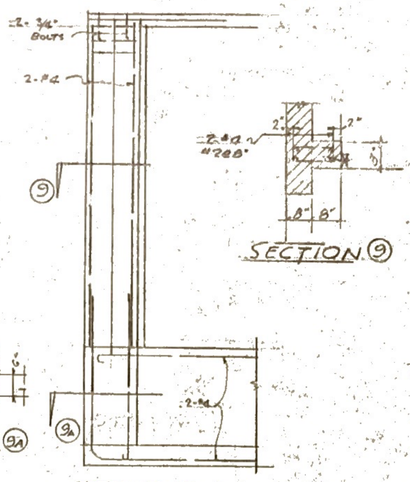
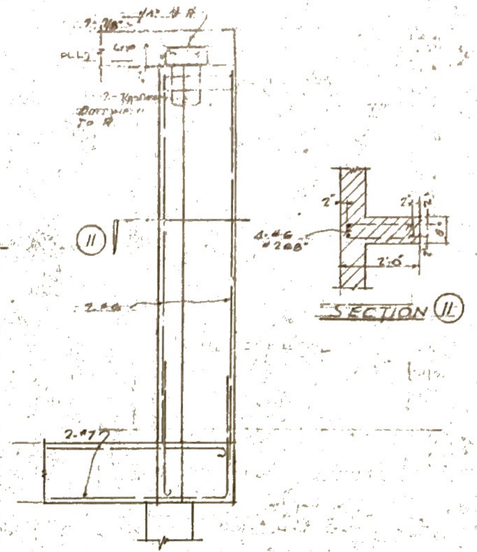
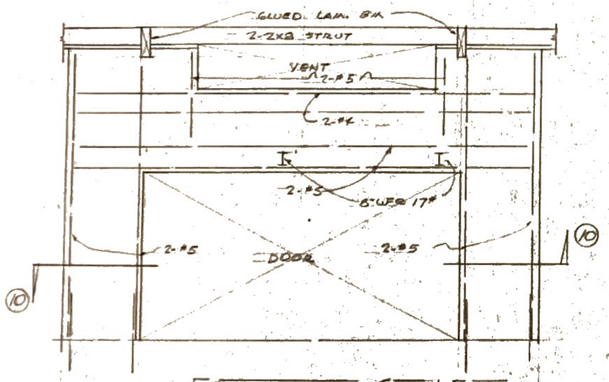
554 A 1

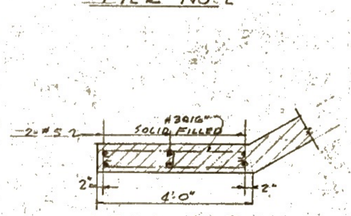


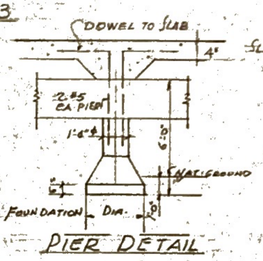


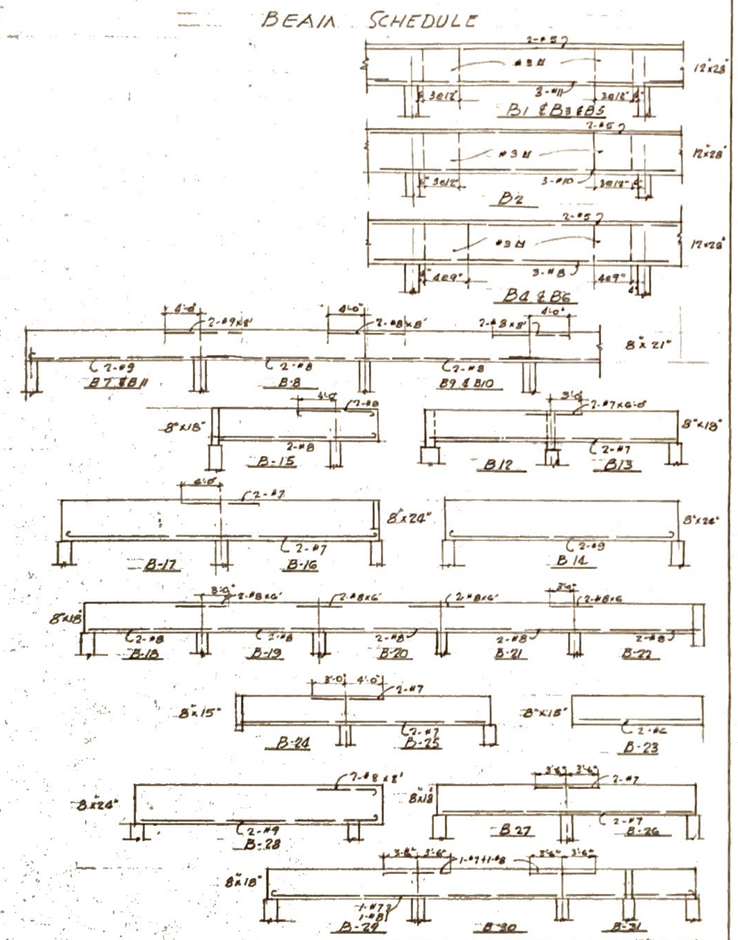


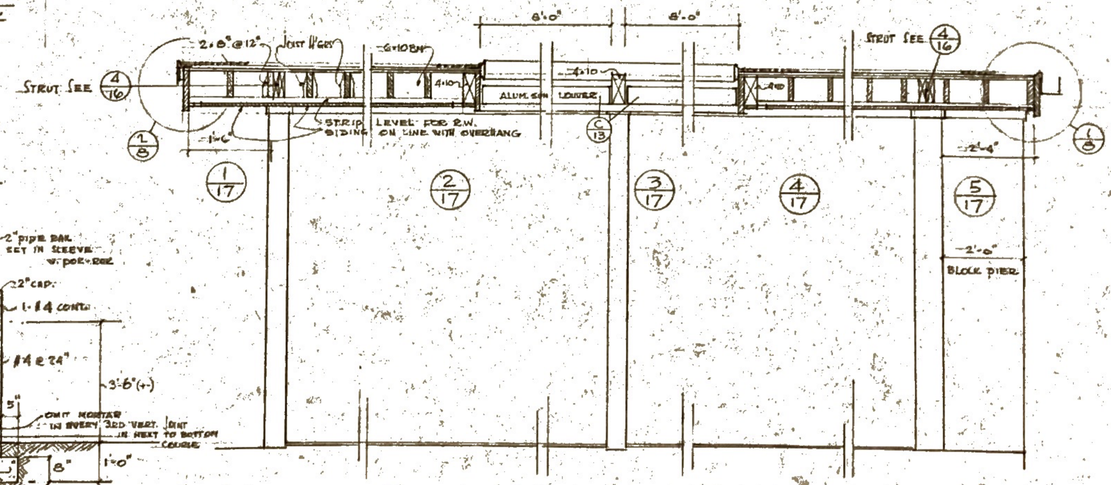


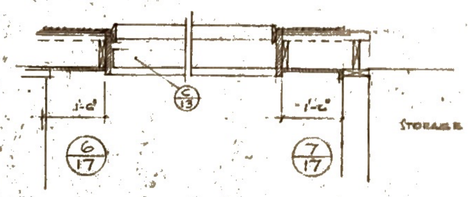


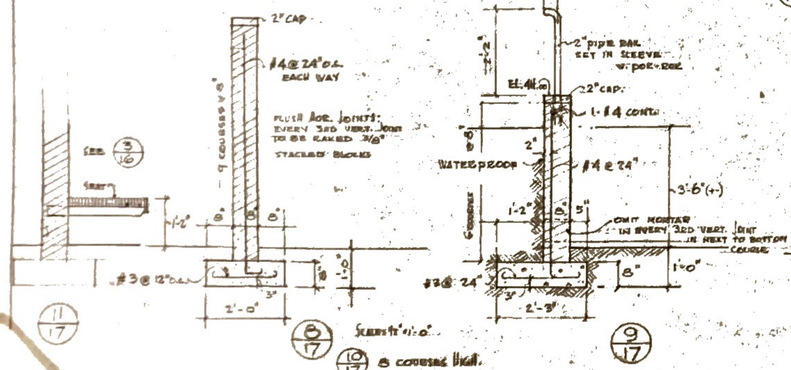












LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP

STRUCTURAL DETAILS

CARL D. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

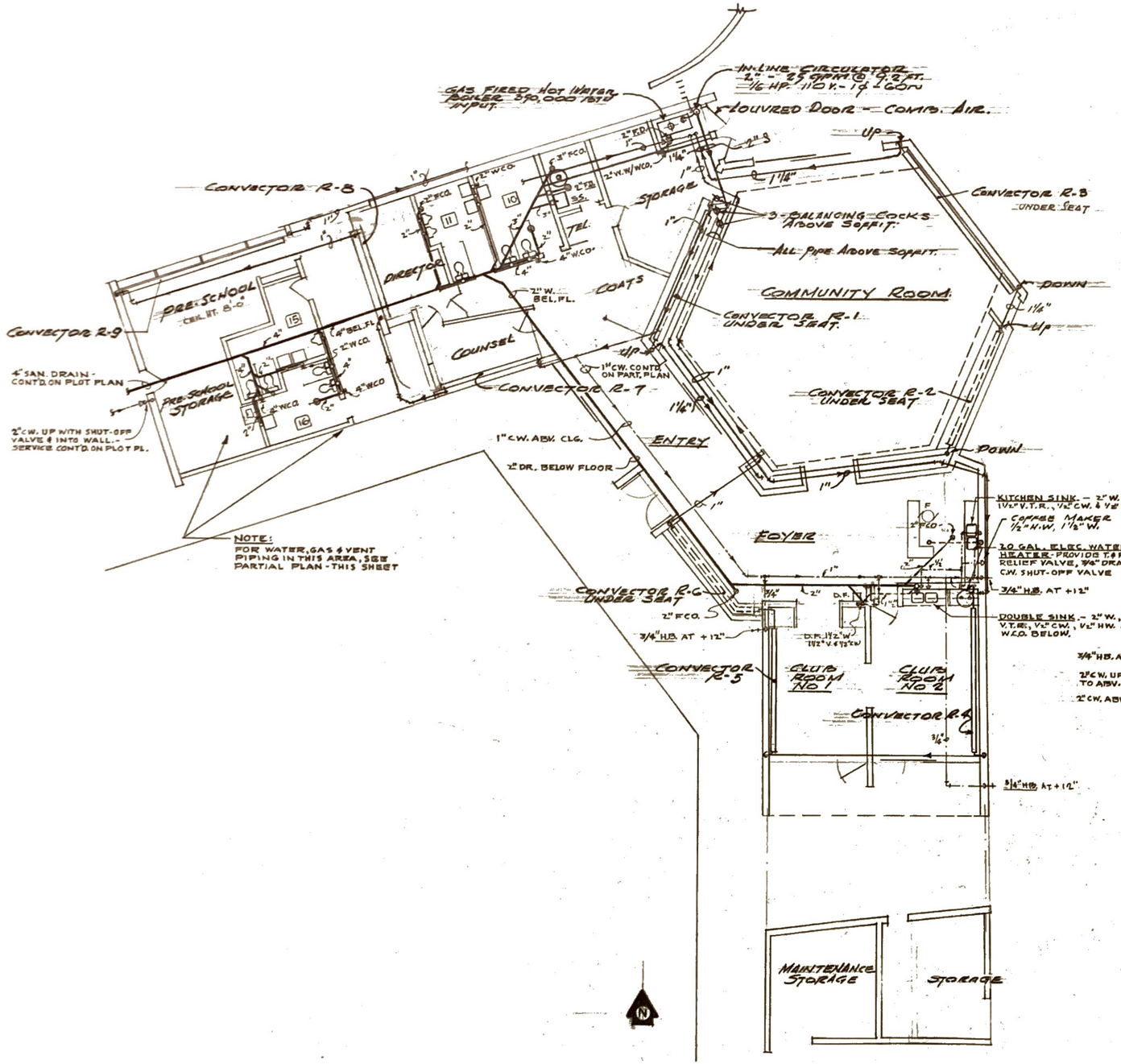
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

REVISED 7-7-54
DATED 2-2-54
Job No. 505

17

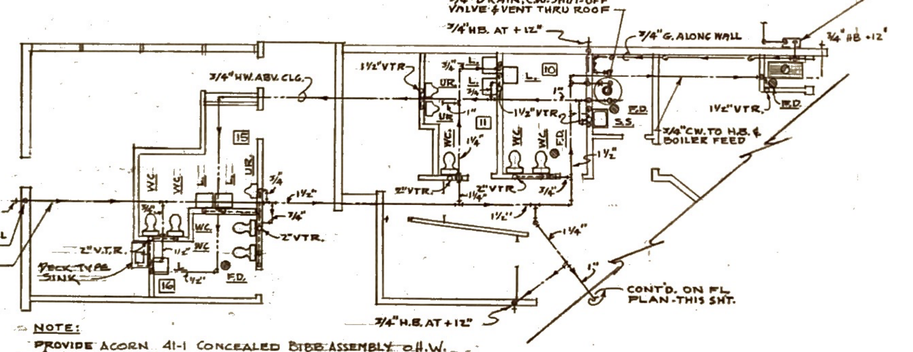
000006 554 A 1

554 A 1



HEATING, VENTILATION, AND PLUMBING
BUILDING FLOOR PLAN.
SCALE: 1/8"=1'-0"

CONVECTOR	BTU/LIN. FT.	LIN. FT.	BTU/HR.	CIRCUIT	TYPE
R-1	1890	18	34,020	A	
R-2	1890	16	30,240	A	
R-3	1890	23	43,470	A	
R-4	1260	18	22,600	B	
R-5	1260	17	21,340	B	
R-6	1890	16	30,240	B	
R-7	1260	10	12,600	C	
R-8	1260	10	12,600	C	
R-9	1260	20	25200	C	



NOTE:
PROVIDE ACORN 41-1 CONCEALED BIBB ASSEMBLY o/H.W. & C.W. BELOW ONE LAVATORY IN EACH TOILET RM. (4 TOIL. ROOMS)
NOTE: NO H.W. IN LAV'S OF TOIL. ROOMS 15 & 16

WATER, GAS & VENT PIPING ONLY

PARTIAL FLOOR PLAN

SCALE: 1/8"=1'-0"

SYMBOLS

ABB.	SYMBOL	DESCRIPTION
D or W	———	DRAIN OR WASTE
V	- - - - -	VENT
C.W.	—·—·—	COLD WATER
H.W.	—··—··—	HOT WATER
G.	—G—	GAS
F.C.O.	⊘	FLOOR CLEAN-OUT
W.C.O.	—|	WALL CLEAN-OUT
H.B.	+ H.B.	HOSE BIBB
F.	⌀	FAN, 150 CFM AT 1/4" STATIC PRESS.

PLUMBING FIXTURE & EQUIPT. SCHEDULE

ABB.	FIXTURE	WASTE	VENT	C.W.	H.W.	DESCRIPTION
W.C.	WATER CLOS.	4"	2"	1/2"	—	
L.	LAVATORY	1 1/2"	1 1/2"	1/2"	1/2"	
U.R.	URINAL	2"	1 1/2"	3/4"	—	STALL FL. MTD.
S.S.	SERVICE SINK	3"	1 1/2"	1/2"	1/2"	
K.S.	KITCHEN SINK	2"	1 1/2"	1/2"	1/2"	
D.F.	DRINKING FOUNT.	1 1/2"	1 1/2"	1/2"	—	
F.D.	FLOOR DRAIN	2"	1 1/2"	—	—	
G.W.H.	GAS WATER HTR.	—	3"	1"	1"	28 CFH.
E.W.H.	ELEC. " "	—	—	3/4"	3/4"	5 KW

BOARD APPROVAL STAMP
APPROVED
MAY 4 1961
BOARD OF RECREATION AND PARK COMMISSIONERS

LAS PALMAS SENIOR CITIZENS CENTER
PLUMBING AND HEATING
CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS

REV. 8-20-61
DATE 2-24-61
JOB NO. 505

18

554 A 1

ELECTRICAL FLOOR PLAN

1/8" = 1'-0"

SYMBOL LIST

- INDICATES FIXTURE TYPE, SEE FIXTURE SCHEDULE IN SPECS.
- INCANDESCENT LIGHTING OUTLET & FIXTURE, CEILING MOUNTED
- RECESSED INCANDESCENT LIGHTING FIXTURE
- INCANDESCENT LIGHTING FIXTURE WALL MOUNTED
- FLUORESCENT LIGHTING FIXTURE PENDANT MOUNTED, SEE ARCH. PLANS FOR MOUNTING HEIGHTS.
- FLUORESCENT STRIP LIGHTING FIXTURE
- RECESSED FLUORESCENT LIGHTING FIXTURE
- RECESSED INCANDESCENT LIGHTING FIXTURE
- FLOODLIGHT, WALL MOUNTED
- TELEPHONE OUTLET
- PUBLIC ADDRESS SPEAKER OUTLET
- MICROPHONE OUTLET
- MOTOR OUTLET
- DUPLEX RECEPTACLE, MOUNTED FLUSH IN WALL AT +12", GROUNDING TYPE; HUBBELL #5262-I, EQUAL BY ARROW-HART, BRYANT, SIERRA, CH.B.
- JUNCTION BOX, CEILING MOUNTED
- JUNCTION BOX, WALL MOUNTED
- TOGGLE SWITCH, QUIETTE TYPE; ARROW-HART # 1891-I, EQUAL BY BRYANT, CH.B., HUBBELL, SIERRA
- CLOCK, CROWN # C-325, 15" SATIN BRASS FRONT, RECESS. BOX
- MANUAL MOTOR STARTING SWITCH WITH THERMAL OVERLOAD, W.P. AT MOTOR.
- 1/2"C-2#12 IN CEILING OR WALL
- 1/2"C-3#12
- 3/4"C-4#12
- 3/4"C-5#12
- CONDUIT RUN TO PANEL
- CONDUIT RUN IN OR UNDER FLOOR OR BELOW GRADE
- CONDUIT RUN EXPOSED
- WALL MOUNTED EXIT LIGHTING FIXTURE
- MOMENTARY "ON" "OFF" PUSH BUTTON FOR CONTACTOR OPERATION, FLUSH MOUNTED.

"A"

		ΦA	ΦB	
4	COMMUNITY RM.	800		1-20
10			1100	
7		1240		
9			980	
27	COVE LTG.	1300		
5	RECEPTACLES	1000		
5	TOIL. COAT RMS.	1000		
7	SPARE	500		
4	PATIO FLOODS	850		
7	OUTSIDE LTG.	1320		
4	PATIO LTG.	780		
7	OUTSIDE LTG.	1320		
1	TIME CLOCK	500		
6	RECEPTS.	720		
7	DIR. COUNCIL, JAN.	500		
5	RECEPTS.	900		
	WINDOW MOTOR	500		
	HAND DRYER	1440		2-20
	SPARE	500		1-20
	SEE CKT #18	1440		2-20
	HAND DRYER	1440		2-20
	SPARE	500		1-20
	SEE CKT #21	1440		
	SPARE	500		1-20
	23,900W.	11,870	11,900	

SPLIT BUS ON CONTACTOR 60A, 2P, ASCO BUL 920 MT. ON WALL NR. PANEL. PUSH BUTTON IN DIR. OFF.

CIRCUITS #10, 11, 12 SHALL BE TIME CLOCK CONTROLLED

"B"

		ΦA	ΦB	
3	FOYER	700		1-20
4	CLUB RM #2	1160		
7	FOYER		1380	
5	CLUB RM #1		900	
5	FOYER	900		
	SPARE	500		
4	STO. RMS.		800	
7	RECEPTS.		1200	1-20
	RANGE EXH.	600		2-20
	RANGE	1075		1-20
	REFRIG. WASH'R	700		—
	SEE CKT #10		1075	2-20
	WATER HTR	1400		—
	SPACE	—		—
	SEE CKT #19		1400	—
	SPACE	—		—
		—	—	—
		—	—	—
		15,850	8510	7340

SPLIT BUS ON CONTACTOR 30A-2P ASCO BUL 8922, MT. CONTACTOR IN PANEL "B" BEHIND DOOR.

FLOOR STANDING COMB. SERVICE & DISTRIBUTION SWITCHBOARD

120/240V. SERVICE 4 WIRE MAINS

4" CONDT. STUB

PULL SECTION

400A. FRAME 200A. FUSE

400A. BUS

225 AF/125 AT | 100 AF/90 AT | 100A. SPACE

2"C-3#1/0

1"C-3#12

TIME CLOCK 24-HR. SINGLE THROW

CONTACTOR IN PANEL

PANEL "A"

PANEL "B"

SINGLE LINE DIAGRAM

GENERAL NOTES

1. ALL FLUORESCENT FIXTURES SHALL HAVE H.P.F. RAPID START BALLASTS.
2. ALL RECESSED FIXTURES SHALL BE COMPLETE WITH ATTACHED PULL BOXES & PLASTER RINGS WHERE REQUIRED.
3. FLUORESCENT LAMPS SHALL BE WARM WHITE.

LAS PALMAS SENIOR CITIZENS CENTER

BOARD Approval STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

ELECTRICAL

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

REV. 8-28-61
DATE 2-7-61
JOB NO. 5505

19

000004 554 A 1

554 A 1

L.A. WATER D. - 12" - 22' S.N.

M.H.

8" SEWER

M.H.

FRANKLIN AVENUE

6" SEWER

L.A. GAS 4" 23' N.S.

L.A.W.D. 6" 17' N.S. (ABANDONED)

UTILITY Co. POLE

USE STEEL ON POLE & TERMINATE PER UTILITY CO. REQUIREMENTS; VERIFY EXACT LOCATION IN FIELD

2" TEARRITE OR 1½" STEEL PIT SERVICE

4" TEARRITE ELECTRIC SERVICE

4" STEEL, STUB BEYOND BLDG. & CAP

PATIO

GAS METER (SEE DETAIL 5 - G.C. GAS (G))

SWITCHBOARD

PT. BACKBOARD 4'-0" x 8'-0" PLYWD.

BUILDING

L.A.G.& E. 23' N.E.

SURFACE CLEANOUT

CONNECT TO STREET SEWER

3"G.W.

10

12

WATER METER BOX

1/4 @ 12 FDR CONTIN. PIER ELECT. FLOOR PLAN

LAS PALMAS AVENUE

L.A.W.D. 4" 22½' E.W.

L.A.W.D. 8" 25' E.W.

8" SEWER

MH

PATIO

STORAGE

OUTDOOR COURTS

DRIVE WAY

PARKING

UTILITY PLOT PLAN

SCALE: 1" = 20'

LAS PALMAS SENIOR CITIZENS CENTER

1822 LAS PALMAS AVE. HOLLYWOOD

A 1957 BOND FUND PROJECT

DEPARTMENT OF RECREATION AND PARKS

CITY OF LOS ANGELES

CARL B. TROEDSSON - ARCHITECT - 501 S. BOYLSTON, LOS ANGELES

CONTRACTOR'S NAME AND ADDRESS

6'-0"

1'-0"

2x4 SPACER

BACKGROUND COL. B

1'-0"

¾"

4'-8" EXT. PLYWOOD ¾"

1x2 TRIM

2x4 SPACER

2x6

2x6

OPEN

BLACK

BLACK

21'-0"

33'-9"

BLACK

2"

2"

1'

COLOR CHART: SEE D'WG 6
STYLE OF LETTERS: SAME AS CAPTION OF D'WG 1.
BLACK LETTERS

NOTE:
COLORS FOR SIGN TO BE COLOR COMBINATION USED FOR BUILDING PROJECT.

PROJECT SIGN
¾"=1'-0"

2x6 NEW SCREEN TO PL.

WELD PL. TO TEE

½" BOLT

2x6

2½" pipe

2x6 VERT. R.W.

pipe

2x8 R.W.

SECTION

½" BOLT

2x6

4'-6"

3"

1'-0"

6"

6"

4"

4"

4
20

FENCE AT TRASH CANS

3/20

1½"

½"x8" BOLT GALV. SET IN WALL

½"x8" GALV. BOLT SET IN WALL

2/20

EVEN NUMBER OPENINGS

CRIMP ALL CORNERS

5"

½" GALV. BOLTS W. GALV. WASHERS TSK & PLUGGED

4½"

EQUAL SPACES 3" (±)

3x8 FRAME

2x4

2x6

ALL R.W. CL. HEART

2/20

SCALE: 1½"=1'-0"

2/20

3/20

WOOD FENCE IN BLOCK GARDEN WALL

9/17

2" PIPE RAIL JOINTS WELD & GRIND SMOOTH

EL. 411

EL. 410.46

8" 12" 12" 12" 12" 12"

6 RISERS @ 6" (±)

2'-6"

SEESAW JOINTS EVERY 3'0 VERT. RAKED 3/8

LEAVE OPEN JOINT FOR WEEP HOLE

1'-0"

PRESENT GRADE

PRESENT BRICK WALL

3 FOOT OPEN

PRESENT GRADE

ELEV. OF EAST END OF WALL

SECTION

1/20

SCALE: 1½"=1'-0"

N

½" GALV. IN SLEEVE W. POCKET

1'-1"

STEPS OF NORMAN FACE BRICK RUBBLE SIDE UP LIGHT RED L.A. BRICK

PLAN OF RAILING & STEPS

LAS PALMAS SENIOR CITIZENS CENTER

BOARD APPROVAL STAMP

APPROVED

MAY 4 1961

BOARD OF RECREATION AND PARK COMMISSIONERS

UTILITY PLAN & MISCELLANEOUS DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

DRW. B. Jones
DATE 2-7-61
JOB NO. 505

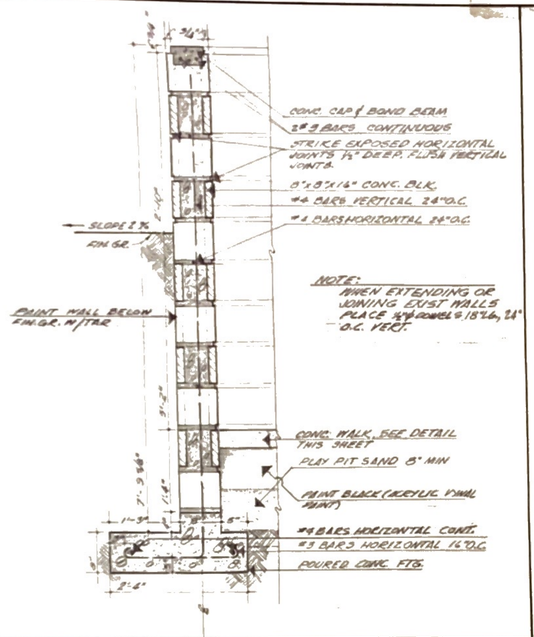
PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES

20

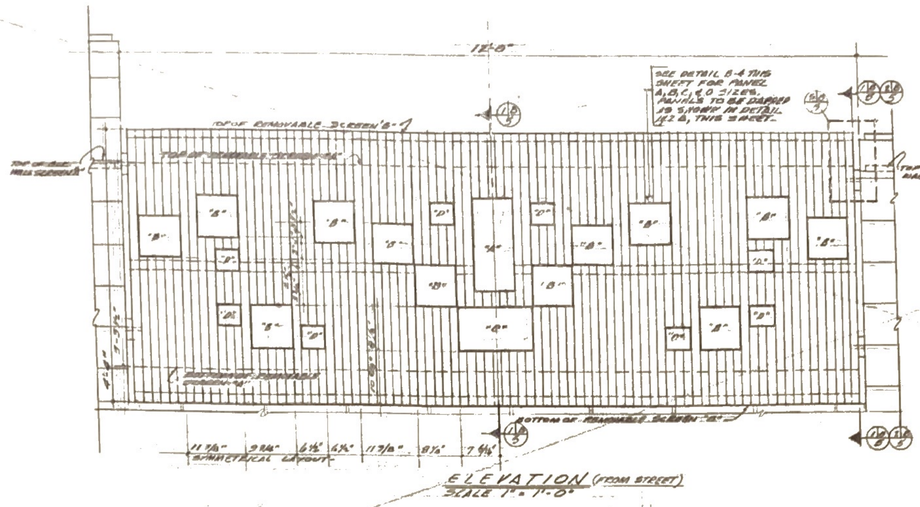
000003 551 A 1

RECORD DRAWINGS
1963

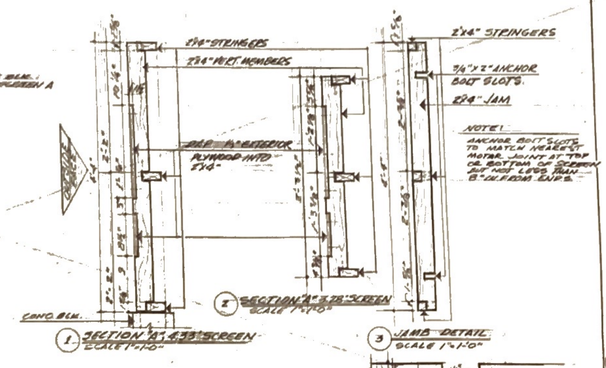
554 L



A CONCRETE BLOCK WALL (TYPICAL)
SCALE 1" = 1'-0"

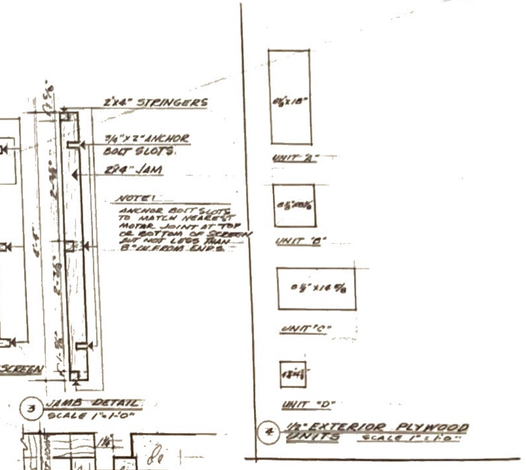


ELEVATION (FROM STREET)
SCALE 1" = 1'-0"

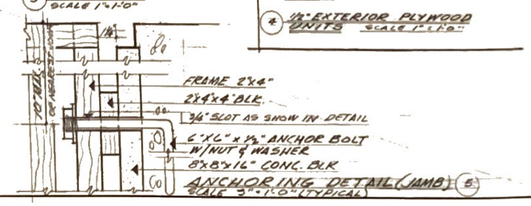


1 SECTION "A" & "B" SCREEN
SCALE 1"=1'0"

2 SECTION "A" & "B" SCREEN
SCALE 1"=1'0"



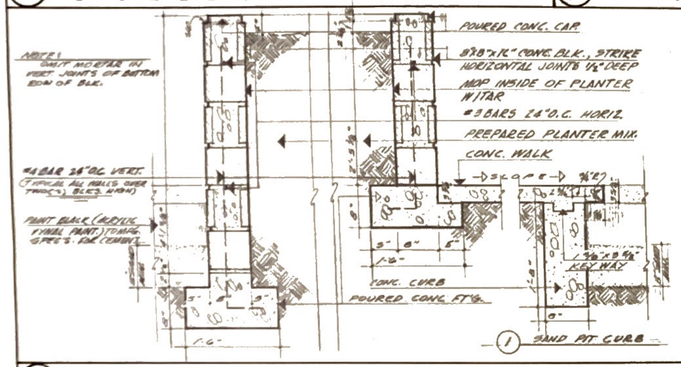
4 ¾" EXTERIOR PLYWOOD UNITS SCALE 1"=1'0"



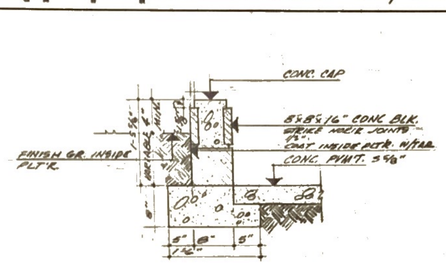
3 JAMB DETAIL
SCALE 1"=1'-0"

ANCHORING DETAIL (JAMB) 5
SCALE 3"=1'-0" (TYPICAL)

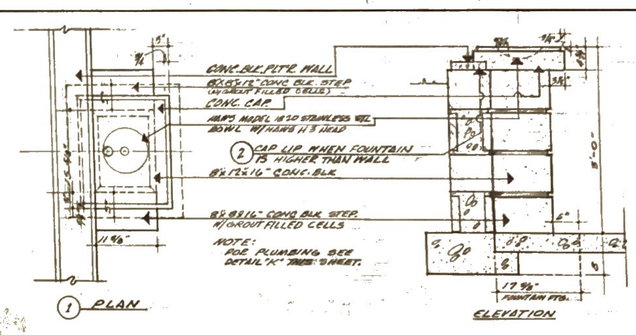
B REMOVABLE WOODEN SCREEN "A" & "B" DETAILS SCALE AS SHOWN



C PLANTER WALL AND SAND PIT CURB SECTION SCALE 1"=1'-0"



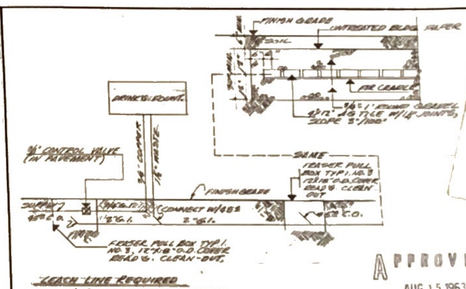
D SECTION PLANTER WALL SCALE 1"=1'-0"



1 PLAN

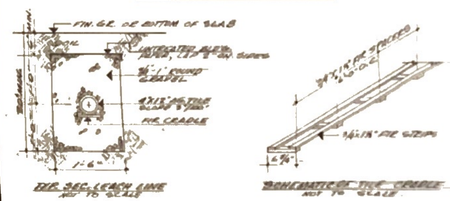
ELEVATION

E DRINKING FOUNTAIN DETAILS SCALE 1"=1'-0"

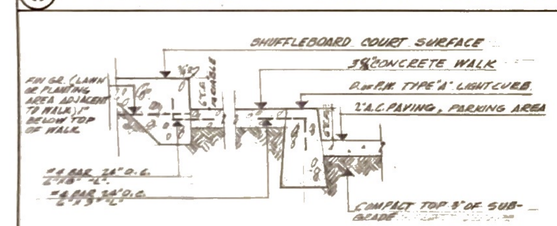


APPROVED
AUG 15 1963
BOARD OF RECREATION AND PARK COMMISSION

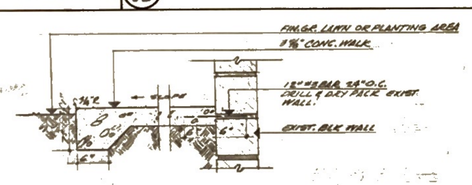
PLUMBING SCHEMATIC



K TYPICAL DRINKING FOUNTAIN INSTALLATION

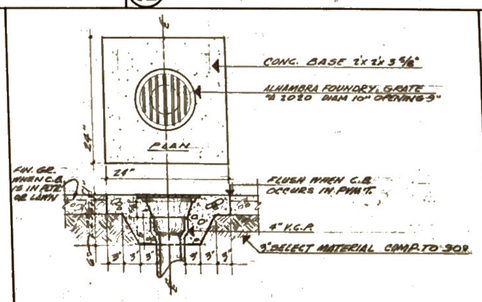


1 WALK AND CURB ADJACENT TO SHUFFLEBOARD COURTS

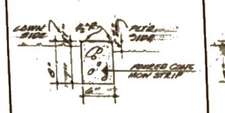


2 CURB AT WALK ADJACENT TO EXIST. BLK. WALL

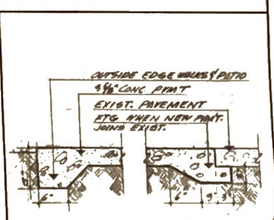
F WALK AND CURB DETAILS SCALE 1"=1'-0"



G TYPICAL CATCH BASIN DETAIL SCALE 1"=1'-0"



H TYPICAL CONCRETE MOWING STRIP



J TYP. WALK & PATIO PAVING DETAILS

CONSTRUCTION DETAILS
LAS PALMAS RECREATION CENTER
1672 LAS PALMAS AVENUE, HOLLYWOOD, CALIF.

DEPARTMENT OF RECREATION AND PARKS
PLANNING & ENGINEERING DIVISION
CITY OF LOS ANGELES CALIFORNIA

SUPT. OF PARK DEVELOPMENT
SUPT. OF RECREATION
SUPT. OF ADMINISTRATION
GENERAL MANAGER

REFERENCES
SUBMITTED BY
DESIGNED BY
DRAWN BY
CHECKED BY A.R.
DATE FEB. 1963

REVISIONS DATE

000433

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

554 L 1

554 L I

COMMUNITY BLDG.

STORAGE ROOM

PRE-SCHOOL CLASS ROOM

SHUFFLEBOARD COURTS

CONC. RAMP

EX. CONC. WALK

EX. CONC. PATIO

2" A.C. PARKING LOT

RIDGE LEVEL

FR. CONC. SLAB

EX. SIDEWALK

EX. CURB & GUTTER

EX. CONC. CURB WALL

EX. CHAIN LINK FENCE

EX. ROUTED SIGN

EX. GAS METER RELOCATED

EXTERIOR PLASTER FINISH

GRANITE

REMOVE EX. PLAY EQUIPMENT ON THIS AREA

REMOVE EX. TREE

REMOVE EX. PLANTER TO BE REMOVED

CONSTRUCT STD. DRWY., DWY. APR. STD. PLAN D-14817, CASE "E" X=3' Y=6' W=20'.

CONSTRUCT DWY. APR. TYPE A LIGHT CURB STD. PLAN B-3462

CONST. DWY. APR. CATCH BASIN NO. 28, STD. PLAN NO. B-2458

7'X7' CONC. SLAB

CONC. CURB PAINT

CONC. MOWING STRIP

CONC. HEADER STRIP

CONC. APRON STRIP

CONC. ROLL CURB

CONC. WALK

CONC. RAMP

CONC. PLANTER

CONC. PAVEMENT

CONC. SPECIFICATIONS

CONC. STANDARD

CONC. TOP OF CURB

CONC. TOP OF CATCH BASIN

CONC. TOP OF WALL

CONC. VITRIFIED CLAY PIPE

CONC. WITH

CONC. INVERT EL.

CONC. FLOW LINE

CONC. FINISH PAVEMENT

CONC. GRADE

CONC. HEIGHT

CONC. MAN HOLE

CONC. NUMBER

CONC. PLANTER

CONC. PAVEMENT

CONC. SPECIFICATIONS

CONC. STANDARD

CONC. TOP OF CURB

CONC. TOP OF CATCH BASIN

CONC. TOP OF WALL

CONC. VITRIFIED CLAY PIPE

CONC. WITH

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE
BLK.	BLOCK
T.H.	TOP OF HEADER
B.W.	BOTTOM OF WALL
C.F.	CURB FACE
C.O.	CLEAN OUT
CONC.	CONCRETE
CONST.	CONSTRUCT
Dep't APR.	DEPARTMENT OF PUBLIC WORKS
DEPR'T.	DEPARTMENT
EL.	ELEVATION
EX.	EXISTING
F.G.	FINISH GRADE
F.L.	FLOW LINE
F.P.	FINISH PAVEMENT
GR.	GRADE
HGT.	HEIGHT
M.H.	MAN HOLE
NO.	NUMBER
PLTR.	PLANTER
PVM'T.	PAVEMENT
SPEC'S.	SPECIFICATIONS
STD.	STANDARD
T.C.	TOP OF CURB
T.C.B.	TOP OF CATCH BASIN
T.W.	TOP OF WALL
V.C.P.	VITRIFIED CLAY PIPE
W/	WITH

INDEX TO DRAWINGS

SHEET NO.	TITLE
1	GRADING AND SITE CLEARANCE PLAN
2	DIMENSION AND PAVING PLAN
3	WATER SYSTEM
4	LANDSCAPE PLAN & PLAY EQUIPMENT LOCATION
5	CONSTRUCTION DETAILS
6	CONSTRUCTION DETAILS

LEGEND

- EXISTING TREE
- CLEAN OUT
- CATCH BASIN
- PROPOSED CONCRETE WORK
- PROPOSED CONTOURS — 107
- UNDERGROUND DRAIN — 4" D.D.
- DIRECTION OF FLOW SURFACE DRAINAGE

NORTH
SCALE 1"=10'

APPROVED
AUG 15 1963
BOARD OF RECREATION AND PARK COMMISSIONERS

GRADING AND SITE CLEARANCE PLAN

LAS PALMAS RECREATION CENTER
1822 LAS PALMAS AVENUE, HOLLYWOOD, CALIF.

DEPARTMENT OF RECREATION AND PARKS
PLANNING & ENGINEERING DIVISION
CITY OF LOS ANGELES CALIFORNIA

REFERENCES	DESIGNED BY	REVISIONS	DATE	SHEET
SUBMITTED BY	DRAWN BY			1
	CHECKED BY			
	DATE FEB 1963			

554 L I

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

554 L 1

PLANT LIST				
QUANTITY	SIZE	BOTANICAL NAME	COMMON NAME	REMARKS
2	5-GAL.	CALLISTEMON LANCEOLATUS	LEMON BOTTLE BRUSH	TREE FORM, STAKE
4	5-GAL.	ACROCARPUS FRAXINIFOLIUS	"PINK CEDAR"	STAKE (SINGLE)
3	5-GAL.	JACARANDA ACUTIFOLIA	JACARANDA	STAKE (3 INCHES)
6	5-GAL.	ALBIZZIA JULIBRISSIN	SILK TREE	GUY
3	5-GAL.	PINUS CANARIENSIS	CANARY ISLAND PINE	STAKE (SINGLE)
1	5-GAL.	PODOCARPUS MACROPHYLLA	YEW PINE	STAKE (SPECIMEN)
3	5-GAL.	PYRUS KAWAKAMI	EVERGREEN PEAR	ESPALIER
1	5-GAL.	ARALIA ELEGANTISSIMA	DIZGOTHECA	SPECIMEN-FULL
8	5-GAL.	PHORMIUM TENAX	NEW ZEALAND FLAX	BRONZE
FLATS		AJUGA REPTANS	CARPET BUGLE	BRONZE
FLATS	R.C.	HEDERA HELIX HAHNI	HAHNS IVY	
	4" POTS	OPHIOPOGON JAPONICUS	MONDO GRASS	
	R.C.	VINCA MAJOR	PERIWINKLE MYRTLE	
3	1-GAL	SOLANDRA GUTTATA	CUP OF GOLD	VINE, ATTACH TO WALL

APPROVED
AUG 15 1963
BOARD OF RECREATION AND PARK COMMISSIONERS

LANDSCAPE PLAN & PLAY EQUIPMENT LOCA
LAS PALMAS RECREATION CENTE
1823 LAS PALMAS AVENUE, HOLLYWOOD, CALIF.

DEPT. OF PARK DEVELOPMENT
DEPT. OF RECREATION
DEPT. OF ADMINISTRATION
GENERAL MANAGER

DEPARTMENT OF RECREATION AND PARKS
PLANNING & ENGINEERING DIVISION
CITY OF LOS ANGELES CALIFORNIA

REFERENCES
SUBMITTED BY
DESIGNED BY CL
DRAWN BY
CHECKED BY AA
DATE FEB 1963
REVISIONS
DATE
000034

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

554 L 1

554 L 1

EXIST. BRICK WALL

CONC. BLK. WALL (EXIST. PTN'S BLK'S)

CONC. BLK. PLANTER WALL

CATCH BASIN

EXIST. COMMUNITY BLDG.

PATIO (EXIST.)

EXIST. COVERED PATIO

STORAGE (EXIST.)

COVERED WALK (EXIST.)

6 SHUFFLEBOARD COURT DETAIL 'E'

CURB, WALK & COURT.

DRINKING FOUNTAIN & INSTALLATION DETAIL

EXIST. CONC. BLK. WALL

CONC. BLK. WALL

CONC. RAMP

CONC. MOWING STRIP

CONC. PAVING

CURB ONLY FLUSH W/WALK

4-BENCHES

SAND PIT CURB

REMOVABLE RUSTAKE FENCE

CURB

PRE-SCHOOL

CY. CONC. PVMT.

EXIST. CONC. WALK (EXIST.)

EXIST. CONC. SIDEWALK

EXIST. 6'-0" CHAIN LINK FENCE

EXIST. 6'-0" CHAIN LINK FENCE (PAINTED GUNITE BOX SHAPE)

EXIST. 6'-0" C.L. FENCE & CONC. WALL

LIMIT CURB

DRIVEWAY

FRANKLIN AVE.

LAS PALMAS AVE.

PLAN

NORTH

SCALE: 1/16" = 1'-0"

CONC. BLK. WALL

2" I.D. GAL. STL. PIPE

STRETCHER BAR

RUSTAKE FENCING 11'-8"O.C.

HOOK BOLTS FOUR (4) (SPACED AS SHOWN)

FENCE 4'-6" HIGH (1)

CONC. BLK. WALL

2" I.D. GAL. STL. PIPE

STRETCHER BAR

RUSTAKE FENCING 11'-8"O.C.

HOOK BOLTS THREE (3) (SPACED AS SHOWN)

FENCE 3'-3½" HIGH (2)

(A) REMOVABLE RUSTAKE FENCE DETAILS — SCALE 1/4"=1'-0"

1" RADIUS

POURED CONC. CURB

(B) CURB DETAIL — SCALE 1"=1'-0"

APPROVED

AUG 15 1963

BOARD OF RECREATION AND PARK COMMISSIONERS

DIMENSION AND PAVING PLAN

LAS PALMAS RECREATION CENTER

1820 LAS PALMAS AVENUE, HOLLYWOOD, CALIF.

DEPARTMENT OF RECREATION AND PARKS

PLANNING & ENGINEERING DIVISION

CITY OF LOS ANGELES CALIFORNIA

SUPT. OF PARK DEVELOPMENT

SUPT. OF RECREATION

SUPT. OF ADMINISTRATION

GENERAL MANAGER

REFERENCES

SUBMITTED BY

DESIGNED BY

DRAWN BY

CHECKED BY A.F.

DATE FEB 1963

REVISIONS DATE

000036

JOB NO. 473

FILE NO. 468

SHEET 2 OF

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

554 L 1

554 W 2

EXIST. COMMUNITY BLDG.

EXIST. PATIO

EXIST. STORAGE RM.

EXIST. WALK

EXIST. WALK

EXIST. PRE-SCHOOL RM.

EXIST. PLANT

EXIST. CONCRETE WALK

EXIST. CONCRETE WALK

EXIST. SIDEWALK

EXIST. SIDEWALK

FRANKLIN AVE.

LOS PALMAS AVE.

2" METER

1" VALVE

2" DOMESTIC

¾" DOMESTIC

¾" GATE VALVE IN CONC. BOX

Rain Jic 62 C

Rain Jic 315 C

NOTE: ALL HOSE BIBBS TO BE CONVERTED TO POST VACUUM, THREAD ADAPTOR FOR CHARITY UNCT.

NORTH
SCALE 1" = 10'

SCOPE OF WORK
MOVE 2 - ¾" CONTROL VALVES IN 2 - ¾" SWING JOINTS TO PROPER EXISTING EXIST. PLANTING BOX CURB
RELOCATE 1 - ¾" QUICK COUPLING VALVE

LEGEND
- S Rain Jic No. 315C
- ▽ Rain Jic No. 62C
- • Buckner No. 13 LT quick coupling valve
- ▲ Moody A1-S
- ×V V Moody A1-10-F-H-Q
  Installer to furnish 4 couplers for quick coupling valves
  Use Rain Jic flow adjusters if needed
  Adjust sprinklers to give best coverage

SHOWN IN WRONG LOCATION

MOVE 1 QUICK COUPLER VALVE ¾" & ¾" CONTROL VALVE 3' SOUTH IN CVV BOX

MOVE TO THIS POSITION

MOVE TO THIS POSITION

PLANTING EXIST.

LOS PALMAS JUNIOR CENTER
DEPARTMENT OF RECREATION AND PARKS
PLANNING & ENGINEERING DIVISION
CITY OF LOS ANGELES, CALIFORNIA
W.O. # 7690
DATE 7-64

APPROVED
AUG 19 1963
BOARD OF RECREATION AND PARK COMMISSIONERS

WATER SYSTEM
LOS PALMAS RECREATION CENTER
1892 LOS PALMAS AVENUE, HOLLYWOOD, CALIF.

DEPARTMENT OF RECREATION AND PARKS
PLANNING & ENGINEERING DIVISION
CITY OF LOS ANGELES CALIFORNIA

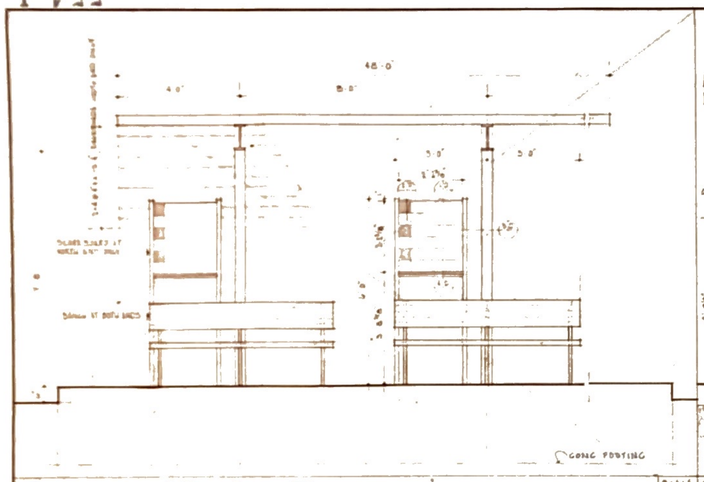
DEPT. OF PARK DEVELOPMENT
DEPT. OF RECREATION
DEPT. OF ADMINISTRATION
GENERAL MANAGER

DESIGNED BY
DRAWN BY
TRACED BY
DATE MAR. 1963
SUBMITTED BY

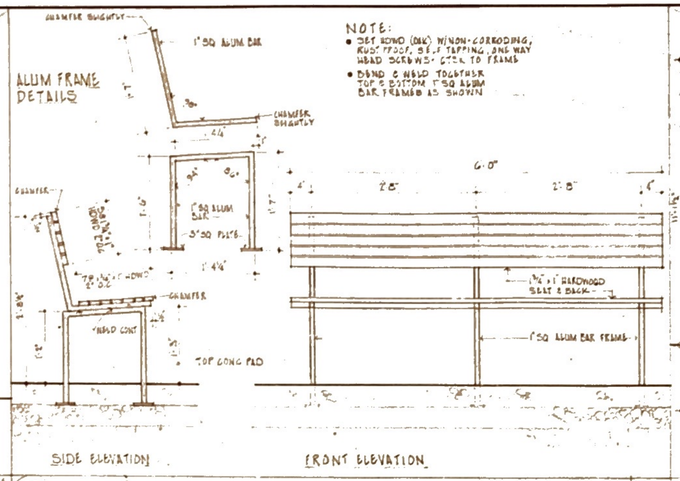
DATE
SHEET 3 OF 3 SHTS.

554 W 2

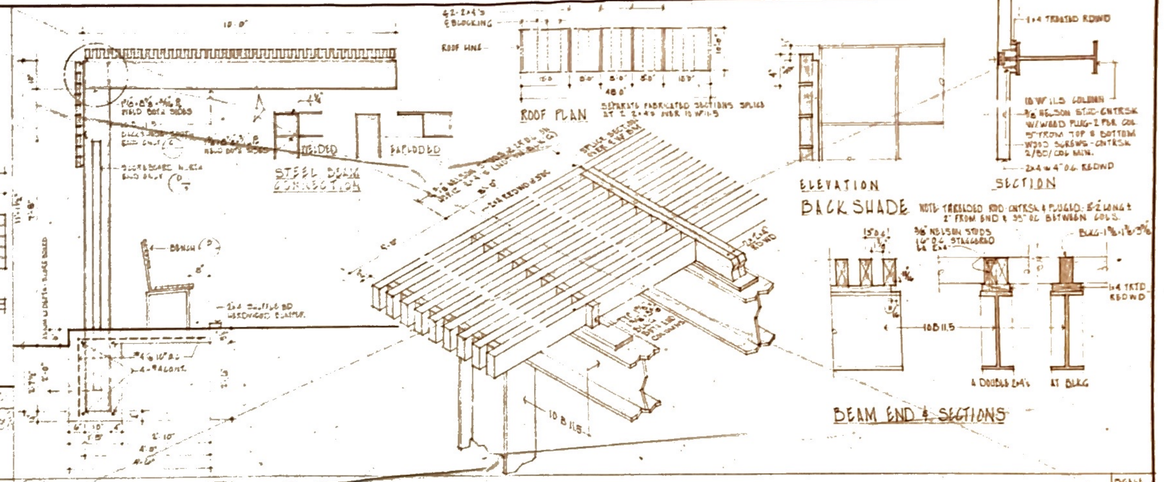
554 L 1



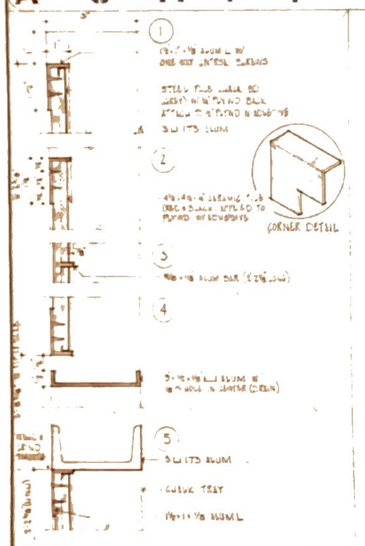
A SIDE ELEVATION



B BENCH DETAILS



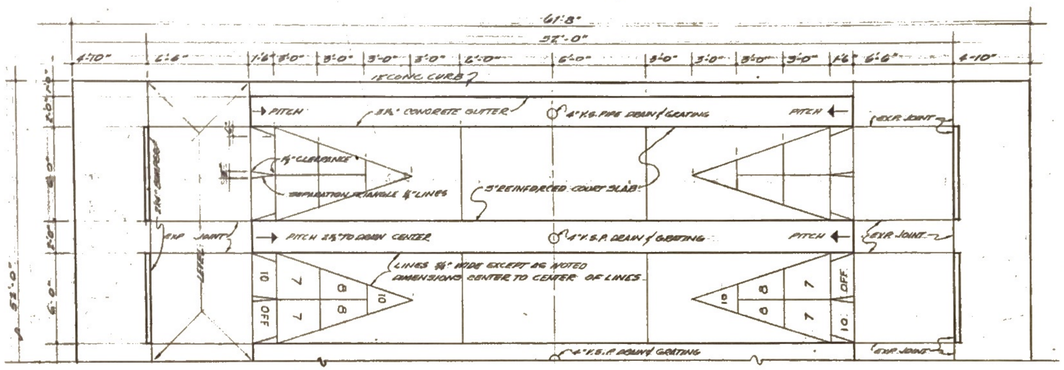
C SUNDER DETAILS



D MISCELLANEOUS DETAILS

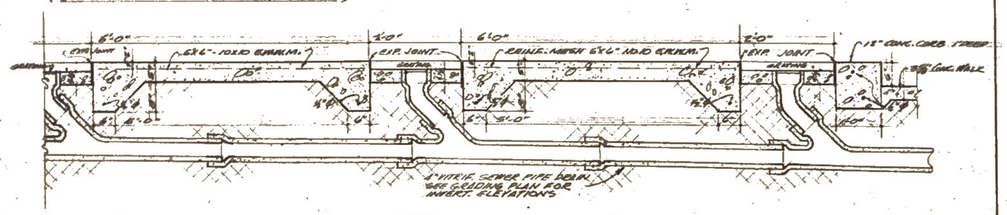
GENERAL NOTES

- SOILS
  SAND CLAYEY, LOESS 1000 LBS/SQ FT BEARING VALUE EXTEND FOOTINGS 1'-0" MIN BELOW NATURAL GRADE
- CONCRETE
  GRADE "C" 2000 PSI @ 28 DAYS - MAX 1½" AGG - MAX WATER 7.5 GAL/SACK PORTLAND CEMENT CEMENT TO CONFORM TO ASTM C 150 AGG TO ASTM C33-44
- REINFORCING
  ALL STRUCTURAL STEEL WELDING TO BE PERFORMED BY AN EXPERT CERTIFIED WELDERS.
- LUMBER
  ALL EXPOSED SHEATHING SHALL BE SELECT HEART REDWOOD, SURFACE & EDGE TO BE SANDED SMOOTH. ALL REDWOOD TO BE DOUGLAS GRADE.
- PAINT

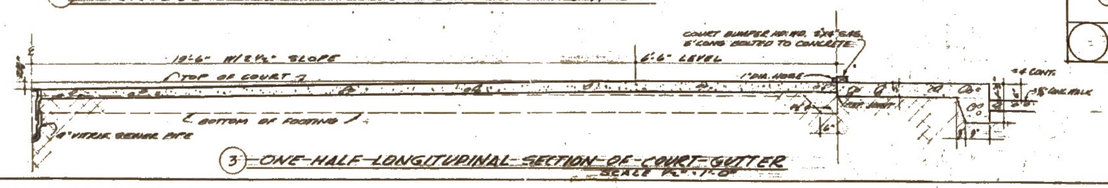


1 PLAN OF SHUFFLEBOARD COURTS SCALE ⅛" = 1'-0"
(6 - C O U R T S - R E Q U I R E D)

NOTE:
SEE SPECIFICATIONS FOR COURT LINE PAINT.

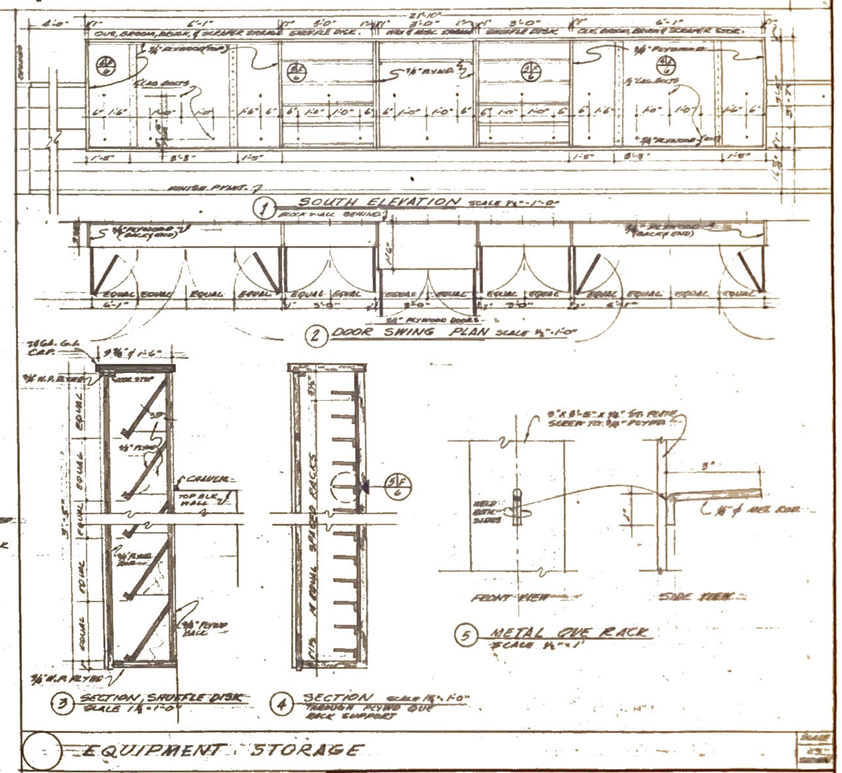


2 CROSS-SECTION THRU COURTS SCALE ½" = 1'-0"



3 ONE-HALF LONGITUDINAL SECTION OF COURT GUTTER
SCALE ½" = 1'-0"

E SHUFFLEBOAD COURT DETAILS SCALE AS INDICATED.



EQUIPMENT STORAGE

APPROVED
AUG 15 1963
BOARD OF RECREATION AND PARK COMMISSIONERS

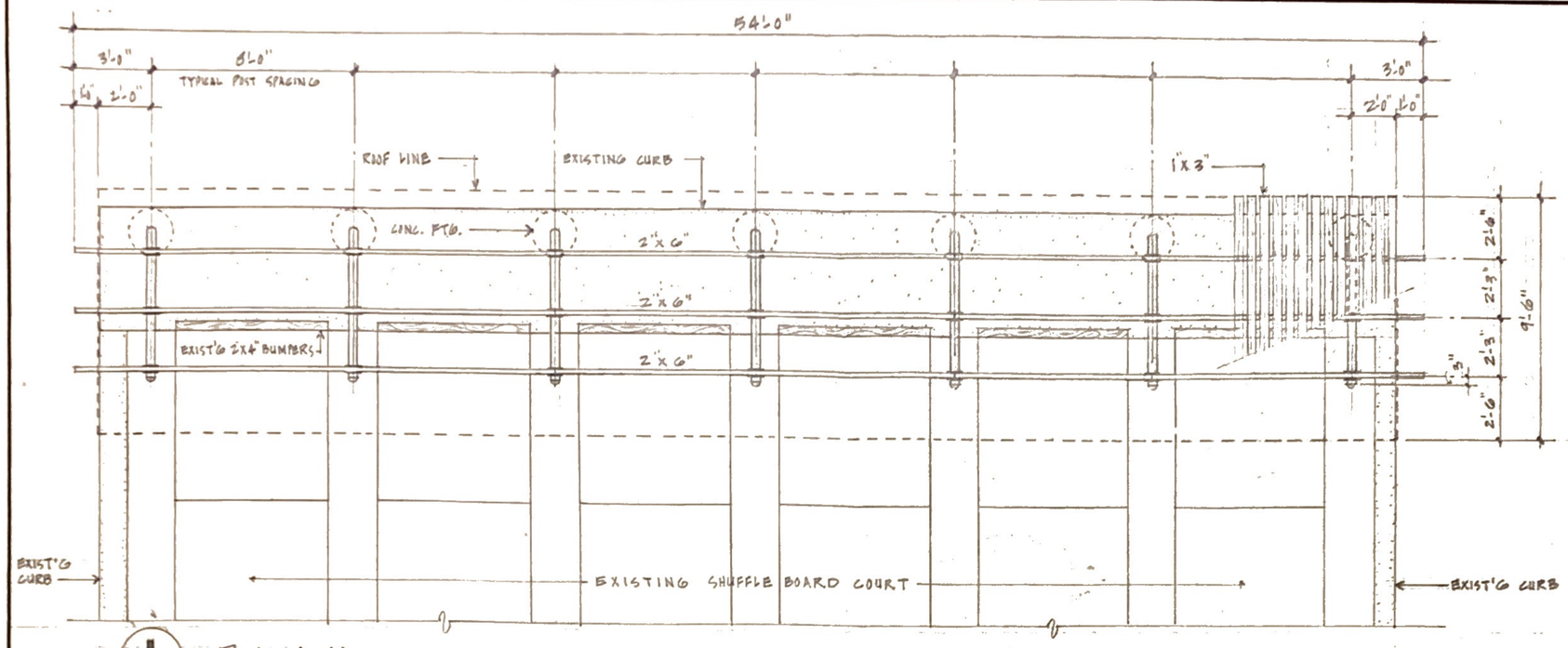
CONSTRUCTION DETAILS
LAS PALMAS RECREATION CENTER
1822 LAS PALMAS AVENUE, HOLLYWOOD, CALIF.

DEPARTMENT OF RECREATION AND PARKS
PLANNING & ENGINEERING DIVISION
CITY OF LOS ANGELES, CALIFORNIA

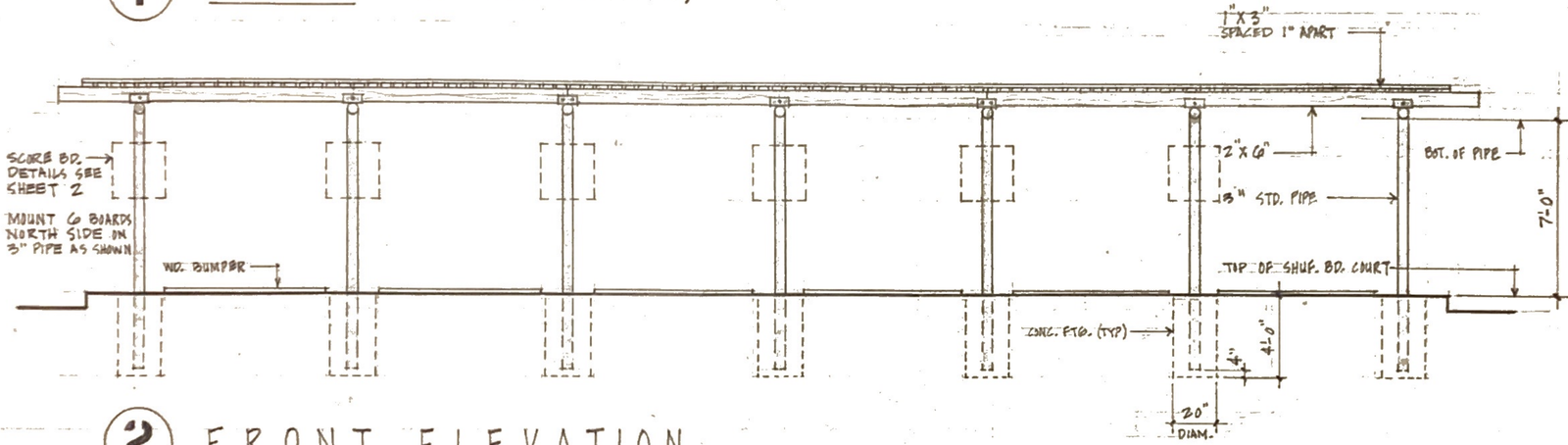
DEPT. OF PARK DEVELOPMENT
DEPT. OF RECREATION
DEPT OF ADMINISTRATION
GENERAL MANAGER
REFERENCES
SUBMITTED BY
DESIGNED BY
DRAWN BY
CHECKED BY A.R.
DATE 4-1-63
JOB NO. 4-63
FILE NO.
SHEET 6 OF 13

554 L 1

RECORD DRAWINGS
1964

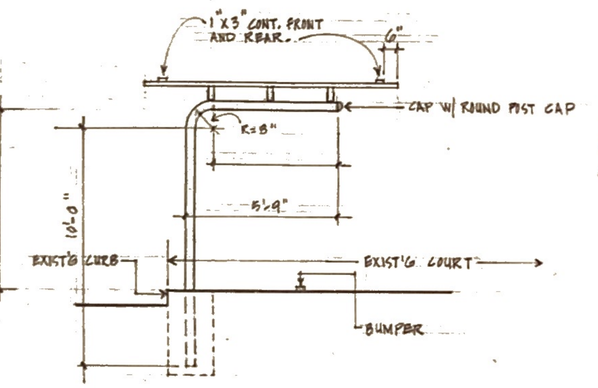


1 PLAN (TYPICAL BOTH ENDS)

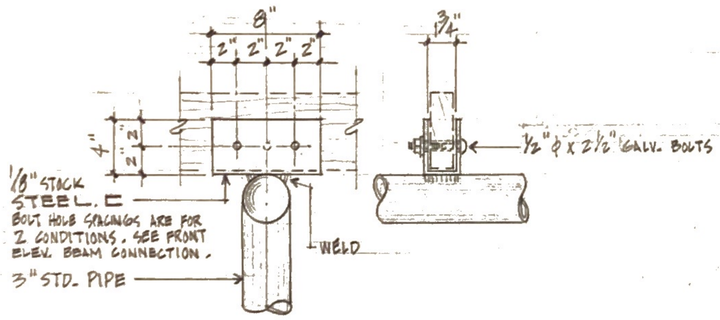


2 FRONT ELEVATION

SCALE 1/4" = 1'-0"



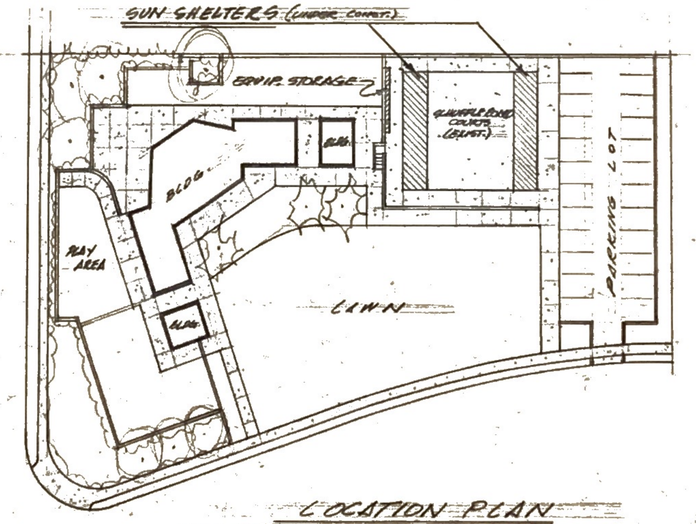
3 SIDE ELEVATION



FRONT SIDE

4 WOOD BEAM CONNECTION DETAIL

SCALE 1 1/2" = 1'-0"



LOCATION PLAN

NOT TO SCALE

GENERAL NOTES

PAINT

PAINT FOR WOOD SHALL BE TWO COATS, FIRST AND SECOND COATS SHALL BE BY SAMUEL CABOT INC. "BLEACHING OIL #241"; OR OLYMPIC STAINED PRODUCTS CO. "BLEACHTOX".

METAL

ALL METAL SHALL BE HOT DIP GALV. AFTER FABRICATION -

JOB ORDER Nº YP 7816

SUN SHELTER, SHUFFLE BOARD

PLAN, ELEVATIONS AND DETAILS

LAS PALMAS RECREATION CENTER
1822 LAS PALMAS AVE., HOLLYWOOD, CALIF.

SUPT. OF PARKS	DEPARTMENT OF RECREATION AND PARKS PLANNING & ENGINEERING DIVISION CITY OF LOS ANGELES CALIFORNIA			JOB NO.
SUPT. OF RECREATION				FILE NO.
EXECUTIVE OFFICER	REFERENCES	DESIGNED BY VIERRA DRAWN BY VIERRA	REVISIONS DATE	SHEET 1 OF 1
GENERAL MANAGER	SUBMITTED BY C Paim	CHECKED BY DATE OCT 1964	000039	

NOTE: CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

554 A 3

RECORD DRAWINGS
1976

LAS PALMAS SENIOR CITIZENS CENTER

ELECTRICAL

SHEET 1 OF 6

CABL & TROEDSSON, ARCHITECT
501 & BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS
CITY OF LOS ANGELES

REVISED 4-76
BY: DELMAR SOUTHGE
NOT ISSUED

PANEL "B" SCHEDULE

CIR NO.	O	Ø	DESCRIPTION	OUTLETS	WATTS		BRKR POLES & AMPS
1		3	POWER	700			1-20
2			CLUBS EM #2	1140			
3		7	POWER	1380			
4			CLUBS EM #1	960			
5			POWER	960			
6			SPARE	500			
7		4	510 RMS.	800			
8			RECEPTS.	1260			1-20
9			BANNER EXH.	600			
10			BANNER	1080			2-20
11			REFRIG. WATER	700			1-20
12			BASE CKT #10	1080			—
13			WATTAGE HTR	1600			2-20
14			SPARE				—
15			BASE CKT #18	1600			2-20
16			SPARE				—
17			SPARE				—
18							—
19							—
20							—
			TOTAL	8850	8510	1740	

SPLIT BUS
CU CONTACTOR
60A 2 P, 240 VAC
MT. ON WALL NR. PANEL.
PUSH BUTTON IN BLDG. OFF.

PANEL "A" SCHEDULE

CIR NO.	O	Ø	DESCRIPTION	OUTLETS	WATTS		BRKR POLES & AMPS
1		2	COMMUNITY BR	800			1-20
2			TOILET	1000			
3		5	TOILET, CONT	1000			
4			SPARE	1500			
5		6	OUTDOOR LTS	1320			1-20
6			SPARE	500			
7		1	PATIO FLOODS	960			1-20
8			SPARE	500			
9		8	RECEPTS.	900			
10			MR. COMM. ANT.	500			
11		9	RECEPTS.	720			
12			TIME CLOCK	500			
13			DUPLEX ATTN	900			
14		12	PATIO LTS	800			
15			SPARE				
16			SPARE				
17			WINDOW MOTOR	500			
18			HUMID DEVICE	400			2-20
19			SPARE	500			1-20
20			SPARE CKT #19				
21			HUMID DEVICE	400			1-20
22			LIGHT POLES	2100			2-30
23			SPARE CKT #21				
24			SEE CKT #22		2100		
			TOTAL 25.9 10 KW	15070	12840		

25.9 KW 108 AMPS @ 240 VAC

CIRCUITS #10,11,12,22,24 SHALL BE TIME CLOCK CONTROLLED

INSTALL NEW BREAKER 240VAC 2P 30A 10,000A (SYM)

(3) 400W FIXTURES — LIGHT POLE WITH — SEE UTILITY PLAN SH.2

CONDUIT TO BE CONCEALED IN CEILING — SEE PLOT PLAN (UTILITY)

CLOUDED AREAS INDICATE NEW WORK.

10" BEND RADIUS

ELECTRICAL FLOOR PLAN

Scale 1/4" = 1'-0"

INSTALL (1) WALL MOUNTED LUMINAIRE HOLOPHANE CAT.# 420

CONDUIT SHALL BE EXPOSED 3/4" AND PAINTED OVER

SEE EXACT LOCATION

4" BOX WITH 1 HOLE COVER WITH 1/2" PLUG, SEE DWG. #E FOR LOCATION

REMOVE EXISTING FIXTURE AND INSTALL COVER PLATE

INSTALL (1) WALL MOUNTED LUMINAIRE CAT. N# 3663 NEMA 4 TAMPERPROOF SCREWDRIVER

INSTALL (1) SURFACE MOUNTED LUMINAIRE HOLOPHANE CAT.# 420

3 #8-1"C

10" BEND RADIUS

TOILET WOMEN'S

TOILET MEN

RECESSED HAND DRYER SEE ALSO FOR LOCATION

CONSOLE DEE

DRESSING

ELEVATOR

LOUNGE

PATIO

COMMUNITY EM #1

KITCHEN

HEATER

SPACE HEATER

ELECTRIC WATER HEATER

FOOD WARMER

27" WATT

KW WATER HEATER

CLUBROOM NO. 2

CLUBROOM NO. 1

PATIO

SIDE

CONCRETE

CONDUIT OUT

TO PANEL "A"

SYMBOL LIST

- INDICATES FIXTURE TYPE, SEE FIXTURE SCHEDULE IN SPEC. # FIXTURE, CEILING MOUNTED
- INCANDESCENT LIGHTING OUTLET
- INCANDESCENT LIGHTING FIXTURE
- FLUORESCENT LIGHTING FIXTURE
- RECESSED INCANDESCENT LIGHTING FIXTURE
- RECESSED FLUORESCENT LIGHTING FIXTURE
- FLUORESCENT STRIP LIGHTING FIXTURE
- FLUORESCENT LIGHTING FIXTURE MOUNTED UNDER ACOUSTICAL PLANK
- FLUORESCENT LIGHTING FIXTURE MOUNTED ON CEILING
- WALL MOUNTED EXIT LIGHTING FIXTURE
- MOMENTARY ON "DEF" PUSH BUTTON FOR CONTACTOR OPERATING, RECESSED MOUNTED.
- WALL MOUNTED LUMINAIRE KENALL CAT.# 3663

GENERAL NOTES

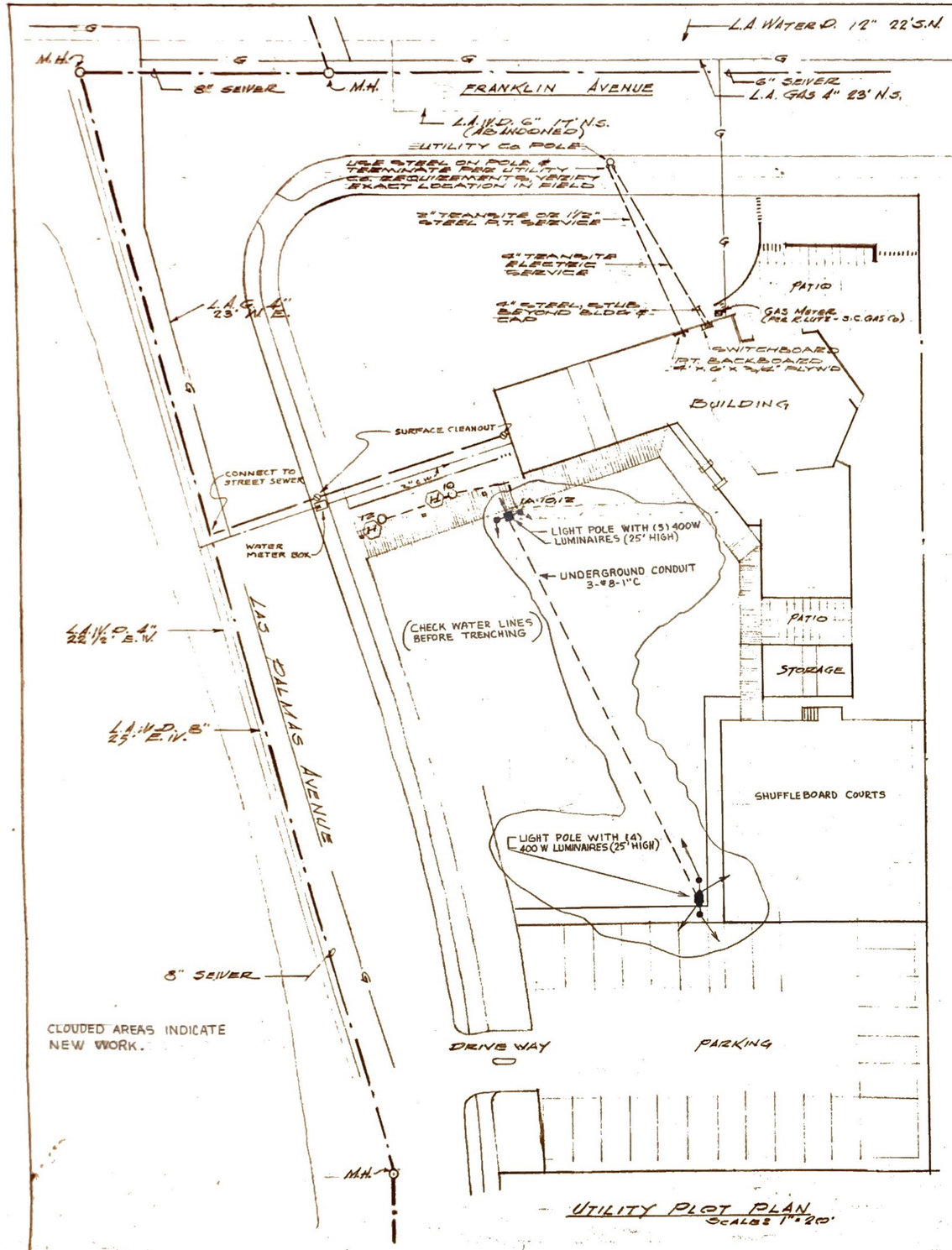
1. ALL FLUORESCENT FIXTURES SHALL HAVE H.P.F. RAPID START BALLASTS.
2. ALL RECESSED FIXTURES SHALL BE COMPLETE WITH ATTACHED PULL BOXES & PLASTER RINGS WHERE REQUIRED.
3. FLUORESCENT LAMPS SHALL BE WARM WHITE.

- 120/240V SERVICE ATTACHMENT
- #4 STEEL CONDUIT
- PULL SECTION
- FLOOR STANDARD COMB. SERVICE & DISTRIBUTION SWITCHBOARD
- 400A. BUSS
- 400A. FRAME 200A. PLUG
- 225AF 100AT 2POLE 3WIRE 120/240V MOLDED CASE CIRCUIT BREAKER
- 125AF 90AT 2POLE 3WIRE 120/240V MOLDED CASE CIRCUIT BREAKER
- PANEL "A"
- 2"C. w/ #6 & #8
- 1"C. w/ #12
- CONTACTOR IN PANEL
- SHUNT BUS ON CONTACTOR 30A-2P ASCO MT. CONTACTOR IN PANEL REMIND ESP. 2668.
- TIME CLOCK (NEW) DPST 240VAC 40A TORK CAT.# 7202 EL
- A-124
- PANEL "B"

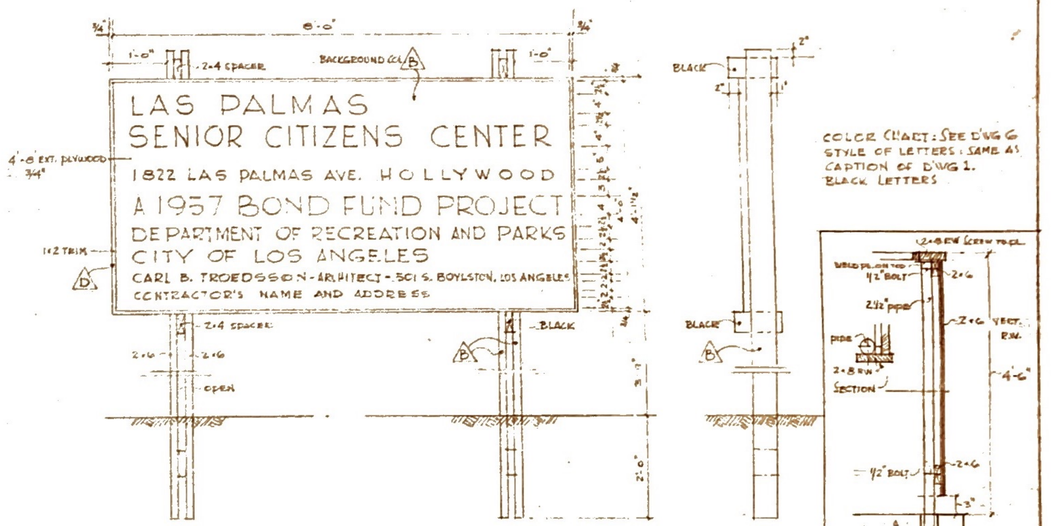
TIME CLOCK CONTROL DIAGRAM

554 A 1

554 A 1

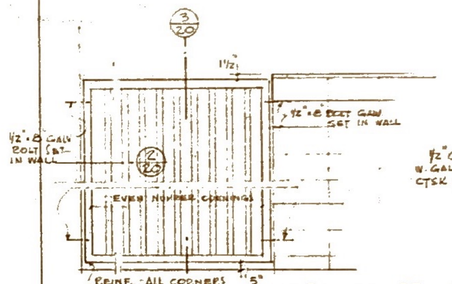


UTILITY PLOT PLAN
SCALE: 1" = 20'

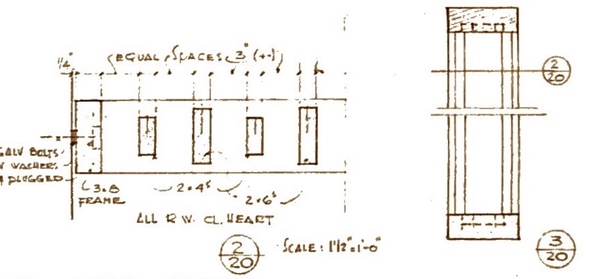


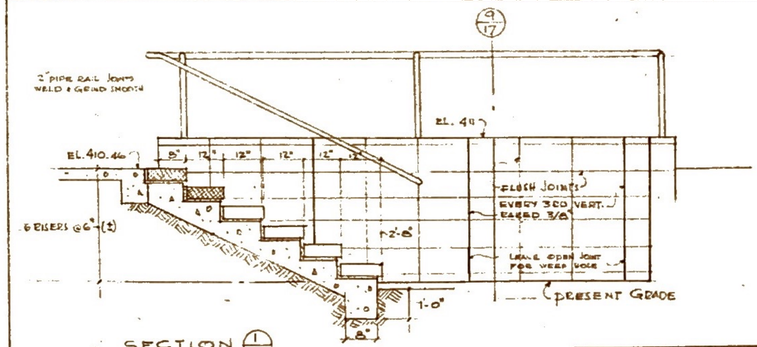
NOTE:
COLORS FOR SIGN TO BE COLOR COMBINATION USED FOR BUILDING PROJECT.

PROJECT SIGN
3/4" = 1'-0"

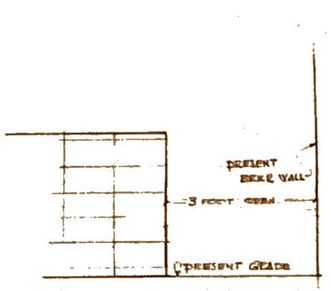


WOOD FENCE IN BLOCK GARDEN WALL

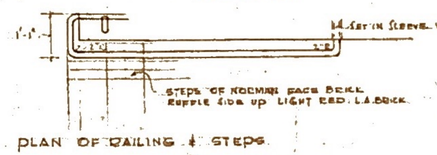




SECTION
SCALE: 1/2" = 1'-0"



ELEV. OF EAST END OF WALL



PLAN OF RAILING & STEPS

LAS PALMAS SENIOR CITIZENS CENTER

REVISED 4-1-76
BY: DELMAR SOUTHER
NOT ISSUED

UTILITY PLAN & MISCELLANEOUS DETAILS

CARL B. TROEDSSON, ARCHITECT
501 S. BOYLSTON ST.
LOS ANGELES 17

PREPARED FOR DEPARTMENT OF RECREATION AND PARKS CITY OF LOS ANGELES.

SHEET 2 OF 8

000022 554 A 1

RECORD DRAWINGS
1979

ADDITION
LAS PALMAS
SENIOR CITIZEN CENTER

1822 LAS PALMAS AVE. HOLLYWOOD, CALIF.

DEMOLITION NOTES:

1. ALL SALVAGEABLE ITEMS SHALL BE REMOVED BY THE DEPARTMENT OF RECREATION & PARKS PRIOR TO DEMOLITION OF INDICATED ITEMS, EXCEPT FOR THOSE ITEMS INDICATED TO BE REMOVED & RELOCATED.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL HOOK-UP OF UTILITIES REQUIRED TO INSURE COMPLETE SERVICE FOR TEMPORARY FACILITIES
3. VISIT THE SITE PRIOR TO SUBMITTING BIDS, NOTIFY THE DEPT. OF DISCREPANCY FOUND, COORDINATE REMOVAL OF ALL UTILITIES WITH UTILITIES COMPANY.
4. VERIFY REMOVAL & RELOCATION OF EXIST. ITEMS (TREES, PLANTS, CONC., ETC.) WITH THE DEPT. PRIOR TO REMOVAL & RELOCATION.
5. REMOVAL OF ALL EXIST. FOOTING, SLAB & FOUNDATION, ETC. REMAINING FROM DEMOLITION SHALL BE DISPOSED AWAY FROM THE SITE.

SUMMARY

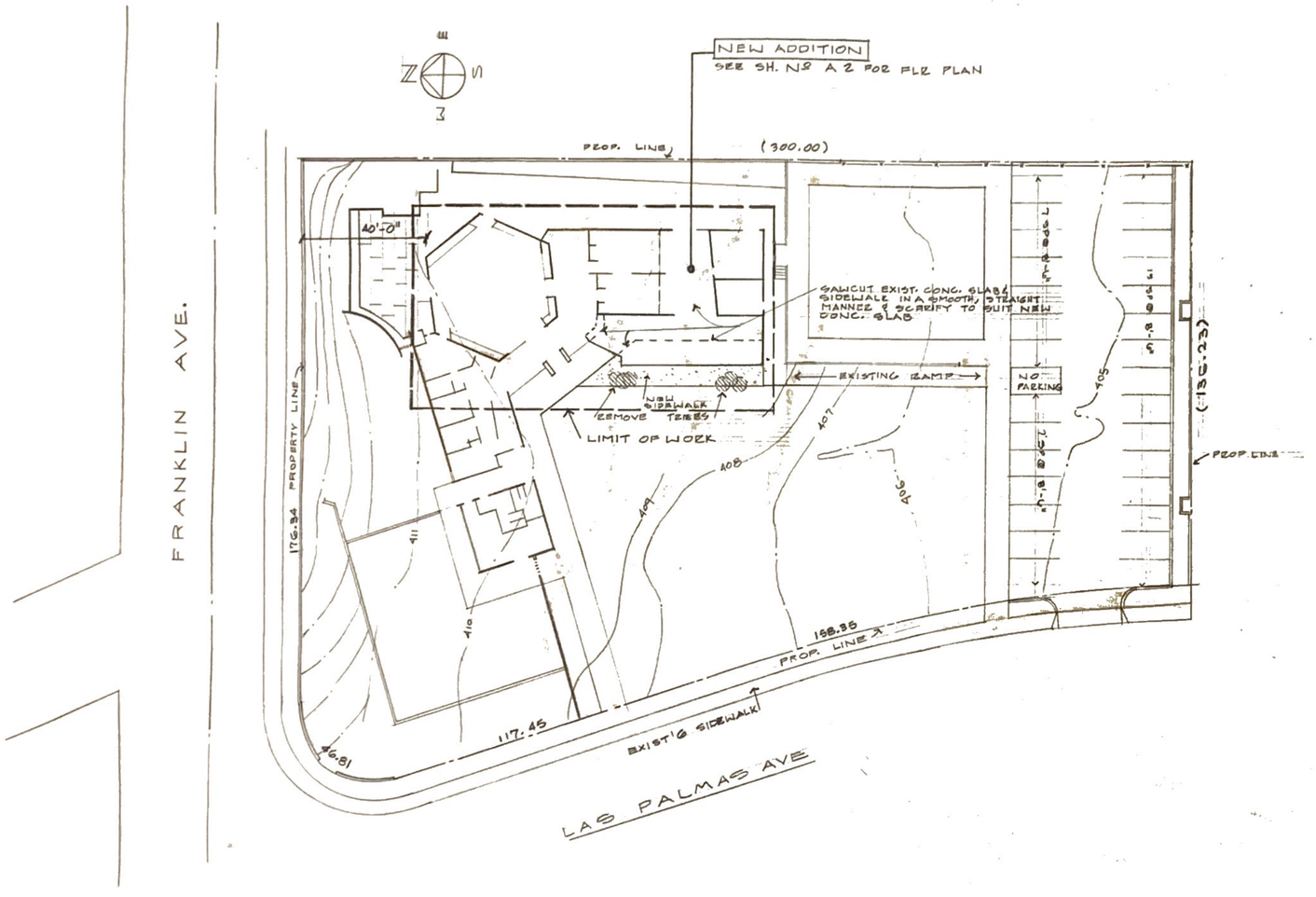
OCCUPANCY: G-1, B-2

CONSTRUCTION TYPE: V

FLOOR AREA: 5754 SQ. FEET

SHEET INDEX

SHT. No	DESCRIPTION
	ARCHITECTURAL
A 1	PLOT & DEMO PLAN, VICINITY MAP, REF. SYMBOL
A 2	FLOOR PLAN, GENERAL NOTES.
A 3	ELEVATIONS, SECTION
A 4	REFLECTED CEILING PLAN - DETAILS
A 5	WINDOW & DOOR - DETAILS
A 6	WINDOW, DOOR SCHEDULE, & FINISH - SCHEDULE
A 7	ROOF PLAN & DETAILS
A-8	WALL SECTIONS
	STRUCTURAL
S-1	FOUNDATION, ROOF FRAMING PLANS
	MECHANICAL
M-1	FLOOR PLAN, SCHEDULE & DETAILS
M-2	PLUMBING FLOORPLAN, DETAILS, & SCH.
	ELECTRICAL
E-1	LTG & PWR PLAN, PANEL SCH., SYM & SINGLE LINE



PLOT PLAN & DEMOLITION

SCALE: 1" = 20'

LEGEND

EXIST. 4" CONC. SLAB TO BE REMOVED

LIMITS OF WORK

123.48 EXIST. FINISH GRADE ELEVATION TO BE VERIFIED.

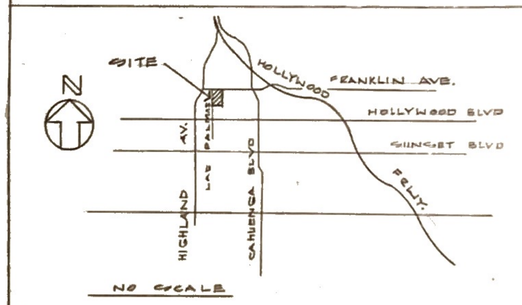
DETAIL REFERENCE: 1 / A-4 — LETTER OF SECTION, DETAIL ELEVATION LETTERED CONSECUTIVELY ON EACH SHEET

DOOR REFERENCE: D / 2 — "D" INDICATES "DOOR"; DOOR NUMBER - SEE DOOR SCHEDULE SHT. A6

WINDOW & LOUVER REFERENCE: W / 2 — "W" INDICATES "WINDOW" "L" " "LOUVER" WINDOW & LOUVER NO. SEE WINDOW SCHEDULE, SHT A6

WALL LINE GRID: A — LETTER OR NUMBER INDICATE WALL LINE

VICINITY MAP



NO SCALE

"AS BUILT" 12-12-79

SHEET TITLE: PLOT AND DEMOLITION PLAN, VICINITY MAP REFERENCE SYMBOL.

PROJECT: ADDITION

FACILITY - ADDRESS: LAS PALMAS SENIOR CITIZEN CENTER 1822 LAS PALMAS AVE. HOLLYWOOD CALIF.

SUPT. OF PARKS

SUPT. OF RECREATION

SUPT. OF PLANNING AND DEVELOPMENT

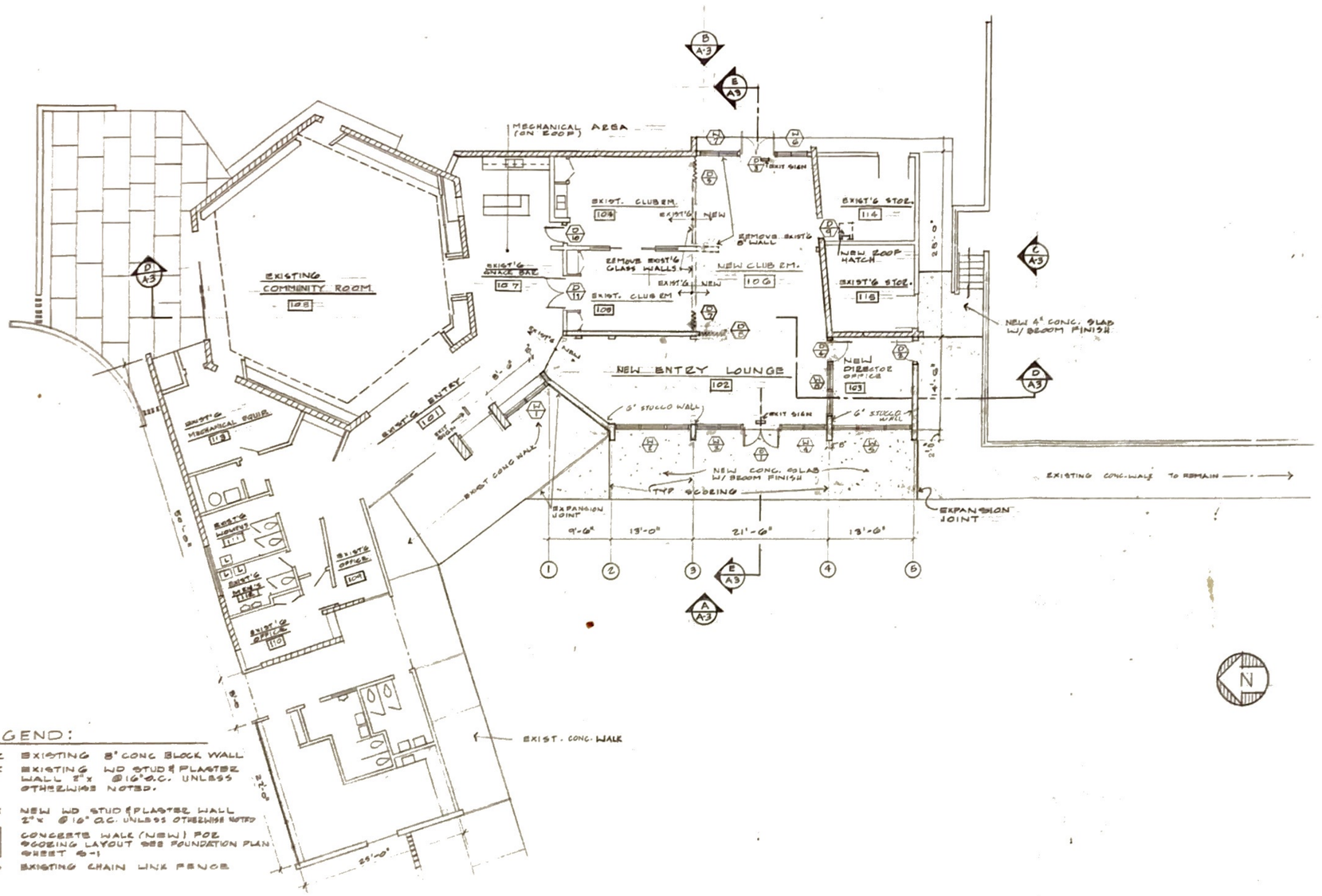
GENERAL MANAGER

REVISION | DATE | BY

DESIGNED BY: TLB
DRAWN BY: TLB
CHECKED BY: WAS
SUBMITTED BY: WAS
DATE
FILE NO 554

CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N MAIN STREET CITY HALL EAST LOS ANGELES, CALIFORNIA 90012

SHEET A-1 OF 12 SHEETS



LEGEND:

- EXISTING 8" CONC BLOCK WALL
- EXISTING WD STUD & PLASTER WALL 2"x 4" @16" O.C. UNLESS OTHERWISE NOTED.
- NEW WD STUD & PLASTER WALL 2"x 4" @16" O.C. UNLESS OTHERWISE NOTED
- CONCRETE WALK (NEW) FOR SCORING LAYOUT SEE FOUNDATION PLAN SHEET S-1
- EXISTING CHAIN LINK FENCE

A — FLOOR PLAN — SCALE 1/8" = 1'-0"

GENERAL NOTES

1. ALL WORKS & MATERIALS SHALL CONFORM WITH REQUIREMENTS OF L.A. CITY CODES & ALL GOVERNMENTAL AGENCIES HAVING JURISDICTION.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS & CONDITIONS @ JOBSITE BEFORE COMMENCING ANY WORK & REPORT IN WRITING ANY DISCREPANCY TO THE OWNER'S REPRESENTATIVE.
3. WHERE DIMENSIONS ARE GIVEN ON THE DRAWINGS THEY ARE NOT TO BE SCALED, DIMENSIONS GIVEN PREVAIL.
4. ALL PHASES OF DRAWINGS FORM PART OF THE CONTRACT DOCUMENT SUCH AS ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL LANDSCAPING AND IRRIGATION. IF CERTAIN, ITEMS INDICATED ON THE ARCHITECTURAL & DOES NOT APPEAR ON ELEC. OR OTHER DRAWINGS OR VICE VERSA, IT SHALL BE FURNISHED & INSTALLED BY THE CONTRACTOR.
5. PROVIDE CONSTRUCTION BARRICADE FENCE, GATES, WARNING SYSTEM TO PROTECT PUBLIC & CONSTRUCTION. WORK SHALL BE DONE WITHIN & THIS AREA MUST BE KEPT CLEAN AT ALL TIMES.
6. NO FLOOR SHALL BE POURED UNTIL ALL ELECTRICAL AND MECHANICAL INSTALLATIONS HAVE BEEN APPROVED.
7. ALL STUDS ARE 2"x 4" @16" O.C. UNLESS OTHERWISE NOTED.
8. BUILDING SHALL HAVE ONE (1) HOUR FIRE RESISTIVE CONSTRUCTION.
9. PROVIDE BLOCKING AS REQUIRED FOR FIRE EXTINGUISHER, BROOM RACKS, LIGHT FIXTURES, SHELVING CABINETS, SIGNS, ETC.
10. WHERE DRYWALL ABUTS DISSIMILAR MATERIAL PROVIDE CASING BEADS.
11. USE 6d NAILS FASTENING ALL 5/8" GYPSUM BOARD UNLESS OTHERWISE NOTED.
12. PROVIDE (2) PORTABLE FIRE EXTINGUISHER MINIMUM 2-A RATED WITHIN 75 FT. TRAVEL DISTANCE AND AS REQ. BY FIRE DEPT. FIELD INSPECTOR.
13. ALL EXTERIOR PLASTER SHALL BE 7/8" THICK MIN.
14. ALL EXIT DOORS SHALL BE OPENABLE FROM INSIDE WITHOUT THE USE OF KEY OR SPECIAL KNOWLEDGE.
15. PROVIDE "EXIT" SIGNS: 5" HIGH LETTERS - MINIMUM.
16. INTERIOR WALL & CEILING FINISHES SHALL NOT EXCEED AN END FLAME POINT SPREAD RATING OF 75 AND SMOKE DENSITY OF 450.
17. PROVIDE WEATHERSTRIPPING @ ALL EXTERIOR DOORS.
18. PROVIDE CONSPICUOUSLY MARKED LABEL OUTSIDE GAS SHUT-OFF VALVES. CORROSIVE RESISTANT METAL WITH @ LEAST 3" HIGH LETTERS.
19. T.V. ANTENNA CROSS ARMS OR OTHER ROOF OBSTRUCTION SHALL BE LOCATED SEVEN (7) FEET MINIMUM ABOVE THE ROOF.
20. ANY DECORATION USED SHALL BE NONE COMBUSTIBLE OR FLAMEPROOFED IN AN APPROVED MANNER.
21. SECURITY & EXIT OPENING SHALL MEET THE REQUIREMENTS OF: DIV. 67 L.A. CITY BLDG. CODE.
22. PROVIDE CEILING INSULATION OF THE FOLLOWING "R" VALUES - CEILING-R-19
23. NO TRENCHES OR EXCAVATIONS 5'-0" OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND, THE CONTRACTOR SHALL OBTAIN NECESSARY PERMIT FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO STARTING CONSTRUCTION.
24. ALL GLASS DOORS, ADJACENT PANELS AND ALL GLAZED OPENINGS WITHIN 18" OF ADJACENT FLOOR SHALL BE OF GLASS APPROVED FOR IMPACT HAZARD CLASSIFICATION AND TABLE 17F.
25. ALL WELDING TO BE DONE BY WELDERS CERTIFIED BY THE L.A. CITY BUILDING DEPT.
26. CONTINUOUS INSPECTION ON CAISSONS.
27. INTERIOR FINISHES & FLAMEPROOFING (TITLE 19, CH 42 UBC) (L.A.M.C. 57.22) INTERIOR WALL & CEILING FINISHES FOR ASSEMBLY AREAS SHALL NOT EXCEED AN END POINT FLAME SPREAD RATING OF 200.
28. EXIT AISLES AND SEATING (TITLE 19 CH 23 UBC) (LAMC 57.10) MINIMUM 24" WIDTH LEADING TO EXITS IN CLUB ROOMS.
29. POST ROOM CAPACITY SIGN AS PROVIDED BY BY FIRE DEPT. (TITLE 19) (L.A.M.C. 57.10)

"AS BUILT" 12-12-79

SHEET TITLE: FLOOR PLAN, GENERAL NOTES,

PROJECT: ADDITION

FACILITY - ADDRESS: LAS PALMAS SR. CITIZEN CTR. 1822 LAS PALMAS AVE. HOLLYWOOD, CALIF.

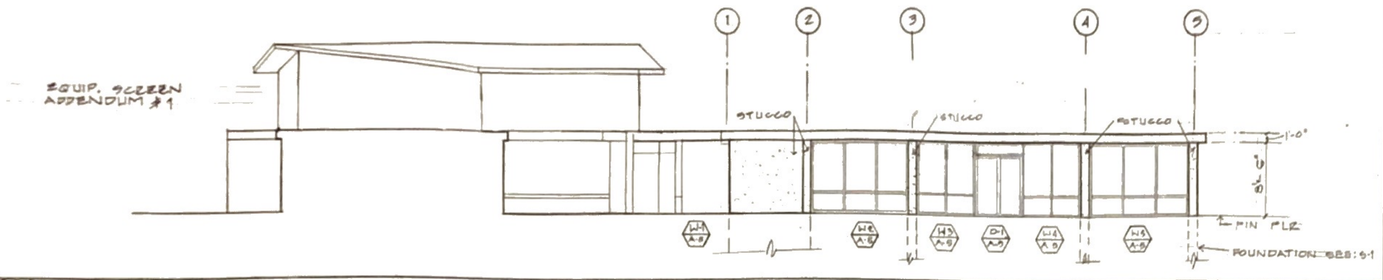
	REVISION	DATE	BY
SUPT. OF PARKS			
SUPT. OF RECREATION			
SUPT. OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY: [illegible]
DRAWN BY: [illegible]
CHECKED BY: [illegible]
SUBMITTED BY: [illegible]
DATE:
FILE NO. 554

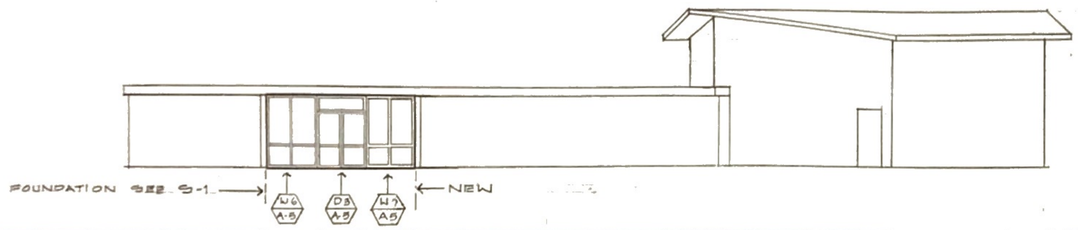
CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET CITY HALL EAST LOS ANGELES CALIFORNIA 90012

SHEET A-2 OF 12 SHEETS

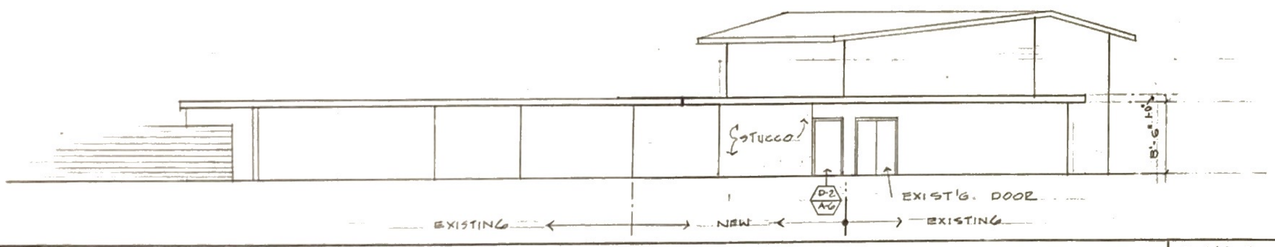
NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME



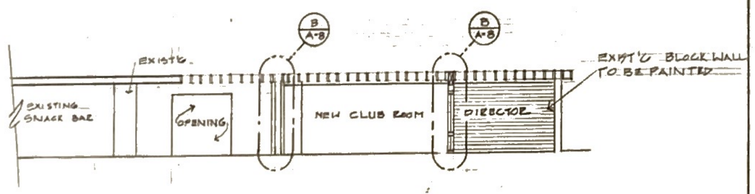
A — FRONT ELEVATION — SCALE 1/8" = 1'-0"



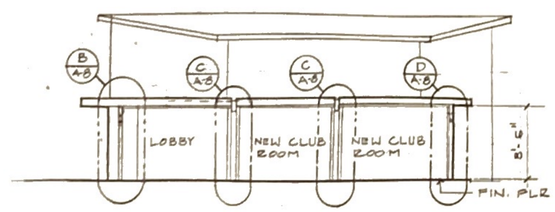
B — REAR ELEVATION — SCALE 1/8" = 1'-0"



C — SIDE ELEVATION — SCALE 1/8" = 1'-0"



D — LONGITUDINAL SECTION (LOOKING EAST) — SCALE 1/8" = 1'-0"



E — CROSS SECTION (LOOKING NORTH) — SCALE 1/8" = 1'-0"

"AS BUILT" 12-12-79

SHEET TITLE: ELEVATIONS, SECTION

PROJECT: ADDITION

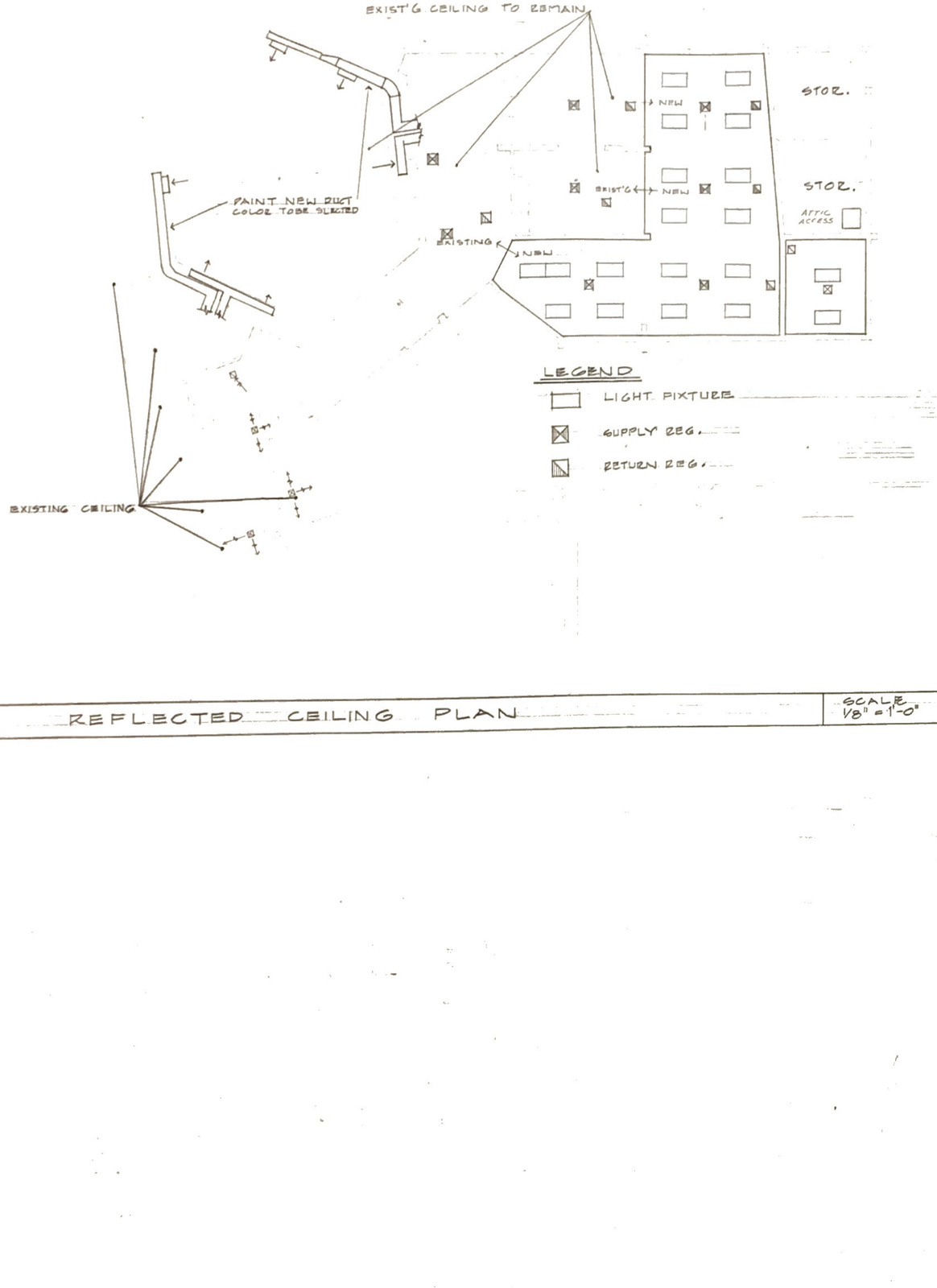
FACILITY - ADDRESS: LAS PALMAS SR CITIZEN CENTER

SUPT. OF PARKS	REVISION	DATE	BY	DESIGNED BY: TLB
SUPT. OF RECREATION				DRAWN BY: TLB
SUPT. OF PLANNING AND DEVELOPMENT				CHECKED BY:
GENERAL MANAGER				SUBMITTED BY:
				DATE:
				FILE NO. 554

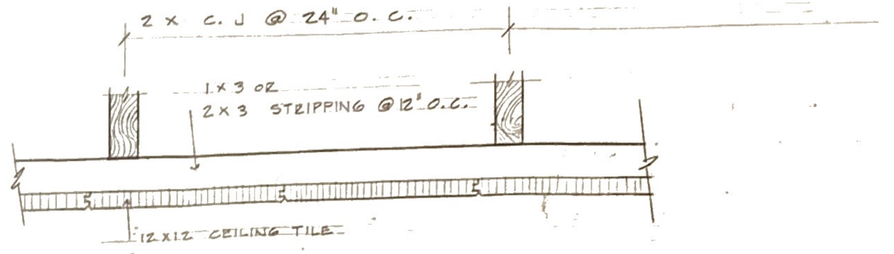
CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

SHEET A-3 OF 12 SHEETS

NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME



B REFLECTED CEILING PLAN — SCALE 1/8" = 1'-0"



NOTE: PROVIDE BACKING FOR LIGHT FIXTURES

A CROSS SECTION THRU SYSTEM — SCALE 3" = 1'-0"

SCALE

SCALE

NOTES: INTEGRATED CEILING

1. INTEGRATED CLG. SYSTEM SHALL CONFORM TO L.A. CITY BLDG & SAFETY R.R. NO 22069
2. ACOUSTICAL TILE SHALL BE INCOMBUSTIBLE WITH A FLAME RATING 25 OR LESS.

"AS BUILT" 12-12-79

SHEET TITLE: REFLECTED CEILING PLAN, DETAILS, SECTIONS

PROJECT

FACILITY - ADDRESS: LAS PALMAS SR CITIZEN CENTER
1822 LAS PALMAS AVE, HOLLYWOOD, CA.

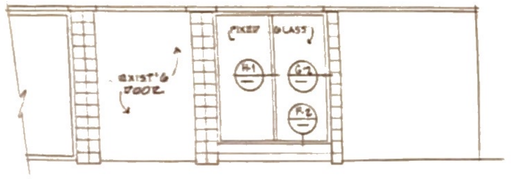
	REVISION	DATE	BY
SUPT. OF PARKS			
SUPT. OF RECREATION			
SUPT. OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY: TLB
DRAWN BY: TLB
CHECKED BY:
SUBMITTED BY:
DATE:
FILE NO. 554

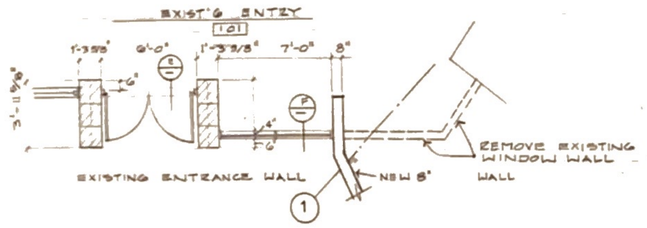
CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

SHEET A-4 OF 12 SHEETS

NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME 00049

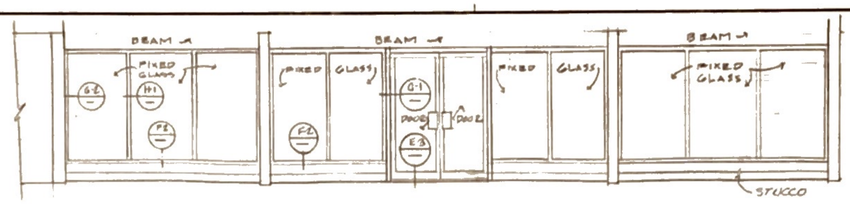


ELEVATION ENTRANCE WALL
SCALE 1/4" = 1'-0"

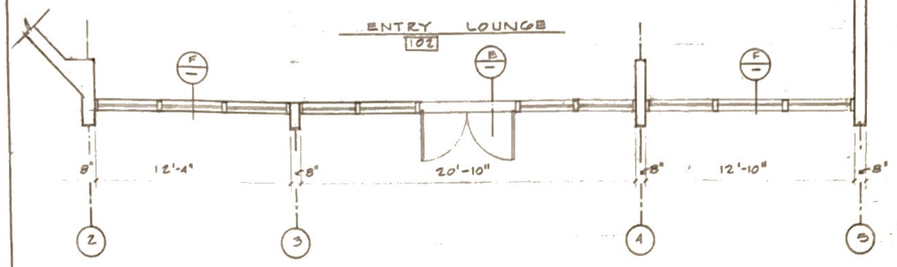


PLAN

A WINDOW - ELEV. & PLAN — SCALE 1/4" = 1'-0"



FRONT ELEVATION ENTRANCE WALL
SCALE 1/4" = 1'-0"

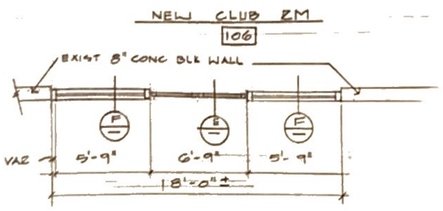


PLAN

B WINDOW - ELEV. & PLAN — SCALE 1/4" = 1'-0"

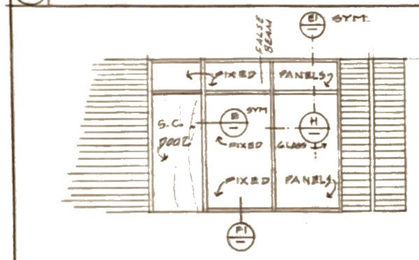


REAR ELEV. ENTRANCE WALL
SCALE 1/4" = 1'-0"

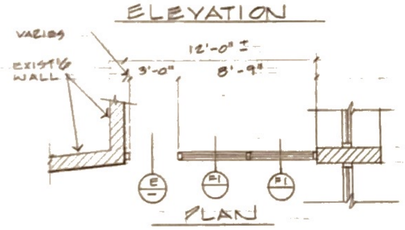


PLAN

C WINDOW - ELEV. & PLAN — SCALE 1/4"=1'-0"

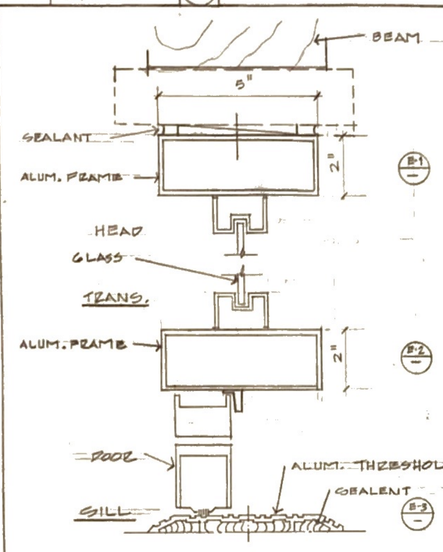


ELEVATION

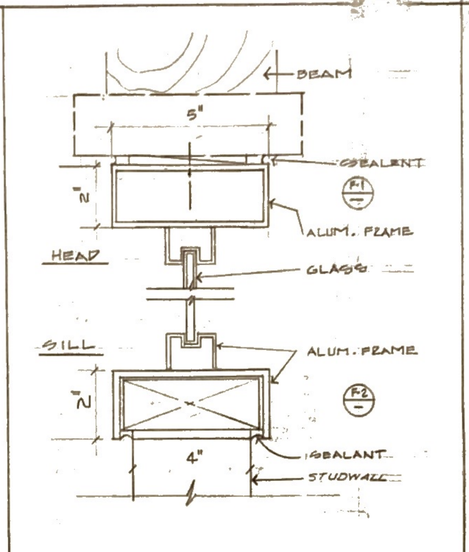


PLAN

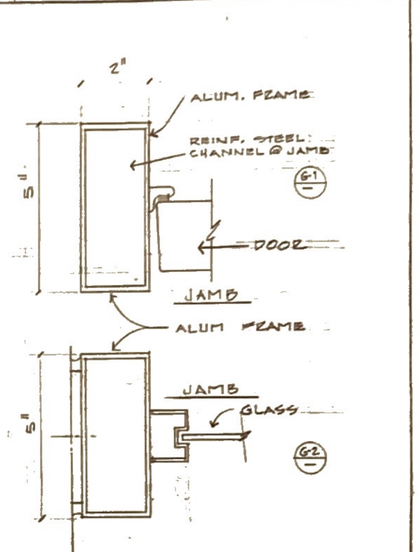
D WINDOW - ELEV. & PLAN — SCALE 1/4" = 1'-0"



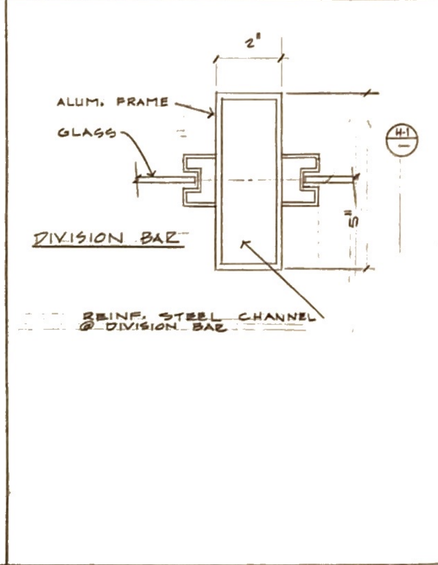
E SECTION — SCALE HALF



F SECTION — SCALE HALF



G SECTION — SCALE HALF



H SECTION — SCALE HALF

"AS BUILT" 12-12-80

SHEET TITLE: WINDOW AND DOOR - DETAILS

PROJECT: ADDITION

FACILITY - ADDRESS: LAS PALMAS SR. CITIZEN CENTER
1822 LAS PALMAS AVE, HOLLYWOOD, CA.

SUPT. OF PARKS	REVISION	DATE	BY	DESIGNED BY: TLB
SUPT. OF RECREATION				DRAWN BY: TLB
SUPT. OF PLANNING AND DEVELOPMENT				CHECKED BY: WNS
GENERAL MANAGER				SUBMITTED BY: WNS
				DATE:
				FILE NO. 554

CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N MAIN STREET, CITY HALL EAST LOS ANGELES, CALIFORNIA 90012

SHEET A-5 OF 12 SHEETS

NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

DOOR SCHEDULE

MARK	SIZE WIDTH	SIZE HGT	SIZE THK.	TYPE	MATERIAL DOOR	MATERIAL FRAME	DETAILS HEAD	DETAILS JAMB	DETAILS THRESH.	REMARKS
D/1	PR 3'-0"	7'-0"	1 3/4"	A	ALUM GLASS	ALUM	B-7 A-6	B-7 A-6	B-3 A-6	PANIC HDW. CLOSER
D/2	2'-8"	"	"	B	WD. S.C.	PRESSED METAL	A A-6	A A-6	A A-6	CLOSER - LOCKSET
D/3	PR 3'-0"	"	"	A	ALUM GLASS	ALUM	B-7 A-6	B-1 A-6	B-3 A-6	PANIC HDW. CLOSER
D/4	2'-8"	"	"	B	WD S.C.	ALUM	B-3 A-6	A-6	A-6	—
D/5	11'-0"	8'-0" OPNG	9/16	C	WD. VINYL COVERED	WOOD	C A-6	O/E A-6	—	FOLDING DOOR
D/6	"	"	"	"	"	"	"	"	"	"
D/7	12'-0"	7'-0" OPNG	9/16	C	WD VINYL COVERED	WOOD	C A-6	D/E A-6	—	EXIST'G DOOR & FRAME TO REMAIN
D/8	20'-0"	7'-0" OPNG	9/16	C	WD VINYL COVERED	WOOD	C A-6	D/E A-6	—	"
D/9	3'-0"	7'-0"	3/4	B	SC-WD	"	—	—	—	EXIST'G DOOR & FRAME TO REMAIN NOT RATED HARDWARE
D/10	3'-0"	"	"	B	SC-WD	"	—	—	—	EXIST'G DOOR & FRAME TO REMAIN NOT RATED HARDWARE
D/11	3'-0"	"	"	B	SC-WD	"	—	—	—	—

NOTE: ① 3/4 HR-U.L. RATED DR.

WINDOW SCHEDULE

MARK	SIZE WIDTH	SIZE HGT.	TYPE	MATERIAL FRAME	MATERIAL GLASS	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	REMARKS
W/1	2'-0"	2'-0"	B	ALUM	BRONZE TONE	B-1/A5	B-1/A5	B-1/A5	
W/2	3'-0"	"	B			B-1/A5	B-1/A5	B-1/A5	
W/3	2'-3"	"	B			B-1/A5	B-1/A5	B-1/A5	
W/4	2'-3"	"	B			B-1 A-5	B-1 A-5	B-1 A-5	
W/5	3'-4"	"	B			B-1 A-5	B-1 A-5	B-1 A-5	
W/6	3'-0"	"	B			B-1 A-5	B-1 A-5	B-1 A-5	
W/7	2'-3"	"	B			B-1 A-5	B-1 A-5	B-1 A-5	
W/8	2'-4"	3'-4"	A		CLEAR	A-6	A-5	A-6	

INTERIOR FINISH SCHEDULE

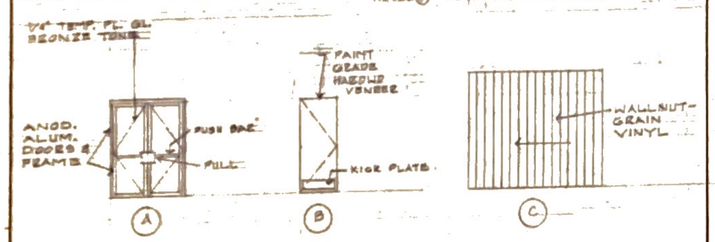
ROOM NO.	ROOM NAME	FLOOR MAT'L	FLOOR COLOR	BASE MAT'L	BASE COLOR	WALLS MAT'L	WALLS COLOR	CEILING MAT'L	CEILING COLOR	DOORS MAT'L	DOORS COLOR	TRIM (DOOR & WINDOW) MAT'L	TRIM COLOR	CASEWORK MAT'L	CASEWORK COLOR	REMARKS
101	EXIST'G ENTRY	EXIST'G TO REMAIN		EXIST'G TO REMAIN		EXIST'G TO REMAIN		EXIST'G TO REMAIN				EXIST'G				
102	ENTRY - LOUNGE	V.A.		NEW VINYL	BASE	5/8 DRYWALL		NEW ACOUSTICAL TILE				ALUM				
103	DIRECTOR OFFICE	CPT		VINYL BASE		5/8" DRYWALL PAINT EXIST'G		↓		WOOD (D-2)		METAL				
104	EXIST'G CLUB ROOM	RUBBER TILE EXIST'G TO REMAIN		EXIST'G TO REMAIN		BLOCK		EXIST'G TO REMAIN				N/A				
105	NEW CLUB ROOM	RUBBER TILE		VINYL		5/8" DRYWALL PAINT EXIST'G BLOCK		NEW ACOUSTICAL TILE				ALUM				
10	EXIST'G SNACK BAR	EXIST'G FLOOR TO REMAIN		EXIST'G TO REMAIN		EXIST'G		EXIST'G TO REMAIN				N/A				
106	EXIST'G COMMUNITY RM.	↓		↓		↓		↓				EXIST'G TO REMAIN				
110	EXIST'G OFFICE															
111	EXIST'G TOILET															
112	EXIST'G TOILET															
113	EXIST'G MECH. EQUIP. RM.															
114	EXIST'G STOR.															

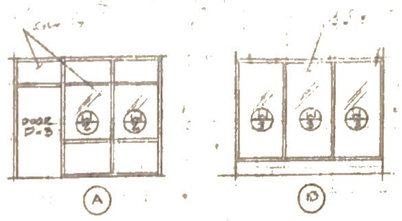
EXTERIOR FINISH SCHEDULE

MATERIAL	LOCATION	PAINT / COLOR	REMARKS
EXTERIOR PLASTER		PAINT / MATCH EXIST'G	
FASCIA & GRAVEL STOP	ROOF	ENAM / GALV.	
GRAVEL SURFACING	ROOF	MARBLE WHITE	NATURAL COLOR ROCK
CONC. SLAB & WALKS	EXTERIOR	NATURAL COLOR	
WOOD DOORS	D/2, D/	ENAM,	
METAL LOUVERS / DOOR FRAMES	D/2	ENAM/2478	PAINT EXTERIOR FACE & EDGES

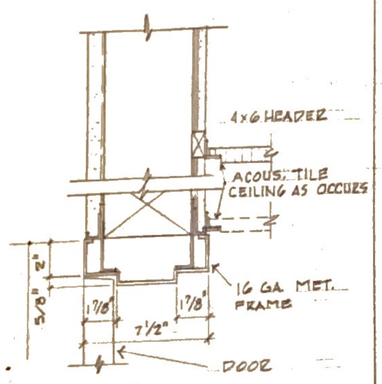
MAT'L & COLOR REFERENCES

PAINT: SINCLAIR PAINT CO./ EGGSHELL ENAMEL UNLESS OTHERWISE NOTED OR SPECIFIED.
VINYL ASBESTOS TILE: FLINTKOTE "CLASSIC PREMIER"
VINYL BASE: BURKE
ACOUSTICAL TILE: ARMSTRONG / SEE SH. A-4
WOOD STAIN: SINCLAIR.
EXTERIOR PLASTER: SINCLAIR PAINT CO.

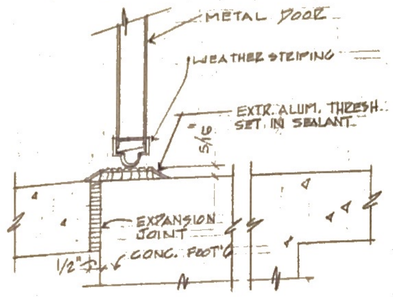




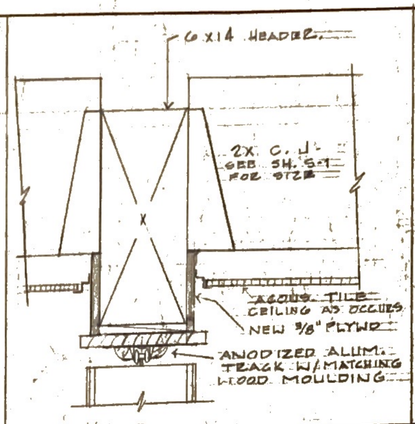
DOOR TYPES
3/16" = 1'-0"



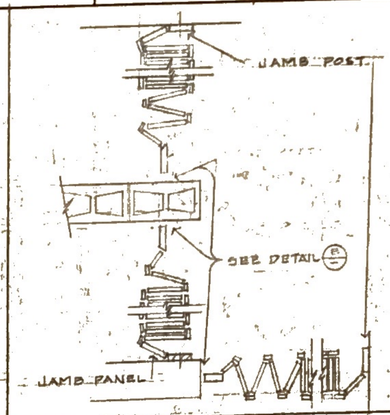
A HEAD & JAMB SIM. — SCALE 3" = 1'-0"



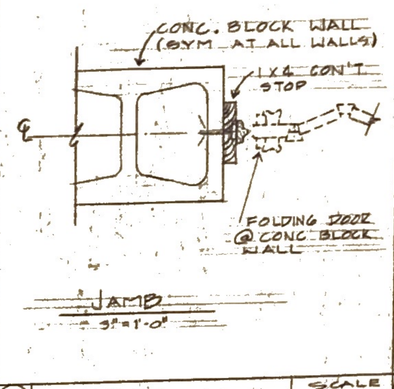
B THRESHOLD — SCALE 3" = 1'-0"



C HEAD — SCALE 3" = 1'-0"



D JAMB — SCALE 3" = 1'-0"



E JAMB — SCALE 3" = 1'-0" F

"AS BUILT" 12-12-80

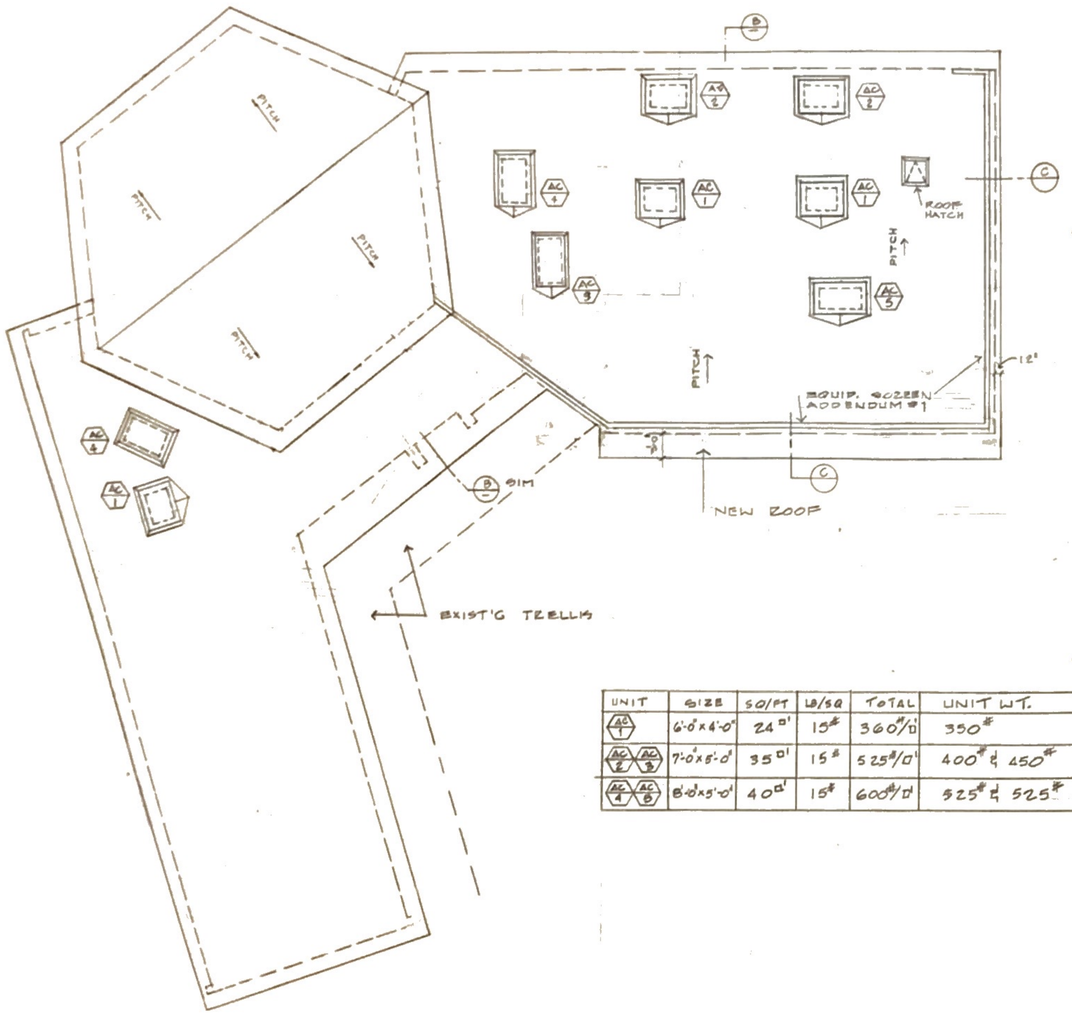
SHEET TITLE: WINDOW AND DOOR - SCHEDULE, DETAILS
PROJECT: ADDITION
FACILITY - ADDRESS: LAS PALMAS SR. CITIZEN CENTER, 1822 LAS PALMAS AVE, HOLLYWOOD, CA.

	REVISION	DATE	BY
SUPT OF PARKS			
SUPT OF RECREATION			
SUPT OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY: TLP
DRAWN BY: TLP
CHECKED BY: HNS
SUBMITTED BY: HNS
DATE
FILE NO. 554
SHEET A-6 OF 12 SHEETS

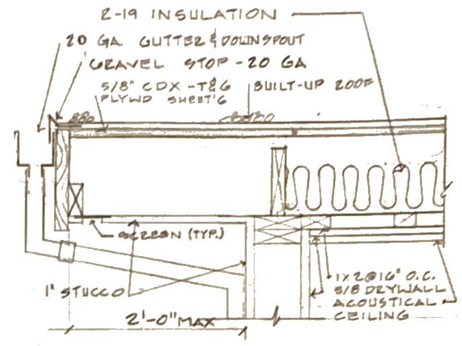
CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

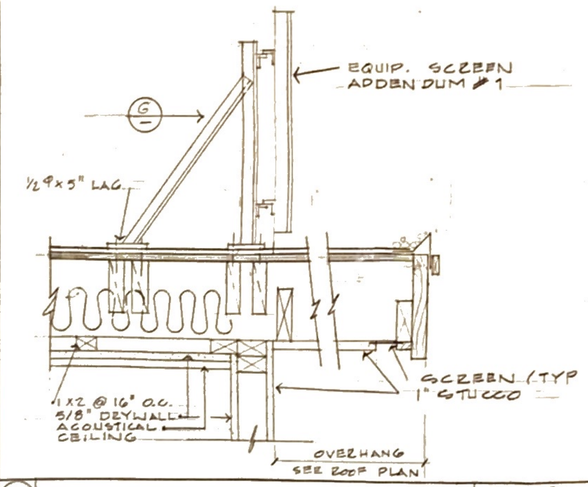


UNIT	SIZE	SQ/PT	LB/SQ	TOTAL	UNIT WT.
AC 1	6'-0"x4'-0"	24 □'	15#	360#/□'	350#
AC 2 AC 3	7'-0"x5'-0"	35 □'	15#	525#/□'	400# & 450#
AC 4 AC 5	8'-0"x5'-0"	40 □'	15#	600#/□'	525# & 525#

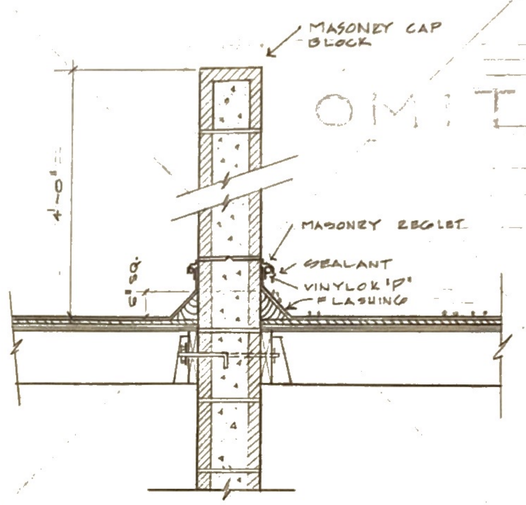
A ROOF PLAN — SCALE 1/8" = 1'-0"



B SECTION — SCALE 1½" = 1'-0"



C SECTION — SCALE 1½" = 1'-0"

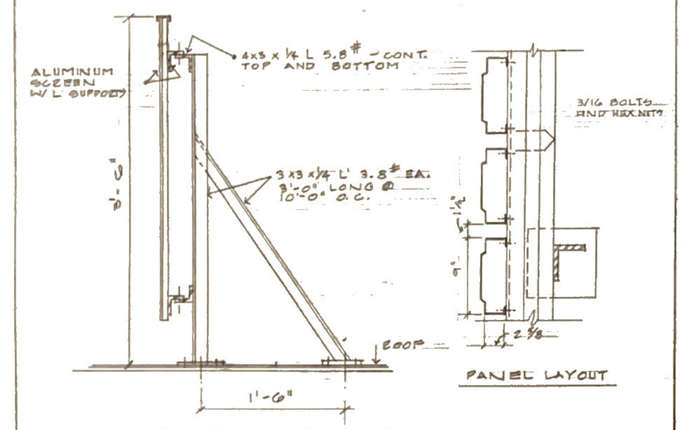


D SECTION — SCALE 1½" = 1'-0"

FLINTKOTE - (A-4-M)

1. H.M.P. ASPHALT SPRINKLE MOPPING	15 LBS.
2. NO 40 PLAXINE - BASE SHEET OF ALL ALL WEATHER BASE SHEET (3 LAYERS)	120 LBS.
3. H.M.P. ASPHALT MOPPING BETWEEN LAYERS (2 @ 25.)	50 LBS
~~4. NO 80 MINERAL SURFACE CAP SHEET (ASBESTOS OR GLASS)~~	~~80 LBS~~
APPROXIMATE TOTAL WEIGHT	325 LBS

E SUMMARY OF ROOFING MATERIALS PER 100 SQ. FT.

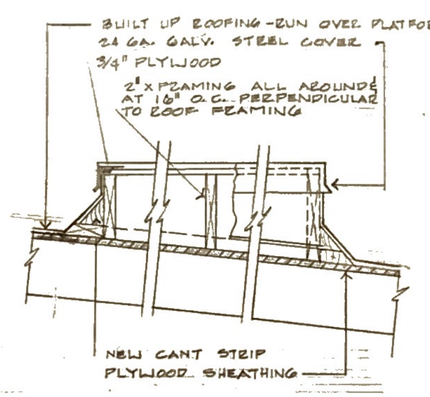


EQUIP. SCREEN SECTION.

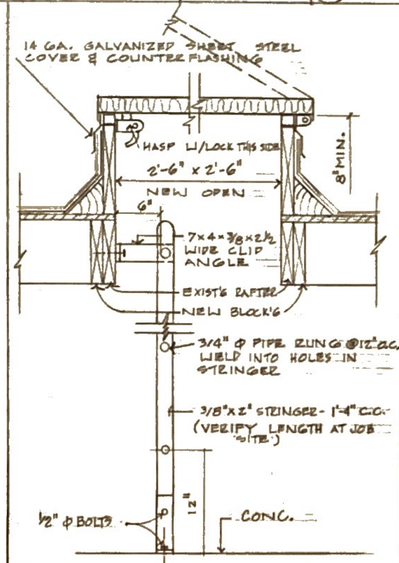
ADDENDUM #1

F — SCALE 1½" = 1'-0"

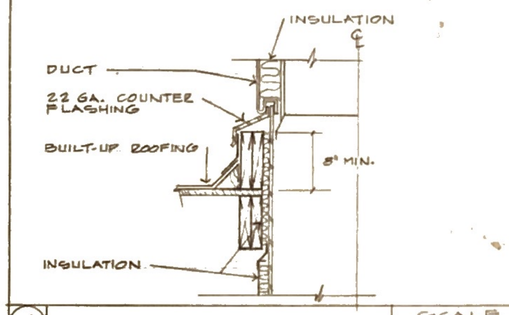
G EQUIP SCREEN — NOT TO SCALE



H EQUIPMENT PLATFORM — SCALE 1½" = 1'-0"



I ROOF HATCH — SCALE 1½" = 1'-0"



J "AS BUILT" 12-12-79 — SCALE NONE

SHEET TITLE: ROOF PLAN DETAIL, - ADDITION

PROJECT

FACILITY - ADDRESS: LAS PALMAS SR CITIZEN CENTER, 1822 LAS PALMAS AVE HOLLYWOOD CA

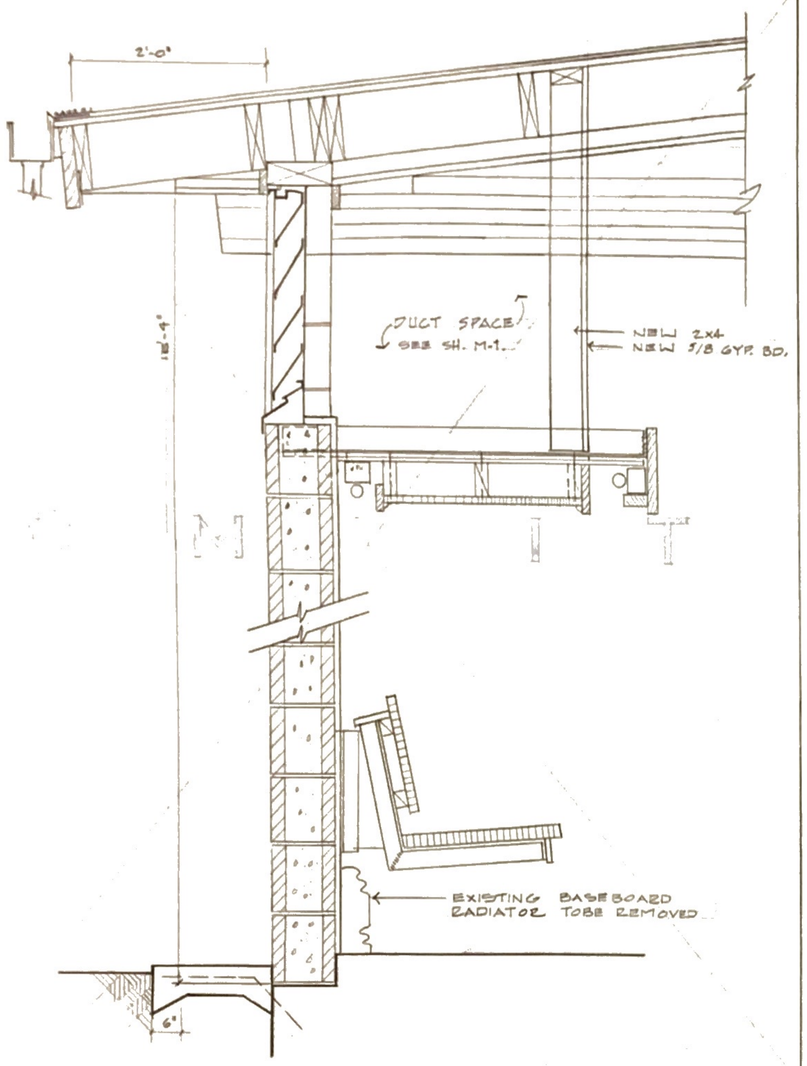
	REVISION	DATE	BY
SUPT. OF PARKS			
SUPT. OF RECREATION			
SUPT. OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY: T.L.B.
DRAWN BY: T.L.B.
CHECKED BY: W.L.J.
SUBMITTED BY: W.L.J.
DATE:
FILE NO 554

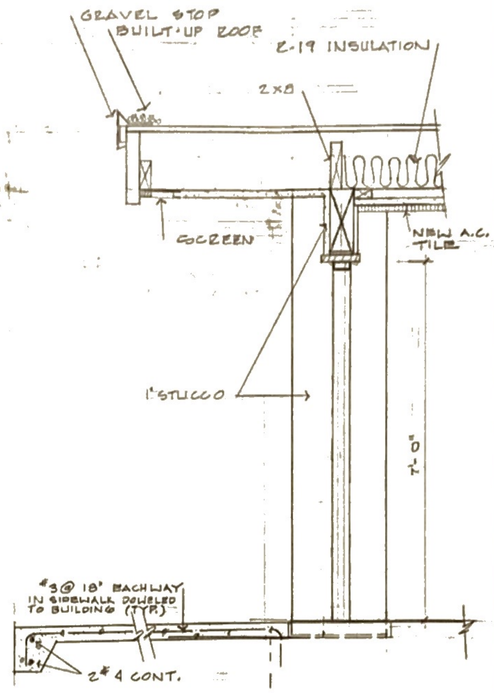
CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

SHEET A-7 OF 12 SHEETS

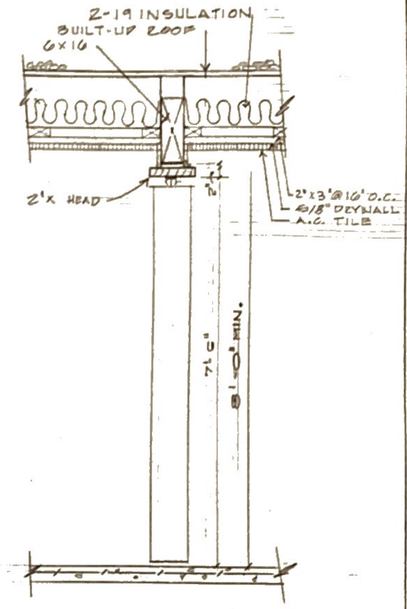
NOTE: CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME



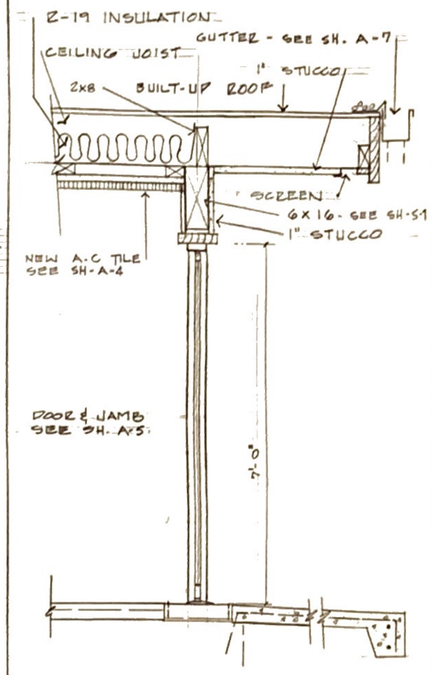
A WALL SECTION SCALE 1½" = 1'-0"



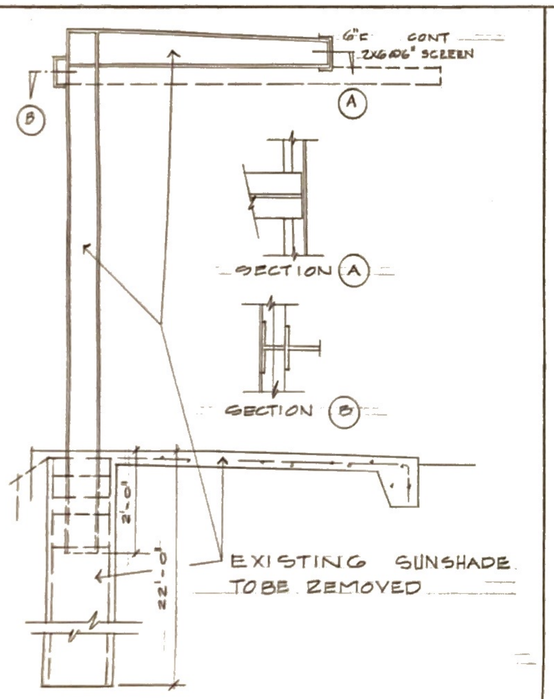
B WALL SECTION SCALE 3/4" = 1'-0"



C WALL SECTION SCALE 3/4" = 1'-0"



D WALL SECTION SCALE 3/4" = 1'-0"



"AS BUILT" 12-12-79

SHEET TITLE: WALL SECTIONS,

PROJECT: - ADDITION

FACILITY - ADDRESS: LAS PALMAS 92 CITIZEN CENTER
1822 LAS PALMAS AVE HOLLYWOOD CA

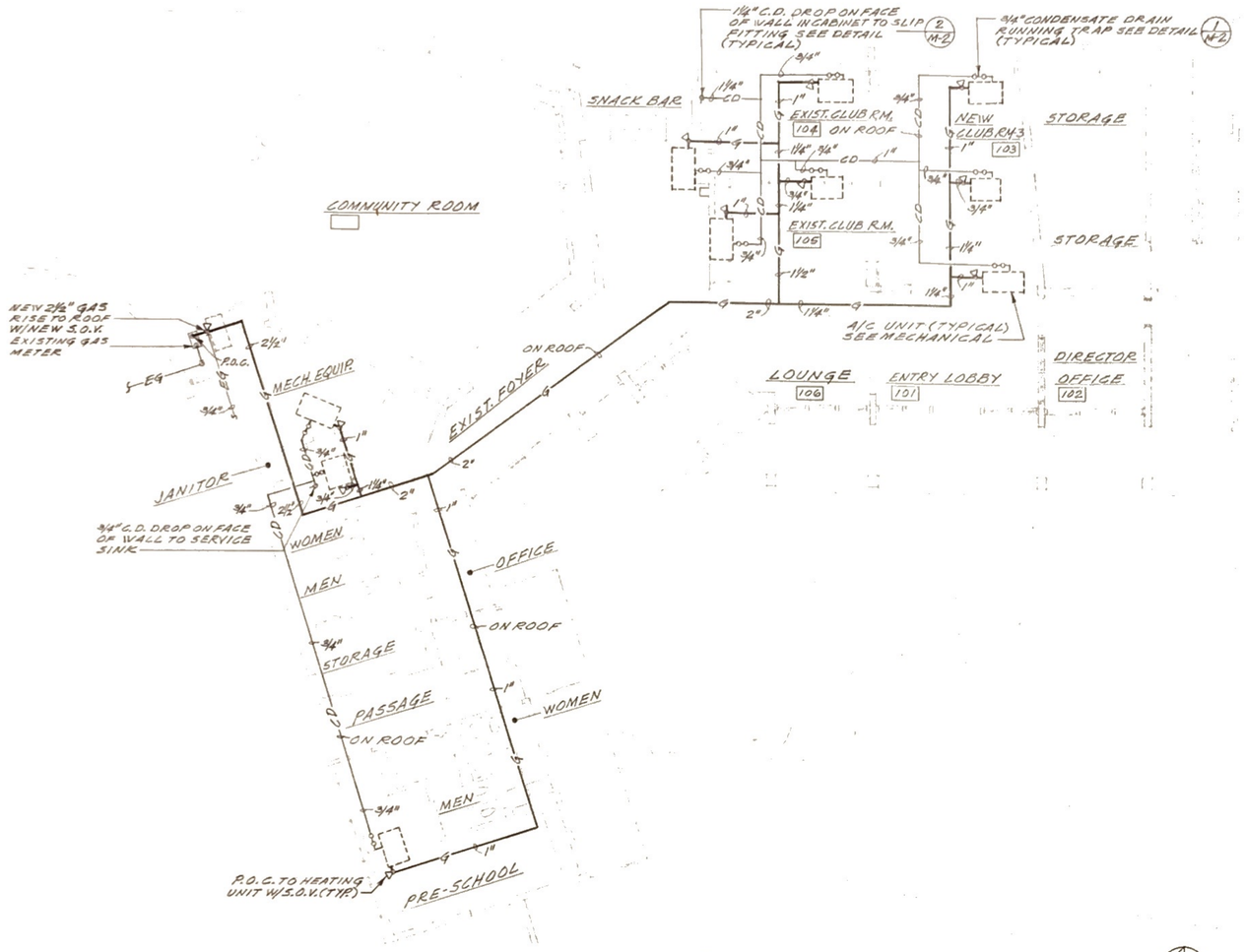
	REVISION	DATE	BY
SUPT. OF PARKS			
SUPT. OF RECREATION			
SUPT. OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY: TLP
DRAWN BY: TLP
CHECKED BY: WLPS
SUBMITTED BY: WLPS
DATE:
FILE NO 554

CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

SHEET A-8 OF 12 SHEETS

NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME (illegible)



PLUMBING FLOOR PLAN

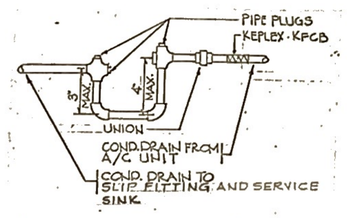
SCALE: ⅛" = 1'-0"

N

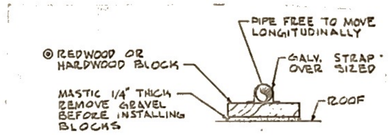
STARTING

GAS SCHEDULE - C.F.H.				
	SPACE HT'G.	WATER HT'G.	OTHER	TOTAL
EXISTING		28		28
	838			838
FUTURE				
	838	28		866

OUTLET = 200 FT.



RUNNING TRAP (1) M-2
NOT TO SCALE



* NOTE: USE NO NAILS INTO ROOF.
◎ AT DRAIN LINES SPACEING 8'-0" O.C. MAXIMUM AT GAS LINES SPACEING 10'-0" O.C. MAXIMUM.

SLIP FITTING (2) M-2
NOT TO SCALE

PIPE SUPPORT (3) M-2
NOT TO SCALE

1928

"AS BUILT" 12-12-79

SHEET TITLE: PLUMBING FLOOR PLAN, DETAILS AND SCHEDULES

PROJECT: LAS PALMAS SENIOR CITIZENS CENTER

FACILITY - ADDRESS: LAS PALMAS SENIOR CITIZENS CENTER, 1822 LAS PALMAS AVE. HOLLYWOOD, CALIF.

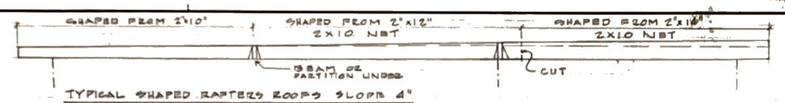
	REVISION	DATE	BY
SUPT. OF PARKS			
SUPT. OF RECREATION			
SUPT. OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY
DRAWN BY
CHECKED BY
SUBMITTED BY
DATE
FILE NO 554

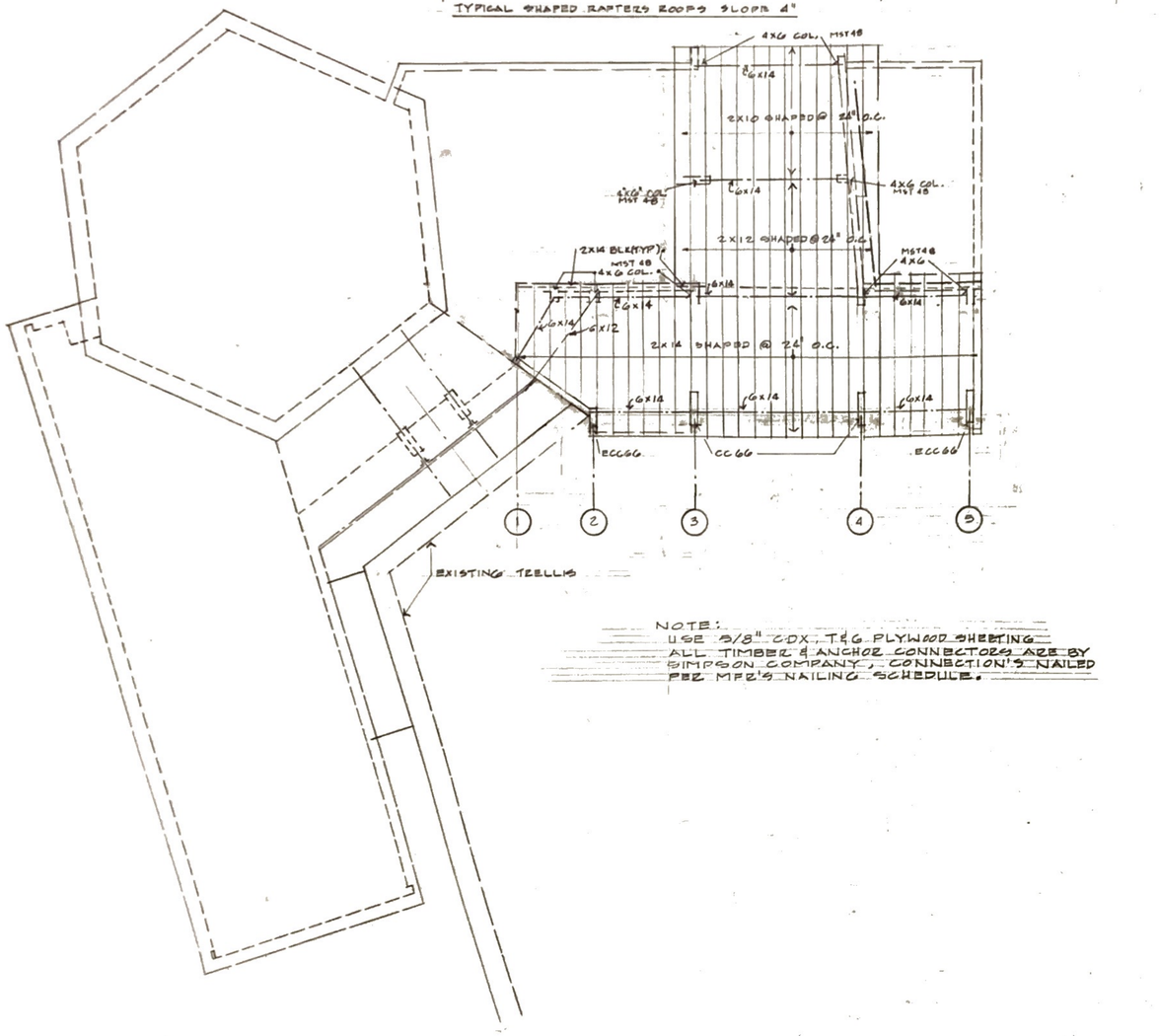
CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

SHEET M-2 OF SHEETS

NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

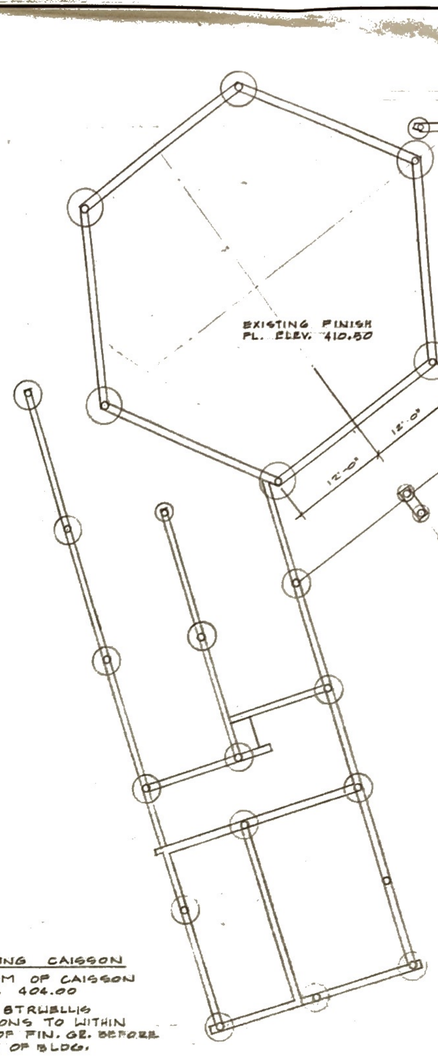


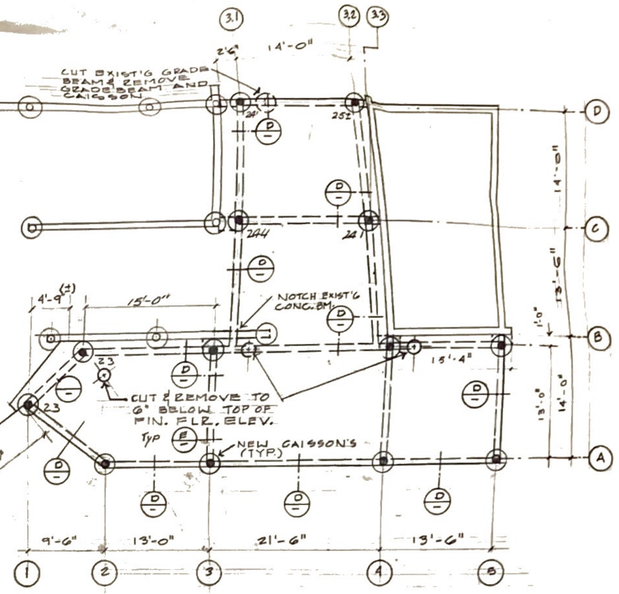
TYPICAL SHAPED RAFTERS ROOFS SLOPE 4"



NOTE:
USE 5/8" CDX T&G PLYWOOD SHEETING ALL TIMBER & ANCHOR CONNECTORS ARE BY SIMPSON COMPANY, CONNECTION'S NAILED PER MFR'S NAILING SCHEDULE.

A ROOF FRAMING — SCALE 1/8" = 1'-0"

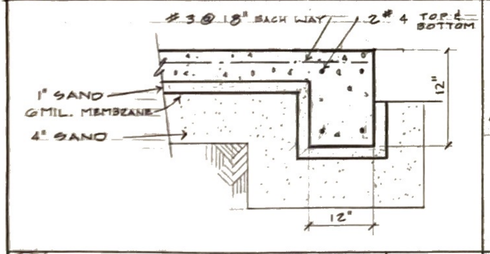




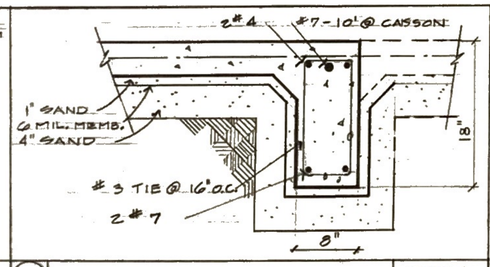
B FOUNDATION PLAN — SCALE 1/8" = 1'-0"

EXISTING CAISSON

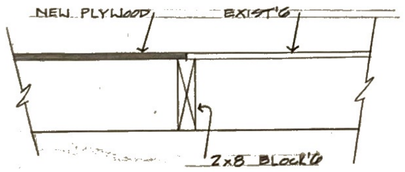
1. BOTTOM OF CAISSON ELEV. 404.00
2. POUR STRUELLIS CAISSONS TO WITHIN 2FT. OF FIN. GR. BEFORE START OF BLDG.



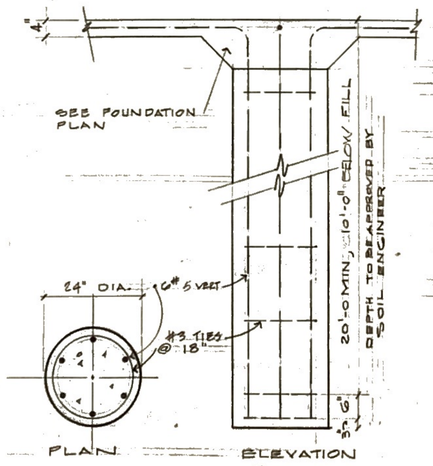
C FOOTING DETAIL — SCALE 1½" = 1'-0"



D FOOTING DETAIL — SCALE 1½" = 1'-0"



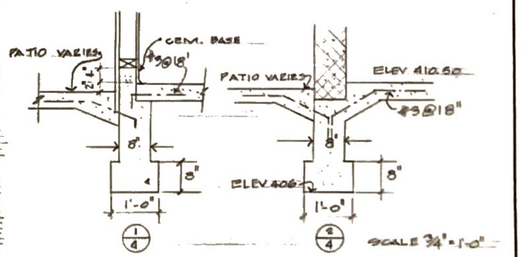
ROOF DIAPHRAGM CONNECTION — NO SCALE



F CAISSON - TYP. — SCALE 3/4" = 1'-0"

NOTE:

1. FLOOR SLABS:
   PRIOR TO PLACING FLOOR SLABS, THE EXISTING GRADE SHOULD BE SCARIFIED TO A DEPTH OF 12" (INCHES), MOISTENED AS REQUIRED TO OBTAIN OPTIMUM MOISTURE CONTENT, AND RECOMPACTED TO 90 PERCENT OR THE MAXIMUM DRY DENSITY, AS DETERMINED BY ASTM - D-1557-70.
2. APPROVAL: ALL CAISSON EXCAVATIONS BE APPROVED BY KOVACS-BYRD AND ASSOCIATES, INC. CONSULTING ENGINEERS & GEOLOGISTS; 12526 VENTURA BLVD. STUDIO CITY, CA. 91604 (213) 980-0825 OR APPROVED REGISTERED SOIL & FOUNDATION ENGINEER.
3.



SCALE 3/4" = 1'-0"

EXISTING FOOTING @ PATIO

"AS BUILT" 12-12-79

SHEET TITLE: FOUNDATION, ROOF FRAMING PLANS,

PROJECT: ADDITION

FACILITY - ADDRESS: LAS PALMAS SR CITIZEN CENTER 1822 LAS PALMAS AVE HOLLYWOOD CA

	REVISION	DATE	BY
SUPT. OF PARKS			
SUPT. OF RECREATION			
SUPT. OF PLANNING AND DEVELOPMENT			
GENERAL MANAGER			

DESIGNED BY: TLB
DRAWN BY: TLB
CHECKED BY:
SUBMITTED BY: WNS
DATE:
FILE NO. 554

CITY OF LOS ANGELES
DEPARTMENT OF RECREATION AND PARKS
200 N. MAIN STREET, CITY HALL EAST, LOS ANGELES, CALIFORNIA 90012

SHEET S-1 OF 12 SHEETS

NOTE CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND BE RESPONSIBLE FOR SAME

RECORD DRAWINGS
1999

AMERICANS WITH DISABILITIES ACT - ADA

TRANSITION PLAN

ADA COMPLIANCE

LAS PALMAS SENIOR CITIZEN CENTER

1820 LAS PALMAS AVE., LOS ANGELES, CA.

DRAWING INDEX

A-0 COVER SHEET, SITE PLAN, VICINITY MAP, AND GENERAL NOTES
A-1 SENIOR CENTER FLOOR PLAN
A-2 HANDICAP PARKING STALL
A-3 OUTDOOR STAIRWAY, ADA COMPLIANT M/W TOILET, ~~VERTICAL PLATFORM LIFT~~ OMIT

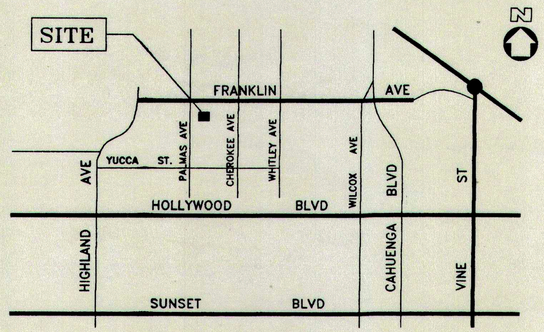
SCOPE OF WORK

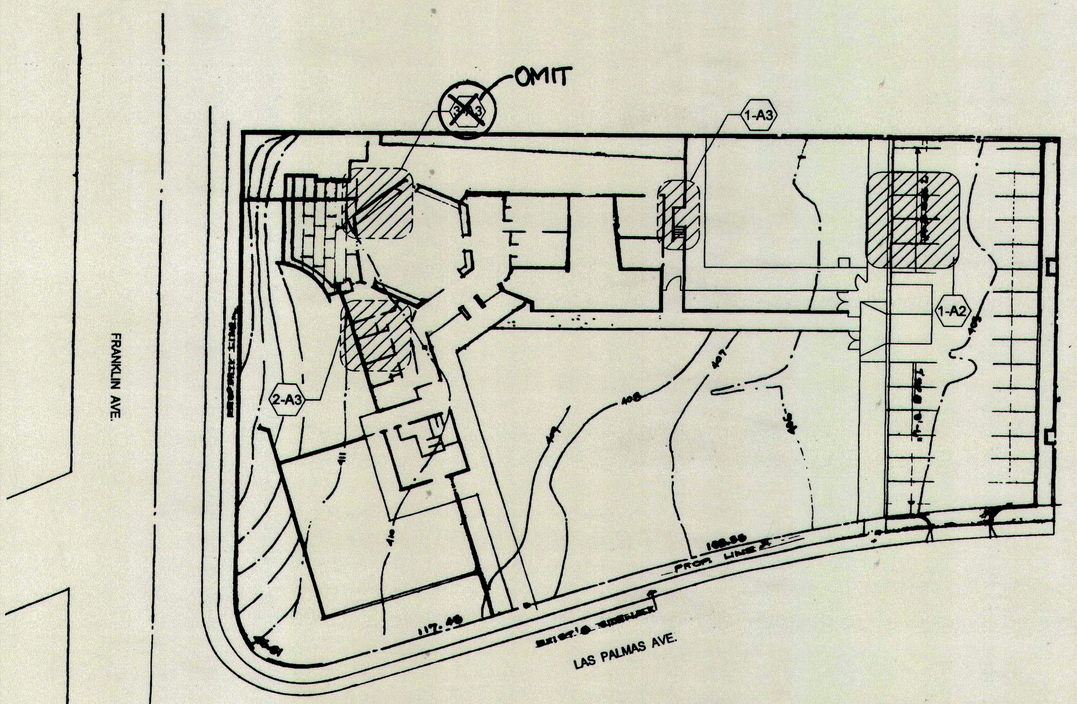
1. PROVIDE AND MODIFY STAIRS HANDRAILS TO COMPLY WITH ADA.
2. PROVIDE 10"H DOOR BOTTOMS AT THE PUSH SIDE OF THE DOOR.- S.S. KICK PLATE.
3. PROVIDE LEVER HARDWARE AT ENTRANCE TO COMMUNITY ROOM
4. COMPLETE MODIFICATION OF MEN AND WOMEN TOILETS
5. ~~REMOVE ONE WOOD STAIRS AND INSTALL A 48"x48" HANDICAPPED LIFT.~~ OMIT ~~(COMMUNITY ROOM)~~
6. PROVIDE TWO (2) HANDICAPPED PARKING STALL.

GENERAL NOTES

1. VERIFY ALL EXISTING CONDITIONS AND DIMENSION PRIOR TO CONSTRUCTION AND DEMOLITION.
2. PATCH AND REPAIR ALL DAMAGES CAUSED BY NEW WORK TO MATCH EXISTING ADJACENT CONDITION.
3. ALL MATERIALS, PARTS, AND EQUIPMENT FURNISHED BY THE CONTRACTOR IN THE WORK SHALL BE NEW, HIGH GRADE, AND FREE FROM DEFECTS U.N.O.. QUALITY OF WORK SHALL BE IN ACCORD WITH THE GENERALLY ACCEPTED STANDARDS.
4. OMISSIONS FROM THE PLANS AND SPECIFICATIONS SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF FURNISHING, MAKING, OR INSTALLING ALL ITEMS REQUIRED BY LAW OR USUALLY FURNISHED, MADE OR INSTALLED IN A PROJECT OF THE SCOPE AND CHARACTER INICATED BY THE PLANS AND SPECIFICATIONS.
5. DISPOSE OFF-SITE, ALL RUBBISH AND DEBRIS DUE TO NEW CONSTRUCTION
6. ALL TOILET FIXTURES, TOILET ACCESSORIES, DOORS AND DOOR HARDWARES SHALL CONFROM THE THE TITLE 24 CALIFORNIA CODE OF REGULATIONS AND THE ADA ACCESSIBILITY GUIDELINES (ADAAG).
7. ALL EXISTING DOORS IN A PUBLIC ACCOMMODATION AREAS ONLY SHALL BE PROVIDED WITH A LEVER TYPE DOORKNOB HARDWARES.

VICINITY MAP





N SITE PLAN
1" = 20'-0"

CITY ENGINEER	R.E.	DATE
[signature]		8/23/00
DEPUTY CITY ENGINEER	R.E.	DATE
Clark W. Robins	S-1845	8-25-00
CITY ARCHITECT	L.A.	DATE
[signature]	[signature]	8/23/00

LICENSED ARCHITECT CARMELO ARMANDO SABATELLA C-13951 11.30.01 REGISTERED DATE STATE OF CALIFORNIA

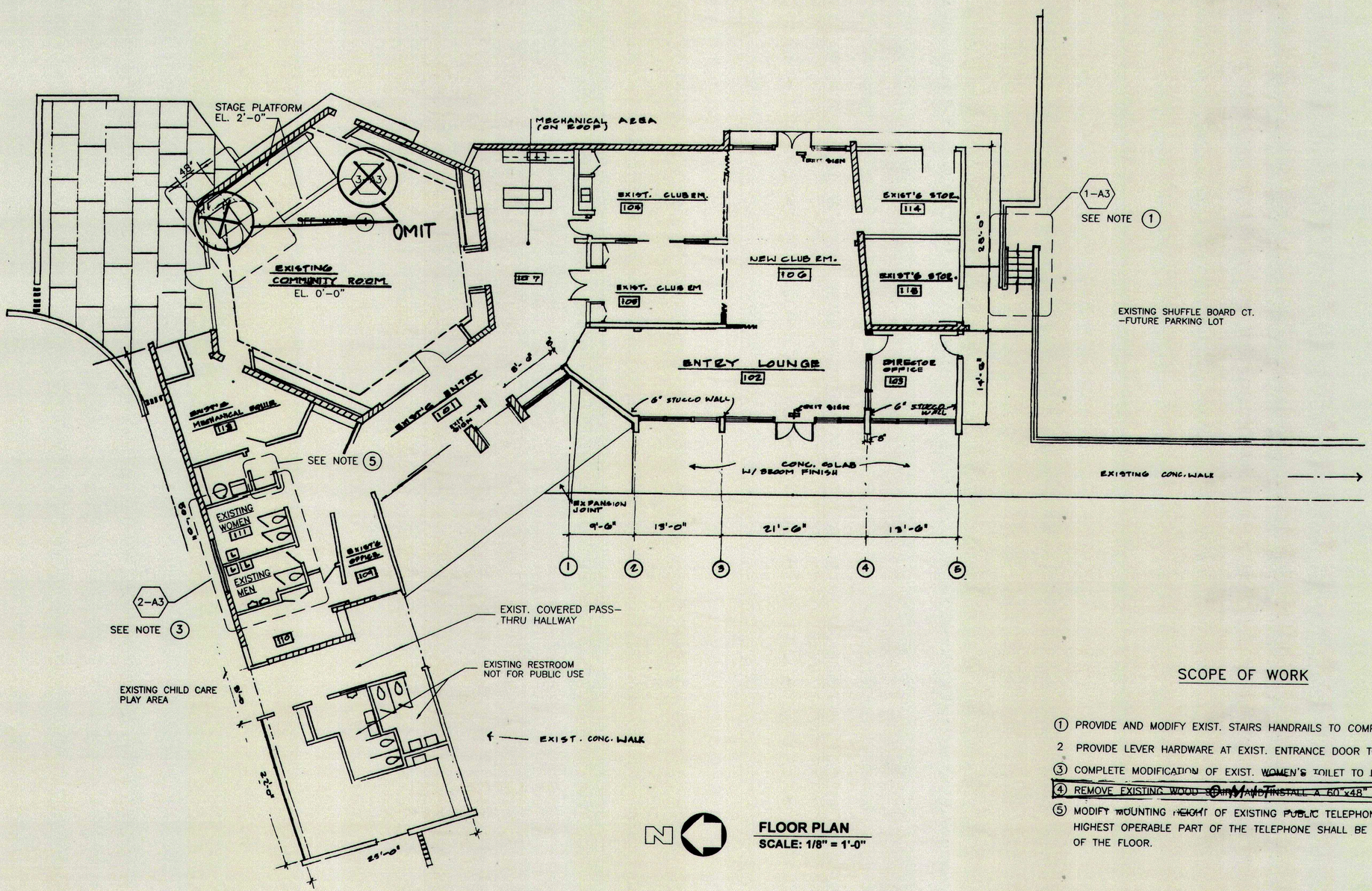
REGISTERED PROFESSIONAL ENGINEER VITALY B. TROYAN, PE No. C-29230 Exp. 9-30-01 CIVIL STATE OF CALIFORNIA

AS-BUILT
RECORDED ____ BY ____

CITY OF LOS ANGELES, DEPARTMENT OF RECREATION AND PARKS, 200 NORTH MAIN STREET, ROOM 709 LOS ANGELES, CALIFORNIA 90012

We make LA a better place!

SHEET TITLE	COVER SHEET, SCOPE OF WORK, VICINITY MAP, AND GENERAL NOTES
PROJECT	LAS PALMAS SENIOR CITIZEN CENTER - ADA COMPLIANCE-1ST YEAR
FACILITY ADDRESS	1820 LAS PALMAS AVE. LOS ANGELES
PROJECT NO.	1024D
FILE NO.	554
SHEET	A-0
OF 1 SHEETS 4	



FLOOR PLAN
SCALE: 1/8" = 1'-0"

SCOPE OF WORK

1. PROVIDE AND MODIFY EXIST. STAIRS HANDRAILS TO COMPLY WITH ADA.
2. PROVIDE LEVER HARDWARE AT EXIST. ENTRANCE DOOR TO COMMUNITY ROOM.
3. COMPLETE MODIFICATION OF EXIST. WOMEN'S TOILET TO UNISEX TOILET
4. ~~REMOVE EXISTING WOOD STAIRS AND INSTALL A 60"x48" HANDICAPPED LIFT.~~ OMIT
5. MODIFY MOUNTING HEIGHT OF EXISTING PUBLIC TELEPHONE. THE HIGHEST OPERABLE PART OF THE TELEPHONE SHALL BE WITHIN 48" OF THE FLOOR.

CITY OF LOS ANGELES, DEPARTMENT OF RECREATION AND PARKS, 200 NORTH MAIN STREET, ROOM 709 LOS ANGELES, CALIFORNIA 90012

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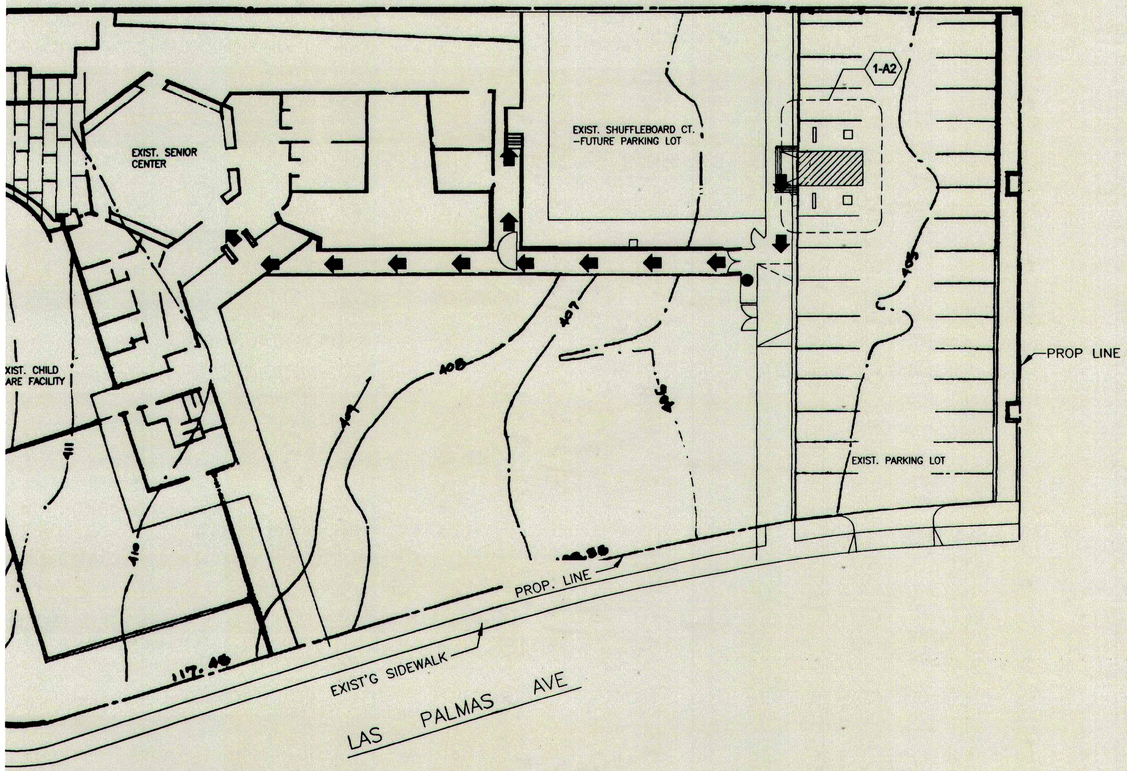
SHEET TITLE	SENIOR CENTER FLOOR PLAN
PROJECT	LAS PALMAS SENIOR CITIZEN CENTER - ADA COMPLIANCE-1ST YEAR
FACILITY ADDRESS	1820 LAS PALMAS AVE. LOS ANGELES
PROJECT NO.	1024D
FILE NO.	554
SHEET	A-1
OF 2 SHEETS 4	

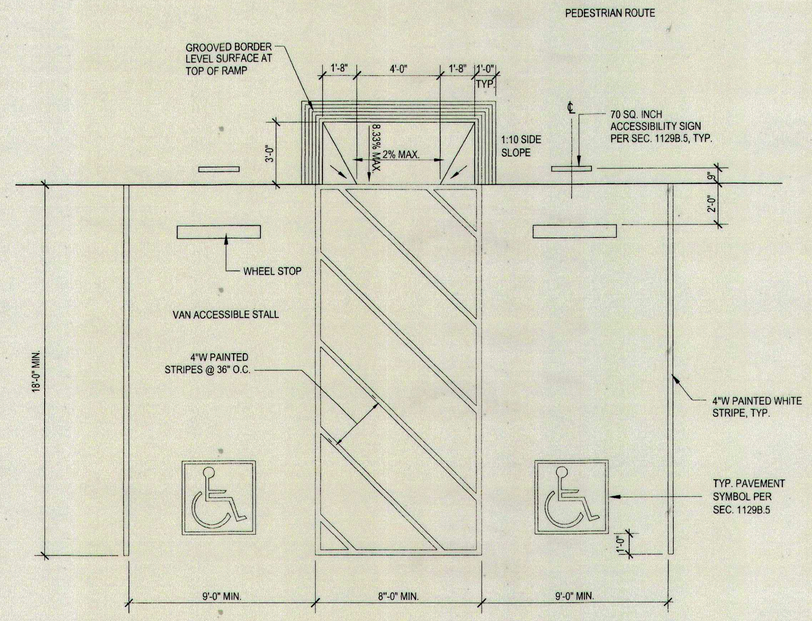


LEGEND:

- DISABLED ACCESS - P.O.T. FROM NEW CONSTRUCTION (AREA OF WORK) TO STREET SIDEWALK.
- INTERNATIONAL SYMBOL OF ACCESSABILITY SIGN (2-A2)
- NEW CONSTRUCTION

SCOPE OF WORK

1. PROVIDE TWO (2) 9'-0"Wx18'-0"L HANDICAPPED PARKING STALL PAINTED ISA SYMBOL. SEE DETAIL 3/A-2, RESTRIPE EXIST. PARKING STALLS AS NECESSARY
2. EXTEND THE EXISTING DRIVE WAY AT 5'± TO THE EAST



1-A2 / A-2 **DOUBLE PARKING STALLS**
SCALE: N.T.S.

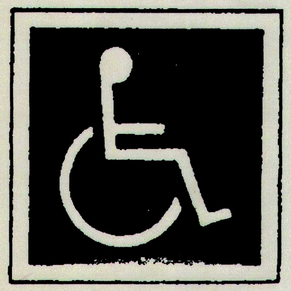


FIGURE NO. 11B-6

2-A2 / A-2 **INTERNATIONAL SYMBOL OF ACCESSIBILITY SIGN**
SCALE: N.T.S.

CITY OF LOS ANGELES, DEPARTMENT OF RECREATION AND PARKS, 200 NORTH MAIN STREET, ROOM 709 LOS ANGELES, CALIFORNIA 90012

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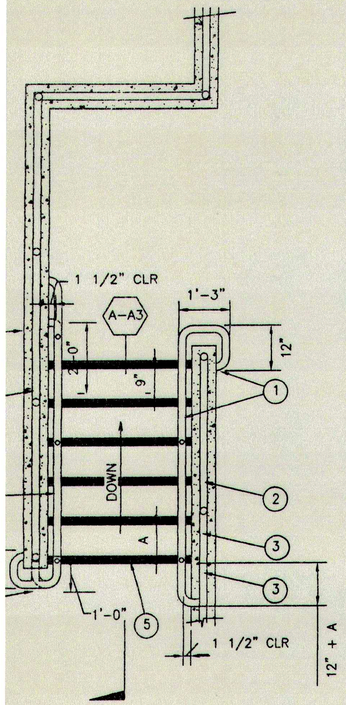
SHEET TITLE	HANDICAP PARKING STALL
PROJECT	LAS PALMAS SENIOR CITIZEN CENTER - ADA COMPLIANCE-1ST YEAR
FACILITY ADDRESS	1820 LAS PALMAS AVE. LOS ANGELES
PROJECT NO.	1024D
FILE NO.	554
SHEET	A-2
OF 3 SHEETS 4	

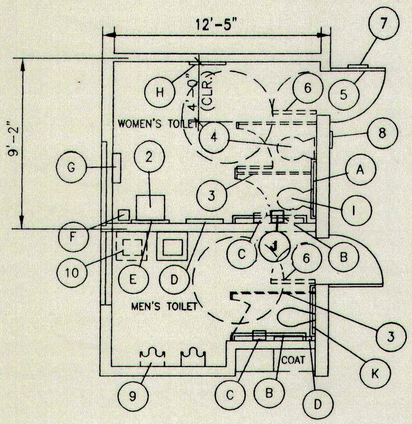


NOTE

1. PROVIDE AND INSTALL NEW (2) SET OF 1 1/2"ø GALV. STEEL HANDRAIL APPROXIMATELY 16 FEET LONG WITH EXTENSIONS. SEE DETAIL A-A3/A3.
2. EXISTING 2 1/2"ø PIPE GUARDRAIL, LEAVE GUARDRAIL AS IT IS.
3. EXISTING 8" WIDE BY 6" HIGH CONCRETE CURB .
4. PROVIDE (6) 2"W x 48"L SLIP RESISTANT STRIPPING OF CONTRASTING COLOR. SEE DETAIL 2/A-4.
5. REMOVE EXISTING 2 1/2"ø HANDRAIL APPROXIMATELY 8 FEET LONG. PROVIDE AND INSTALL 1-1/2"ø GALV. STEEL HANDRAIL.

PLAN - STAIR TO SHUFFLEBOARD CT

SCALE: 1/2" = 1'-0"



PROVIDE AND INSTALL TOILET ROOM ACCESSORIES AS FOLLOWS:

- (A) GRAB BAR, 1-1/2"ø STAINLESS STEEL, 36" LONG, SECURELY ATTACHED 33" ABOVE AND PARALLEL TO FLOOR.
- (B) GRAB BAR, 1-1/2"ø STAINLESS STEEL, 42" LONG, SECURELY ATTACHED 33" ABOVE AND PARALLEL TO FLOOR.
- (C) TOILET PAPER HOLDER; STAINLESS STEEL; CONTINUOUS RUN.
- (D) SEAT COVER DISPENSER; PLASTIC LOCATED 40" MAX. FROM FLOOR.
- (E) MIRROR WITH STAINLESS STL. FRAMED 24"x36" WITH 6"Wx24"L SHELF, NO HIGHER THAN 40" FROM FLOOR.
- (F) SOAP DISPENSER (LIQUID) STAINLESS STEEL SHALL BE NO HIGHER THAN 40" FROM FLOOR.
- (G) TOWEL DISPENSER/WASTE RECEPTACLE (SURFACE MTD) STAINLESS STEEL SHALL BE NO HIGHER THAN 40" FROM FLOOR.

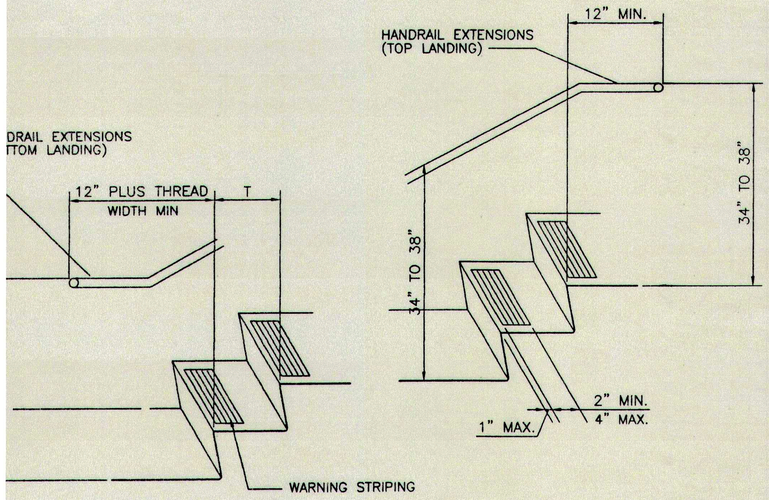
NOTES

1. REMOVE EXISTING WATER CLOSET. INSTALL ONE (1) NEW WATER CLOSET TO MATCH EXISTING (WALL-HUNG OR FLOOR MOUNTED), 17"-19" HIGH (AFF) WITH FLUSH VALVE ON THE WIDE SIDE. RECONNECT EXISTING PIPING TO NEW WATER CLOSET.
2. REMOVE EXISTING LAVATORY. INSTALL ONE (1) NEW LAVATORY PER CODE. INSULATE DRAIN AND HOT WATER PIPING. RECONNECT EXISTING PIPING TO NEW LAVATORY.
3. REMOVE (DISPOSE) EXISTING METAL PARTITION, PATCH/RETILE FLOOR AND CEILING AFFECTED AREAS AS REQUIRED TO MATCH EXISTING
4. REMOVE AND DISPOSE EXISTING WATER CLOSET. CAP/PLUG ALL UNUSED OUTLETS/PIPES. PATCH AND RETILE AS REQUIRED TO MATCH EXISTING
5. PROVIDE AND INSTALL ONE (1) 36"x84"x1-3/4" SOLID CORE WOOD DOOR AND FRAMES. SEE HARDWARE TYPE 2 (FIN HARDWARE SECTION 09700) PROVIDE METAL LOUVER VENT MIN. 10" FROM BOTTOM OF DOOR TO ALLOW THE DOOR TO BE OPENED BY WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION.
6. REMOVE AND DISPOSE EXISTING DOOR/FRAMES. PATCH/PAINT WALL AND FLOOR AFFECTED BY REMOVAL TO MATCH EXISTING
7. PROVIDE AND INSTALL DOOR SIGN (UNISEX) 1/4" THK PLASTIC; 12" IN DIAMETER 5'-0" ABOVE FLOOR. TRIANGLE (INSIDE).
8. PROVIDE AND INSTALL INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) LOCATED 5'-0" ABOVE FLOOR.
9. REMOVE AND DISPOSE EXISTING URINAL. CAP/PLUG ALL UNUSED OUTLETS/PIPES. PATCH AND RETILE AS REQUIRED.
10. REMOVE AND DISPOSE EXISTING LAVATORY. CAP/PLUG ALL UNUSED OUTLETS/PIPES. PATCH AND RETILE AS REQUIRED.

- (H) SANITARY NAPKIN DISPENSER COMBINATION VENDOR SHALL BE NO HIGHER THAN 40" FROM FLOOR.
- (J) SANITARY NAPKIN AND TAMPON DISPOSAL; STAINLESS STEEL; (MOUNT BELOW GRAB BAR).
- (K) GRAB BAR, 1-1/2" ø STAINLESS STEEL, 32" LONG, SECURELY ATTACHED 33" ABOVE AND PARALLEL TO FLOOR.

2-A3 / A-1 **PLAN - MEN AND WOMEN TOILETS (HANDICAPPED)**

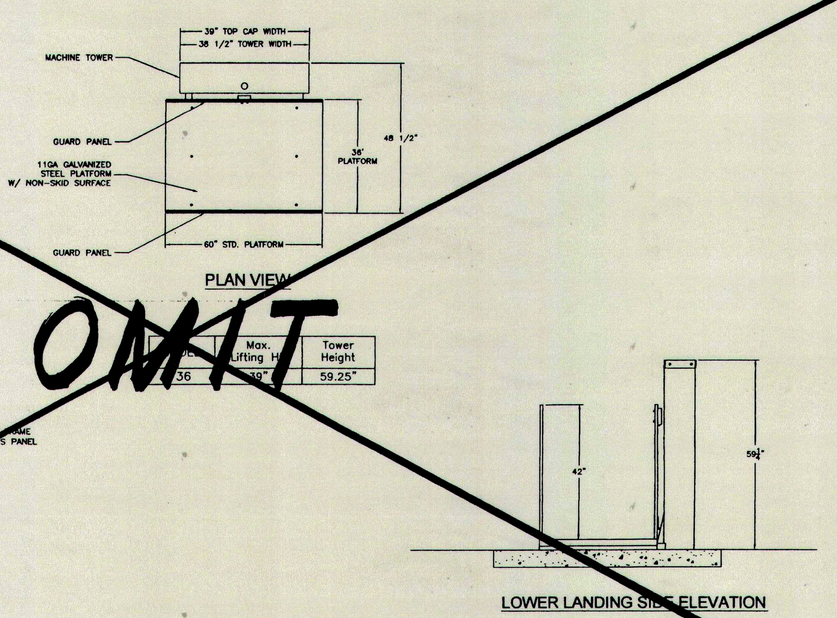
SCALE: 1/4" = 1'-0"



DETAIL - STRIPING AND EXTENSIONS

SCALE: N.T.S.

OMIT



3-A3 / A-1 **VERTICAL PLATFORM LIFT**

SCALE: N.T.S.

CITY OF LOS ANGELES, DEPARTMENT OF RECREATION AND PARKS, 200 NORTH MAIN STREET, ROOM 709 LOS ANGELES, CALIFORNIA 90012

We make better L.A. places.

DATE	BY
12-06-99	

GENERAL MANAGER

ASST. GM, DIR. PLANNING & DEVELOPMENT

ASST. GM, DIR. OPERATIONS

DEPUTY DIR. OF DESIGN

DESIGNED/DATE

DRAWN/DATE

CHECKED/DATE

SHEET TITLE: OUTDOOR STAIRWAY, ADA COMPLIANT UNISEX TOILET, VERTICAL PLATFORM LIFT

PROJECT: LAS PALMAS SENIOR CITIZEN CENTER - ADA COMPLIANCE-1ST YEAR

FACILITY ADDRESS: 1820 LAS PALMAS AVE. LOS ANGELES

PROJECT NO. 1024D

FILE NO. 554

SHEET A-3

OF 4 SHEETS 4

RECORD DRAWINGS
2019

FIRE ALARM SYSTEM
LAS PALMAS SENIOR CITIZEN CENTER

INSTALLING CONTRACTOR:

FIRE ALARM • LIFE SAFETY • NURSE CALL
FIBER OPTICS • VOICE AND DATA
ACCESS CONTROL SECURITY CCTV

FFSTECH
BUILDING INTEGRATED SYSTEMS

BICSI UL S4755-1

C-10 & C-7 LIC. #541227
C-16 LIC. #816187
ALARM LIC. #ACO 4380
REG. 4 CERTIFIED

6000 VENICE BOULEVARD, LOS ANGELES ,CALIFORNIA 90034 • (323) 965-9300 Fax: (323) 965-2700

C19-02751
APPROVED
LOS ANGELES FIRE DEPARTMENT
FIRE DEVELOPMENT SERVICES
BY: DM 8/22/19
LIFE WARNING SYSTEM

F19-01238
SUBJECT TO FIELD INSPECTION
The approval of these plans and/or specifications does not exempt them from strict compliance with all other pertinent sections of the Municipal Code and other laws and regulations.
APPROVED
FOR CENTRAL STATION TRANSMITTERS ONLY
LOS ANGELES FIRE DEPARTMENT
FIRE DEVELOPMENT SERVICES
BY: DM 8/22/19

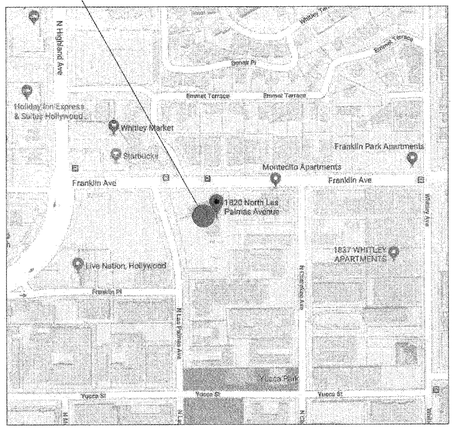
THIS PLAN APPROVAL IS SUBJECT TO THE USE OF SUITABLE ELECTRICAL EQUIPMENT AND THOSE THAT ARE APROVED BY THE DEPARTMENT. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED BY A CITY OF LOS ANGELES RECOGNIZED TESTING LABORATORY. LAMC 93.0402

☐ This perforated set of plans are not approved for the [illegible] are paid and the permit is issued.
☐ The permit(s) is valid for two years from the date the permit fees are paid.
☐ Visit http:/www.permitla.org/lpar/index.cfm to check the status of this set of plans by entering the 15 digits Permit number. "Issued" status means the permit fees have been paid.
☐ No inspection can be scheduled until the permit fees have been paid.
BY: [signature] DATE: 8-22-19
Permit No./ Application No. 19041 . 10000 . 33120
○ This set of plans MUST be at the job site during construction.
○ It is unlawful to alter, change, or deviate from these plans.
○ The stamping of this plan SHALL NOT be held to permit or to be an approval of the violation of any provisions of any Ordinance or Law.
○ SEPARATE permits are required for BUILDING ELECTRICAL, PLUMBING, FIRE SPRINKLERS, ELEVATOR, HEATING or REFRIGERATION [illegible] was issued as a combination permit for a Dwelling Two Family Dwelling [illegible] Section 91.0107.2.2 and the work to that [illegible]

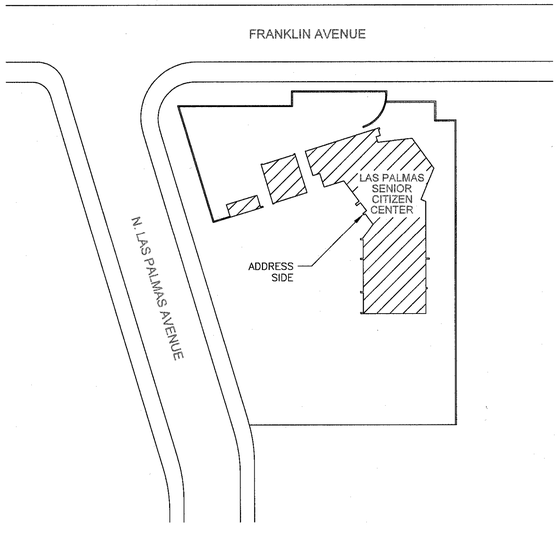
City of Los Angeles, Department of Building & Safety
Electrical Plan Check
Plan Checked for:
☐ Energy Conservation Standards
☑ Fire Alarm System
☐ Other: [signature]
☐ Electrical Systems
☐ Methane Electrical Wiring System

VICINITY MAP

PROJECT SITE



SITE PLAN



DRAWING INDEX

DRAWING REF. NO.	DRAWING NO.	DESCRIPTION
	FA-0.0	TITLE SHEET
	FA-0.1	NOTES, SCHEDULES, SYMBOL LIST & BILL OF MATERIAL
	FA-0.2	SYSTEM CALCULATIONS & SINGLE LINE RISER DIAGRAM
	FA-0.3	FIRE ALARM CONTROL UNIT WIRING
	FA-2.01	FIRE ALARM FLOOR PLAN

FFSTECH
BUILDING INTEGRATED SYSTEMS

C-10 & C-7 LIC. #541227
C-16 LIC. #816187
ALARM LIC. #ACO 4380
REG. 4 CERTIFIED

BICSI UL S4755-1

6000 VENICE BOULEVARD, LOS ANGELES ,CALIFORNIA 90034 • (323) 965-9300 Fax: (323) 965-2700

LAS PALMAS SENIOR CITIZEN CENTER

1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

Copyright FIRST FIRE SYSTEMS, INC. 1999

Issue Date: 08-03-2019

Revisions

No.	Date	Description
0	08-21-19	For Submittal

CONSULTANT'S SEAL

FFSTECH Y. ROSHANZAMIR Contractor C-10 No. 541227 Exp. 08-30-2020 ELECTRICAL STATE OF CALIFORNIA

Project Number: Drawn By: JJS

Checked By: Project Manager: DH

Sheet Title:
TITTLE SHEET

Sheet Number:
FA-0.0

GENERAL NOTES:

1. THE SYSTEM SHOWN HERE IS INTENDED TO MEET THE FOLLOWING CODES AND STANDARDS:
   - HEALTH AND SAFETY CODE SECTION 13145.
   - CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 19 CCR, TITLE 24, PART 2: 2017 EDITION.
   - CALIFORNIA BUILDING CODE (CBC) CCR, TITLE 24, PART 2: 2017 EDITION.
   - CALIFORNIA ELECTRICAL CODE CCR, TITLE 24, PART 3: 2017 EDITION.
   - CALIFORNIA MECHANICAL CODE (CMC) CCR, TITLE 24, PART 4: 2017 EDITION.
   - CALIFORNIA FIRE CODE (CFC) CCR, TITLE 24, PART 9: 2017 EDITION.
   - NFPA 72, THE NATIONAL FIRE ALARM CODE, 2016 EDITION, AS AMENDED IN CHAPTER 47 OF THE 2017 CFC.
2. CELLULAR ALARM COMMUNICATOR IS INHERENTLY POWER LIMITED, AND SIGNALING AND INITIATING CIRCUITS DO NOT REQUIRE OVERCURRENT PROTECTION.
3. CELLULAR ALARM COMMUNICATOR WILL CONNECT TO THE PRIMARY AND SECONDARY PORTS OF THE FIRE ALARM CONTROL UNIT'S DACT. THE CELLULAR ALARM COMMUNICATOR WILL TRANSMIT ANY OFF-NORMAL CONDITION TO THE CENTRAL STATION.
4. CELLULAR ALARM COMMUNICATOR MUST BE PROGRAMMED TO SEND TEST SIGNAL AT INTERVALS NOT EXCEEDING 60 MINUTES.
5. FAILURE OF THE PRIMARY TRANSMISSION PORT MUST BE ANNUNCIATED LOCALLY AND TRANSMTTED WITHIN 4 MINUTES OVER THE SECONDARY TRANSMISSION PORT.
6. THERE ARE NO ABOVE CEILING HEAT DETECTORS ON EXISTING SYSTEM.
7. ALL WIRING, INITIATING DEVICES, AND ANNUNCIATOR PANEL SHALL BE SUPERVISED TO THE PRINCIPAL POINT OF ANNUNCIATION (F/A PANEL TO SUPERVISE THE ANNUNCIATOR PANEL, ALL CIRCUITS AND INITIATING DEVICES).
8. WIRING SHALL NOT BE LOOPED THROUGH DEVICES; WIRE MUST BE CUT FOR IN AND OUT.
9. POINT AND COMMON ANNUCIATION PROHIBITED. NON-ADDRESSABLE CIRCUITS, T-TAPPING IS PROHIBITED.
10. ALL DEVICES IN THE ALARM SYSTEM SHALL BE COMPATIBLE AND INSTALLED TO MANUFACTURER'S SPECIFICATIONS.
11. AUDIBILITY OF ALARM AND VOICE COMMUNICATION SHALL BE NOT LESS THAN 15dBA ABOVE AMBIENT SOUND, BUT NOT LESS THAN 75dBA, THROUGHOUT AREA OF ALARM.
12. AREAS HAVING MORE THAN 2 STROBES IN THE FIELD OF VIEW SHALL BE SYNCHRONIZED (2016 NFPA 72, 18.5.5.4.2.(3)).
13. SMOKE DETECTORS AND HEAT DETECTOR LOCATIONS ARE BASED ON SMOOTH CEILING WITH MAXIMUM HEIGHT OF 10 FEET UNLESS OTHERWISE NOTED.
14. STROBE LOCATION IS BASED ON 10 FOOT CEILING HEIGHT AND ARE INSTALLED ACCORDING TO NFPA 72 REQUIREMENTS UNLESS OTHERWISE NOTED.
15. WALL-MOUNTED STROBES SHALL HAVE THEIR BOTTOMS NOT LESS THAN 80 INCHES ABOVE FINISHED FLOOR AND NO GREATER THAN 96 INCHES ABOVE FINISHED FLOOR.
16. STROBES IN SLEEPING AREAS SHALL BE LOCATED WITHIN 16 FEET OF PILLOW AND HAVE A MINIMUM INTENSITY OF 110cd. FOR STROBES LOCATED LESS THAN 24 INCHES FROM CEILING, MINIMUM INTENSITY SHALL BE 177cd.
17. MANUAL PULL STATIONS SHALL BE MOUNTED NO HIGHER THAN 48" TO TOP OF OUTLET BOX. (2016 CBC ADA C 1136A.2 AND 1142A.2)
18. FIRE ALARM SIGNAL SHALL MEET ANSI S3.41, AUDIBLE EMERGENCY EVACUATION SIGNAL (TEMPORAL PATTERN).

INSTALLATION NOTES:

1. ELECTRICAL CONTRACTOR TO PROVIDE 120VAC, 20AMP. DEDICATED CIRCUIT TO FIRE CONTROL PANEL COMMUNICATOR (NIC). FIRE CONTROL PANEL COMMUNICATOR CIRCUIT SHALL BE INSTALLED ACCORDING TO NFPA72 5.5.1(1)(2)(3).
2. POWER LIMITED WIRING SHALL BE SEPARATED FROM NON-POWER LIMITED, ELECTRIC LIGHT, POWER, AND CLASS I CIRCUITS A MINIMUM OF 2 INCHES. NFPA 70, 760-133.
3. ALL WIRING AND CABLING METHODS SHALL COMPLY WITH NFPA 70, 760-130., BY PROTECTING ALL WIRING WITHIN SEVEN (7) FEET ABOVE. FINISHED FLOOR IN CONDUIT STUB-UPS AND BY CONCEALING ALL WIRING IN WALLS, CEILINGS, AND PROTECTIVE BUILDING ELEMENTS.
4. ALARM CONTRACTOR SHALL PROVIDE THE OWNER WITH A COPY OF MAINTENANCE, OPERATION AND TEST INSTRUCTIONS, ALONG WITH A COPY OF THE "AS BUILT" DRAWINGS.
5. CONTRACTOR SHALL PROVIDE AND PERMANENTLY INSTALL A COPY OF THE OPERATING INSTRUCTIONS NEXT TO THE FIRE CONTROL PANEL AS WELL AS AN EMERGENCY SERVICE RESPONSE PHONE NUMBER.

CENTRAL STATION:
National Monitoring Center (NMC)
25341 Commercentre Dr.
Lake Forest, CA 92630
Ph. (800) 662-1711
U.L. CERTIFICATE #: S8126-1

INSTALLATION COMPANY:
FFSTECH Building Integrated Systems
6000 Venice Boulevard
Los Angeles, CA 80012
Ph. (323) 965-9300
U.L. CERTIFICATE #: S4755-1

SCOPE OF WORK:

1. REPLACE EXISTING FIRE ALARM PANEL WITH NEW IO1000GD ADDRESSABLE FIRE ALARM PANEL.
2. PROVIDE A NEW CELLULAR ALARM COMMUNICATOR FOR AN APPROVED SOLE PATH OF COMMUNICATION TO THE CENTRAL STATION.
3. INSTALL NEW FIELD DEVICES.
4. TOTAL DEVICES: 51.
5. NUMBER OF STORIES: 1.
6. TEST THE ENTIRE SYSTEM.

PROJECT DATA

PROJECT ADDRESS:
1820 NORTH LAS PALMAS AVENUE
LOS ANGELES, CA 90028

OWNER:
CITY OF LOS ANGELES
PARKS & RECREATION
3900 CHEVY CHASE DRIVE BUILDING A
LOS ANGELES, CA 90039
ATTENTION: RICHARD PAYAN 323-867-2902

CONSTRUCTION TYPE:
II-B NON-SPRINKLERED

OCCUPANCY TYPE:
A-3

OCCUPANCY LOAD:
60

NUMBER OF STORIES:
1

SQUARE FOOTAGE:
6030 SQ. FT.

APPLICABLE CODES AS OF JANUARY 1, 2017

2017 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24, C.C.R.
2017 CALIFORNIA BUILDING CODE (CBC), VOLUMES 1-2, PART 2, TITLE 24, C.C.R.;
(2018 INTERNATIONAL BUILDING CODE VOLUMES 1-2 AND 2014 CALIFORNIA AMENDMENTS)
2017 LOS ANGELES ELECTRICAL CODE (LAEC)
(2017 NATIONAL ELECTRICAL CODE AND 2014 CALIFORNIA AMENDMENTS)
2017 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24, C.C.R.;
(2018 IAPMO UNIFORM MECHANICAL CODE AND 2014 CALIFORNIA AMENDMENTS)
2017 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24, C.C.R.;
(2018 IAPMO UNIFORM PLUMBING CODE AND 2014 CALIFORNIA AMENDMENTS)
2017 CALIFORNIA ENERGY CODE, PART 6, TITLE 25 C.C.R.
(2017 CALIFORNIA ENERGY COMMISSION BUILDING ENERGY EFFICIENCY STANDARDS)
2017 CALIFORNIA ELEVATOR CODE, PART 7, TITLE 24, C.C.R.
2017 CALIFORNIA HISTORICAL BUILDING CODE, PART 8 CBSC
2017 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24, C.C.R.
(2018 INTERNATIONAL FIRE CODE AND 2015 CALIFORNIA AMENDMENTS)
2017 CALIFORNIA GREEN (CAL GREEN) CODE, PART 11, TITLE 24, C.C.R.
2017 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24, C.C.R.
Title 8 C.C.R., CH. 4, SUB-CH. 6-ELEVATOR SAFETY ORDERS
TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

LIST OF FEDERAL CODES AND STANDARDS (IF APPLICABLE)

AMERICANS WITH DISABILITIES ACT (ADA), TITLE II OR TITLE III
FOR TITLE II: UNIFORM FEDERAL ACCESSIBILITY STANDARDS(UFAS) OR ADA STANDARDS FOR ACCESSIBLE DESIGN (APPENDIX A OF 28 CFR PART 36)
FOR TITLE III: ADA STANDARDS FOR ACCESSIBILE DESIGN (APPENDIX A OF 28 CFR PART 36)

PARTIAL LIST OF APPLICABLE NFPA STANDARDS:

NFPA 13	AUTOMATIC SPRINKLER SYSTEMS	2017 EDITION
NFPA 72	NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED) (NOTE SEE UL STANDARD 1971 FOR "VISUAL DEVICES")	2017 EDITION

SYMBOL LEGEND AND BILL OF MATERIAL

SYMBOL	QTY.	DESCRIPTION	MANUFACTURE	MODEL NO	C.S.F.M.	ROUGH-IN BOX
FACU	1 2	FIRE ALARM CONTROL UNIT BATTERY A.H. PROVIDED	EST	IO1000GD 18.0 A.H.	7165-1657:0244	INCLUDED
FAC	1	CELLULAR ALARM COMMUNICATOR	TELGUARD	TG-7FS-LTE-V	7300-1402:0110	INCLUDED
SRD	1	SYSTEM RECORD DOCUMENTS CABINET	SPACE AGE	SSU00689	7300-0553:0110	INCLUDED
SD	23	SMOKE DETECTOR	EST	SIGA-PD	7272-1657:0331	3-1/2" OCTAGON
CO	1	COMBINATION SMOKE/CARBON MONOXIDE DETECTOR	EST	SIGA-PCD	7270-1657:0334	3-1/2" OCTAGON
F	4	MANUAL PULL STATION	EST	SIGA-270	7150-1657:0129	SINGLE GANG, 2-1/2" DEEP
F WP	1	MANUAL PULL STATION, WP	EST	MPSR1-D45-GE	7150-1657:0236	INCLUDED
CT1	1	SINGLE INPUT MODULE	EST	SIGA-CT1	7300-1657:0121	SINGLE GANG, 2-1/2" DEEP
CR	7	HIGH POWER CONTROL RELAY MODULE	EST	SIGA-CRH	7300-1657:0121	4/S DEEP
	13	MULTI-CANDELA STROBE, CEILING	EST	GCF-VM	7125-1657:0219	4/S DEEP
	3	MULTI-CANDELA STROBE, WALL	EST	G1RF-VM	7125-1657:0218	4/S DEEP
	4	MULTI-CANDELA HORN STROBE, CEILING	EST	GCF-HDVM	7125-1657:0202	4/S DEEP
WP	2	MULTI-CANDELA HORN STROBE, WALL, WP	EST	WG4RF-HVMC	7125-1657:0311	449
	3	15K ohm/47K ohm END OF LINE RESISTOR AS REQ'D				

FIRE ALARM SEQUENCE OF OPERATIONS

ACTION \ DEVICE	Manual Pull Stations	Area Smoke Detectors	Carbon Monoxide Detector
Annunciate at FACP (Alarm & Trouble)	YES	YES	YES
Annunciate at Central Station	YES	YES	YES
Shutdown HVAC Units Globally	YES	YES	YES
Activate Audio/Visual Signal	YES	YES	YES

FIRE ALARM WIRE LEGEND

SYMBOL	DEVICE/FUNCTION	DESCRIPTION
D	SLC DEVICES CIRCUIT	16/2 FPLR CABLE (WEST PENN D990 OR EQUAL)
V	VISUAL DEVICES CIRCUIT	14/2 FPLR CABLE (WEST PENN 994 OR EQUAL)
Z	REMOTE ANNUNCIATOR	1 PAIR #16 WEST PENN D990 & 2 #14 THHN

WIRE FILL CHART

CONDUIT TRADE SIZE (INCHES)			1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6
TYPE LETTERS		CONDUCTOR SIZE AWG, KCMIL												
THWN		14	13	24	39	69	94	154						
		12	10	18	29	51	70	114	164					
THHN		10	6	11	18	32	44	73	104	160				
		8	3	5	9	16	22	36	51	79	106	136		
			AREA - SQUARE INCHES											
			PERCENT REDUCTION PER NUMBER OF 18AWG TWISTED SHIELDED PAIRS											
TRADE SIZE	INTERNAL DIAMETER INCHES	TOTAL 100%	OVER 2 COND. 40%	1	2	3	4	5	6	7	8			
1/2	.622	.30	.12	33%	66%	99%	X	X	X	X	X			
3/4	.824	.53	.21	19%	38%	57%	76%	95%	X	X	X			
1	1.049	.86	.34	12%	24%	36%	48%	60%	72%	84%	96%			
1 1/4	1.380	1.50	.60	7%	14%	21%	28%	35%	42%	49%	56%			
1 1/2	1.610	2.04	.82	5%	10%	15%	20%	25%	30%	35%	40%			
2	2.067	3.36	1.34	3%	6%	9%	12%	15%	18%	21%	24%			

MAXIMUM NUMBER OF CONDUCTORS IN TRADE SIZES OF CONDUIT OR TUBING

FFSTECH
BUILDING INTEGRATED SYSTEMS
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C-16 LIC. #816187
ALARM LIC. #ACO 4380
REG. 4 CERTIFIED
UL S4755-1
6000 VENICE BOULEVARD, LOS ANGELES, CALIFORNIA 90034 • (323) 965-9300 Fax: (323) 965-2700

LAS PALMAS SENIOR CITIZEN CENTER
1820 N. LAS PALMAS AVENUE
LOS ANGELES, CA 90028

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Issue Date: 08-03-2019

Revisions

No.	Date	Description
0	08-21-19	For Submittal

CONSULTANT 'S SEAL

F F S T E C H
V. MOSHANZAMIR
Contractor
C-10
No. 541227
Exp. 08-30-2020
ELECTRICAL
STATE OF CALIFORNIA

Project Number: Drawn By: JJS

Checked By: Project Manager: DH

Sheet Title:
NOTES, SCHEDULES, SYMBOL LIST & BILL OF MATERIAL

Sheet Number:
FA-0.1

BATTERY CALCULATIONS FOR FACU

QTY.	DESCRIPTION	STANDBY DEVICE	STANDBY AMPS	ALARM DEVICE	ALARM AMPS
1	FIRE ALARM CONTROL UNIT	0.26800	0.26800	0.43300	0.43300
1	FIRE ALARM ANNUNCIATOR	0.09900	0.09900	0.11500	0.11500
23	SMOKE DETECTOR	0.00003	0.00074	0.00003	0.00074
1	SMOKE / CO DETECTOR	0.00005	0.00005	0.00007	0.00007
4	MANUAL PULL STATION	0.00025	0.00100	0.00040	0.00160
1	SINGLE INPUT MODULE	0.00025	0.00025	0.00040	0.00040
7	HIGH POWER CONTROL RELAY MODULE	0.00008	0.00053	0.00008	0.00053
8	15cd STROBE, CEILING	0.00000	0.00000	0.07400	0.59200
4	30cd STROBE, CEILING	0.00000	0.00000	0.10800	0.43200
1	75cd STROBE, CEILING	0.00000	0.00000	0.20500	0.20500
2	15cd STROBE, WALL	0.00000	0.00000	0.07100	0.14200
1	110cd STROBE, WALL	0.00000	0.00000	0.24000	0.24000
4	30cd HORN STROBE, CEILING	0.00000	0.00000	0.12400	0.49600
2	28cd HORN STROBE, WALL, WP	0.00000	0.00000	0.21000	0.42000
TOTAL			0.36956		3.07833
		STANDBY		ALARM	
		24 HOURS	8.87	15 MIN.	0.77
		TOTAL	9.64	A.H. REQUIRED.	
	BATTERY WITH 20% DERATING INCLUDED:		11.76	A.H. REQUIRED.	
	2-18 A.H. BATTERIES ARE PROVIDED.				

BATTERY CALCULATIONS FOR FAC

QTY.	DESCRIPTION	STANDBY DEVICE	STANDBY AMPS	ALARM DEVICE	ALARM AMPS
1	CELLULAR ALARM COMMUNICATOR	0.06000	0.06000	0.25000	0.25000
TOTAL			0.06000		0.25000
		STANDBY		ALARM	
		24 HOURS	1.44	5 MIN.	0.02
		TOTAL	1.46	A.H. REQUIRED.	
	BATTERY WITH 20% DERATING INCLUDED:		1.78	A.H. REQUIRED.	
	1-7 A.H. BATTERIES ARE PROVIDED.				

VOLTAGE DROP% CALCULATIONS

FA Panel	FACU	WIRE GAUGE	14	
Circuit No.	C1	Area Cir.Mil	4110	(Not Used in DC VD Calcs)
System Voltage	20.4	DC resistance ohm/kFT	3.26	Coated(USED IN CALCS)
1-way Distance in Ft	240	DC resistance ohm/kFT	3.14	Uncoated(NOT USED)

Model Number	Description	QTY	Alarm Current	Total Current
GCF-VM	15CD STROBE	2	0.074	0.1480
GCF-VM	75CD STROBE	1	0.205	0.2050
G1RF-VM	15CD STROBE	2	0.071	0.1420
G1RF-VM	110CD STROBE	1	0.240	0.2400
		CIRCUIT TOTAL CURRENT		0.7350

RESISTANCE (ohms)	OPERATING VOLTS	VOLTAGE DROP	%VOLTAGE DROP
1.5648	19.25	1.150	5.64%

NOTE: OPERATING VOLTAGE BETWEEN 16VDC - 33VDC PER MANUFACTURER SPECS.
Resistance = (2 X one way distance in feet x wire resistance in ohms) / (1,000)
Dropped Voltage= (current x resistance)
% voltage drop= (dropped voltage/system volt)

VOLTAGE DROP% CALCULATIONS

FA Panel	FACU	WIRE GAUGE	14	
Circuit No.	C2	Area Cir.Mil	4110	(Not Used in DC VD Calcs)
System Voltage	20.4	DC resistance ohm/kFT	3.26	Coated(USED IN CALCS)
1-way Distance in Ft	240	DC resistance ohm/kFT	3.14	Uncoated(NOT USED)

Model Number	Description	QTY	Alarm Current	Total Current
GCF-VM	15CD STROBE	3	0.074	0.2220
GCF-VM	75CD STROBE	1	0.205	0.2050
GCF-HDVM	30CD HORN STROBE	1	0.124	0.1240
WG4RF-HVMC	28CD HORN STROBE, WP	1	0.210	0.2100
		CIRCUIT TOTAL CURRENT		0.7610

RESISTANCE (ohms)	OPERATING VOLTS	VOLTAGE DROP	%VOLTAGE DROP
1.5648	19.21	1.191	5.84%

NOTE: OPERATING VOLTAGE BETWEEN 16VDC - 33VDC PER MANUFACTURER SPECS.
Resistance = (2 X one way distance in feet x wire resistance in ohms) / (1,000)
Dropped Voltage= (current x resistance)
% voltage drop= (dropped voltage/system volt)

VOLTAGE DROP% CALCULATIONS

FA Panel	FACU	WIRE GAUGE	14	
Circuit No.	C3	Area Cir.Mil	4110	(Not Used in DC VD Calcs)
System Voltage	20.4	DC resistance ohm/kFT	3.26	Coated(USED IN CALCS)
1-way Distance in Ft	200	DC resistance ohm/kFT	3.14	Uncoated(NOT USED)

Model Number	Description	QTY	Alarm Current	Total Current
GCF-VM	30CD STROBE, CEILING	3	0.108	0.3240
GCF-HDVM	30CD HORN STROBE	2	0.124	0.2480
WG4RF-HVMC	28CD HORN STROBE, WP	1	0.210	0.2100
		CIRCUIT TOTAL CURRENT		0.7820

RESISTANCE (ohms)	OPERATING VOLTS	VOLTAGE DROP	%VOLTAGE DROP
1.304	19.38	1.020	5.00%

NOTE: OPERATING VOLTAGE BETWEEN 16VDC - 33VDC PER MANUFACTURER SPECS.
Resistance = (2 X one way distance in feet x wire resistance in ohms) / (1,000)
Dropped Voltage= (current x resistance)
% voltage drop= (dropped voltage/system volt)

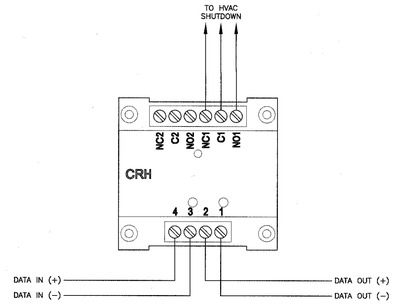
VOLTAGE DROP% CALCULATIONS

FA Panel	FACU	WIRE GAUGE	14	
Circuit No.	C4	Area Cir.Mil	4110	(Not Used in DC VD Calcs)
System Voltage	20.4	DC resistance ohm/kFT	3.26	Coated(USED IN CALCS)
1-way Distance in Ft	260	DC resistance ohm/kFT	3.14	Uncoated(NOT USED)

Model Number	Description	QTY	Alarm Current	Total Current
GCF-VM	15CD STROBE, CEILING	2	0.074	0.1480
GCF-VM	30CD STROBE, CEILING	1	0.108	0.1080
GCF-HDVM	30CD HORN STROBE	1	0.124	0.1240
		CIRCUIT TOTAL CURRENT		0.3800

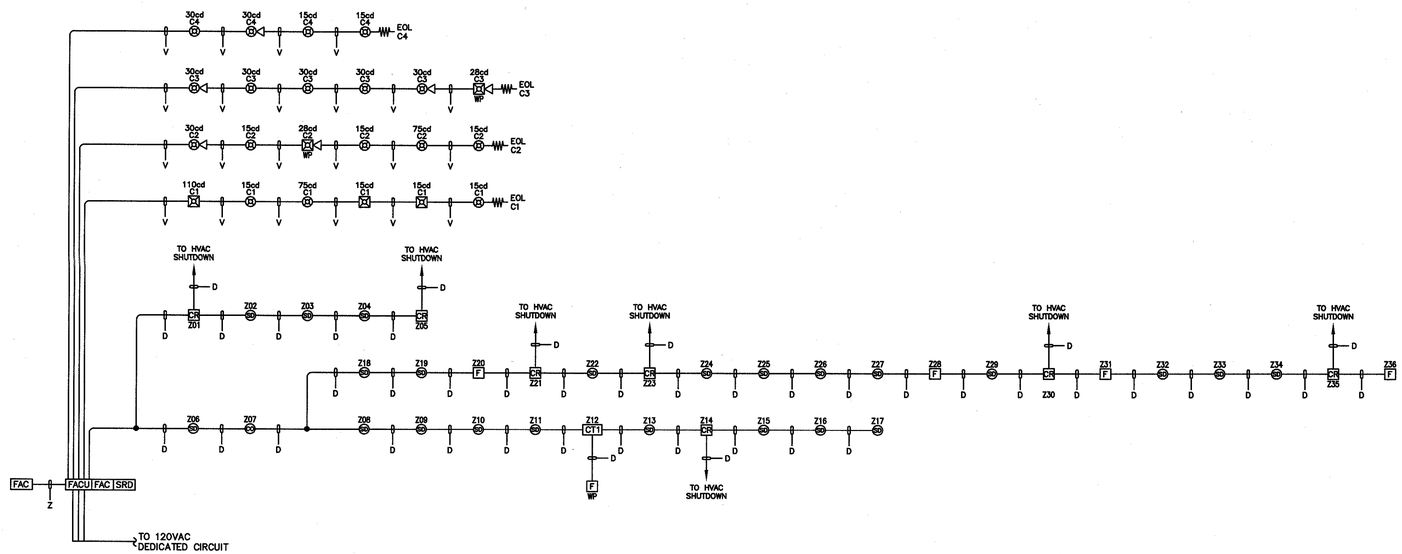
RESISTANCE (ohms)	OPERATING VOLTS	VOLTAGE DROP	%VOLTAGE DROP
1.6952	19.76	0.644	3.16%

NOTE: OPERATING VOLTAGE BETWEEN 16VDC - 33VDC PER MANUFACTURER SPECS.
Resistance = (2 X one way distance in feet x wire resistance in ohms) / (1,000)
Dropped Voltage= (current x resistance)
% voltage drop= (dropped voltage/system volt)



HVAC SHUTDOWN DETAIL

FIRE ALARM WIRE LEGEND		
SYMBOL	DEVICE/FUNCTION	DESCRIPTION
D	SLC DEVICES CIRCUIT	16/2 FPLR CABLE (WEST PENN D990 OR EQUAL)
V	VISUAL DEVICES CIRCUIT	14/2 FPLR CABLE (WEST PENN 994 OR EQUAL)
Z	REMOTE ANNUNCIATOR	1 PAIR #16 WEST PENN D990 & 2 #14 THHN



SINGLE LINE RISER DIAGRAM

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C-10 & C-7 LIC. #541227
C-16 LIC. #816187
ALARM LIC. #ACO 4380
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Issue Date: 08-03-2019

Revisions

No.	Date	Description
0	08-21-19	For Submittal

CONSULTANT 'S SEAL



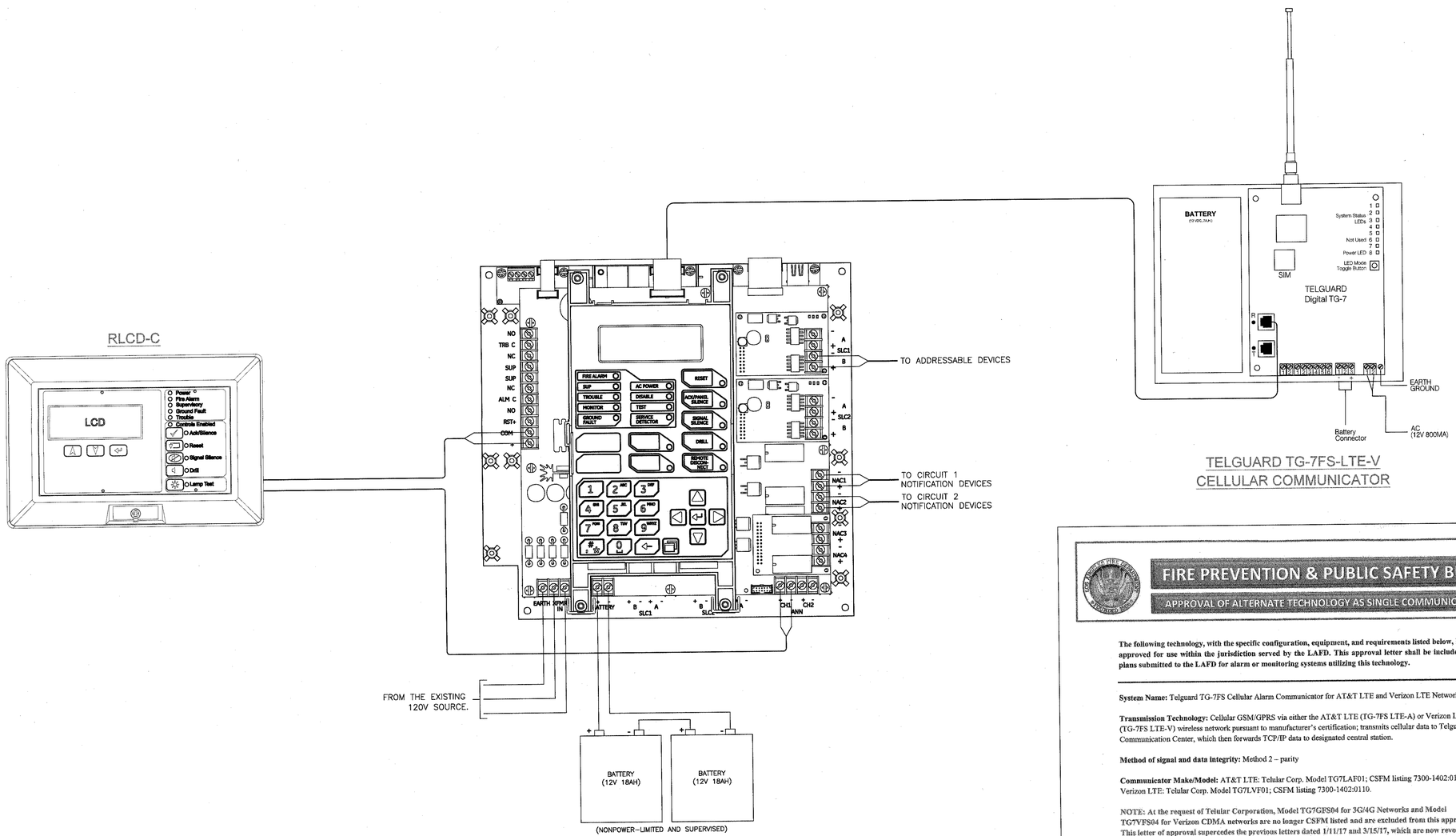
Project Number: Drawn By: JJS

Checked By: Project Manager: DH

Sheet Title:
SYSTEM CALCULATIONS AND SINGLE LINE RISER DIAGRAM

Sheet Number:

FA-0.2



TELGUARD TG-7FS-LTE-V
CELLULAR COMMUNICATOR

iO1000 MOTHERBOARD (FACU)

FACU WIRING DIAGRAM

FIRE PREVENTION & PUBLIC SAFETY BUREAU

APPROVAL OF ALTERNATE TECHNOLOGY AS SINGLE COMMUNICATION PATH

The following technology, with the specific configuration, equipment, and requirements listed below, has been approved for use within the jurisdiction served by the LAFD. This approval letter shall be included on all plans submitted to the LAFD for alarm or monitoring systems utilizing this technology.

System Name: Telguard TG-7FS Cellular Alarm Communicator for AT&T LTE and Verizon LTE Networks

Transmission Technology: Cellular GSM/GPRS via either the AT&T LTE (TG-7FS LTE-A) or Verizon LTE (TG-7FS LTE-V) wireless network pursuant to manufacturer's certification; transmits cellular data to Telguard Communication Center, which then forwards TCP/IP data to designated central station.

Method of signal and data integrity: Method 2 – parity

Communicator Make/Model: AT&T LTE: Telular Corp. Model TG7LAF01; CSFM listing 7300-1402:0109. Verizon LTE: Telular Corp. Model TG7LVF01; CSFM listing 7300-1402:0110.

NOTE: At the request of Telular Corporation, Model TG7GFS04 for 3G/4G Networks and Model TG7VFS04 for Verizon CDMA networks are no longer CSFM listed and are excluded from this approval. This letter of approval supercedes the previous letters dated 1/11/17 and 3/15/17, which are now revoked.

Receiver Make/Model: UL listed compatible POTS/IP receivers that work with Contact ID, Modem IIe, IIIa[2], SIA2, Sonitrol, DMP, or Pulse (3/1 or 4/2 formats).

Data Throttling capable?: None indicated in manufacturer's installation instructions.

Central Station: Any LAFD-approved[†] central station supervising station equipped with a compatible receiver.

Special Requirements:

- [†] The central station supervising station must possess and maintain a current "F425" Fire Permit through the City of Los Angeles Office of Finance. Expiration or other loss of permit voids this approval.
- Any failure of the communication path shall be annunciated at the central station within 60 minutes.[1]
- Incomplete, corrupted, or other signal errors will be recorded and displayed at the central station. *Communicator will resend message if receipt is not acknowledged by receiver at central station.*
- The record and display rate of subsequent alarms will not be less than one every 10 seconds.[2]
- Approved for use with any local or remote antenna certified by the manufacturer for use with this product.

Inspection procedure:

[1] *Verify maximum 60-minute check-in and fail timing. Timing is programmed by installer into the communicator.*
[2] *Record and display rate can be tested by initiating two alarm devices simultaneously and then comparing time they were received/recorded by central station.*
Annunciator can display/verify: cellular signal strength (bar graph); modem operation, SIM card detectoin, cell tower detection, verification of SIM activation; if internet access and communication path is good.

APPROVED BY: _____ DATE: 7/10/17

FFSTECH
BUILDING INTEGRATED SYSTEMS

C-10 & C-7 LIC. #541227
C-16 LIC. #816187
ALARM LIC. #ACO 4380
REG. 4 CERTIFIED

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Revisions

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CONSULTANT'S SEAL

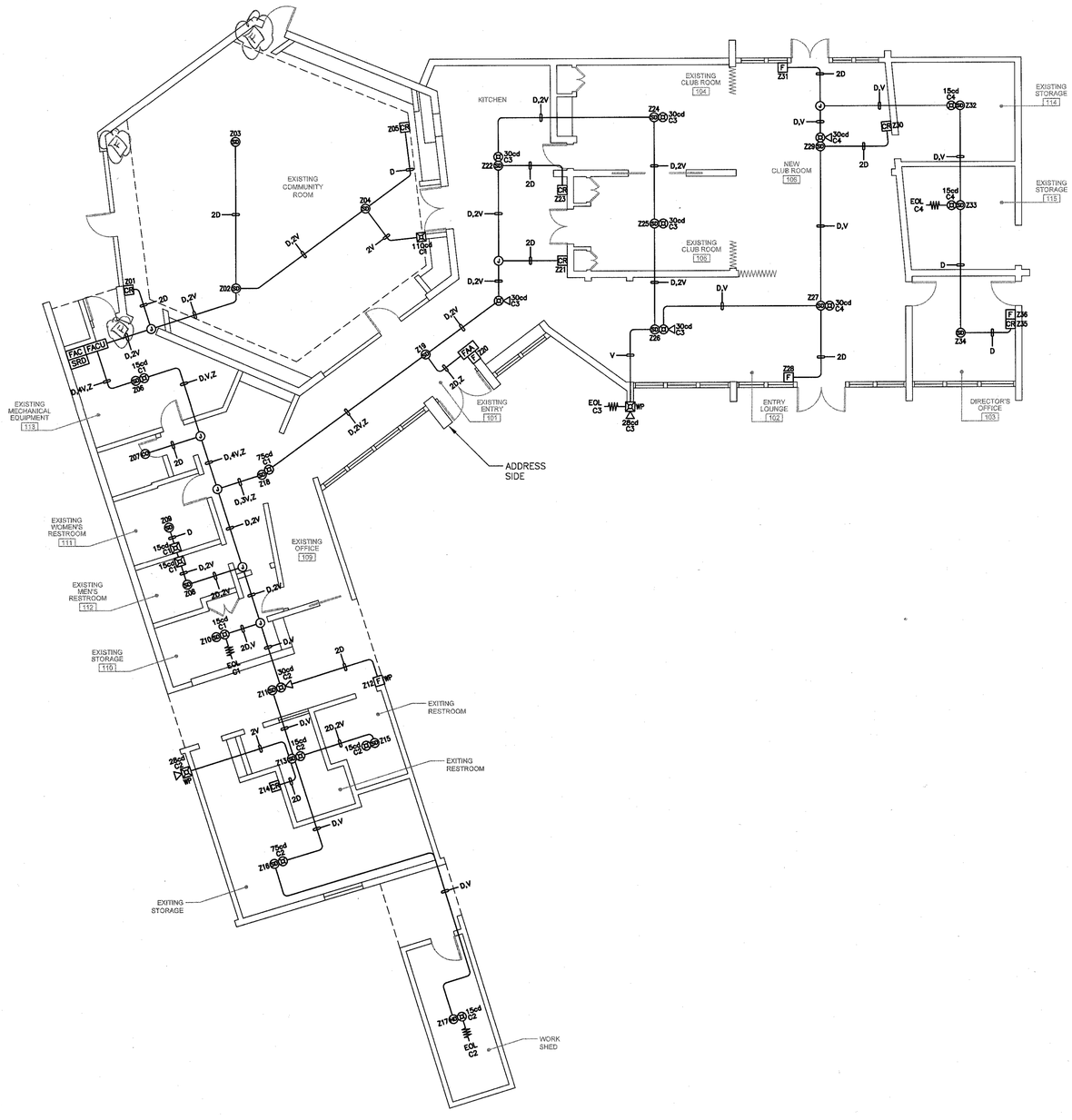
Project Number: Drawn By: JJS

Checked By: Project Manager: DH

Sheet Title:
FIRE ALARM CONTROL UNIT WIRING DIAGRAM

Sheet Number:
FA-0.3

FIRE ALARM WIRE LEGEND		
SYMBOL	DEVICE/FUNCTION	DESCRIPTION
D	SLC DEVICES CIRCUIT	16/2 FPLR CABLE (WEST PENN D990 OR EQUAL)
V	VISUAL DEVICES CIRCUIT	14/2 FPLR CABLE (WEST PENN 994 OR EQUAL)
Z	REMOTE ANNUNCIATOR	1 PAIR #16 WEST PENN D990 & 2 #14 THHN



FIRST FLOOR FIRE ALARM PLAN

1/8"=1'-0"

N

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C-16 LIC. #816187
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CONSULTANT ' S SEAL

FFSTECH JOSHUA LAMUR Contractor C-10 No. 541227 Exp. 09-30-2020 ELECTRICIAN STATE OF CALIFORNIA

Project Number: Drawn By: JJS

Checked By: Project Manager: DH

Sheet Title: **FIRE ALARM FLOOR PLAN**

Sheet Number: **FA-2.01**

ATTACHMENT G

LADWP CHANGE OF LOAD SERVICE COMMITTMENT, DATED 9/8/2025

Los Angeles Department of Water & Power
BUILDING A STRONGER L.A.

Karen Bass, Mayor

Board of Commissioners
Richard Katz, President
George S. McGraw, Vice President
Nurit D. Katz
Mia Lehrer
Wilma J. Pinder
Chante L. Mitchell, Secretary

Janisse Quiñones, Chief Executive Officer and Chief Engineer

September 8, 2025

Mr. Morgan Lytle
LABOE
1149 S Broadway STE 830
Los Angeles, CA 90015

Dear Mr. Lytle:

Subject: Change in Load Service Commitment
1820 N Las Palmas Ave - Las Palmas Senior Citizen Center
Project No. P333052 / Work Request No. 2962877

Thank you for providing us with plans for the project at the above address. The Department of Water and Power electrical facilities are adequate for the change in electrical load on the existing switchboard. This letter also confirms that you are not proposing any changes to your service equipment.

The maximum available fault current at the existing service(s) is estimated to be:

Service	Amps	Voltage	∅-Wire	Fault Current
MS	400A	120/240V	1Ø-3W	32,000A
MS	400A	120/240V	3Ø-4W	32,000A

This fault current information has been reported to the Department of Building and Safety. Please be advised that it is your responsibility to provide a copy of this Service Agreement to the contractor responsible for performing the work. You may track the status of your job on our website at https://wmis.powersystem.ladwp.com.

This commitment is valid for six months. Any change in load or design will require revised plans to be submitted to the Department for re-evaluation. If you have any questions regarding these requirements or if you wish to discuss any design changes, please contact our design engineer Mr. Jeremy Phan, at (213) 887-6753.

Sincerely,

Rodolfo Monroy

Rodolfo J. Monroy
District Engineer, Metro West Service Planning

c: Jeremy Phan

Attachment No. 3

COUNTY CLERK'S USE

CITY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING
1149 S. BROADWAY, 7th FLOOR
LOS ANGELES, CALIFORNIA 90015
CALIFORNIA ENVIRONMENTAL QUALITY ACT

NOTICE OF EXEMPTION

(Articles II and III – City CEQA Guidelines)

Submission of this form is optional. The form shall be filed with the County Clerk, 12400 E. Imperial Highway, Norwalk, California, 90650 and with the State Clearinghouse in the Office of Planning and Research, if filed with the County Clerk, pursuant to Public Resources Code Section 21152(b). Pursuant to Public Resources Code Section 21167(d), the filing of this notice starts a 35-day statute of limitations on court challenges to the approval of the project.

LEAD CITY AGENCY AND ADDRESS: City of Los Angeles c/o Bureau of Engineering 1149 S. Broadway, 6th Floor, MS 939 Los Angeles, CA 90015	**COUNCIL DISTRICT** 13
PROJECT TITLE: Las Palmas Senior Citizen Center - Renovation (W.O. E1908358/ CIP No. G1163)	**LOG REFERENCE**

PROJECT LOCATION: The Project is located at 1820 N. Las Palmas Avenue on the southeast corner of Franklin Avenue and Las Palmas Avenue, in the Hollywood Community Plan Area of the City of Los Angeles, see also Parcel Profile Report from NavigateLA, Figure 1: Project Vicinity, and Figure 2: Project Location). T.G. Page 593, Grid E4

DESCRIPTION OF NATURE, PURPOSE, AND BENEFICIARIES OF PROJECT: The project consists of consists of renovating the interior of an approximately 5,504 square-foot senior community center, along with the exterior site improvements. Project beneficiaries include facility users, community members, and visitors who will have improved recreational facilities. Please see the project description continuation in the narrative for more details. On [Insert date (Month Day, Year)], the [Insert decision making body (e.g., City Council, etc.)] determined the project was exempt under the California Environmental Quality Act (CEQA) and approved the project.

CONTACT PERSON	**CONTACT INFORMATION**
Robert Savinelli	robert.savinellli@lacity.org

EXEMPT STATUS:

CITY CEQA GUIDELINES	CATEGORICAL EXEMPTION*	Art. III, Sec. 1 Class 1 Cat. 1, 4 Art. III, Sec. 1 Class 3 Cat. 6 Art. III, Sec. 1 Class 4 Cat. 1
STATE CEQA GUIDELINES	CATEGORICAL EXEMPTION*	Sec. 15301 (a)(d) Sec. 15303 (e) Sec. 15304 (a)

* See Public Resources Code Sec. 21080 and set forth state and city guidelines provisions.

JUSTIFICATION FOR PROJECT EXEMPTION: This project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Sections 15301 Existing Facilities (a: interior/exterior alterations), (d: restoration or rehabilitation of deteriorated or damaged structures); 15303 New Construction or Conversion of Small Structures (e: accessory structures such as carports and fences) and 15304 Minor Alterations to Land (a: grading). Additionally, the project is exempt pursuant to the corresponding *City CEQA Guidelines (*Article III, Section 1, Classes 1-1, 1-4, 3-6, and 4-1). *None of the limitations set forth in State CEQA Guidelines 15300.2 apply (see attached narrative).*

IF FILED BY APPLICANT, ATTACH CERTIFIED DOCUMENT OF EXEMPTION FINDING

SIGNATURE:	TITLE:	DATE:
Pending project approval. Maria Martin	Environmental Affairs Officer Environmental Management Group	***Pending project approval.***

FEE: $75.00	RECEIPT NO.	REC'D BY	DATE

DISTRIBUTION: (1) COUNTY CLERK; (2) STATE CLEARINGHOUSE; (3) AGENCY RECORD

CATEGORICAL EXEMPTION NARRATIVE

I. DESCRIPTION OF NATURE, PURPOSE, AND BENEFICIARIES OF PROJECT, CONTINUED

The Las Palmas Senior Citizen Center is operated by the City of Los Angeles Department of Parks and Recreation. The Las Palmas Senior Citizen Center - Renovation Project (Project) consists of a renovation of the building interior space (approx. 5500 SF), exterior within the existing footprint, and a modernization of the exterior features, Figures 1 – 3). Minor excavation and modification of grades may be needed for the patio area, trash enclosure, and LID capture and reuse planters. The plans call for a reduction in total landscaping (approx. 2600 square feet less) and a loss of three parking spaces (21, down from 24). Fencing will be installed along the perimeter and internally (306 linear feet total).

The new parking lot shade structure will be built using cast-in-place concrete piles (not driven) set with boreholes excavated to a maximum depth of 25 feet. The Project site is considered to have a high paleontological sensitivity at depths of 15 feet and greater. There is a potential to encounter significant paleontological resources during drilling activities that extend to impact native Pleistocene-age deposits (i.e., drilling that exceeds a depth of 15 feet). Therefore, a Paleontological Resources Monitoring and Treatment Plan (PRMTP) must be prepared and implemented prior to any ground disturbance at a depth of greater than 15 feet. The plan should specify the levels and types of mitigation efforts during drilling activities and should also include a description of the professional qualifications required of key staff, communication protocols to be followed during construction, unanticipated discovery protocols, fossil recovery protocols, sampling protocols for microfossils (if required), laboratory procedures, reporting requirements, and curation provisions for any collected fossil specimens.

The scope of the contractor's work includes:

- Implementation of PRMTP
- redesign interior spaces to add additional restrooms
- renovate floor and ceilings throughout
- upgrade existing roof (approx. 7900 SF), lighting, mechanical systems, and electrify building
- upgrade existing windows
- add photovoltaic panels to the roof
- redesign existing trellis
- renovate turf areas and irrigation system
- renovate existing concrete walkways and patio spaces to meet ADA requirements
- renovate existing shuffleboard area to multi-use exercise area with photovoltaic shade structure and reconfigure landscaping
- restripe existing parking lot
- construct a new trash enclosure at parking area
- add photovoltaic panels on a new shade structure in the parking lot or carport

- add one dual EV charger, and one single EV charger (3 spaces) at the parking lot
- replace old fencing and add 43 linear feet of new fencing

Unless otherwise stated, the proposed project will be designed, constructed and operated following all applicable laws, regulations, ordinances and formally adopted City standards including but not limited to:

- City of Los Angeles Municipal Code
- Bureau of Engineering Standard Plans
- Standard Specifications for Public Works Construction, including Additions and Amendments
- Work Area Traffic Control Handbook

In compliance with the Los Angeles Fire Code, Chapter 33, Fire Safety During Construction and Demolition, the proposed project shall, at a minimum, include the following precautionary measures:

- ensure there is a clear access path from the adjoining street or hard surface to the work site, prior to using fuel or heat generating equipment
- heat generating equipment shall only be operated in areas clear of combustible materials (i.e., grasses, weeds, shrubs, trash, etc.)
- no smoking is allowed within the work area
- fire extinguishers or water supply (if available) must be available at the work site for emergency situations, such as a fire occurs near the work site
- equipment shall be cooled down before refueling at the work site or be moved to an area not containing combustible materials
- ensure Fire Department contact information (i.e., 911 or local fire station phone number) at the site always
- have an egress plan available in case of a fire
- if water is available, spray the work area with water to reduce the risk of vegetation catching fire prior to work activities starting

The Project includes best management practices (BMPs) for compliance with applicable regulatory requirements that protect cultural resources and for implementation of applicable “Greenbook” Standard Specifications for Public Works Construction that protect cultural resources as follows:

BMP-CUL-1: In the event that unanticipated historical artifacts were encountered, City Engineer Standard Specifications, Section 6-6.2, (Greenbook, 2021) states: “If discovery is made of items of archaeological or paleontological interest, the Contractor shall immediately cease excavation in the area of discovery and shall not continue until ordered by the Engineer.” Therefore, during activities in which there will be ground disturbances (i.e., digging, drilling, etc.) if any evidence of archaeological, cultural, or paleontological resources are found, all work within the vicinity of the find shall stop until a

qualified archaeologist can assess the finds and make recommendations. No excavation of any finds should be attempted by project personnel unless directed by a qualified archaeologist. Construction activities may continue in other areas. If the discovery proves significant under CEQA (Section 15064.5f; Public Resources Code or PRC 21082), additional work such as testing, or data recovery may be warranted.

BMP-CUL-2: The discovery of human remains is always a possibility during ground disturbances; State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Los Angeles County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The Los Angeles County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the coroner will notify the Native American Heritage Commission, which will determine and notify a Most Likely Descendent (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

II. PROJECT HISTORY

The Project site is comprised of one parcel, Assessor Parcel Number (APN) 5547-003-900, located in the Hollywood Redevelopment Area within the Hollywood Community Plan Area (CPA) of the City of Los Angeles. The legal description is Lot 10, Block 2 of the Hollywood Oceanview Tract. The Project site is improved with the Las Palmas Senior Citizen Center, a one-story municipal recreational building constructed in 1961 for the City of Los Angeles Department of Recreation and Parks (RAP). The property is not currently listed in the National Register of Historic Places (National Register), California Register of Historical Resources (California Register), or designated as a City of Los Angeles Historical-Cultural Monument (LA HCM), nor was it previously identified in any historical resource surveys.

The purpose of the renovation is to enhance the enjoyment of stakeholders. The current building is outdated and requires various repairs. The proposed work includes updates to existing building infrastructure including roofing, HVAC, and electrical systems. Unused outdoor space will be renovated to new multi-use exercise area. Uneven outdoor surfaces will be repaired. Limited landscape and irrigation improvements will be provided. Interior space will be reconfigured for more efficient utilization of space and the addition of new restroom facilities. The interior and exterior finishes will be updated.

III. ENVIRONMENTAL REVIEW

A. Basis for Categorical Exemption

The project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15301, Class 1 (a) and (d) *Existing Facilities* for operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use because the project consists of:

- Interior or exterior alterations involving such things as interior partitions, plumbing, and electrical conveyances
- Restoration or rehabilitation of deteriorated or damaged structures, facilities, or mechanical equipment to meet current standards of public health and safety, unless it is determined that the damage was substantial and resulted from an environmental hazard such as earthquake, landslide, or flood

The project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15303, Class 3 (e) *New Construction or Conversion of Small Structures* which consists of construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure. The numbers of structures described in this section are the maximum allowable on any legal parcel. Examples of this exemption include, but are not limited to:

- Accessory (appurtenant) structures including garages, carports, patios, swimming pools, and fences

The project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15304, Class 4 (a) *Minor alterations to land* which consists of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes. Examples include, but are not limited to:

- Accessory (appurtenant) structures including garages, carports, patios, swimming pools, and fences

Additionally, the Project is exempt from CEQA pursuant to the following City CEQA Guidelines from Article III, Section 1.

- Class 1-1: Interior or exterior alterations involving remodeling or minor construction where there be negligible or no expansion of use
- Class 1-4: Restoration or rehabilitation of deteriorated or damaged structures, facilities or mechanical equipment and systems to meet current standards of public health, safety and environmental protection
- Class 3-6: Accessory (appurtenant) structures including garages, carports, patios, swimming pools, fences, game courts (including tennis courts accessory to residential developments), play areas and retaining walls
- Class 4-1: Grading on land with a slope of less than ten percent (10%), except where it is to be located in a waterway, in any wetland, in an officially designated (by federal, State, or local governmental action) scenic area or in an officially mapped areas of severe geologic hazard

B. Consideration of Potential Exceptions to use of a Categorical Exemption

The State CEQA Guidelines (CCR Sec 15300.2) limit the use of categorical exemptions in the following circumstances:

1. Location. Exemption Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located – a project that is ordinarily insignificant in its impact on the environment may be significant in a particularly sensitive environment. Therefore, these classes are considered to apply in all instances, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies. As of February 12, 2024 the site was listed within a special grading area (BOE basic grid Map A-13372) and a liquefaction zone on ZIMAS. As of February 12, 2024 the site is not a listed as part of a high fire severity zone or an oil zone on NavigateLA.

According to the Department of Conservation California Geological Survey, the project site is located within the Alquist-Priolo Earthquake Fault Zone. Alquist-Priolo earthquake fault zones are regulatory zones surrounding the surface traces of active faults in California. These zones were conceived in the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act), the intent of which is to reduce losses

from surface fault rupture. Local agencies must regulate development projects within earthquake fault zones and demonstrate that proposed buildings will not be constructed on active faults. Projects include all land divisions and most structures for human occupancy.

The site lies within a designated liquefaction zone, an area mapped for “historic occurrence of liquefaction, or where local geological, geotechnical, and groundwater conditions indicate a potential for permanent ground displacements,” or where “previous occurrence of landslide movement, or local topographic, geological, geotechnical, and subsurface conditions indicate a potential for permanent ground displacements,” according to the Official Map of Seismic Hazards, released by the California Department of Conservation, California Geological Survey (CGS).

The proposed project consists of renovation of an existing structure and addition of a small shade structure in a parking lot. No new structures for human habitation will be constructed. Repair and maintenance projects are common in the City and throughout areas deemed to be within the earthquake hazard zones, as such these repairs are not unusual circumstances. The project would not potentially result in or increase vulnerability to damage caused by earthquakes and there is no reasonable possibility that the project will have a significant effect due to unusual circumstances. All best management practices and building codes will be followed.

This project is exempt from CEQA pursuant to State CEQA Guidelines Article 19, Section 15301 *Existing Facilities* (a), (d); 15303 *New Construction or Conversion of Small Structures* (e); 15304 *Minor alterations to land* (a). Therefore, the location exception does not apply.

2. Cumulative Impact. This exception applies when, although a project may not have a significant impact, the cumulative impact of successive projects of the same type in the same place, over time is significant.

As a preexisting structure, the Las Palmas Senior Citizens Center will not need to undergo another renovation for another 30-40 years. Proceeding with this project will not result in the renovation of many other related or similar or related projects within the state of California or City of Los Angeles. Therefore, this exception has no application to this project.

3. Significant Effect. This exception applies when, although the project may otherwise be exempt, there is a reasonable possibility that the project will have a significant effect due to unusual circumstances.

The community center has been in operation for at least 60 years. The facility will be closed during construction. This Project does not present any unusual circumstances. The borehole drilling for the parking lot shade structure will be actively monitored, and the spoils checked for paleolithic artefacts such as fossils, following the PRMTP.

The proposed project consists of renovation to an existing building, landscaping, replacement of a fence, and addition of a shade structure in the parking lot. At the project site, construction may require temporary traffic control. Motorists will be notified of traffic changes via temporary street signing and traffic control devices per the WATCH. It is anticipated that traffic in both directions will remain open.

The project shall be performed in accordance with applicable WATCH as required by the California Manual on Uniform Traffic Control Devices (CA MUTCD) published by Caltrans, imposed on projects of this nature. City construction crews will coordinate with schools and the Department of Transportation according and provide flaggers when required. When the activity site encroaches upon a sidewalk, walkway or crosswalk area, pedestrians shall be provided advance warning if they are detoured away from the activity construction site.

The proposed project shall be constructed following any or all the applicable measures below:

1. Construction could occur from 7 a.m. to 9 p.m. Monday through Friday and on Saturday from 8 a.m. to 6 p.m. as allowable by *LAMC § 41.10 - Construction Noise*.

2. Notify all adjacent property owners and land users of the construction length, duration, and hours of noise and vibration producing construction activities, in writing.

3. Provide and make available contact information for sidewalk and street repairs and replacement concerns, on construction activities, prior to and on-site during construction.

The equipment used on site will be tested to maintain noise levels at or below the City standard. Standard conditions and construction practices will be implemented for this project. No unusual construction noise or traffic effects are anticipated. No reasonable possibility has been identified that the project will have a significant effect due to unusual circumstances. As such, this exception does not apply.

Therefore, this exception has no application to this project.

4. Scenic Highway. A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway. As of February 12, 2024, the proposed project is not within a state designated scenic highway or within sight of any state designated scenic highway. Therefore, this exception has no application to this project.

5. Hazardous Waste Site. This exception applies when a project is located on a site listed as a hazardous waste site under Government Code Section 65962.5. As of February 12, 2024, the project site was not listed as a hazardous waste site on *Geotracker* or *Envirostor*. Therefore, this exception has no application to this project.

6. Historical Resources. This exception applies when a project may cause a substantial adverse change in the significance of a historical resource. This exception does not apply to the Project. GPA Consulting (GPA) submitted a technical cultural study which concludes that the Las Palmas Senior Citizens Center is not a historical resource for the purposes of CEQA. A paleontological memo authored by Bargas Environmental Consulting reports that no known paleontological resources were identified within a 1-mile buffer of the Project. The upper 15 to 20 feet of sediments consist of unmapped artificial fill, which have a low potential to contain significant paleontological resources due to their disturbed nature. However, the artificial fill is underlain by Pleistocene-age older alluvial sediments, which have a high paleontological potential since numerous vertebrate fossil-bearing localities have been recovered from Pleistocene-age sediments elsewhere in the vicinity of the Project. A Paleontological Resources Monitoring and Treatment Plan (PRMTP) must be prepared and implemented prior to ground disturbance.

The project does not cause a substantial adverse change in the significance of a historical resource. This exception does not apply.

IV. REFERENCES

California Code of Regulations, Title 14, Division 6, Chapter 3 (State CEQA Guidelines), available from http://leginfo.legislature.ca.gov/

California Regional Water Quality Control Board, *Geotracker*. Accessed February 12, 2024, from https:// geotracker.waterboards.ca.gov.

California Department of Transportation (Caltrans). *California State Scenic Highway System Map*. Retrieved February 12, 2024, from https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways.

City of Los Angeles Department of Public Works Bureau of Engineering. *NavigateLA.* Retrieved on February 6, 2024, https://navigatela.lacity.org/navigatela/

City of Los Angeles Department of Public Works Bureau of Engineering. Standard Plans. https://apps.engineering.lacity.gov/techdocs/stdplans/

City of Los Angeles Environmental Quality Act Guidelines available from https://planning.lacity.org/EIR/CEQA_Guidelines/City_CEQA_Guidelines.pdf.

City of Los Angeles Municipal Code. https://lacity.gov/government/city-charter-rules-and-codes

Historical Resource Evaluation Report for 1820 N. Las Palmas Avenue Los Angeles, California. Prepared by GPA Consulting. pp 1-82. January 2024.

Paleontological Recommendations Memorandum for the Las Palmas Senior Citizen Center Renovation (G1163) Project located in the City and County of Los Angeles, California. Courtney Richards. Bargas Consulting. pp 1-13. June 30, 2023.

Public Resources Code, Div. 13, Sections 21000-21189 (CEQA), available from http://leginfo.legislature.ca.gov/

Public Resources Code. Section 5097.98.

Standard Specifications for Public Works Construction. Public Works Standards Inc, “Green Book”.

State of California Health and Safety Code Section 7050.5.

State Department of Toxic Substances Control. *Envirostor*. Retrieved February 12, 2024 from www.envirostor.dtsc.ca.gov.

Work Area Traffic Control Handbook. BNi-Building News. http://www.watchbook.org/