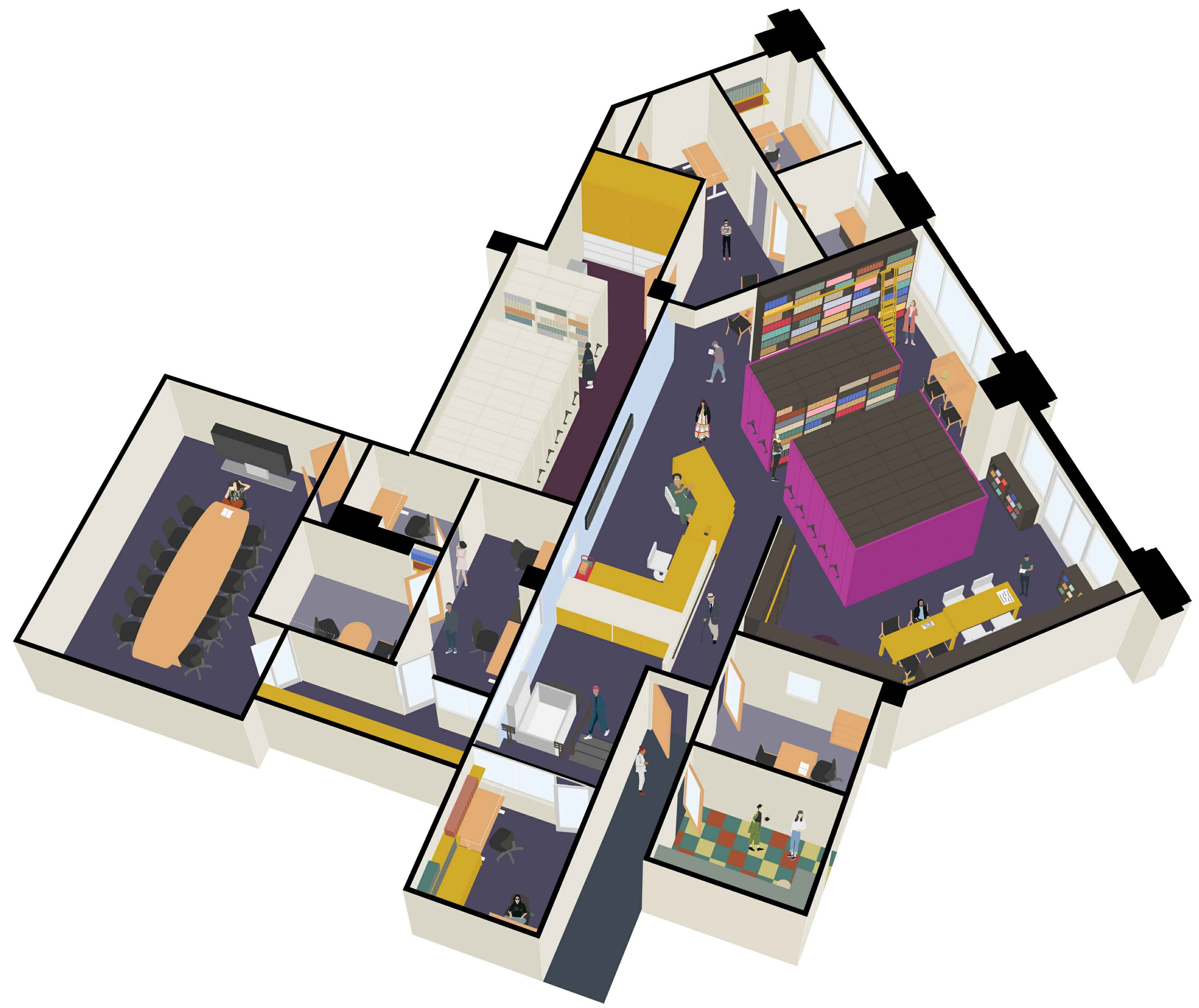
100% CONSTRUCTION DOCUMENTS

SEPTEMBER 26, 2019



METRO LIBRARY RELOCATION

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

LOS ANGELES, CA 90012

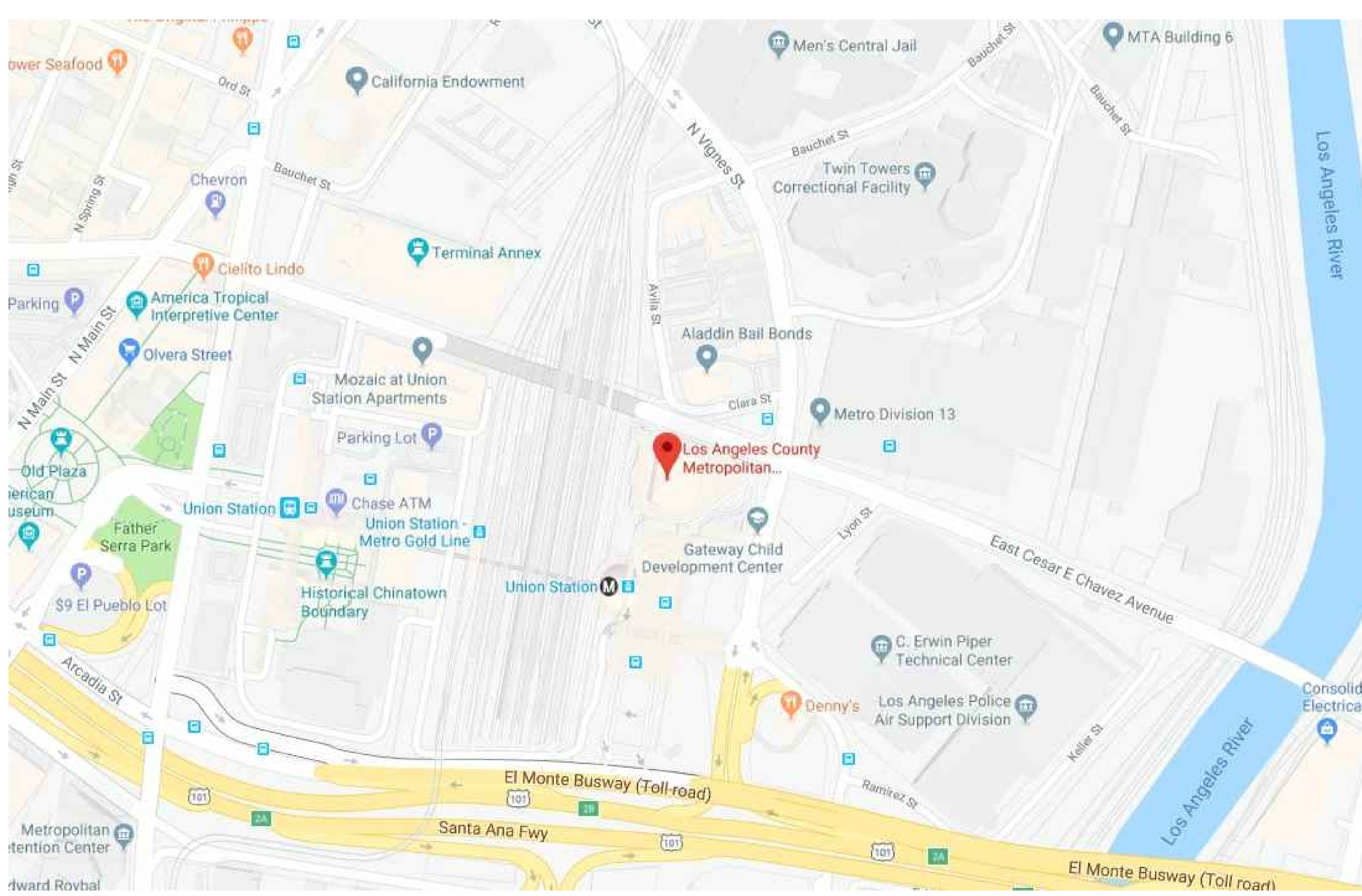
((RADAR))

RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.

423 GIN LING WAY, LOS ANGELES, CA 90012 T 213.617.0075 F 213.617.0077

INFO@RACHELALLEN.NET RACHELALLEN.NET

2 PROJECT LIMIT PLAN
SCALE: 1/32" = 1'-0"



1 VICINITY MAP
SCALE: AS SHOWN

DRAWING LIST:

ARCHITECTURAL	
PROJECT/SITE FORMS & ANALYSIS	
A0-0	COVER SHEET
A0-1	PROJECT INFO, PLOT PLAN, VICINITY MAP
A0-2	GENERAL, FIRE DEPT, GREEN NOTES
A0-3	GREEN NOTES, FORMS
A0-4	ACCESSIBLE NOTES, FORMS
A0-5	ACCESSIBLE NOTES, FORMS
A0-6	ACCESSIBLE FORMS
A0-7	ACCESSIBLE FORMS
A0-8	ACCESSIBLE FORMS
BUILDING	
A2-0	EXISTING/DEMO PLANS
A2-1	NEW FLOOR PLAN
A2-2	EGRESS PLAN
A2-3	FURNITURE PLAN; FINISHES SCHEDULE
A4-1	SECTIONS
A5-1	REFLECTED CEILING PLAN
A5-2	RCP / ACT LAYOUT
A6-1	CASEWORK FRONT DESK; FINISH SCHEDULE
A6-2	CASEWORK CATALOGING; DISPLAY WALL; ARCHIVE STOR
A6-3	CASEWORK KITCHEN; CHAIRLIFT; ACCESSIBILITY
A6-4	GUARDRAIL + STAIR DETAILS
A6-5	SHELVING DETAILS 1 OF 2
A6-6	SHELVING DETAILS 2 OF 2
A6-7	WALL TYPES
A6-8	DOOR & WINDOW, FLOOR EXTENSION, THRESHOLD DETAILS
A6-9	CEILING DETAILS 1 OF 3
A6-10	CEILING DETAILS 2 OF 3
A6-11	CEILING DETAILS 3 OF 3
A6-12	LADBS CEILING NOTES
A7-1	MANUFACTURER'S CUT SHEET 1 OF 2
A7-2	MANUFACTURER'S CUT SHEET 2 OF 2
A8-1	DOOR & WINDOW TYPES; HARDWARE; SCHEDULE
MECHANICAL, ELECTRICAL, PLUMBING	
M0.00	MECHANICAL COVER SHEET
M1.00	MECHANICAL SCHEDULES
M2.00	MECHANICAL DEMO PLAN
M2.01	MECHANICAL PLAN
M2.02	MECHANICAL PIPING PLAN
M3.00	MECHANICAL DETAILS
M3.01	MECHANICAL DETAILS
M4.00	TITLE 24
M4.01	TITLE 24
E0.01	GENERAL NOTES, LEGEND AND SHEET INDEX
E0.02	ELECTRICAL SPECIFICATIONS
E0.03	INDOOR TITLE 24
E0.04	INDOOR TITLE 24
E0.05	LIGHTING FIXTURE SCHEDULE
E2.01	LIGHTING PLAN
E3.01	POWER PLAN
E3.02	EQUIPMENT POWER PLAN
E5.01	SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E7.01	EMERGENCY LIGHTING PHOTOMETRIC CALCULATIONS
P0.00	PLUMBING COVER SHEET
P2.01	PLUMBING PLAN
FIRE PROTECTION	
FP2.00	GENERAL NOTES, DEVICE ELEVATIONS, & LEGEND
FP2.01	DETECTION & CONTROL/NOTIFICATION FLOOR PLANS
FP2.02	AIR SAMPLING PIPING ISOMETRIC
FP2.03	CONTROL PANEL/SINGLE LINE DIAGRAMS & BATT CALCS
FP2.04	ELECTRICAL INSTALLATION DETAILS AND DEVICE ELEV.
FP2.05	ELECTRICAL INSTALLATION DETAILS
FP2.06	GENERAL PIPING NOTES & PIPING FLOOR PLAN
FP2.07	ISOMETRIC/INSTALLATION DETAILS

PROJECT INFORMATION:

PROPERTY ADDRESS:
LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY
ONE GATEWAY PLAZA
758 NORTH VIGNES STREET
LOS ANGELES, CA 90012

PLANS PREPARED BY:
RADAR, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T 213.617.0075
LIC #C28585

STRUCTURAL CONSULTANT:
J.A. MARTIN, SERPARATELY CONTRACTED TO LACMTA

MEP ENGINEER:
REX ENGINEERING GROUP
2501 DAVIDSON DRIVE SUITE 200
MONTEREY PARK, CA 91754
T 323.262.9199

GENERAL CONTRACTOR:
TBD

SPECIFICATIONS:
AWC WEST
24990 GREENSBRIER DRIVE
STEVENSON RANCH, CA 91381
T 661.287.4211

PROJECT DESCRIPTION:
TENANT IMPROVEMENT & RELOCATION OF (E) TRANSPORTATION LIBRARY
TO GROUND LEVEL SPACE, INCLUDING STACKS, ARCHIVE, CONFERENCE ROOM, OFFICES & CUBICLES
AND KITCHENETTE

PROPERTY INFORMATION:
ASSESSOR PARCEL NO.: 5409025BRK
TRACT: TR 51217
LOT: 5
LOT AREA: 89,968.2 SF

ZONING SUMMARY:
ZONING: [Q]M3-1-RIO
ZONING: ADP-RIO
ZI: ZI-2129 LOS ANGELES STATE ENTERPRISE ZONE
ZI-2427 FREEWAY ADJACENT NOTICE FOR SENSITIVE USES
ZI-1117 MTA PROJECT
ZI-2358 RIVER IMPROVEMENT OVERLAY DISTRICT
ZI-2452 TRANSIT PRIORITY AREA IN THE CITY OF LOS ANGELES
LAND USE: HEAVY MANUFACTURING
LANDUSE: REGION CENTER COMMERCIAL
HILLSIDE AREA: NO
SPECIFIC PLAN: NONE

BUILDING SUMMARY:
TYPE I CONSTRUCTION

EXISTING USE: OFFICE TOWER WITH RETAIL AND 4 LEVEL OF SUBTERRANEAN PARKING

AREA SUMMARY
AREA OF TENANT IMPROVEMENT PROJECT LIMIT: 3707.9 SF

OCCUPANCY
TYPE A, B
A: 11 OCC. + B: 27 OCC. = 38 OCC.

((RADAR))
RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

N

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

PROJECT NOTES, PROJECT PLAN, DRAWING LIST

PROJECT
1818
SCALE
VARIES
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A0-1

A. GENERAL NOTES:

1. THE PLANS AND SPECIFICATIONS INCLUDED HERE REPRESENT "INSTRUMENTS OF SERVICE" ONLY. THEY ARE AND SHALL REMAIN THE SOLE PROPERTY OF RADAR, INC.

2. ALL WORK SHALL BE IN CONFORMANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE, THE 2016 EDITION OF THE CALIFORNIA BUILDING CODE, THE CITY AND COUNTY OF LOS ANGELES BUILDING CODE, 2017 EDITION, AND WITH THE REQUIREMENTS OF ANY OTHER AGENCIES HAVING JURISDICTION.

3. ALL THE VARIOUS PARTS OF THESE PLANS: ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, ETC., SHALL BE CONSIDERED AS A WHOLE, AND ANYTHING NOTED IN ONE SHALL BE CONSIDERED AS HAVING BEEN NOTED IN ALL.

4. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO FINISHED OPENINGS.

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

B. GENERAL CONTRACTOR'S RESPONSIBILITIES:

1. THE CONTRACTOR SHALL HAVE A METRO APPROVED SET OF PLANS ON THE JOB SITE THROUGHOUT THE PERIOD OF CONSTRUCTION. A COPY OF THE LOS ANGELES RESEARCH REPORT (EVALUATION REPORT) AND/OR CONDITIONS OF LISTING SHALL BE MADE AVAILABLE AT THE JOB SITE.

2. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS, ELEVATIONS, AND CONDITIONS AT THE SITE PRIOR TO CONSTRUCTION AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES BETWEEN PLANS AND FIELD CONDITIONS. WHERE DISCREPANCIES OCCUR, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR PROCEEDING WITH THE WORK WITHOUT THE ARCHITECT'S INSTRUCTIONS AND APPROVAL. NO DEVIATION WHATSOEVER FROM THESE PLANS AND SPECIFICATIONS WILL BE PERMITTED WITHOUT PRIOR DISCUSSION WITH AND APPROVAL FROM THE ARCHITECT.

3. THE CONTRACTOR SHALL MAINTAIN INSURANCE AS REQUIRED BY THE WORKER'S COMPENSATION ACT UNDER THE LOCAL LABOR LAWS.

4. THE CONTRACTOR SHALL PROTECT THE WORK AND THE OWNER'S PROPERTY AGAINST INJURY AND LOSS AND SHALL REPAIR OR REPLACE SUCH DAMAGE AT NO COST TO THE OWNER.

5. THE CONTRACTOR SHALL VERIFY WITH MTA AS TO THE MTA DESIRE TO SAVE OR ESPECIALLY TO PROTECT ANY ITEM RELATED TO THE DEMOLITION WORK INCLUDING THE INTERIOR OF THE SPACE AND THE EXTERIOR AREAS.

6. IN THE EVENT THE CONTRACTOR ENCOUNTERS ON THE SITE MATERIAL REASONABLY BELIEVED TO BE ASBESTOS POLYCHLORINATED BIPHENYL (PCB), OR ANY OTHER HAZARDOUS MATERIAL WHICH HAS NOT BEEN RENDERED HARMLESS, THE CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THE AREA AFFECTED AND REPORT ON THE CONDITION TO THE OWNER, ARCHITECT AND APPLICABLE GOVERNMENT AGENCIES IN WRITING.

7. THE CONTRACTOR SHALL LEAVE THE COMPLETED WORK AND THE ENTIRE JOB SITE CLEAN AND NEAT SUBJECT TO THE OWNER'S APPROVAL AND SHALL PROVIDE THE OWNER WITH MAINTENANCE AND OPERATING MANUALS FOR ALL APPLIANCES AND EQUIPMENT INSTALLED.

8. SHOP DRAWINGS MUST BE SUBMITTED TO ARCHITECT FOR REVIEW AND APPROVAL BEFORE PROCEEDING WITH FABRICATION OF ANY CUSTOM DOORS OR WINDOWS, INCLUDING SKYLIGHTS, CASEWORK AND/OR CABINETRY. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR PROCEEDING WITH SUCH WORK WITHOUT THE ARCHITECT'S INSTRUCTIONS AND APPROVAL.

9. MATERIALS AND PRODUCTS SPECIFIED BY THE NAME OF THE MANUFACTURER OR TRADE NAME OR BRAND OR CATALOG REFERENCES ESTABLISH A STANDARD AND SHALL BE THE BASIS OF THE BID. SUBSTITUTIONS OF EQUAL OR BETTER VALUE MAY BE PROPOSED IN WRITING TO METRO AND THE ARCHITECT FOR CONSIDERATION. NO SUBSTITUTIONS MAY BE MADE WITHOUT PRIOR DISCUSSION WITH AND APPROVAL FROM THE ARCHITECT. VISIBLE HARDWARE AND MATERIALS ARE SUBJECT TO THE ARCHITECT'S FIELD APPROVAL.

C. MATERIALS:

1. ALL LUMBER SHALL BE GRADE MARKED AND CONFORM TO THE STANDARD GRADING AND DRESSING RULES OF THE WEST COAST LUMBER INSPECTION BUREAU. ALL WOOD STUDS AND STUD BLOCKING SHALL BE DOUGLAS FIR #2 OR BETTER. ALL HORIZONTAL MEMBERS, FLOOR JOISTS, ROOF JOISTS, HEADERS, BEAMS, AND PURLINS SHALL BE DOUGLAS FIR #2 OR BETTER UNLESS OTHERWISE NOTED.

D. DOORS & WINDOWS:

1. EVERY SPACE INTENDED FOR HUMAN OCCUPANCY SHALL BE PROVIDED WITH NATURAL LIGHT BY MEANS OF EXTERIOR GLAZED OPENINGS IN ACCORDANCE WITH SECTION 1205.2 OR SHALL BE PROVIDED WITH ARTIFICIAL LIGHT 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 (1205.1 AND 1205.3).

2. GLASS AND GLAZING: PROVIDE TEMPERED GLASS IN LOCATIONS WHICH ARE SUBJECT TO HUMAN IMPACT SUCH AS GLASS ENTRANCE AND EXIT DOORS, FIXED GLASS PANELS, SHOWER DOORS AND TUB ENCLOSURES. THE INSTALLER OF THE GLAZING IN THESE AREAS SHALL BE RESPONSIBLE FOR CONFIRMING TO ALL THE MOST RECENT AND RESTRICTIVE LOCAL, STATE, AND FEDERAL REGULATIONS. UNIT SKYLIGHTS SHALL BE LABELED BY A LA CITY APPROVED LABELING AGENCY; SUCH LABEL SHALL STATE THE APPROVED LABELING AGENCY NAME, PRODUCT DESIGNATION AND PERFORMANCE GRADE RATING (RESEARCH REPORT NOT REQUIRED). SKYLIGHTS AND SLOPED GLAZING SHALL COMPLY WITH SEC R308.6.

E. MECHANICAL, PLUMBING, ELECTRICAL:

1. THE CONTRACTOR SHALL REVIEW THE EXISTING CONDITION AND PROPOSED NEW WORK WITH ITS MECHANICAL SYSTEM AND PLUMBING SUBCONTRACTORS AND ELECTRICIAN PRIOR TO PROCEEDING WITH DEMOLITION.

2. ATTIC VENTILATION: ENCLOSED ATTIC SPACES AND ENCLOSED ROOF RAFTERS SHALL HAVE CROSS VENTILATION FOR EACH SEPARATE SPACE USING VENTILATING OPENINGS PROTECTED FROM THE ENTRANCE OF RAIN. THE NET FREE VENTILATING AREA SHALL BE NOT LESS THAT $1/150$ OF THE AREA OF THE SPACE VENTILATED.

3. KITCHEN SINKS, LAVATORIES, BATHTUBS, SHOWERS, BIDETS, LAUNDRY TUBS AND WASHING MACHINE OUTLETS SHALL BE PROVIDED WITH HOT AND COLD WATER AND CONNECTED TO AN APPROVED WATER SUPPLY (R306.4). EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION. PROVIDE ULTRA-FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. PLUMBING FIXTURES ARE REQUIRED TO BE CONNECTED TO A SANITARY SEWER OR TO AN APPROVED SEWAGE DISPOSAL SYSTEM (R306.3).

4. WATER HEATER MUST BE STRAPPED TO WALL (SEC. 507.3, UPC).

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

6. ALL ELECTRICAL WORK SHALL BE IN FULL ACCORDANCE WITH ALL CODES, RULES, AND REGULATIONS OF GOVERNING AGENCIES AND SHALL COMPLY WITH THE REQUIREMENTS OF THE SERVICING POWER AND TELEPHONE/DATA COMPANIES. ALL EQUIPMENT INSTALLED OUTDOORS SHALL BE FULLY WEATHERPROOF. RECEPTACLES SHALL BE INSTALLED AT 15" ABOVE THE FLOOR, AND WALL SWITCHES AT 36" ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.

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

I. FIRE-RESISTANCE RATED CONSTRUCTION & FIRE PROTECTION:

8. FIRE RATED ASSEMBLIES SHALL BE PER TABLE 721.1(1), GENERIC ASSEMBLIES OF GYPSUM HANDBOOK AND HAVE LARR APPROVAL OR ICC APPROVAL

9. FIRE BLOCKING MUST BE PROVIDED IN ACCORDANCE WITH SECTION 718.2 AT THE 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 SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
D. IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP AND BOTTOM OF THE RUN AND BETWEEN STUDS ALONG AND IN LINE WITH THE RUN OF STAIRS IF THE WALL UNDER THE STAIRS IS UNFINISHED.
E. IN OPENINGS AROUND VENTS, PIPES, DUCTS, CHIMNEYS, FIREPLACES AND SIMILAR OPENINGS WHICH AFFORD A PASSAGE FOR FIRE AT CEILING AND FLOOR LEVELS, WITH NONCOMBUSTIBLE MATERIALS.

10. PLUMBING PENETRATION THROUGH HORIZONTAL OCCUPANCY SEPARATIONS SHALL BE BOXED OUT AND FILLED WITH APPROVED SAFING MATERIAL. INSULATION IS NOT APPROVED. (714.4.1)

11. STEEL BEAMS AND COLUMNS SHALL BE PROTECTED AS REQUIRED FOR 1-HOUR PROTECTION. WHERE CEILING FORMS THE PROTECTIVE MEMBRANE FOR FIRE-RESISTIVE ASSEMBLIES (OCCUPANCY SEPARATIONS AND RATED ROOF/CEILING OR FLOOR/CEILING ASSEMBLIES), THE CONSTRUCTION (FLOOR JOISTS) AND THEIR SUPPORTING HORIZONTAL STRUCTURAL MEMBERS (BEAMS) NEED NOT BE INDIVIDUALLY FIRE PROTECTED EXCEPT WHERE SUCH MEMBERS SUPPORT DIRECTLY APPLIED LOADS FROM MORE THAN ONE FLOOR OR ROOF. THE REQUIRED FIRE RESISTANCE SHALL NOT BE LESS THAN THAT REQUIRED FOR
INDIVIDUAL PROTECTION OF MEMBERS.(704.3)

12. ALL PLUMBING PENETRATIONS THRU WALLS WHICH REQUIRE PROTECTED OPENINGS (FIRE WALLS, FIRE BARRIERS, FIRE PARTITIONS) ARE REQUIRED TO BE GALVANIZED OR CAST IRON PIPING

FIRE DEPARTMENT NOTES (2016 CFC)

1. BUILDINGS UNDERGOING CONSTRUCTION ALTERATION OR DEMOLITION SHALL BE IN ACCORDANCE WITH CFC CHAPTER 33 (CFC 3301)
2. DECORATIVE MATERIALS SHALL BE MAINTAINED IN A FLAME-RETARDANT CONDITION. (CODE REGS. TIT 19, CHAPTER 8, CFC 801)
3. AT LEAST ONE FIRE EXTINGUISHER WITH A MINIMUM OF 2-A SHALL BE PROVIDED WITHIN 75 FEET MAXIMUM TRAVEL DISTANCE FOR EACH 11,250 SQUARE FEET OR PORTION THEREOF ON EACH FLOOR. (CFC 906, NFPA 10, CAL. CODE REGS., TIT 19, CHAPTER 3)
4. INSTALL EXIT SIGNS AT LOCATIONS TO CLEARLY INDICATE THE DIRECTION OF EGRESS TRAVEL. NO POINT SHALL BE MORE THAN 100 FEET FROM THE NEAREST VISIBLE SIGN PER SEC. 1011.1, 2016 CBC.
5. PROVIDE EXIT SIGNS IN ACCORDANCE WITH SEC. 1011.6, 2016 CBC, AS FOLLOWS:
   - COLOR AND DESIGN OF LETTERING, ARROWS AND OTHER SYMBOLS ON EXIT SIGNS SHALL BE IN HIGH CONTRAST WITH THEIR BACKGROUND
   - EXIT SIGNS SHALL HAVE THE WORD "EXIT" ON THE SIGN IN BLOCK CAPITAL LETTERS NOT LESS THAN 6 INCHES IN HEIGHT WITH A STROKE OF NOT LESS THAN $\frac{3}{4}$ INCH
   - EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED. WHEN THE FACE OF THE EXIT SIGNS IS ILLUMINATED FROM AN EXTERNAL SOURCE, IT SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT CANDLES FROM EITHER OF ELECTRIC LAMPS. INTERNALLY ILLUMINATED SIGNS SHALL PROVIDE EQUIVALENT LUMINANCE
7. ANY TIME A BUILDING IS OCCUPIED, THE MEANS OF EGRESS SHALL BE ILLUMINATED AT AN INTENSITY OF NOT LESS THAN 5 FOOTCANDLES AT THE FLOOR LEVEL (CBC 1011.6.2)
8. EGRESS ILLUMINATION REQUIRES A SOURCE OF EMERGENCY POWER AT ALL TIMES AND SHALL ENSURE CONTINUED ILLUMINATION FOR A DURATION OF NO LESS THAN 90 MINUTES IN CASE OF PRIMARY POWER LOSS (CBC 1011.6.3)

GREEN BUILDING NOTES

A. HVAC SYSTEM

1. TESTING AND ADJUSTING: WORK SHALL COMPLY WITH SECTION A.5.410.4 OF THE 2016 CALIFORNIA GREEN BUILDING CODE
2. PROCEDURES: PERFORM TESTING AND ADJUSTING IN ACCORDANCE WITH INDUSTRY BEST PRACTICES AND APPLICABLE STANDARDS ON EACH SYSTEM AS DETERMINED BY BUILDING COUNCIL
3. HVAC BALANCING: BEFORE A NEW SPACE-CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, THE SYSTEM SHOULD BE BALANCED IN ACCORDANCE WITH THE PROCEDURES DEFINED BY THE ASSOCIATED AIR BALANCED COUNCIL NATIONAL STANDARDS (CA GBC 5.410.4.3.1)
4. REPORTING: AFTER COMPLETION OF TESTING, ADJUSTING AND BALANCING, THE CONTRACTOR SHALL PROVIDE THE OWNER OR REPRESENTATIVE A FINAL REPORT OF TESTING SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES
5. OPERATION AND MAINTENANCE MANUAL: PROVIDE THE BUILDING REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF ALL GUARANTEES/WARRANTIES FOR EACH SYSTEM. INCLUDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE ENFORCING AGENCY (CA GBC 5.504.1.3, 5.504.3)
6. TEMPORARY VENTILATION: IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MERV OF 8, BASED ON ASHRAE 52.2-1999, OR AN AVERAGE EFFICIENCY OF 30% BASED ON ASHRAE 52.1-1992. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY OR AT THE CONCLUSION OF CONSTRUCTION (CA GBC 5.504.1.3, 5.504.3)
7. COVERING DUCTS: AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING, AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM (CALGREEN GBC 5.504.3)
8. AIR FILTRATION: PROVIDE AT LEAST MERV-8 FILTERS IN REGULARLY OCCUPIED SPACES OF MECHANICALLY VENTILATED BUILDINGS. INSTALL FILTERS MUST BE CLEARLY LABELED BY THE MANUFACTURER INDICATING THE MERV RATING, AND FILTER SPECIFICATION SHALL BE INCLUDED IN THE OPEREATION AND MAINTENANCE MANUAL (CALGREEN 5.504.5.3 THROUGH 5.504.5.3.1)
9. HVAC BALANCING TO BE PERFORMED BY TAAB, NEBB, OR AABC

B. LIGHTING

1. OCCUPANCY SENSORS: ALL LIGHTING FIXTURES ARE CIRCUITED TO BE CONTROLLED BY OCCUPANCY SENSORS TO ASSURE THAT THERE WILL NEVER BE ANY INSTANCE WHERE ANY LIGHTING FIXTURE WILL BE LEFT ON WHERE NOT NEEDED. OCCUPANCY SENSORS SHALL BE INFRARED, ULTRASONIC OR DUAL (BOTH) TECHNOLOGY TYPE DEPENDING ON THE SPACE AND OCCUPANT PROFILES. SENSORS ARE EITHER WALL MOUNTED OR CEILING MOUNTED; IN BOTH CASES, MANUAL SWITCHES WILL ALSO BE PART OF THE DESIGN TO ALLOW FOR FURTHER REDUCTION OF LIGHTING IF DESIRED OR NEEDED.
2. DIMMABLE SYSTEMS: EMERGENCY EGRESS FIXTURES CONNECTED TO BATTERY PACKS ARE ALSO DESIGNED TO BE DIMMABLE AND CONTROLLED BY THE SAME DEVICES AS THE NORMAL FIXTURES AND CIRCUITS. THEY WILL TURN ON TO FULL BRIGHT UPON LOSS OF POWER.
3. MOTION SENSORS: STORAGE LIGHTING (TYPE L6) IS CONTROLLED BY TIMECLOCK IN COMBINATION WITH MOTION SENSORS.
4. LIGHTING TESTING AND AJUSTING: ALL LIGHTING CONTROL SYSTEMS SHALL FIELD CALIBRATED AND FOLLOW TESTING GUIDELINES AS DESCRIBED IN 2016 CALIFORNIA ENERGY CODE TITLE 24. SEE ALSO TITLE 24 SHEET NRCC-LTI-02-E ON ELECTRICAL DRAWINGS E0-3, E0-4.
   i. NA7.6.2.3 - OCCUPANCY SENSOR ACCEPTANCE
   ii. NA7.6.2.5 -AUTOMATIC TIME SWITCH CONTROL ACCEPTANCE
   iii. NA7.7.2 -ENERGY MANAGEMENT CONTROL SYSTEM (EMCS)

C. UNIVERSAL WASTE

1. UNIVERSAL WASTE CONTAINER LOCATION; UNIVERSAL WASTES ARE:
   - ELECTRONIC DEVICES
   - BATTERIES
   - ELECTRIC LAMPS
   - MERCURY-CONTANING EQUIPMENT
   - CRTS
   - CRT-GLASS
   - NON-EMPTY AEROSOL CANS
2. NON-RESIDENTIAL ADDITIONS AND ALTERATIONS SHALL REQUIRE VERFICATION THAT CALIFORNIA PROHIBITED UNIVERSAL WASTE MATERIAL ARE DISPOSED OF PROPERLY AND DIVERTED FROM LANDFILLS. (5.408.2)

D. ENVIRONMENTAL COMFORT

1. INTERIOR SOUND TRANSMISSION. WALL AND FLOORCEILING ASSEMBLIES SEPARATING TENANT SPACES AND TENANT SPACES AND PUBLIC PLACES SHALL HAVE AN STC OF AT LEAST 40. (5.507.4.3)

LEGEND

(E) WALL
DEMO
RATED
PROJECT LIMIT
NEW
EXIT SIGN. ARROW INDICATES DIRECTION
1 KEYNOTE
DOOR
WINDOW
F-1 FINISH
LEVEL EL — ELEVATION/HEIGHT

WALL LEGEND, SEE WALL DETAILS A6-7

A NON-RATED WALL
B 1-HOUR RATED WALL
B SIM. 1-HOUR RATED WALL
C LOW WALL
D LOW WALL AT RAMP
F FURRED WALL

ACCESSIBLE LEGEND

60" TURNING RADIUS
18" INTERIOR DOOR PULL
30" X 48" CLEAR SPACE

EGRESS LEGEND

EGRESS AISLE

OFFICE ← ROOM NAME
200 SF ← ROOM SQ. FTG
2 OCC. ← OCCUPANT NUMBER
201 ← ASSIGNED ROOM NO
ROOM LABEL/ OCCUPANT LOAD

CEILING LEGEND, SEE RCP A5-1

CEILING MTD. LIGHT FIXTURE
WALL MTD. LIGHT FIXTURE
T-GRID MTD LIGHT FIXTURE
SUSPENDED LINEAR FIXTURE
HVAC LINEAR DIFFUSER
HVAC SQ. DIFFUSER
HVAC SQ. DIFFUSER
ACCESS PANEL

((RADAR))
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.
423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
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Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

GENERAL NOTES; FIRE DEPT NOTES; GREEN NOTES; LEGEND

PROJECT
1818
SCALE
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DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A0-2

LA DBS DEPARTMENT OF BUILDING AND SAFETY

2017 Los Angeles Green Building Code

FORM GRN 18N

WATER CONSERVATION ORDINANCE NOTES

NON-RESIDENTIAL BUILDINGS

1. For new buildings or additions exceeding 50,000 ft^2, 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 300 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)

LA DBS DEPARTMENT OF BUILDING AND SAFETY

2017 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 sheetmetal 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 8 or higher. However, buildings within 1,000 feet of a freeway shall provide regularly occupied areas of the building with a MERV 13 filter. 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. Ventilated spaces in buildings shall meet the minimum requirements of Section 121 of the California Energy Code and Chapter 4 of the California Code of Regulations, Title 8. (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)

LA DBS DEPARTMENT OF BUILDING AND SAFETY

2017 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 # __________ - __________ - __________ Date: ____________________

ITEM #	CODE SECTION	REQUIREMENT	REFERENCE SHEET (Sheet # or N/A)	COMMENTS (e.g. note #, detail # or reason for N/A)
		PLANNING AND DESIGN		
1	5.106.1	Storm water drainage and retention during construction	N/A	INT. WORK ONLY
2	5.106.4.1.1	Short-term bicycle parking (≥ 10 vehicular parking spaces)	N/A	INT. WORK ONLY
3	5.106.4.1.2	Long-term bicycle parking (≥ 10 vehicular parking spaces)	N/A	INT. WORK ONLY
4	5.106.5.2	Designated parking (≥ 10 vehicular parking spaces)	N/A	INT. WORK ONLY
5	5.106.10	Grading and Paving	N/A	INT. WORK ONLY
		WATER EFFICIENCY & CONSERVATION		
6	5.303.1.1	Additions in excess of 50,000 sq ft	N/A	NO ADDITION
7	5.303.1.2	Excess consumption	A0-3	GRN 15/ NOTE 2
8	5.303.2	Water reduction	A0-3	GRN 17
9	5.303.3	Water conserving plumbing fixtures and fittings	A0-3	GRN 15/ NOTE 3
10	5.303.3.3	Showerheads	N/A	NO SHOWERS
11	5.304.1	Outdoor water use in landscape areas	N/A	INT. WORK ONLY
12	5.304.3	Irrigation controller and sensor application	N/A	INT. WORK ONLY
13	5.304.4	Outdoor water use meters	N/A	INT. WORK ONLY
14	5.304.5	Exterior faucets	N/A	INT. WORK ONLY
15	5.305.1	Graywater ready	N/A	INT. WORK ONLY
16	5.305.2	Recycled water supply to fixtures	A0-3	GRN 15/ NOTE 8
		MATERIAL CONSERVATION & RESOURCE EFFICIENCY		
17	5.407.1	Weather protection	N/A	INT. WORK ONLY
18	5.407.2.1	Sprinklers	N/A	INT. WORK ONLY
19	5.407.2.2.1	Nonabsorbent floor and wall finishes	N/A	INT. WORK ONLY
20		Exterior door protection	N/A	INT. WORK ONLY
21	5.407.2.2.2	Flashing	N/A	INT. WORK ONLY
22	5.408.1	Construction waste diversion	A0-3	GRN 15/ NOTE 12
23	5.408.2	Universal Waste	A0-2	SEE GREEN NOTES
24	5.408.3	Excavated soil and land clearing debris	N/A	INT. WORK ONLY

LA DBS DEPARTMENT OF BUILDING AND SAFETY

PLUMBING FIXTURE FLOW RATES

Non-Residential Occupancies

2017 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.

LA DBS DEPARTMENT OF BUILDING AND SAFETY

VOC AND FORMALDEHYDE LIMITS

2017 Los Angeles Green Building Code

(Incorporate this form into the plans)

FORM GRN 11

The tables below are taken from the 2017 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	100
Nonflat-high gloss coatings	150
Specialty Coatings	
Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings[1]	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Rust preventative coatings	250
Shellacs	
Clear	730
Opaque	550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

[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] Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. 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	250
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	250
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.

LA DBS DEPARTMENT OF BUILDING AND SAFETY

2017 Los Angeles Green Building Code

FORM GRN 10

ITEM #	CODE SECTION	REQUIREMENT	REFERENCE SHEET (Sheet # or N/A)	COMMENTS (e.g. note #, detail # or reason for N/A)
25	5.410.1	Recycling by occupants (additions that are > 30% of existing floor area)	N/A	NO ADDITION
26	5.410.4	Testing, adjusting and balancing	A0-2	GREEN NOTES, 1
27	5.410.4.2	– Systems	A0-2	GREEN NOTES, 1
28	5.410.4.3	– Procedures	A0-2	GREEN NOTES, 2
29	5.410.4.3.1	– HVAC balancing	A0-2	GREEN NOTES, 3
30	5.410.4.4	– Reporting	A0-2	GREEN NOTES, 4
31	5.410.4.5	– Operation and maintenance manual	A0-2	GREEN NOTES, 5
32	5.410.4.5.1	– Inspections and reports	A0-2	GREEN NOTES, 5
		ENVIRONMENTAL QUALITY		
33	5.503.1	Fireplace and Woodstoves	N/A	NO FIREPLACE
34	5.504.1.3	Temporary ventilation	A0-3	GRN 15, NOTE 17
35	5.504.3	Covering of duct openings and protection of mechanical equipment during construction	A0-3	GRN 15, NOTE 18
36	5.504.4	Finish material pollutant control	A0-3	GRN 15, NOTE 19
37	5.504.4.1	– Adhesives, sealants, and caulks		
38	5.504.4.3	– Paints and coatings		
39	5.504.4.3.1	– Aerosol paints and coatings		
40	5.504.4.3.2	– Verification	A0-3	GRN 15, NOTE 20
41	5.504.4.4	Carpet systems	A0-3	GRN 15, NOTE 21
42	5.504.4.4.1	Carpet cushion	A0-3	GRN 15, NOTE 22
43	5.504.4.5	Composite wood products	A0-3	GRN 15, NOTE 23,24
44	5.504.4.6	Resilient flooring systems	A0-3	GRN 15, NOTE 25
45	5.504.5.3	Filters	A0-3	GRN 15, NOTE 26
46	5.504.7	Environmental tobacco smoke (ETS) control	A0-3	GRN 15, NOTE 27
47	5.505.1	Indoor moisture control	A0-3	GRN 15, NOTE 28
48	5.506.2	Carbon dioxide (CO_2) monitoring	A0-3	GRN 15, NOTE 29
49	5.507.4.1	Exterior noise transmission prescriptive method	N/A	INT. WORK ONLY
50		– Exterior noise transmission for roof	N/A	INT. WORK ONLY
51		– Exterior noise transmission for walls	N/A	INT. WORK ONLY
52		– Exterior noise transmission for windows	N/A	INT. WORK ONLY
53	5.507.4.2	Exterior noise transmission performance method	N/A	INT. WORK ONLY
54	5.507.4.3	Interior sound transmission	A0-2	SEE GREEN NOTES
55	5.508.1	Ozone depletion and greenhouse gas reductions	A0-3	GRN 15, NOTE 30
56	5.508.2	Supermarket refrigerant leak reduction	N/A	NO RETAIL FOOD SRVC

((RADAR))

RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

GREEN NOTES; FORMS

PROJECT 1818
SCALE N/A
DRAWN BY KC
DATE 09/26/19

SHEET NUMBER A0-3

INFORMATION BULLETIN / PUBLIC - BUILDING CODE
REFERENCE NO: Various EFFECTIVE: 01-01-2017
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PREVIOUSLY ISSUED AS: N/A

GENERAL NOTES FOR COMMERCIAL ACCESSIBILITY

NOTE: Code references are to the 2017 edition of the Los Angeles Building Code

The State of California delegates authority to the local jurisdiction to ensure compliance with Title 24, Part 2 of the California Code of Regulations. The following general notes indicate specific areas of Title 24, Part 2 which are applicable to your project. Please be aware that the owner(s) of the building and his/her consultants are responsible for compliance with the most current Federal Regulations contained in the Americans with Disabilities Act (ADA) and Fair Housing Act (FHA). Where the ADA & FHA requirements exceed those contained in Title 24, Part 2, it is the responsibility of the owners and their consultants to ensure compliance with the most current ADA & FHA regulations, as the City is not authorized to review plans or inspect projects for ADA & FHA compliance.

The following, applicable, general notes shall be provided on the plans.

A. APPLICATION AND ADMINISTRATION

1. Public accommodations shall maintain in operable working condition those features of facilities and equipment that are required to be accessible to and useable by persons with disabilities. Isolated or temporary interruptions in service or accessibility due to maintenance or repairs shall be permitted. **§11B-108**

B. BUILDING BLOCKS

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 inch maximum. **§11B-302.2, Figure 11B-302.2**

CHANGES IN LEVEL

3. Vertical changes in level for floor or ground surfaces may be ¼ inch high maximum and without edge treatment. Changes in level greater than ¼ inch and not exceeding ½ inch in height shall be beveled with a slope not steeper than 1:2. **§11B-303, Figures 11B-303.2 & 11B-303.3**
4. Changes in level greater than ½ inch in height shall be ramped and shall comply with the requirements of 11B-405 Ramps or 11B-406 Curb Ramps as applicable. **§11B-303**
5. Abrupt changes in level exceeding 4 inches in a vertical dimension between walks, sidewalks or other pedestrian ways and adjacent surfaces or features shall be identified by warning curbs at least 6 inches in height above the walk or sidewalk surface or by guards or handrails with a guide rail centered 2 inches minimum and 4 inches maximum above the surface of the walk or sidewalk. These requirements do not apply between a walk or sidewalk and an adjacent street or driveway. **§11B-303.5**

TURNING SPACE

6. Circular turning spaces shall be a space of 60 inches diameter minimum and may include knee and toe clearance complying with 11B-306 Knee and Toe Clearance. **§11B-304.3.1**
7. T-Shaped turning spaces shall be a T-shaped space within a 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, Figure 11B-304.3.2**

KNEE AND TOE CLEARANCE

8. For lavatories and built-in dining and work surfaces required to be accessible, toe clearance shall be provided that is 30 inches in width and 9 inches in height above the finish floor or ground for a depth of 19 inches minimum. **§11B-306.2.1**

9. Toe clearance shall extend 19 inches maximum under lavatories for toilet and bathing facilities and 25 inches maximum under other elements. **§11B-306.2.2**
10. At lavatories in toilet and bathing facilities, knee clearance shall be provided that is 30 inches in width for a depth of 11 inches at 9 inches above the finish floor or ground and for a depth of 8 inches at 27 inches above the finish floor or ground 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, Figure 11B-306.3(c)**
11. At dining and work surfaces required to be accessible, knee clearance shall be provided that is 30 inches in width at 27 inches above the finish floor or ground for a depth of at least 19 inches. **§11B-306.3**

PROTRUDING OBJECTS

12. Except for handrails, objects with leading edges more than 27 inches and less than 80 inches above the finish floor or ground shall protrude no more than 4 inches horizontally into the circulation path. Handrails may protrude 4½ inches maximum. **§11B-307.2, Figure 11B-307.2**
13. Freestanding objects mounted on posts or pylons shall overhang circulation paths no more than 12 inches when located from 27 to 80 inches above the finish floor or ground. **§11B-307.3, Figure 11B-307.3(a)**
14. Protruding objects shall not reduce the clear width required for accessible routes. **§11B-307.5**
15. Lowest edge of a sign or other obstruction, when mounted between posts or pylons separated with a clear distance greater than 12 inches, shall be less than 27 inches or more than 80 inches above the finish floor or ground. **§11B-307.3, Figure 11B-307.3(b)**
16. Vertical clearance shall be at least 80 inches high on circulation paths except at door closers and door stops, which may be 78 inches minimum above the finish floor or ground. **§11B-307.4**
17. Guardrails or other barriers with a leading edge located 27 inches maximum above the finish floor or ground shall be provided where the vertical clearance on circulation paths is less than 80 inches high. **§11B-307.4, Figure 11B-307.4**
18. Where a guy support is used within either the width of a circulation path or 24 inches maximum outside of a circulation path, a vertical guy brace, sidewalk guy or similar device shall be used to prevent a hazard or an overhead obstruction. **§11B-307.4.1, Figure 11B-307.4.1**

REACH RANGES

19. Electrical controls and switches intended to be used by the occupant of a room or area to control lighting and receptacle outlets, appliances or cooling, heating and ventilating equipment shall be located within allowable reach ranges. Low reach shall be measured to the bottom of the outlet box and high reach shall be measured to the top of the outlet box. **§11B-308.1.1**
20. Electrical receptacle outlets on branch circuits of 30 amperes or less and communication system receptacles shall be located within allowable reach ranges. Low reach shall be measured to the bottom of the outlet box and high reach shall be measured to the top of the outlet box. **§11B-308.1.2.**
21. High forward reach that is unobstructed 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, Figure 11B-308.2.1**
22. High forward reach shall be 48 inches maximum where the reach depth is 20 inches or less and 44 inches maximum where the reach depth exceeds 20 inches. High forward reach shall not exceed 25 inches in depth. **§11B-308.2.2, Figure 11B-308.2.2**
23. High side reach shall be 48 inches maximum and the low side reach shall be 15 inches minimum above the finish floor where the side reach is unobstructed or the depth of any obstruction does not exceed 10 inches. **§11B-308.3.1, Figure 11B-308.3.1**
24. High side reach shall be 46 inches maximum above the finish floor or ground where the high side reach is over an obstruction more than 10 inches but not more than 24 inches in depth. **§11B-308.3.2, Figure 11B-308.3.2**
25. Obstructions for high side reach shall not exceed 34 inches in height and 24 inches in depth. **§11B-308.3.2, Figure 11B-308.3.2**

26. Obstructed high side reach for the top of washing machines and clothes dryers shall be permitted to be 36 inches maximum above the finish floor. **§11B-308.3.2**
27. Obstructed high side reach for the operable parts of fuel dispensers shall be permitted to be 54 inches maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs. **§11B-308.3.2**

OPERABLE PARTS

28. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Force required to activate operable parts shall be 5 pounds maximum. **§11B-309.4**

C. ACCESSIBLE ROUTES

DETECTABLE WARNINGS AND DETECTABLE DIRECTIONAL TEXTURE

1. Detectable warning surfaces shall be yellow and approximate FS 33538 of Federal Standard 595C. **§11B-705.1.1.3.1**
2. Detectable warning surfaces shall provide a 70 percent minimum visual contrast with adjacent walking surfaces. Contrast in percent shall be determined by:

   Contrast percent = [(B1-B2)/B1] x 100 where

   B1 = light reflectance value (LRV) of the lighter area and

   B2 = light reflectance value (LRV) of the darker area

   §11B-705.1.1.3.2 (See exception)

DOORS, DOORWAYS, AND GATES

3. Doors, doorways, and gates providing user passage shall be provided in accordance with 11B-206.5 Doors, Doorways, and Gates. **§11B-206.5**
4. Doors, doorways and gates that are part of an accessible route shall comply with 11B-404 Doors, Doorways, and Gates. **§11B-404.1**
5. 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. Openings more than 24 inches deep shall provide a clear opening of 36 inches minimum. There shall be no projections into the required clear opening width lower than 34 inches above the finish floor or ground. Projections into the clear opening width between 34 inches and 80 inches above the finish floor or ground shall not exceed 4 inches. **§11B-404.2.3**
6. Swinging doors and gates shall have maneuvering clearances complying with Table 11B-404.2.4.1. **§11B-404.2.4.1**
7. Doorways less than 36 inches wide without doors or gates, sliding doors, or folding doors shall have maneuvering clearances complying with Table 11B-404.2.4.2. **§11B-404.2.4.2**
8. Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches of the latch side an interior doorway, or within 24 inches of the latch side of an exterior doorway, projects more than 8 inches beyond the face of the door, measured perpendicular to the face of the door or gate. **§11B-404.2.4.3**
9. Thresholds, if provided at doorways, shall be ½ inch high maximum. Raised thresholds and changes in level at doorways shall comply with 11B-302 Floor or Ground Surfaces and 11B-303 Changes in Level. **§11B-404.2.5**
10. Handles, pulls, latches, locks, and other operable parts on doors and gates shall comply with 11B-309.4 Operation. Operable parts of such hardware 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**
11. The force for pushing or pulling open a door or gate other than fire doors shall be as follows: **§11B-404.2.9**
    a. Interior hinged doors and gates: 5 pounds maximum.
    b. Sliding or folding doors: 5 pounds maximum.

    c. Required fire doors: the minimum opening force allowable by the appropriate administrative authority, not to exceed 15 pounds.
    d. Exterior hinged doors: 5 pounds maximum.

12. 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. **§11B-404.2.10**

RAMPS

13. Ramp runs shall have a running slope not steeper than 1:12 (8.33%). **§11B-405.2**
14. Cross slope of ramp runs shall not be steeper than 1:48 (2.083%). **§11B-405.3**
15. Floor or ground surfaces of ramp runs shall comply with 11B-302 Floor or Ground Surfaces. Changes in level other than the running slope and cross slope are not permitted on ramp runs. **§11B-405.4**
16. The clear width of a ramp run shall be 48 inches minimum. **§11B-405.5**
17. The rise for any ramp run shall be 30 inches maximum. **§11B-405.6**
18. Ramps shall have landings at the top and the bottom of each ramp run. **§11B-405.7**
19. Landings shall comply with 11B-302 Floor or Ground Surfaces. Changes in level are not permitted. **§11B-405.7.1**
20. The landing clear width shall be at least as wide as the widest ramp run leading to the landing. **§11B-405.7.2**
21. Top landings shall be 60 inches wide minimum. **§11B-405.7.2.1**
22. The landing clear length shall be 60 inches long minimum. **§11B-405.7.3**
23. Bottom landings shall extend 72 inches minimum in the direction of ramp run. **§11B-405.7.3.1**
24. 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**
25. Where doorways are located adjacent to a ramp landing, maneuvering clearances required by 11B-404.2.4 and 11B-404.3.2 shall be permitted to overlap the required landing area. Doors, when fully open, shall not reduce the required ramp landing width by more than 3 inches. Doors, in any position, shall not reduce the minimum dimension of the ramp landing to less than 42 inches. **§11B-405.7.5**
26. Ramp runs shall have compliant handrails per 11B-505 Handrails. **§11B-405.8**
27. Edge protection complying with 11B-405.9.2 Curb or Barrier shall be provided on each side of ramp runs and at each side of ramp landings. **§11B-405.9 (See exceptions)**
28. A curb, 2 inches high minimum, or barrier shall be provided that prevents the passage of a 4 inch diameter sphere, where any portion of the sphere is within 4 inches of the finish floor or ground surface. To prevent wheel entrapment, the curb or barrier shall provide a continuous and uninterrupted barrier along the length of the ramp. **§11B-405.9.2**
29. Landings subject to wet conditions shall be designed to prevent the accumulation of water. **§11B-405.10**

HANDRAILS

30. Handrails shall be provided on both sides of stairs and ramps. **§11B-505.2**
31. 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. **§11B-505.3**
32. Top of gripping surfaces of handrails shall be 34 inches minimum and 38 inches maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above walking surfaces, stair nosings, and ramp surfaces. **§11B-505.4**
33. 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**

34. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur 1½ inches minimum below the bottom of the handrail-gripping surface. **§11B-505.6**
35. Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1¼ inches minimum and 2 inches maximum. **§11B-505.7.1**
36. Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches minimum and 6¼ inches maximum, and a cross-section dimension of 2¼ inches maximum. **§11B-505.7.2**
37. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with Section 11B-505.10 Handrail Extensions. **§11B-505.10**
38. 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**
39. 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, or shall be continuous to the handrail of an adjacent stair flight. **§11B-505.10.2**
40. 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. The horizontal extension of a handrail shall be 12 inches long minimum and a height equal to that of the sloping portion of the handrail as measured above the stair nosings. Extension shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight. **§11B-505.10.3**

STAIRWAYS

41. A stair is defined as a change in elevation, consisting of one or more risers. **§11B-202**
42. All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Risers shall be 4 inches high minimum and 7 inches high maximum. Treads shall be 11 inches deep minimum. Curved stairways with winder treads are permitted at stairs which are not part of a required means of egress. (See exception) **§11B-504.2**
43. Open risers are not permitted. **§11B-504.3 (See exceptions)**
44. 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 stripe 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 stripe shall extend the full width of the step or upper approach and shall be of material that is at least as slip resistant as the other treads of the stair. A painted stripe shall be acceptable. Grooves shall not be used to satisfy this requirement. **§11B-504.4.1**
45. The radius of curvature at the leading edge of the tread shall be ½ inch maximum. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. Risers shall be permitted to slope under the tread at an angle of 30 degrees maximum from vertical. The permitted projection of the nosing shall extend 1¼ inches maximum over the tread below. **§11B-504.5 (See exception for existing buildings)**
46. Stairs shall have handrails complying with Section 11B-505 Handrails. **§11B-504.6**
47. Stair treads and landings subject to wet conditions shall be designed to prevent the accumulation of water. **§11B-504.7**
48. Floor identification signs required by Chapter 10, Section 1022.9 complying with Sections 11B-703.1 Signs General, 11B-703.2 Raised Characters, 11B-703.3 Braille and 11B-703.5 Visual Characters shall be located at the landing of each floor level, placed adjacent to the door on the latch side, in all enclosed stairways in buildings two or more stories in height to identify the floor level. At the exit discharge level, the sign shall include a raised five pointed star located to the left of the identifying floor level. The outside diameter of the star shall be the same as the height of the raised characters. **§11B-504.8**

CURB RAMPS, BLENDED TRANSITIONS AND ISLANDS

49. Perpendicular ramp runs shall have a running slope not steeper than 1:12 (8.33%). **§11B-406.2.1**
50. For perpendicular ramps, where provided, curb ramp flares shall not be steeper than 1:10. **§11B-406.2, Figure 11B-406.2.2**
51. The running slope of the curb ramp segments shall be in-line with the direction of sidewalk travel. Ramp runs shall have a running slope not steeper than 1:12 (8.33%). **§11B-406.3.1, Figure 11B-406.3.2**
52. A turning space 48 inches minimum by 48 inches minimum shall be provided at the bottom of the curb ramp. The slope of the turning space in all directions shall be 1:48 maximum (2.083%). **§11B-406.3.2**
53. Blended transition ramps hall have a running slope not steeper than 1:20 (5%). **§11B-406.4.1**
54. Curb ramps and the flared sides of curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides. **§11B-406.5.1**
55. The clear width of curb ramp runs (excluding any flared sides), blended transitions, and turning spaces shall be 48 inches minimum. **§11B-406.5.2**
56. Landings shall be provided at the tops of curb ramps and blended transitions (parallel curb ramps shall not be required to comply). The landing clear length shall be 48 inches minimum. The landing clear width shall be at least as wide as the curb ramp, excluding any flared sides, or the blended transition leading to the landing. The slope of the landing in all directions shall be 1:48 (2.083%) maximum. **§11B-406.5.3**
57. Grade breaks at the top and bottom of curb ramp runs shall be perpendicular to the direction of the ramp run. Grade breaks shall not be permitted on the surface of ramp runs and turning spaces. Surface slopes that meet at grade breaks shall be flush. **§11B-406.5.6**
58. The cross slope of curb ramps and blended transitions shall be 1:48 (2.083%) maximum. **§11B-406.5.7**
59. Counter slopes of adjoining gutters and road surfaces immediately adjacent to and within 24 inches of the curb ramp shall not be steeper than 1:20 (5%). The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level. **§11B-406.5.8**
60. The bottom of diagonal curb ramps shall have a clear space 48 inches minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches minimum clear space within the markings. **§11B-406.5.9**
61. Curb ramps and blended transitions shall have detectable warnings complying with 11B-705 Detectable Warnings. **§11B-406.5.12**
62. Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. The clear width of the accessible route at islands shall be 60 inches wide minimum. Where curb ramps are provided, they shall comply with 11B-406 Curb Ramps, Blended Transitions and Islands. Landings complying with 11B-406.5.3 Landings and the accessible route shall be permitted to overlap. Islands shall have detectable warnings complying with 11B-705 Detectable Warnings and Detectable Directional Texture. **§11B-406.6, Figure 11B-406.6**

D. GENERAL SITE AND BUILDING ELEMENTS

1. Where parking spaces are provided, accessible parking spaces shall be provided in number and kind required per Section 11B-208 Parking Spaces. **§11B-208.1**
2. Where passenger loading zones, drop-off zones, and/or bus stops are provided, accessible passenger loading zones, drop-off zones, and/or bus stops are required.
3. Where Electric vehicle charging stations (EVCS) are provided, they shall comply with Section 11B-812 as required by Section 11B-228.3.
4. EVCS complying with Section 11B-812 that serve a particular building or facility shall be located on an accessible route to an entrance complying with Section 11B-206.4. Where EVCS do not serve a particular building or facility, EVCS complying with Section 11B-812 shall be located on an accessible route to an accessible pedestrian entrance of the EV charging facility.

((RADAR))

RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

ACCESSIBLE NOTES, FORMS

PROJECT 1818
SCALE N/A
DRAWN BY KC
DATE 09/26/19
SHEET NUMBER A0-4

E. PLUMBING FIXTURES AND FACILITIES

DRINKING FOUNTAINS

1. Drinking fountains shall comply with Sections 11B-307 Protruding Objects and 11B-602 General Requirements. **§11B-602.1**
2. Units shall have a clear floor or ground space complying with Section 11B-305 Clear Floor or Ground Space positioned for a forward approach and centered on the unit. Knee and toe clearance complying with Section 11B-306 Knee and Toe Clearance shall be provided. **§11B-602.2**
3. Spout outlets shall be 36 inches maximum above the finish floor or ground. **§11B-602.4**
4. 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**
5. The spout shall provide a flow of water 4 inches high minimum and shall be located 5 inches maximum from the front of the unit. The angle of the water stream shall be measured horizontally relative to the front face of the unit. Where spouts are located less than 3 inches from the front of the unit, the angle of the water stream shall be 30 degrees maximum. Where spouts are located between 3 inches and 5 inches maximum from the front of the unit, the angle of the water stream shall be 15 degrees maximum. **§11B-602.6**
6. Spout outlets of drinking fountains for standing persons shall be 38 inches minimum and 43 inches maximum above the finish floor or ground. **§11B-602.7**
7. Wall and post-mounted cantilevered drinking fountains shall be 18 inches minimum and 19 inches maximum in depth. **§11B-602.8**
8. All drinking fountains shall either be located completely within alcoves, positioned completely between wing walls, or otherwise positioned so as not to encroach into pedestrian ways. The protected area within such a drinking fountain is located shall be 32 inches wide minimum and 18 inches deep minimum, and shall comply with Section 11B-305.7 Maneuvering Clearance. When used, wing walls or barriers shall protect horizontally at least as far as the drinking fountain and to within 6 inches vertically from the floor or ground surface. **§11B-602.9**

TOILET AND BATHING ROOM CLEARANCES

9. Doors to unisex toilet rooms and unisex bathing rooms shall have privacy latches. **§11B-213.2.1**
10. Mirrors located above the lavatories or countertops shall be installed within the bottom edge of the reflecting surface 40 inches maximum above the finish floor or ground. Mirrors not located above the 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**
11. 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**
12. Where towel or sanitary napkin dispensers, waste receptacles, or other accessories are provided in toilet facilities, at least one of each type shall be located on an accessible route. All operable parts, including coin slots, shall be 40 inches maximum above the finish floor. Baby changing stations are not required to comply with Section 11B-603.5 (See exception) **§11B-603.5**

WATER CLOSETS AND TOILET COMPARTMENTS

13. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with Section 11B-309.4 Operation except they shall be located 44 inches maximum above the floor. Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with Section 11B-604.8.2 Ambulatory Accessible Compartments. **§11B-604.6**
14. Toilet paper dispensers shall comply with Section 11B-309.4 Operation 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 the grab bars. Dispensers shall not be of a type that control delivery or that does not allow continuous paper flow. **§11B-604.7**
15. Sanitary napkin disposal units, if provided, shall comply with Section 11B-309.4 and shall be wall mounted and located on the sidewall between the rear wall of the toilet and the toilet paper dispenser, adjacent to the

toilet paper dispenser. The disposal unit shall be located below the grab bar with the opening of the disposal unit 19 inches minimum (483 mm) above the finish floor. **§11B-604.7.2**

16. 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**
17. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with Section 11B-309 Operable Parts except that the flush control shall be mounted at a maximum height of 44 inches above the finish floor. **§11B-605.4**
18. For lavatories and sinks, a clear floor space complying with Section 11B-305 Clear Floor or Ground Surfaces, positioned for a forward approach, and knee and toe clearance complying with Section 11B-306 Knee and Toe Clearance shall be provided. **§11B-606.2**
19. 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**

SIGNS RELATED TO TOILETS AND BATHING FACILITIES

20. Entrances leading to toilet rooms and bathing rooms complying with 11B-603 Toilet and Bathing Rooms shall be identified by a geometric symbol complying with 11B-703.7.2.6 Toilet and Bathing Room Geometric Symbols. Where existing toilet rooms or bathing rooms do not comply with 11B-603 Toilet and Bathing Rooms, directional signs indicating the location of the nearest compliant toilet room or bathing room within the facility shall be provided. Signs shall comply with 11B-703.5 Visual Characters and shall include the International Symbol of Accessibility complying with 11B-703.7.2.1 ISA. Where existing toilet rooms or bathing rooms do not comply with 11B-603 Toilet and Bathing Rooms, the toilet rooms or bathing rooms complying with 11B-603 Toilet and Bathing Rooms shall be identified by the International Symbol of Accessibility complying with 11B-703.7.2.1 ISA. Where clustered single user toilet rooms or bathing facilities are permitted to use exceptions to 11B-213.2 Toilet and Bathing Rooms, toilet rooms or bathing facilities complying with 11B-603 Toilet and Bathing Rooms shall be identified by the International Symbol of Accessibility complying with 11B-703.7.2.1 ISA unless all toilet rooms and bathing facilities comply with 11B-603 Toilet and Bathing Rooms. Existing buildings that have been remodeled to provide specific toilet rooms or bathing rooms for public use that comply with these building standards shall have the location of and the directions to these rooms posted in or near the building lobby or entrance on a sign complying with 11B-703.5 Visual Characters, including the International Symbol of Accessibility complying with 11B-703.7.2.1 ISA. **§11B-216.8**
21. Pictograms shall comply with the following:
    a. Pictograms shall have a field height of 6 inches minimum. Characters and Braille shall not be located in the pictogram field. **§11B-703.6.1**
    b. Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field. **§11B-703.6.2**
    c. Pictograms shall have text descriptors located directly below the pictogram field. Text descriptors shall comply with 11B-703.2 Raised Characters, 11B-703.3 Braille and 11B-703.4 Installation Height and Location. **§11B-703.6.3**
    d. The installation height and location of Pictogram signs shall be per **§11B-703.4.1.**
22. Symbols shall comply with the following:
    a. Doorways leading to toilet rooms and bathing rooms shall be identified by a geometric symbol complying with 11B-703.7.2.6 Toilet and Bathing Facilities Geometric Symbols. The symbol shall be mounted at 58 inches minimum and 60 inches maximum above the finish floor or ground surface measured from the centerline of the symbol. Where a door is provided, the symbol shall be mounted within 1 inch of the vertical centerline of the door. **§11B-703.7.2.6 (See exception)**
    b. A triangle symbol shall be located at entrances to men's toilet and bathing facilities and it shall be identified by an equilateral triangle, ¼ inch thick with edges 12 inches long and a vertex pointing upward. The triangle symbol shall contrast with the door, either light on a dark background or dark on a light background. **§11B-703.7.2.6.1**

    c. A circle symbol shall be located at entrances to women's toilet and bathing facilities and it shall be identified by a circle, ¼ inch thick and 12 inches in diameter. The circle symbol shall contrast with the door, either light on a dark background or dark on a light background. **§11B-703.7.2.6.2**
    d. A combined circle and triangle symbol shall be located at entrances to unisex toilet and bathing facilities and it shall be shall be identified by a circle, ¼ inch thick and 12 inches in diameter with a ¼ inch thick triangle with a vertex pointing upward superimposed on the circle and within the 12-inch diameter. The triangle symbol shall contrast with the circle symbol, either light on a dark background or dark on a light background. The circle symbol shall contrast with the door, either light on a dark background or dark on a light background. **§11B-703.7.2.6.3**

WASHING MACHINE AND CLOTHES DRYERS

23. Washing machines and clothes dryer's operable parts must comply with Section 11B-309 Operable Parts. **§11B-611.3**
24. Top loading machines shall have the door to the laundry compartment located 36 inches maximum above the finish floor. Front loading machines shall have the bottom of the opening to the laundry compartment located 15 inches minim and 36 inches maximum above the finish floor. **§11B-611.4**

F. COMMUNICATION ELEMENTS AND FEATURES

FIRE ALARM SYSTEMS

1. Where fire alarm systems and carbon monoxide alarm systems provide audible alarm coverage, alarms shall comply with 11B-215 Fire Alarm Systems. **§11B-215.1 (See exception)**
2. Alarms in public use areas and common use areas shall comply with 702 Chapter 9, Section 907.5.2.3.1. **§11B-215.2**
3. Where employee work areas have audible alarm coverage, the wiring system shall be designed so that visible alarms complying with 702 Chapter 9, Section 907.5.2.3.2 can be integrated into the alarm system. **§11B-215.3**
4. Fire alarm systems shall have permanently installed audible and visible alarms complying with NFPA 72 (1999 or 2002 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1), except that the maximum allowable sound level of audible notification appliances complying with section 4-3.2.1 of NFPA 72 (1999 edition) shall have a sound level no more than 110 dB at the minimum hearing distance from the audible appliance. In addition, alarms in guest rooms required to provide communication features shall comply with sections 4-3 and 4-4 of NFPA 72 (1999 edition) or sections 7.4 and 7.5 of NFPA 72 (2002 edition), and Chapter 9, Sections 907.5.2.1 and 907.5.2.3. **§11B-702.1**

ASSISTIVE LISTENING SYSTEMS

5. Assistive listening systems shall be provided in assembly areas, including conference and meeting rooms, used for the purpose of entertainment, educational or civic gatherings, or similar purposes. **§202, §11B-219.2**

   Note: Assembly areas include, but are not limited to, classrooms, lecture halls, courtrooms, public meeting rooms, public hearing rooms, legislative chambers, motion picture houses, auditoria, theaters, playhouses, dinner theaters, concert halls, centers for the performing arts, amphitheaters, arenas, stadiums, grandstands, or convention centers. **§202, §11B-219.2**
6. Assistive listening system shall provide an amplification system utilizing transmitters, receivers, and coupling devices to bypass the acoustical space between a sound source and a listener by means of induction loop, radio frequency, infrared, or direct-wired equipment. **§202**
7. Where a building contains more than one assembly area under one management, the total number of required receivers may be calculated using the total number of seats in the assembly areas provided that all receivers are usable with all systems. **§11B-219.3 (See exception)**
8. Twenty-five percent minimum of receivers provided for assistive listening systems, but no fewer than two, shall be hearing-aid compatible except when all seats in an assembly area are served by means of an induction loop. **§11B-219.3**

9. When assistive-listening systems are limited to specific areas or seats, such areas or seats shall be within a 50-foot viewing distance of the stage or playing area and shall have a complete view of the stage or playing area. **§11B-219.4**
10. Permanently installed assistive-listening systems are required in areas if (1) they have fixed seating and (2a) they accommodate at least 50 persons or (2b) they have audio-amplification systems, except those used exclusively for paging and/or background music. **§11B-219.2, §11B-219.5**
11. Portable assistive-listening systems may serve more than one conference or meeting rooms if an adequate number of electrical outlets or other supplementary wiring is provided and permanently installed systems are not required. **§11B-219.5**
12. Receivers required for use with an assistive listening system shall include a 1/8 inch standard mono jack. **§11B-706.2**
13. Receivers required to be hearing aid compatible shall interface with telecoils in hearing aids through the provision of neck loops. **§11B-706.3**
14. Assistive listening systems shall be capable of providing a sound pressure level from 110 – 118 dB with a dynamic range on the volume control of 50 dB. **§11B-706.4**
15. Signal-to-noise ratio for internally generated noise in assistive listening systems shall be 18 dB minimum. **§11B-706.5**
16. Peak clipping shall not exceed 18 dB of clipping relative to the peaks of speech. **§11B-706.6**

TWO-WAY COMMUNICATION SYSTEMS

17. Two-way communication systems that are provided to gain admittance to a building or facility or to restricted areas within a building or facility shall provide both audible and visual signals. Handset cords, if provided, shall be 29 inches long minimum. **§11B-230.1, §11B-708**
18. Common use or public use system interface of communications systems between a residential dwelling unit and a site, building, or floor entrance shall include the capability of supporting voice and TTY communication with the residential dwelling unit interface. **§11B-708.4.1**
19. Residential dwelling unit system interface of communications systems between a residential dwelling unit and a site, building, or floor entrance shall include a telephone jack capable of supporting voice and TTY communication with the common use or public use system interface. **§11B-708.4.2**

TELEPHONES

20. Where coin-operated public pay telephones, coin less public pay telephones, public closed-circuit telephones, public courtesy phones, or other types of public telephones are provided, public telephones shall be provided in accordance with 11B-217 Telephones for each type of public telephone provided. For purposes of this section, a bank of telephones shall be considered to be two or more adjacent telephones. **§11B-217.1**
21. Except drive-up only public telephones, where public telephones are provided, wheelchair accessible telephones complying with 11B-704.2 shall be provided in accordance with Table 11B-217.2. **§11B-217.2**
22. All public telephones shall have volume controls complying with 11B-704.3. **§11B-217.3**
23. TTYs complying with 11B-704.4 shall be provided in accordance with 11B-217.4.
24. Where a bank of telephones in the interior of a building consists of three or more public pay telephones, at least one public pay telephone at the bank shall be provided with a shelf and an electrical outlet in accordance with 11B-704.5. **§11B-217.5 (See exception)**

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
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2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
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Metro
Transportation
Library
Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

ACCESSIBLE
NOTES, FORMS

PROJECT
1818
SCALE
N/A
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A0-5

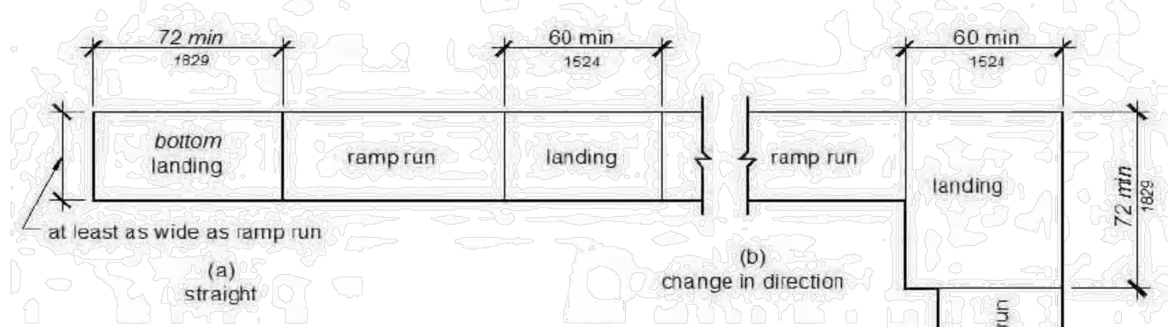
LA DBS — DEPARTMENT OF BUILDING AND SAFETY

REFERENCE NO.: LABC Sec.11B-403,404,405, 408,504,505,802 Effective: 01/01/2017

DOCUMENT NO.: **P/BC 2017-085** Revised:

Previously Issued As: P/BC 2014-085

ACCESSIBILITY DETAILS FOR RAMPS, STAIRS & ELEVATORS



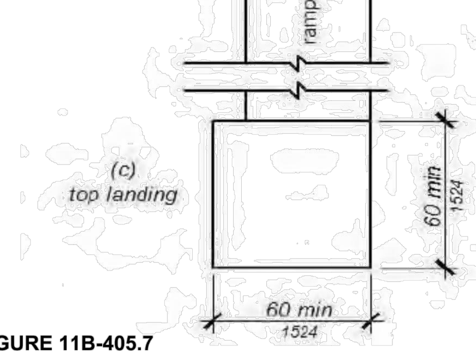
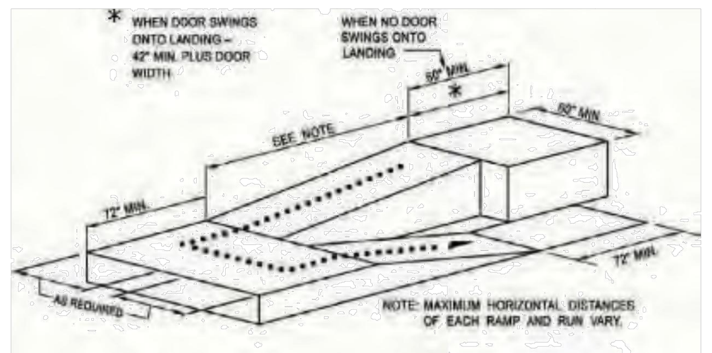
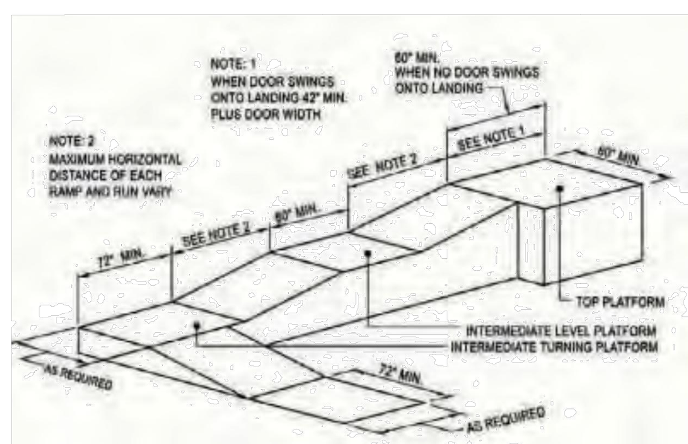


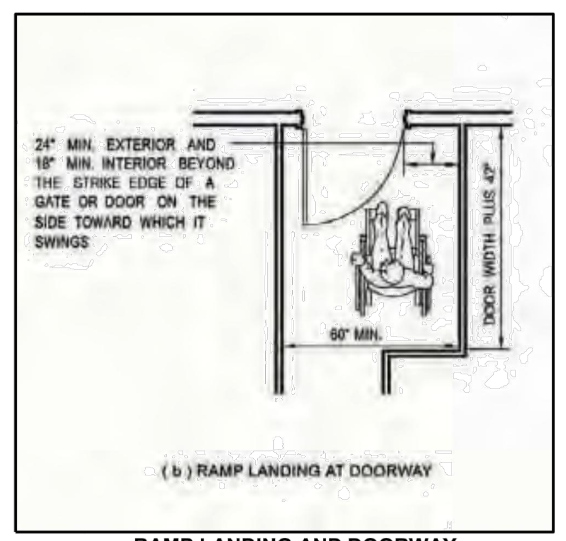
FIGURE 11B-405.7
RAMP LANDINGS



RAMP WITH INTERMEDIATE SWITCH-BACK PLATFORM



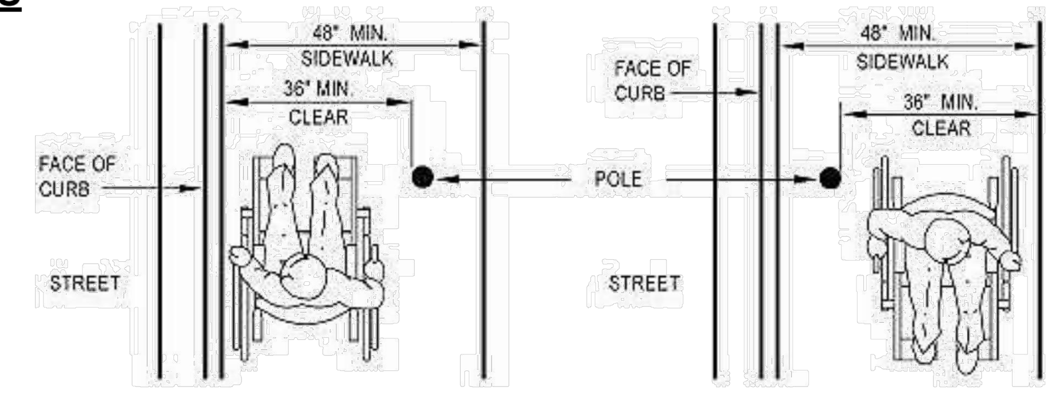
RAMP WITH TURNING PLATFORM



RAMP LANDING AND DOORWAY

THESE DIAGRAMS ILLUSTRATE THE SPECIFIC REQUIREMENTS OF THESE REGULATIONS AND ARE INTENDED ONLY AS AN AID FOR BUILDING DESIGN AND CONSTRUCTION.

RAMPS



SIDEWALK OBSTRUCTIONS

11B-505.10.1 TOP AND BOTTOM EXTENSION AT RAMPS. Ramp handrails shall extend horizontally above the landing for 12 inches beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or landing surface, or shall be continuous to the handrail of an adjacent ramp run.

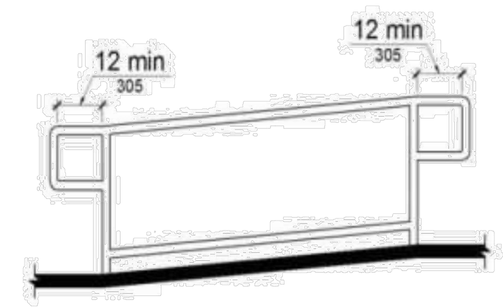


FIGURE 11B-505.10.1
TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS

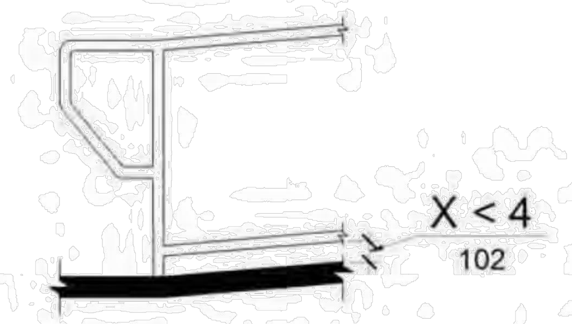
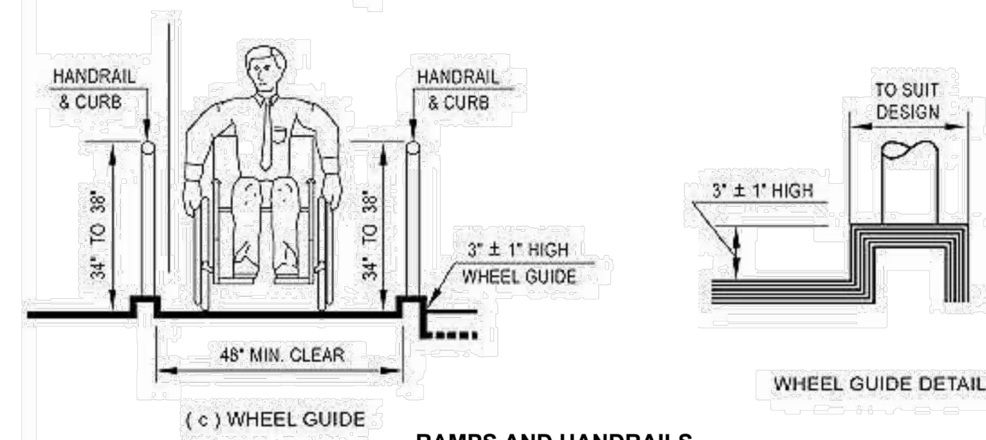
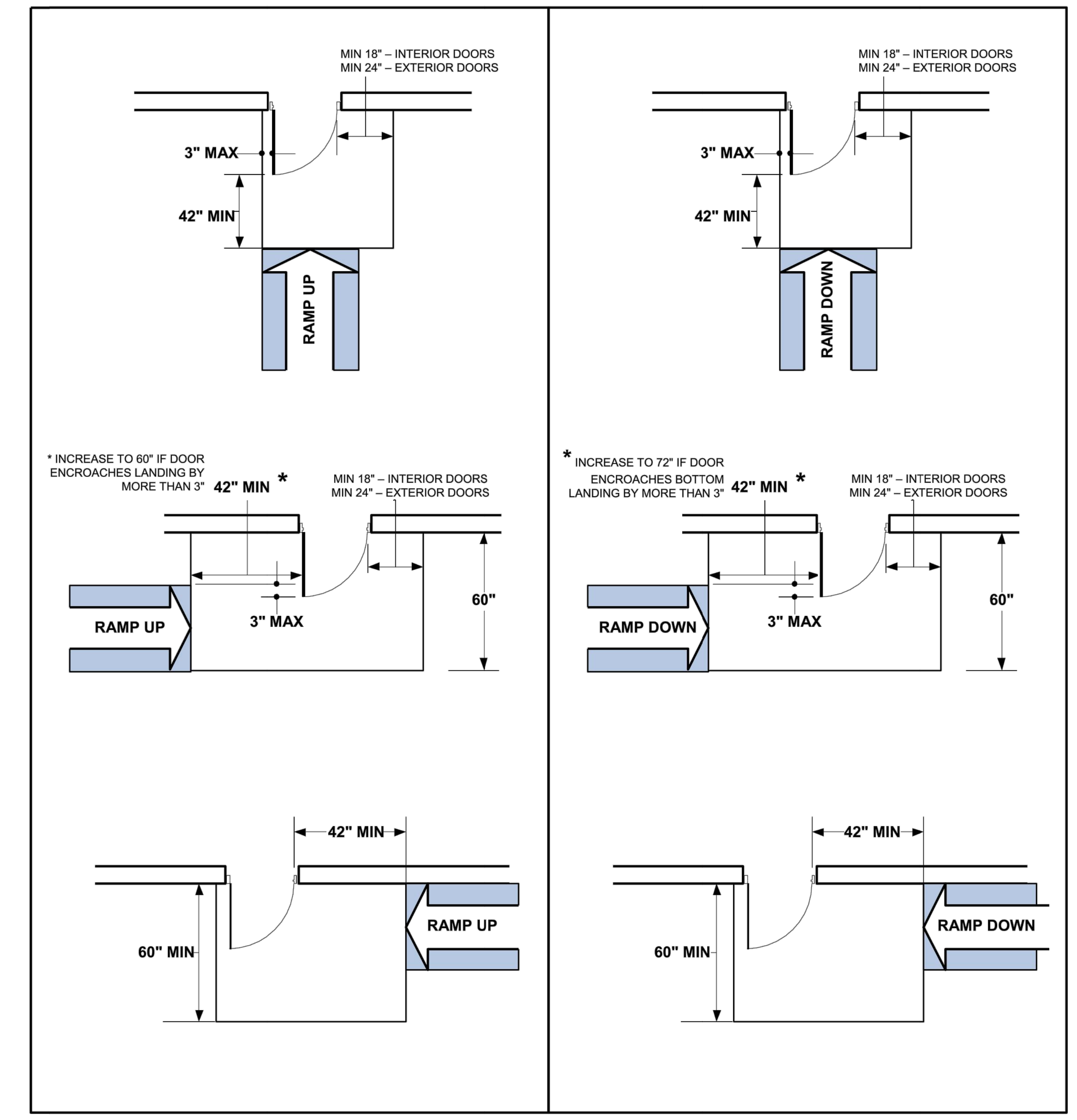


FIGURE 11B-405.9.2
CURB OR BARRIER EDGE PROTECTION



RAMPS AND HANDRAILS

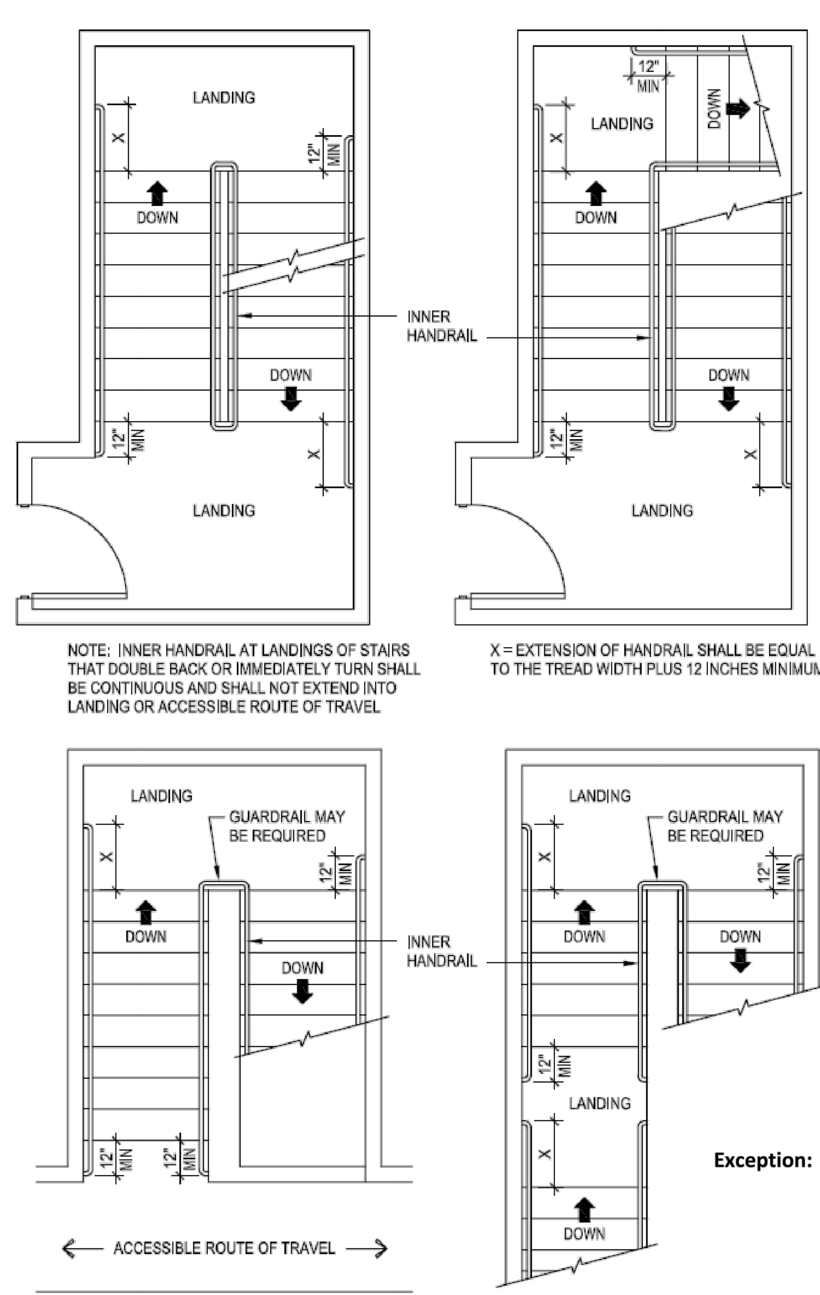
DOORWAYS AT RAMP LANDINGS



DOORWAYS AT TOP LANDING SPACE OF A RAMP

DOORWAYS AT BOTTOM LANDING SPACE OF A RAMP

STAIRWAYS



Exception: Curved stairways with winder treads are permitted at stairs which are not part of a required means of egress.

11B-504 STAIRWAYS

STAIRS

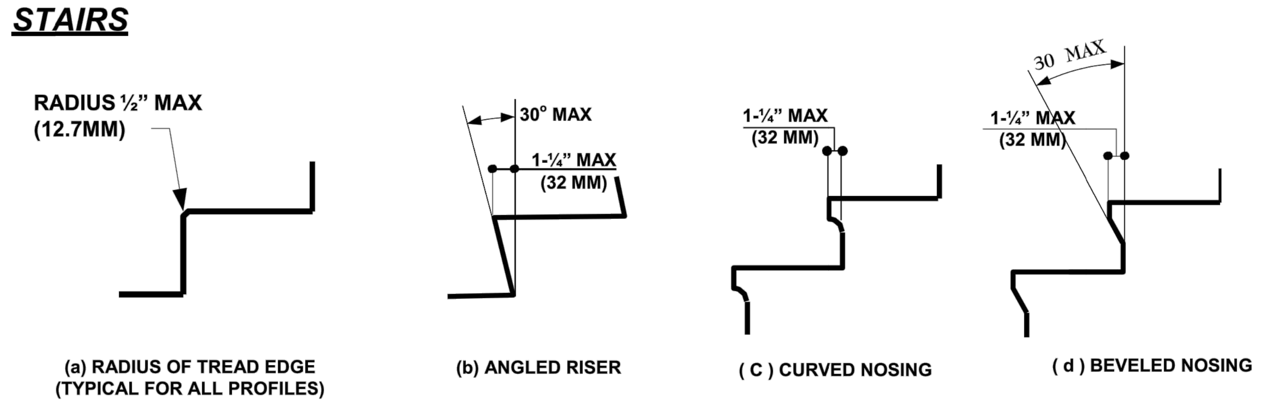


FIGURE 11B-504.5
STAIR NOSINGS

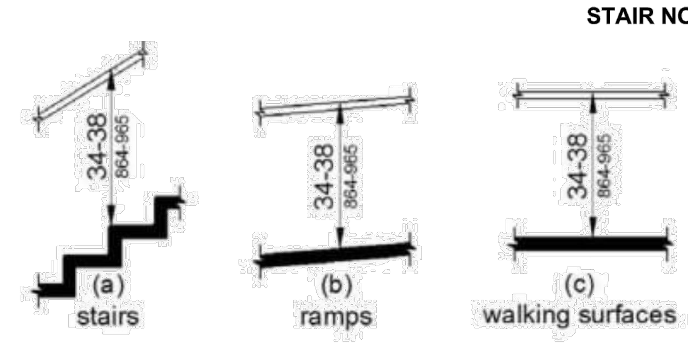


FIGURE 11B-505.4
HANDRAIL HEIGHT

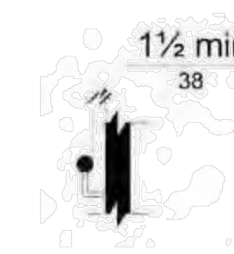


FIGURE 11B-505.5
HANDRAIL CLEARANCE

FIGURE 11B-505.6
HORIZONTAL PROJECTIONS BELOW GRIPPING SURFACE

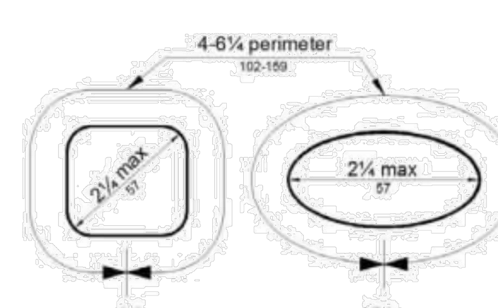


FIGURE 11B-505.7.2
HANDRAIL NON-CIRCULAR CROSS SECTION

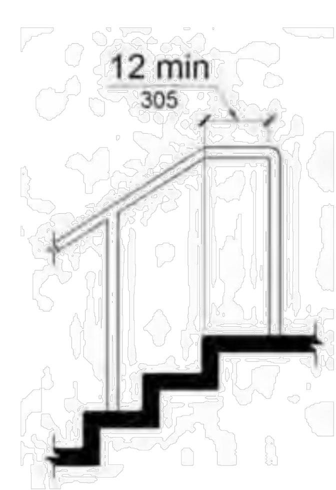


FIGURE 11B-505.10.2
TOP HANDRAIL EXTENSION AT STAIRS

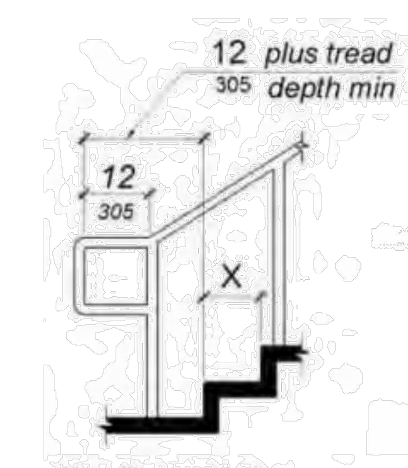


FIGURE 11B-505.10.3
BOTTOM HANDRAIL EXTENSION AT STAIRS

ELEVATORS

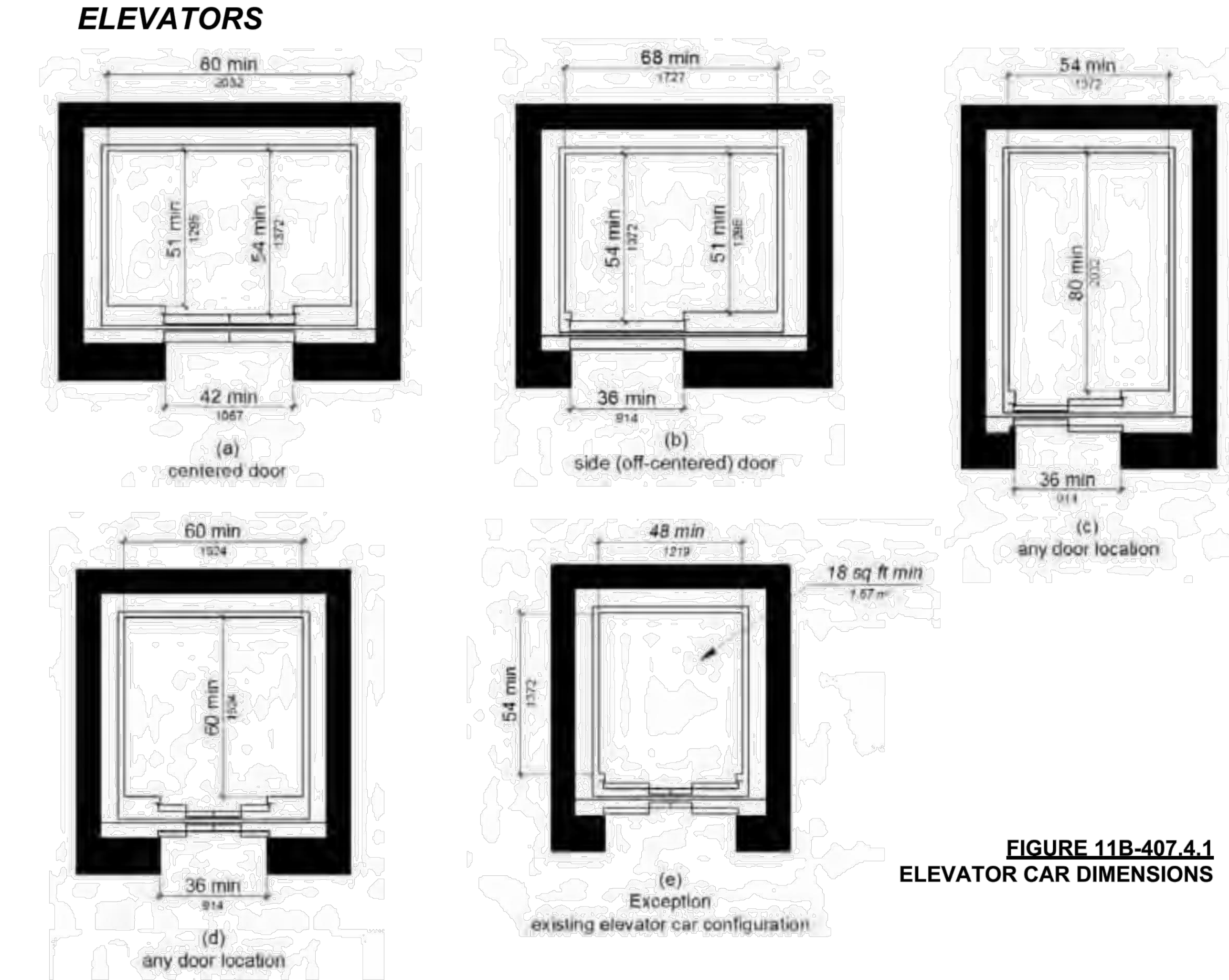


FIGURE 11B-407.4.1
ELEVATOR CAR DIMENSIONS

TABLE 11B-407.4.1
ELEVATOR CAR DIMENSIONS

MINIMUM DIMENSIONS				
DOOR LOCATION	DOOR CLEAR WIDTH	INSIDE CAR, SIDE TO SIDE	INSIDE CAR, BACK WALL TO FRONT RETURN	INSIDE CAR, BACK WALL TO INSIDE FACE OF DOOR
Centered	42 inches	80 inches	51 inches	54 inches
Side (off-centered)	36 inches	68 inches	51 inches	54 inches
Any	36 inches	54 inches	80 inches	80 inches
Any	36 inches	60 inches	60 inches	60 inches

1. A tolerance of minus 5/8 inch (15.9 mm) is permitted.
2. Other car configurations that provide a turning space complying with *Section 11B*-304 with the door closed shall be permitted.

((RADAR))

RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

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ELEVATORS

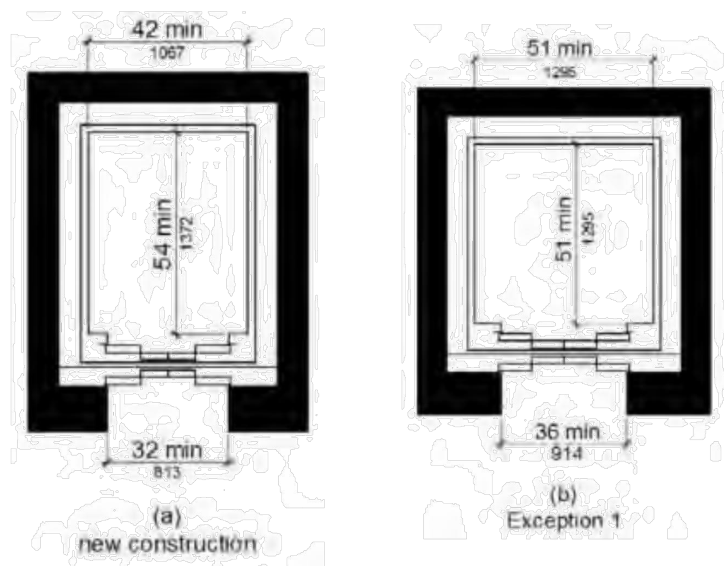


FIGURE *11B*-408.4.1
LIMITED-USE/LIMITED-APPLICATION (LULA)
ELEVATOR CAR DIMENSIONS

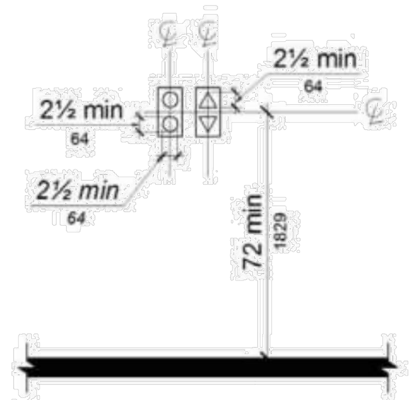


FIGURE 11B-407.2.2.2
VISIBLE HALL SIGNALS

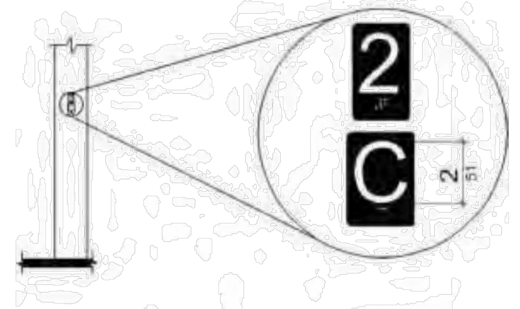


FIGURE 11B-407.2.3.2
CAR DESIGNATIONS ON JAMBS OF DESTINATION-ORIENTED ELEVATOR HOISTWAY ENTRANCES

Door and signal timing. The minimum acceptable time from notification that a car is answering a call or notification of the car assigned at the means for the entry of destination information until the doors of that car start to close shall be calculated from the following equation:

T* = *D*/(1.5 ft/s)** or ***T* = *D*/(455 mm/s)** = 5 seconds minimum where ***T equals the total time in seconds and ***D*** equals the distance (in feet or millimeters) from the point in the lobby or corridor 60 inches (*1524* mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door. (11B-407.3.4)

Exceptions:
1. For cars with in-car lanterns, T shall be permitted to begin when the signal is visible from the point 60 inches (*1524* mm) directly in front of the farthest hall call button and the audible signal is sounded.
2. Destination-oriented elevators shall not be required to comply with *Section 11B*-407.3.4.

Door delay. Elevator doors shall remain fully open in response to a car call for 5 seconds minimum. (11B-407.3.5)

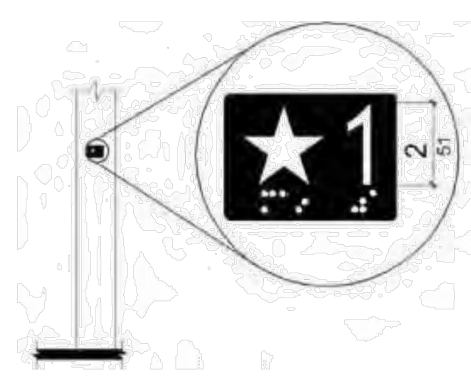
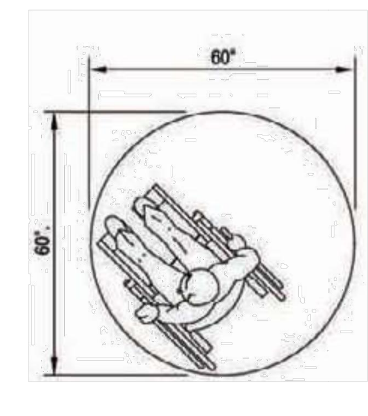


FIGURE 11B-407.2.3.1
FLOOR DESIGNATIONS ON JAMBS OF ELEVATOR HOISTWAY ENTRANCE

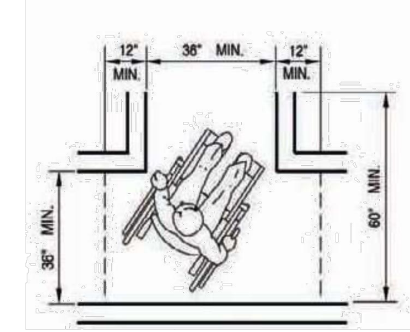
INFORMATION BULLETIN / PUBLIC - BUILDING CODE
REFERENCE NO.: LABC Sec. 11B-304,305,404 Effective: 01/01/2017
DOCUMENT NO.: **P/BC 2017-086** Revised: 07/01/2018
Previously Issued As: P/BC 2014-086

ACCESSIBILITY DETAILS FOR DOORS, MANEUVERING SPACES & ROUTES

UNLESS SPECIFICALLY STATED OTHERWISE, FIGURES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. (11B-104.3 FIGURES)



(a) 60 INCHES DIAMETER SPACE



(b) T-SHAPED SPACE FOR 180° TURNS

WHEELCHAIR TURNING SPACE

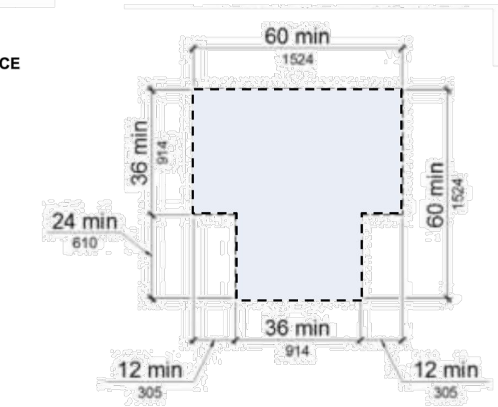


FIGURE *11B*-304.3.2
T-SHAPED TURNING SPACE

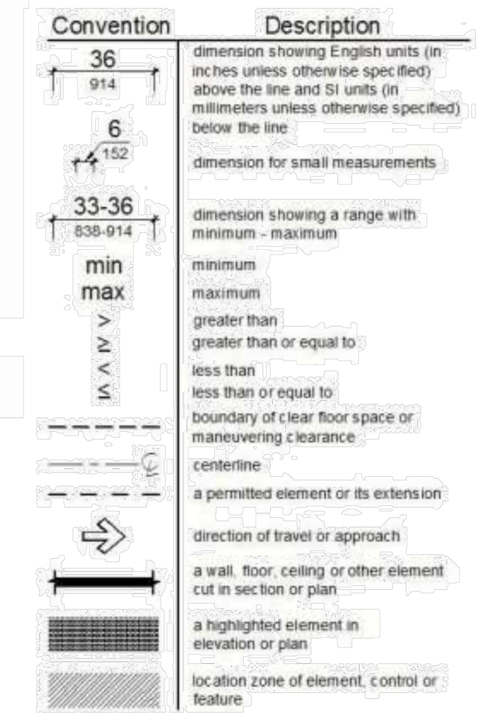


FIGURE 11B-104
GRAPHIC CONVENTION FOR FIGURES

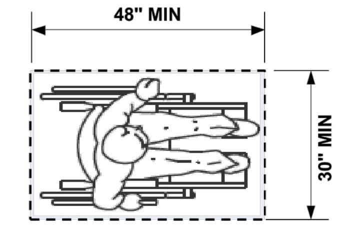


FIGURE 11B-305.3
CLEAR FLOOR OR GROUND SPACE

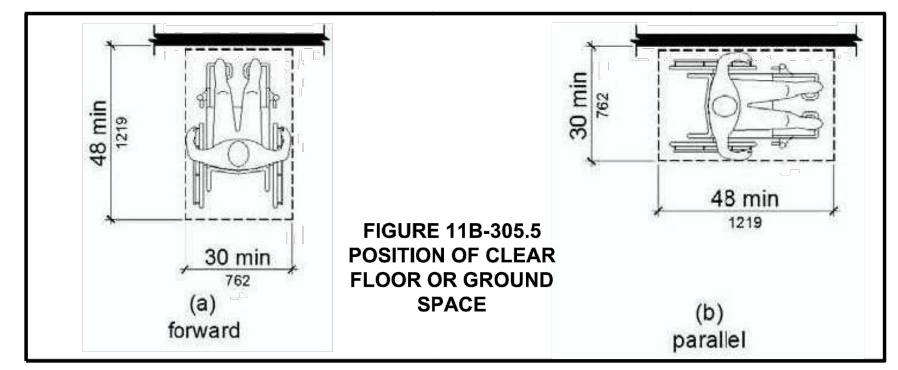
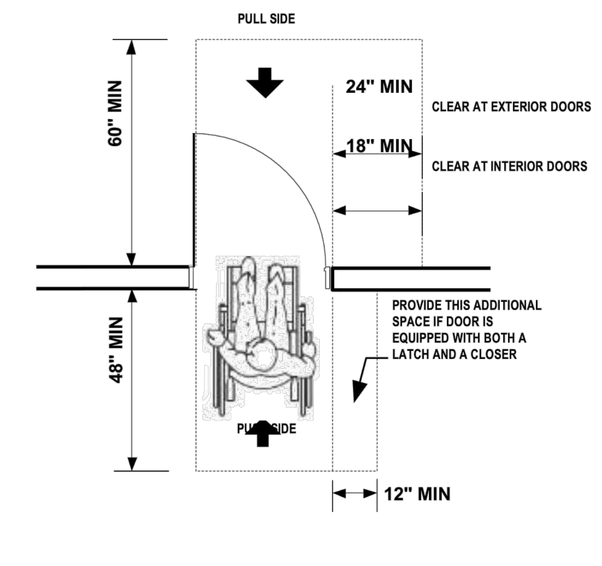


FIGURE 11B-305.5
POSITION OF CLEAR FLOOR OR GROUND SPACE

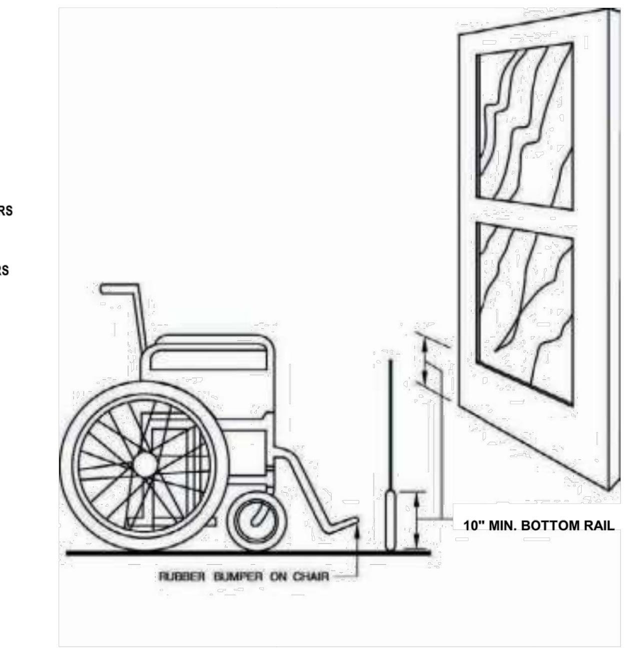
As a covered entity under Title II of the Americans with Disabilities Act, the City of Los Angeles does not discriminate on the basis of disability and, upon request, will provide reasonable accommodation to ensure equal access to its programs, services and activities.

THESE DIAGRAMS ILLUSTRATE THE SPECIFIC REQUIREMENTS OF THESE REGULATIONS AND ARE INTENDED ONLY AS AN AID FOR BUILDING DESIGN AND CONSTRUCTION.

DOORS & MANEUVERING SPACE



FRONT APPROACH



DOOR CONSTRUCTION

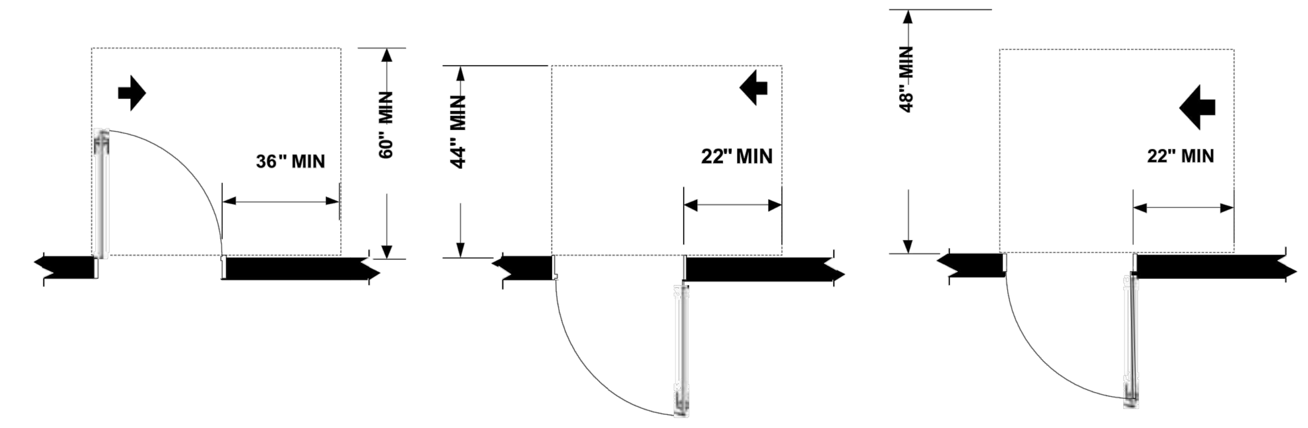


FIGURE 11B-404.2.4.1
MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

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.

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DOORS & MANEUVERING SPACE

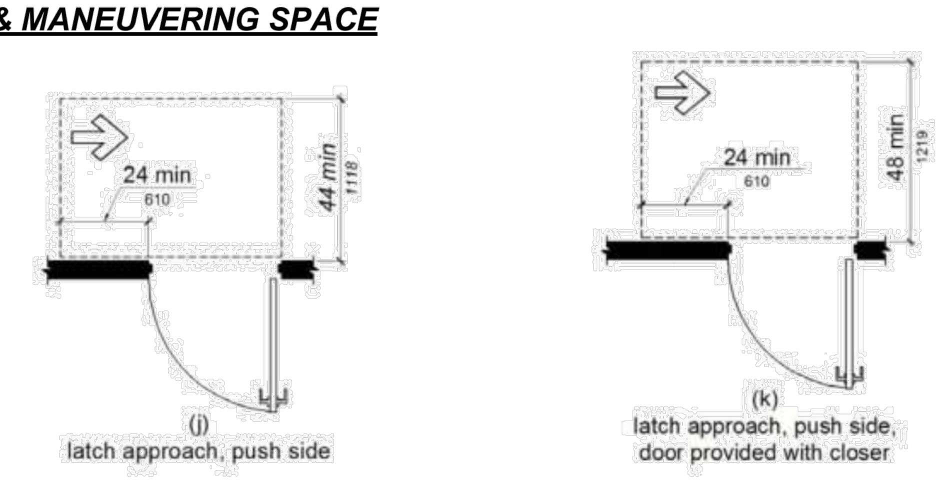

FIGURE *11B*-404.2.4.1—continued
MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

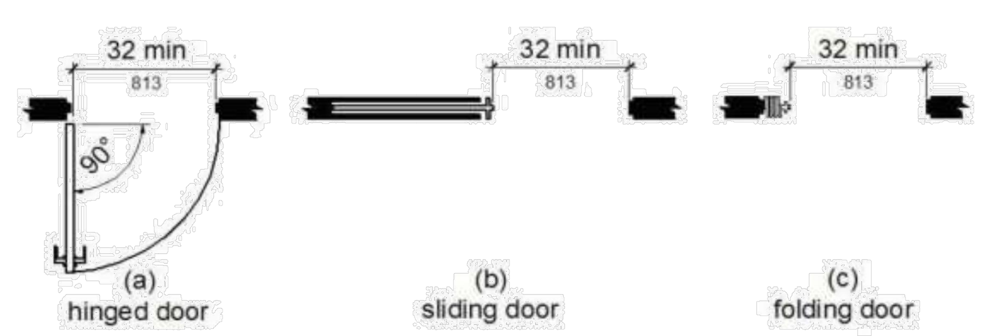

FIGURE 11B-404.2.3
CLEAR WIDTH OF DOORWAYS

TABLE 11B-404.2.4.1
MANEUVERING CLEARANCES AT MANUAL SWINGING DOORS AND GATES

TYPE OF USE		MINIMUM MANEUVERING CLEARANCE	
APPROACH DIRECTION	DOOR or GATE SIDE	PERPENDICULAR TO DOORWAY	PARALLEL TO DOORWAY (beyond latch side unless noted)
From front	Pull	60 inches	18 inches[5]
From front	Push	48 inches	0 inches[1]
From hinge side	Pull	60 inches	36 inches
From hinge side	Push	44 inches	22 inches[3]
From latch side	Pull	60 inches	24 inches
From latch side	Push	44 inches	24 inches

1. ADD 12 INCHES IF CLOSER AND LATCH ARE PROVIDED.
2. ADD 4 INCHES IF CLOSER AND LATCH ARE PROVIDED.
3. BEYOND HINGE SIDE.
4. ADD 4 INCHES IF CLOSER IS PROVIDED.
5. ADD 6 INCHES AT EXTERIOR SIDE OF EXTERIOR DOORS.

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DOORS & MANEUVERING SPACE

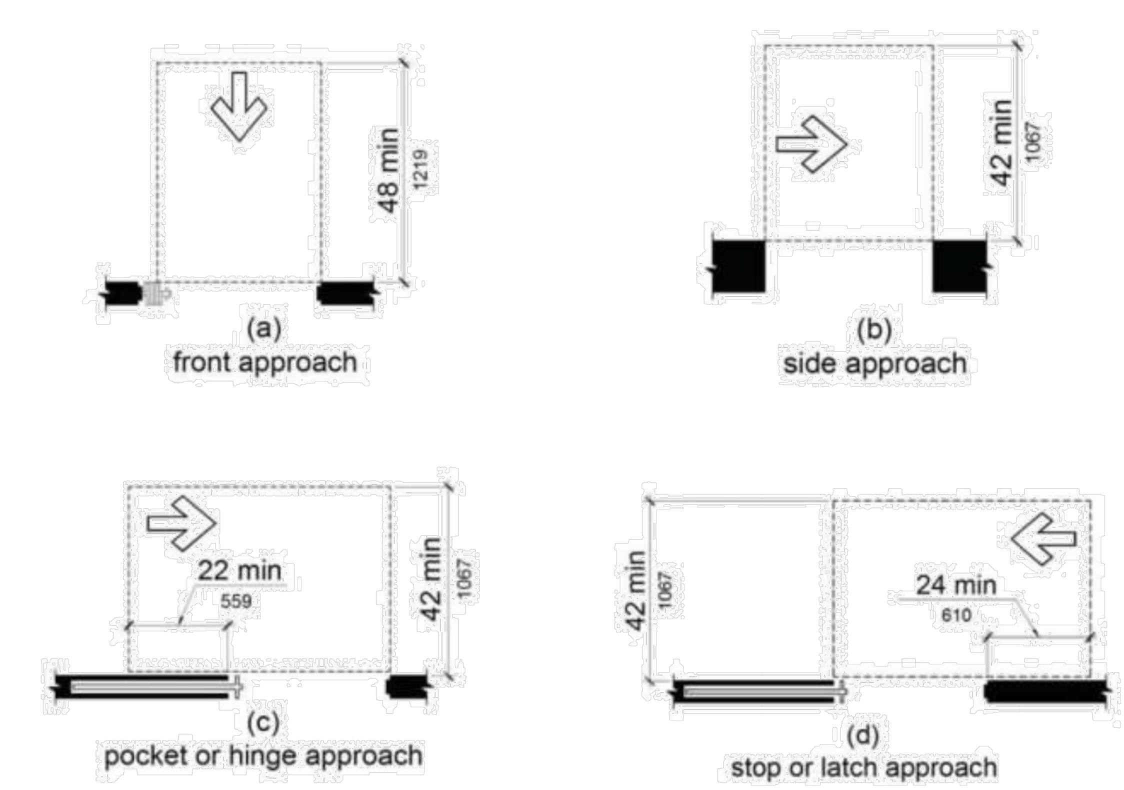

FIGURE 11B-404.2.4.2
MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS, SLIDING DOORS, GATES, AND FOLDING DOORS

TABLE 11B-404.2.4.2
MANEUVERING CLEARANCES AT DOORWAYS WITHOUT DOORS OR GATES
MANUAL SLIDING DOORS AND MANUAL FOLDING DOORS

	MINIMUM MANEUVERING CLEARANCE	
Approach direction	Perpendicular to doorway	Parallel to doorway (beyond stop/latch side unless noted)
From Front	48 inches	0 inches
From Side[1]	42 inches	0 inches
From pocket/hinge side	42 inches	22 inches
From stop/latch side	42 inches	24 inches

1. Doorway with no door only.
2. Beyond pocket/hinge side

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.

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

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5	100% CONSTRUCTION DOCS	9/26/19

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TITLE
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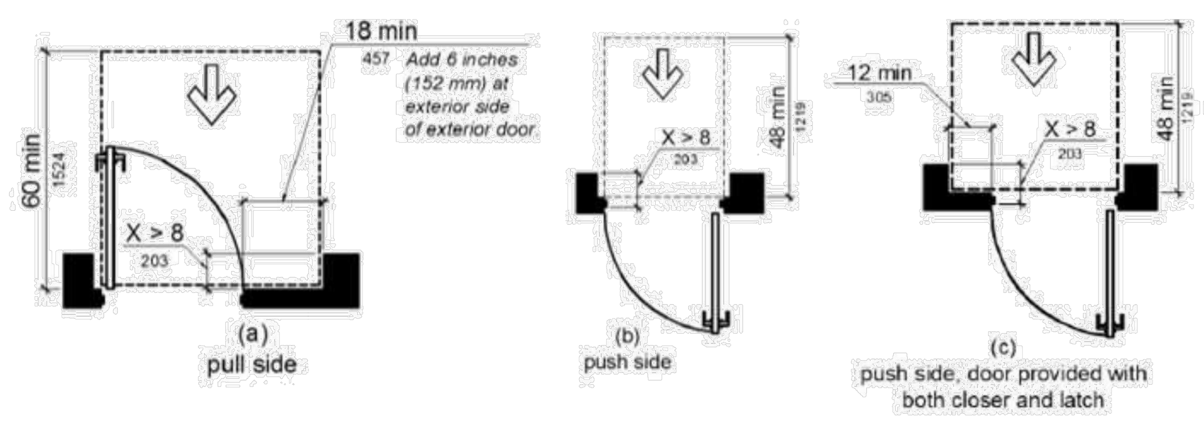
KC
DATE
09/26/19

SHEET NUMBER
A0-7

DOORS & MANEUVERING SPACE



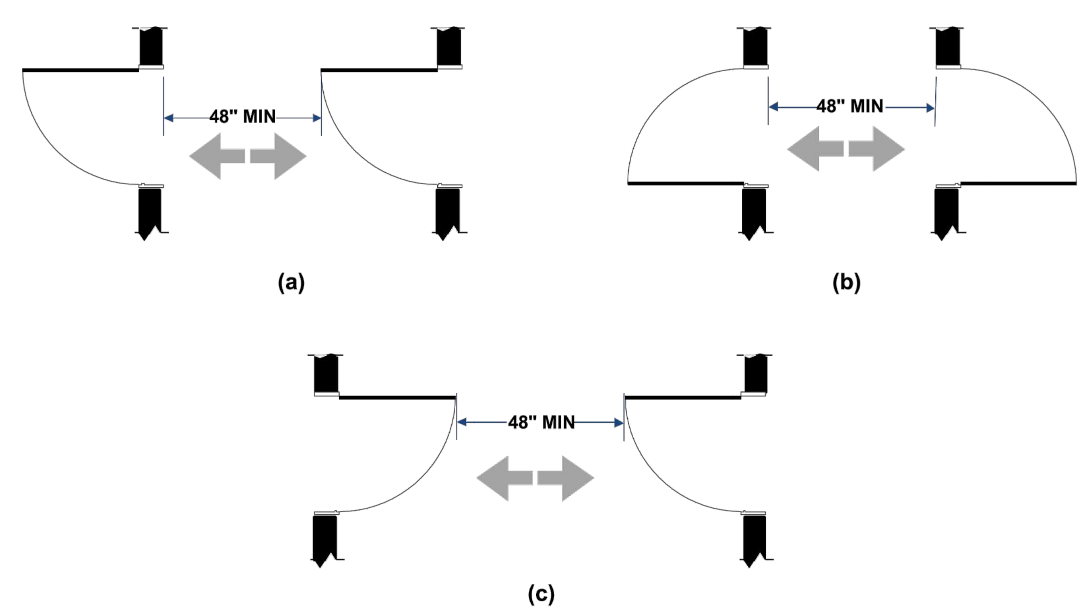


FIGURE 11B-404.2.6
DOORS IN SERIES AND GATES IN SERIES

ACCESSIBLE ROUTES

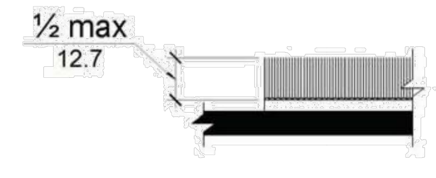


FIGURE 11B-302.2
CARPET PILE HEIGHT

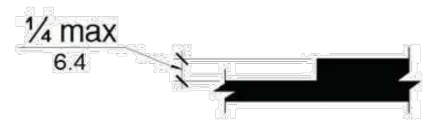


FIGURE 11B-303.2
VERTICAL CHANGE IN LEVEL

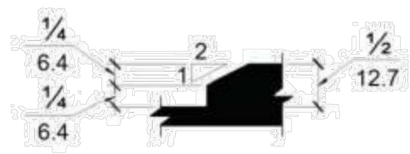
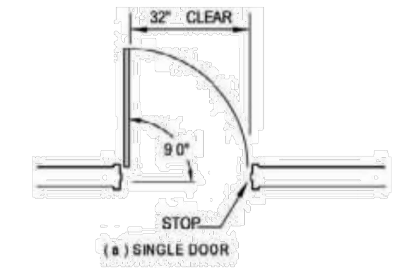
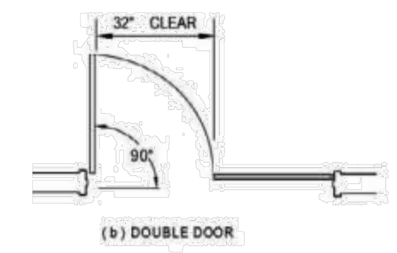


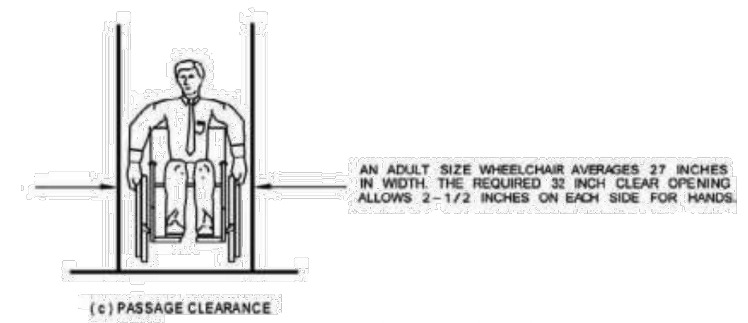
FIGURE 11B-303.3
BEVELED CHANGE IN LEVEL

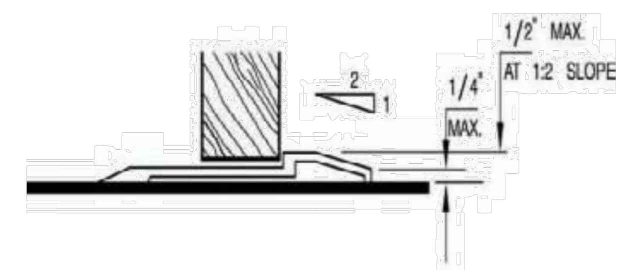




11B-404.2.3

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. Openings more than 24 inches deep shall provide a clear opening of 36 inches minimum. There shall be no projections into the required clear opening width lower than 34 inches above the finish floor or ground. Projections into the clear opening width between 34 inches and 80 inches above the finish floor or ground shall not exceed 4 inches.





11B-404.2.5
THRESHOLDS, IF PROVIDED AT DOORWAYS, SHALL BE 1/2 INCH HIGH MAXIMUM. RAISED THRESHOLDS AND CHANGES IN LEVEL AT DOORWAYS SHALL COMPLY WITH SECTIONS 11B-302 AND 11B-303.

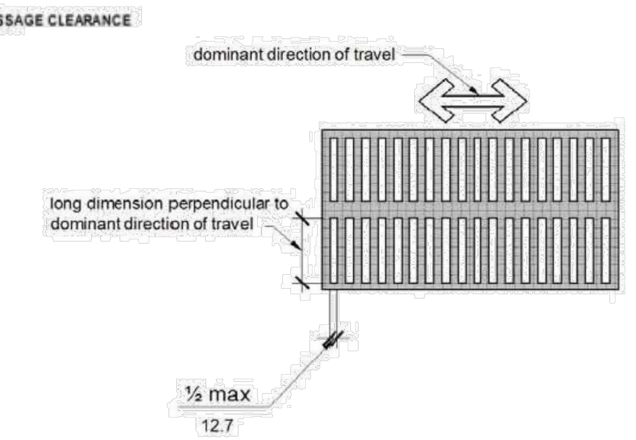
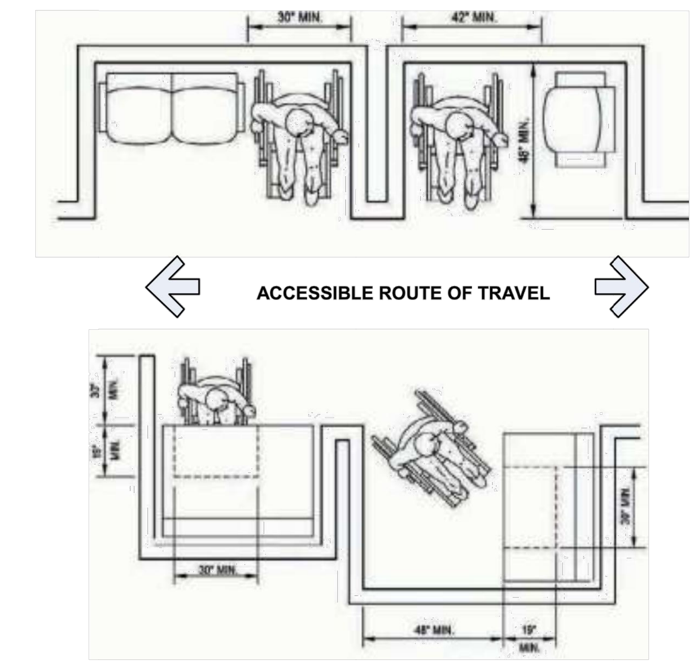


FIGURE 11B-302.3
ELONGATED OPENINGS IN FLOOR OR GROUND SURFACES

ACCESSIBLE ROUTES



11B-403.5.1
SEE CLEAR WIDTH AND EXCEPTIONS REQUIREMENTS

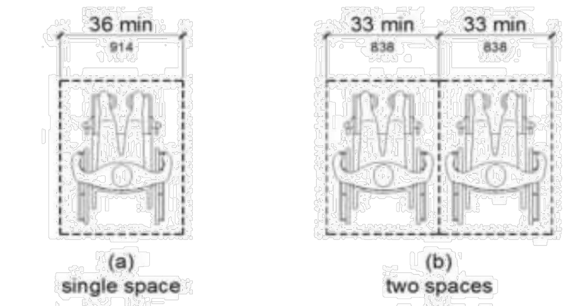


FIGURE 11B-802.1.2
WIDTH OF WHEELCHAIR SPACES

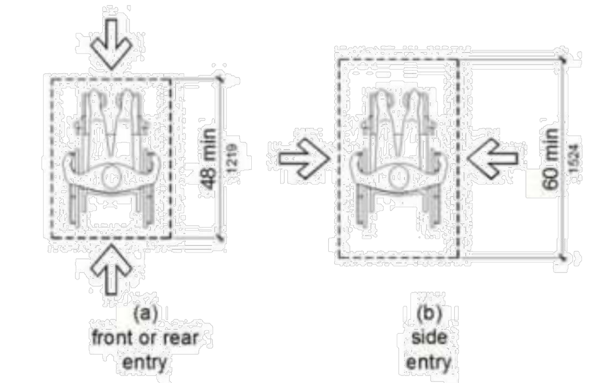


FIGURE 11B-802.1.3
DEPTH OF WHEELCHAIR SPACES

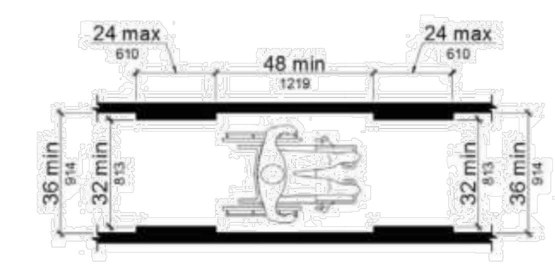


FIGURE 11B-403.5.1
CLEAR WIDTH OF AN ACCESSIBLE ROUTE

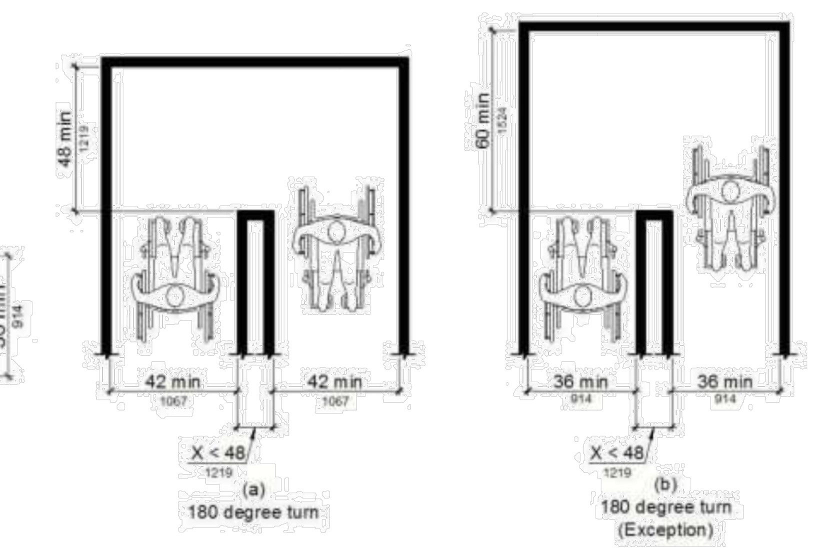


FIGURE 11B-403.5.2
CLEAR WIDTH AT TURN

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INFO@RACHELALLEN.NET
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5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

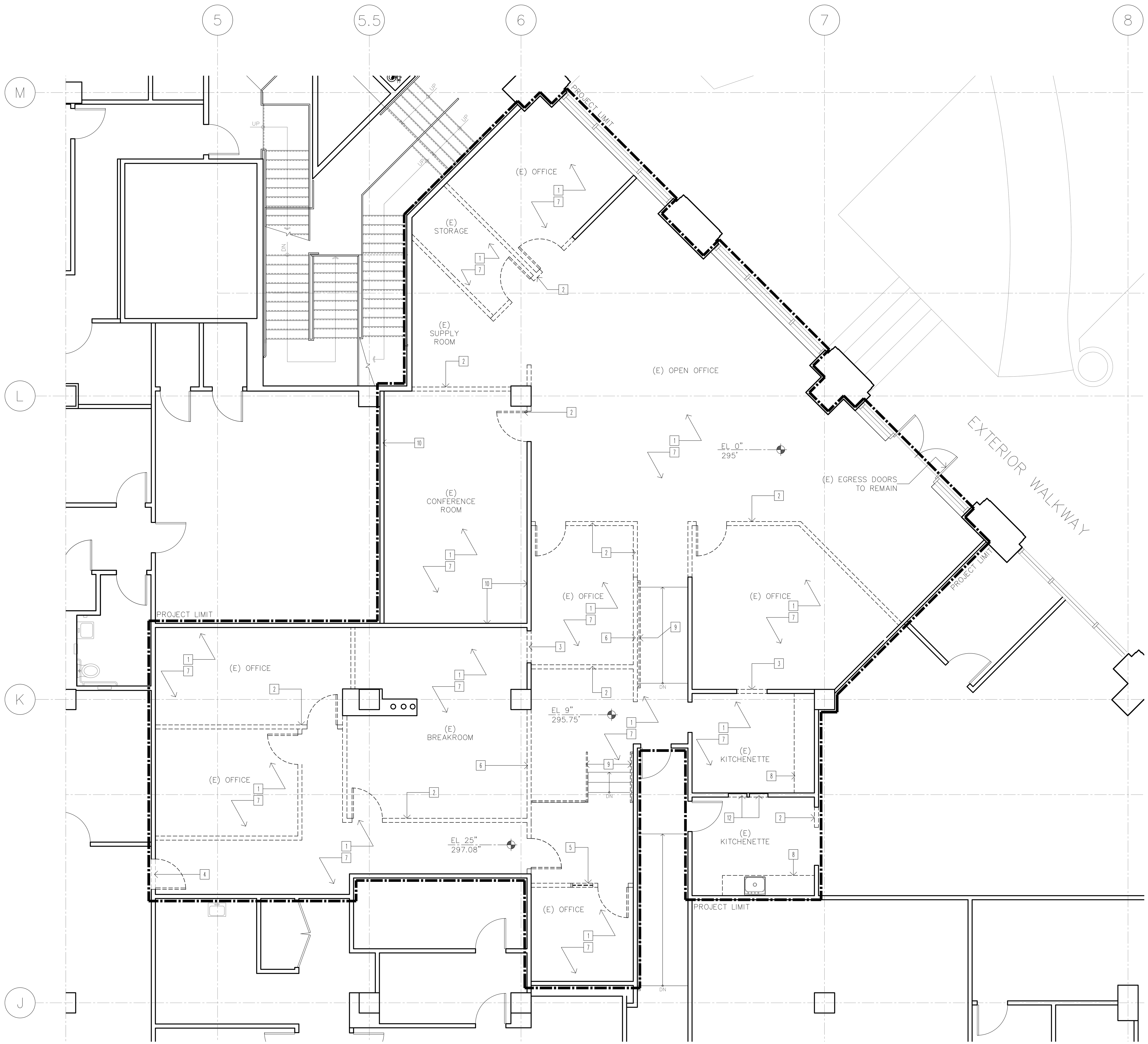
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

ACCESSIBLE NOTES, FORMS

PROJECT
1818
SCALE
N/A
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A0-8



1 DEMO PLAN
SCALE: 3/16"=1'-0"

KEYNOTES

1. REMOVE ALL FINISH & SUB FLOORING, WINDOW SHADES, REMAINING FURNITURE, THROUGHOUT
2. DEMO WALLS AND DOORS
3. DEMO PARTIAL WALL FOR WINDOW PLACEMENT
4. REMOVE DOOR AND FRAME, OPENING TO BE FILLED
5. DEMO (E) OFFICE
6. DEMO WALL, PREP FOR LOW WALL 42" SAME LOCATION
7. DEMO (E) SUSPENDED CEILING OVERHEAD
8. DEMO (E) KITCHENETTE CASEWORK
9. REMOVE HANDRAILS
10. PREP FOR 1-HOUR RATED WALL AT FUTURE ARCHIVE
11. REFER TO MEP SHEETS FOR MECHANICAL, ELECTRICAL, PLUMBING DEMO NOTES
12. PARTIAL REMOVAL OF WALL, PREPARE NICHE

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213.617.0075
INFO@RACHELALLEN.NET
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RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

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Metro Transportation Library Relocation

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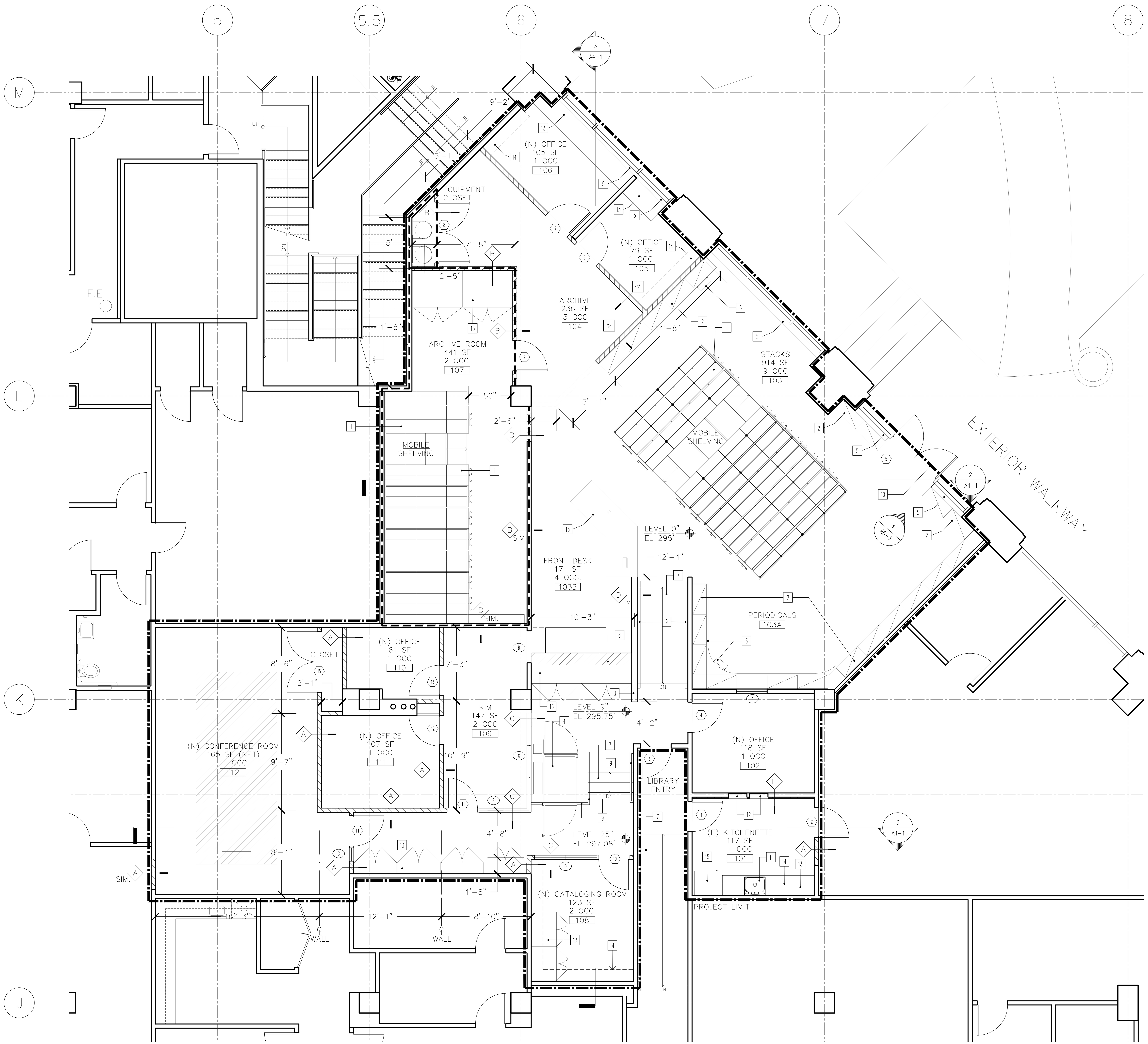
Los Angeles, CA 90012

TITLE

EXIST-DEMO FLOOR PLAN

PROJECT
1818
SCALE
3/16" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A2-0



1 (N) FLOOR PLAN
SCALE: 3/16"=1'-0"

GENERAL NOTES

1. WALL LEGEND ON SHEET A0-2; FOR WALL DETAILS, SEE A6-7
2. INTERIOR DETAILS AND FINISHES, SEE A6-1
3. EGRESS PLAN, SEE A2-2
4. FURNITURE PLAN, SEE A2-3
5. DIMENSIONS OF NEW WALLS TO CENTER OF STUD

KEYNOTES:

1. MANUAL-OPERATED MOBILE SHELVING, SEE A7-1.
2. FIXED HIGH SHELVING, SEE A7-2
3. METAL LADDER AND RAIL, SEE A7-2
4. (N) ACCESSIBLE CHAIR LIFT, SEE A7-1
5. REPLACE (E) VERTICAL SHADES WITH MECHOSHADE 5x MANUAL SHADE SYSTEM; SEE FINISH SCHEDULE ON SHEET A6-1 FOR DRAPE COLOR.
6. (N) 14" CONCRETE FLOR EXTENSION, SEE DETAIL 2/A6-8
7. EXISTING STAIRS AND RAMPS TO REMAIN; NEW FLOORING FINISHES PER FINISH SCHEDULE
8. (N) 42" LOW WALL, PER WALL DETAIL 5/A6-7
9. (N) METAL GUARDRAIL AND HANDRAIL, SEE A6-4
10. (E) DOUBLE DOORS TO BE EGRESS-ONLY. INSTALL NEW PANIC HARDWARE, SEE DOOR SCHEDULE SHEET A8-1
11. (N) SINK SUPPLY AND WASTE LINE, SEE PLUMBING SET
12. TWO (N) NICHES FOR (N) ELECTRICAL AND LIGHTING CONTROL PANELS PER ELECTRICAL SET; SEE 6/A6-7
13. BUILT IN CASEWORK, SEE A2-3
14. BUILT IN SHELVING, SEE A2-3
15. (N) REFRIDGERATOR, OPOI

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Metro Transportation Library Relocation

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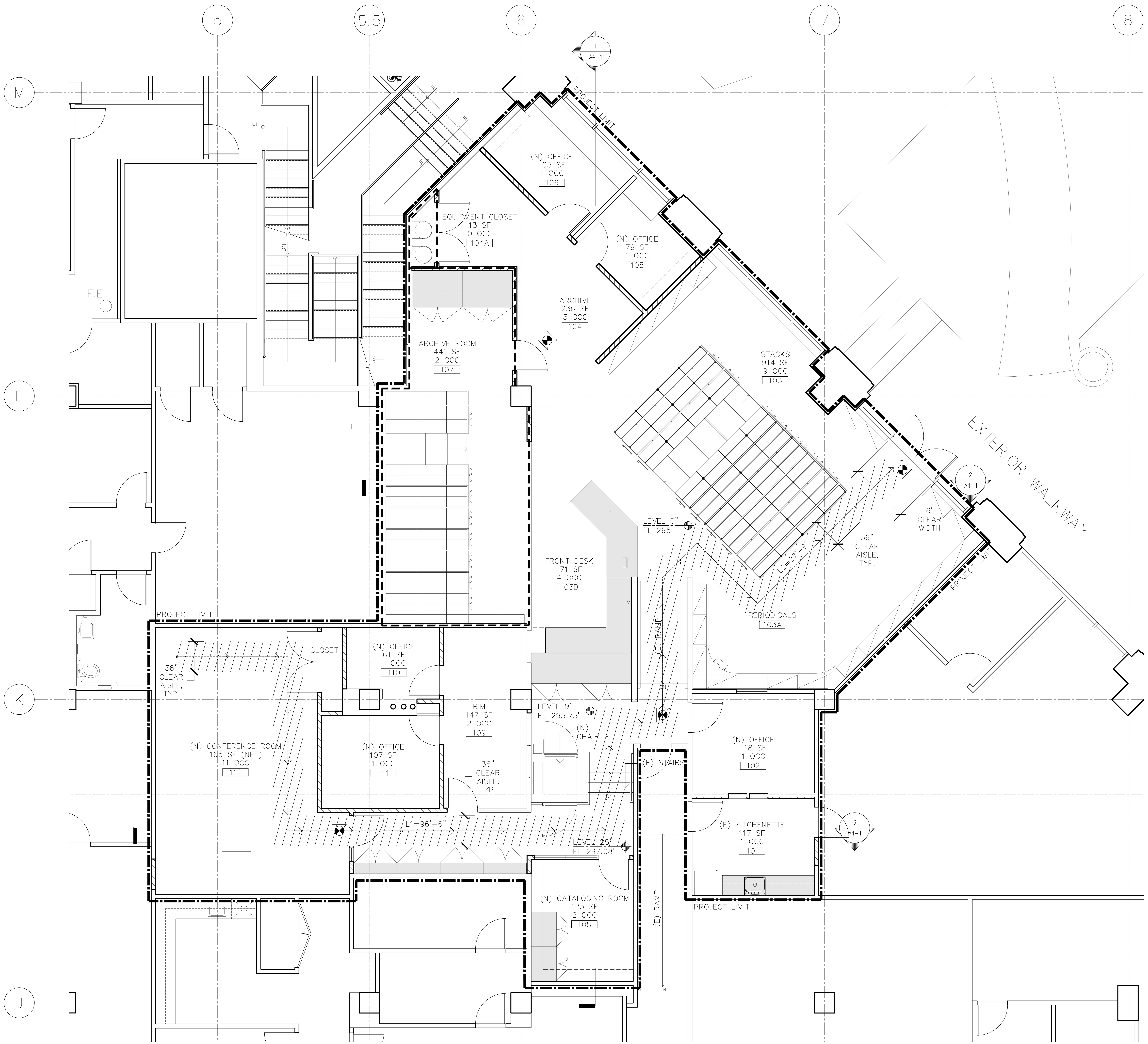
TITLE

NEW FLOOR PLAN

PROJECT
1818
SCALE
3/16" = 1'-0"
DRAWN BY
KC
DATE
6/7/19

SHEET NUMBER
A2-1



1 EGRESS PLAN
SCALE: 3/16"=1'-0"

OCCUPANCY SUMMARY:	
A (ASSEMBLY)	11 OCC.
B (BUSINESS)	27 OCC.
	38 OCC. <49 OCC., ONE EXIT

MEANS OF EGRESS NOTES:

A. REFER TO FIRE DEPARTMENT NOTES, A0-2
B. EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED
C. EXIT SIGNS ILLUMINATED BY AN EXTERNAL SOURCE SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT CANDLES (54 IUX).
D. INTERNALLY ILLUMINATED SIGNS SHALL BE LISTED AND LABELED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER=S INSTRUCTIONS AND SECTION 2702.
E. EXIT SIGNS SHALL BE ILLUMINATED AT ALL TIMES. (1013.3)
F. 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)
G. 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.
H. DOOR HANDLES, LOCK AND OTHER OPERATING DEVICES SHALL BE INSTALLED AT A MIN. 34" AND A MAX. 48" ABOVE THE FINISHED FLOOR
I. THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED.
J. ALL EGRESS DOOR OPERATION SHALL ALSO COMPLY WITH SECTION 1010.1.9 B 1010.1.9.12
K. 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.
L. THE MEANS OF EGRESS ILLUMINATION LEVEL SHALL NOT BE LESS THAN 1 FOOT-CANDLE AT THE WALKING SURFACE
M. 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:
    1. AISLES AND UNENCLOSED EGRESS STAIRWAYS IN ROOMS AND SPACES THAT REQUIRE TWO OR MORE MEANS OF EGRESS
    2. CORRIDORS, EXIT ENCLOSURES AND EXIT PASSAGEWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.;
    3. 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.
    4. INTERIOR EXIT DISCHARGE ELEMENTS, AS PERMITTED IN SECTION 1028.1, IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.
    5. EXTERIOR LANDINGS, AS REQUIRED BY SECTION 1010.1.6, FOR EXIT DISCHARGE DOORWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.

N. THE EMERGENCY POWER SYSTEM SHALL PROVIDE POWER FOR A DURATION OF NOT LESS THAN 90 MINUTES AND SHALL CONSIST OF STORAGE BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR. THE INSTALLATION OF THE EMERGENCY POWER SYSTEM SHALL BE IN ACCORDANCE WITH SECTION 2702.
O. 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 (1 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 AT THE END OF THE EMERGENCY LIGHTING TIME DURATION. A MAXIMUM-TO-MINIMUM ILLUMINATION UNIFORMITY RATIO OF 40 TO 1 SHALL NOT BE EXCEEDED.

EGRESS SUMMARY:			EXIT ACCESS TRAVEL DISTANCE
PATH STARTING AT CONFERENCE ROOM	L1=96'-6"	L2=27'-9"	L1+L2 =124'-3"
B-OCCUPANCY < 100', WITH SPRINKLER SYSTEM PER TABLE 1014.3		<250', WITH SPRINKLER SYSTEM PER TABLE 1016.1	

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RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

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5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

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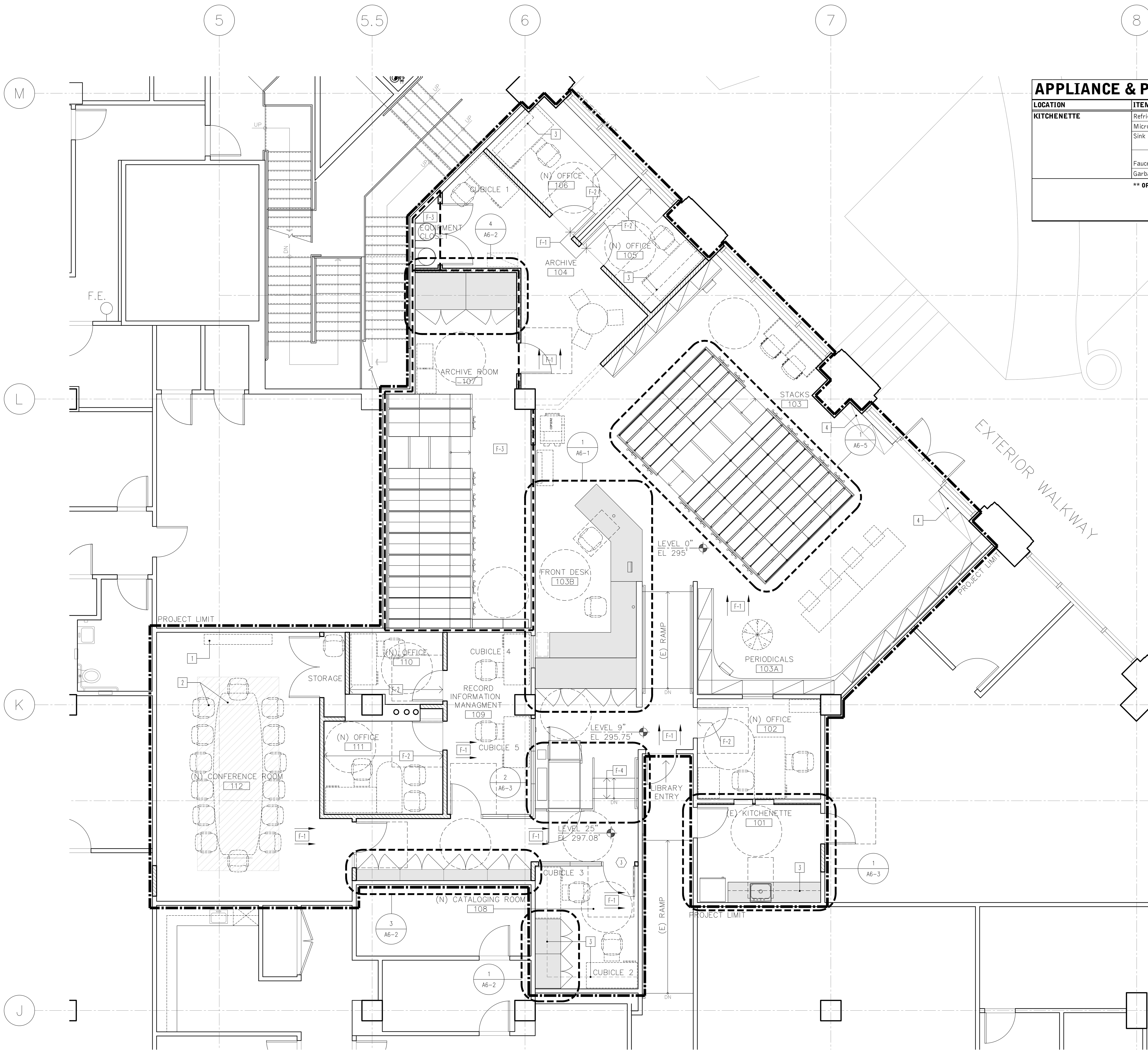
Los Angeles, CA 90012

TITLE

FLOOR PLAN; EGRESS PLAN

PROJECT
1818
SCALE
3/16" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A2-2



1 FURNITURE/FINISHES PLAN
SCALE: 3/16"=1'-0"

APPLIANCE & PLUMBING SCHEDULE

LOCATION	ITEM	MANUFACTURER	MODEL #	FINISH	QTY.	NOTES
KITCHENETTE	Refrigerator	TBD	TBD			OPOI
	Microwave	TBD	TBD			OPOI
	Sink	Elkay	LRAD2222654	Stainless Steel		22" x 22" x 6-1/2", Single Bowl Drop-in ADA Sink
	Faucet	Moen	7423	Chrome		Chateau One-Handle Low Arc Kitchen Faucet, ADA
	Garbage Disposal	Insinkerator				See Plumbing Schedule

**** OPOI = OWNER-PROVIDED, OWNER-INSTALLED**

DATE	DESCRIPTION
9/26/2019	100% CONSTRUCTION DOCS

GENERAL NOTES:

1. FURNTURE SHOWN FOR REFERENCE ONLY, NIC.
2. THRESHOLD DETAILS, SEE 1/A6-6
3. CARPET DIRECTION/RUN INDICATED WITH ARROWS F-1
4. FINISH SCHEDULE, SEE A6-1

KEYNOTES:

1. (E) SCREEN OPOI
2. (E) TABLE AND CHAIRS OPOI
3. (N) SHELVING, DETAIL 8/A6-2
4. (N) LOW SHELVING WITH LAMINATE TOP, DETAIL 6/A6-6

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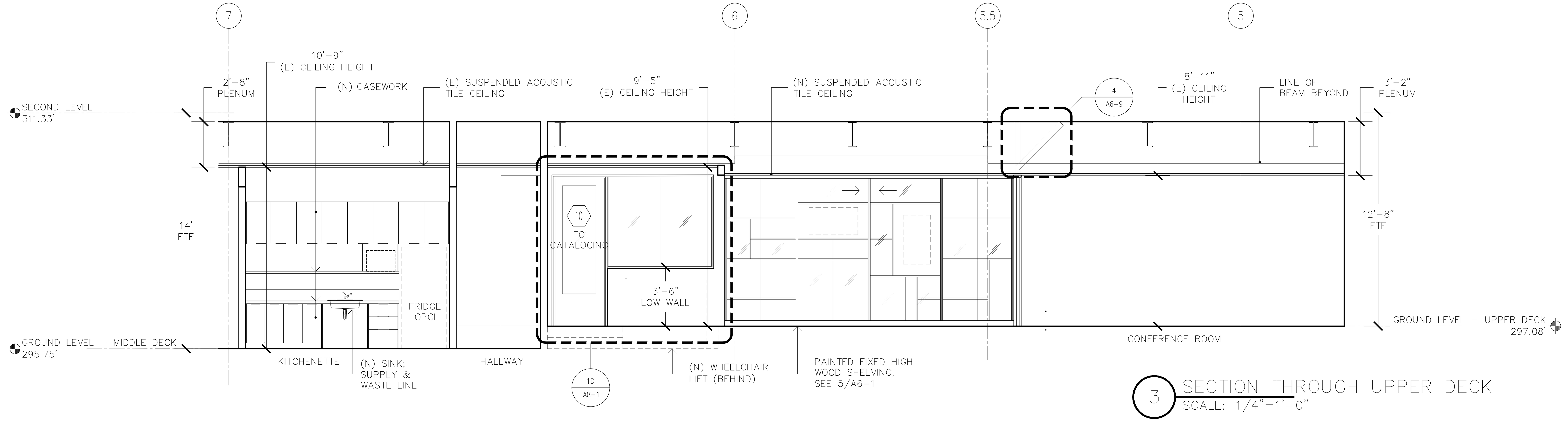
TITLE

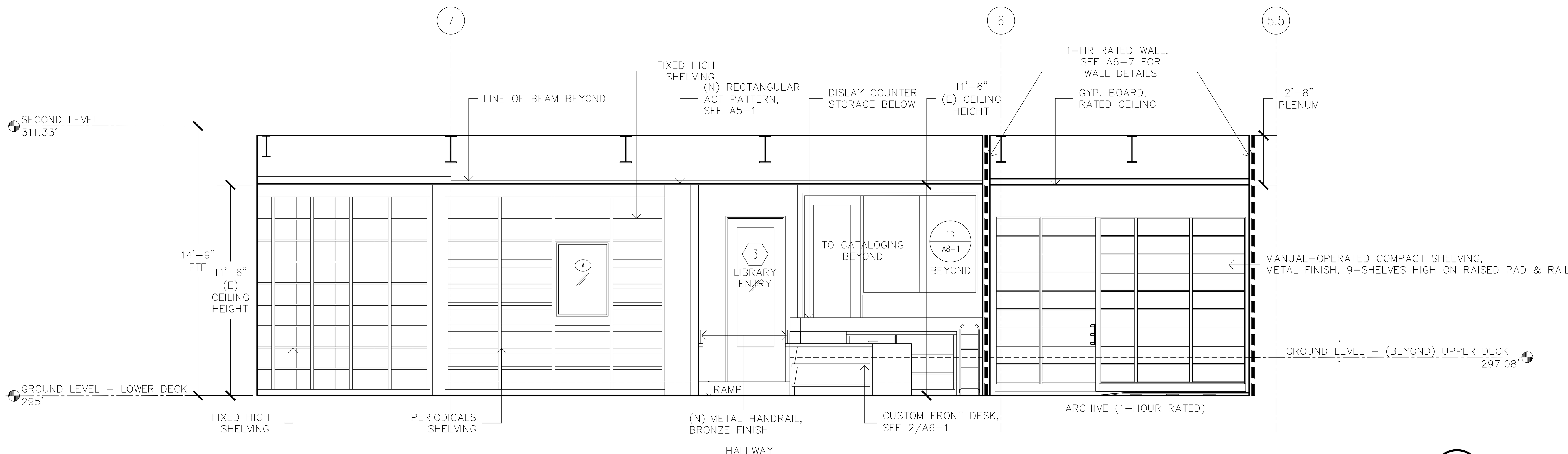
FURNITURE/ FINISHES PLAN

PROJECT
1818
SCALE
3/16" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

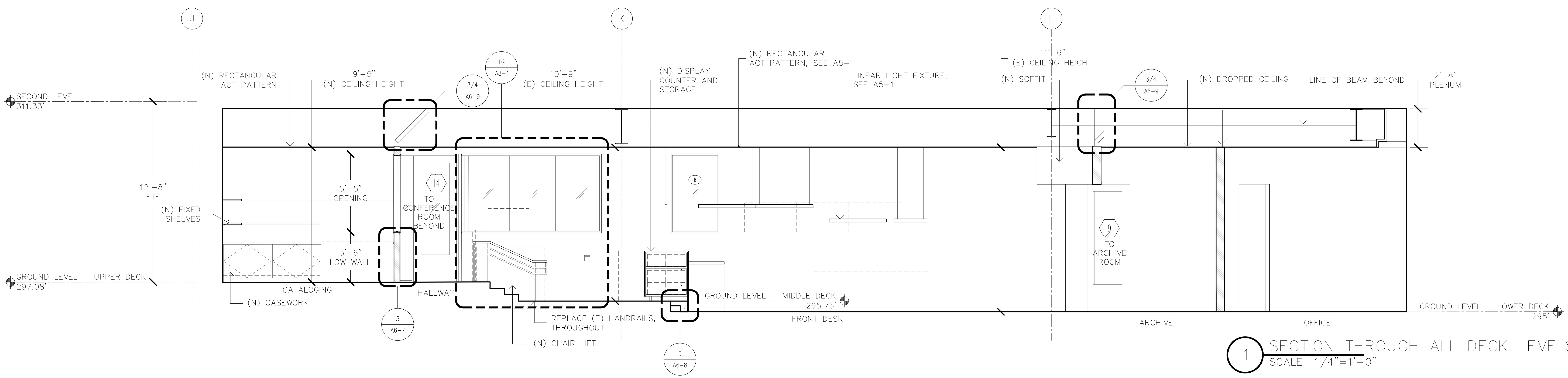
SHEET NUMBER
A2-3



3 SECTION THROUGH UPPER DECK
SCALE: 1/4"=1'-0"



2 SECTION THROUGH LOWER DECK
SCALE: 1/4"=1'-0"



1 SECTION THROUGH ALL DECK LEVELS
SCALE: 1/4"=1'-0"

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INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

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Metro Transportation Library Relocation

MTA Building
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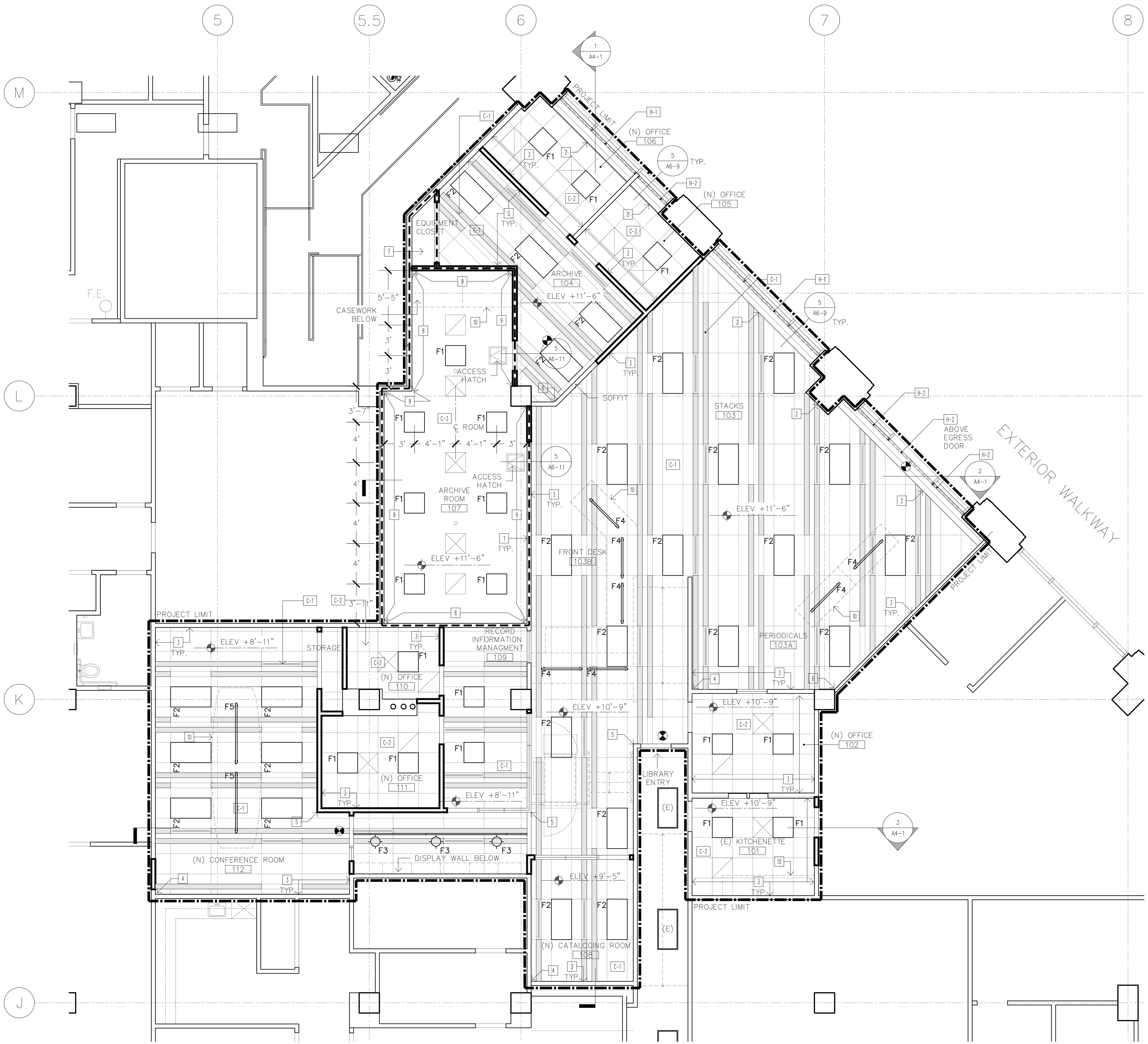
Los Angeles, CA 90012

TITLE

PARTIAL BUILDING SECTIONS

PROJECT
1818
SCALE
1/4" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A4-1



1 (N) REFLECTED CEILING PLAN
SCALE: 3/16"=1'-0"

GENERAL NOTES

1. ALL NEW CEILINGS; CEILING FINISHES, SEE FINISH SCHEDULE A6-1
2. SEE MEP SHEETS, FOR SWITCHING/CONTROLS/LIGHTS/HVAC
3. DIMENSIONS TO ℄ OF LIGHT FIXTURES AND DIFFUSERS, FOR DIFFUSER TYPES, SEE SHEET M1.00
FOR LIGHT FIXTURE SCHEDULE, SEE E0.05

KEYNOTES:

1. CHANNEL MOLDING, SEE 2/A6-9
2. 4" FLOAT EDGE AT WINDOW WALL ONLY, SEE 3/A6-9
3. SHADOW MOLDING AT EDGE, TYPICAL, SEE 4/A6-9
4. INSIDE MITERED CORNER, SEE 4A/A6-9
5. OUTSIDE MITERED CORNER, SEE 4B/A6-9
6. ANGLED MITERED CORNER, SEE 4C/A6-9
7. OPEN TO DECK ABOVE, NO CEILING
8. FOR SUSPENDED GYP. BOARD CEILING, PROVIDE SLIP JOINT ALONG LENGTH OF WALLS SHOWN (2)
9. PROVIDE FIX JOINT ALONG LENGTH OF ALL OTHER WALLS
10. DASHED LINE INDICATES FURNITURE OR CASEWORK BELOW FOR REFERENCE

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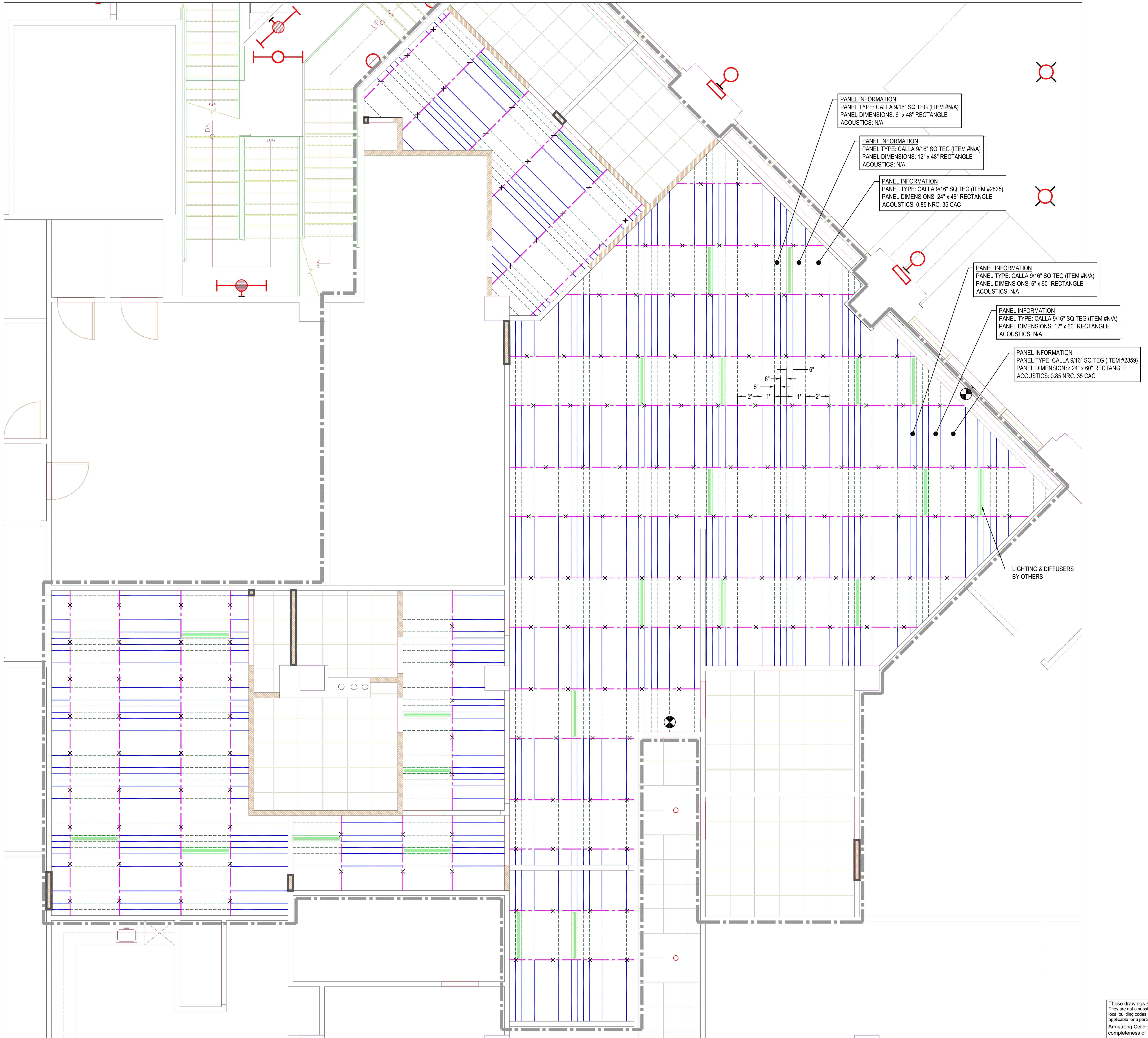
TITLE

REFLECTED CEILING PLAN

PROJECT
1818
SCALE
3/16" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A5-1

NOT TO SCALE



SUSPENSION KEY

- (7500/7501) 12' ID/HD SUPRAFINE MAIN BEAM
- (XL7558) 5' SUPRAFINE CROSS TEE
- (XL7540) 4' SUPRAFINE CROSS TEE
- (7891) 12 GA. HANGER WIRE - 36" O.C.

PROJECT NAME: LA METRO LIBRARY			
DWG. NO. RCP		REV: .	DATE: .
DATE: 4/5/19	SCALE: 1/4"=1'-0"	DESC.: .	
DRAWN BY: JDL	CHK BY: .		

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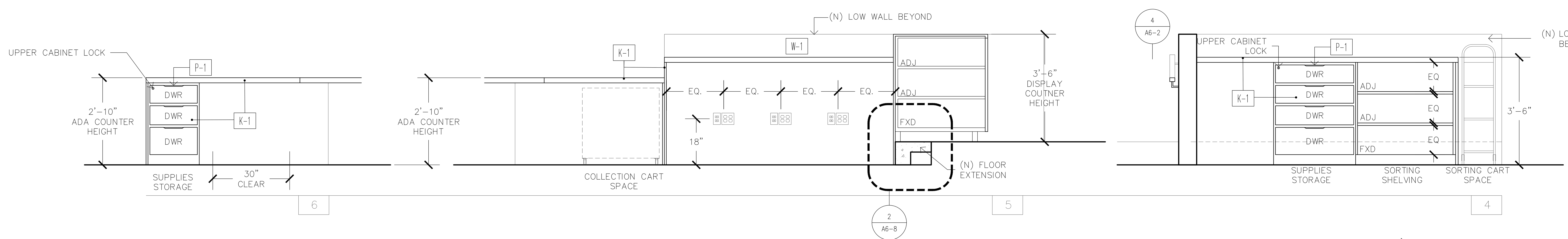
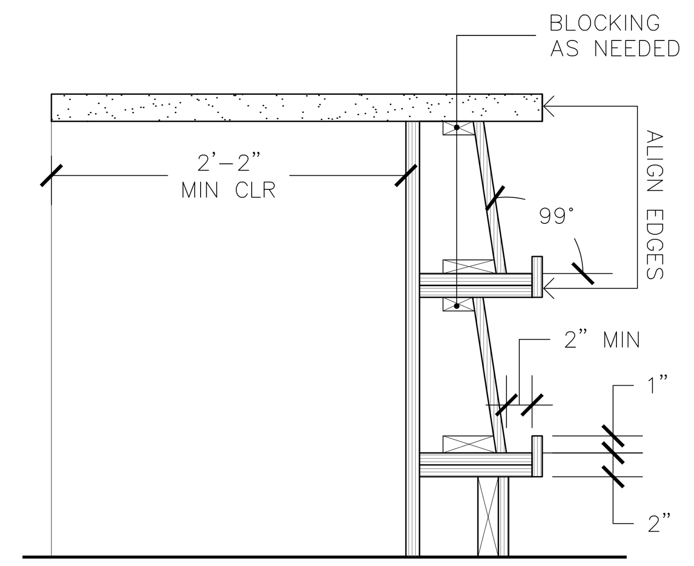
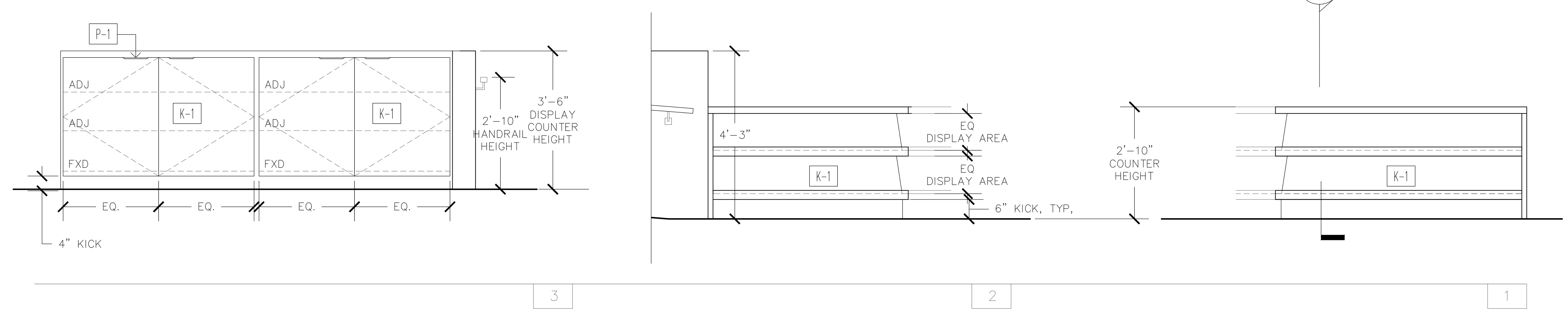




FRONT DESK DISPLAY SECTION

3 SCALE: 1"=1'-0"



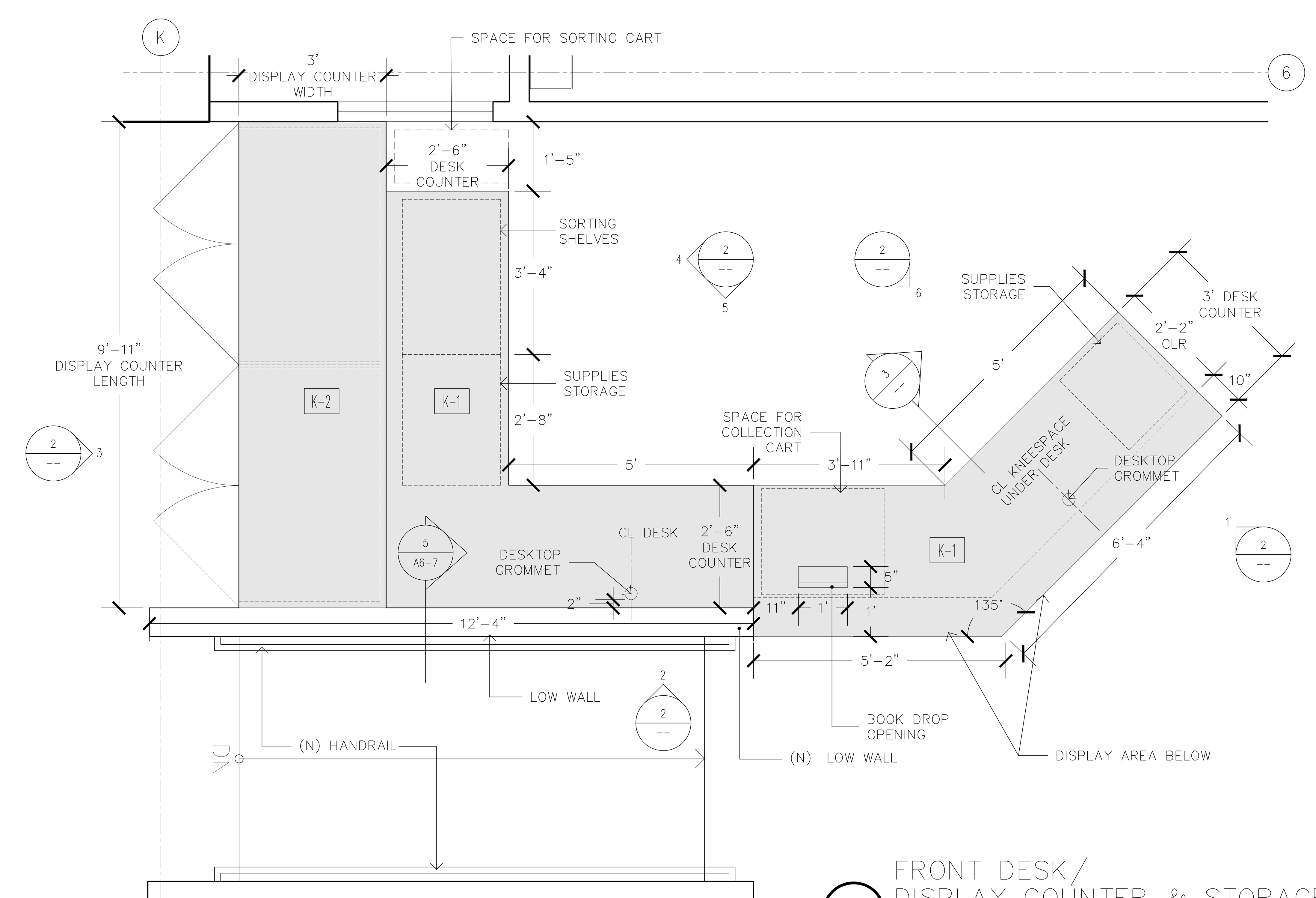
INTERIOR ELEVATIONS FRONT DESK

2 SCALE: 1/2"=1'-0"

FINISH SCHEDULE

SURFACE	LOCATION	TAG	DESCRIPTION	MANUFACTURER	STYLE / COLOR / ITEM #	NOTES
FLOOR	Public Area	F-1	Rectangular Modular Carpet	Interface	Aerial Collection AE317/Iris/105828	
	Office	F-2	Square Modular Carpet	Interface	Winning Collection/Chariote/106190	
	Archive	F-3	Rubber Tile	Nora Systems	Norament Satura 5131 / Cassiopeia	40"x40" tile
	Stair Treads	F-4	Rubber Tile	Nora Systems	Norament Stairtreads 926 Round 0716 / Slate Grey	6x6 tile
BASE	Throughout	B-1	Rubber Base	Johnsonite	Baseworks Thermoset/TG9 / Poetry Plum	4" tall, coved
WALL	Throughout	W-1	Painted GB	Dunn Edwards	DE6226 Foggy Day	Sheen: Gloss Level 5-9, Velvet
CEILING	Public Area	C-1	Pattern ACT 6"x, 12"x, 24"x (48") (60")	Armstrong Ceilings	DesignFlex Pattern SR 8	Match Dunn Edwards DEA184 Parisian Night; Molding per details and specs
	Office	C-2	2x2 ACT	Armstrong Ceilings	Calla 9/16" Tegular / White (WH)	Molding per details and specs
	Archive	C-3	Painted GB	Dunn Edwards	DE6226 Foggy Day	Sheen: Gloss Level 5-9, Velvet
CASEWORK	Front Desk; Display Wall; Cataloging Storage, Archive Storage	K-1	Laminate	Abet Laminati	469 Giallo Africa/Sei	
	Display Storage	K-2	Laminate	Abet Laminati	469 Giallo Africa/Sei	
	Kitchnette	K-3	Laminate	Formica	Neutral White (918)	
		K-4	Solid Surface	Corian	Cilantro	
SHELVING	Mobile Shelving - Stacks	S-1	Laminate	Abet Laminati	1840 Fuscia/Sei	Finish Panels, per details A6-6
		S-3	Metallic Powder Coat	Spacesaver	Espresso 151	Manufacturer Standard
	Mobile Shelving - Archive	S-2	Powder Coat Metal	Spacesaver	Cottonwood 204	Manufacturer Standard
	Case Shelving - Stacks	S-3	Metallic Powder Coat	Spacesaver	Espresso 151	Manufacturer Standard
BRONZE METALS	Rolling Ladder, Handrails	S-4	Muntz Metal	TBD	60% Copper/40% Zinc alloy w #4 satin finish	Fabricator to send architect samples of material; Control sample will be finished with building's oxidized metal standards by Stuart Dean; If fabricator can't match control sample, finishing can be performed offsite and install the finished product; If fabricator fails to match control sample offsite, Stuart Dean to finish onsite.
DOORS + WINDOWS	Doors (library only)	K-5	Wood Veneer	Brookside	Braewood Prefinished / F/C Cherry 8-913/MER PF	See door schedule for door location
	Kitchenette Door (Door 2)	K-6	Wood Veneer	TBD	TBD	See door schedule for door location; Match (E) veneer at building; Cherry Alabama Stain
	Door Trim; Window Trim	W-2	Painted Aluminum	Dunn Edwards	Snowy Shadow DE5897	Sheen: Gloss Level 65-80, Semi-Gloss
	Kitchenette door (Door 2)	W-5	Painted Aluminum	Dunn Edwards	Sahara DEC747	Sheen: Gloss Level 65-80, Semi-Gloss
CASEWORK PULLS	Front Desk; Display Counter/Storage; Cataloging Storage; Kitchen; Archive	P-1	Chamfered Edge Drawer Pull	Doug Mockett	DP254B / Brushed Brass (4B); 7 7/8" long	1/16" Deep, sits flush on flush on top of drawer door per elevation
WINDOW COVERINGS	Stacks, Office 106	H-1	Exterior-facing Multiple Windows	Mecho	5X Shade System/SoHo Collection/1116 Sullivan/ 1% Openness	Regular Roll without Fascia; Ceiling Mtd
	Office 105, Egress Door-adjacent	H-2	Exterior-facing Single Windows	Mecho	5 Shade System/SoHo Collection/1116 Sullivan/ 1% Openness	Regular Roll without Fascia; Ceiling Mtd
	Glass Door	H-3	Privacy Film	LLumar	Frost Series/ Frost NRM PS2	See door schedule for door location
THRESHOLDS	Exterior Door	T-1	Carpet to Exterior Stone Threshold	Assa Abloy Pemko	Offset Saddle 2727D/Dark Bronze Anodized	
	Carpet to Rubber	T-2	Carpet to Resilient Floor Adapter	Johnsonite	Resilient Adaptor/CTA-XX-A/85 Burgundy	

DATE	DESCRIPTION
4/25/2019	90% Design Development
6/20/2019	60% Construction Documents
7/25/2019	90% Construction Documents
9/26/2019	100% Construction Documents



FRONT DESK/ DISPLAY COUNTER & STORAGE

1 SCALE: 1/2"=1'-0"

((RADAR))

RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

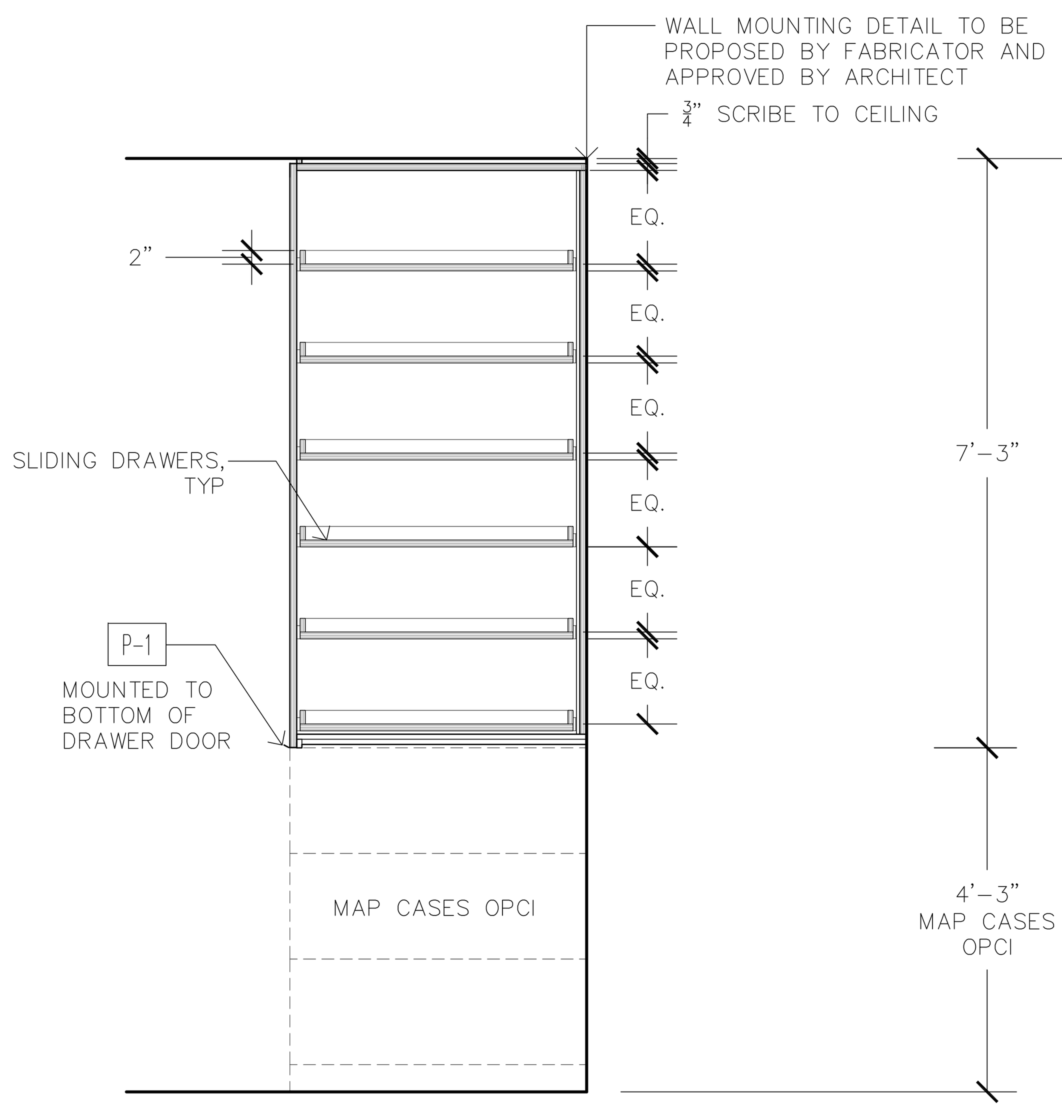
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

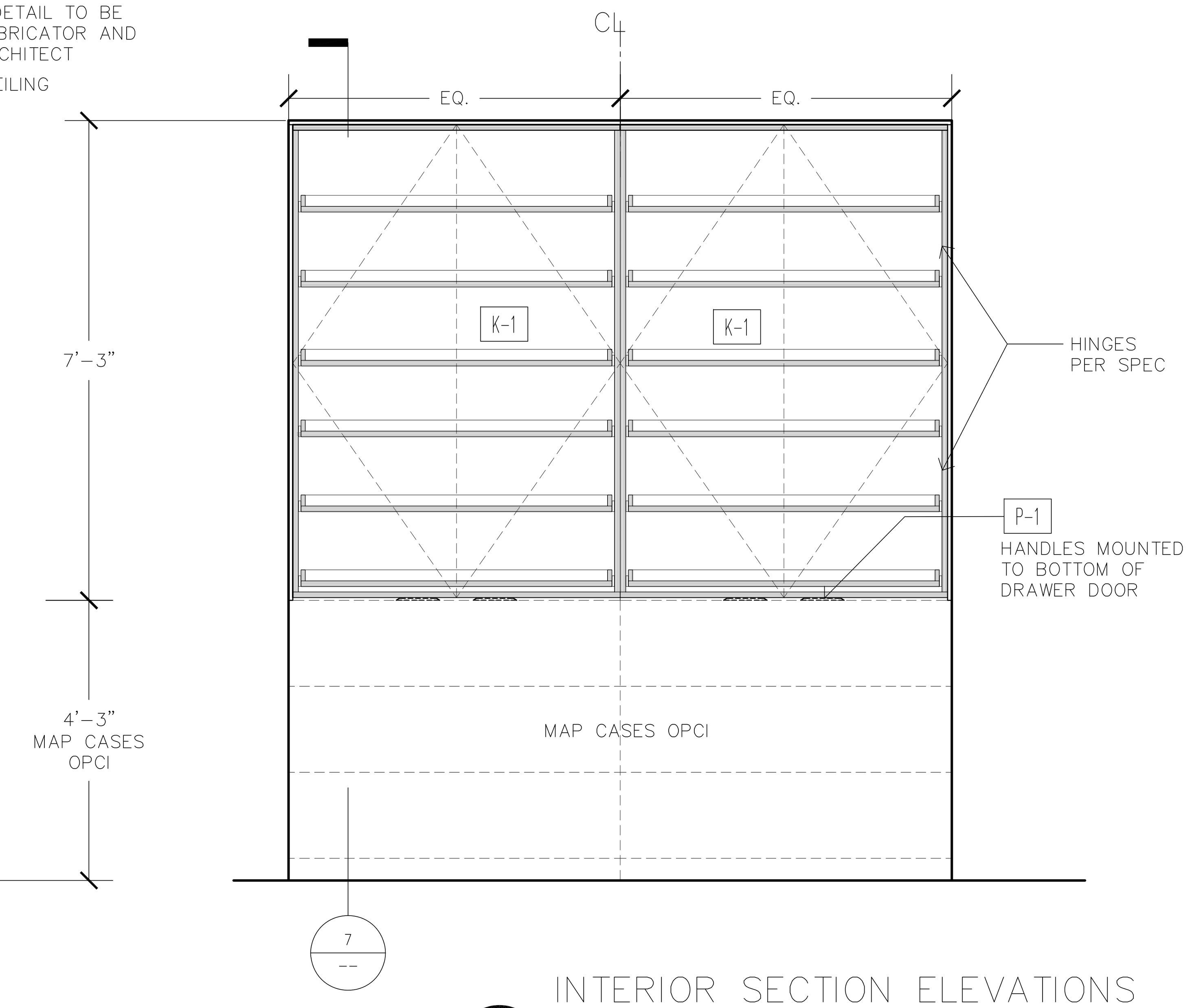
CASEWORK FRONT DESK; FINISH SCHEDULE

PROJECT
1818
SCALE
1/2" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

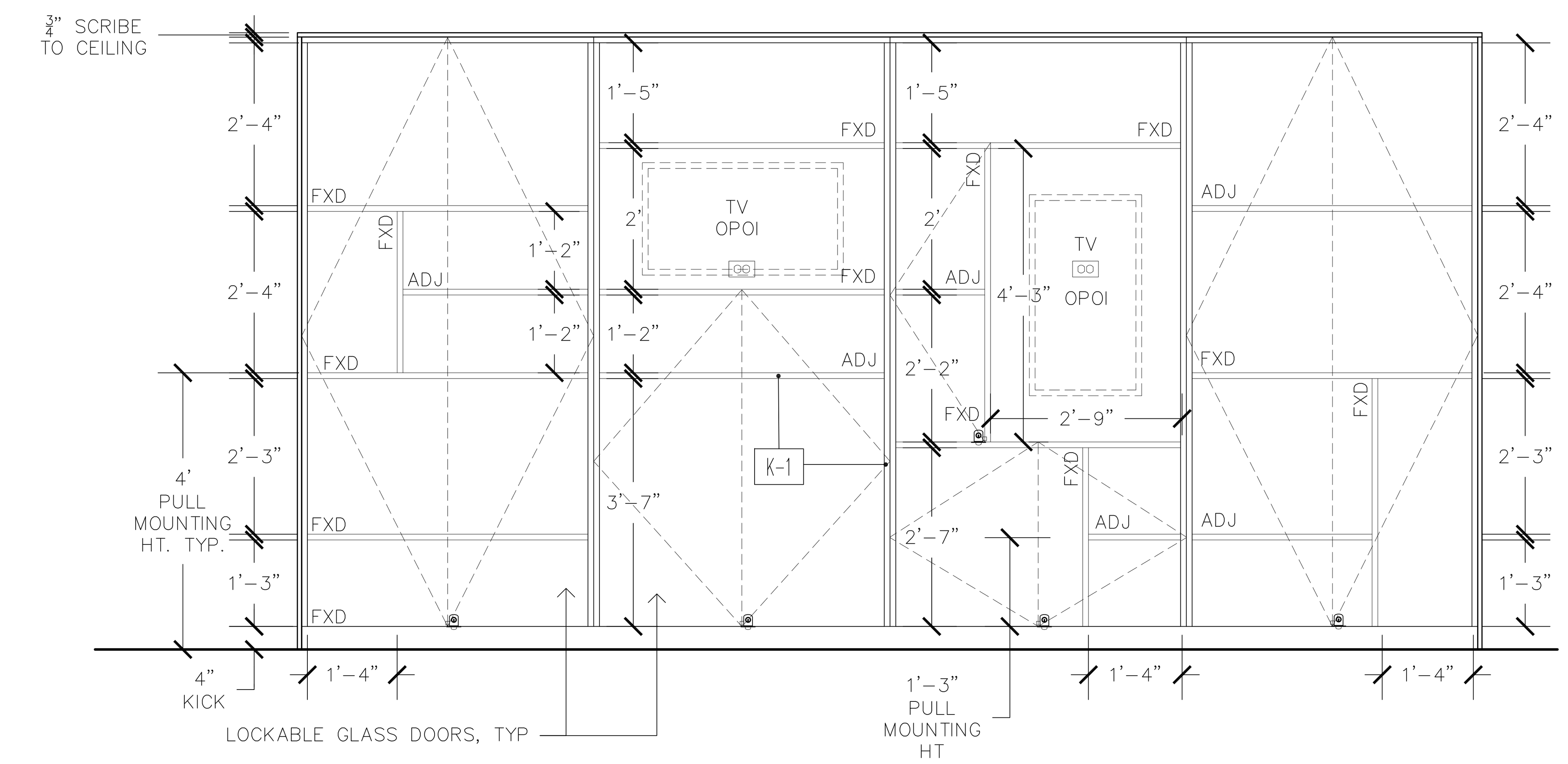
SHEET NUMBER
A6-1



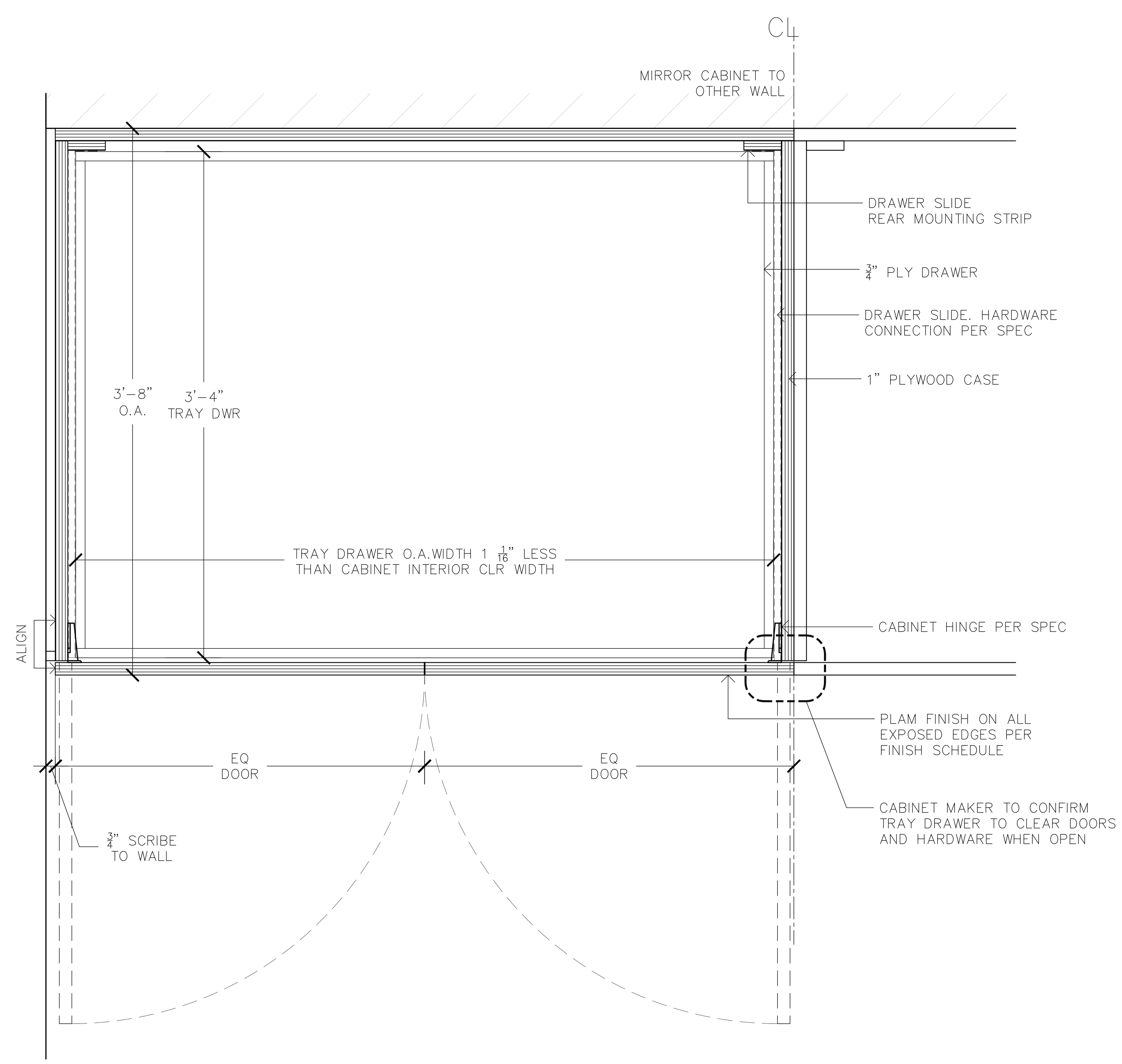
7 INTERIOR ELEVATIONS ARCHIVE STORAGE
SCALE: 1/2"=1'-0"



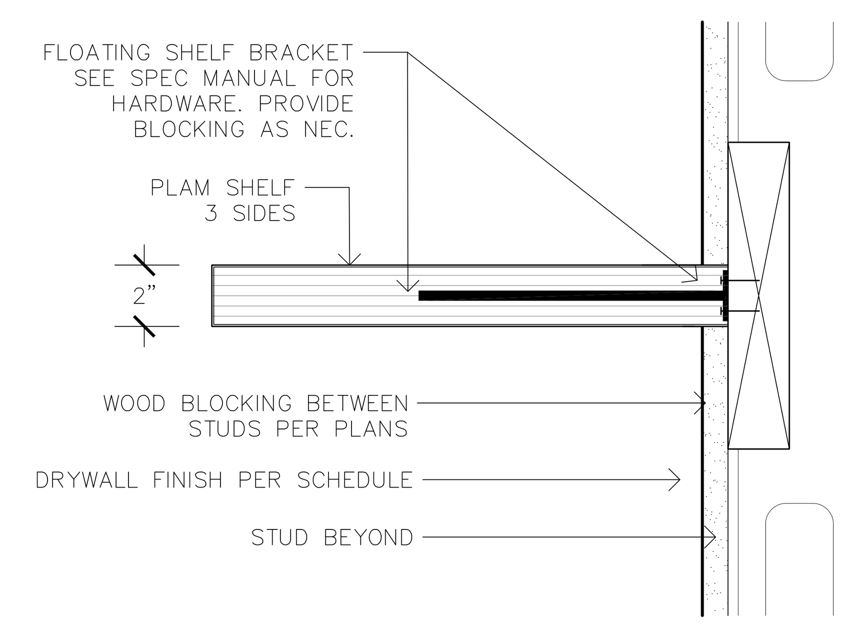
6 INTERIOR SECTION ELEVATIONS ARCHIVE STORAGE
SCALE: 1/2"=1'-0"



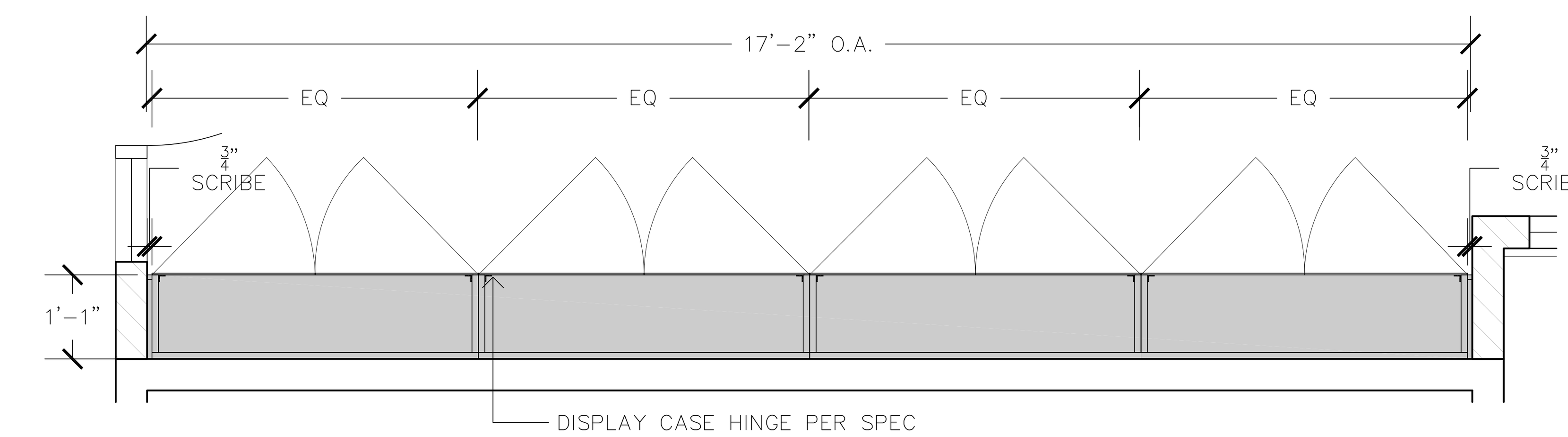
5 INTERIOR ELEVATIONS DISPLAY WALL
SCALE: 1/2"=1'-0"



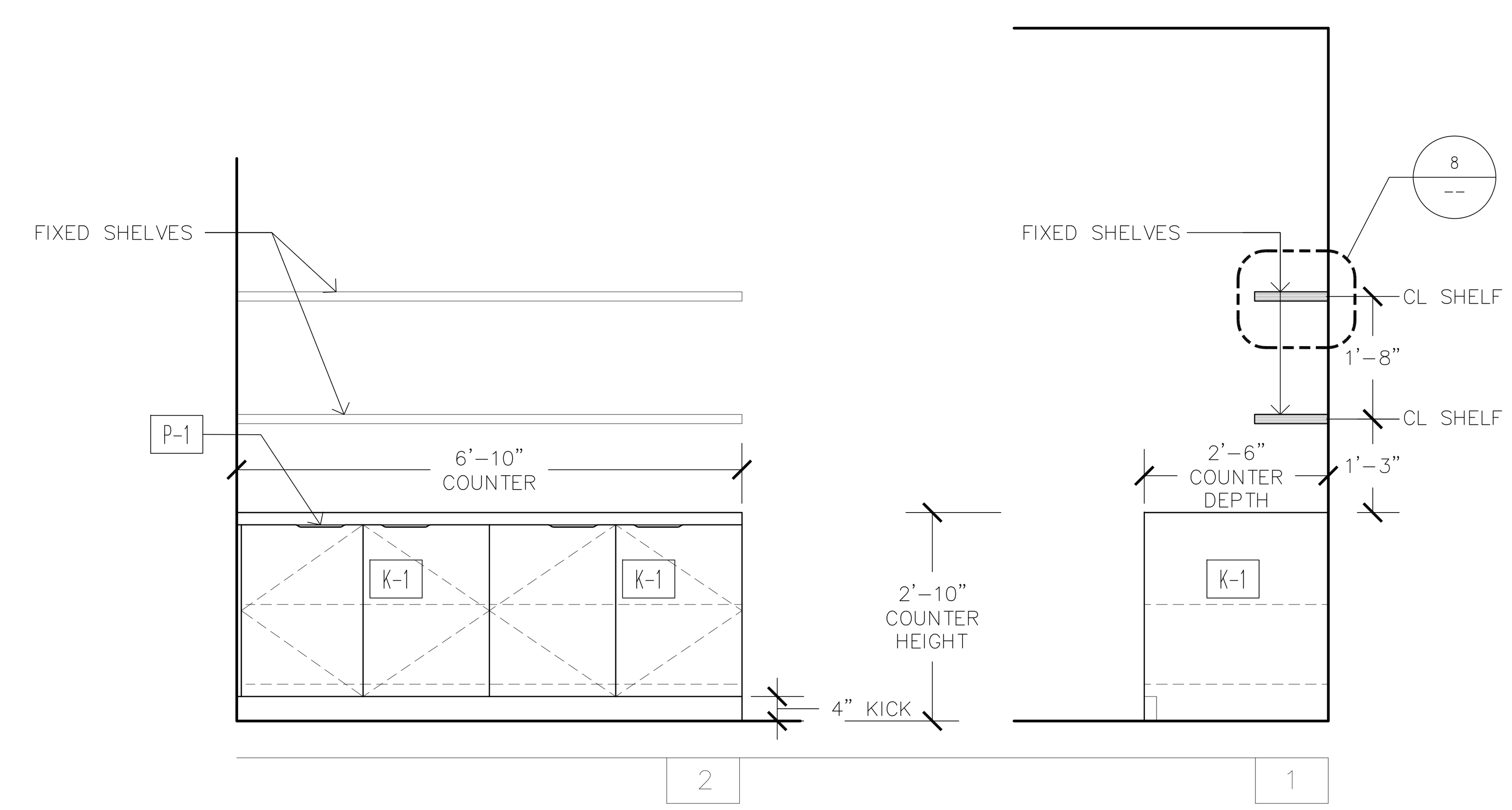
4 ARCHIVE STORAGE TYP. CABINET PLAN DETAIL
SCALE: 1/2"=1'-0"



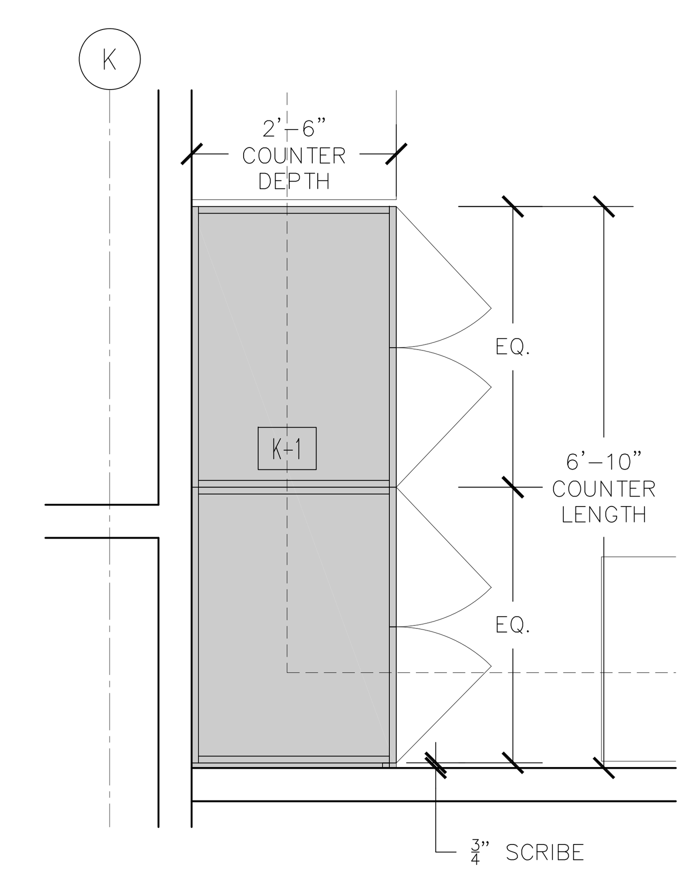
8 TYP. FLOATING SHELF DETAIL
SCALE: 3"=1'-0"



3 DISPLAY WALL
SCALE: 1/2"=1'-0"



2 INTERIOR ELEVATIONS CATALOGING STORAGE
SCALE: 1/2"=1'-0"



1 CATALOGING STORAGE
SCALE: 1/2"=1'-0"

((RADAR))
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.
423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
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REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
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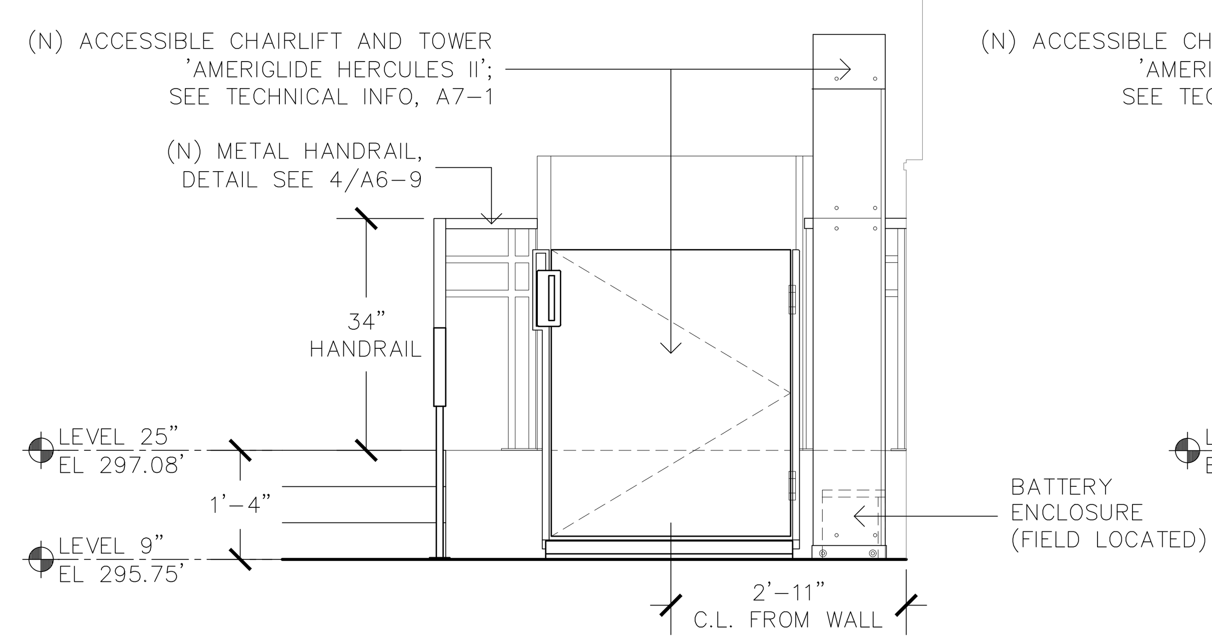
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

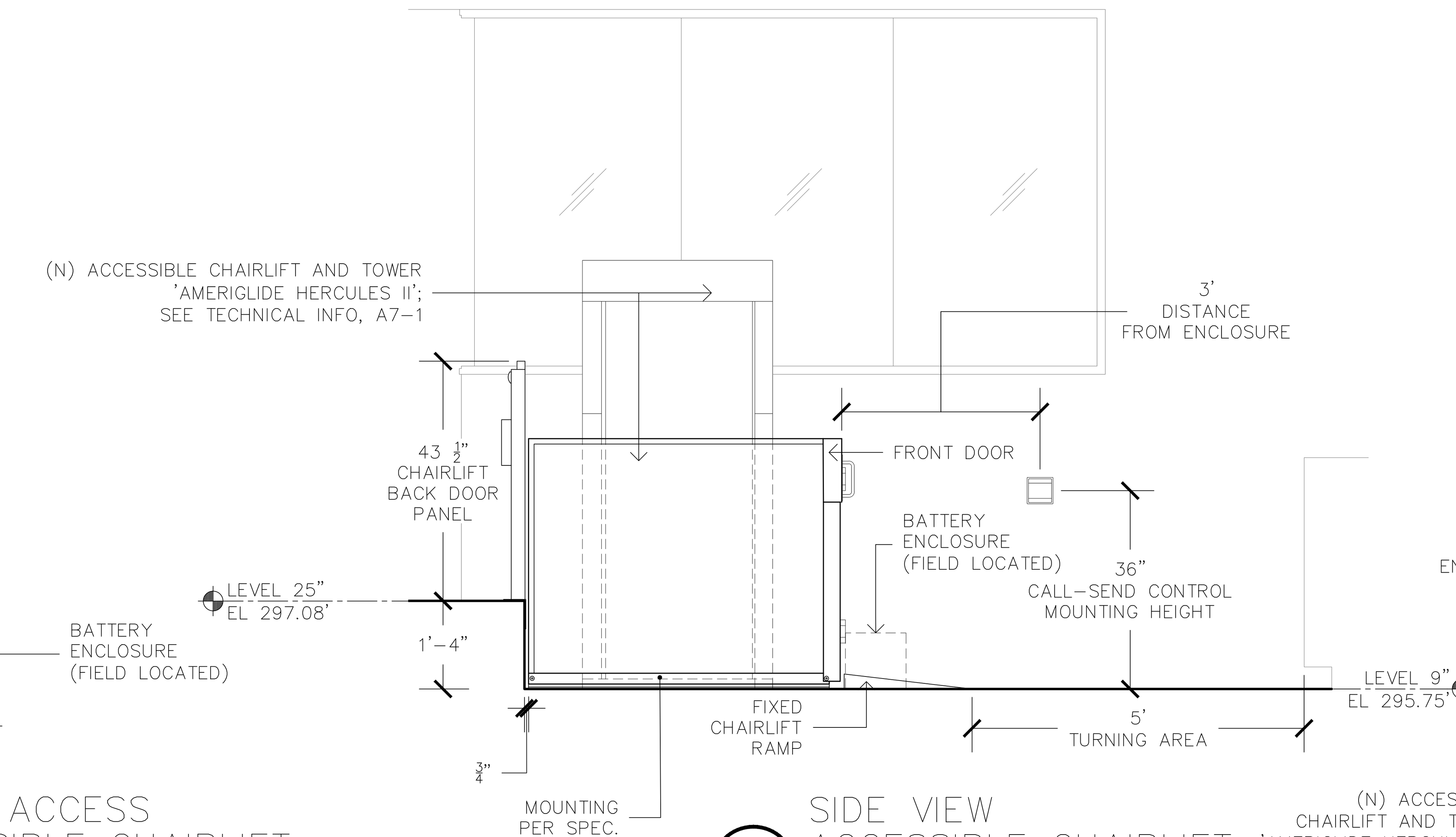
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE
CASEWORK CATALOGING; DISPLAY WALL; ARCHIVE STOR

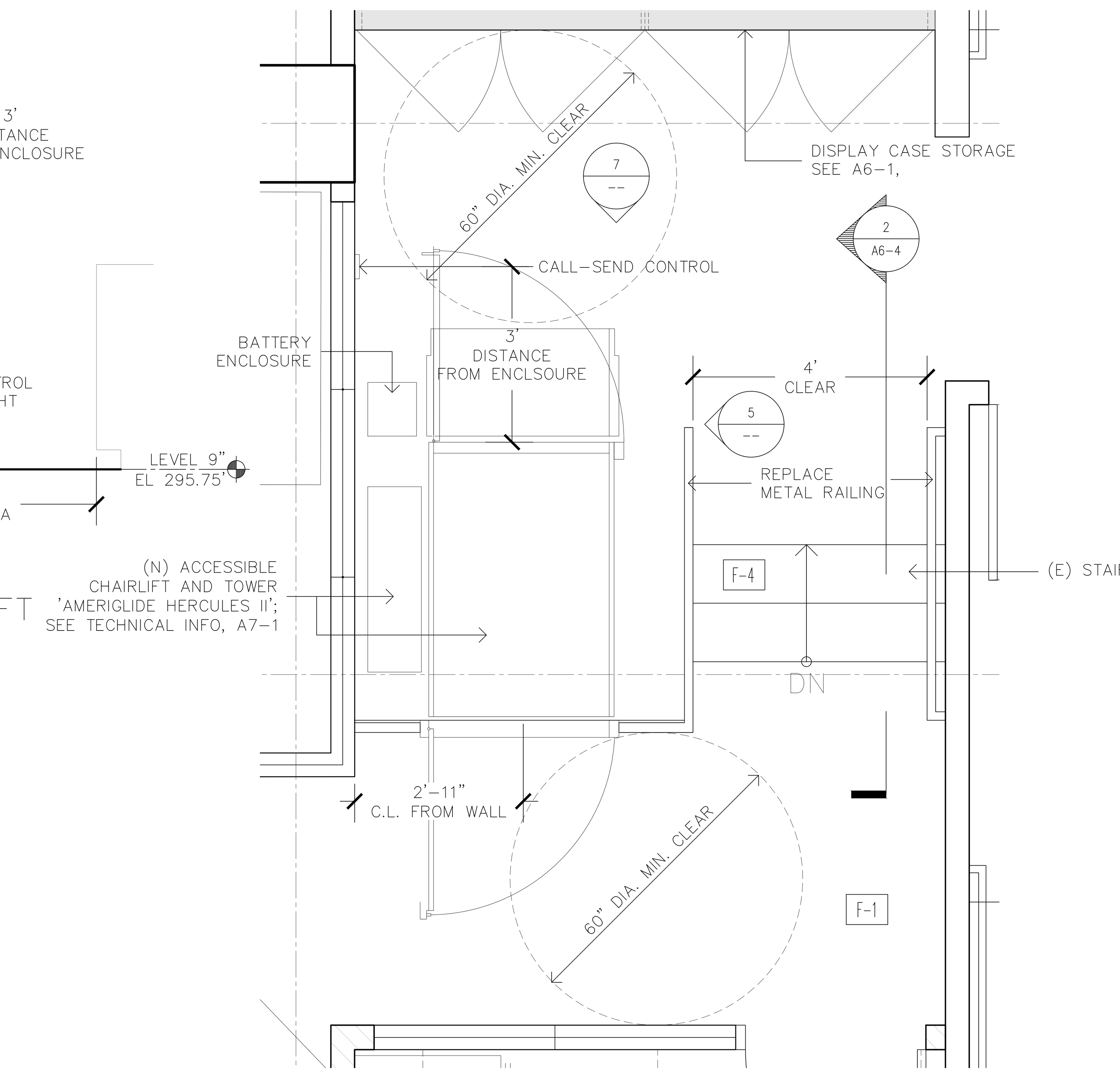
PROJECT 1818
SCALE 1/2" = 1'-0"
DRAWN BY KC
DATE 09/26/19
SHEET NUMBER A6-2



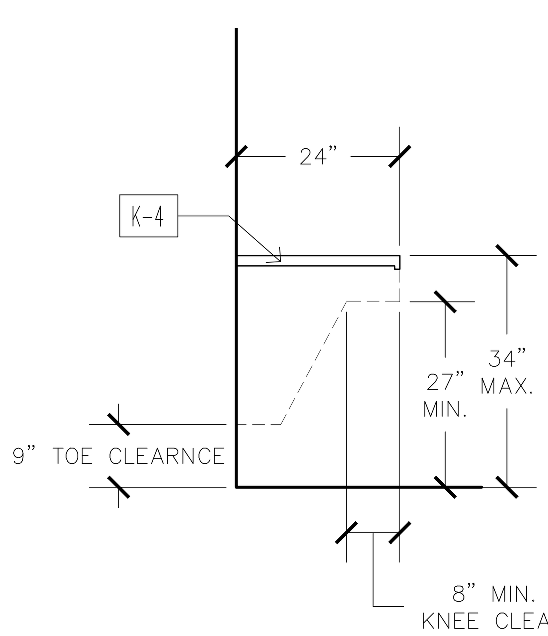
7 FRONT ACCESS ACCESSIBLE CHAIRLIFT
SCALE: 1/2"=1'-0"



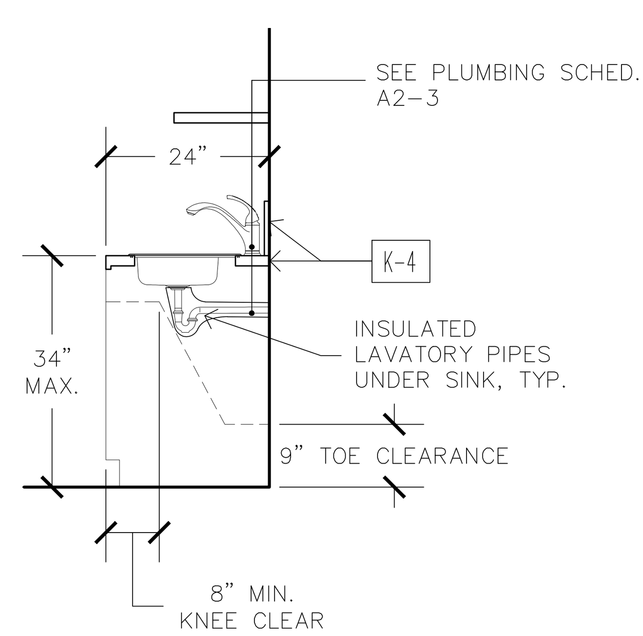
5 SIDE VIEW ACCESSIBLE CHAIRLIFT
SCALE: 1/2"=1'-0"



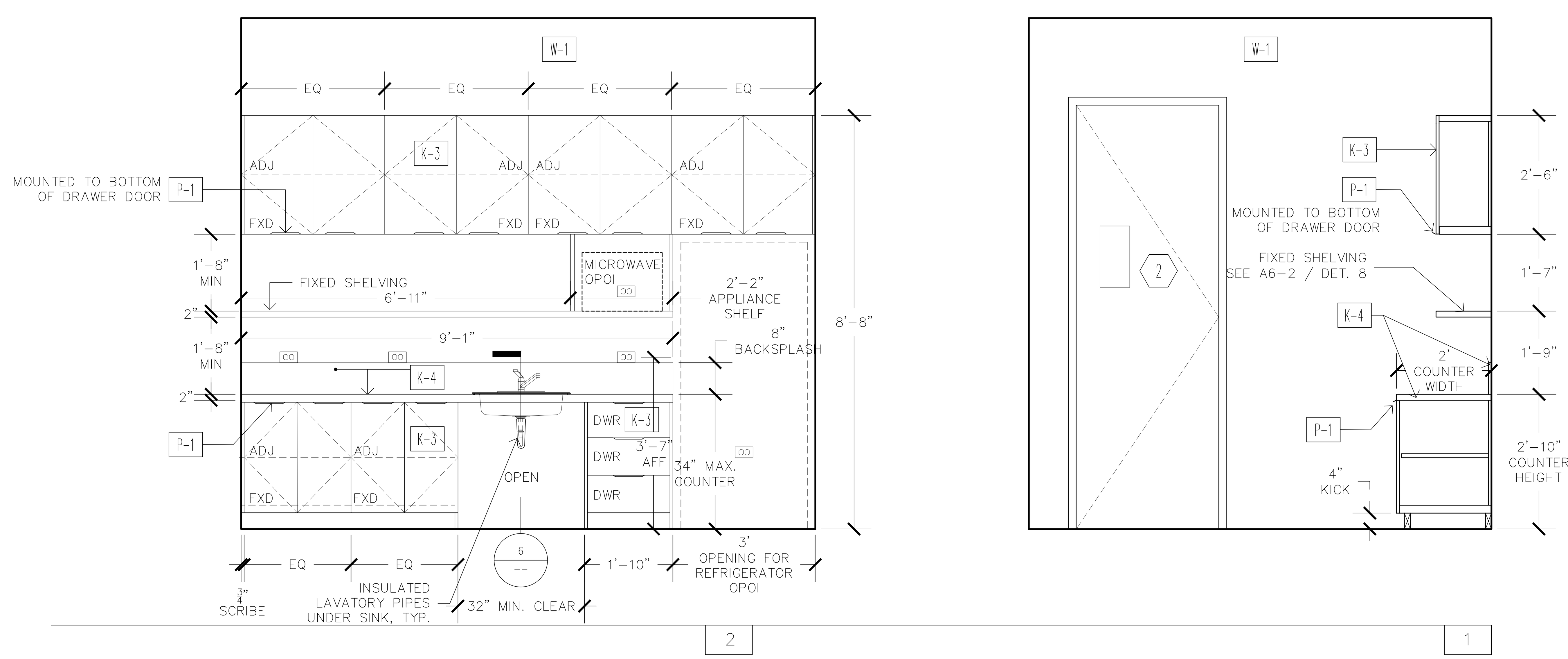
2 ENLARGED PLAN (E) STAIR & CHAIRLIFT
SCALE: 1/2"=1'-0"



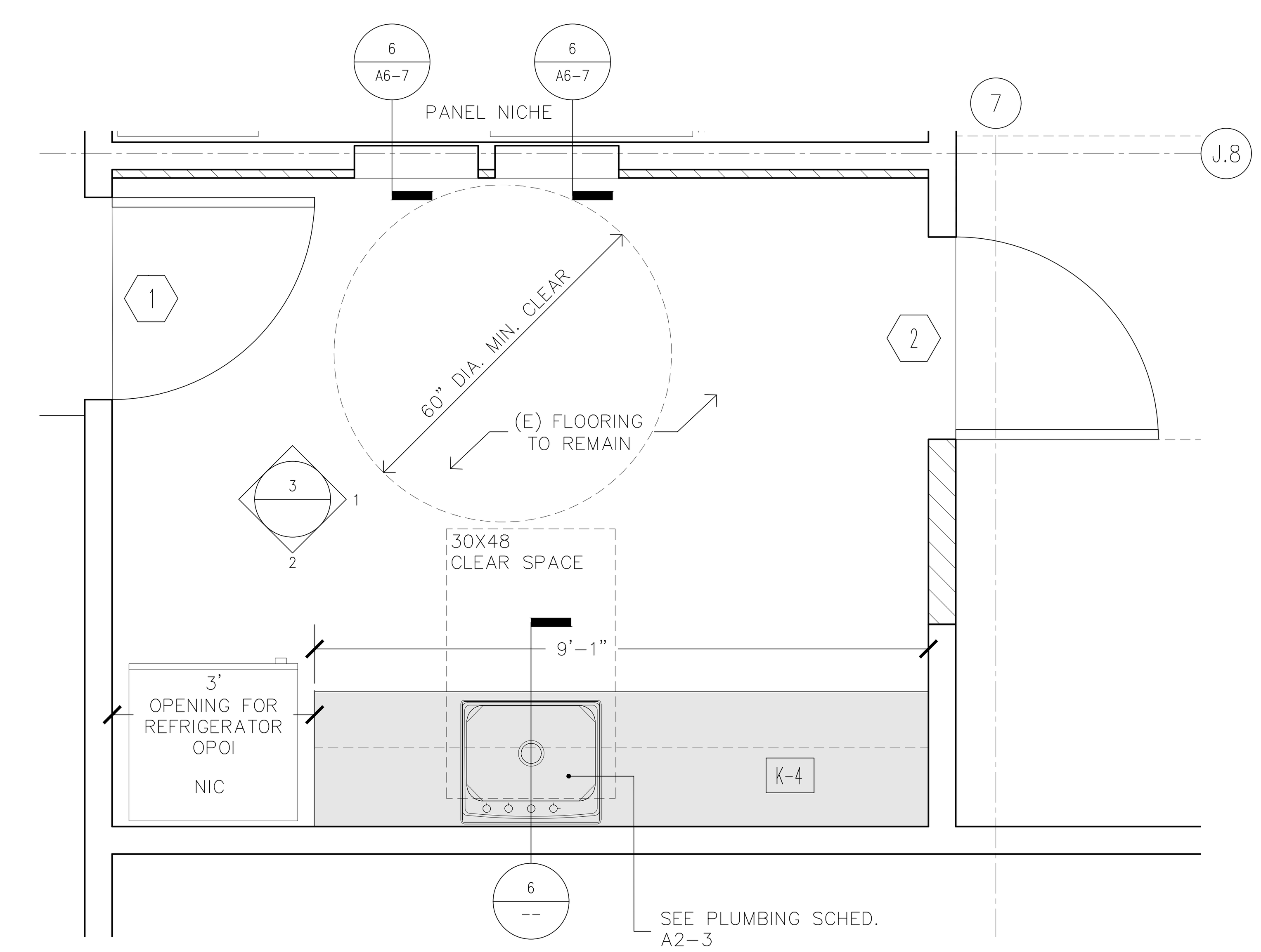
8 ACCESSIBLE COUNTER
SCALE: 1/2"=1'-0"



6 ACCESSIBLE SINK
SCALE: 1/2"=1'-0"



3 INTERIOR ELEVATIONS KITCHENETTE
SCALE: 1/2"=1'-0"



1 ENLARGED PLAN KITCHENETTE
SCALE: 1/2"=1'-0"

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RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT RACHEL M ALLEN #C28585 REN. 4/30/21 STATE OF CALIFORNIA

NO	ISSUE	DATE
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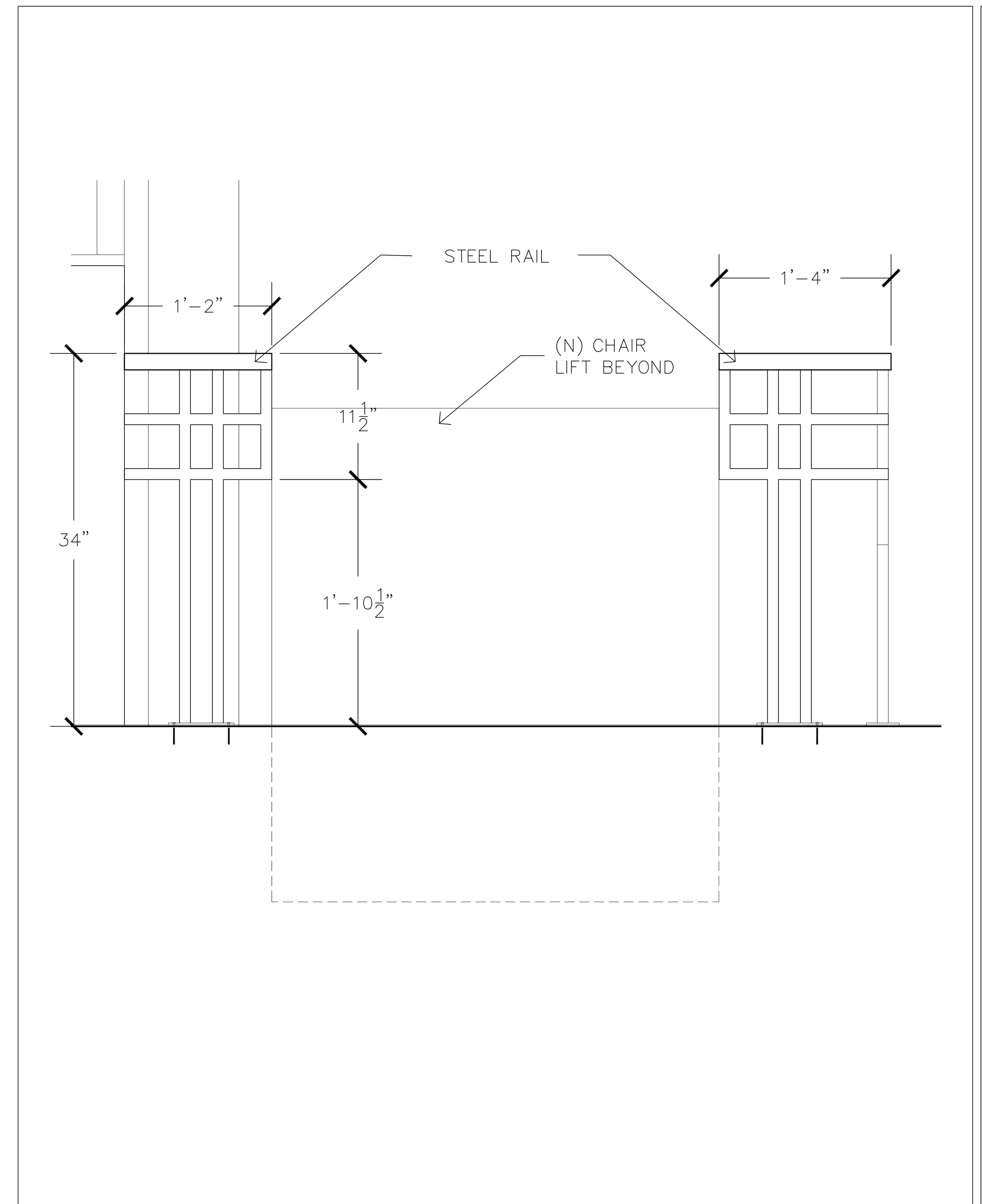
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

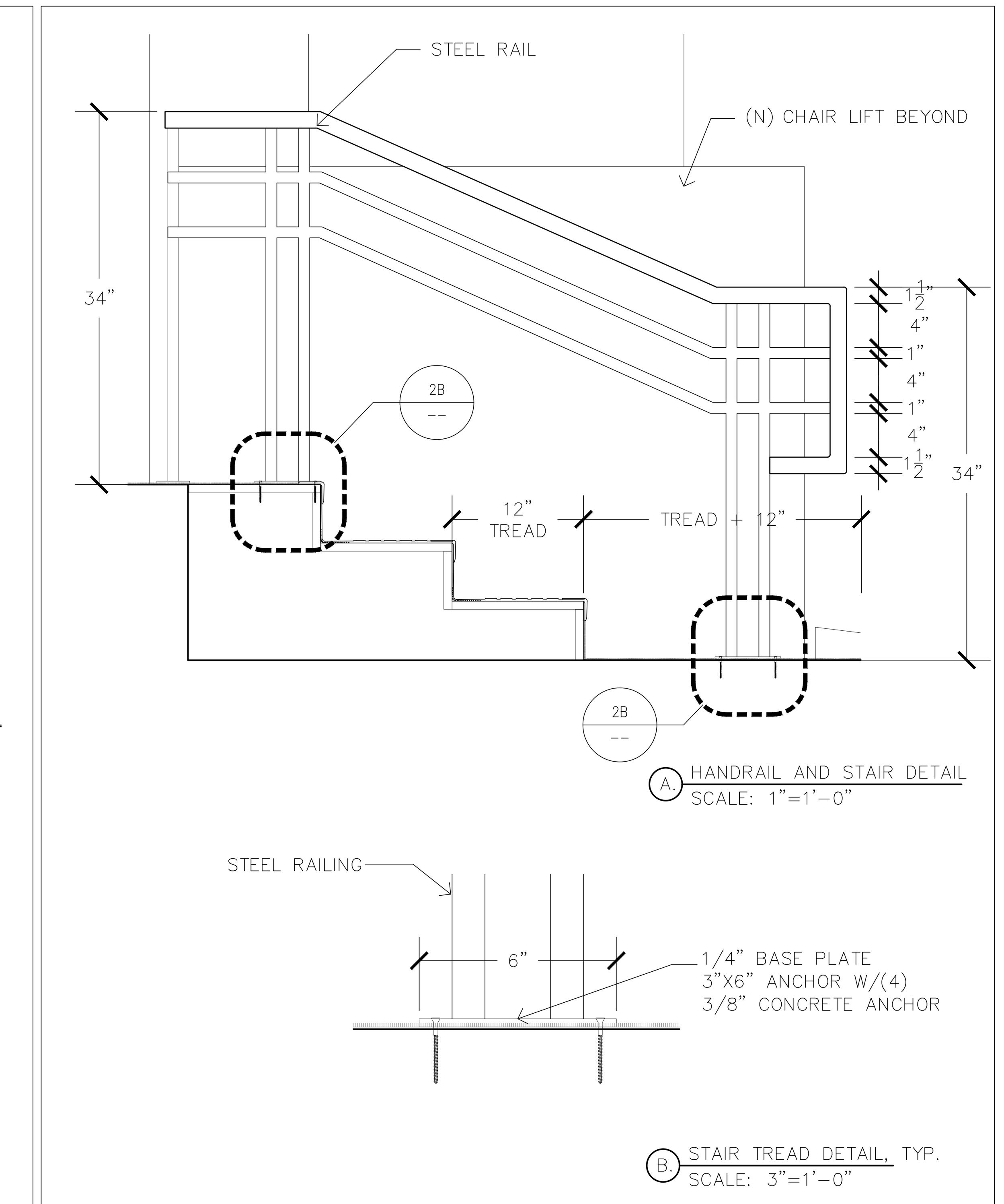
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE
CASEWORK KITCHEN; CHAIRLIFT; ACCESSIBILITY

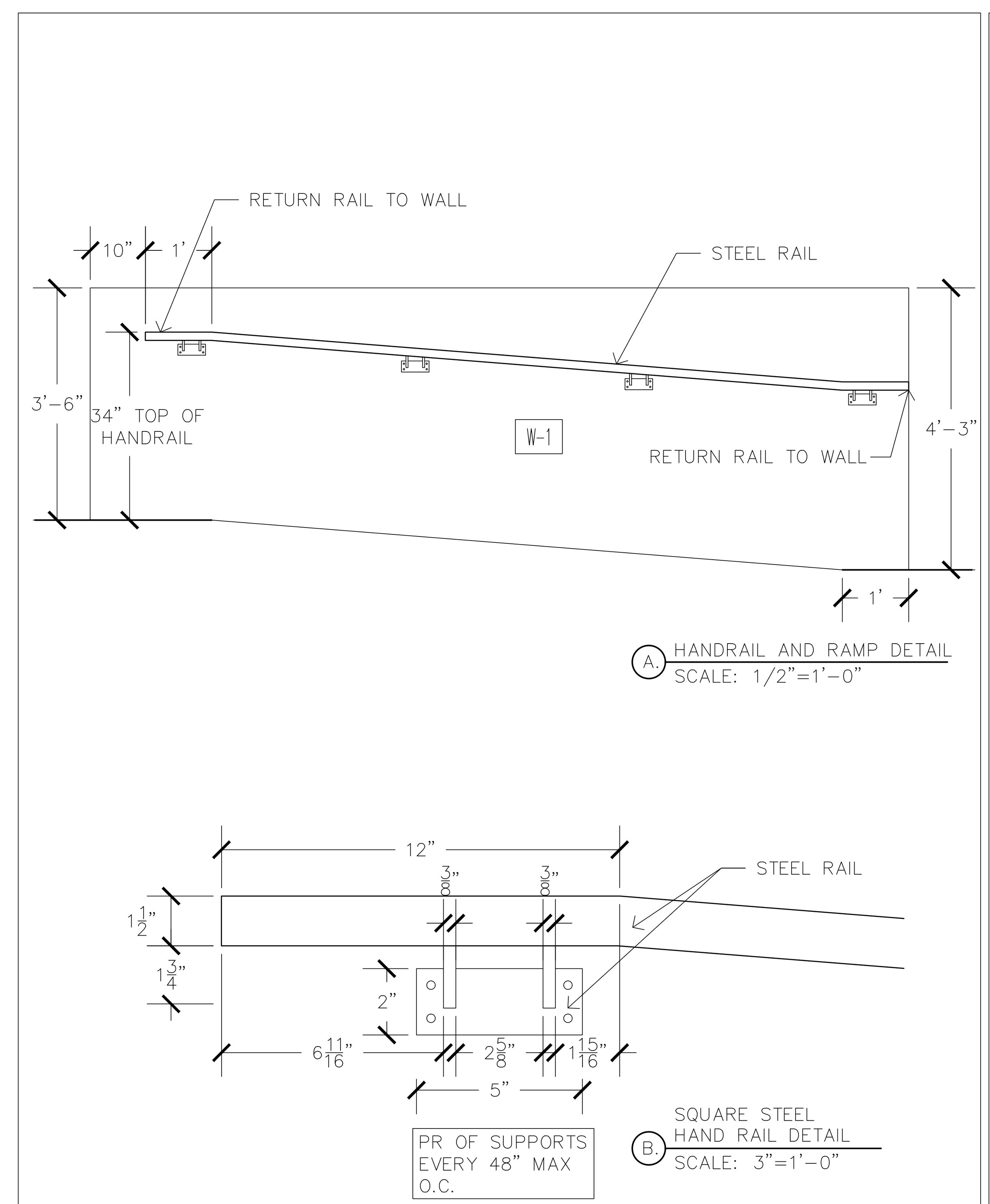
PROJECT 1818
SCALE 1/4" = 1'-0"
DRAWN BY KC
DATE 09/26/19
SHEET NUMBER A6-3



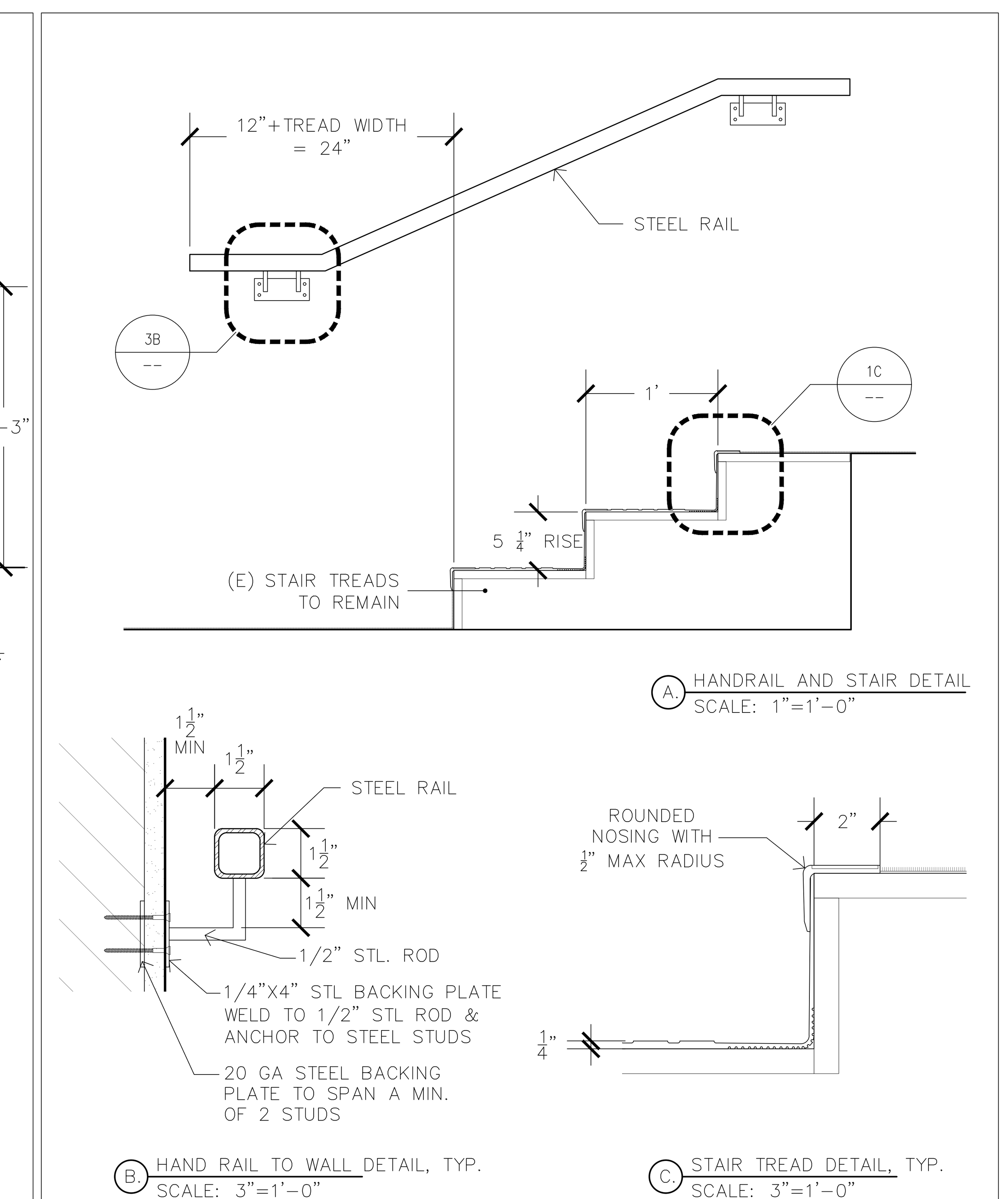
RADAR RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC. 423 GIN LING WAY LOS ANGELES, CA 90012 T. 213.617.0075 F. 213.617.0077	HANDRAIL DETAIL METRO LIBRARY RELOCATION PROJECT NO. 1818 DATE: 05/14/19 SCALE: 1"=1'-0"	DETAIL NO. 4



RADAR RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC. 423 GIN LING WAY LOS ANGELES, CA 90012 T. 213.617.0075 F. 213.617.0077	HANDRAIL/STAIR DETAIL METRO LIBRARY RELOCATION PROJECT NO. 1818 DATE: 05/14/19 SCALE: 1" = 1'-0"	DETAIL NO. 2



RADAR RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC. 423 GIN LING WAY LOS ANGELES, CA 90012 T. 213.617.0075 F. 213.617.0077	RAMP HANDRAIL DETAIL METRO LIBRARY RELOCATION PROJECT NO. 1818 DATE: 05/14/19 SCALE: NTS	DETAIL NO. 3



RADAR RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC. 423 GIN LING WAY LOS ANGELES, CA 90012 T. 213.617.0075 F. 213.617.0077	HANDRAIL/STAIR DETAILS METRO LIBRARY RELOCATION PROJECT NO. 1818 DATE: 05/14/19 SCALE: VARIES	DETAIL NO. 1

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
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NO	ISSUE	DATE
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5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

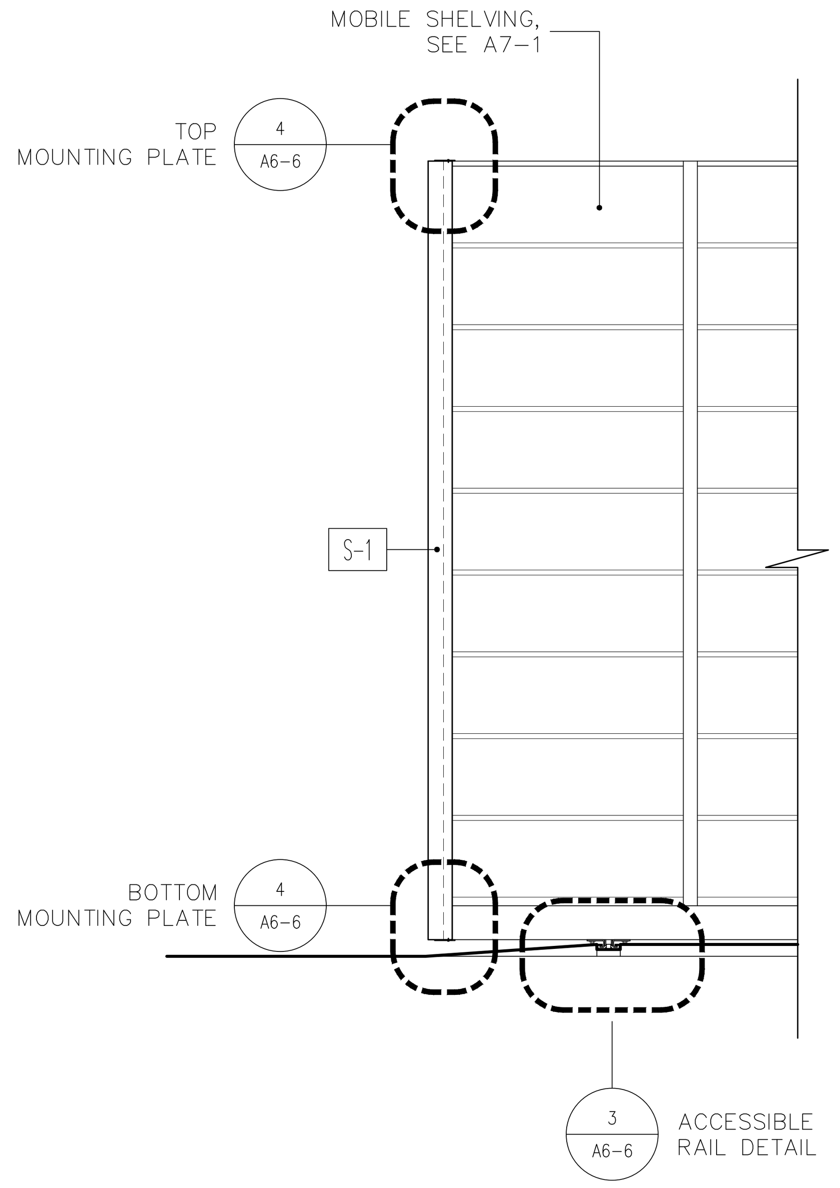
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

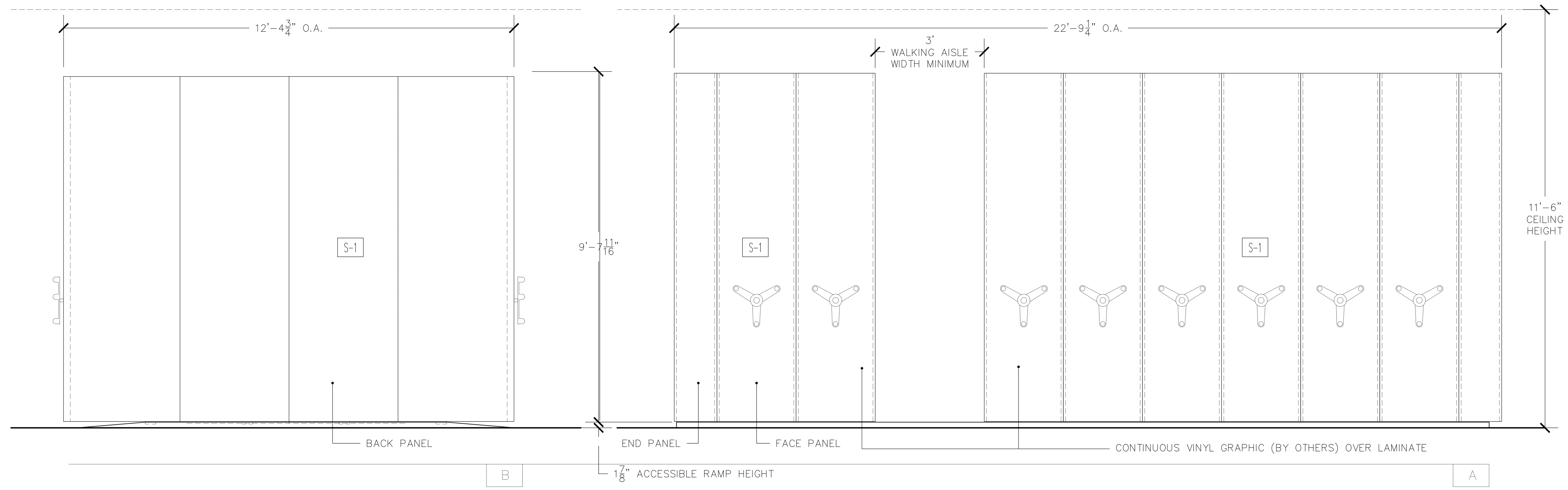
INTERIOR DETAILS / GUARDRAILS AND STAIRS

PROJECT
1818
SCALE
VARIES
DRAWN BY
ZH
DATE
09/26/19

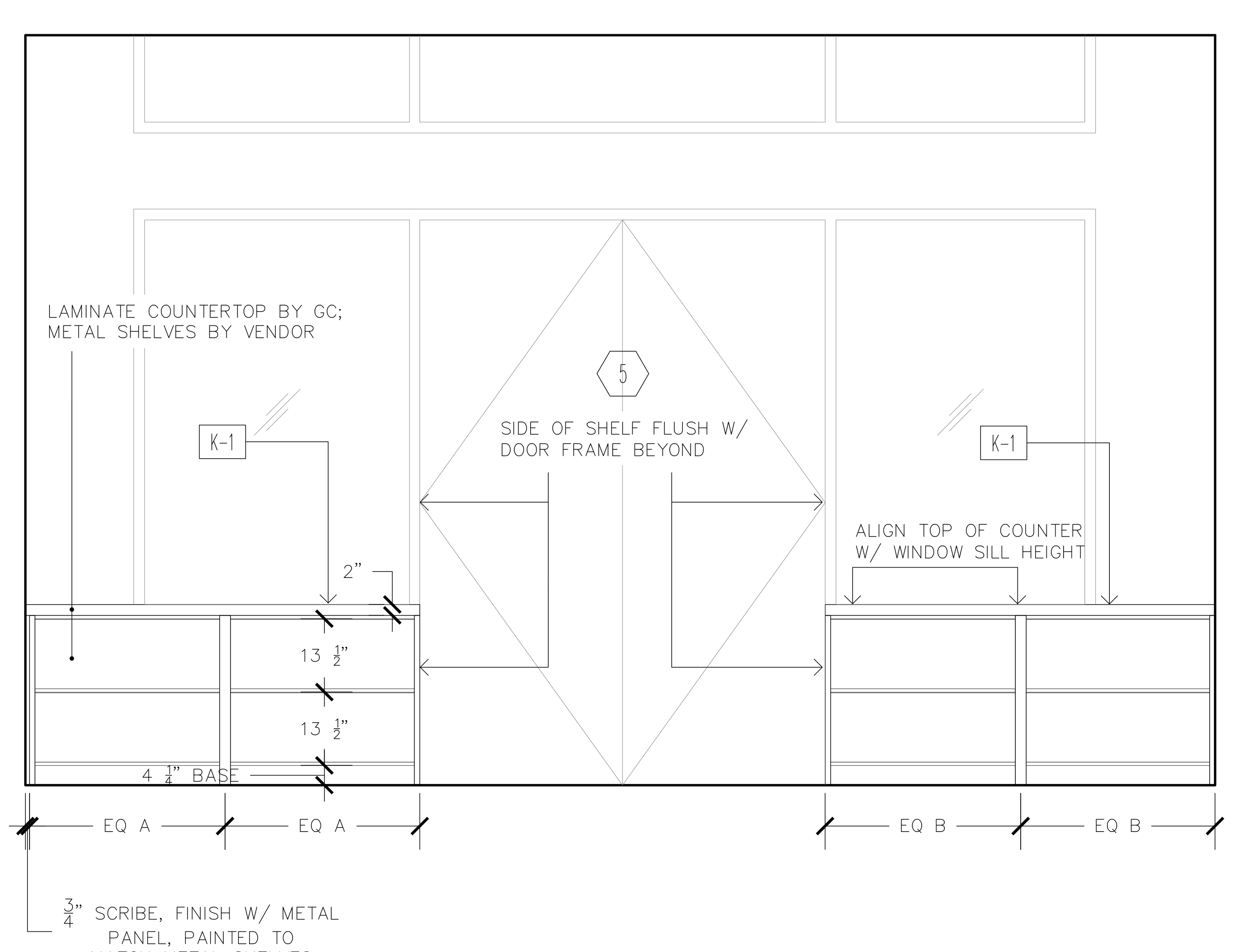
SHEET NUMBER
A6-4



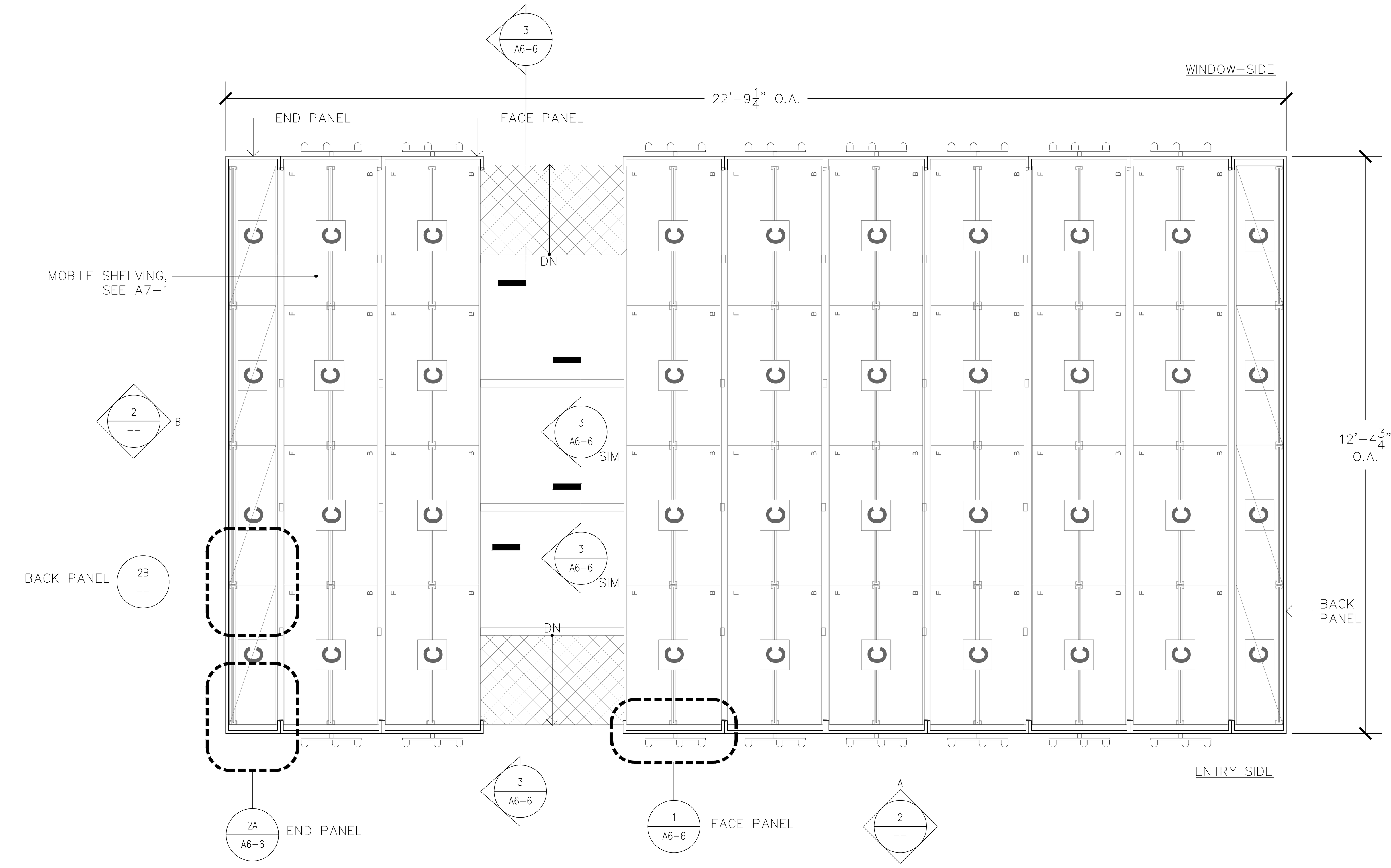
3 PARTIAL SECTION
STACKS MOBILE SHELVING
SCALE: 1/2"=1'-0"



2 ELEVATIONS
STACKS MOBILE SHELVING
SCALE: 1/2"=1'-0"



4 INTERIOR ELEVATION
METAL SHELVING
SCALE: 1/2"=1'-0"



1 PLAN
STACKS MOBILE SHELVING
SCALE: 1/2"=1'-0"

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DEVELOPMENT
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INC.

423 GIN LING WAY, LOS ANGELES CA 90012
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LICENSED ARCHITECT
RACHEL M ALLEN
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NO	ISSUE	DATE
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5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

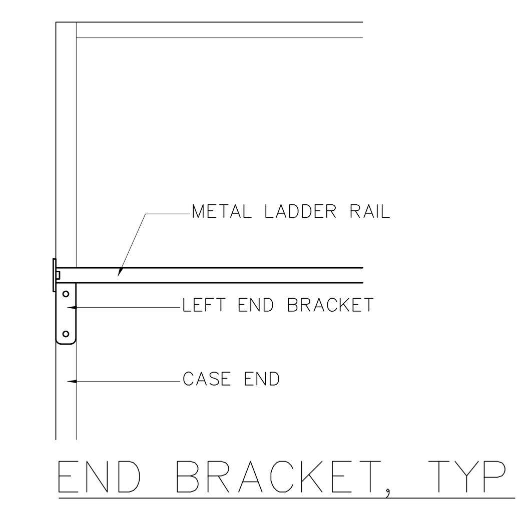
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

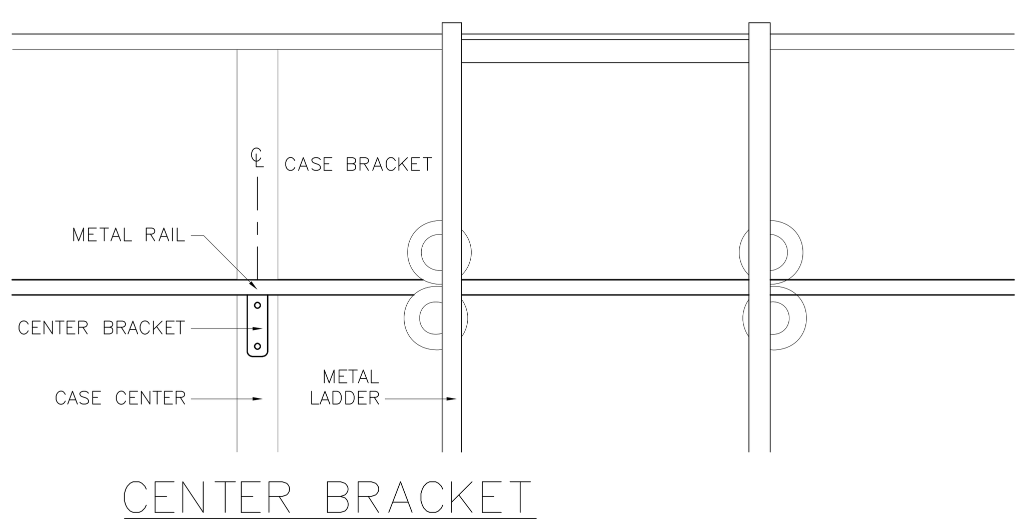
TITLE

SHELVING DETAILS 1 OF 2

PROJECT 1818
SCALE VARIES
DRAWN BY KC
DATE 09/26/19

SHEET NUMBER A6-5





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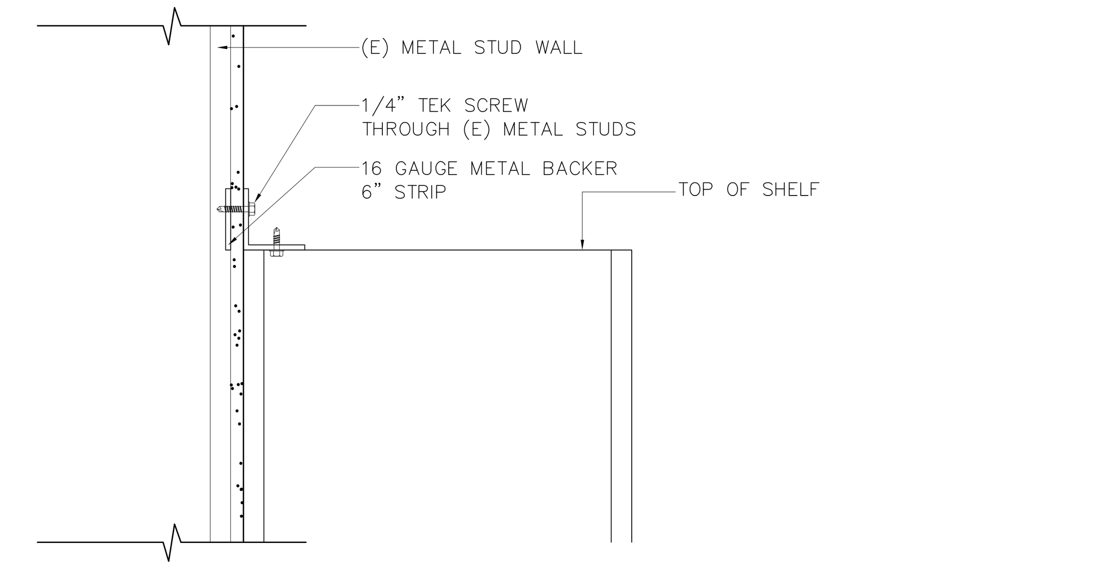
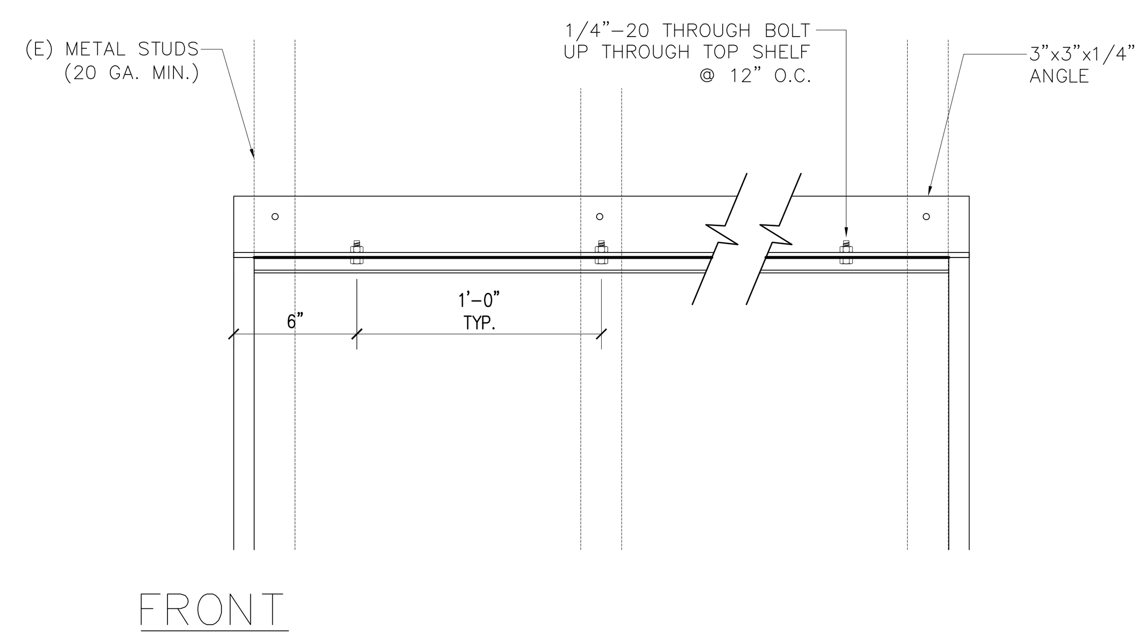
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

LADDER BRACKET
FIXED SHELVING
METRO LIBRARY RELOCATION
PROJECT NO. 1818 DATE: SCALE: 1-1/2" = 1'-0"
DETAIL NO. 7





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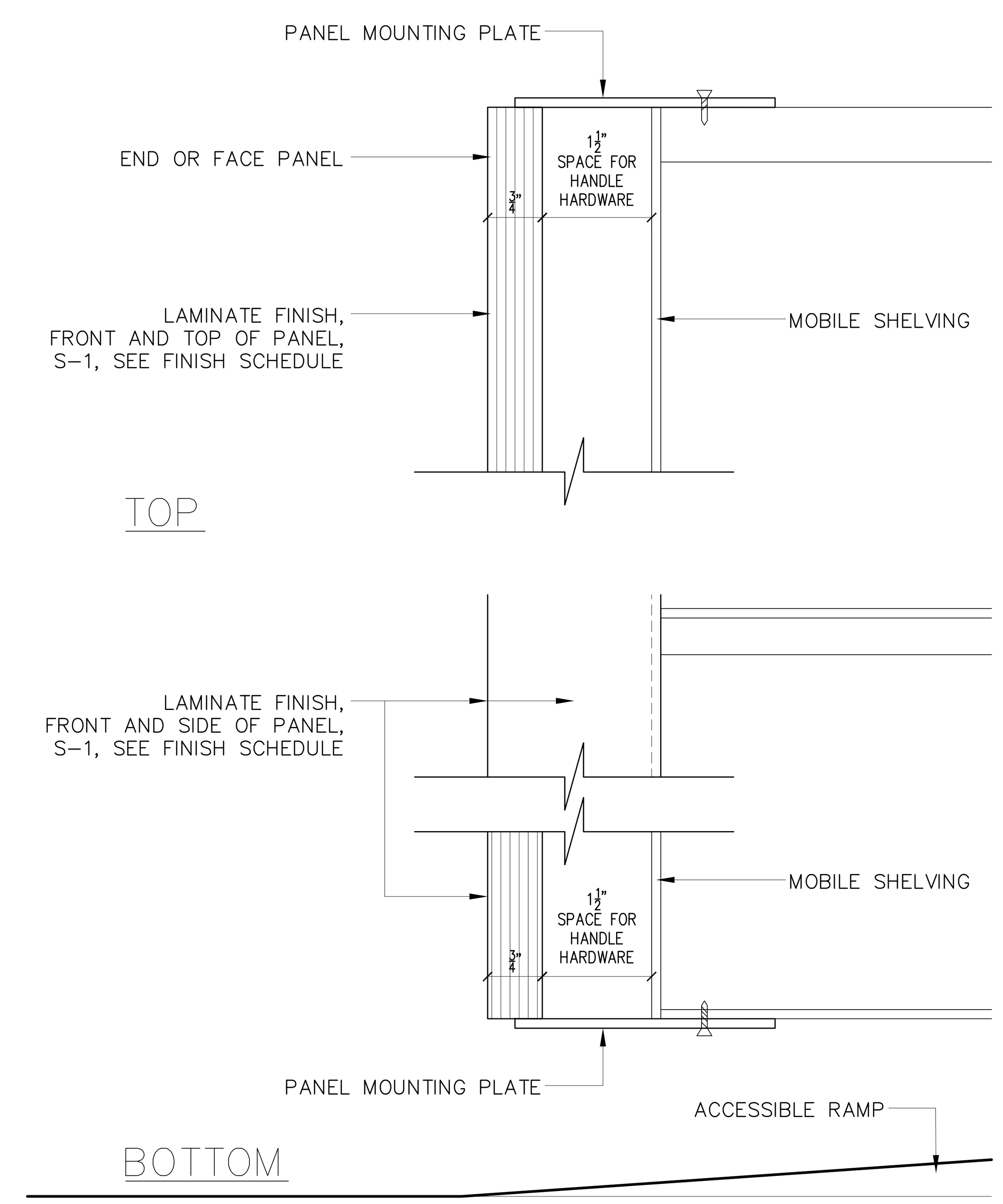
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

WALL ANCHOR
FIXED CASE SHELVING
METRO LIBRARY RELOCATION
PROJECT NO. 1818 DATE: SCALE: 1-1/2" = 1'-0"
DETAIL NO. 5



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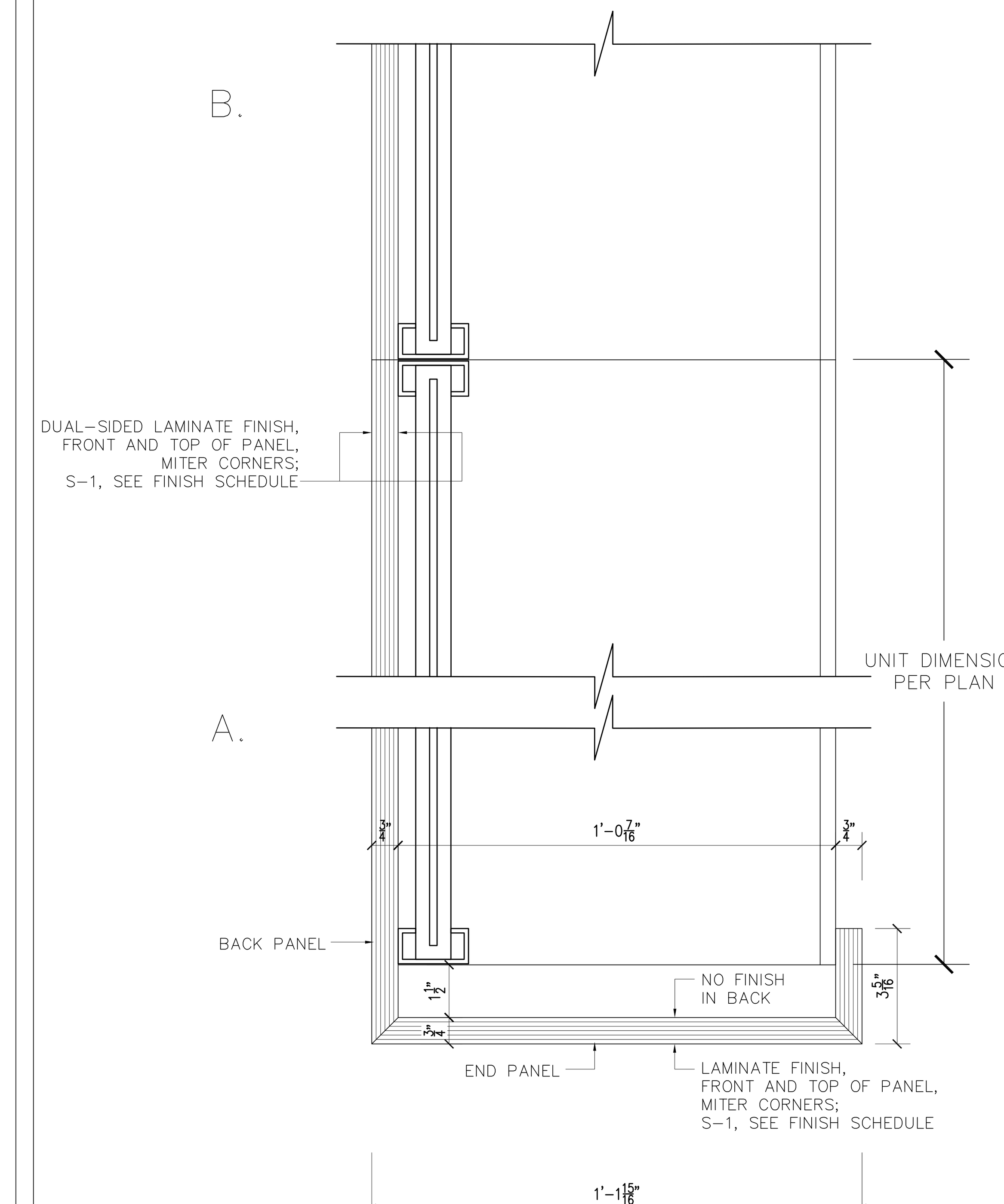
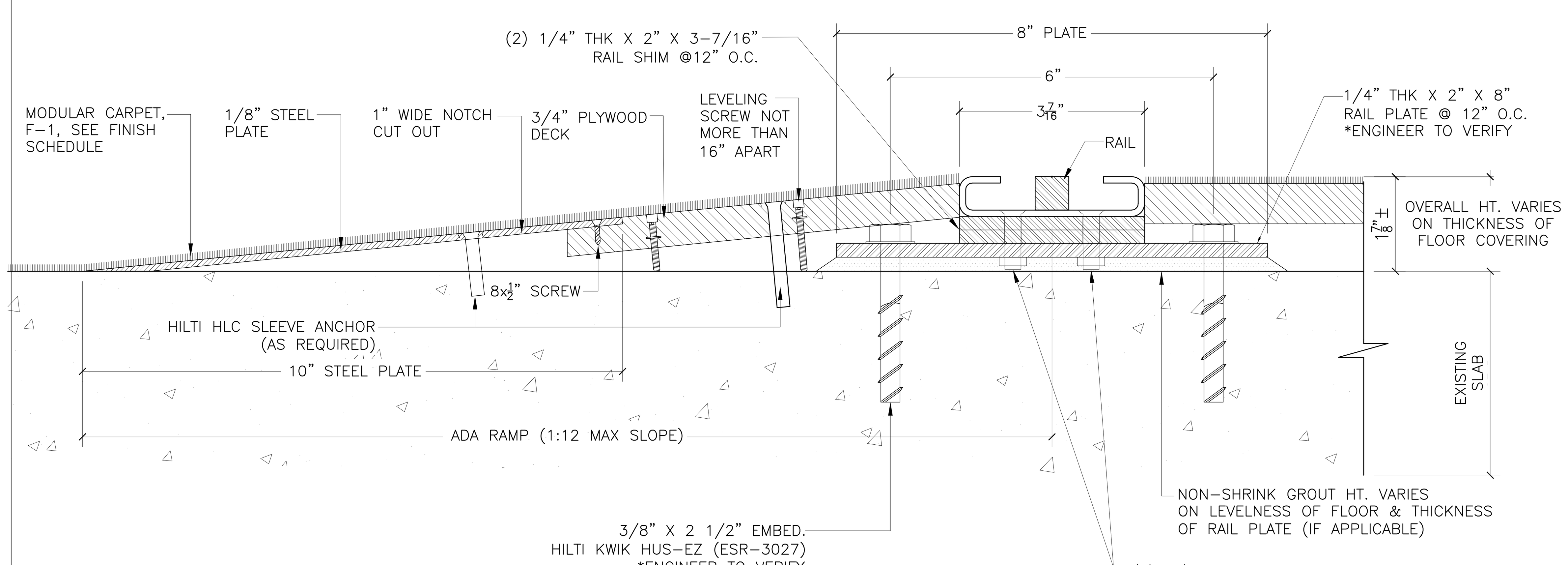
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

END PANEL MOUNTING
MOBILE SHELVING
METRO LIBRARY RELOCATION
PROJECT NO. 1818 DATE: SCALE: 6" = 1'-0"
DETAIL NO. 4



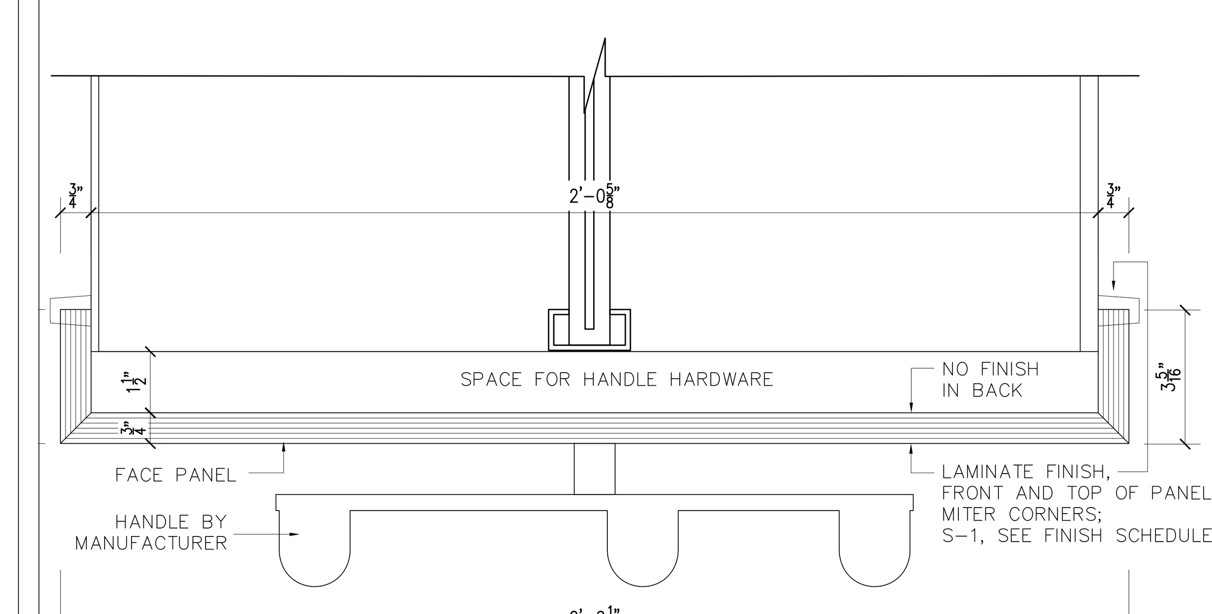
RADAR
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

END PANEL
MOBILE SHELVING
METRO LIBRARY RELOCATION
PROJECT NO. 1818 DATE: SCALE: 3" = 1'-0"
DETAIL NO. 2



RADAR
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

ACCESSIBLE RAMP/RAIL
MOBILE SHELVING
METRO LIBRARY RELOCATION
PROJECT NO. 1818 DATE: SCALE: 3" = 1'-0"
DETAIL NO. 3



RADAR
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH, INC.
423 GIN LING WAY
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

FACE PANEL WITH HANDLE
MOBILE SHELVING
METRO LIBRARY RELOCATION
PROJECT NO. 1818 DATE: SCALE: 3" = 1'-0"
DETAIL NO. 1

((RADAR))

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RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTUCTION DOCS	9/26/19

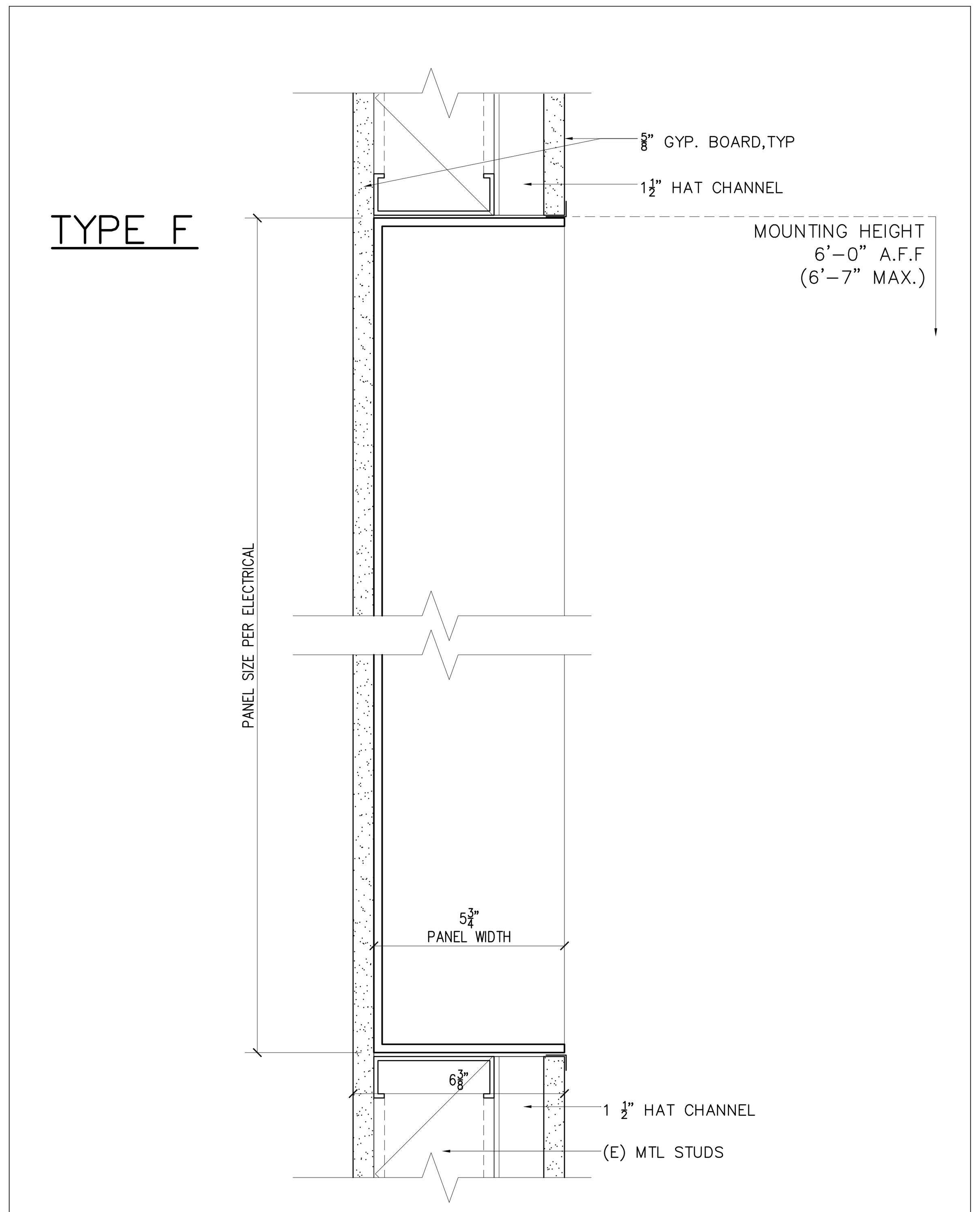
Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

SHELVING DETAILS 2 OF 2

PROJECT 1818
SCALE VARIES
DRAWN BY KC
DATE 09/26/19
SHEET NUMBER A6-6



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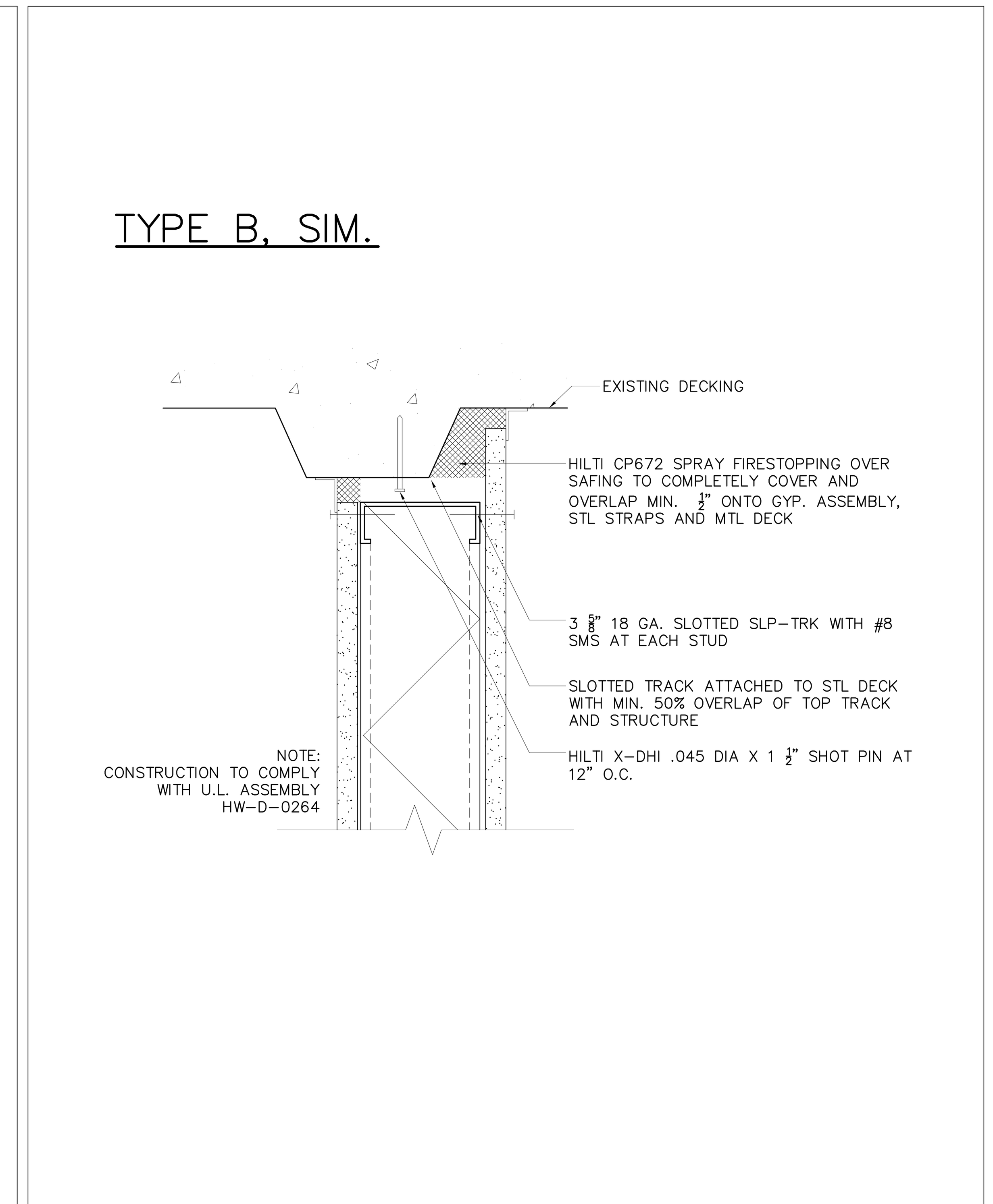
LOS ANGELES, CA 90012
T. 213.617.0075 F. 213.617.0077

FURRING FOR PANEL NICHE
INTERIOR WALL

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 6



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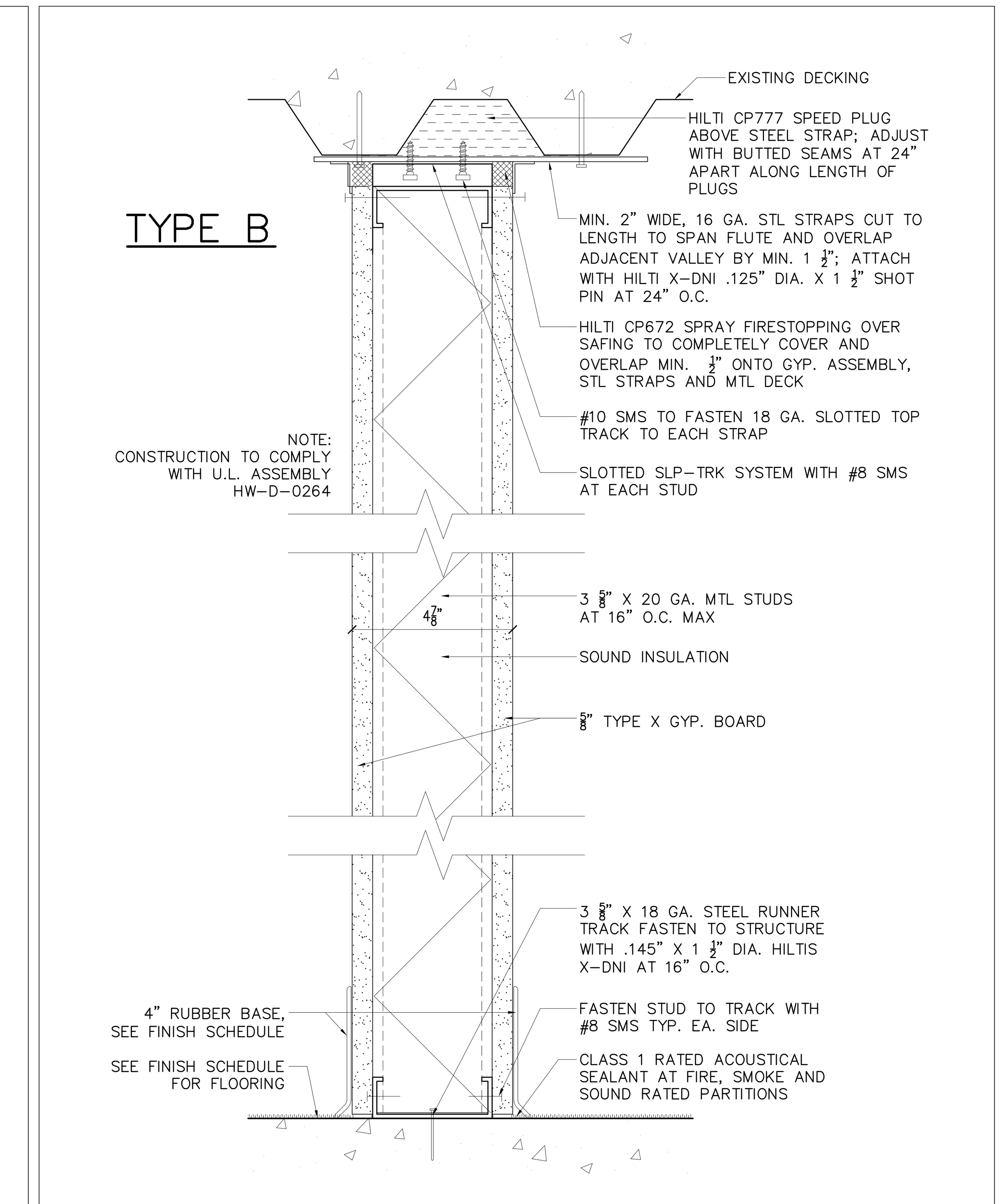
1-HR RATED / ALT FLUTE
INTERIOR WALL TO MTL DECK

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 4



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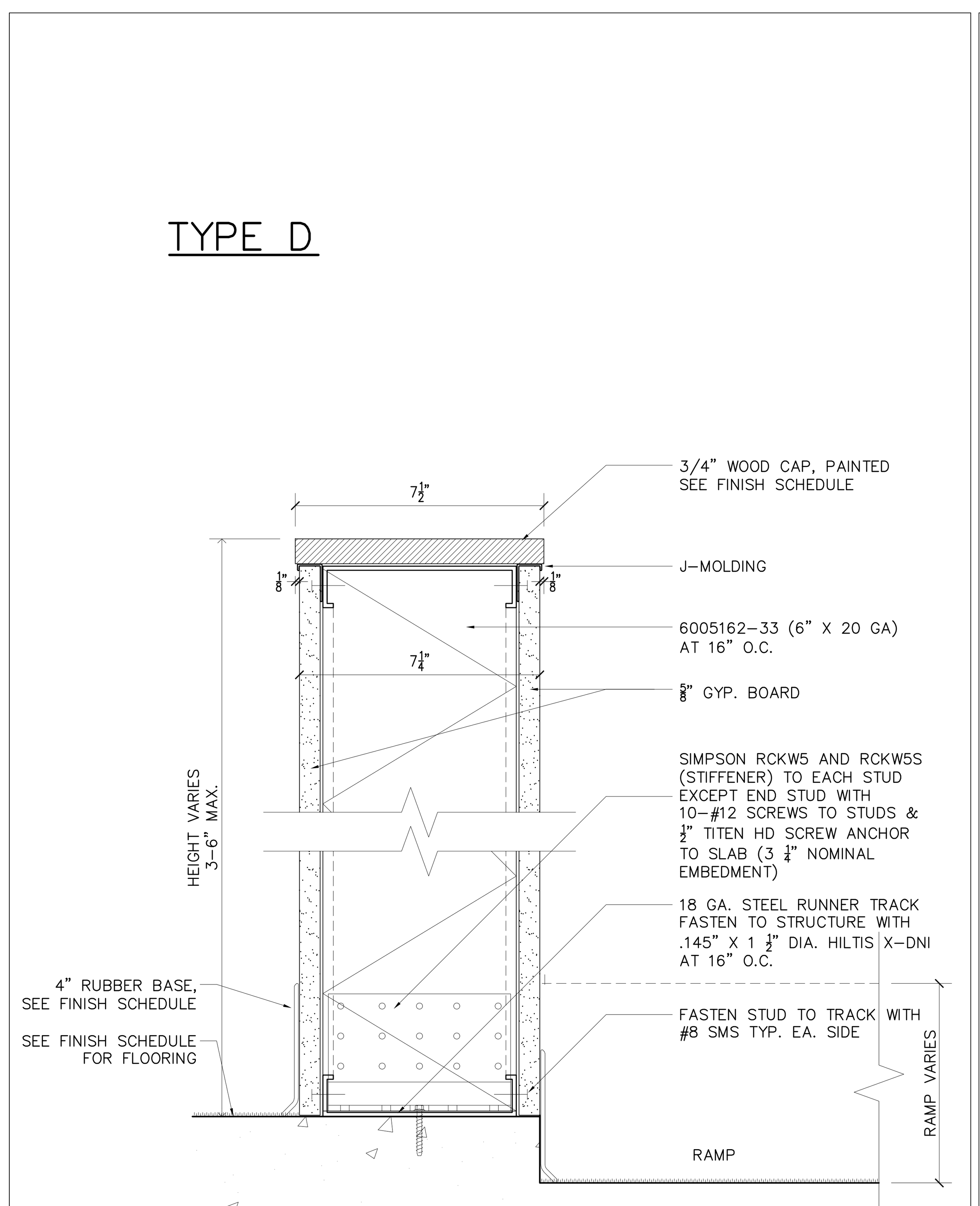
1-HR RATED
INTERIOR WALL TO MTL DECK

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 2



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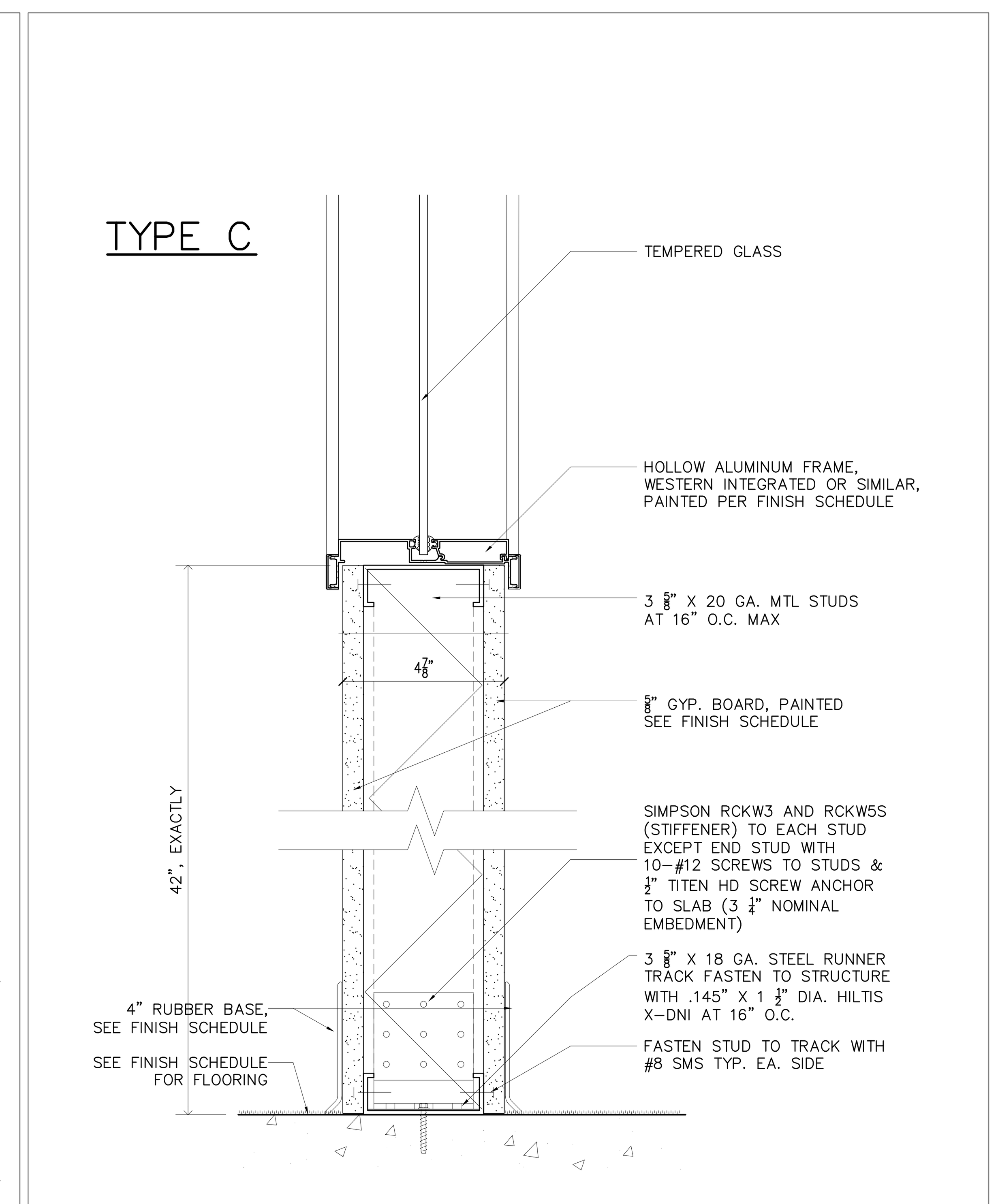
LOW WALL AT RAMP
INTERIOR WALL

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 5



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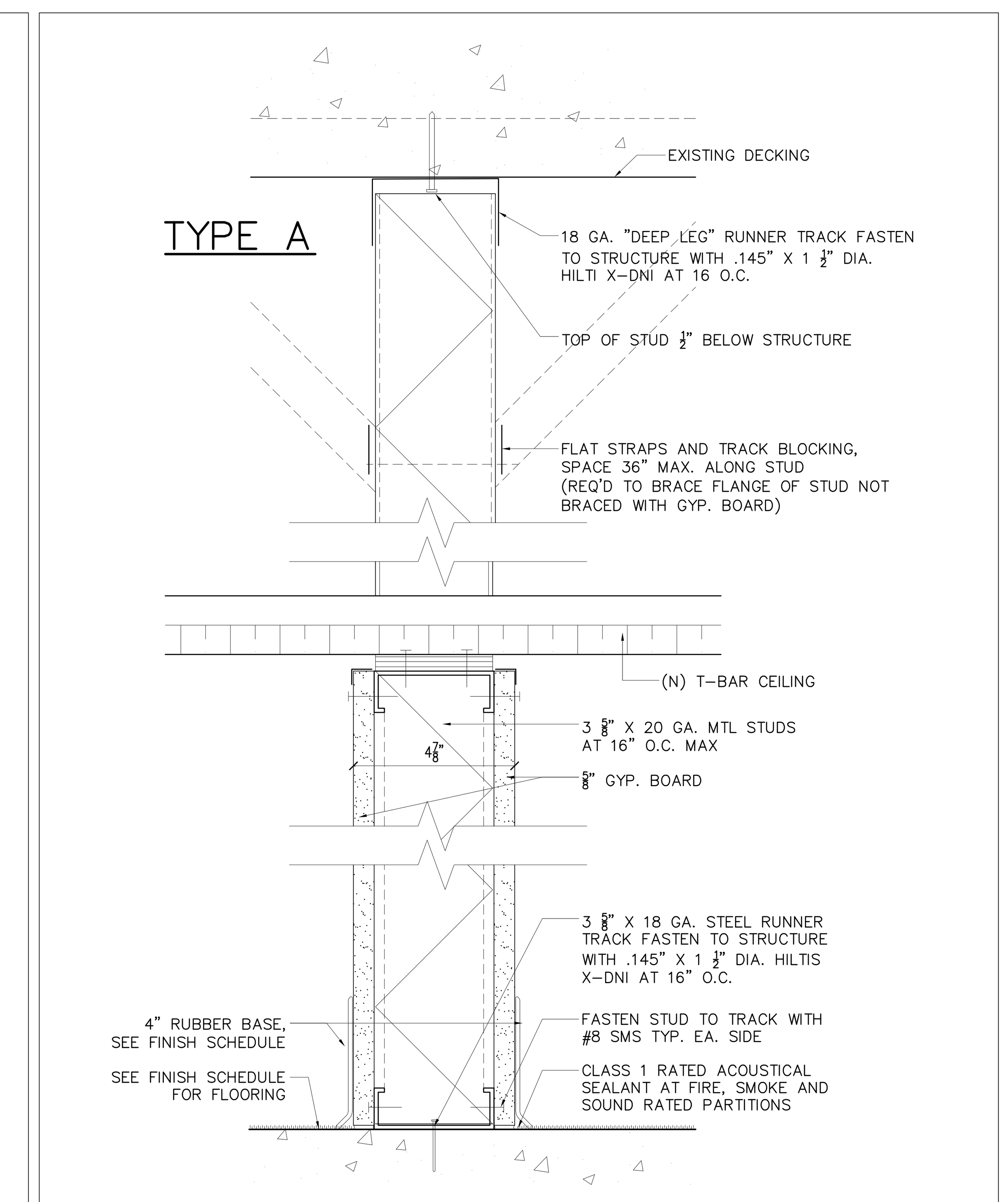
WINDOW SILL / LOW WALL
INTERIOR WALL

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 3



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NON-RATED
INTERIOR WALL TO MTL DECK

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 1

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
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Metro Transportation Library Relocation

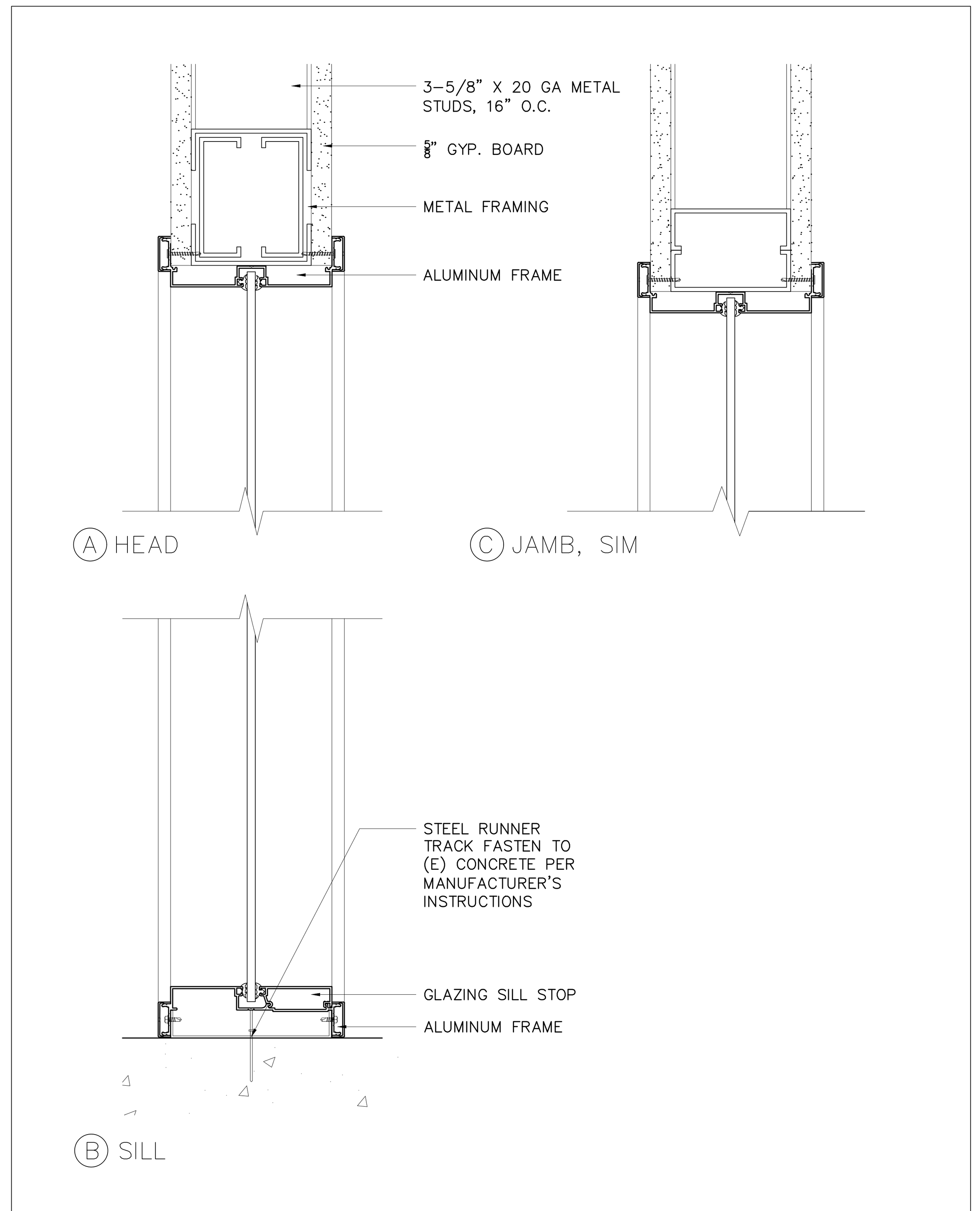
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

WALL TYPES

PROJECT
1818
SCALE
3" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A6-7



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LOS ANGELES, CA 90012
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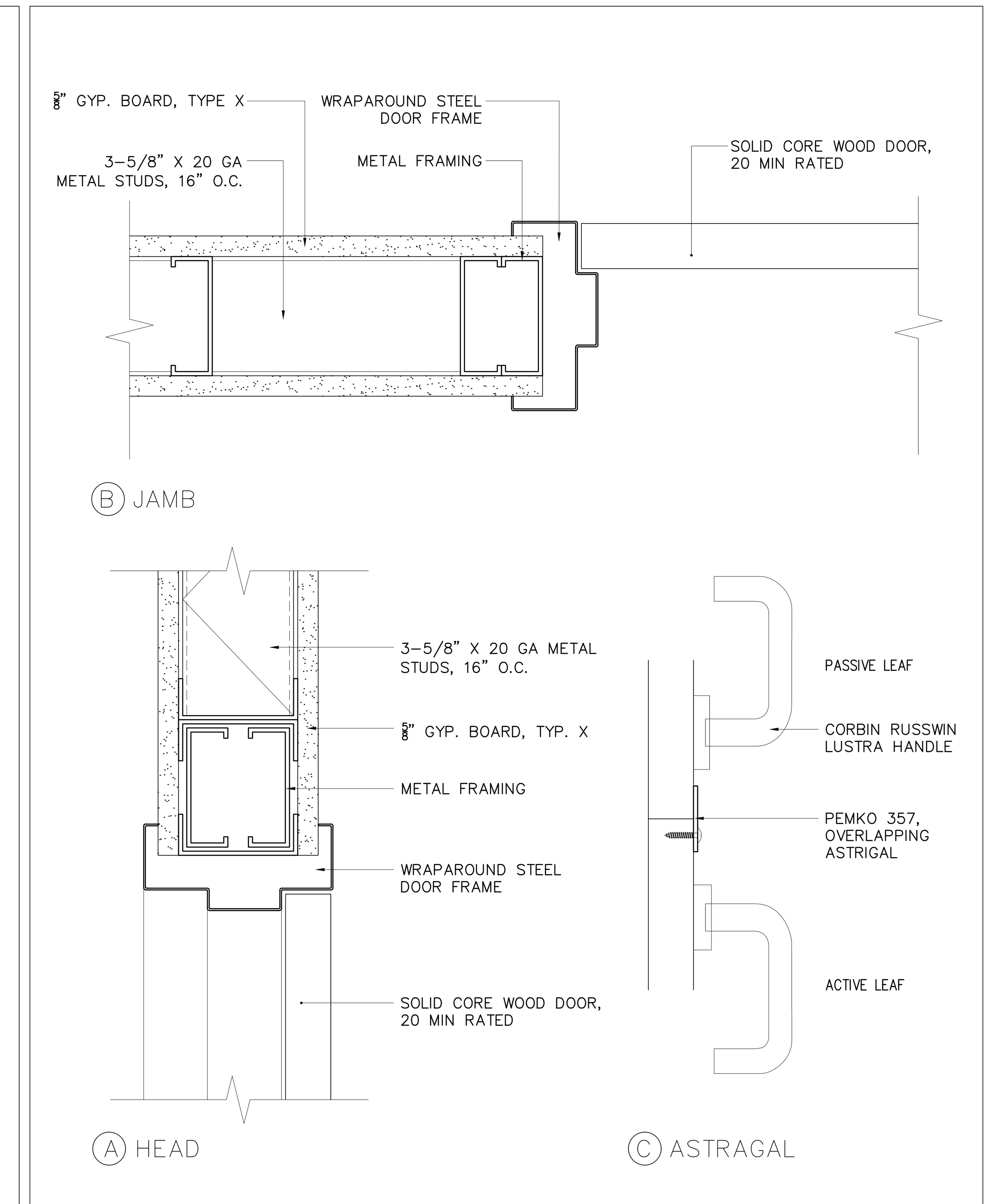
FIXED ALUM WINDOW TO FLR INTERIOR WALL

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 6



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LOS ANGELES, CA 90012
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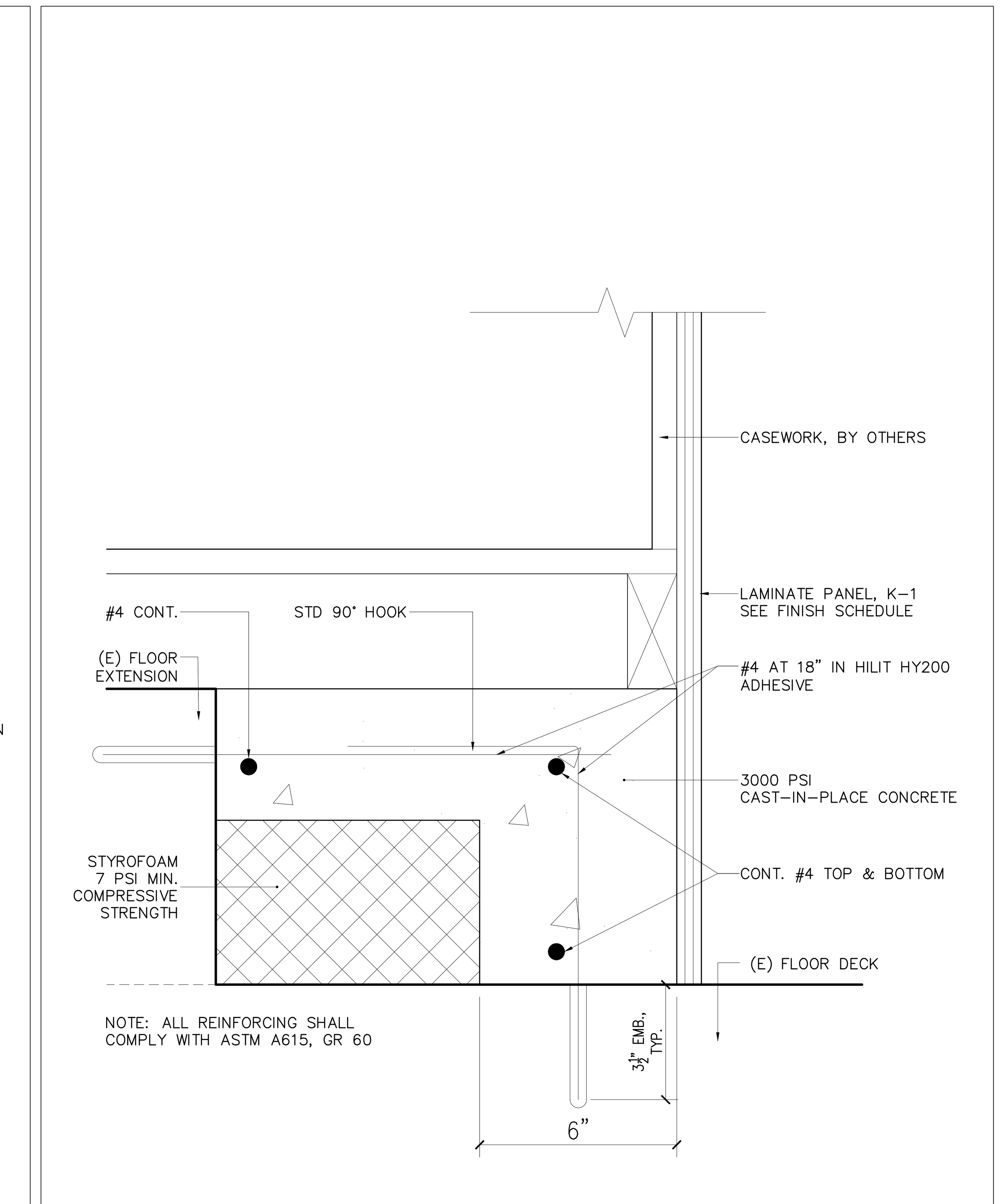
RATED DOOR

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 4



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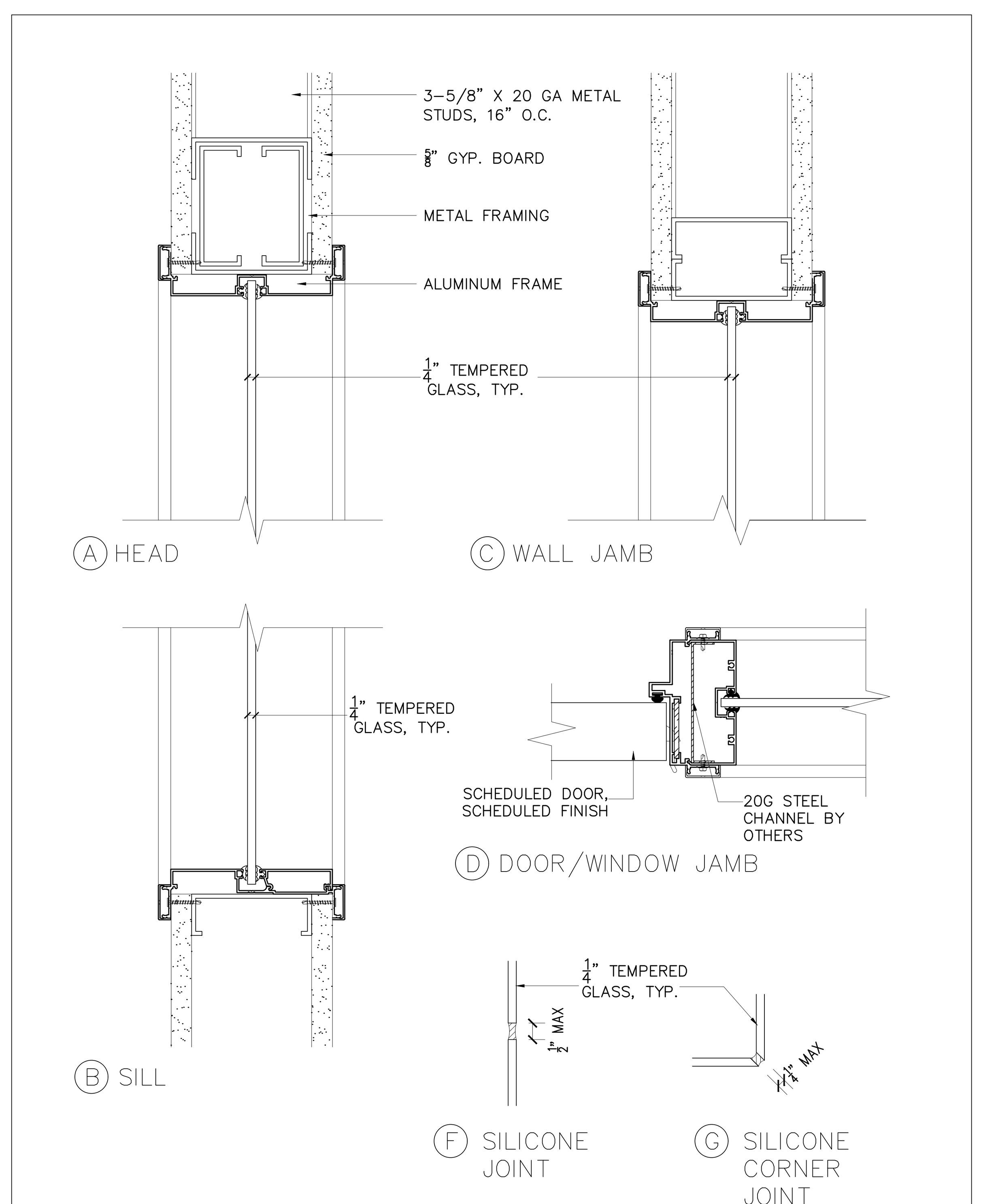
(N) FLOOR EXTENSION INTERIOR DETAIL

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 2



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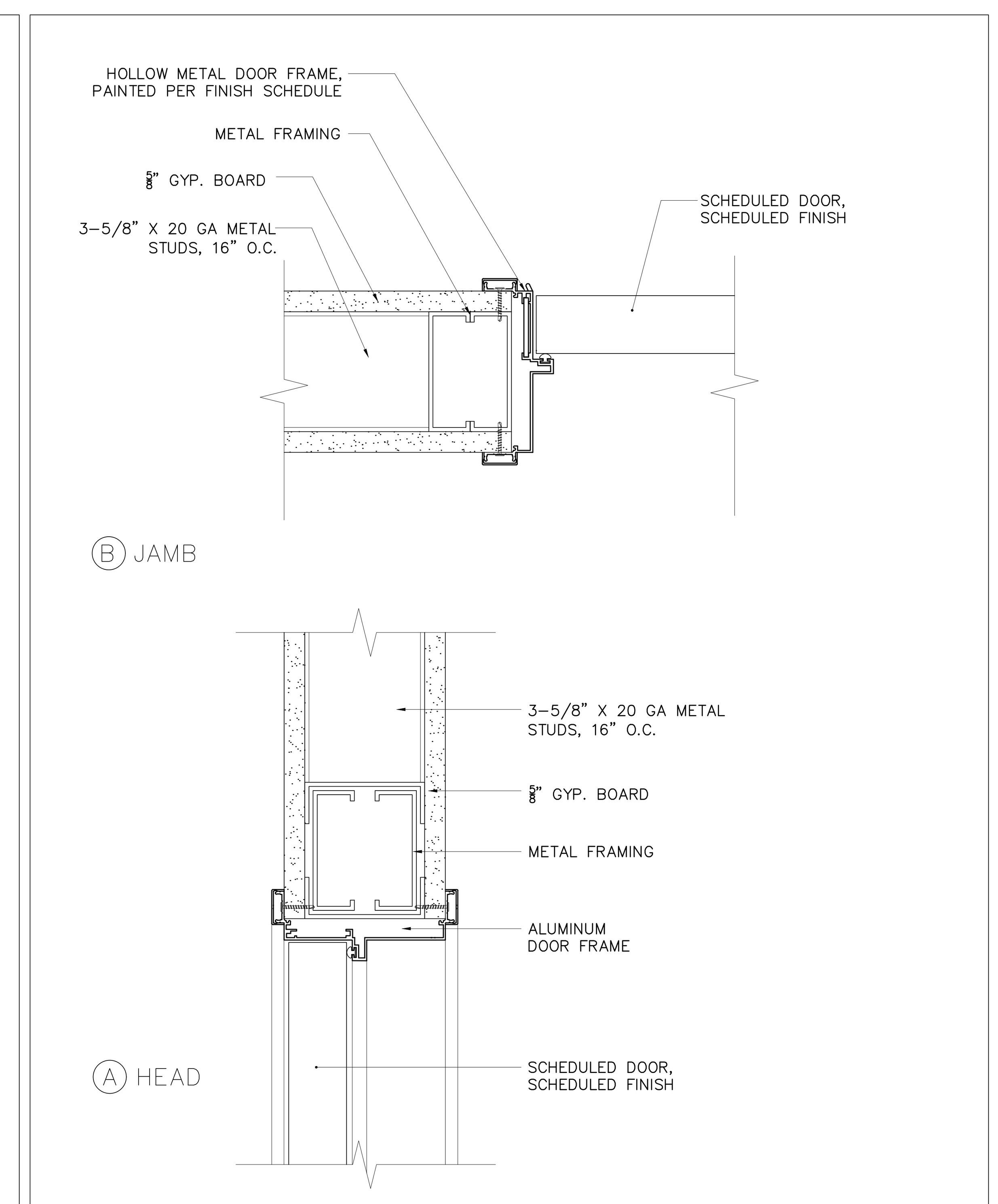
FIXED ALUM WINDOW TO SILL INTERIOR WALL

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 5



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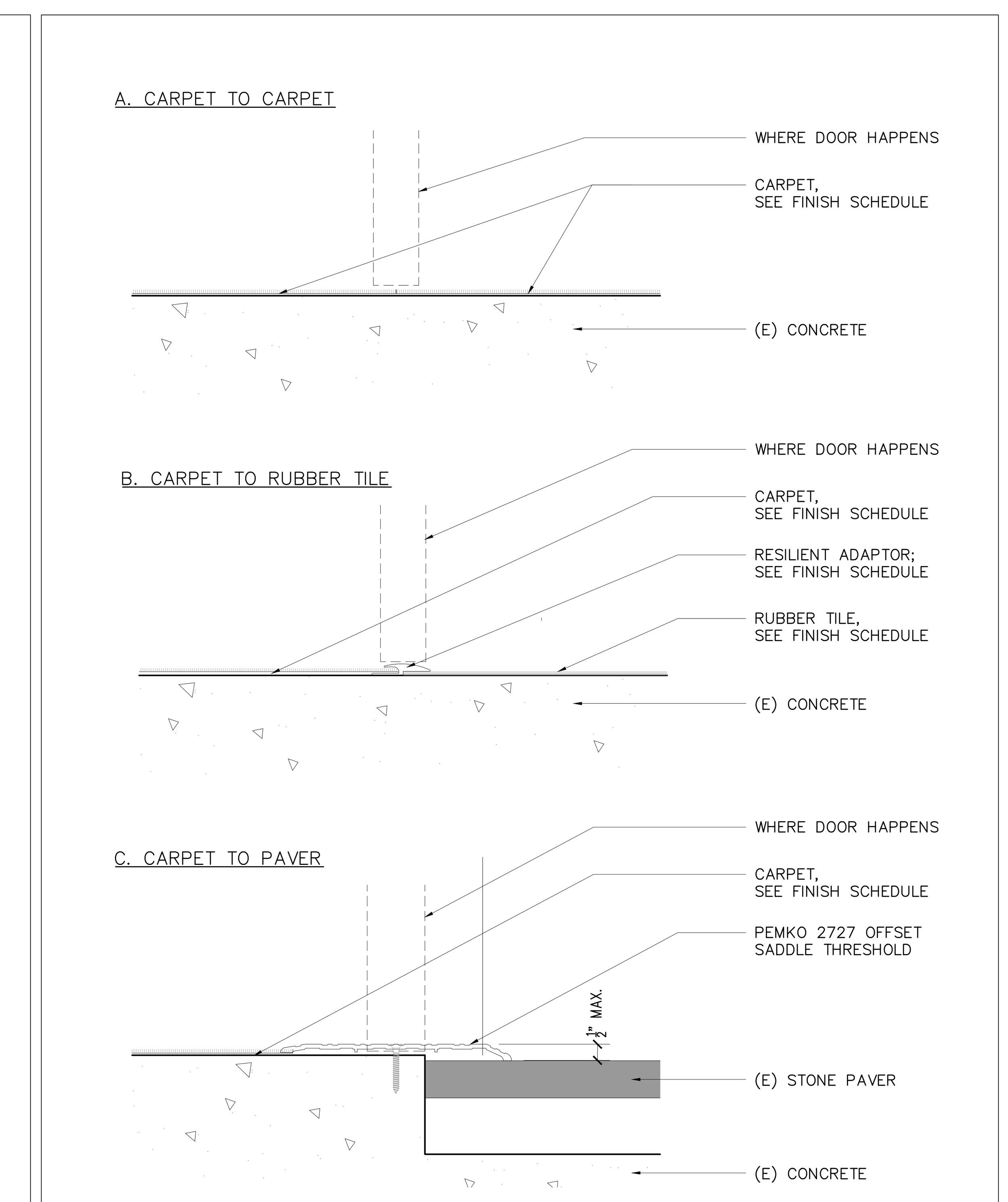
NON-RATED DOOR

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 3



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THRESHOLD DETAILS

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO. 1

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RACHEL
ALLEN
DEVELOPMENT
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RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
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Metro Transportation Library Relocation

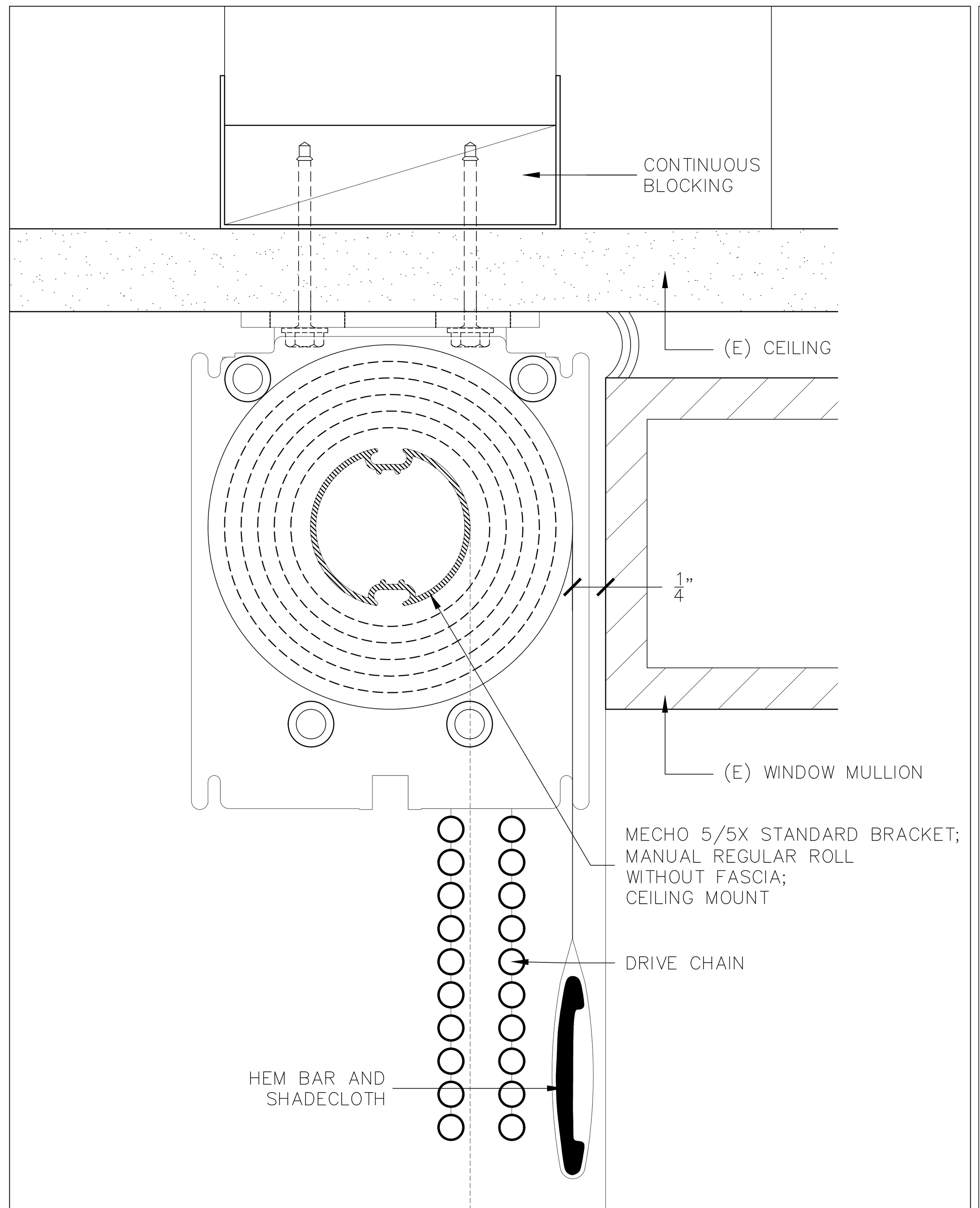
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

DOOR & WINDOW; FLOOR EXTENSION; THRESHOLD DETAILS

PROJECT
1818
SCALE
3" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A6-8



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LOS ANGELES, CA 90012
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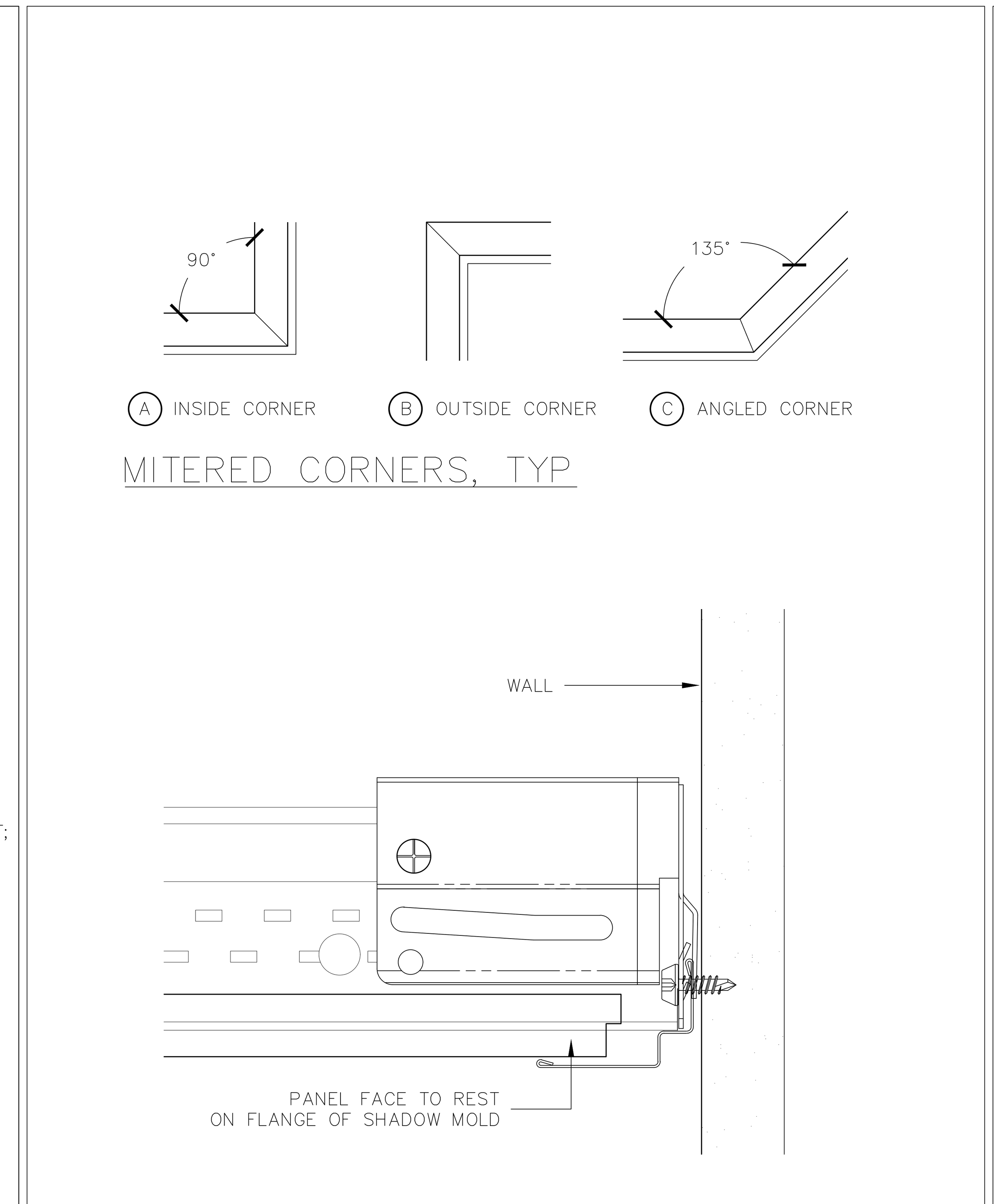
MANUAL ROLLER SHADE CEILING DETAILS

PROJECT NO. 1818 DATE: SCALE: 1'-0"= 1'-0"

DETAIL NO. 6



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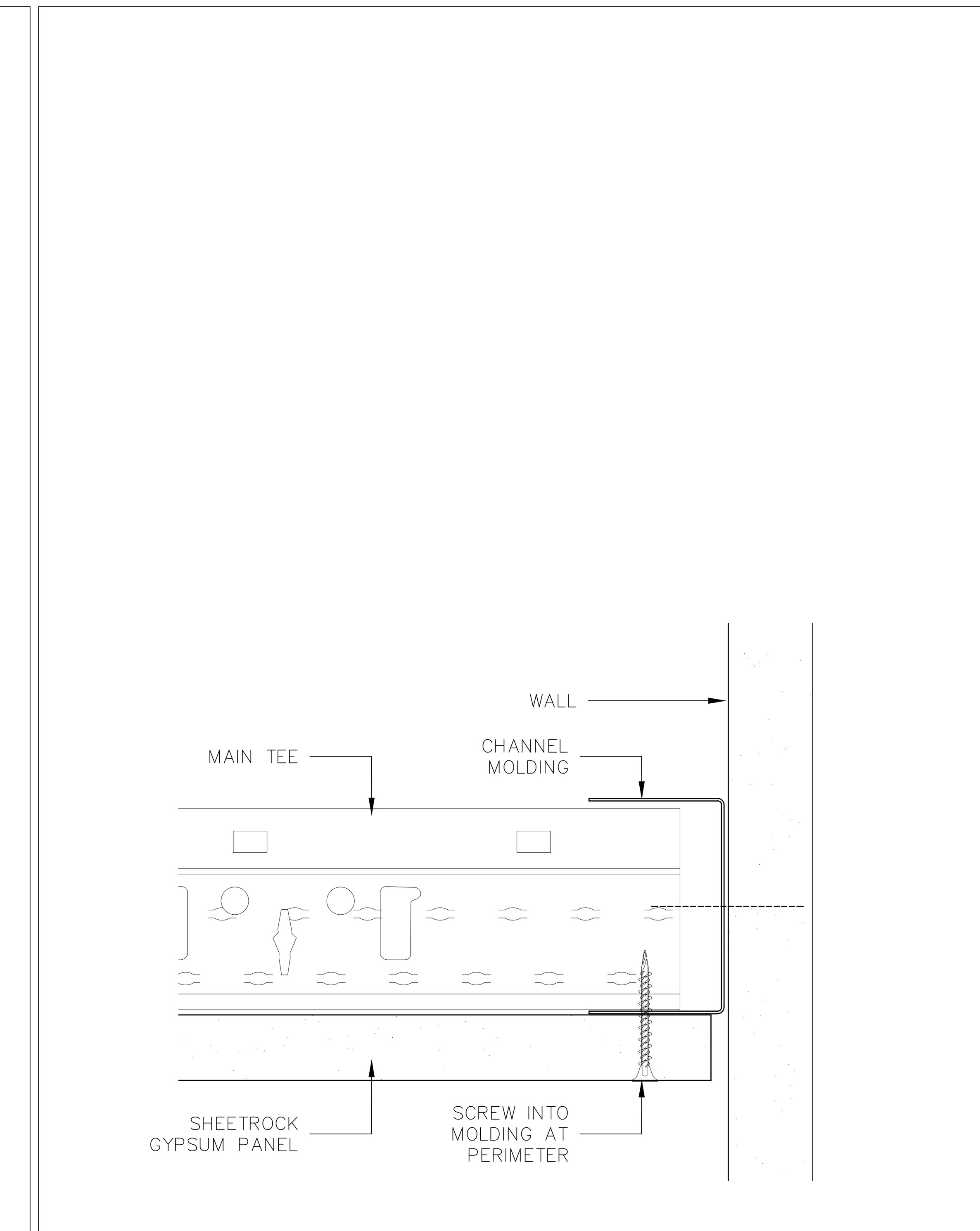
SHADOW MOLDING FLANGE CEILING DETAILS

PROJECT NO. 1818 DATE: SCALE: VARIES

DETAIL NO. 4



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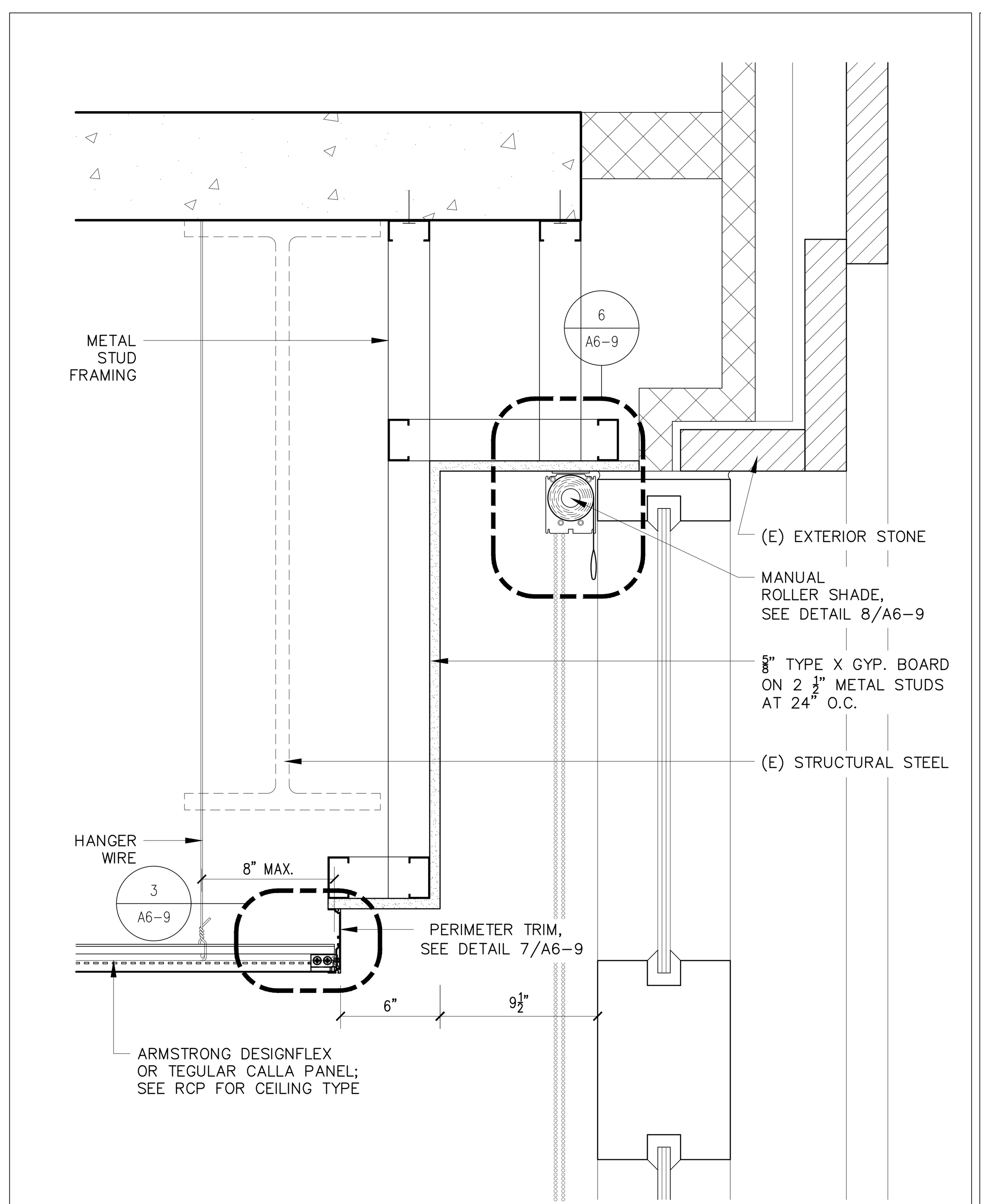
PERIMETER DETAIL CHANNEL MOLDING

PROJECT NO. 1818 DATE: SCALE: 1'-0"=1'-0"

DETAIL NO. 2



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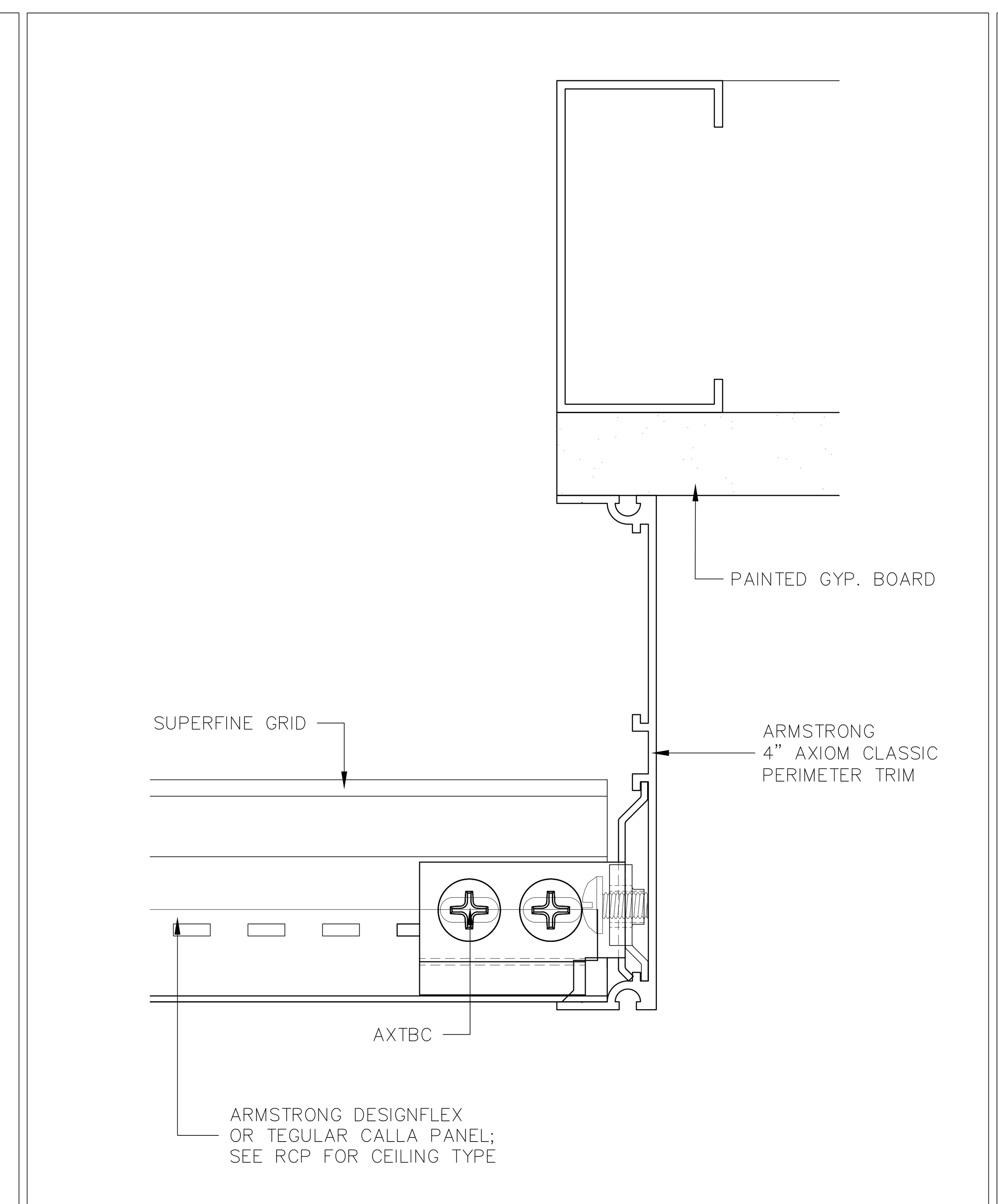
FLOAT EDGE AT WINDOW CEILING DETAIL

PROJECT NO. DATE: SCALE: 1 1/2"=1'-0"

DETAIL NO. 5



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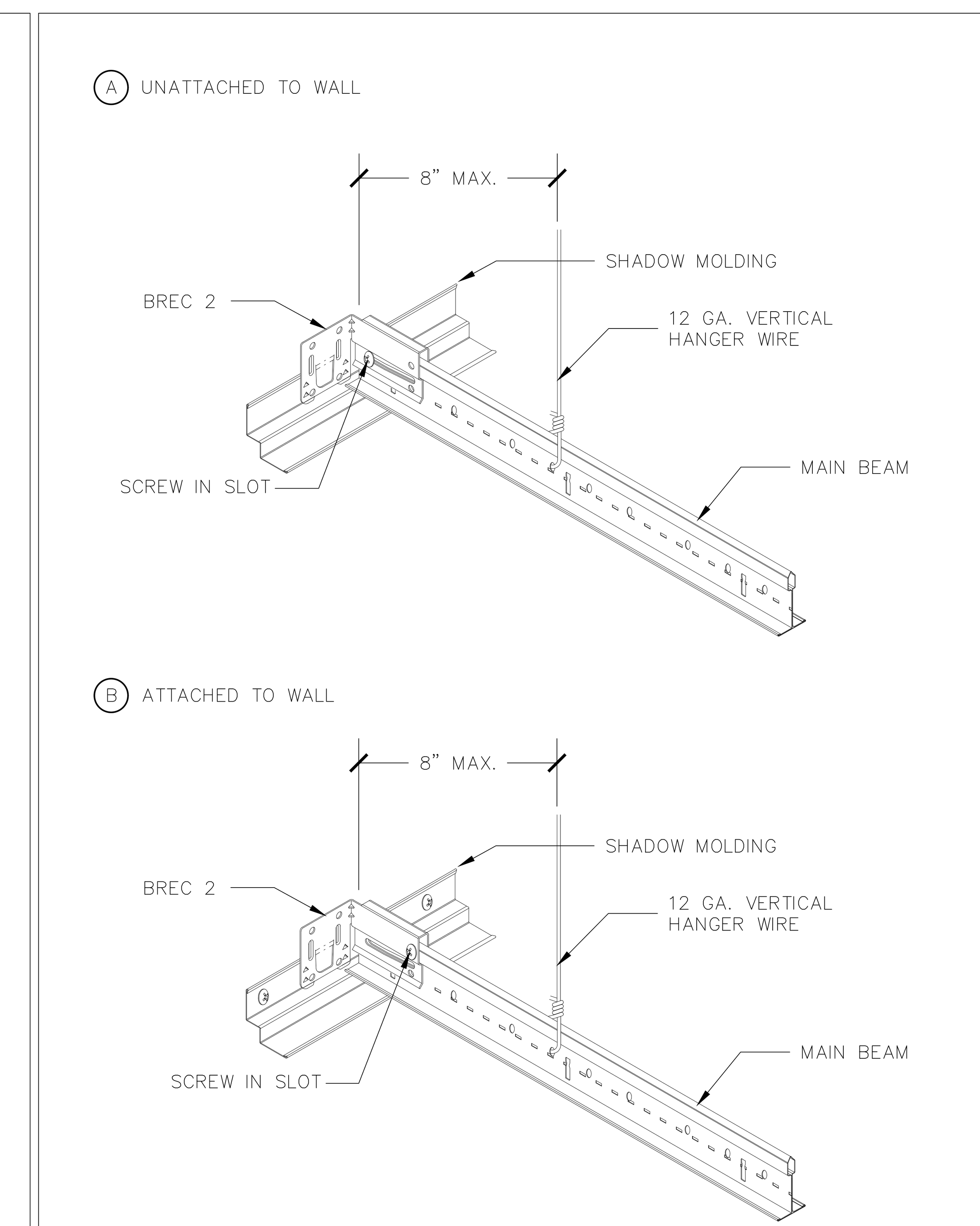
4" FLOAT EDGE CEILING DETAIL

PROJECT NO. 1818 DATE: SCALE: 1'-0"= 1'-0"

DETAIL NO. 3



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SHADOW MOLDING CEILING DETAILS

PROJECT NO. 1818 DATE: SCALE: NTS

DETAIL NO. 1

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213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

NO	ISSUE	DATE
4	60% CONSTRUCTION DOCS	6/20/19
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Metro Transportation Library Relocation

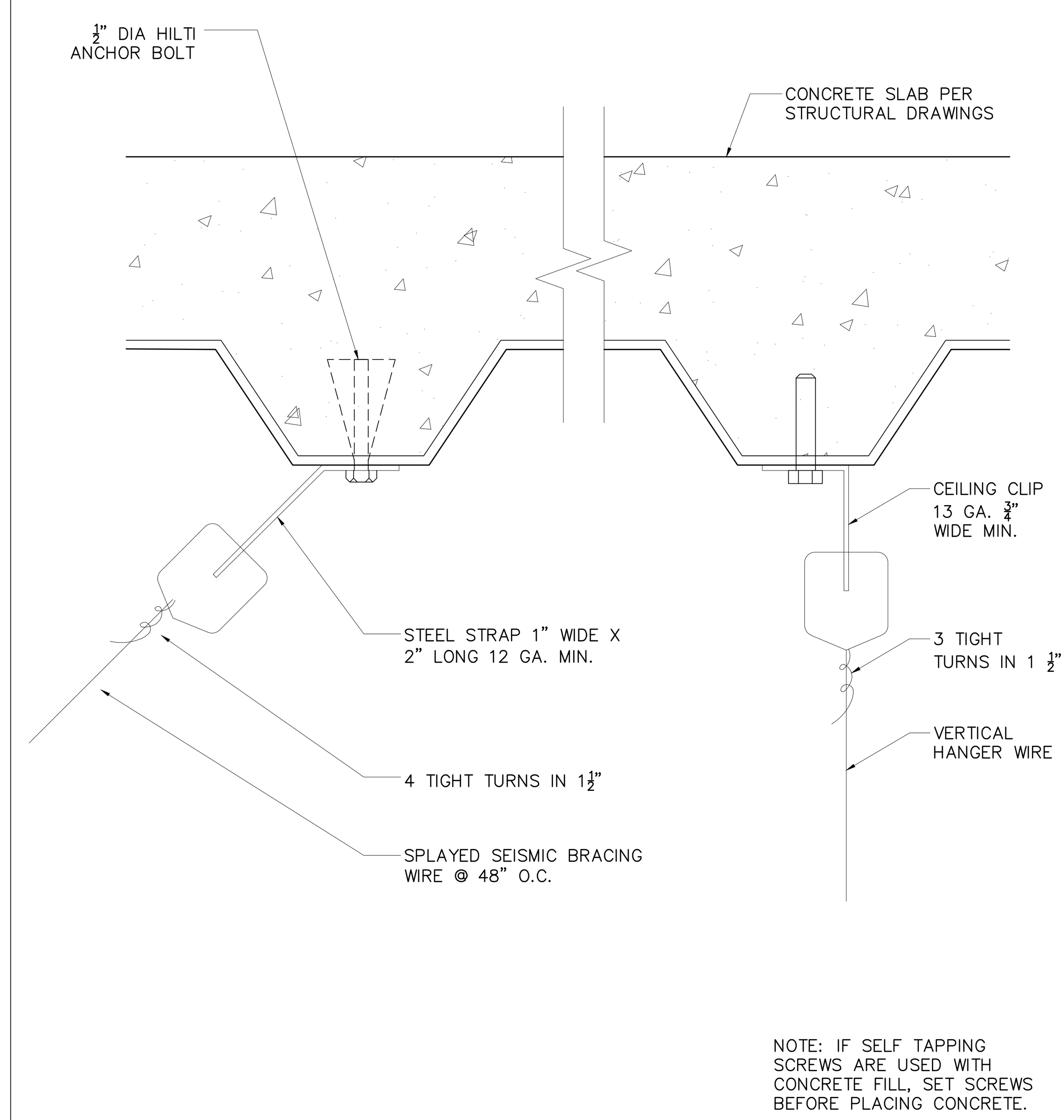
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

CEILING DETAILS 1 OF 3

PROJECT
1818
SCALE
VARIES
DRAWN BY
ZH
DATE
09/26/19

SHEET NUMBER
A6-9



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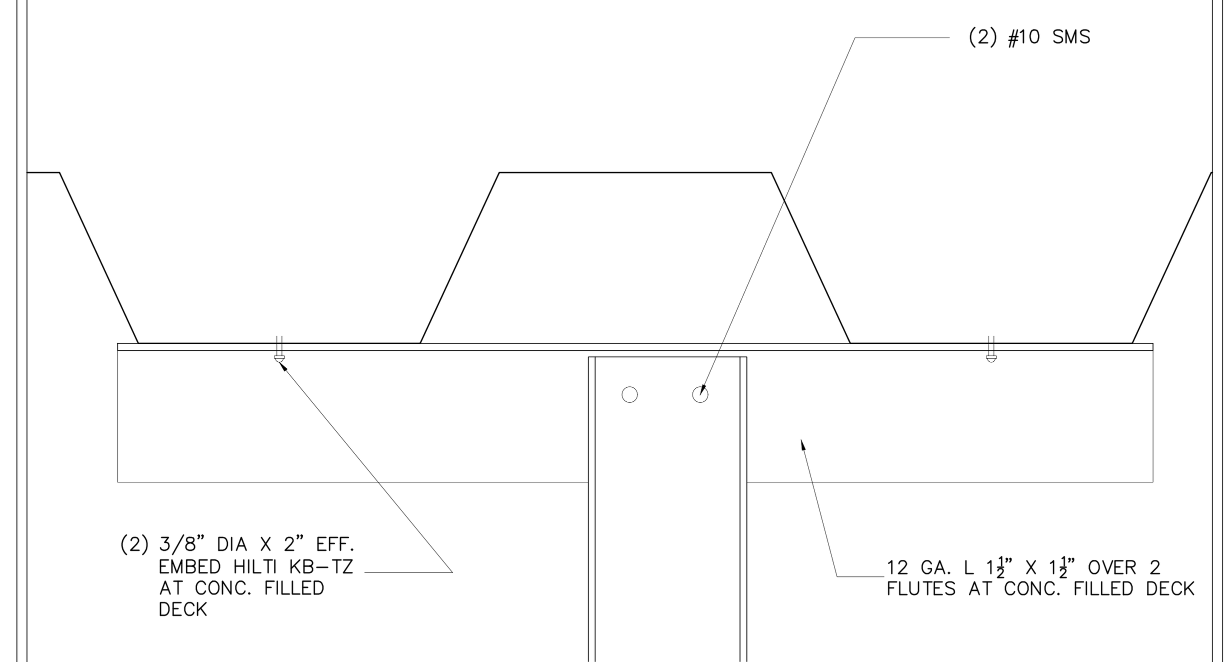
SEISMIC AHCHORAGE
PROJECT NO. DATE: SCALE: 3"=1'-0"
DETAIL NO. 5



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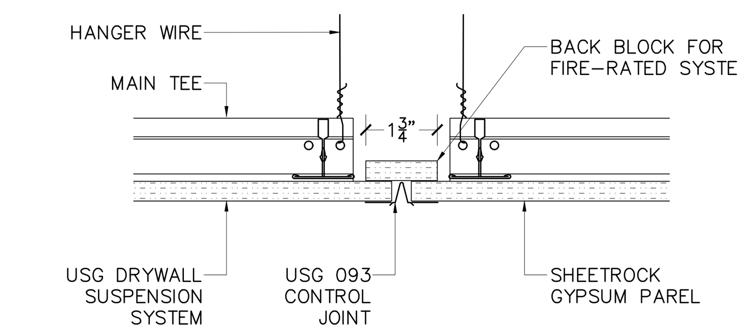
STRUT CONNECTION
CEILING TO METAL DECK
PROJECT NO. DATE: SCALE: 3"=1'-0"
DETAIL NO. 3



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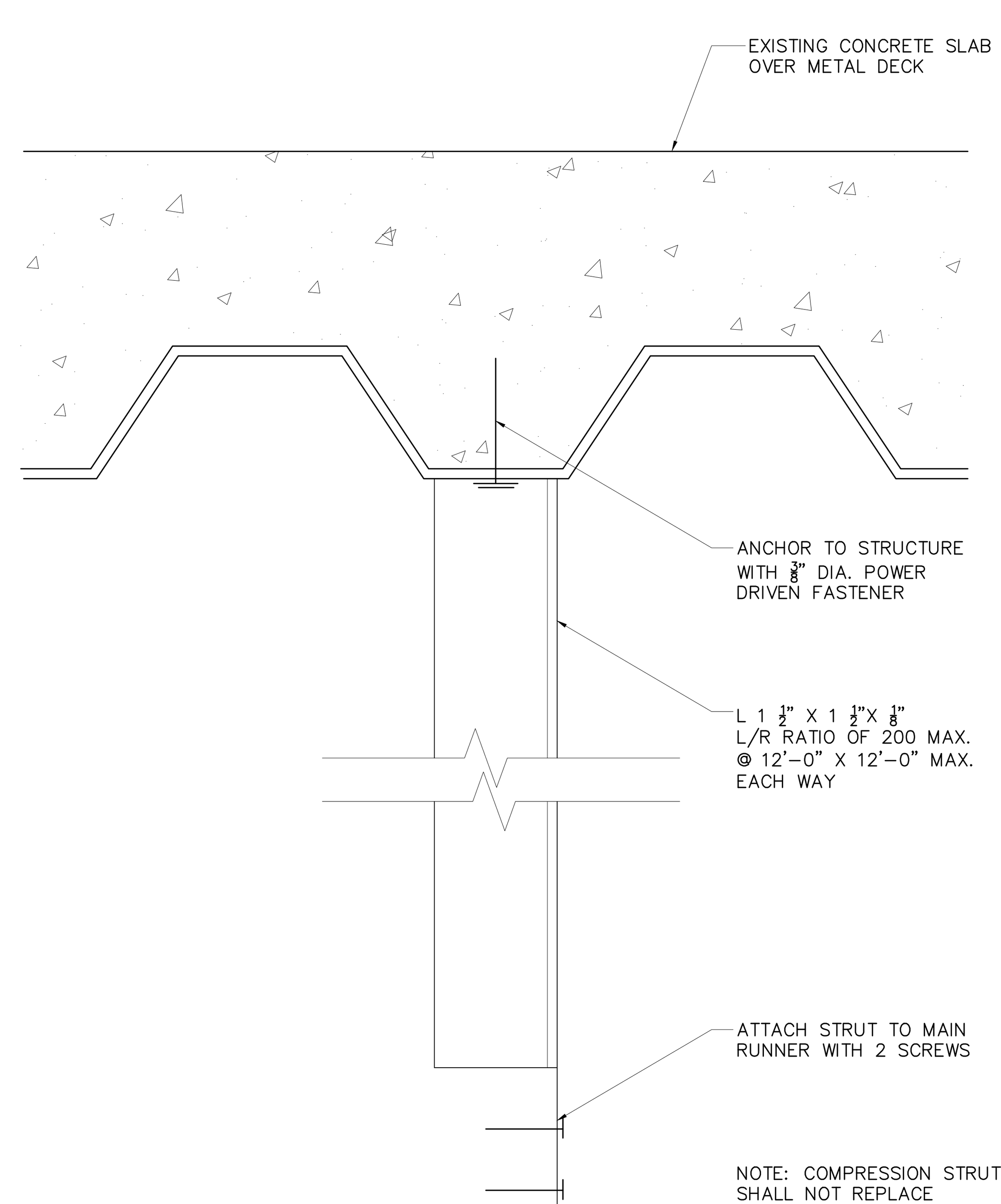
TYP. CONTROL JOINT
FIRE-RATED SYSTEM
PROJECT NO. DATE: SCALE: 3"=1'-0"
DETAIL NO. 2



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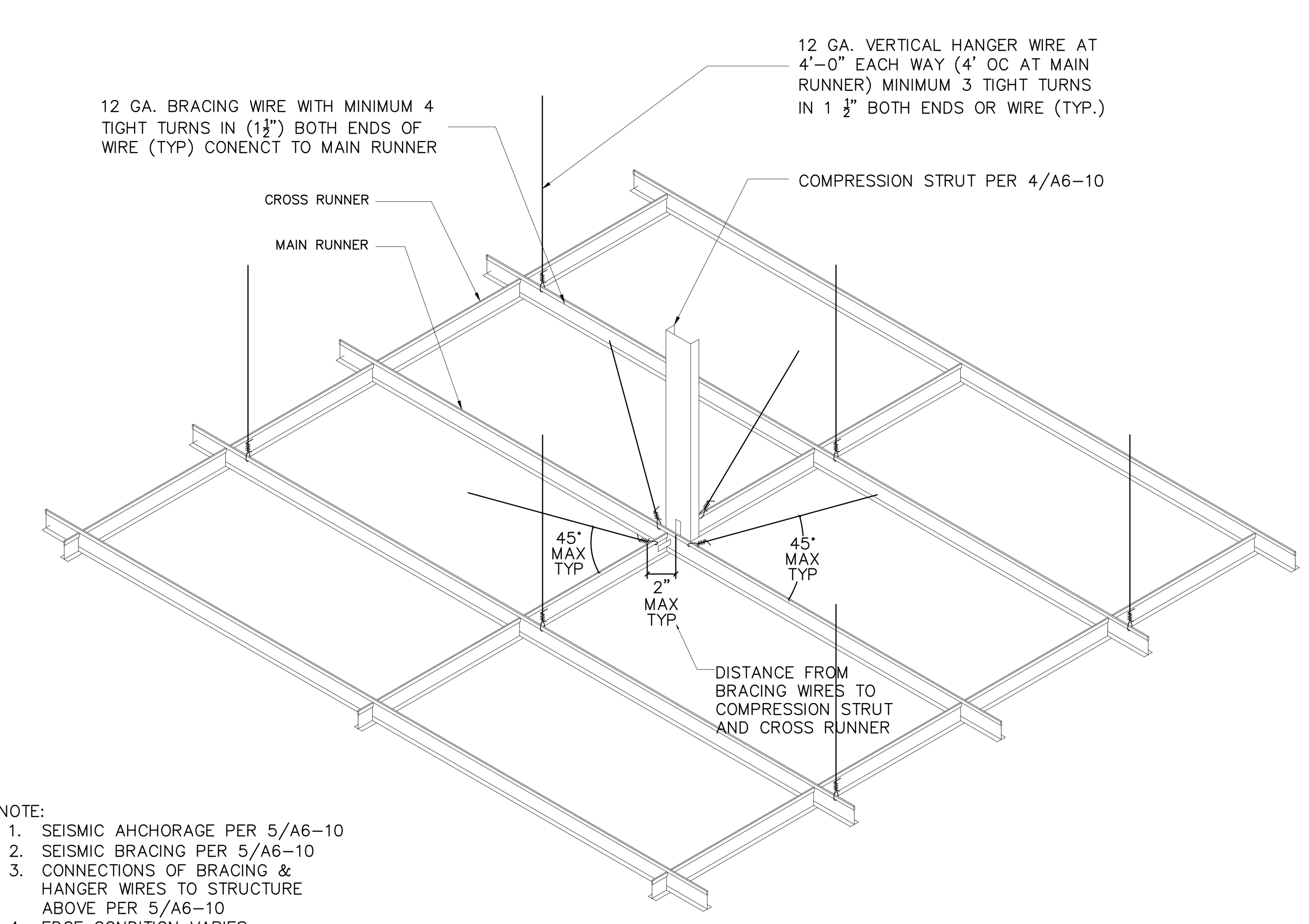
COMPRESSION STRUT
CONNECTION
PROJECT NO. DATE: SCALE: 3"=1'-0"
DETAIL NO. 4



NOTE:
1. SEISMIC AHCHORAGE PER 5/A6-10
2. SEISMIC BRACING PER 5/A6-10
3. CONNECTIONS OF BRACING & HANGER WIRES TO STRUCTURE ABOVE PER 5/A6-10
4. EDGE CONDITION VARIES

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BRACING WIRE CONNECTIONS
METRO LIBRARY RELOCATION
PROJECT NO. 0000 DATE: SCALE: 1-1/2"=1'-0"
DETAIL NO. 1

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213.617.0075
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Metro Transportation Library Relocation

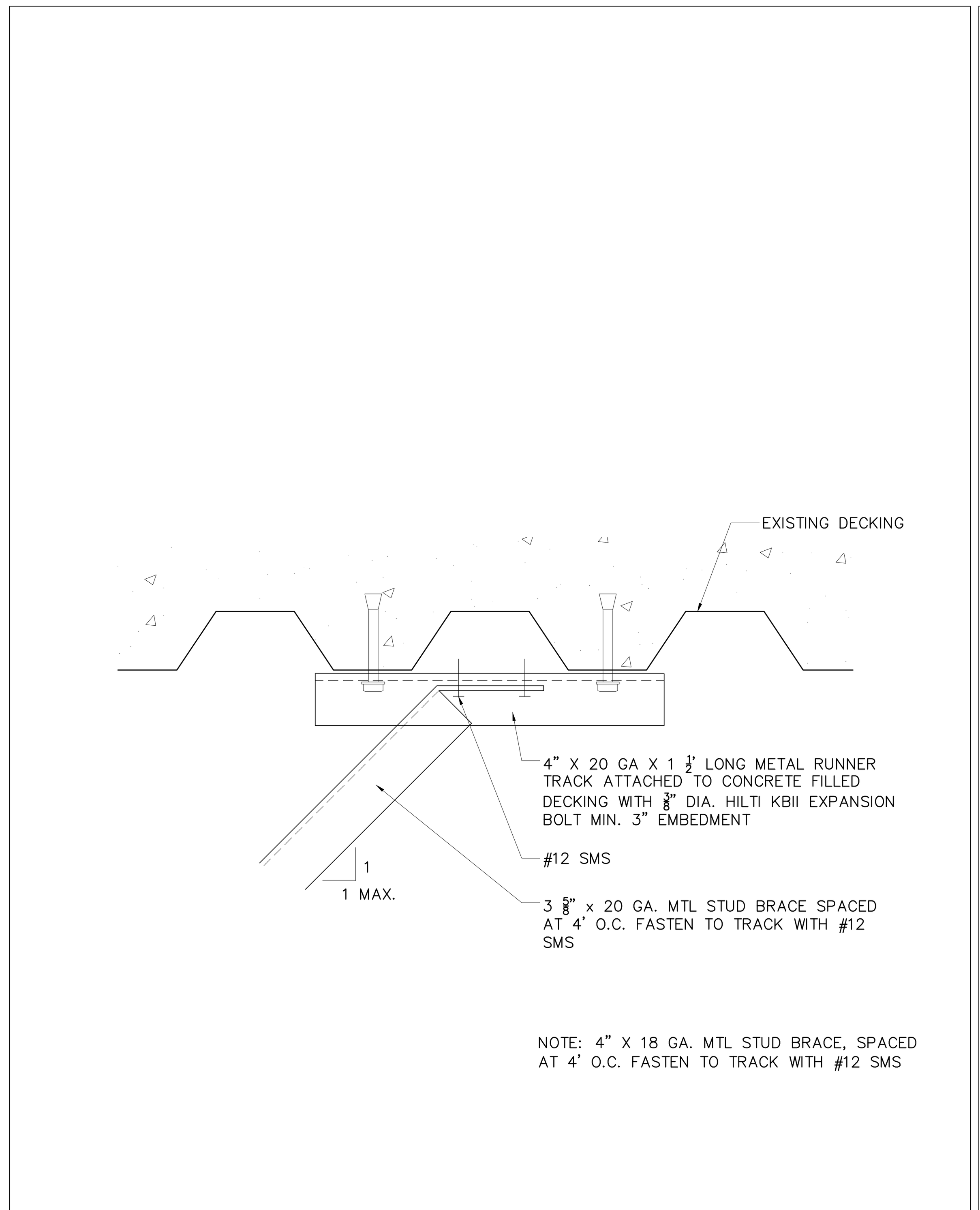
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

CEILING DETAILS 2 OF 3

PROJECT
1818
SCALE
VARIES
DRAWN BY
ZH
DATE
09/26/19

SHEET NUMBER
A6-10



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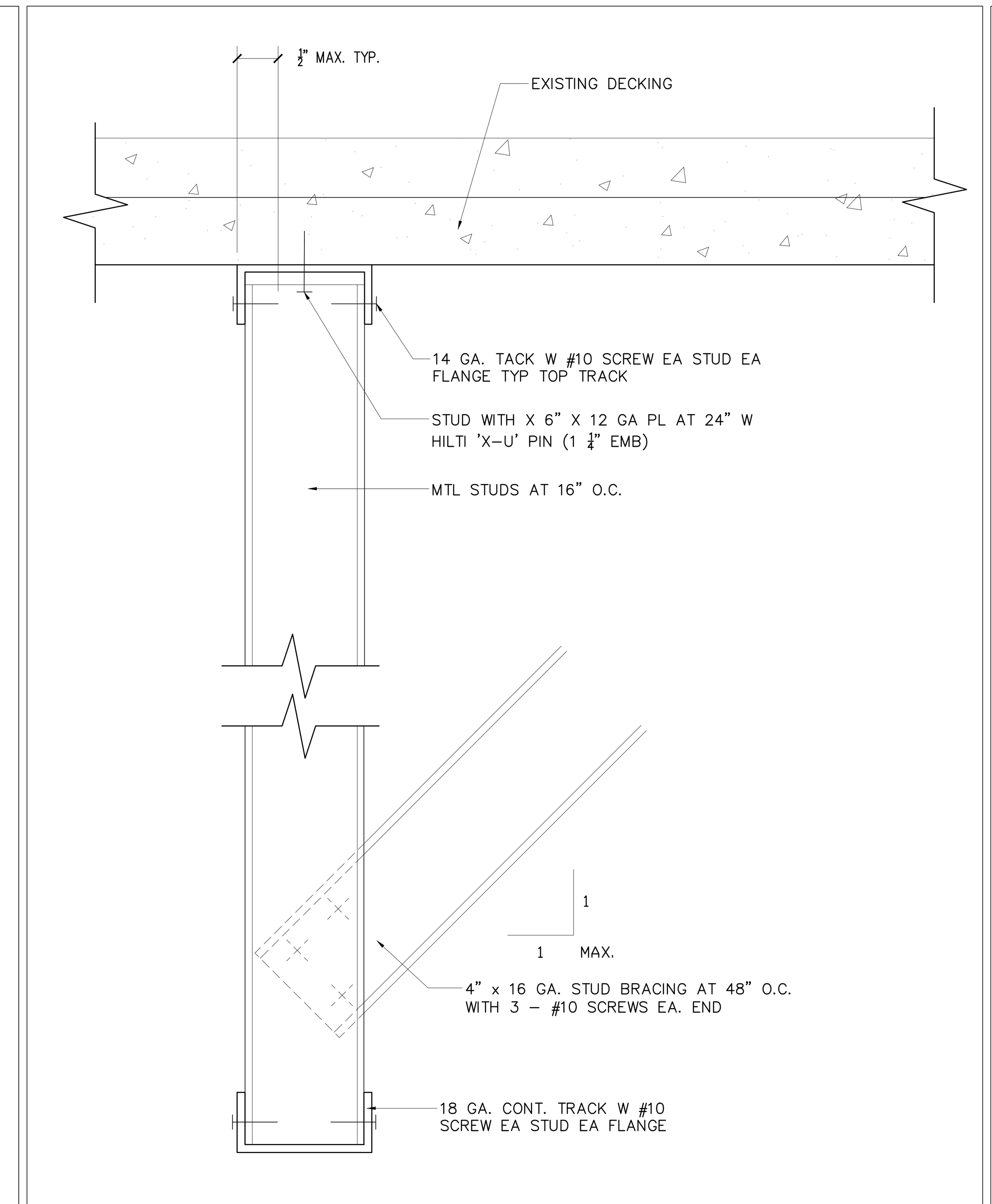
STUD BRACE CONNECTION
INTERIOR WALL TO MTL DECK

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO.
6



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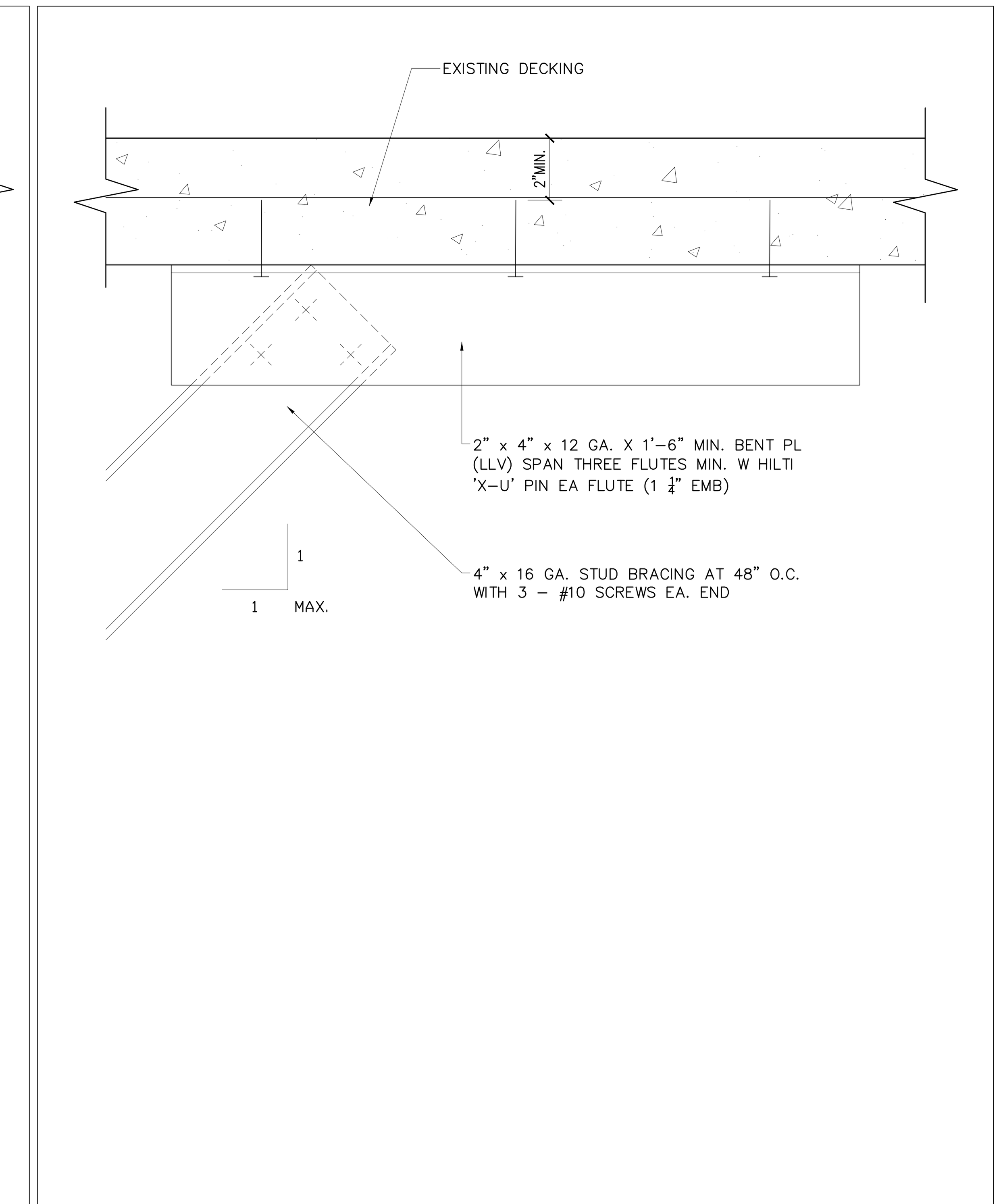
PERPENDICULAR TO DECK
SUSPENDED STUD

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO.
4



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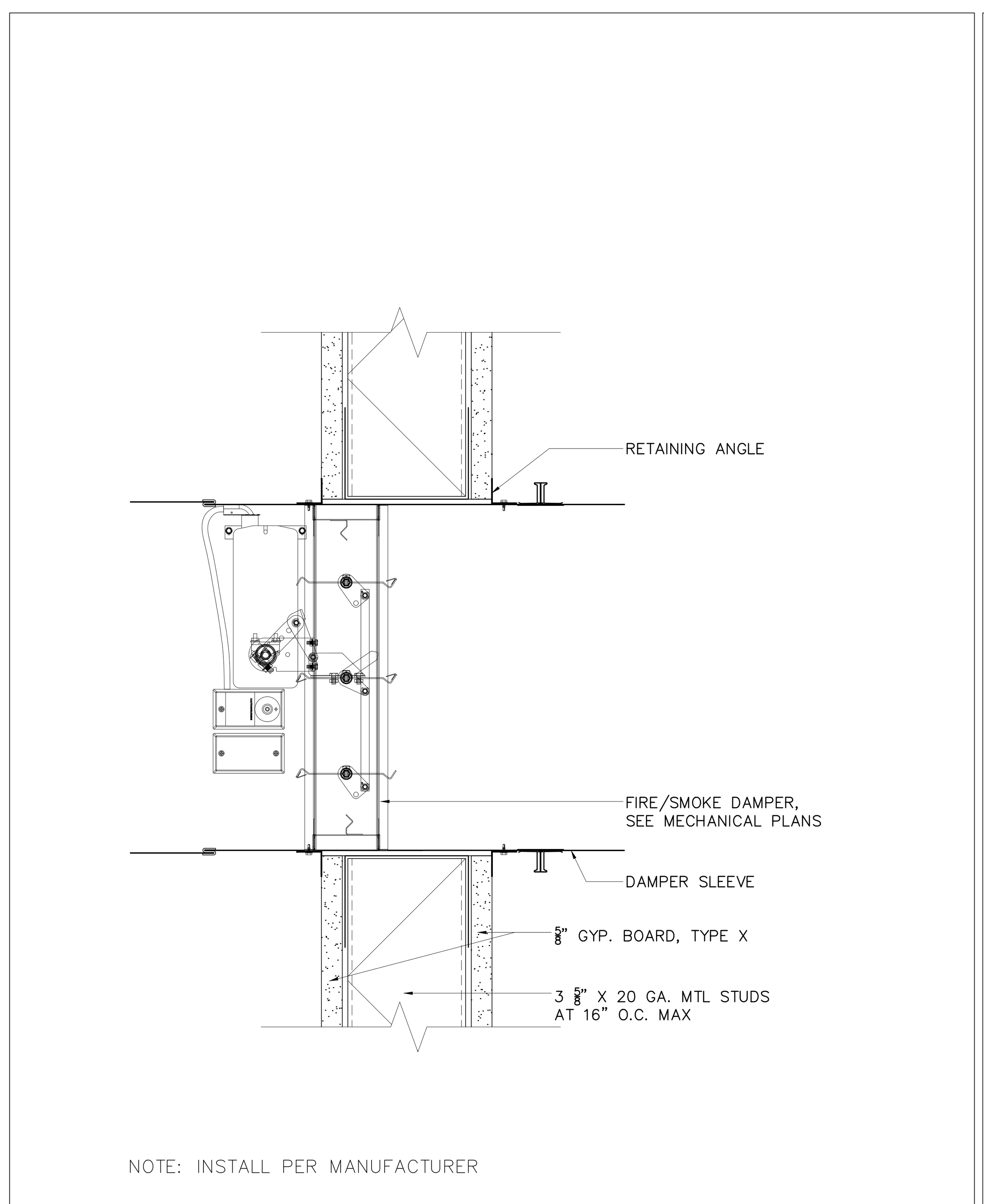
PERPENDICULAR TO DECK
SUSPENDED STUD

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO.
2



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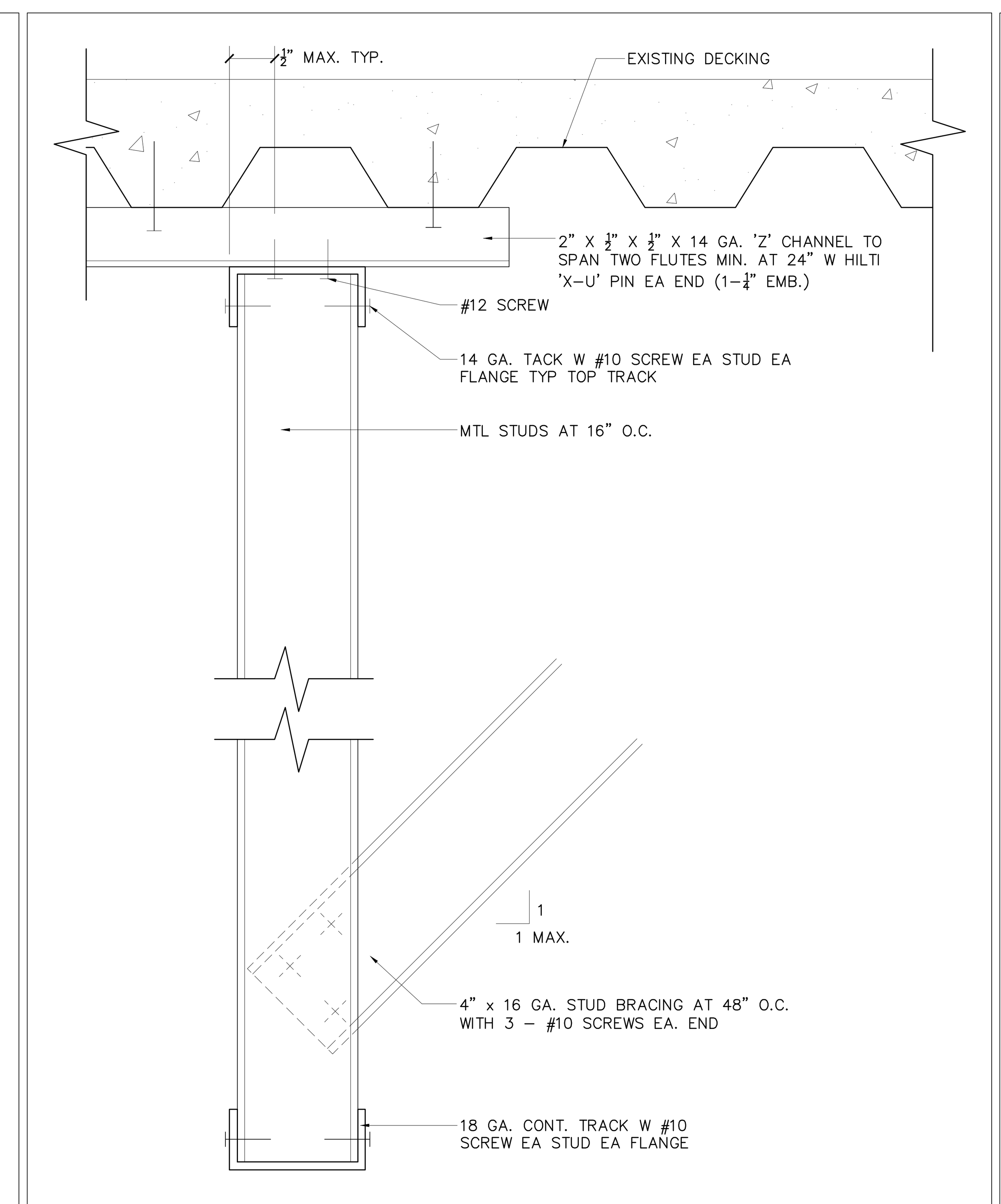
FIRE/SMOKE DAMPER
INTERIOR WALL TO MTL DECK

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO.
5



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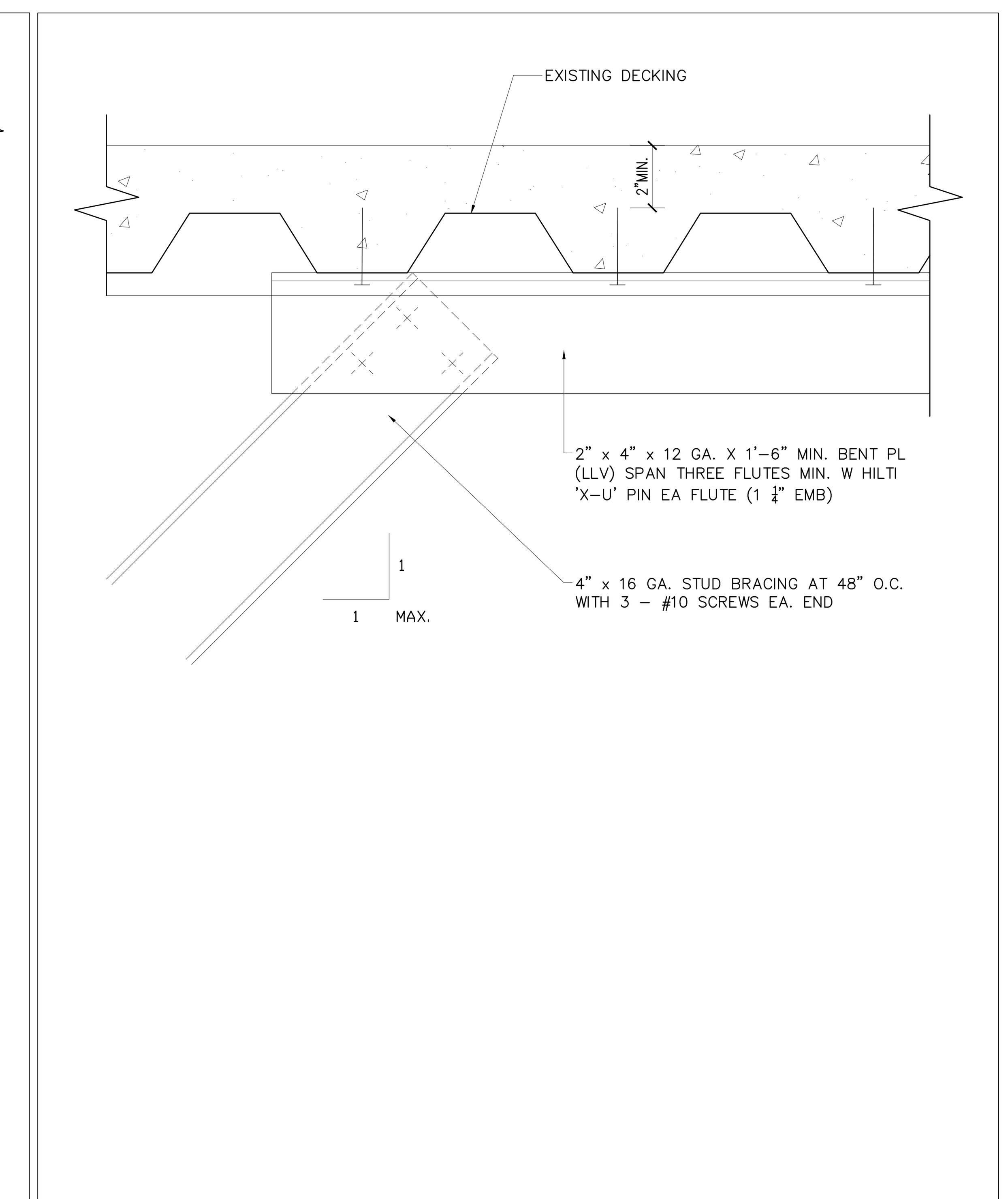
T. 213.617.0075 F. 213.617.0077

PARALLEL TO DECK
SUSPENDED STUD

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO.
3



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SUSPENDED STUD
INTERIOR WALL TO MTL DECK

PROJECT NO. DATE: SCALE: 3"=1'-0"

DETAIL NO.
1

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DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
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INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
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Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

CEILING DETAILS 3 OF 3

PROJECT
1818
SCALE
3" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A6-11

PRESCRIPTIVE STANDARDS FOR SUSPENDED CEILING ASSEMBLIES

A. SUSPENDED CEILINGS AND LIGHTING SYSTEMS

The following prescriptive design may be used for suspended ceilings and lighting systems that are a maximum 4 feet (1829 mm) below the structural deck and weigh no more than 4 pounds per square foot.

B. MINIMUM INSTALLATION REQUIREMENTS

1. Vertical Support

a. Hanger wires supporting a maximum tributary ceiling area of 16 square feet shall be a minimum of 12 gauge in diameter. The size of wires supporting a tributary ceiling area of greater than 16 square feet shall be substantiated by design calculations.

b. Hanger attachment devices used in ceiling systems not exceeding four pounds per square foot shall be capable of supporting a minimum allowable load of 100 pounds.

Hanger attachment devices used in ceiling systems exceeding four pounds per square foot shall be capable of supporting the design load and shall be substantiated by design calculations.

c. Hangers shall be plumb and shall not attach to or bend around interfering duct pipes or similar obstructions. If hangers must be splayed more than one horizontal to six vertical the resulting horizontal force shall be offset by bracing, counter-splaying or other acceptable means and substantiated by design calculations.

d. Perimeter Hangers.

The terminal end of each cross runner or main runner shall be independently supported and within eight inches of a wall.

2. Lateral Support

Lateral support for the ceiling system may be provided by four wires of minimum No. 12 gauge splayed in four directions 90 degrees apart and connected to the main runner within two inches of the cross runner and to the structure above at an angle not exceeding 45 degrees from the plane of the ceiling. These lateral support points shall be placed 12 feet o.c. in each direction with the first point within four feet from each wall.

3. Attachment of Members to the Perimeter

Allowance shall be made for lateral movement of the system. Main runners and cross runners may be attached at two adjacent walls with clearance between the wall and the runners maintained at the other two walls.

4. Lighting Fixture and Air Diffuser Supports

Lighting fixtures and air diffusers shall be supported directly by wires to the structure above.

EXCEPTIONS:

a. Recessed lighting fixtures not over 56 pounds in weight and suspended and independently hung fixtures not over 20 pounds in weight may be supported and attached directly to the ceiling system runners by a positive attachment such as screws or bolts.

b. Air diffusers which weigh not more than 20 pounds and which receive no tributary loading from duct work may be positively attached to and supported by the ceiling runners.

5. Perimeter Members

A minimum wall angle size of at least a two inch (51 mm) horizontal leg shall be used at perimeter walls and interior full height partitions. The first ceiling tile shall maintain 3/4- inch (19 mm) clear from the finish wall surface. An equivalent alternative detail that will provide sufficient movement due to anticipated lateral building displacement may be used in lieu of the long leg angle subject to the approval of the Superintendent of Building.

Application:
This provision shall be required only when the span of the proposed suspended ceiling system between perimeter walls exceeds 25 feet in both directions. Perimeter walls shall be considered as those existing/proposed interior partitions that are laterally braced as required by Section 1613.7.1 of the Los Angeles City Building Code.

6. Bracing at Discontinuity

Positive bracing to the structure shall be provided at the changes in the ceiling plane elevation or at discontinuities in the ceiling grid system.

7. Support for Wiring Systems

Electrical wiring systems, including cable trays, conduits, junction boxes, and other appurtenances shall be independently supported and independently braced from the structure.

8. Sprinkler Heads

All sprinkler heads (drops) except floor-ceiling or roof-ceiling fire-resistive assemblies, shall have a 2 inch (50 mm) oversize ring, sleeve, or adaptor through the ceiling tile to allow for free movement of at least 1 inch (25 mm) in all horizontal directions. Alternatively, a swing joint that can accommodate 1 in. (25 mm) of ceiling movement in all horizontal directions is permitted to be provided at the top of the sprinkler head extension.

Sprinkler heads penetrating floor-ceiling or roof-ceiling fire-resistive assemblies shall comply with Section 712.3.1 of the Los Angeles City Building Code.

C. SPECIAL REQUIREMENT FOR MEANS OF EGRESS

1. General

Ceiling suspension systems shall be connected and braced directly to the structure at the means of egress serving an occupant load of 30 or more and at lobbies accessory to Group A Occupancies. Spacing of vertical hangers shall not exceed 2 feet (610 mm) on center along the entire length of the means of egress or lobby.

Application:
These provisions shall be required only when the distance between the structural deck and the suspended ceiling exceeds 4 feet.

2. Assembly Device

All lay-in panels shall be secured to the suspension system with two hold-down clips

minimum for each tile within a 4-foot (1219 mm) radius of the exit lights and exit signs.

Application:
This requirement shall apply only in fire-rated exit corridors and within A, E, and M occupancies. For purposes of this Section, exit strobe lights shall not be considered exit signs.

3. Emergency Systems

Independent supports and braces shall be provided for light fixtures required for exit illumination. Power supply for exit illumination shall comply with the requirement of Section 1011.5.3 of the Los Angeles City Building Code.

4. Supports for Appendage

Separate support from the structure shall be provided for all appendages, such as light fixtures, air diffusers, exit signs and similar elements.

D. PLANS AND SPECIFICATIONS

1. General

The building plans and specifications submitted to the Department for approval shall clearly identify all suspended ceiling systems and shall define or show all supporting details, light fixture attachments, lateral bracing, partition supports, etc.

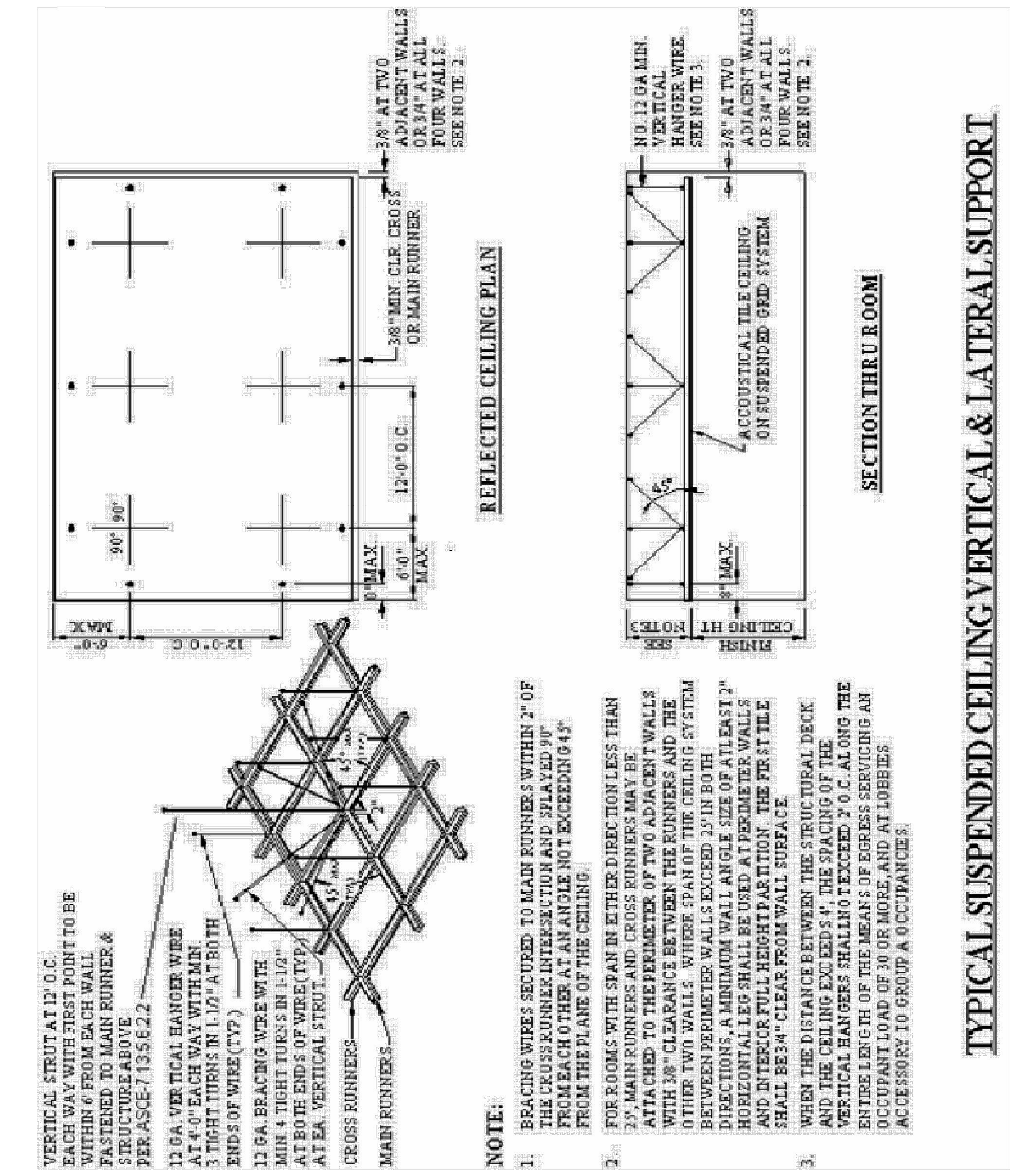
2. Identification

All suspended ceiling systems included in a General Approval shall be identified by indentation or by nontransferable decal on main members with letters not less than 1/4-inch high and shall include the following:

a. Runner designation and permissible spacing if other than 4" o.c.

b. Adequacy for light fixture.

c. Special requirements, if any.



((RADAR))
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.
423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

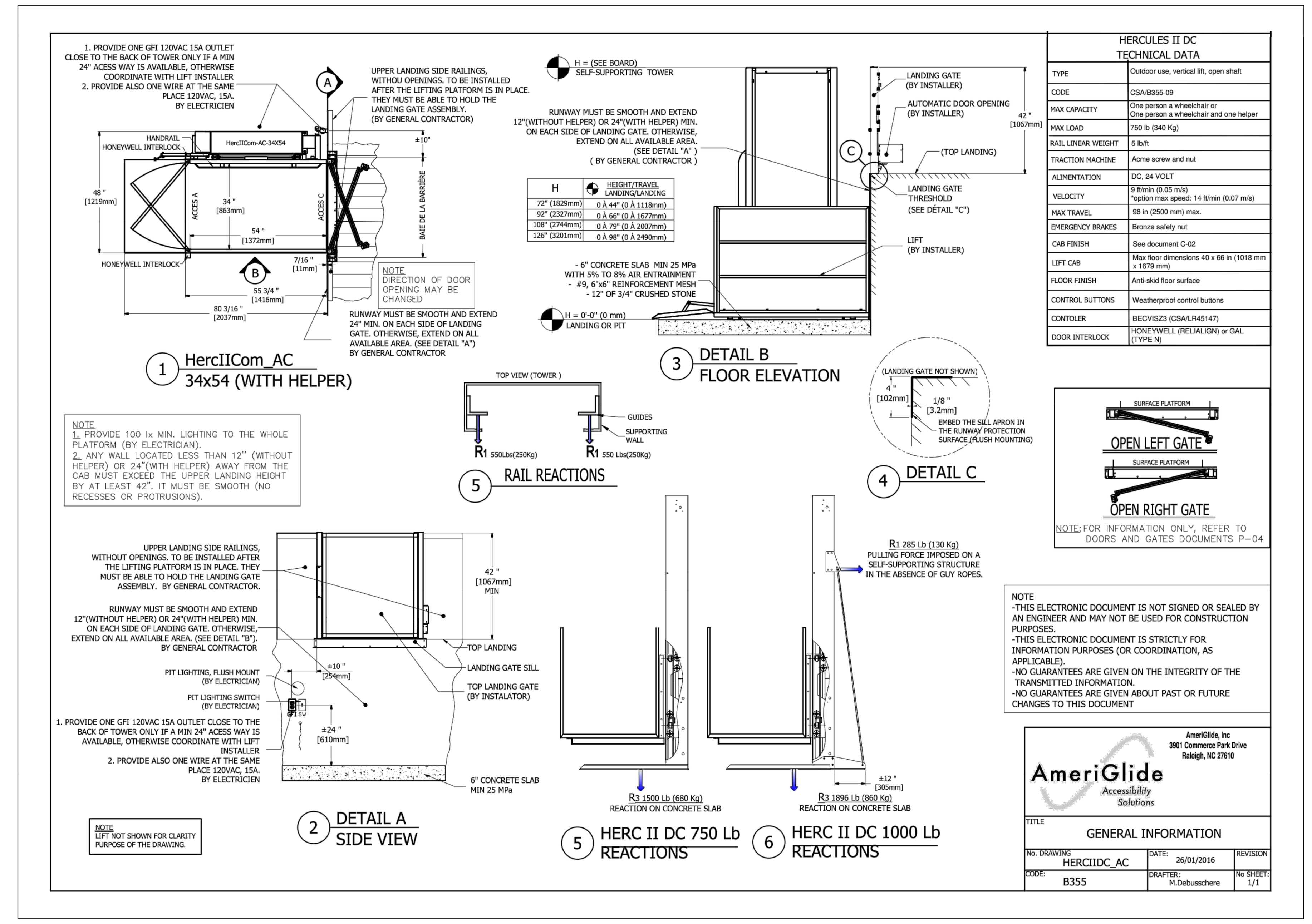
NO	ISSUE	DATE
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

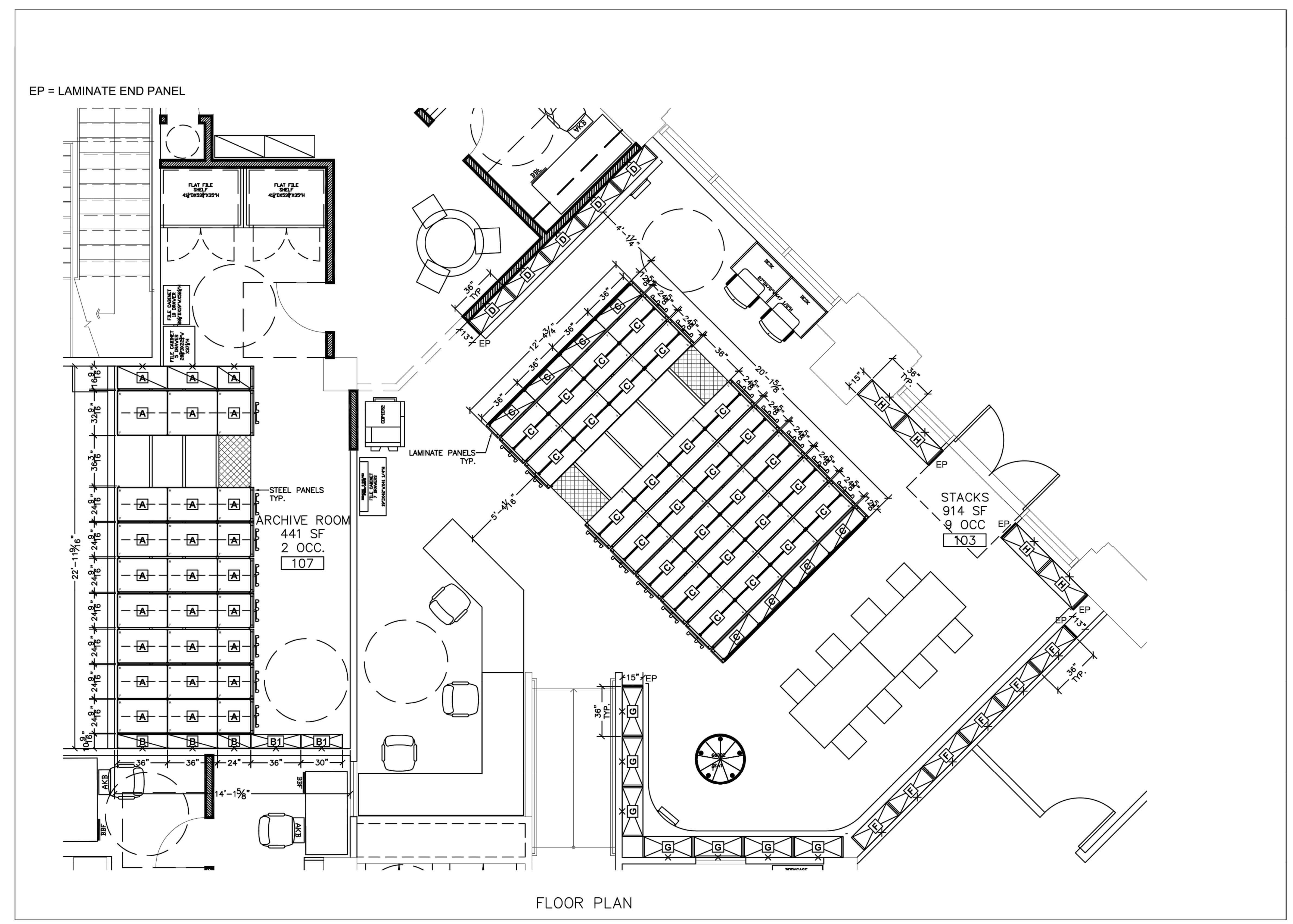
Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE
LADBS CEILING NOTES

PROJECT
1818
SCALE
VARIES
DRAWN BY
ZH
DATE
09/26/19
SHEET NUMBER
A6-12





1 SHELVING EQUIPMENT FLOOR PLAN
SCALE: 3/16"=1'-0"

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

LICENSED ARCHITECT
RACHEL M ALLEN
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NO	ISSUE	DATE
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3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
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Metro Transportation Library Relocation

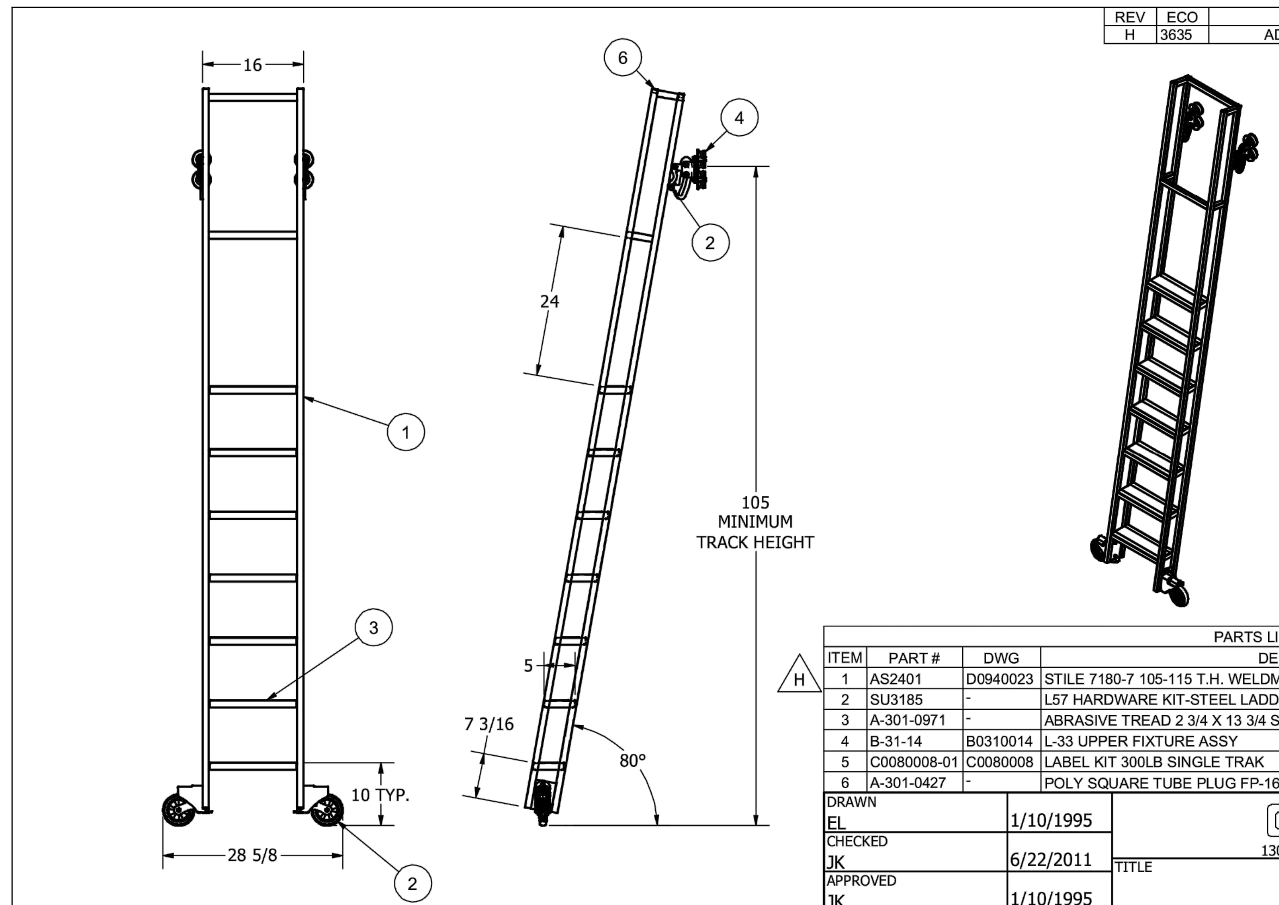
MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

MANUFACTURER'S CUT SHEETS 1 OF 2

PROJECT
1818
SCALE
1/4" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A7-1



REV	ECO	DESCRIPTION	DATE	BY	APP
H	3635	ADDED DRAWING NUMBERS	5/26/2011	DD	JK

PARTS LIST

ITEM	PART #	DWG	DESCRIPTION	STOCK #	QTY
1	AS2401	D0940023	STILE 7180-7 105-115 T.H. WELDMENT	-	1
2	SU3185	-	L57 HARDWARE KIT-STEEL LADDERS (SHIPPED LOOSE)	-	1
3	A-301-0971	-	ABRASIVE TREAD 2 3/4 X 13 3/4 SUR-STEP HEAVY DUTY	-	7
4	B-31-14	B0310014	L-33 UPPER FIXTURE ASSY	-	2
5	C0080008-01	C0080008	LABEL KIT 300LB SINGLE TRAK	-	1
6	A-301-0427	-	POLY SQUARE TUBE PLUG FP-166	-	4

DRAWN EL	1/10/1995
CHECKED JK	6/22/2011
APPROVED JK	1/10/1995
PART D-094-0003	

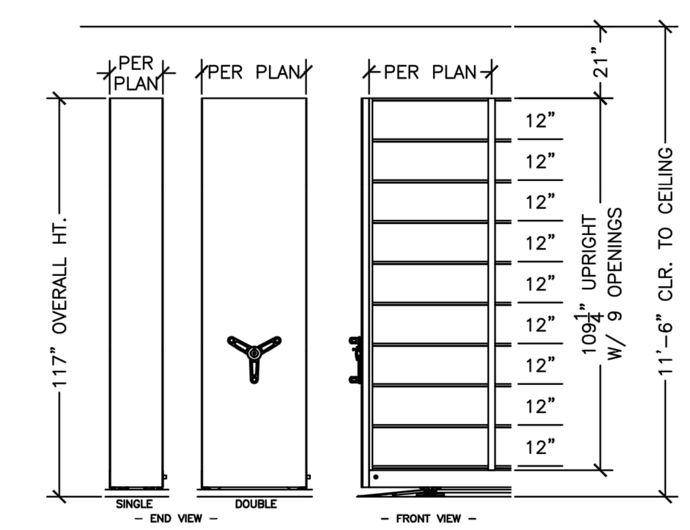
cotterman® co.
130 Seltzer Road, Croswell, Michigan, U.S.A., 48422

TITLE
7180 7 STEP LADDER 105-115" TH 33/57

Drawing is computer generated, and print might not be to scale

SIZE B | DWG NO D0940003.dwg | REV H
QUOTE | SHEET 1 OF 1

A



A | TYPICAL ELEVATION – MOBILE – CASE TYPE

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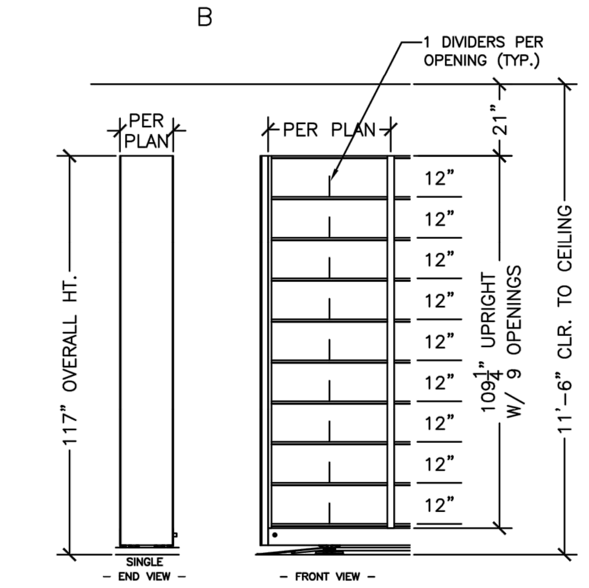

B | TYPICAL ELEVATION – STATIONARY – CASE TYPE

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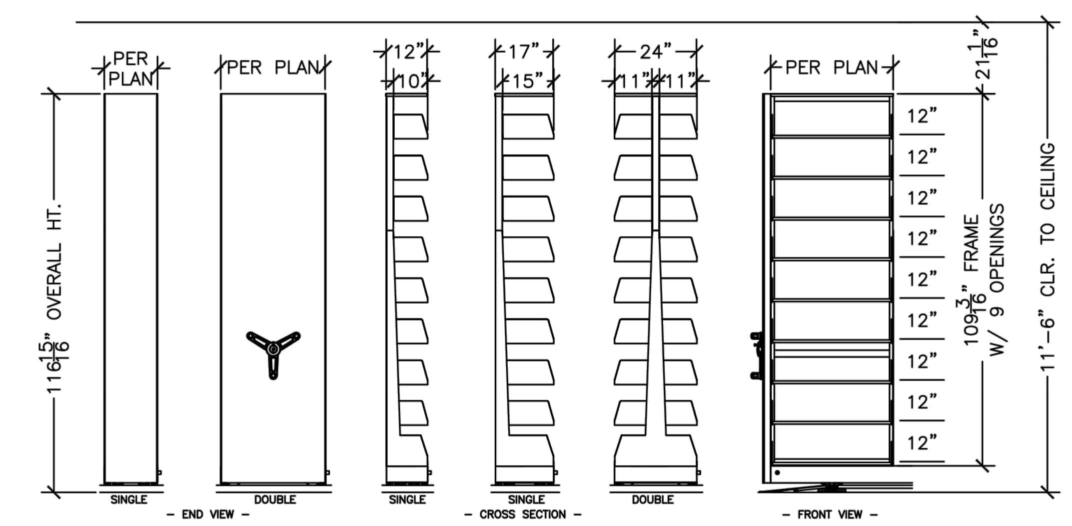
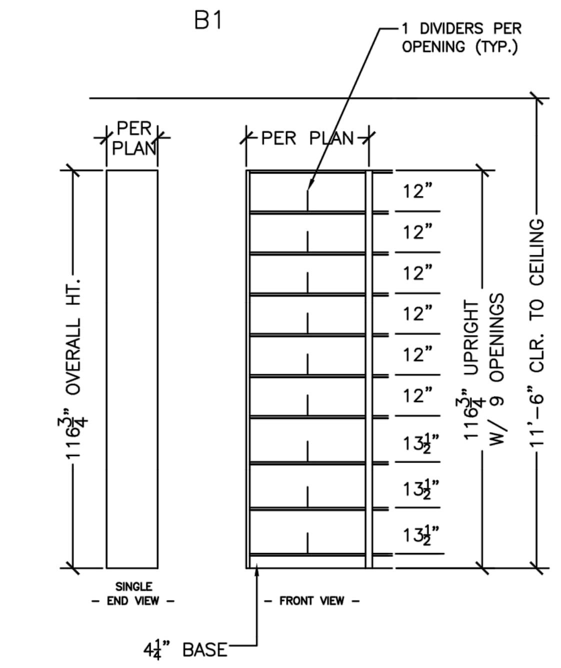


C | TYPICAL ELEVATION – MOBILE – CANTILEVER

B1



B1 | TYPICAL ELEVATION – STATIC – CASE TYPE

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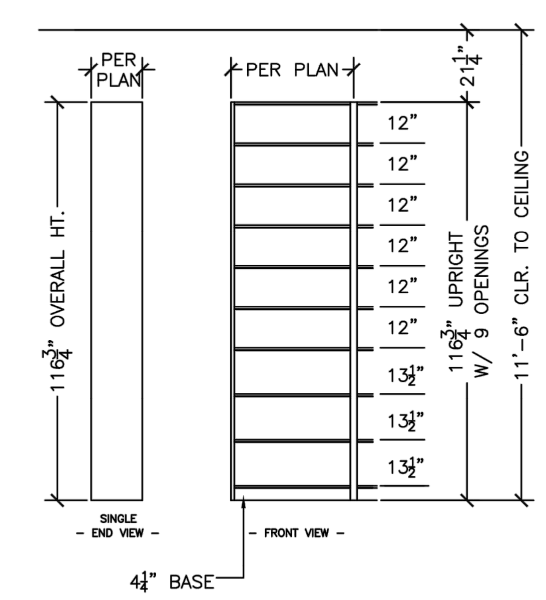

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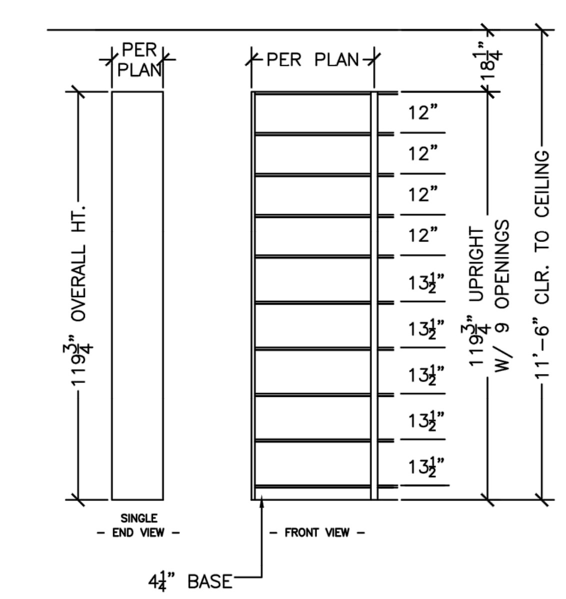

F | TYPICAL ELEVATION – STATIC – CASE TYPE

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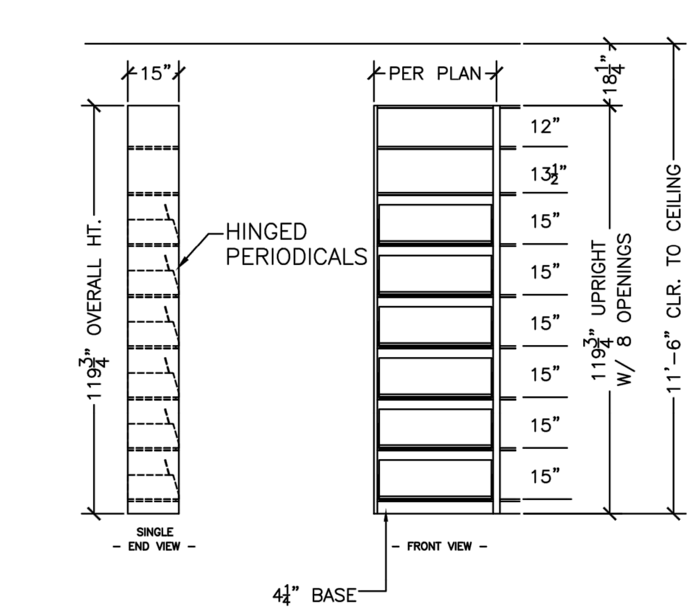

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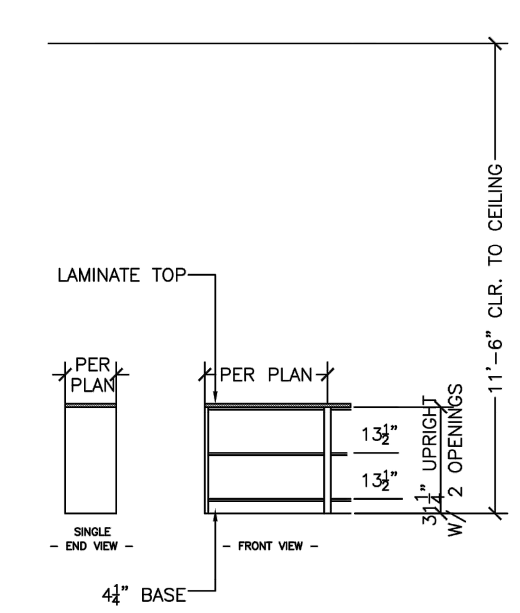

H | TYPICAL ELEVATION – STATIC – CASE

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
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INFO@RACHELALLEN.NET
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Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

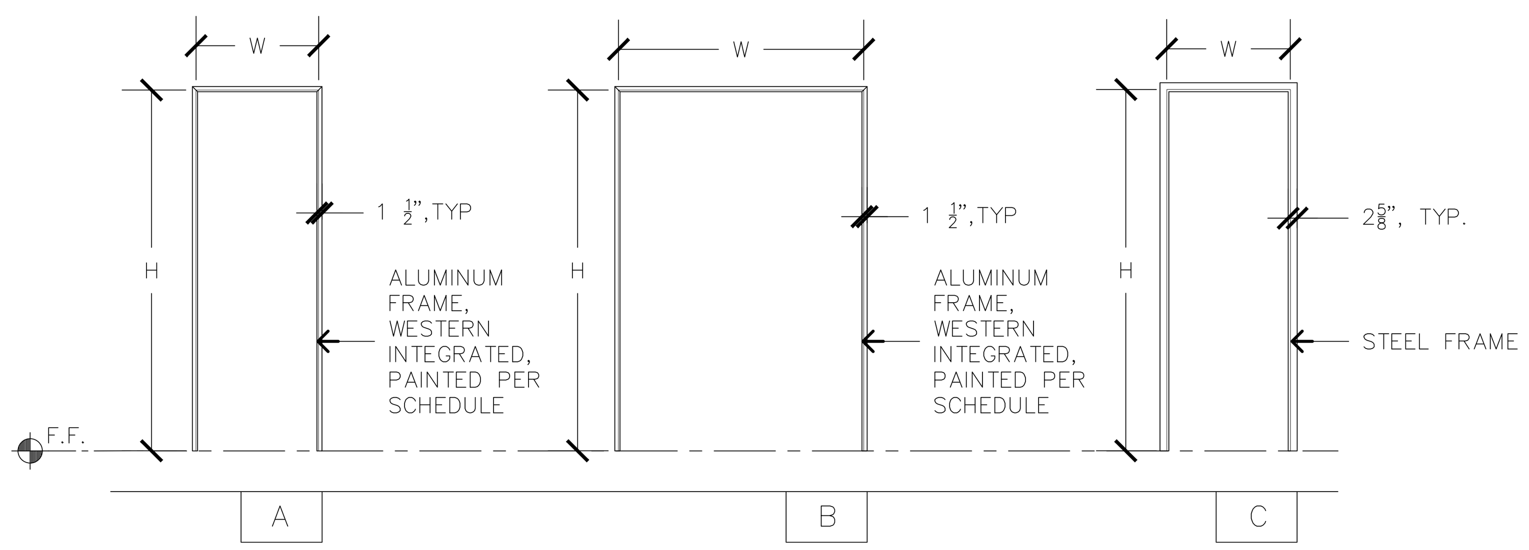
TITLE

MANUFACTURER'S CUT SHEETS 2 OF 2

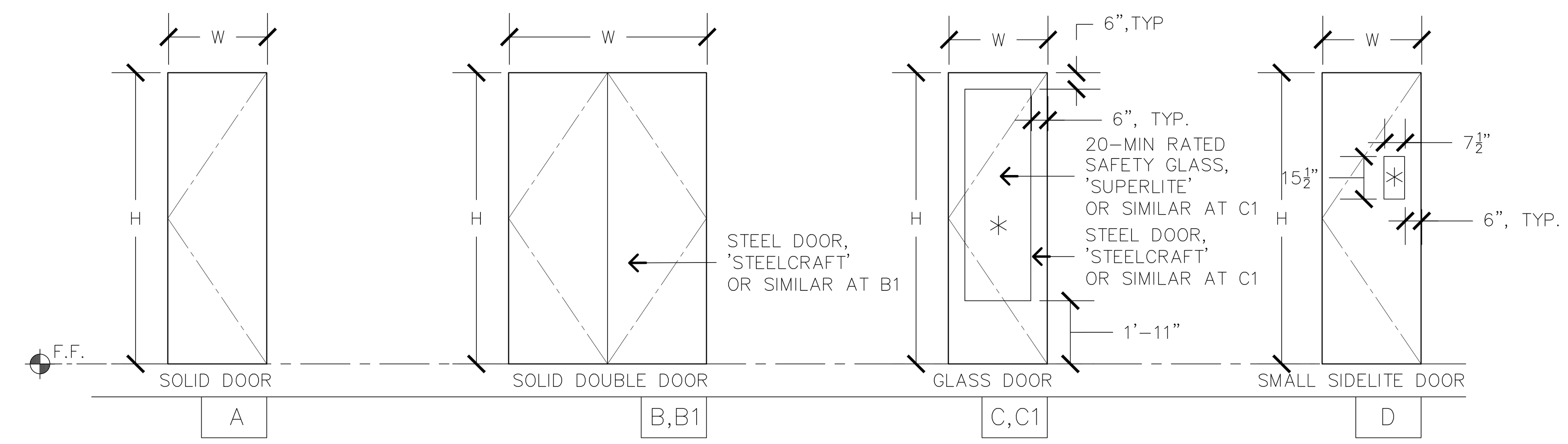
PROJECT
1818
SCALE
1/4" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A7-2

DOOR & WINDOW TYPES

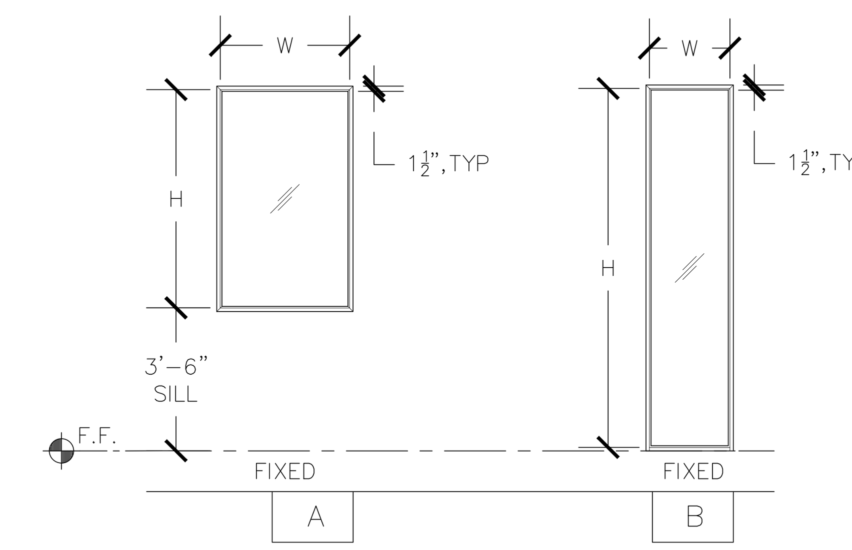


DOOR FRAME TYPES

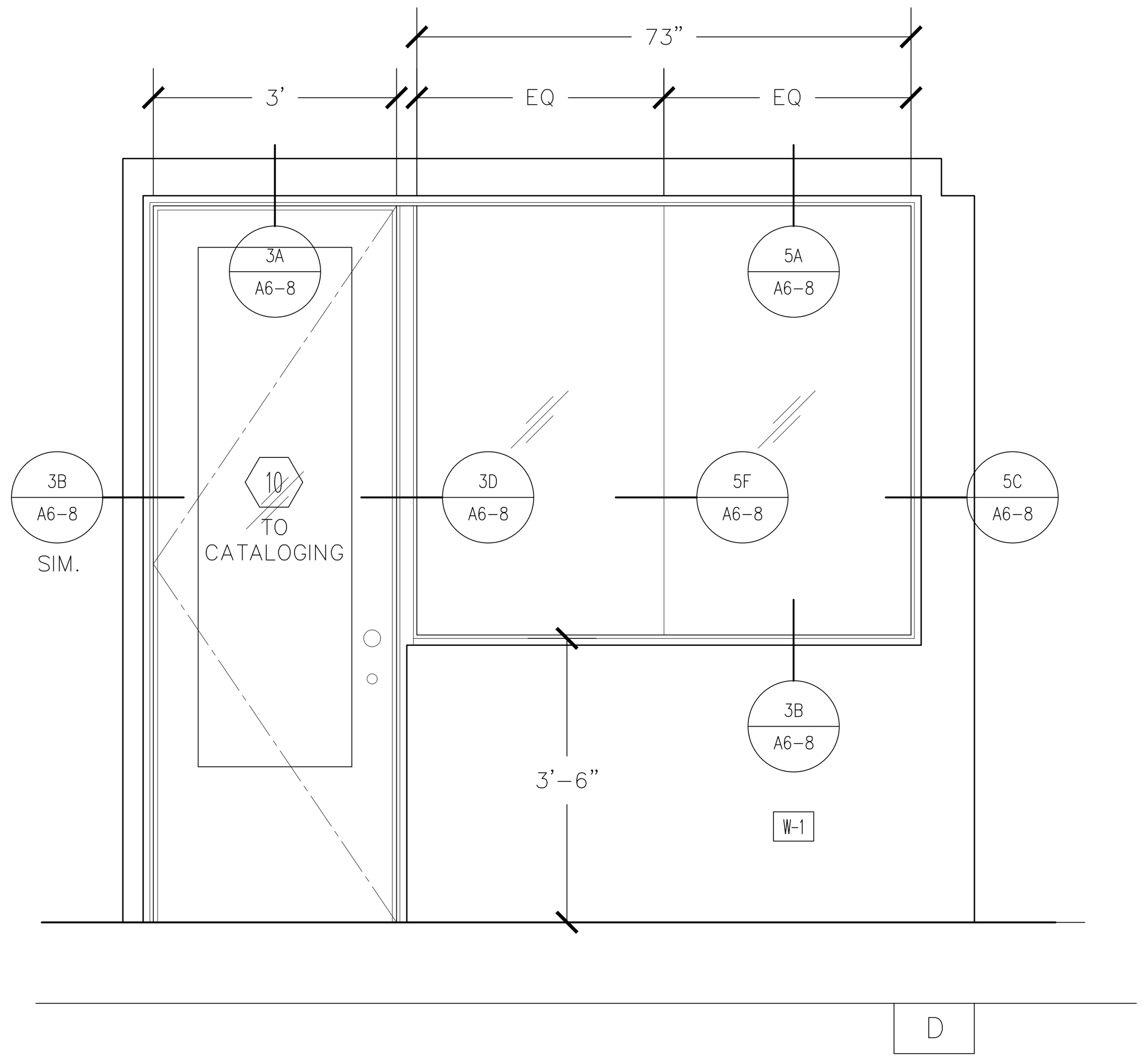


DOOR TYPES

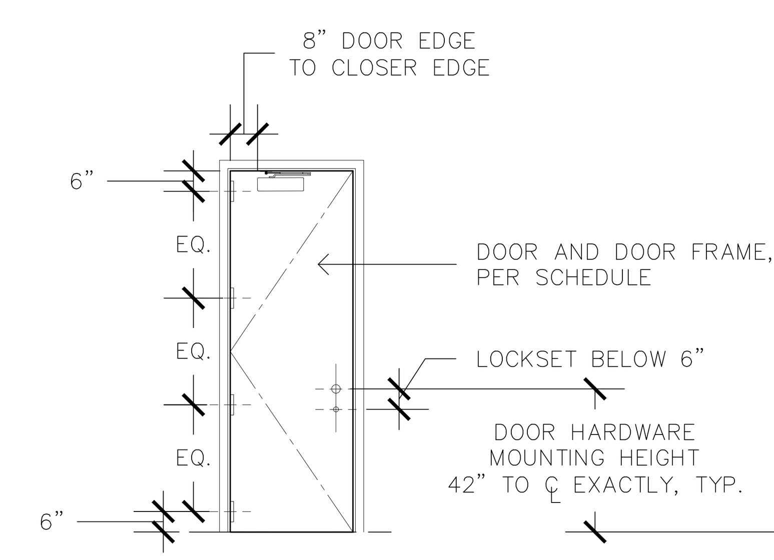
* = ALL GLAZING PANELS IN FIRE-RATED DOOR ASSEMBLIES TO BE WIRE-GLASS. ALL OTHER GLAZING PANELS IN DOORS TO BE TEMPERED GLASS UNLESS OTHERWISE NOTED



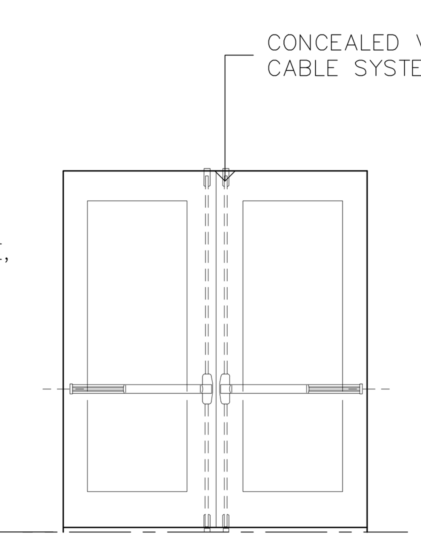
WINDOW TYPES



HARDWARE DIAGRAMS



DOOR HARDWARE DIAGRAM



EXIT DOOR DIAGRAM

DOOR HARDWARE SCHEDULE

DOOR #	DOOR LOCATION	HW SET#	COMMENTS
1	101 - (E) - Kitchenette	8	Existing to Remain, including hardware
2	101 - (N) Kitchenette-RIM	5	Hardware finish to match existing Kitchenette door finish
3	Library Entry	8	Existing to Remain, including hardware; Install magnet; Connect to fire/life system
4	102 - (N) - Office	6	
5	103 - (E) - Storefront Doors/Stacks	1	(E) Double Doors; Replace/install exit bar system; Existing doors and frame to remain; install articulating astragal; remove exterior trim and replace with two matching bronze plates
6	105 - (N) - Office	6	
7	106 - (N) - Office	6	
8	104 - (N) - Equipment Closet	2	(N) Double Doors; Rated; Flush bolt at passive leaf
9	107 - (N) - Archive	4	Rated Door
10	108 - (N) - Cataloging Room	7	
11	109 - (N) - RIM	7	
12	110 - (N) - Office	6	
13	111 - (N) Office	6	
14	112 - (N) - Conference Room	7	Lockable inside and key outside
15	112A - (N) - Conference Room Storage	3	(N) Double Doors; Flush bolt at passive leaf

1. Refer to Specifications Manual for full Hardware Set Info
2. Steel Door: Metro to install only locks; complete prep by GC
3. Wood Door Prep: Mortise pocket only; Metro to install cross bore holes

DOOR SCHEDULE

				DOOR							FRAME						
NO.	DOOR LOCATION	INT/EXT	RATING	TYPE	TH	W	H	MATERIAL	FINISH	FUNCTION	TYPE	MATERIAL	FINISH	HEAD DTL	JAMB DTL	THRESHOLD DTL	REMARKS
1	101 - (E) - Kitchenette	INT	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Existing to Remain
2	101 - (N) Kitchenette-RIM	INT	N/R	D	1-3/4"	36	106	SC	WV	LHR	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	
3	Library Entry	INT	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Existing to Remain; Install magnet; Connect to fire/life system
4	102 - (N) - Office	INT	N/R	C	1-3/4"	36	106	SC	WV	LH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
5	103 - (E) - Storefront Doors/Stacks	EXT	--	--	--	--	--	--	--	--	--	--	--	--	--	1C/A6-8	Existing doors and frame to remain; (E) Transparent glass panes to be replaced with (sandblast) glass and anti-graffiti exterior coating. Install door sensor and shock detector for security per hardward specs.
6	105 - (N) - Office	INT	N/R	C	1-3/4"	36	106	SC	WV	LH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
7	106 - (N) - Office	INT	N/R	C	1-3/4"	36	106	SC	WV	RH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
8	104 - (N) - Equipment Closet	INT	1 HR	B1	1-3/4"	72	106	SC	WV	LHR	C	STL	PT	4A/A6-8	4B/A6-8	1B/A6-8	Rated Door; Flush bolt at passive leaf
9	107 - (N) - Archive	INT	1 HR	C1	1-3/4"	36	106	SC	WV	LHR	C	STL	PT	4A/A6-8	4B/A6-8	1B/A6-8	Rated Door
10	108 - (N) - Cataloging Room	INT	N/R	C	1-3/4"	36	106	SC	WV	LH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
11	109 - (N) - RIM	INT	N/R	C	1-3/4"	36	106	SC	WV	LH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
12	110 - (N) - Office	INT	N/R	C	1-3/4"	36	106	SC	WV	LH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
13	111 - (N) Office	INT	N/R	C	1-3/4"	36	106	SC	WV	RH	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Privacy Film - Llumar Frost Series NRM PS2
14	112 - (N) - Conference Room	INT	N/R	C	1-3/4"	36	106	SC	WV	RHR	A	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	
15	112A - (N) - Conference Room Storage	INT	N/R	B	1-3/4"	72	106	SC	WV	LHR	B	AL	PT	3A/A6-8	3B/A6-8	1A/A6-8	Flush bolt at passive leaf

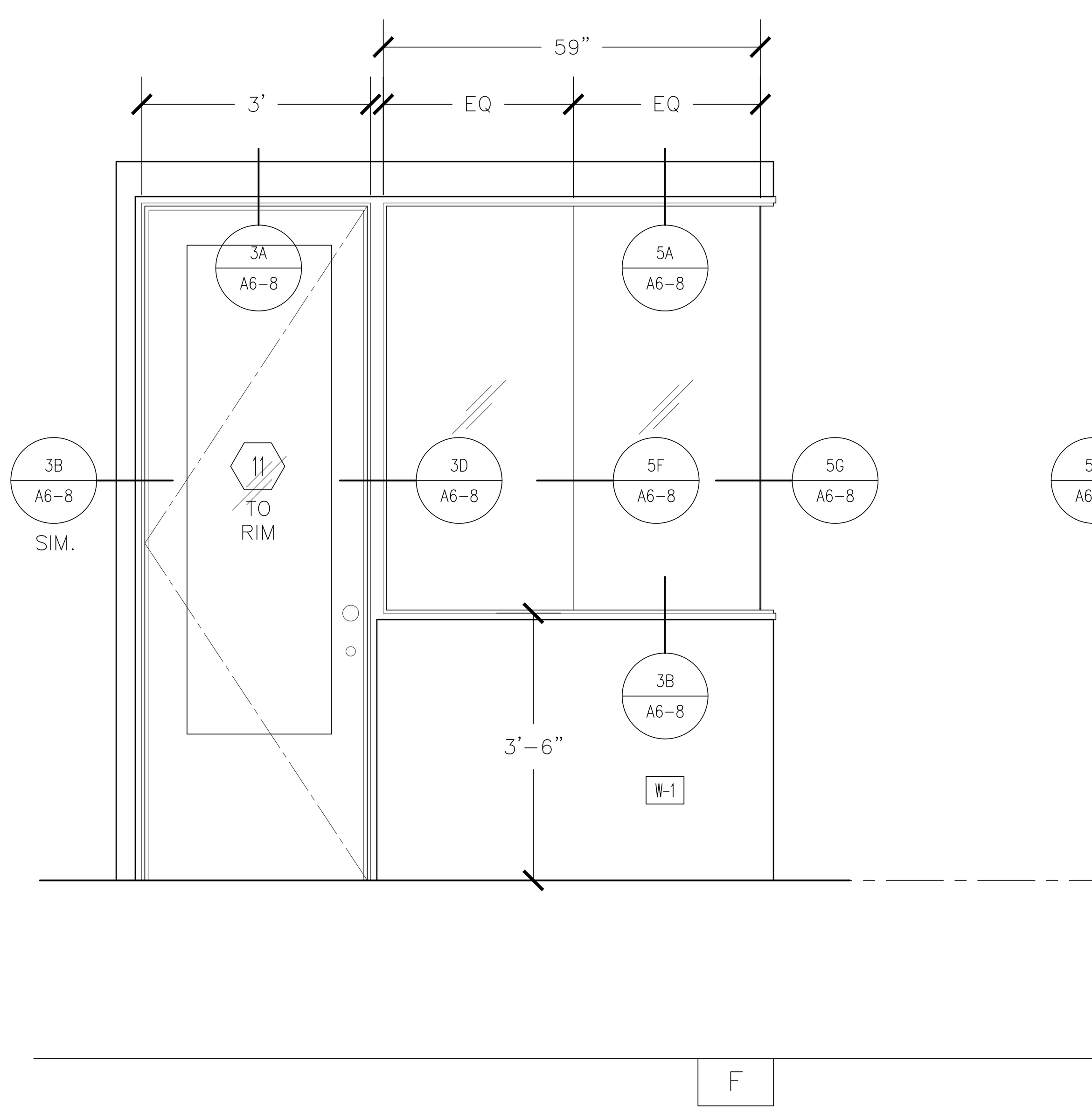
WINDOW SCHEDULE

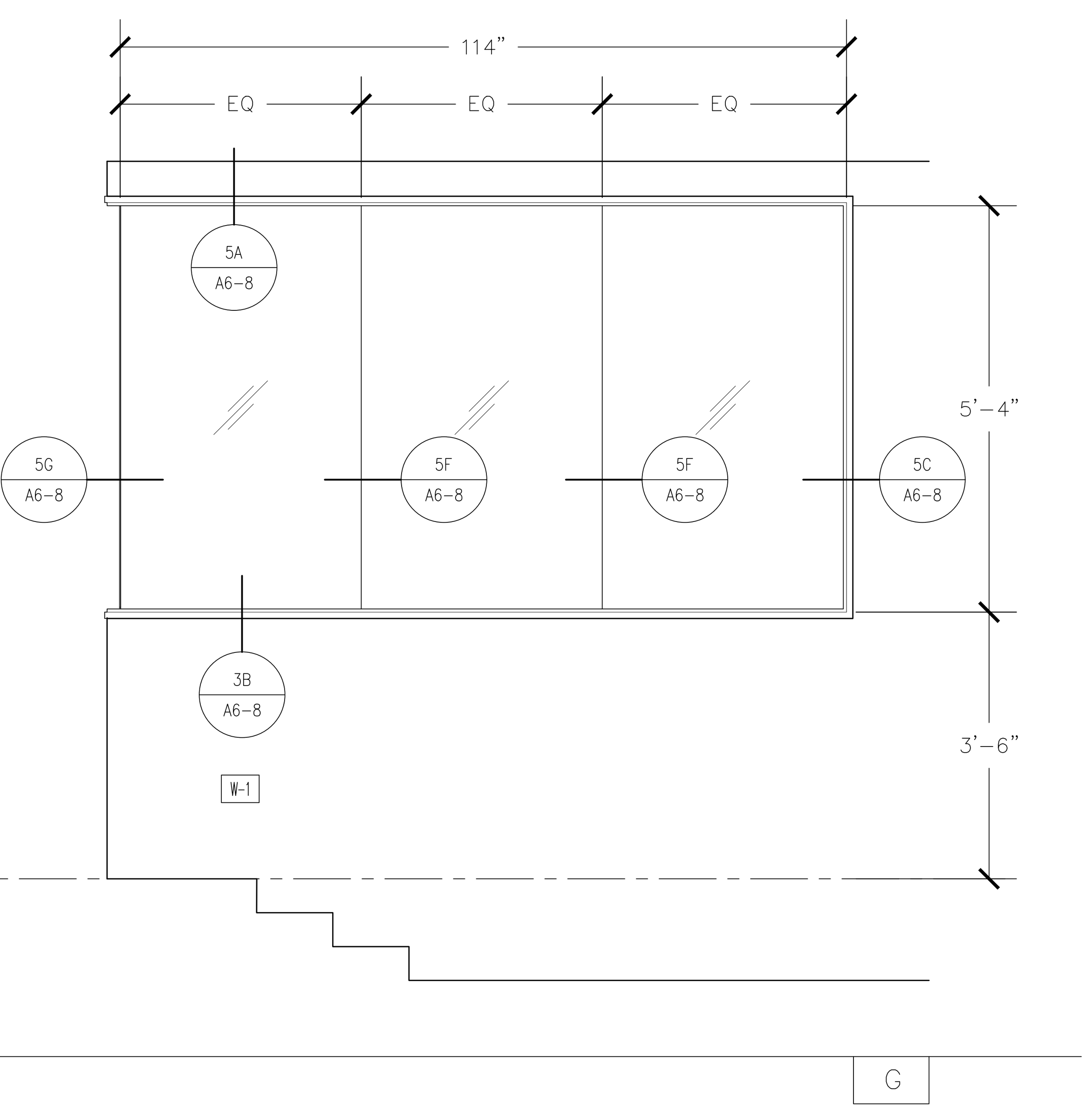
										GLAZING					
NO.	WINDOW LOCATION	TYPE	SILL HT.	HEAD HT.	W	H	MATERIAL	FINISH	FUNCTION	GLASS TH	GLASS TYPE	HEAD	JAMB	SILL	REMARKS
A	102 - (N) Office	A	42	90	32	46	AL	PT	FXD	1/4"	tempered	5A/A6-8	5C/A6-8	5B/A6-8	
B	109 - (N) Office	A	42	106	38	64	AL	PT	FXD	1/4"	tempered	5A/A6-8	5C/A6-8	5B/A6-8	
C	112 - (N) - Conference Room	B	0	106	16	106	AL	PT	FXD	1/4"	tempered	6A/A6-8	6C/A6-8	6B/A6-8	
D	109 - (N) Catologing	--	42	106	73	64	AL	PT	FXD	1/4"	tempered	--	--	--	See Partition System, 1/A8-1
F	108 (N) RIM	--	42	106	59	64	AL	PT	FXD	1/4"	tempered	--	--	--	See Partition System, 1/A8-1
G	108 (N) RIM	--	42	106	114	64	AL	PT	FXD	1/4"	tempered	--	--	--	See Partition System, 1/A8-1

KEY TO ABBREVIATIONS

FXD: Fixed
FR: French PIV: Pivoting
RH/LH: Right/Left Hand Swing
RHR: Right Hand Reverse
LHR: Left Hand Reverse
SL: Slider DH: Double-Hung
PT: Paint
SE: Sealer
AL: Aluminum
OVHD: Overhead
1/2: Single/Double Glazed
WV: Wood Veneer
WD: Wood (Solid)
SC: Solid Core
HC: Hollow Core
PO: Pocket
N/A: Not Applicable

1. Safety/tempered glass where required by code
2. All thresholds 1/2" Max.
3. Wood Door Prep: Mortise pocket only; Metro to install cross bore holes and install locksets and cores
4. Steel Door: Metro to install only locks; complete prep by GC
5. Refer to Finish Schedule for finish trim color
6. Refer to Door Hardware Schedule for all hardware information





1 PARTITION SYSTEM ELEVATION
SCALE: 1/2"=1'-0"

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
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423 GIN LING WAY, LOS ANGELES CA 90012
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LICENSED ARCHITECT
RACHEL M ALLEN
#C28585
REN. 4/30/21
STATE OF CALIFORNIA

NO	ISSUE	DATE
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2	DESIGN DEVELOPMENT	4/25/19
3	30% CONSTRUCTION DOCS	5/23/19
4	60% CONSTRUCTION DOCS	6/20/19
5	100% CONSTRUCTION DOCS	9/26/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
Los Angeles, CA 90012

TITLE

DOOR & WINDOW TYPES; HARDWARE; SCHEDULES

PROJECT
1818
SCALE
1/4" = 1'-0"
DRAWN BY
KC
DATE
09/26/19

SHEET NUMBER
A8-1

REFRIGERATION PIPE INSULATION THICKNESS

FLUID OPERATING TEMPERATURE RANGE (°F)	INSULATION CONDUCTIVITY			NOMINAL PIPE DIAMETER (IN.)				
	CONDUCTIVITY (BTU*IN/H*FT²*°F)	MEAN TEMP. (°F)		<1	1 TO <1.5	1.5 TO <4	4 TO 8	8 AND LARGER
SPACE HEATING AND SERVICE WATER HEATING SYSTEMS (STEAM, STEAM CONDESATE, REFRIGERANT, SPACE HEATING, SERVICE HOT WATER)				MINIMUM PIPE INSULATION REQUIRED (THICKNESS IN INCHES OR R-VALUE)				
ABOVE 350	0.32–0.34	250	IN.	4.5	5.0	5.0	5.0	5.0
			R-VALUE	R-37	R-41	R-37	R-27	R-23
251–350	0.29–0.32	200	IN.	3.0	4.0	4.5	4.5	4.5
			R-VALUE	R-24	R-34	R-35	R-26	R-22
201–250	0.27–0.30	150	IN.	2.5	2.5	2.5	3.0	3.0
			R-VALUE	R-21	R-20	R-17.5	R-17	R-14.5
141–200	0.25–0.29	125	IN.	1.5	1.5	2.0	2.0	2.0
			R-VALUE	R-11.5	R-11	R-14	R-11	R-10
105–140	0.22–0.28	100	IN.	1.0	1.5	1.5	1.5	1.5
			R-VALUE	R-7.7	R-12.5	R-11	R-9	R-8
SPACE COOLING SYSTEMS (CHILLED WATER, REFRIGERANT AND BRINE)				MINIMUM PIPE INSULATION REQUIRED (THICKNESS IN INCHES OR R-VALUE)				
40–60	0.21–0.27	75	IN.	0.75	0.75	1.0	1.0	1.0
			R-VALUE	R-6	R-5	R-7	R-6	R-5
<40	0.20–0.26	50	IN.	1.0	1.5	1.5	1.5	1.5
			R-VALUE	R-8.5	R-14	R-12	R-10	R-9

NOTES:
1. THESE THICKNESS ARE BASED ON ENERGY EFFICIENCY CONSIDERATIONS ONLY. ISSUES SUCH AS WATER VAPOR PERMEABILITY OR SURFACE CONDENSATION SOMETIMES REQUIRE VAPOR RETARDERS OR ADDITIONAL INSULATION

EXCEPTION 1: FACTORY INSTALLED PIPING WITHIN SPACE CONDITIONING EQUIPMENT CERTIFIED UNDER SECTION 110.1 OR 110.2

EXCEPTION 2: PIPING THAT CONVEYS FLUIDS WITHIN A DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60°F AND 105°F

EXCEPTION 3: WHERE THE HEAT GAIN OR HEAT LOSS TO OR FROM PIPING WITHOUT INSULATION WILL NOT INCREASE BUILDING SOURCE ENERGY USE.

EXCEPTION 4: PIPING THAT PENETRATES FRAMING MEMBERS SHALL NOT BE REQUIRED TO HAVE PIPE INSULATION FOR THE DISTANCE OF THE FRAMING PENETRATION. METAL 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.

SHEET INDEX

SHT. NO.	DESCRIPTION	SCALE
M0.00	MECHANICAL COVER SHEET	N/A
M1.00	MECHANICAL SCHEDULES	N/A
M2.00	MECHANICAL DEMOLITION PLAN	3/16"=1'-0"
M2.01	MECHANICAL PLAN	3/16"=1'-0"
M2.02	MECHANICAL PIPING PLAN	3/16"=1'-0"
M3.00	MECHANICAL DETAILS	N/A
M3.01	MECHANICAL DETAILS	N/A
M4.00	TITLE 24	N/A
M4.01	TITLE 24	N/A

DUCT SIZING SCHEDULE

LOW VELOCITY DUCT SYSTEMS SUPPLY AND EXHAUST

CFM RANGE	ROUND DUCT DIAMETER OR EQUIVALENT RECTANGULAR DUCT	CFM RANGE	ROUND DUCT DIAMETER OR EQUIVALENT RECTANGULAR DUCT
UP TO 80	6" DIA.	900 – 1100	15" DIA.
80 – 120	7" DIA.	1100 – 1400	16" DIA.
120 – 180	8" DIA.	1400 – 1900	18" DIA.
180 – 270	9" DIA.	1900 – 2500	20" DIA.
270 – 350	10" DIA.	2500 – 3300	22" DIA.
350 – 450	11" DIA.	3300 – 4100	24" DIA.
450 – 600	12" DIA.	4100 – 5000	26" DIA.
600 – 750	13" DIA.	5000 – 6200	28" DIA.
750 – 900	14" DIA.	6200 – 7500	30" DIA.

GENERAL NOTES:

CONTRACTOR & BID

1. SUBMIT ALL MECHANICAL EQUIPMENT AND ACCESSORIES; AIR HANDLING FIXTURES, DUCTWORK, PIPING, FITTINGS, ETC. FOR APPROVAL PRIOR TO PURCHASE, FABRICATION OR INSTALLATION.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PER AIA201 ON ALL DUCTWORK AND PIPING SYSTEMS PRIOR TO FABRICATION AND INSTALLATION. SHOP DRAWINGS SHALL BE COMPLETELY COORDINATED BY GENERAL & MECHANICAL CONTRACTORS WITH ALL TRADES INDICATING IDENTIFYING: LIGHT FIXTURES, PLUMBING, SPRINKLER HEADS, SPRINKLER MAINS, CABLE-TRAYS, BASE BUILDING DUCTS, BEAMS/STRUCTURE, SPEAKERS, ETC. (EXISTING OR NEW). MECHANICAL ENGINEER DRAWINGS SHALL NOT BE USED AS SHOP DRAWINGS.
3. CONTRACTOR SHALL REVIEW EXISTING INSTALLED BUILDING CONDITIONS, BASE BUILDING; DUCTS, PIPES, SPRINKLER MAINS, CONDUITS, STRUCTURAL BEAMS, ETC. FOR COORDINATION, PRIOR TO BIDDING AND DEVELOPING SHOP DRAWINGS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY PERMITS.
5. SHOP DRAWINGS SHALL INDICATE CFM QUANTITIES AT ALL DIFFUSERS AND VAV BOX SCHEDULES PER FLOOR.
6. CONTRACTOR SHALL PROVIDE REPRODUCIBLE AS-BUILT DRAWINGS AND AUTOCAD FILES AND IN PDF FORM FOR ENGINEERS & LANDLORDS FILES.
7. CONTRACTOR SHALL PROVIDE AND INDICATE ON SHOP DRAWINGS ALL VOLUME CONTROL DAMPERS, FIRE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND ACCESS DOORS (IN DUCTS AND CEILINGS).
8. MECHANICAL CONTRACTOR SHALL PROVIDE 3RD PARTY INDEPENDENT AIR BALANCE REPORTS
9. DUCT TESTING AND LEAKAGE TESTING ARE TO BE PERFORMED BY HERS.

MISCELLANEOUS

1. IN NON-ACCESSIBLE PLASTER (GYP. BOARD) CEILINGS, ROUTE DISTRIBUTION TO PROVIDE VAV BOXES, VOLUME DAMPERS AND OTHER CONTROL DEVICES ABOVE ACCESSIBLE CEILINGS (TYPICAL).
2. ALL PIPING AND DUCTWORK SHALL FREELY PASS THROUGH ALL WALLS AND FLOORS WITHOUT RIGID CONNECTIONS. PENETRATION POINTS SHALL BE SLEEVED TO ALLOW PASSAGE OF PIPING OR DUCTWORK AND MAINTAIN 3/4" TO 1-1/4" CLEARANCE AROUND THE OUTSIDE SURFACES. THIS CLEARANCE SHALL BE TIGHTLY PACKED WITH ONE POUND DENSITY GLASS FIBER, AND CAULKED AIRTIGHT WITH NON-HARDENING SEALANT AFTER INSTALLATION OF PIPING OR DUCTWORK. G.C. TO PATCH WALL PENETRATION TO MATCH WALL RATING.
3. ALL HEATING HOT WATER OR CHILLED WATER PIPING SHALL BE INSULATED WITH 1-1/2" ONE-PIECE PERFORMED FIBER GLASS W/ ALL PURPOSE FIRE RETARDANT VAPOR BARRIER JACKET AND "K" FACTOR OF 0.24 AT 75°F MEAN TEMPERATURE. UNLESS SPECIFIED OTHERWISE.
4. ALL REQUIRED FIRE RATED CORRIDORS SHALL BE FIRE RATED CEILING TUNNEL TYPE WITH TOP OF TUNNEL EXTENDING NOT MORE THAN 6" ABOVE STANDARD BUILDING CEILING HEIGHT.
5. MECHANICAL CONTRACTOR SHALL INSTALL DUCT TYPE SMOKE DETECTORS AT ALL C.S.F.D.'S. FIRE/LIFE SAFETY CONTRACTOR SHALL INTERFACE ALL FIRE ALARM DEVICES WITH BUILDING FIRE ALARM SYSTEM.
6. ALL CONNECTIONS TO BASE BUILDING TOILET EXHAUST DUCTS SHALL REQUIRE EXTENDING BASE DUCTS WITH VOLUME DAMPER AND CONNECTING NEW DUCT WITH VOLUME DAMPER DOWNSTREAM OF BASE DUCT OPENING. NOTE: BASE DUCT IS NOT TO BE CAPPED OFF.

DUCTWORK & DIFFUSERS

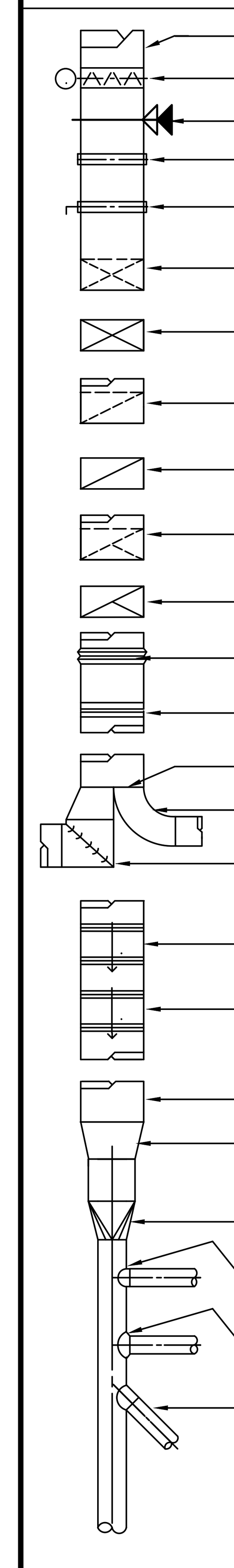
1. ALL DUCTWORK SHALL BE GALVANIZED STEEL SHEET METAL (U.N.O.). ALUMINUM OR ALUMINUM FLEX IS NOT PERMITTED (U.N.O.)
2. PROVIDE ALL LOW PRESSURE DUCTWORK SIZED EQUAL TO OR LESS THAN 0.08" W.G./100' (TYP.) UNLESS SCHEDULED OTHERWISE. INDICATE ALL DUCT SIZES ON SHOP DRAWINGS.
3. SIZE HIGH (MEDIUM) VELOCITY DUCTWORK AT .3" W.G./100' OR 2500 FPM, WHICHEVER PROVIDES THE LARGER DUCT.
4. PROVIDE MINIMUM DUCT RADIUS ON ELBOWS AT 1-1/2 TIMES DUCT SIZE, TYPICAL FOR ALL ELBOWS.
5. PROVIDE 5'-0" MAX. FLEX DUCT CONNECTION TO ALL DIFFUSERS, TYPICAL. FLEXIBLE DUCT SHALL BE CASCO SF-181 OR CLAS-GLAS ACOUSTICAL FLEX WITH MVD AT REMOTE END AWAY FROM DIFFUSERS.
6. PROVIDE DUCT SEALANT TYPE DP-1010 BY; DESIGN POLYMERICS, OR EQUAL TO ALL DUCT JOINTS, WHETHER HARD METAL OR FLEXIBLE DUCTS.
7. ALL HIGH (MEDIUM) PRESSURE DUCTS SHALL BE FREE FROM CONTACT WITH ALL: PIPING, WALLS, ELECTRICAL CONDUITS, CEILING SUSPENSION SYSTEMS, ETC.
8. ALL SUPPLY DUCTWORK SHALL BE INSULATED WITH 3 PCF DENSITY INORGANIC GLASS FIBER NON-FLEXIBLE WITH PRE-SIZED CANVAS VAPOR BARRIER JACKETING. INSULATION SHALL HAVE A "K" FACTOR OF 0.24 MAXIMUM AT 75°F MEAN TEMPERATURE.
9. CEILING DIFFUSER CORES AND BACK-PANS SHALL HAVE A FLAT BLACK ENAMEL FINISH. FACE TO BE OFF-WHITE BAKED ENAMEL ON PERFORATED PLATE AND MARGIN UNLESS SPECIFIED OTHERWISE BY ARCHITECT AND APPROVED BY MECHANICAL ENGINEER. NECK VELOCITIES NOT TO EXCEED 500 FPM MAXIMUM.
10. ALL BASE AND TENANT DEVELOPMENT V.A.V. BOX TAPS TO BASE BUILDING MAIN DUCT LOOPS SHALL BE DOWN STREAM OF ACOUSTIC LINED DUCTWORK AND 30" FROM ANY DUCT FITTING.
11. TENANT DUCT FITTINGS ARE NOT SHOWN FOR CLARITY. CONTRACTOR SHALL PROVIDE ALL NECESSARY DROPS, RISES, OFFSETS AND TRANSITIONS TO PROVIDE TENANT DUCT DISTRIBUTION AS SHOWN.
12. PROVIDE FIVE (5) PIECE MITERED ELBOWS ON DUCT SYSTEMS ABOVE 1500 FPM (FEET PER MINUTE) DUCT VELOCITY.
13. PROVIDE ALL DUCTWORK AND ASSOCIATED FITTING PER; "SHEET METAL & AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC." (SMACNA)
14. PROVIDE BRACING AND ANCHORAGE SUPPORTS ON ALL DUCTS SHALL PROVIDE ALL NECESSARY DROPS, RISES, OFFSETS AND TRANSITIONS TO PROVIDE TENANT DUCT DISTRIBUTION AS SHOWN.
15. ALL EXPOSED DUCTWORK IN OPEN CEILING AREAS SHALL BE NEATLY INSTALLED WITH SMOOTH CLEAN JOINTS AND WITHOUT; ANY DENTS, EXPOSED GLUE, OR EXCESSIVE TRANSITIONS. ALL EXPOSED DUCTWORK SHALL BE UN-INSULATED. ALL DIFFUSER CONNECTIONS IN EXPOSED NON-CEILING AREAS SHALL HAVE DIRECT CONNECTIONS FROM THE DUCT DROPS WITHOUT FLEXIBLE CONNECTIONS. DUCTWORK SHALL BE SUITABLE FOR PAINTING, PAINT PREPARATION SHALL BE BY THE GENERAL CONTRACTOR. COLOR TO BE DETERMINED BY ARCHITECT.

CITY & CODE REQUIRMENTS

1. PROVIDE FIRE DAMPERS OR COMBINATION SMOKE FIRE DAMPERS WITH ACCESS IN ALL RATED WALLS IN ACCORDANCE WITH LOCAL CODES.
2. PROVIDE LOCAL CITY APPROVED DUCT WRAP INSULATION WITH WRAPPING AND VERIFY CALIFORNIA ENERGY COMMISSION APPROVAL.
3. FABRICATE, INSTALL, SEAL AND INSULATE ALL DUCTWORK IN STRICT CONFORMANCE WITH THE REQUIREMENTS OF 2016 CALIFORNIA MECHANICAL CODES AND SMACNA STANDARDS AND LOS ANGELES CODE AMENDMENTS.
4. ALL EQUIPMENT, MATERIALS AND WORK SHALL CONFORM TO THE APPLICABLE CODES OF THE 2016 CALIFORNIA BUILDING, FIRE, MECHANICAL AND ELECTRICAL CODES AS ADOPTED BY THE CITY OF LOS ANGELES, C.E.C. TITLE 24 AND ALL OTHER CODES, SAFETY ORDERS AND REGULATIONS AS ENFORCED BY THE STATE OF CALIFORNIA, THE STATE AND CITY FIRE MARSHALL'S PERTAINING TO THIS PROJECT.

MECHANICAL LEGEND & ABBREVIATIONS

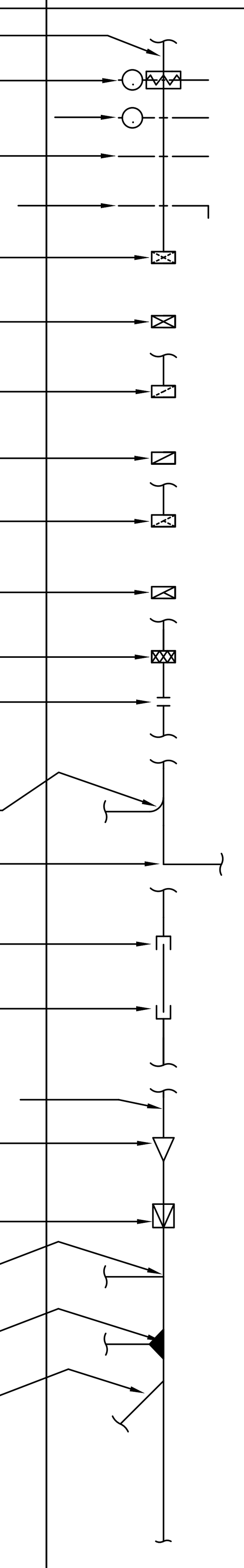
S□MBOL ON D□ GS DOUBLE LINE



DUCT□ OR□ □ LEGEND

- DUCT CONTINUOUS AS NOTED
- MOTORIZED CONTROL DAMPER
- COMBINATION SMOKE FIRE DAMPERS
- F.D – FIRE DAMPER
- M.V.D – MANUAL VOLUME DAMPER
- SUPPLY OR DISCHARGE AIR LOOKING AWAY FROM VIEWER
- SUPPLY OR DISCHARGE AIR LOOKING TOWARD VIEWER
- RETURN OR OUTSIDE AIR LOOKING AWAY FROM VIEWER
- RETURN OR OUTSIDE AIR LOOKING TOWARD VIEWER
- EXHAUST AIR LOOKING AWAY FROM VIEWER
- EXHAUST AIR LOOKING TOWARD VIEWER
- F.C. – FLEXIBLE CONNECTION
- F & G – FLANGED & GASKETED CONNECTION
- A" TH THROAT SIZE
- ROUND ELBOW
- SQUARE ELBOW WITH TURNING VANES
- RISE IN DUCTWORK
- DROP IN DUCTWORK
- A X B RECTANGULAR DUCT SIZE
- DUCT TRANSITION (RECT. TO RECT.)
- RECTANGULAR TO ROUND TRANSITION
- STRAIGHT TEE (NOT ALLOWED)
- CONICAL TEE
- 45° LATERAL BRANCH

S□MBOL ON D□ GS SINGLE LINE



ABBREVIATIONS

GENERAL ABBREVIATIONS

A.D.	ACCESS DOOR
B.H.P.	BRAKE HORSEPOWER
B.T.U.	BRITISH THERMAL UNIT
C.F.M.	CUBIC FEET PER MINUTE
CONN.	CONNECTION
C.S.F.D.	COMBINATION SMOKE FIRE DAMPER
D/L	LOUVER IN DOOR
DISCH.	DISCHARGE
E.A.	EXHAUST AIR
ENT.	ENTERING
°F	DEGREE FAHRENHEIT
F.A.	FRESH AIR
F.D.	FLOOR DRAIN
F.P.M.	FEET PER MINUTE
F.S.	FLOOR SINK
F.V.	FACE VELOCITY
H.P.	HORSEPOWER
K.W.	KILOWATT
(K-27)	LINED DUCTWORK, WITH PERFORATED METAL LINER
LVG.	LEAVING
(L)	LINED DUCTWORK
M.A.	MIXED AIR
MAX.	MAXIMUM
M.B.H.	THOUSANDS OF BRITISH THERMAL UNITS PER HOUR
MIN.	MINIMUM
M.H.P.	MOTOR HORSEPOWER
O.S.A.	OUTSIDE AIR
P.D.	PRESSURE DROP
P.O.C.	POINT OF CONNECTION
R.A.	RETURN AIR
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
R.O.	RELIEF OPENING
R.O.F.	RELIEF OPENING W/ CSFD
S.A.	SUPPLY AIR
S.M.	SHEET METAL
S.O.	SCREENED OPENING
S.P.	STATIC PRESSURE
S.S.	STAINLESS STEEL
S.T.	SOUND TRAP
T.A.	TRANSFER AIR
T.E.	TOILET EXHAUST
T.P.	TOTAL PRESSURE

DIFFUSERS, GRILLES & REGISTERS

C.D.	CEILING DIFFUSER
C.D.F.	CEILING DIFFUSER W/ CSFD
S.R.	SUPPLY REGISTER
S.R.F.	SUPPLY REGISTER W/ CSFD
R.G.	RETURN GRILLE
R.G.F.	RETURN GRILLE W/ CSFD
R.R.	RETURN REGISTER
R.R.F.	RETURN REGISTER W/ CSFD
E.G.	EXHAUST GRILLE
E.G.	EXHAUST GRILLE W/ CSDF
E.R.	EXHAUST REGISTER
E.R.F.	EXHAUST REGISTER W/ CSFD
S.W.R.	SIDE WALL REGISTER

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EQUIPMENT DESIGNATION	T	THERMOSTAT
OR	SHEET NOTE REFERENCE	TC	TEMPERATURE CONTROLLER
	AIR FLOW	TS	TEMPERATURE SENSOR
		H	HUMIDISTAT
		S	SWITCH
			SMOKE DETECTOR
			POINT OF CONNECTION

((RADAR))

RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

REGISTERED PROFESSIONAL ENGINEER
VALENTINE DUONG
M39698
EXP:12/31/19
MECHANICAL
STATE OF CALIFORNIA

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE

MECHANICAL COVER SHEET

PROJECT
1818

SCALE
AS NOTED

DRAWN BY

DATE
09/18/19

SHEET NUMBER
M0.00

CHILLED WATER FAN COIL UNITS SCHEDULE

SYMBOL	MAKE	MODEL/TYPE	SERVICE	NOMINAL CAPACITY COOLING BTU/HR	NOMINAL CAPACITY HEATING BTU/HR	CFM	TOTAL S.P.	OSA	ELECTRICAL VOLTS–Ø–Hz	ELECTRICAL MOCP	ELECTRICAL M.C.A.	ELECTRICAL FLA	E.W.T. DB (°F) C.W.	E.W.T. DB (°F) H.W.	L.W.T. DB (°F) C.W.	L.W.T. DB (°F) H.W.	CHILLED WATER COIL DATA GPM	CHILLED WATER COIL DATA # OF ROWS	CHILLED WATER COIL DATA TUBE ø	CHILLED WATER COIL DATA FIN TYPE	HOT WATER COIL DATA GPM	HOT WATER COIL DATA ROWS/FPI/CIRC	HOT WATER COIL DATA TUBE ø	HOT WATER COIL DATA FIN TYPE	PHYSICAL DIMENSIONS & DATA LENGTH (IN.)	PHYSICAL DIMENSIONS & DATA WIDTH (IN.)	PHYSICAL DIMENSIONS & DATA HEIGHT (IN.)	PHYSICAL DIMENSIONS & DATA WEIGHT (LBS.)	REMARKS
FC 1	CARRIER	42DCA12HRAY6AYERYQ	ARCHIVE 107	29.3	45.4	1200	0.4	115	120,1ø,60	–	–	8	48	180	60	150	4.9	4	–	–	3.1	1	–	–	30	37	17	170	SEE NOTES BELOW

NOTES:

1. PROVIDE WITH FIELD INSTALLED DISCONNECT SWITCH (LOCKING TYPE W/ CURRENT LIMITING FUSE).
2. PROVIDE REQUIRED ACCESS TO UNIT ACCESS POINTS AND SERVICE AREAS.
3. PROVIDE PROGRAMMABLE THERMOSTATS WITH HUMIDITY CONTROL FOR ALL UNITS.
4. CONTRACTOR IS TO FIELD VERIFY THE EXACT EWT/LWT OF HOT AND COOL WATER FLOWING INTO TENANT SPACE.
5. PROVIDE 2" PLEATED MERV–8 FILTERS PER MANUFACTURER'S RECOMMENDATION.
6. PROVIDE HUMIDITY CONTROL THAT IS TO BE SET AT 30–50% RELATIVE HUMIDITY AND 70°F DRY BULB TEMPERATURE.
7. PROVIDE EC MOTOR 3 DISCRETE SPEED WITH POTENTIOMETER
8. PROVIDE STAINLESS STEEL DRAIN PANS
9. MECHANICAL CONTRACTOR TO PROVIDE LITTLE GIANT VCMA–15 CONDENSATE PUMPS FOR ALL UNITS. COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO BID TO PROVIDE ELECTRICAL CONNECTIONS AS NECESSARY.

WATER SOURCE HEAT PUMP SCHEDULE

SYMBOL	MAKE	MODEL/TYPE	SERVICE	NOMINAL CAPACITY COOLING BTU/HR	NOMINAL CAPACITY HEATING BTU/HR	CFM	S.P.	FAN POWER (HP)	ELECTRICAL VOLTS–Ø–Hz	ELECTRICAL MOCP	ELECTRICAL M.C.A.	ELECTRICAL FLA	E.A.T. DB (°F) COLD	E.A.T. DB (°F) HOT	L.A.T. DB (°F) COLD	L.A.T. DB (°F) HOT	GPM	OSA	PHYSICAL DIMENSIONS & DATA LENGTH (IN.)	PHYSICAL DIMENSIONS & DATA WIDTH (IN.)	PHYSICAL DIMENSIONS & DATA HEIGHT (IN.)	EER	COP	WEIGHT (LBS)	REMARKS
(N) HP 1	CARRIER	50PCH024NCC3ECE1	CONF. ROOM	25,000	27,300	720	0.5	1/2	208/1ø/60	30	20	16.3	80	68	57	103.1	4.9	100	43	22	18	15.0	4.3	190	SEE NOTES BELOW
(N) HP 2	CARRIER	50PCH018NCC3ECE1	OFFICE	19,000	20,500	585	0.5	1/3	208/1ø/60	15	12	10.2	80	68	57.6	100.5	3.7	80	43	22	17	15.2	4.4	175	SEE NOTES BELOW
(N) HP 3	CARRIER	50PCH030NCC3ECE1	CATALOGING ROOM	30,000	32,800	840	0.5	1/2	460/3ø/60	15	9	7.2	80	68	56.7	104.1	5.8	200	43	22	18	16.1	4.4	195	SEE NOTES BELOW
(N) HP 4	CARRIER	50PCH018NCC3ECE1	LOBBY	19,000	20,500	635	0.5	1/3	460/3ø/60	15	10	8.6	80	68	57.6	100.5	3.7	100	43	22	17	15.2	4.4	175	SEE NOTES BELOW
(N) HP 5	CARRIER	50PCH060NCCACD1	STACKS	60,000	68,000	2,000	0.5	1.0	460/3ø/60	20	14	11.8	80	68	59.0	99.5	12	225	54.5	25	21	15.8	4.2	300	SEE NOTES BELOW
(N) HP 6	CARRIER	50PCH024NCC3ECE1	ARCHIVE & OFFICE	25,000	27,300	705	0.5	1/2	460/3ø/60	15	7	5.6	80	68	57	103.1	4.9	100	43	22	18	15.0	4.3	190	SEE NOTES BELOW

NOTES:

1. PROVIDE WITH FIELD INSTALLED DISCONNECT SWITCH (LOCKING TYPE W/ CURRENT LIMITING FUSE).
2. PROVIDE REQUIRED ACCESS TO UNIT ACCESS POINTS AND SERVICE AREAS.
3. PROVIDE 7–DAY PROGRAMMABLE THERMOSTATS FOR ALL AC UNITS.
4. PROVIDE DUCT TYPE SMOKE DETECTORS IN SUPPLY SIDE FOR HP–5
5. CONDENSER WATER EWT AT 75°F. CONTRACTOR IS TO FIELD VERIFY THE EXACT EWT/LWT OF CONDENSOR WATER FLOWING INTO TENANT SPACE.
6. PROVIDE 2" PLEATED MERV–8 FILTERS PER MANUFACTURER'S RECOMMENDATION.
7. MECHANICAL CONTRACTOR TO PROVIDE LITTLE GIANT VCMA–15 CONDENSATE PUMPS FOR ALL UNITS. COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO BID TO PROVIDE ELECTRICAL CONNECTIONS AS NECESSARY.

HUMIDIFIER SCHEDULE

SYMBOL	SERVICE/ LOCATION	MAKE	MODEL/SIZE	DIMENSIONS (H"xW"xD")	KW	CAPACITY LBS/HR	SUPPLY WATER OD	DRAIN WATER OD	CFM	STEAM OUTLET	ELECTRICAL	FLA	MOCP	OPERATING WEIGHT (LBS)	REMARKS
H 1	ARCHIVE 107	PURE HUMIDIFIER	ES–3	14"X17.5"X14"	3	9.0	1.5"	0.75"	1200	1.5"	115V/1ø/60HZ	25.0	–	131	SEE NOTES BELOW

NOTES:

1. PROVIDE LOCAL HUMIDISTAT WITH PROPORTIONAL MODULATING CONTROL FOR EACH HUMIDIFIER.
2. THE HUMIDISTAT SHALL BE SET PER CLIENT DIRECTION.
3. PROVIDE AIR PROVING SWITCH TO SHUT DOWN HUMIDIFIER OPERATION IN THE EVENT OF FAN COIL SHUT DOWN.
4. HUMIDIFIER SHALL BE OFF IF THERE IS NO AIRFLOW. PROVIDE ALL CONTROL REQUIREMENT PER MANUFACTURER RECOMMENDATION
5. HUMIDIFIER INSTALLATION SHALL BE PER MANUFACTURER RECOMMENDATION. INSTALLATION SHALL BE PERFORMED IN A WAY THAT CONDENSATE DRAIN WILL BE BACK TO HUMIDIFIER THROUGH THE STEAM SUPPLY LINE.
6. PROVIDE UNIT WITH WALL BRACKETS
7. PROVIDE HIGH LIMIT HUMIDISTAT SENSOR TO BE IN DUCTWORK DOWNSTREAM OF FANCOIL UNIT MINIMUM 10 FEET
8. REFER TO DETAIL #10 & #11 ON M3.01 FOR ADDITIONAL DETAILS
9. PROVIDE DCT–927 TEMPERATURE ACTUATED DRAIN TEMPERING KIT
10. PROVIDE ADDITIONAL DRAIN PAN UNDER HUMIDIFIER AND UNDER THE INJECTION TUBE LEADING TO SANITARY DRAIN.
11. MECHANICAL CONTRACTOR TO PROVIDE LITTLE GIANT VCMA–15 CONDENSATE PUMPS FOR ALL UNITS. COORDINATE WITH ELECTRICAL CONTRACTOR PRIOR TO BID TO PROVIDE ELECTRICAL CONNECTIONS AS NECESSARY.

AIR DISTRIBUTION SCHEDULE

TAG	MANUFACTURER	MODEL	SIZE	MAX NC	MOUNTING	TYPE
S–1 CFM	TITUS	PMC	24"X24"	25	T–BAR	PERFORATED MODULAR CORE DIFFUSER
R–1 CFM	TITUS	PAR	24"X24"	25	T–BAR	PERFORATED RETURN DIFFUSER
L–1 CFM	TITUS	ML–TZ	4'–0"	25	T–BAR	ML–38–TZ/ ¾" SLOT SPACING

NOTES:
1. IN DUCTED APPLICATIONS, ALL VOLUME DAMPERS SHALL BE MOUNTED A MINIMUM OF 6' AWAY FROM REGISTER

DIFFUSERS, GRILLES & REGISTERS

AIR SUPPLY DIFFUSER SCHEDULE

MARK OR SYMBOL	DESCRIPTION ① & ②	NECK SIZE	FACE DIMENSION	CFM RANGE	MAX NC	ROUND DUCT DIFF. CONNECTION OR EQUIV. RECT. DUCT	REMARKS
1–WAY BLOW 2–WAY BLOW 3–WAY BLOW 4–WAY BLOW	TITUS MODEL PMC WITH BORDER TYPE–3 FOR FLUSH MOUNTED LAY IN T–BAR APPLICATIONS.	6 X 6	ACOUSTICAL CEILINGS = 24"x24" SURFACE MOUNTED APPLICATIONS IN GYPSUM BOARD CEILINGS = NECK SIZE + 3"	UP TO 125	20	8" DIA.	
		8 X 8		126 – 200	20	9" DIA.	
		10 X 10		201 – 300	20	12" DIA.	
		12 X 12		301 – 450	20	14" DIA.	
		16 X 16		451 – 700	20	16" DIA.	
		18 X 18		701 – 900	25	18" DIA.	

NOTES:
① T–BAR CEILING DIFFUSERS SHALL BE 24"x 24 PERFORATED FACE DIFFUSERS WITH FOUR (4) DIRECTIONAL (FULLY ADJUSTABLE) AIR PATTERN MODULAR CORES W/ EQUAL AIR FLOW IN ALL FOUR DIRECTIONS.
② PROVIDE TITUS MODEL PMC–DF FOR DROPPED FACE (TEGULAR) APPLICATIONS. CONFIRM WITH GENERAL CONTRACTOR

RETURN & EXHAUST DIFFUSER SCHEDULE

MARK OR SYMBOL	DESCRIPTION	NECK SIZE	FACE DIMENSION	CFM RANGE	MAX NC	ROUND DUCT DIFF. CONNECTION OR EQUIV. RECT. DUCT	REMARKS
RETURN EXHAUST	PERFORATED FACE RETURN OR EXHAUST GRILLE TITUS MODEL PAR OR EQUAL.	6 X 6	ACOUSTICAL CEILINGS = 24"x24" SURFACE MOUNTED APPLICATIONS IN GYPSUM BOARD CEILINGS = NECK SIZE + 3"	UP TO 100	15	6" DIA.	
		8 X 8		101 – 200	15	9" DIA.	
		10 X 10		201 – 300	15	12" DIA.	
		12 X 12		301 – 500	20	14" DIA.	
		15 X 15		501 – 700	20	16" DIA.	
		18 X 18		801 – 1000	25	20" DIA.	
		22 X 22		1000 – 1500	25	24" DIA.	

NOTES:
① ALL RETURN AIR REGISTERS SHALL HAVE OUTER BLADES PARALLEL TO THE LONG DIMENSION.
② IN DUCTED APPLICATIONS, ALL VOLUME DAMPERS SHALL BE MOUNTED A MINIMUM 6' AWAY FOR REGISLERS.

((RADAR))

RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor, Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

REGISTERED PROFESSIONAL ENGINEER
VALENTINE DUONG
M39698
EXP: 12/31/19
MECHANICAL
STATE OF CALIFORNIA

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

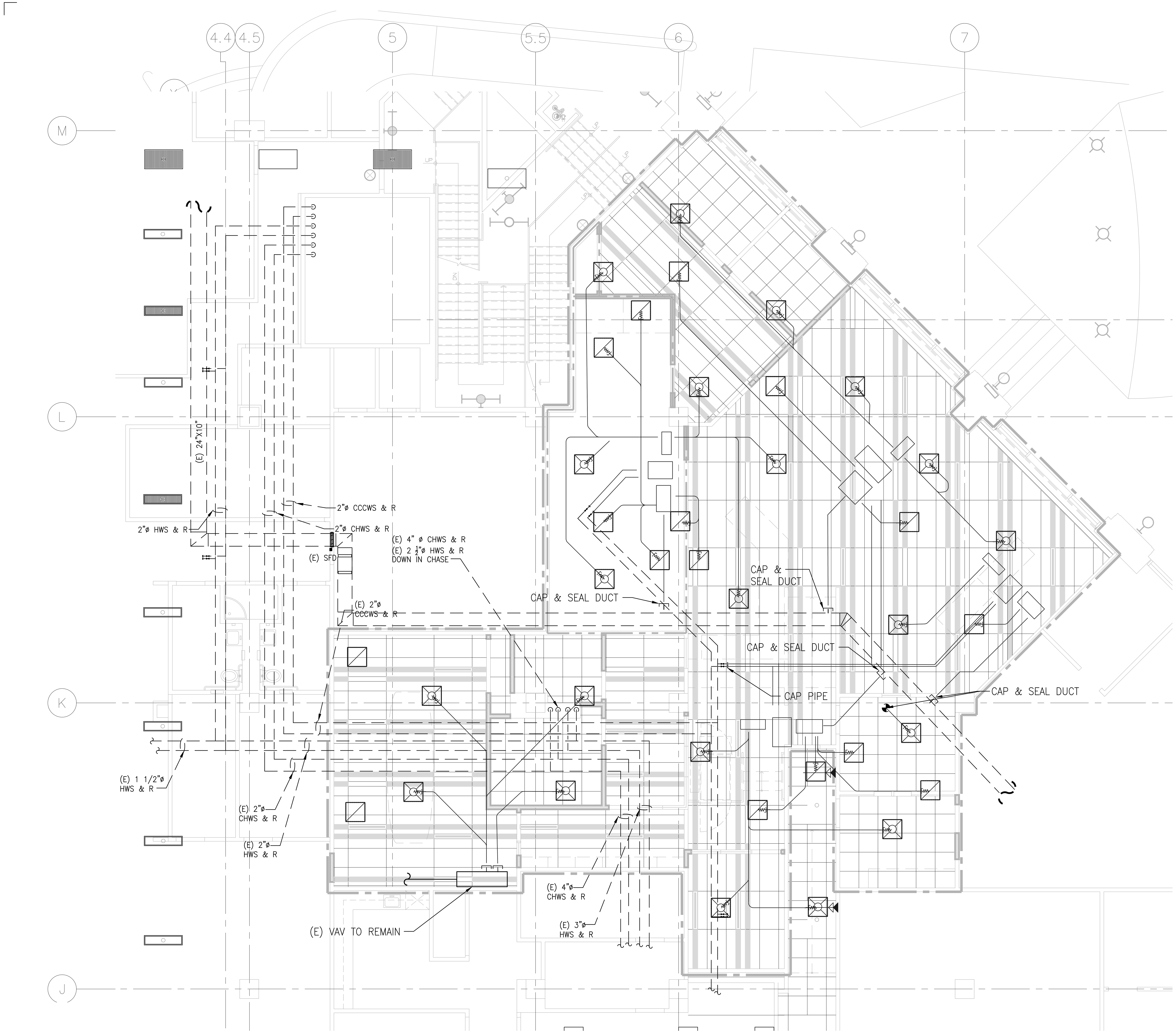
MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
MECHANICAL SCHEDULES

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
M1.00



1 MECHANICAL DEMOLITION PLAN
SCALE: 3/16"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
VALENTINE DUONG
M39698
EXP:12/31/19
MECHANICAL
STATE OF CALIFORNIA

((RADAR))

RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

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NO	ISSUE	DATE
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	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

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TITLE
MECHANICAL DEMOLITION PLAN

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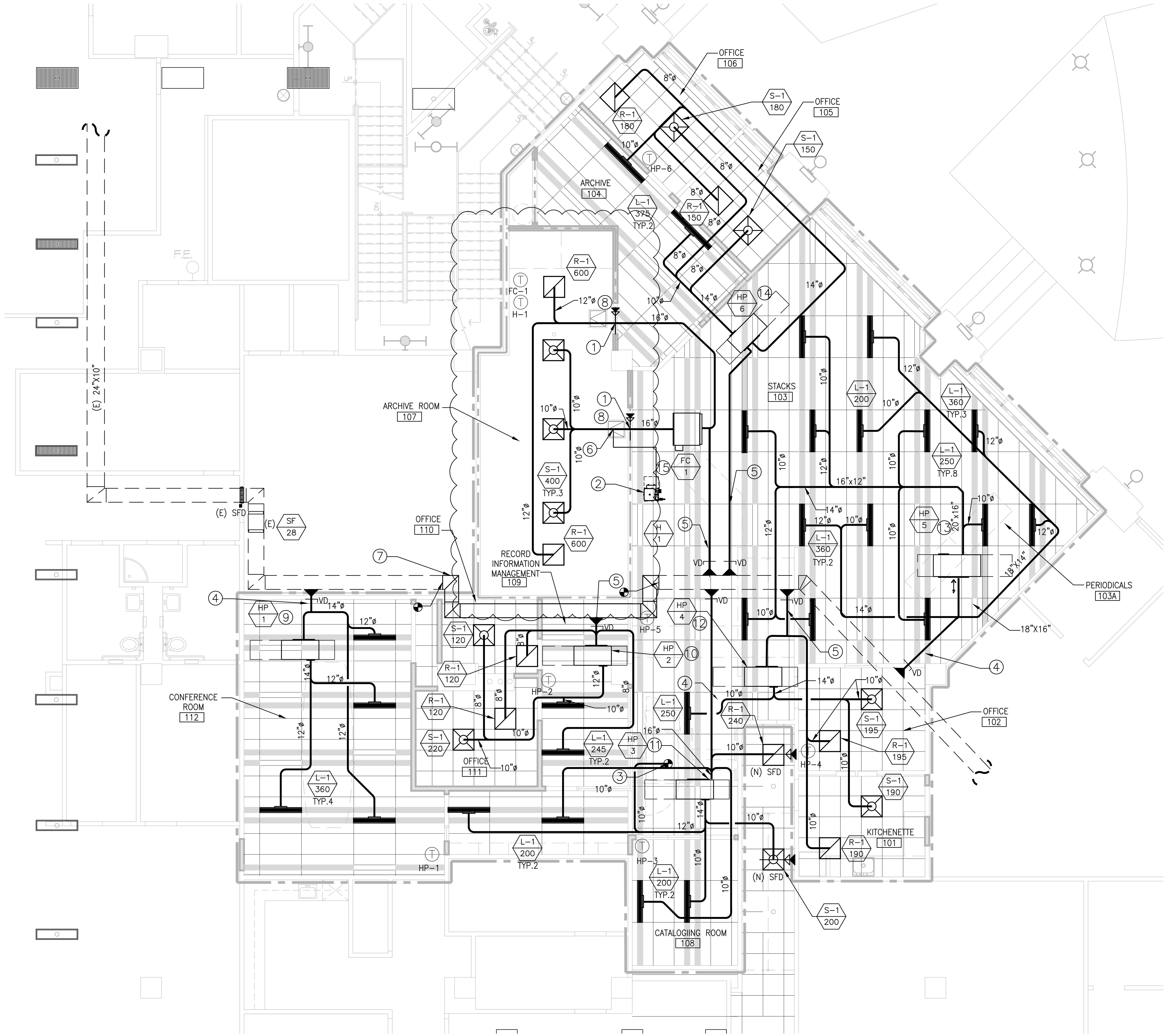
SHEET NUMBER
M2.00



KEY NOTES

1. PROVIDE STAINLESS STEEL COMBINATION FIRE SMOKE DAMPER. POTTORFF MODEL FSD-142-SS.
2. SEE DETAIL #10 & #11 ON M3.01
3. P.O.C. TO EXISTING DUCT TO OPEN OFFICE 188
4. 10"ø SUPPLY OSA DUCT W/ MANUAL BALANCING DAMPER
5. 8"ø SUPPLY OSA DUCT W/ MANUAL BALANCING DAMPER
6. STEAM INJECTION TUBE FROM HUMIDIFIER IS TO BE AFTER THE COMBINATION FIRE SMOKE DAMPER.
7. 18"X10" OUTSIDE AIR DUCT TO BE DISCONNECTED AND RECONNECTED AS SHOWN WITH MINIMAL DOWNTIME
8. 18"X18" ACCESS HATCH
9. SET VOLUME DAMPER TO ALLOW 100 CFM OUTSIDE AIR TO HP-1
10. SET VOLUME DAMPER TO ALLOW 80 CFM OUTSIDE AIR TO HP-2
11. SET VOLUME DAMPER TO ALLOW 200 CFM OUTSIDE AIR TO HP-3
12. SET VOLUME DAMPER TO ALLOW 100 CFM OUTSIDE AIR TO HP-4
13. SET VOLUME DAMPER TO ALLOW 225 CFM OUTSIDE AIR TO HP-5
14. SET VOLUME DAMPER TO ALLOW 100 CFM OUTSIDE AIR TO HP-6
15. SET VOLUME DAMPER TO ALLOW 115 CFM OUTSIDE AIR TO FC-1

1 **MECHANICAL PLAN**
SCALE: 3/16"=1'-0"

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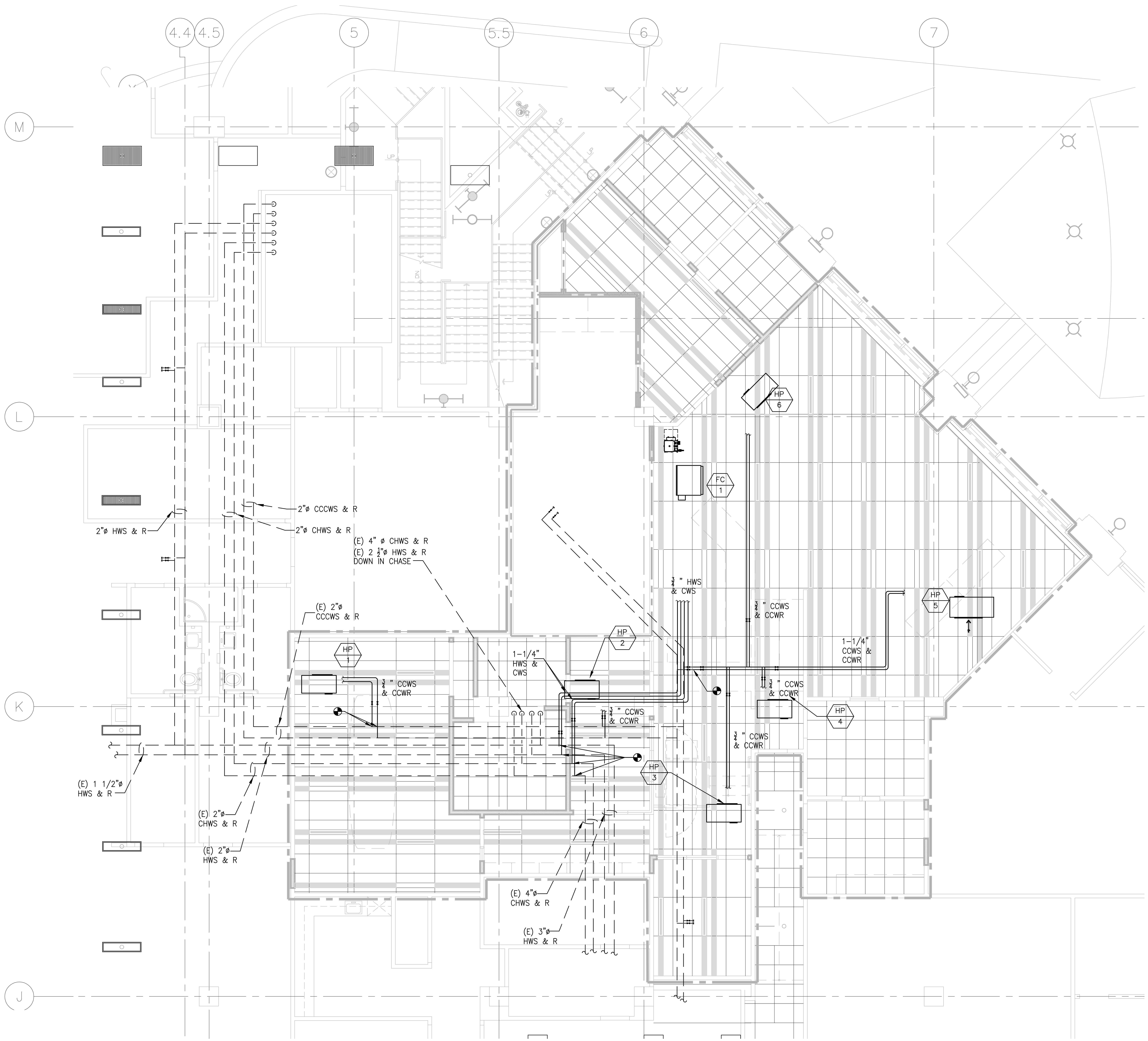

1 **MECHANICAL PIPING PLAN**
SCALE: 3/16"=1'-0"

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RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
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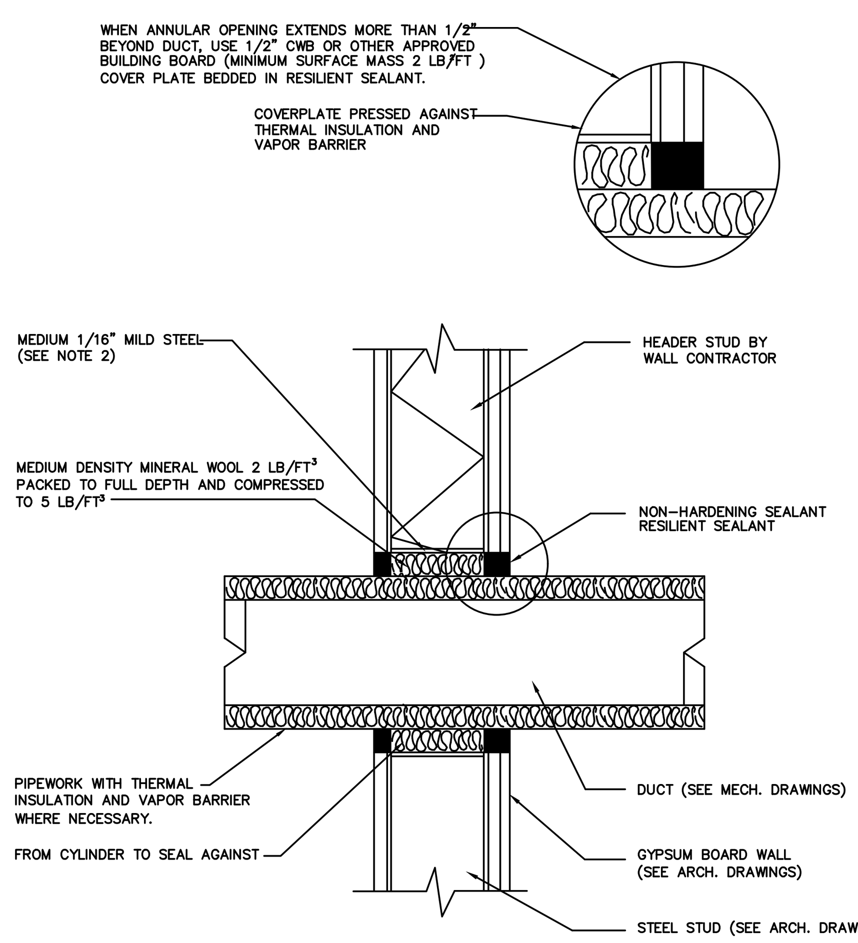
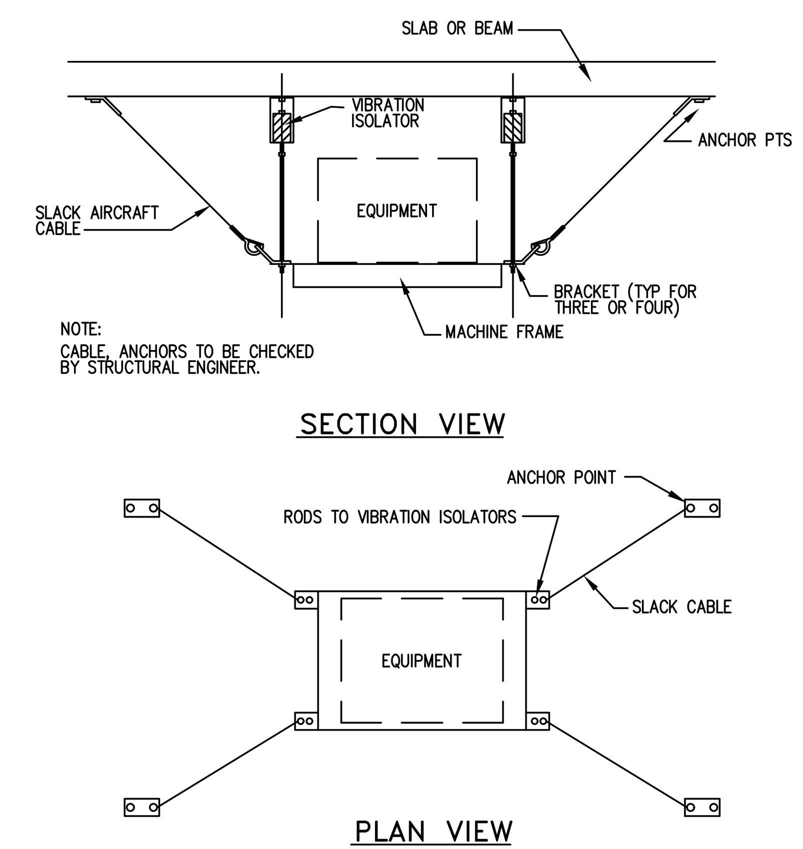
SHEET NUMBER
M2.02



PURPOSE:
TO MAINTAIN SOUND INSULATION BETWEEN ROOMS.

NOTES:
1. PIPE SUPPORTS TO BE SPACED SUFFICIENTLY FROM PARTITION LINE TO ALLOW ACCESS FOR INSTALLATION/SEALING.
2. THICKNESS OF STEEL TO BE SUFFICIENT TO SUPPORT MORTAR AND INFILL ABOVE MINIMUM THICKNESS 1/16".

DUCT PENETRATION THRU NON-RATED WALL | NOT TO SCALE | 1



EQUIPMENT RESTRAINT DETAIL | NOT TO SCALE | 2

COMBINATION SMOKE/FIRE DAMPER SPECIFICATIONS:

Furnish and install dampers as shown and detailed on plans, that meet or exceed the following requirements; Frame shall be a minimum 16 gauge galvanized steel formed from a continuous formed channel section. Bearings shall be formed in the frame and match the contour of the blade. Blade edge and the jamb seals shall be be low friction type non-degradable steel to steel and withstand 850^F, with a minimum leakage rating of UL 555S Class II. Each damper shall be classified by Underwriters Laboratories as a "corridor damper" for installation in tunnel corridors and shall be (1) hour rated per UL standard 555 and leakage rated per UL standard UL555S. Each damper shall carry an Underwriters Laboratory label as well as a California State Fire Marshal Label. File numbers for Underwriters Laboratories, California State Fire Marshal, and /or Los Angeles City Testing Laboratory shall be kept current. Damper motors shall be either 24 volt AC or 120 volt AC and shall drive the damper to the closed position when power is disrupted "Normally closed". Damper shall be manufactured by Pottoroff, Ruskin, or approved equal.

COMBINATION SMOKE/FIRE DAMPER INSTALLATION NOTES:

POTTOROFF MODELS FSD-142 OR EQUAL -- Calif. State Fire Marshall No. 3225-0368 : 110 & 3230-0368 : 111
POTTOROFF MODELS FSD-172 OR EQUAL -- Calif. State Fire Marshall No. 3225-0368 : 110 & 3230-0368 : 111
FOR TUNNEL RATED CORRIDOR APPLICATIONS

1. Framed Openings: Standard steel framed fire partition openings with a simple header are acceptable. Fire rated material lining of a steel framed opening is not required. Opening shall be a minimum of 1/8" per foot larger than the overall damper and assembly size. Maximum opening shall not exceed an 1/8" per foot plus 1". Opening shall not be less than a 1/4" larger than any size damper and sleeve assembly.

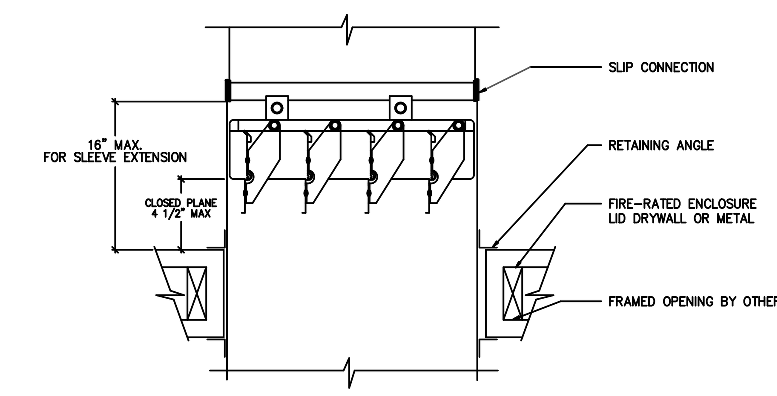
2. Duct to damper sleeve connections: A break away style connection shall be used at every damper sleeve connection. Rectangular ducts shall use one or more of the following connections: plain s-slip, hemmed s-slip, standing s-slip, and other similiarily used slip type joints. where approved mechanical type joint connections such as "WDCI" may be used in lieu of slip joints provided the corners are not bolted and non-metallic cleats are used. Round ducts shall use a draw band type connection or other similiar used slip connection. Sleeves may extend beyond partition up to a maximum of 16" when supplied with a factory mounted motor, access door or duct mounted smoke detector.

3. Mounting Angles: Mounting angles shall be a minimum of 1 1/2" x 1 1/2" x 16 Ga. steel. Mounting Angles shall over lap the wall framing by a minimum of 1", which may require large angles for larger dampers. Angles shall be attached to the sleeve not the partition. The attachment method shall be either: No. 10 sheet metal screws, 1/4" x 20 bolts or 1/2" welds every 12" O.C. maximum, with a minimum of two attachments for each of four sides, both top and bottom. A 1" wide flange termination may be used in lieu of the mounting angle on the bottom sides of the damper sleeve. Attachment angles and flanges shall not interfere with the operation of the damper blades and actuator.

4. Damper/Sleeve Attachment: The damper blades may be installed outside of the partition provided the "closed" plane of the blades is no more than 4 1/2" outside of the partition. The damper shall be attached to the sleeve with No. 10 sheet metal screws, 1/4" x 20 bolts and nuts or welded every 9" o.c. maximum. A minimum of two connections for each of all four (4) sides is required.

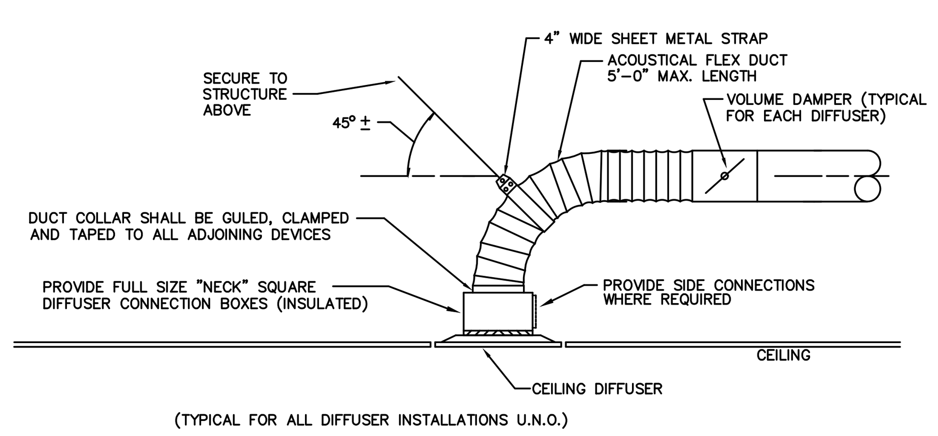
5. Sealing: A continuous bead of Dow - Corning 999, Dow - Corning 732, Fiberfax or GE RTV silicon rubber sealant shall be applied between the damper and sleeve. Only apply sealant to the linkage side of the damper.

6. Electric motor Requirements: When provided with 5800 electric actuators, a maximum of 3" must be provided between the wall and the centerline of the drive shaft.



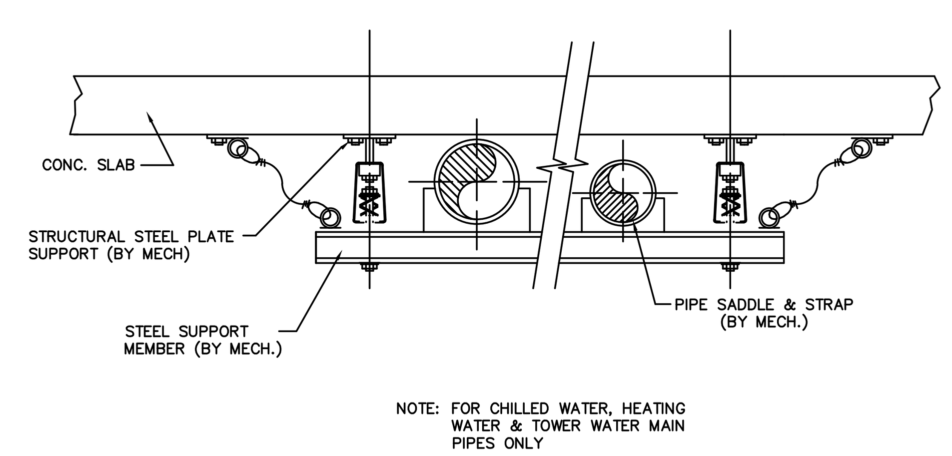
NOTE:
Dampers shall be controlled by local duct type smoke detectors or area detectors where allowed by local code approving authorities. Provide one detector per combination smoke fire damper or area detector coverage where allowed by local code approving authorities.

CORRIDOR TYPE FIRE SMOKE DAMPER DETAIL | NOT TO SCALE | 3



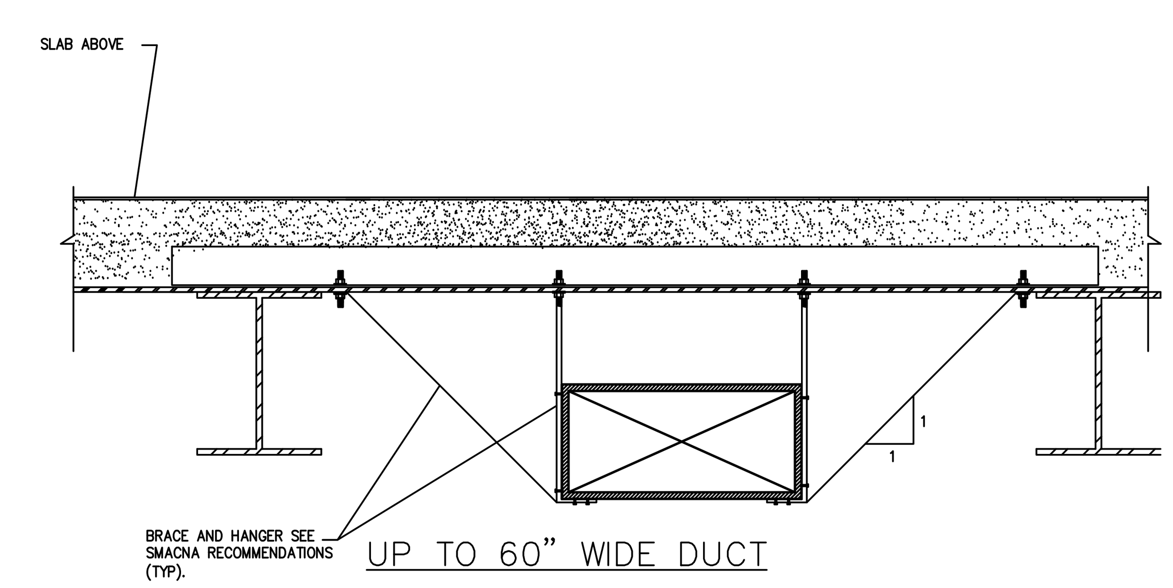
(TYPICAL FOR ALL DIFFUSER INSTALLATIONS U.N.O.)

DIFFUSER DUCTING DETAIL | NOT TO SCALE | 4

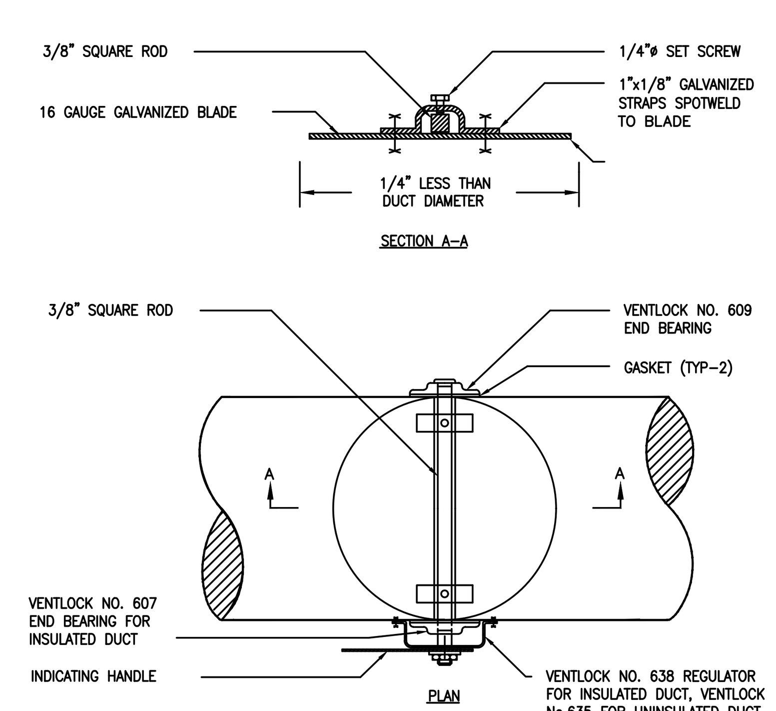


NOTE: FOR CHILLED WATER, HEATING WATER & TOWER WATER MAIN PIPES ONLY

CHW/HW/CW PIPING SUPPORT DETAIL | NOT TO SCALE | 5

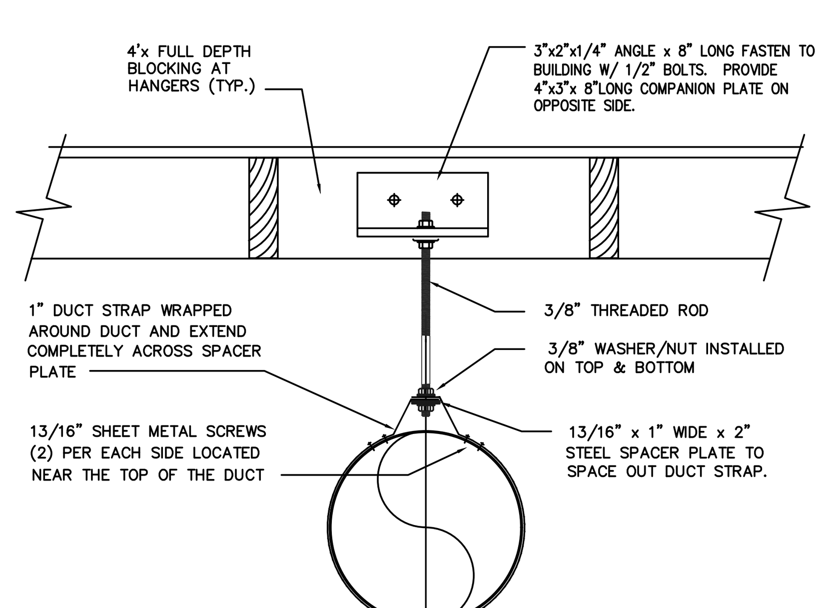


DUCT SUPPORT DETAIL | NOT TO SCALE | 6

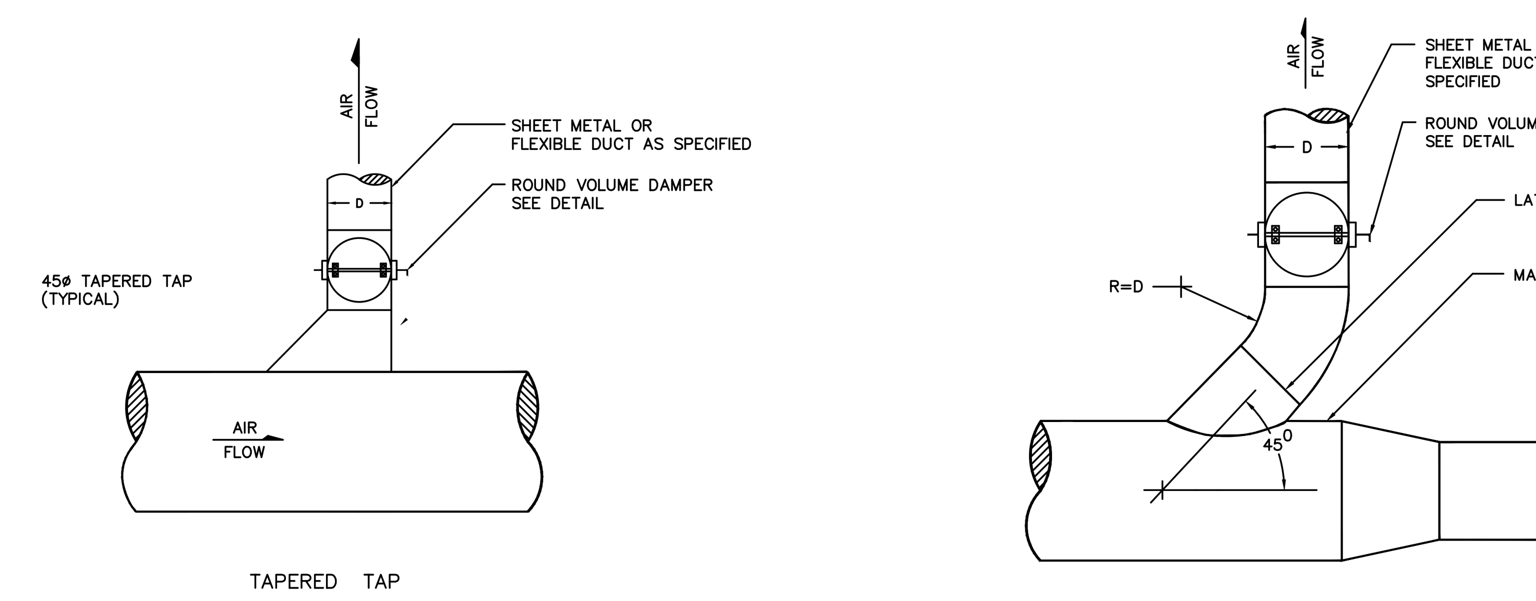


LOW PRESSURE UP TO 14"ø DUCTS

ROUND VOLUME DAMPER | NOT TO SCALE | 7



ROUND DUCT HANGER | NOT TO SCALE | 8



NOTES:
1. DEPTH OF MAIN DUCT MUST BE 2" LARGER THAN TAPERED TAKEOFF. ALL TAKEOFFS SHALL BE ON 45° ANGLE, CONICAL TAKEOFFS WILL NOT BE APPROVED.

TYPICAL DUCT TAKEOFFS | NOT TO SCALE | 9

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RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.
423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
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WWW.RACHELALLEN.NET

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
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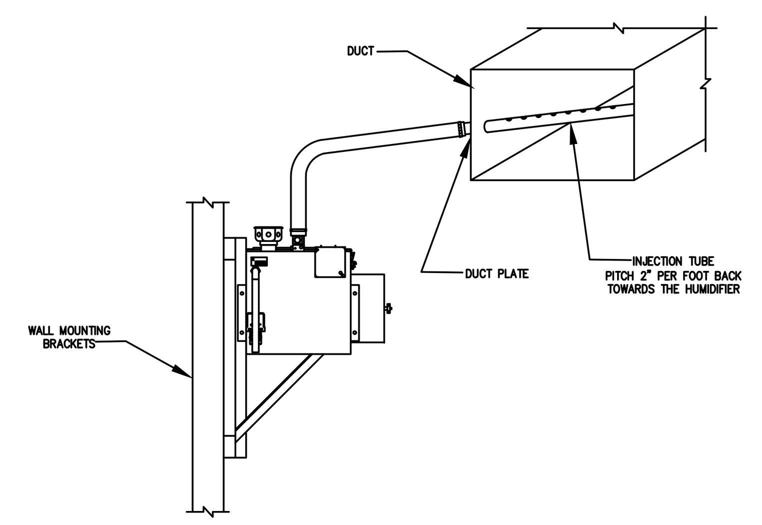
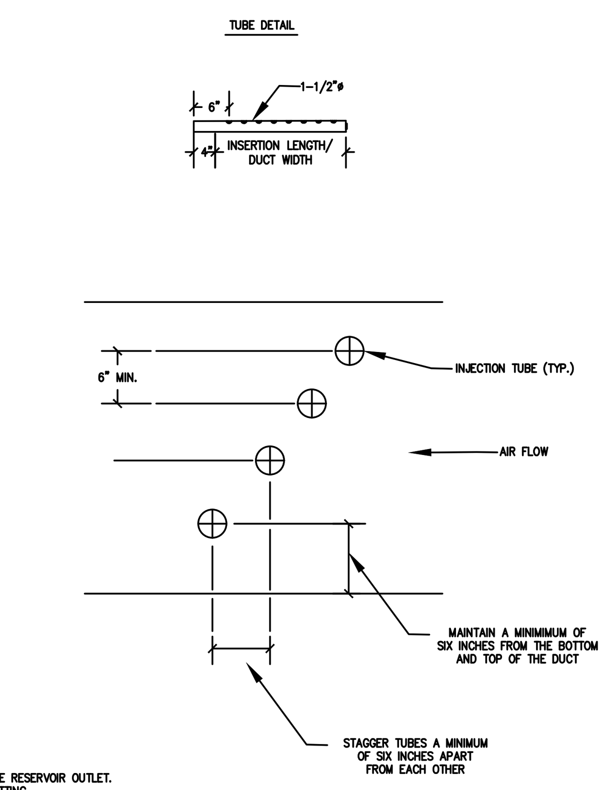
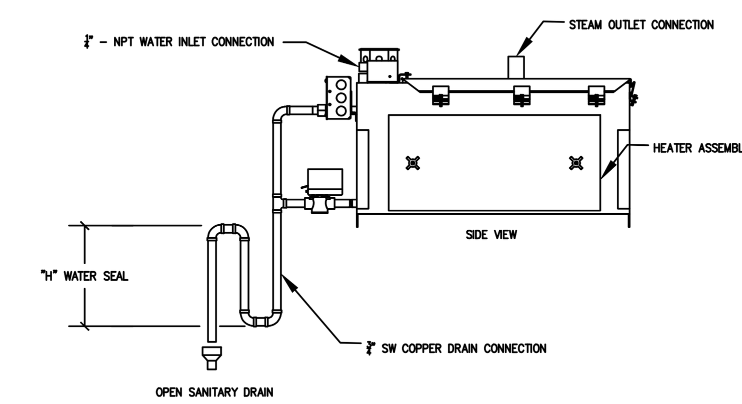




NOTES:

1. PITCH HARD PIPING OR FLEXIBLE HOSE 2" PER FOOT IF STEAM IS FLOWING UPHILL, 1/4" PER FOOT IF THE STEEAM IS FLOWING DOWNHILL.
2. WHEN FEASIBLE TO DO SO, INSTALL AM INIMUM ONE-FOOT RISER FROM THE TOP OF THE TANK TO REDUCE CONDENSATE CARRYOVER
3. USE FLEXIBLE CONNECTIORS OR UNIONS TO ALLOW FOR EASY REMOVAL OF COVER
4. SUPPORT FLEXIBLE HOSE EVERY 18" TO AVOID SAGGING
5. HARD PIPING OR FLEXIBLE HOSE MUST MATCH RESERVOIR OUTLET SIZE. DO NOT USE SUPPLY PIPING IWTH A SMALL INSIDE DIAMETER THAN THE RESERVOIR OUTLET.
6. FAILURE TO FOLLOW THE PIPING RECOMMENDATION MAY RESULT IN BLOWN WATER SEALS, LEAKING COVER GASKET, OR DISPERSION TUBES SPLITTING.
7. REFERENCE JOB SPECIFIC TUBE ASSEMBLY O&M INCLUDED WITH UNIT ORDER FOR COMPLETE DETAILS.
8. DRAIN TO BE 3 FEET AFTER THE STEAM INJECTION POINT
9. THE HUMIDIFIER STEAM INJECTION TUBE IS TO BE 18" AWAY FROM THE FAN COIL
10. THE HIGH LIMIT HUMIDISTAT ACCESSORY IS TO BE PLACED IN THE DUCTWORK DOWNSTREAM FROM THE POINT OF INJECTION AT A DISTANCE OF 8-10 FEET.
11. THE INJECTION TUBE SHALL BE MOUNTED A MINIMUM OF 2 FEET DOWNSTREAM FROM AN ELBOW OR OTHER TURBULENT AIR FLOW AREA.
12. DRAIN PAN SHOULD EXTEND PAST ALL EDGES OF THE HUMIDIFIER AND IF INSTALLED IN THE DUCT, IT SHALL EXTEND A MINIMUM OF 3 FEET DOWNSTREAM FROM THE INJECTION TUBE. THE PAN SHOULD BE OF A SIZE WHICH IS SUFFICIENT TO RETAIN SUDDEN DRAINAGE OF THE HUMIDIFIER'S CONTENTS. THE PAN SHOULD BE DRAINED TO A SANITARY DRAIN.
13. MOUNT HUMIDIFIER AT A LOWER HEIGHT THAN DUCT WHERE APPLICABLE, WHERE NOT APPLICABLE, PROVIDE A DRAIN "TEE" CONNECTED TO 3/4" SW CONDENSATE DRAIN LINE

HUMIDIFIER MOUNTING AND STEAM INJECTION DETAIL — NOT TO SCALE — 10



WATER SEAL HEIGHT Δ

TOTAL KW	"H"
3 THRU 19.5	8" (20 CM)
22 THRU 33	11" (28 CM)
39 THRU 49.5	17" (43 CM)
58.5 THRU 102	19" (48 CM)

Δ THE WATER SEAL HEIGHT MAY HAVE TO BE INCREASED IF EXCESSIVE DUCT STATIC PRESSURE EXISTS

NOTES:

1. DRAIN AND OVERFLOW PIPING ARE FACTORY PIPED. ONE 3/4" SW COPPER DRAIN CONNECTION IS REQUIRED
2. DO NOT USE PVC OR OTHER PLASTIC PIPING THAT IS NOT RATED FOR 220°F OR HIGHER.
3. A WATER SEAL IS TO BE INSTALLED TO PREVENT STEAM FROM ESCAPING THROUGH THE DRAIN LINE. THE WATER SEAL SHALL BE SUFFICIENT HEIGHT TO OVERCOME TH PRESSURE DEVELOPED IN THE HUMIDIFIER AND DUCT STATIC PRESSURE.
4. THE DRAIN PIPING IS TO BE COPPER OR STAINLESS STEAL.

HUMIDIFIER DRAIN PIPING DETAIL — NOT TO SCALE — 11

NOT IN USE — NOT TO SCALE — 12

NOT IN USE — NOT TO SCALE — 13

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STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	Page of
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-14-2019

A. MECHANICAL COMPLIANCE DOCUMENTS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2016 Nonresidential Manual
Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

YES	NO	Comp. Doc./Worksheet #	Title
◉	○	NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
◉	○	NRCC-MCH-01-E (Part 2 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-02-A to 11-A). Required on plans for all submittals.
◉	○	NRCC-MCH-01-E (Part 3 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-12-A to 18-A). Required on plans where applicable.
◉	○	NRCC-MCH-02-E (Part 1 of 2)	Mechanical Dry Equipment Summary is required for all submittals with Central Air Systems. It is optional on plans.
◉	○	NRCC-MCH-02-E (Part 2 of 2)	Mechanical Wet Equipment Summary is required for all submittals with chilled water, hot water or condenser water systems. It is optional on plans.
◉	○	NRCC-MCH-03-E	Mechanical Ventilation and Reheat is required for all submittals with multiple zone heating and cooling systems. It is optional on plans.
○	◉	NRCC-MCH-07-E (Part 1 of 2)	Power Consumption of Fans. Required on plans where applicable
○	◉	NRCC-MCH-07-E (Part 2 of 2)	Power Consumption of Fans, Declaration. Required on plans where applicable

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)
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CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	Page of
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-14-2019

B. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

Test Performed By:

Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck - The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-02-A	MCH-03-A	MCH-04-A	MCH-05-A	MCH-06-A	MCH-07-A	MCH-08-A	MCH-09-A	MCH-10-A	MCH-11-A
Equipment Requiring Testing or Verification	# of Units	Outdoor Air	Single Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Controlled Ventilation (DCV)	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
FC-1	1	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐
VAV-1	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
VAV-2	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
VAV-3	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
VAV-4	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
VAV-5	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
VAV-6	1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Add Row Remove Last

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	Page of
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-14-2019

C. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)

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Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-12-A	MCH-13-A	MCH-14-A	MCH-15-A	MCH-16-A	MCH-17-A	MCH-18-A
Equipment Requiring Testing or Verification	# of Units	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Supply Air Temperature Reset Controls	Condenser Water Reset Controls	ECMS
FC-1	1	☐	☐	☐	☐	☐	☐	☐
VAV-1	1	☐	☐	☐	☐	☐	☐	☐
VAV-2	1	☐	☐	☐	☐	☐	☐	☐
VAV-3	1	☐	☐	☐	☐	☐	☐	☐
VAV-4	1	☐	☐	☐	☐	☐	☐	☐
VAV-5	1	☐	☐	☐	☐	☐	☐	☐
VAV-6	1	☐	☐	☐	☐	☐	☐	☐

Add Row Remove Last

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	Page of
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-14-2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Jerome Lam	Documentation Author Signature:
Company: REX Engineering Group	Signature Date: 03-14-2019
Address: 2501 Davidson Drive 2nd Flr	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Monterey Park CA 91754	Phone: 323-262-9199

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: Jerome Lam	Responsible Designer Signature:
Company : REX Engineering Group	Date Signed: 03-14-2019
Address: 2501 Davidson Drive 2nd Flr	License: M23009
City/State/Zip: Monterey Park CA 91754	Phone: 323-262-9199

STATE OF CALIFORNIA
MECHANICAL VENTILATION AND REHEAT
CEC-NRCC-MCH-03-E (Revised 05/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-03-E
Mechanical Ventilation & Reheat	Page 1 of 2
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-14-2019

A. Mechanical Ventilation and Reheat

In lieu of this compliance document, the required outdoor ventilation rates and airflows may be shown on the plans or the calculations can be presented in a spreadsheet. Mechanical Ventilation and Reheat worksheet available on the Energy Commission's website at: http://www.energy.ca.gov/title24/2016standards/.

Note: In all of the calculations that compare a supply quantity to the REQ'D V.A. quantity, the actual percentage of outdoor air in the supply is ignored.

Areas in buildings for which natural ventilation is used should be clearly designated. Specifications must require that building operating instructions include explanations of the natural ventilation system.

ACTUAL DESIGN (FROM EQUIPMENT SCHEDULES, ETC)						AREA BASIS			OCCUPANCY BASIS			ROOM BASIS	MINIMUM		VAV REHEATED PRIMARY AIR CFM			VAV DEADBAND PRIMARY AIR CFM		
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
ZONE/SYSTEM/VAV BOX TAG	DESIGN PRIMARY COOLING AIRFLOW (CFM)	DESIGN PRIMARY DEADBAND AIRFLOW (CFM)	DESIGN PRIMARY HEATING AIRFLOW (CFM)	CONTROL TYPE DDC (Y/N)	TRANSFER AIRFLOW (CFM)	CONDITIONED AREA (ft^2)	MIN CFM PER AREA	MIN CFM BY AREA	NUMBER OF PEOPLE	CFM PER PERSON	MIN CFM BY OCCUPANT	MIN CFM BY ROOM	REQ'D VENT AIRFLOW (CFM)	COMPLIES?	BASED DESIGN PRIMARY COOLING AIR	MAXIMUM REHEAT (CFM)	COMPLIES?	PRIMARY COOLING AIR	AIRFLOW	COMPLIES?
FC-1	1,200		1,200	Yes		471	0.15	70.65	1	15	15		100	PASS						
VAV-1	720		575	Yes		443	0.15	66.45	23	15	345		350	PASS						
VAV-2	585		475	Yes		364	0.15	54.6	3	15	45		75	PASS						
VAV-3	735		590	Yes		450	0.15	67.5	4	15	60		75	PASS						
VAV-4	635		510	Yes		375	0.15	56.25	9	15	135		150	PASS						
VAV-5	2,000		1,600	Yes		1,080	0.15	162	20	15	300		350	PASS						
VAV-6	705		590	Yes		435	0.15	62.5	6	15	90		100	PASS						

STATE OF CALIFORNIA
MECHANICAL VENTILATION AND REHEAT
CEC-NRCC-MCH-03-E (Revised 05/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-03-E
Mechanical Ventilation & Reheat	Page 2 of 2
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-14-2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Jerome Lam	Documentation Author Signature:
Company: REX Engineering Group	Signature Date: 03-18-19
Address: 2501 Davidson Drive, 2nd Flr	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Monterey Park	Phone: 323-262-9199

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Company : REX Engineering Group	Date Signed: 03-18-19
Address: 2501 Davidson Drive, 2nd Flr	License: M23009
City/State/Zip: Monterey Park	Phone: 323-262-9199

((RADAR))

RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

REGISTERED PROFESSIONAL ENGINEER
VALENTINE DUONG
M39698
EXP: 12/31/19
MECHANICAL
STATE OF CALIFORNIA

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
TITLE 24

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
M4.00

STATE OF CALIFORNIA
HVAC DRY & WET SYSTEM REQUIREMENTS
CEC-NRCC-MCH-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Dry System Requirements	(Page 1 of 3)
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-18-19

A. Equipment Tags and System Description[1] - Dry Systems

MANDATORY MEASURES	T-24 Sections	Reference to the Requirements in the Contract Documents[2]		
Heating Equipment Efficiency[3]	110.1 or 110.2(a)	SEE M1.00		
Cooling Equipment Efficiency[3]	110.1 or 110.2(a)	SEE M1.00		
HVAC or Heat Pump Thermostats	110.2(b), 110.2(c)	SEE M2.01		
Furnace Standby Loss Control	110.2(d)	N/A		
Low Leakage AHUs	110.2(f)	N/A		
Ventilation[4]	120.1(b)	SEE M1.00		
Demand Control Ventilation[5]	120.1(c)4	N/A		
Occupant Sensor Ventilation Control[6]	120.1(c)5, 120.2(e)3	N/A		
Shutoff and Reset Controls[7]	120.2(e)	N/A		
Outdoor Air and Exhaust Damper Control	120.2(f)	SEE M1.00		
Isolation Zones	120.2(g)	N/A		
Automatic Demand Shed Controls	120.2(h)	N/A		
Economizer FDD	120.2(i)	N/A		
Duct Insulation	120.4	SEE M0.00		
PRESCRIPTIVE MEASURES				
Equipment is sized in conformance with 140.4 (a & b)	140.4(a & b)	○ Yes ○ No	○ Yes ○ No	○ Yes ○ No
Supply Fan Pressure Control	140.4(c)	YES		
Simultaneous Heat/Cool[8]	140.4(d)	YES		
Economizer	140.4(e)	N/A		
Heat and Cool Air Supply Reset	140.4(f)	N/A		
Electric Resistance Heating[9]	140.4(g)	N/A		
Duct Leakage Sealing and Testing[10]	140.4(l)	N/A		

Notes:
1. Provide equipment tags (e.g. AHU 1 to 10) and system description (e.g. Single Duct VAV reheat) as appropriate. Multiple units with common requirements can be grouped together.
2. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system.
3. The referenced plans and specifications must include all of the following information: equipment tag, equipment nominal capacity, Title 24 minimum efficiency requirements, and actual rated equipment efficiencies. Where multiple efficiency requirements are applicable (e.g. full- and part-load) include all. Where appliance standards apply (110.1), identify where equipment is required to be listed per Title 20 1601 et seq.
4. Identify where the ventilation requirements are documented for each central HVAC system. Include references to both central unit schedules and sequences of operation. If one or more spaces is naturally ventilated identify where this is documented in the plans and specifications. Multiple zone central air systems must also provide a MCH-03-E compliance document.
5. If one or more spaces has demand controlled ventilation identify where it is specified including the sensor specifications and the sequence of operation.
6. If one or more space has occupant sensor ventilation control identify where it is specified including the sensor specifications and the sequence of operation.
7. If the system is DDC identify the sequences for the system start/stop, optimal start, setback (if required) and setup (if required). For all systems identify the specification for the thermostats and time clocks (if applicable).
8. Identify where the heating, cooling and deadband airflows are scheduled for this system. Include a reference to the specification of the zone controls. Provide a MCH-03-E compliance document.
9. Enter N/A if there is no electric heating. If the system has electric heating indicate which exception to 140.4(g) applies.
10. If duct leakage sealing and testing is required, a MCH-04-A compliance document must be submitted.

STATE OF CALIFORNIA
HVAC SYSTEM REQUIREMENTS
CEC-NRCC-MCH-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Wet System Requirements	(Page 3 of 3)
Project Name: METRO LIBRARY RELOCATION	Date Prepared: 03-18-19

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: JEROME LAM	Documentation Author Signature:
Company: REX Engineering Group	Signature Date: 03-18-19
Address: 2501 Davidson Dr, 2nd Flr	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Monterey Park	Phone: 323-262-9199

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Company: REX Engineering Group	Date Signed: 03-18-19
Address: 2501 Davidson Drive, 2nd Flr	License: M23009
City/State/Zip: Monterey Park	Phone: 323-262-9199

Zone Sizing Summary for FC-01
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:35PM

Air System Information
Air System Name FC-01
Equipment Class .... TERM
Air System Type 4P-FC
Number of zones 1
Floor Area .... 440.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	19.4	19.4	77.7 / 64.1	59.7 / 57.7	3.88	Jul 1500	2.27

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	8.7	61.9 / 70.0	0.87	999	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	16.1	Jul 1500	0.0	440.0

Zone Sizing Summary for HP-1
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:36PM

Air System Information
Air System Name HP-1
Equipment Class .... TERM
Air System Type .... WSHP
Number of zones 1
Floor Area .... 448.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	15.3	15.3	80.1 / 64.4	59.6 / 57.1	-	Jul 1500	1.55

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	10.9	55.4 / 70.0	-	695	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	11.2	Jul 1500	0.0	448.0

Zone Sizing Summary for hp-6
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:41PM

Air System Information
Air System Name hp-6
Equipment Class .... TERM
Air System Type .... WSHP
Number of zones 1
Floor Area .... 430.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	13.0	13.0	77.9 / 64.2	59.0 / 57.5	-	Aug 1500	1.49

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	7.1	60.5 / 70.8	-	639	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	10.3	Aug 1400	0.5	430.0

Zone Sizing Summary for HP-2
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:36PM

Air System Information
Air System Name HP-2
Equipment Class .... TERM
Air System Type .... WSHP
Number of zones 1
Floor Area .... 380.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	10.5	10.5	79.2 / 64.3	59.0 / 57.0	-	Jul 1500	1.27

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	6.5	57.4 / 70.0	-	482	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	7.8	Jul 1500	0.0	380.0

Zone Sizing Summary for HP-3
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:37PM

Air System Information
Air System Name HP-3
Equipment Class .... TERM
Air System Type .... WSHP
Number of zones 1
Floor Area .... 470.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	23.1	23.1	83.3 / 63.9	59.2 / 55.0	-	Jul 1500	1.90

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	21.8	47.4 / 70.0	-	894	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	14.4	Jul 1500	0.0	470.0

Zone Sizing Summary for HP-4
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:37PM

Air System Information
Air System Name HP-4
Equipment Class .... TERM
Air System Type .... WSHP
Number of zones 1
Floor Area .... 390.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	13.4	13.4	81.4 / 63.7	59.6 / 55.7	-	Jul 1500	1.46

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	10.9	52.2 / 70.0	-	570	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	9.2	Jul 1500	0.0	390.0

Zone Sizing Summary for HP-5
Project Name: Untitled 07/15/2019
Prepared by: IEG 03:40PM

Air System Information
Air System Name HP-5
Equipment Class .... TERM
Air System Type .... WSHP
Number of zones 1
Floor Area .... 1280.0 ft²
Location .... Los Angeles LAX, California

Sizing Calculation Information
Calculation Months .... Jan to Dec
Sizing Data .... Calculated
Zone CFM Sizing .... Sum of space airflow rates
Space CFM Sizing .... Individual peak space loads

Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (MBH)	Sens Coil Load (MBH)	Coil Entering DB / WB (°F)	Coil Leaving DB / WB (°F)	Water Flow @ 10.0 °F (gpm)	Time of Peak Coil Load	Zone CFM/ft²
Zone 1	44.8	44.8	82.1 / 63.7	59.6 / 55.4	-	Aug 1500	1.44

Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (MBH)	Heating Coil Ent/Lvg DB (°F)	Htg Coil Water Flow @20.0 °F (gpm)	Fan Design Airflow (CFM)	Fan Motor (BHP)	Fan Motor (kW)
Zone 1	39.5	50.2 / 70.1	-	1843	0.000	0.000

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft²)
Zone 1	29.7	Aug 1500	0.6	1280.0

((RADAR))
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TITLE
TITLE 24

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
M4.01

GENERAL NOTES

A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE CALIFORNIA CODE OF REGULATIONS, CALIFORNIA ELECTRICAL CODE 2016 EDITION AND ALL APPLICABLE LOCAL CODES AND REGULATIONS.

B. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES RELATING TO WORK TO VERIFY SPACES IN WHICH WORK WILL BE INSTALLED. MAINTAIN HEADROOM AND MINIMUM CODE REQUIRED WORKING CLEARANCES AT ALL TIMES.

C. DURING BID, THE CONTRACTOR MUST EXAMINE THE COMPLETE SET OF DRAWINGS AND CONTRACT DOCUMENTS FOR ALL TRADES. COORDINATE AND VERIFY DIMENSIONS SPACE REQUIREMENTS AND POINTS OF CONNECTION TO ALL EQUIPMENT. MAKE ANY ADJUSTMENTS NECESSARY TO AVOID CONFLICTS WITH THE STRUCTURAL AND THE WORK OF OTHER TRADES.

D. THE CONTRACTOR IS ADVISED AND REMINDED THAT THEIR BEST EFFORTS AND THAT OF THE CONTRACTOR'S ORGANIZATION AND PERSONNEL ARE TO BE PROVIDED AS PART OF THE COORDINATED EFFORT INTENDED TO PROVIDE THE PROJECT OWNER AND THE ULTIMATE USERS AND OCCUPANTS WITH FINISHED PROJECT WHICH WILL SERVE ITS INTENDED PURPOSE.

E. CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL ELECTRICAL, MECHANICAL, PLUMBING AND ALL OTHER EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS PRIOR TO ANY WORK.

F. DEDICATED ELECTRICAL SPACE NEC 110.26(F): THE SPACE EQUAL TO THE WIDTH AND DEPTH OF THE EQUIPMENT AND EXTENDING FROM THE FLOOR TO A HEIGHT (6 FT) ABOVE THE EQUIPMENT OR TO THE STRUCTURAL CEILING, WHICHEVER IS LOWER, SHALL BE DEDICATED TO THE ELECTRICAL INSTALLATION. NO PIPING, DUCTS, LEAK PROTECTION APPARATUS, OR OTHER EQUIPMENT FOREIGN TO THE ELECTRICAL INSTALLATION SHALL BE LOCATED IN THIS ZONE.

G. SEE MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATION FOR ADDITIONAL CONNECTION REQUIREMENTS TO CONTROL PANELS AND TRANSFORMERS, 120V FOR CONTROL SYSTEM, SWITCHES, TIME CLOCK, VALVES, STATS, RELAYS, DUCT SMOKE DETECTOR LOCATION, VAV BOXES, SMOKE FIRE DAMPERS, AND ETC. CONTRACTOR SHALL VERIFY FINAL CONTROL WIRING REQUIREMENTS WITH DIVISION 22 & 23 PRIOR TO ANY WORK AND PROVIDE ALL NECESSARY WIRING, DEVICES AND CONNECTIONS AS REQUIRED.

H. CONTRACTOR SHALL EXTEND WIRING FROM ALL JUNCTION BOXES, SWITCHES, ETC. AND MAKE FINAL CONNECTIONS AS REQUIRED TO ALL OTHER EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS PRIOR TO ANY WORK.

I. THE CONTRACTOR SHALL VERIFY THE ACTUAL MOTOR AND APPLIANCE RATING AND LOADS IN ORDER TO PROVIDE CORRECT SIZED MOTOR RELATED ELECTRICAL COMPONENTS. THE CONTRACTOR SHALL SUBMIT TO ARCHITECT WITH REVISED DATA BEFORE INSTALLATION. ALL CHANGES SHALL BE SHOWN ON RECORD DRAWINGS.

J. ALL PANELS, SWITCHES, ETC. SHALL HAVE SUFFICIENT GUTTER SPACE AND LUGS IN COMPLIANCE WITH U.L. REQUIREMENTS TO ACCOMMODATE CONDUCTORS SHOWN.

K. WHERE WIRE SIZES ARE INDICATED ON PLANS, FOR INDIVIDUAL CIRCUITS, THE WIRE SIZE INDICATED SHALL APPLY TO THE COMPLETE CIRCUIT, UNLESS OTHERWISE NOTED.

L. LOCATION OF LOCAL WALL SWITCHES ARE SUBJECT TO MODIFICATIONS. AT OR NEAR DOORS, INSTALL SWITCHES ON SIDE OPPOSITE TO DOOR HINGES. VERIFY FINAL HINGE LOCATION IN FIELD PRIOR TO ANY WORK.

M. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL WALL OUTLET BOXES FOR SWITCHES, STROBES/HORNS, STROBES, FIRE ALARM PULL STATIONS, RECEPTACLES, ETC. WITH TACK BOARDS, CABINETS, FURNITURE, EQUIPMENT ETC. TO AVOID CONFLICT.

N. WHERE ELECTRIC MOTORS OR EQUIPMENT ARE INSTALLED IN HUNG CEILING, PROVIDE DISCONNECT SWITCH IN HUNG CEILING WITHIN REACH FROM ACCESS POINT.

O. PROVIDE APPROVED EXPANSION FITTINGS WHERE RACEWAY CROSSES BUILDING EXPANSION JOINTS.

P. PROVIDE PULL WIRE IN EACH RACEWAY RUN OVER 10 FEET IN LENGTH, IN WHICH PERMANENT WIRING IS NOT INSTALLED.

Q. NOT MORE THAN THREE LIGHTING OR CONVENIENCE OUTLET CIRCUITS ARE PERMITTED IN ONE CONDUIT, UNLESS OTHERWISE INDICATED PROVIDE SEPARATE CONDUIT FOR EACH HOME RUN INDICATED ON THE DRAWING.

R. ALL EXTERIOR ELECTRICAL DEVICES AND EQUIPMENT EXPOSED TO OUTSIDE ENVIRONMENT SHALL BE WEATHERPROOF TYPE, NEMA 3R.

S. LIGHTING, POWER, TELEPHONE AND COMMUNICATIONS OUTLETS SHALL NOT BE PLACED BACK TO BACK. OUTLETS SHALL BE HORIZONTALLY SEPARATED MIN. OF 24" FOR RATED WALL AND MIN. OF 18" FOR NON-RATED WALL.

T. PROVIDE PULL BOXES WHEREVER NECESSARY TO FACILITATE PULLING OF CONDUCTORS. COORDINATE LOCATIONS OF BOXES WITH OTHER TRADES TO AVOID CONFLICT. PULL BOXES SHALL BE ACCESSIBLE. THE SIZE OF PULLBOX SHALL COMPLY WITH CEC REQUIREMENTS.

U. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILING SHALL BE ACCESSIBLE THROUGH OPENING OPERATED BY REMOVAL OF FIXTURES.

V. WHERE MORE THAN ONE LIGHT SWITCH OCCURS AT SAME LOCATION, SWITCHES SHALL BE MOUNTED IN A MULTIPLE GANG BOX UNDER A SINGLE COVER PLATE. PLATES WITH MORE THAN (3) LIGHT SWITCHES SHALL BE LABELED TO INDICATE THE LIGHT FIXTURES CONTROLLED. SWITCH(ES) CONTROLLING LIGHTS ON EMERGENCY CIRCUIT SHALL BE IN A SEPARATE BOX UNDER THE SAME COVER PLATE AS THE OTHER SWITCHES.

W. PROVIDE GREEN GROUNDING CONDUCTOR IN EACH RACEWAY INCLUDING CONDUITS, PLUG STRIPS, ETC. SIZE OF GROUNDING CONDUCTOR SHALL BE IN ACCORDANCE WITH CALIFORNIA ELECTRIC CODE ARTICLE 250.122.

X. PROVIDE #10 CONDUCTORS FOR ALL 20 AMPS CIRCUITS LONGER THAN 100' AND #8 CONDUCTORS FOR CIRCUITS LONGER THAN 225'. CONTRACTOR SHALL ADJUST THE SIZE OF CONDUITS ACCORDINGLY.

Y. FEEDER LENGTH SHOWN ON DRAWINGS ARE FOR VOLTAGE DROP CALCULATION AND NOT TO BE USED FOR COST ESTIMATING.

Z. WHERE CONDITIONS ARE SHOWN AS EXISTING, THEY ARE BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS/DOCUMENTS. NO WARRANTY IS IMPLIED AS TO THE ACCURACY. CONTRACTOR IS TO FIELD VERIFY ALL CONDITIONS. SHOULD FIELD CONDITIONS DIFFER FROM THOSE SHOWN, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BID. THE ENGINEER WILL THEN PROVIDE ADDITIONAL INFORMATION NEEDED TO ACCOMPLISH THE DESIRED RESULT.

AA. CONTRACTOR SHALL PERMANENTLY LABEL CIRCUIT AND PANEL NAME ON ALL OUTLETS.

AB. FUSES SHALL BE PROVIDED WITH REJECTION TYPE FUSE HOLDERS.

AC. CONTRACTOR SHALL LABEL ALL SWITCHED RECEPTACLES PER TITLE 24 REQUIREMENTS. FOR EACH FULL SWITCHED RECEPTACLE PROVIDE TWO LABELS, ONE ON EACH CORNER (TOP RIGHT AND BOTTOM RIGHT). FOR EACH HALF SWITCHED RECEPTACLE PROVIDE ONE LABEL ON TOP RIGHT CORNER. REFER TO LIGHTING CONTROL DIAGRAMS FOR VISUAL REPRESENTATION.

AD. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED BY U.L. OR CITY OF LOS ANGELES APPROVED THIRD PARTY TESTING FACILITY.

AG. MC CABLE IS NOT PERMITTED FOR THIS PROJECT. ALL CIRCUITS CONNECTED VIA HARD CONDUIT AND CONDUCTORS.

ELECTRICAL LEGEND

GENERAL

- JUNCTION BOX CEILING MOUNTED
- JUNCTION BOX WALL MOUNTED +18"AFF, U.O.N.
- JUNCTION BOX FLUSH IN FLOOR
- ENCLOSED CIRCUIT BREAKER
- MOTION DETECTOR
- RELAY
- POWER PACK
- RECEPTACLE CONTROL RELAY
- ROOM CONTROLLER
- EMERGENCY RELAY
- TIME CLOCK
- PUSH BUTTON
- DOOR CONTACT
- CONTACTOR
- BUZZER
- START/STOP SWITCH
- MOTOR
- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- MOTOR CONTROLLER OR STARTER
- COMBINATION CONTROLLER/DISCONNECT SWITCH

WIRES AND RACEWAYS

- CONCEALED CONDUIT IN WALL OR CEILING
- CONCEALED CONDUIT BELOW FINISHED FLOOR/GRADE
- CONDUIT OR RACEWAY TURNED UP
- CONDUIT OR RACEWAY TURNED DOWN
- CONDUIT STUB OUT, CAP-OFF
- CONDUIT CONTINUATION
- HOMERUN CONDUIT LONG STROKES INDICATE NEUTRAL CONDUCTOR, SHORT STROKES INDICATE PHASE OR SWITCHED CONDUCTOR, LONG STROKES WITH DOT INDICATES GROUNDING CONDUCTOR. 3/4"CONDUIT MIN. (U.O.N.), #12 AWG CONDUCTOR MIN. (U.O.N.)
- (3)1"C,3#1,1#8G — 3 SETS OF ONE INCH CONDUIT, EACH WITH THREE NUMBER EIGHT WIRE AND ONE NUMBER EIGHT GROUND.

COMMUNICATIONS (+18" AFF, U.O.N.)

- TELEPHONE OUTLET WITH 1"CONDUIT UP TO ACCESSIBLE CEILING, U.O.N.
- DATA OUTLET WITH 1"CONDUIT UP TO ACCESSIBLE CEILING, U.O.N.
- COMBINATION TELEPHONE/DATA OUTLET WITH 1"CONDUIT UP TO ACCESSIBLE CEILING, U.O.N.
- FLOOR MOUNTED COMBO TELEPHONE/DATA OUTLET WITH 1"CONDUIT UP TO ACCESSIBLE CEILING, U.O.N.
- WIRELESS ACCESS POINT
- CARD READER
- TELEVISION OUTLET
- CAMERA (CCTV)
- SPEAKER
- TELEPHONE TERMINAL BACKBOARD

SWITCHES (+48" AFF, U.O.N.)

- $ — SINGLE POLE SWITCH
- $3 — THREE-WAY SWITCH
- $4 — FOUR-WAY SWITCH
- $P — SWITCH & PILOT LIGHT
- $K — KEY OPERATED SWITCH
- $D — DIMMER SWITCH
- $M — THERMAL OVERLOAD SWITCH
- $T — TIMER SWITCH
- $a — LOWER CASE LETTER INDICATES SWITCHING
- LOW VOLTAGE DIMMER SWITCH (SAME ABBREVIATIONS APPLY AS ABOVE)

PANELS AND RELATED ITEMS

- PANELBOARD - SURFACE
- PANELBOARD - RECESSED
- TRANSFORMER
- SWITCHBOARD OR DISTRIBUTION BOARD QUANTITY OF SECTIONS REQUIRED SHOWN

RECEPTACLES (+18" AFF, U.N.O.)

- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- HALF-SWITCHED DUPLEX RECEPTACLE
- CEILING MOUNTED DUPLEX RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- HALF-SWITCHED DOUBLE DUPLEX RECEPTACLE
- SPECIAL PURPOSE OUTLET (TYPE AS NOTED)
- FLOOR MOUNTED DUPLEX RECEPTACLE
- FLOOR MOUNTED DOUBLE DUPLEX RECEPTACLE
- MULTIOUTLET ASSEMBLY
- POWER COMMUNICATIONS POLE WITH BARRIER
- FLOOR MOUNTED COMBINATION RECEPTACLE & TELE/DATA

NOTE:
ALL RECEPTACLES SHALL BE 20AMP, 120V, U.O.N.

LIGHTING FIXTURES

- DOWNLIGHT/PENDANT LIGHT FIXTURE
- LINEAR WALL MOUNTED LIGHT FIXTURE
- WALL SCONCE
- 2'x4' LIGHT FIXTURE
- STRIP LIGHT FIXTURE
- POLE AND POLE MOUNTED LIGHT FIXTURES NUMBER OF HEADS AS SHOWN
- BOLLARD/INGRADE LIGHT
- TRACK LIGHT
- FLOOD LIGHT
- WALL WASHER, ARROW INDICATES AIM
- EXIT SIGN, SHADING INDICATES FACE, ARROWS AS INDICATED
- BATTERY PACK, NUMBER OF HEADS AS SHOWN
- EMERGENCY 2'x4' LIGHT FIXTURE
- EMERGENCY DOWNLIGHT/PENDANT LIGHT FIXTURE
- EMERGENCY STRIP LIGHT FIXTURE
- NL — NL = NIGHT LIGHT (CONNECT TO UNSWITCHED LEG OF CIRCUIT)
- (SINGLE MANUAL ON/OFF DIMMER SWITCH) WALL MOUNTED OCCUPANCY SENSOR +48"AFF,U.O.N.
- a,b — (DOUBLE MANUAL ON/OFF DIMMER SWITCH) WALL MOUNTED OCCUPANCY SENSOR +48"AFF,U.O.N.
- CEILING MOUNTED OCCUPANCY SENSOR
- CEILING MOUNTED DAYLIGHT SENSOR

ANNOTATION TAGS AND NOMENCLATURE

- # — SHEET NOTE SYMBOL
- REVISION DELTA
- # / ## — DETAIL CALLOUT TAG. # DESIGNATES DETAIL NUMBER, ## DESIGNATES SHEET ON WHICH DETAIL IS LOCATED
- ## / # — MECHANICAL EQUIPMENT CALLOUT TAG. ## DESIGNATES UNIT TYPE, # DESIGNATES UNIT NUMBER.

DEVICE MOUNTING HEIGHTS

REFER TO ELECTRICAL SPECIFICATIONS FOR MORE INFORMATION. DIMENSIONAL NUMBERS SHOWN ADJACENT TO SYMBOLS INDICATE THE CENTERLINE OF DEVICE MOUNTING HEIGHTS.

NOTE: NOT ALL SYMBOLS ARE USED ON THIS PROJECT.

SINGLE LINE DIAGRAM

- CIRCUIT BREAKER
- BREAKER WITH DRAWOUT FEATURE
- CONTACT (NORMALLY OPEN)
- CONTACT (NORMALLY CLOSED)
- C — OPERATING COIL
- FUSE
- FUSED SWITCH
- SWITCH
- POWER TRANSFORMER
- CURRENT TRANSFORMER
- M — POWER UTILITY METER
- SM — POWER NON UTILITY SUB METER
- G — GENERATOR
- GROUND
- GFI — GROUND FAULT SENSOR
- N — NEUTRAL BUS
- G — GROUND BUS
- AUTOMATIC TRANSFER SWITCH
- XXX — FEEDER TAG

ABBREVIATIONS

A,AMP	AMPERE(S)
AC	ALTERNATING CURRENT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ALT	ALTERNATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CT	CURRENT TRANSFORMER
CTR	COUNTER
CU	COPPER
CW	COLD WATER
(D)	DEMO, EXISTING TO BE REMOVED
DEF	DUAL ELEMENT FUSE
DISC	DISCONNECT
DN	DOWN
DP	DOUBLE POLE
DT	DOUBLE THROW
DWG	DRAWING
(E)	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EA	EACH
EC	EMPTY CONDUIT
EIA	ELECTRONIC INDUSTRIES ASSOCIATION
ELEC	ELECTRICAL OR ELECTRIC
ELEV	ELEVATOR
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE RESISTOR
EWC	ELECTRICAL WATER COOLER
F	FUSE
FAA	FIRE ALARM REMOTE ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FC	FOOT CANDLE
FLR	FLOOR
FT	FOOT OR FEET
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GND, G	GROUND
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HZ	FREQUENCY CYCLES PER SECOND
IC	INTERCOM
IG	ISOLATED GROUND CONDUCTOR
IMC	INTERMEDIATE METALLIC CONDUIT
IN	INCH
J-BOX	JUNCTION BOX
K	KIRK KEY INTERLOCKED
KCM	THOUSAND CIRCULAR MIL(S)
KV	KILOVOLT
KVA	KILOVOLT AMPERE(S)
KVAR	KILOVAR(S)
KW	KILOWATT(S)
KWHR	KILOWATT HOUR
LCL	LONG CONTINUOUS LOAD
LTG	LIGHTING
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MH	MANHOLE
MIN	MINIMUM
MTD	MOUNTED
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH

ABBREVIATIONS CONTINUED

N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NF	NON FUSED
NEC	NATIONAL ELECTRICAL CODE
NEGL.	NEGLIGIBLE
#	NUMBER
NTS	NOT TO SCALE
NL	NIGHT LIGHT
NIC	NOT IN CONTRACT
OC	ON CENTER
OL	OVERLOAD ELEMENT
PB	PULL BOX
PF	POWER FACTOR
PH, ø	PHASE
PNL	PANEL
PT	POTENTIAL TRANSFORMER
P	POLE
PVC	POLYVINYL CHLORIDE
(R)	EXISTING TO BE RELOCATED
RMS	ROOT MEAN SQUARE
SHT	SHEET
SMR	SURFACE METAL RACEWAY
SP	SINGLE POLE
SPEC	SPECIFICATIONS
ST	SINGLE THROW
SW	SWITCH
SWBD	SWITCHBOARD
TC	TIME CLOCK
TEL	TELEPHONE
TEMP	TEMPORARY
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TSTAT	THERMOSTAT
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UON	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTED POWER SUPPLY
V	VOLT(S)
VA	VOLT AMP(S)
VAR	REACTIVE VOLT AMPERES
VP	VAPOR PROOF
W/	WITH
W/O	WITHOUT
W	WATT(S)
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL SHEET INDEX

E0.01	GENERAL NOTES, LEGEND, AND SHEET INDEX
E0.02	ELECTRICAL SPECIFICATIONS
E0.03	INDOOR TITLE 24
E0.04	INDOOR TITLE 24
E0.05	LIGHTING FIXTURE SCHEDULE
E2.01	LIGHTING PLAN
E3.01	POWER PLAN
E5.01	SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E7.01	EMERGENCY LIGHTING PHOTOMETRIC CALCULATIONS

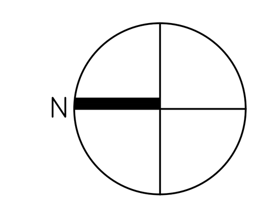
DEFERRED APPROVAL FOR FIRE ALARM S□STEM□ □DESIGN□BUILD B□ CONTRACTOR□

FIRE ALARM DESIGN SHALL BE SUBMITTED BY CONTRACTOR. OBTAIN APPROVAL FROM AUTHORITY HAVING JURISDICTION AND LOCAL FIRE DEPARTMENT PRIOR TO INSTALLATION.

((RADAR))
RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com



-PROGRESS PRINT-
-FOR ESTIMATING ONLY-
-NOT FOR CONSTRUCTION-

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
GENERAL NOTES, LEGEND AND SHEET INDEX

PROJECT 1818
SCALE AS NOTED
DRAWN BY
DATE 09/18/19
SHEET NUMBER E0.01

ELECTRICAL SPECIFICATIONS

PART 1 – GENERAL

A. SCOPE

1. Furnish and install a completely wired and operational electrical system as shown on the drawings and specified herein, including but not limited to, these major items.
   a. Lighting fixtures as indicated and specified on the plans.
   b. Electrical panels, controls, service, disconnects, conduit wiring, etc., for all outlets and equipment.
   c. Telephone outlets and conduit as indicated.
   d. Conduit and outlets for alarm, computer, and security systems as indicated.
   e. Control wiring for electrical systems.
2. Provide permits and inspections as required.

B. CODES, REGULATIONS AND STANDARDS

1. The installation shall comply with applicable local and state codes and ordinances, with the regulations of the latest adopted edition of the following codes and with the requirements of the power and telephone companies furnishing services to this installation.
2. The following industry standards, specifications and codes are minimum requirements:
   a. NEMA–National Electrical Manufacturer's Association Standards
   b. NEC–National Electrical Code
   c. UL–Underwriter Laboratories Incorporated Standards
   d. ANSI–American National Standards Institute
   e. IEEE–Institute of Electrical and Electronics Engineers
   f. NESC–National Electrical Safety Code
   g. TITLE 24–California Energy Commission

C. INSPECTION OF SITE

1. Prior to submitting a bid for electrical work, the Electrical Contractor shall visit the site of the proposed construction and shall thoroughly acquaint himself with existing utilities and working conditions to be encountered, etc. Allowance will not be made for non-compliance with this condition after bidding.

D. GENERAL WORKMANSHIP

1. All work shall be executed and finished in a practical manner and shall present a neat and workmanlike appearance when completed.
2. All work must be acceptable to the Owner. Where a detailed method of installing the work is not specified or indicated, install work as directed by the Owner.

E. RELATED WORK BY OTHERS

1. Electrical drawings identify utility service requirements for power, telephone, and cable TV within and up to five feet outside the building. Utility electrical service transformer(s), where shown on the site plan, are for information only and indicate the preferred point of service. Utility conduit systems, pullboxes, and other structures, where shown on the site plan, are also for information only and indicate the preferred routing. The Electrical Contractor shall refer to utility service drawings for actual utility service requirements for this project. Utility systems shall be constructed in accordance with the approved utility service drawings. It shall be the Electrical Contractor's responsibility to contact and follow-up with all utility companies to obtain both preliminary and final design drawings for this project.
   a. The Electrical Contractor shall coordinate the installation of the electrical service entrance, meet all power company requirements and shall pay all utility company charges.
   b. The local telephone company will furnish and install all telephone wiring and equipment and will make all final telephone connections. The Electrical Contractor shall coordinate the installation of the telephone service entrance, meet all telephone requirements and shall pay all utility company charges.
   c. The Electrical Contractor shall coordinate the installation of the cable service entrance, meet all cable company requirements and shall pay all utility company charges.

F. COOPERATION WITH OTHER CONTRACTORS

1. Cooperate with the other trades so that the installation of the electrical outlets and equipment will be properly coordinated. Conduit, fixtures, and other equipment locations shall be checked with the other trades to avoid conflict with the piping, ductwork, steel, beams, or other obstructions.
2. Carefully check the locations of the outlet boxes and determine that they have not been disturbed during the installation of materials of other trades.
3. Coordinate the location of trenches and conduits for utility services and other disciplines with the General Contractor.

G. MECHANICAL AND ELECTRICAL COORDINATION

1. Any device which carries the full load current of the electrically driven machinery, as opposed to the control of instrumentation current in the holding coil, is a power circuit and is the responsibility of the Electrical Contractor. Control or instrumentation circuits connecting holding coils to the control system as specified by the Mechanical Engineer are the responsibility of the Mechanical Contractor.
2. The power circuit is defined as all devices necessary to operate, and as required by code to protect and service the unit, including branch circuit protective devices, disconnects, magnetic motor starters with running overload and single phasing protection, magnetic contactors, etc.
3. The control or instrumentation circuit is defined as all devices necessary to interface the electrical power circuit with the control system as specified by the Mechanical Engineer including conduit, boxes, conduit fittings, conductors, electric-pneumatic switches, pneumatic-electric switches, electrical and pneumatic relays, pneumatic tubing, etc.
4. The Electrical Contractor shall be responsible to provide 120V duplex receptacles within 25 feet of all roof mounted equipment, per CEC 210.63.

H. DRAWINGS

1. The drawings indicate the general arrangement and locations of the electrical work. Information presented on these drawings are as accurate as planning can determine, but field verification of all dimensions, locations, levels, etc., to suit field conditions is required. Review all architectural, structural and mechanical drawings and adjust all work to meet the requirements of conditions shown. The architectural drawings shall take precedence over all other drawings. Discrepancies between different plans, or between drawings and specifications, or regulations and codes governing the installation shall be brought to the attention of the engineer in writing before the date of bid opening. Where discrepancies or conflicts occur, the bid shall reflect the most stringent requirements. Electrical Contractor shall be responsible to field measure and confirm mounting heights and location of electrical equipment with respect to counters, etc. Do not scale distances off the electrical drawings. Use actual building dimensions.
2. Upon completion of the work under these drawings and specifications, the Electrical Contractor shall provide the Owner with a complete set of marked-up electrical drawings showing the "as-built" condition of the work. Bond prints of the drawings required will be furnished by the Owner, for this purpose.
3. All operating instructions, parts lists and spare parts for material and equipment furnished and/or installed by the Electrical Contractor shall be turned over to the Owner (three copies).

I. SHOP DRAWINGS AND APPROVALS

1. Submittals shall consist of detailed shop drawings, specifications, block wiring diagrams, "catalog cuts" and data sheets containing physical and dimensional information, performance data, electrical characteristics, mateirals used in fabrication, and material finish. Clearly indicate by arrows or brackets precisely what is being submitted on and those optional accessories which are included and those which are excluded.
2. Each submitall shall be accompanied shall bear a stamp stating that the submittal has be thoroughly reviewed by the Contractor and is in full compliance with the requirements of Contract Documents. Cover letters shall list in full the items and data submitted. Failure to comply with this requirements shall constitute grounds for rejection or data.
3. The Contractor shall submit detailed drawings of all electrical equipment and generator rooms, yards, and utility areas. Minimum scale: 1/4"=1'-0".
4. As part of the equipment submittals, the manufacturer shall provide anchorage calculations for floor and wall mounted electrica lequipment. Structural Calculations shall be prepared and signed by Registered Structural Engineer in California.
5. All resubmittals shall include a cover letter that lists the action taken and revisions made to every drawing and equipment data sheet in response to Submitall Review Comments. Failure to include this cover letter will constitue rejection of the resubmittal package.
6. Contractor shall submit short circuit and coordination studies signed by a registered electrical engineer. Studies shall be performed in acceptance with IEEE guidelines. Contractor shall be submitted for architect-engineer review prior to ordering and installing any equipment. Contractor shall ensure that the actual feeder lengths match studies (revise studies if necessary). Service equipment markings as required per CEC 110.24 shall be based on contractor submitted studies.
7. Submit conduits; fittings; outlet pull and junction boxes; wires; wiring devices; lighting fixtures; lamps; ballasts; safety switches; fuses; transformers; panelboards; switchboards; circuit breakers; lighting control system/devices; and fire alarm systems.

J. SUBSTITUTIONS

1. All requests for substitutions shall conform to the general requirements and procedure outlined in Division 1.
2. Where items are noted as "or equal", a product of equal design, construction and performance will be considered.
3. Substitutions shall be equal, in the opinion of the Owner's Representative, to the specified product.
4. The burden of proof of equality of a proposed substitution for a specified item shall be upon the Electrical Contractor. Electrical Contractor shall support its request with sufficient test data, photometric analysis, detailed breakdown defining cost savings, and other means to permit the Architect and/or Engineer to make a fair and equitable decision on the merits of the proposed substitution. Any item by a manufacturer other than those specified, or of brand name or model number will be considered a substitution. The Architect and/or Engineer will be the sole judge of whether or not the substitution is equal in quality, utility, and economy to that specified.
5. Approval of a substitution shall not relieve Electrical Contractor from responsibility for compliance with all requirements of the Contract documents. Electrical Contractor shall bear the expense for any changes in other parts of this work or other work caused by the proposed substitution.
6. If Architect and/or Engineer rejects Electrical Contractor's substitute item on the first submittal, Electrical Contractor may make only one additional request for substitution in the same category.

K. GUARANTEE & TESTING

1. Guarantee all material furnished and all workmanship performed for a period of one year from the date of final acceptance of the work. Any defects developing within this period, traceable to material furnished as a part of this Section or workmanship performed hereunder, shall be corrected as necessary at no cost to the Owner.
2. System shall be tested for proper operation. If tests show that work is defective, Electrical Contractor shall make corrections as necessary at no cost to the Owner.

L. LABELING

1. Provide engraved name plates on switchboards, panel boards, disconnect switches, motor control centers, transformers, etc., indicating equipment designated (or designation of equipment served) and voltage.

M. HOUSEKEEPING PADS

1. Provide 4 inch high concrete equipment pads for all floor-mounted equipment including switchboards, motor control centers, transformers, etc.

N. MATERIALS

1. All materials shall be new and of quality as specified on the plans or specifications and must carry the Underwriter's Laboratories approval covering the purpose for which they are used, in addition to meeting all requirements of the current applicable codes and regulations.
2. Electrical Contractor shall be responsible for replacing equipment which is damaged due to incorrect field wiring provided under this section or factory wiring in equipment provided under this section.

O. STORAGE AND HANDLING OF MATERIAL

1. Deliver materials and equipment to the project in the manufacturer's original, unopened, labeled containers. Protect against moisture, tampering, or damage from improper handling or storage. Electrical Contractor shall protect and be responsible for any damage to work or materials until final acceptance by the Owner, and shall make good without cost to the Owner, any damage or loss that may occur during this period.
2. Arrange for timely delivery of materials and equipment to the jobsite in order to minimize the length of time between delivery and installation.
3. Arrange for timely delivery of Owner supplied materials and equipment to the jobsite in order to minimize the length of time between delivery and installation.
4. Cover and protect any material which may be affected by the weather while in transit or stored at the project site. Any material found defective or not installed in accordance with the contract documents may be rejected by the Engineer.
5. No electrical work shall be installed in areas where other trade's work might cause physical damage to wires, conduit, equipment, boxes or fittings until the other trade's work has been completed. Any equipment or materials which become damaged shall be removed and replaced at no extra cost to the Owner.

P. CLEAN-UP

1. Keep the premises free from accumulation of waste materials, or rubbish caused by employees or work under this division of the specifications. At the completion of the work, remove all surplus materials, tools, etc., and leave the premises "broom-clean".

Q. EXCAVATION, CUTTING AND FITTING

1. Perform the excavation, cutting, fitting, repairing and finishing of the work necessary for the installation of electrical equipment. However, no cutting of the work of other trades or of any structural member shall be done without the consent of the Architect.

R. EXCAVATION AND BACKFILL

1. Perform all excavation and backfilling required for work performed under this division of the specifications. Trench bottoms shall be graded true and free from stones or soft spots. Use excavated materials for backfill unless off site materials are deemed necessary by the Architect. Trenching and backfilling for electrical and telephone utility services to building shall be provided by the Electrical Contractor in accordance with utility company requirements.
2. Verify location of existing under ground utilities prior to trenching.

PART 2 – PRODUCTS AND EXECUTION

A. CONDUIT

1. All wiring shall be installed in listed metallic conduit except as permitted below. GRC may be used in all areas. IMC may be used in indoor locations not in contact with earth. EMT may be used in indoor locations not in contact with earth, not in concrete slabs or walls and not subject to damage. PVC may be used in or below concrete and direct buried in earth. Flexible steel conduit shall be used for indoor final connections to mechanical equipment not to exceed 36", and recessed removable fluorescent light fixtures not to exceed 72". Liquid-tight flexible steel conduit shall be for outdoor final connections to equipment not to exceed 36".
2. Where the conduit enters outlet boxes, fixtures or cabinets, firmly fasten by double locknuts and bushings (GRC and IMC only). Firmly fasten conduit to the building construction. Run exposed conduit parallel to the building lines, supported by appropriate hangers.
3. Cover metallic conduit in contact with earth or fill with polyethylene tape spiral wrapped, 1/2" lapped to provide double thickness. Tape shall be Scotch No. 50 tape. Conduit and ducts not under buildings and feeder ducts shall be installed per CEC 300.5, except that the bends in conduit larger than 1" in diameter shall be made with galvanized steel conduit treated as noted above. Make joints with compound to be watertight.
4. Conduit sizes shall be as required by code and as indicated or specified on drawings. No conduit smaller than 3/4 inch trade size shall be used.
5. Penetration through floor slabs where subject to damage shall be in wrapped rigid steel. Schedule 40 PVC elbows and penetrations may be used in slab on grade where penetrations occur in protected areas (walls, electrical rooms, etc.).
6. Conduits and outlets shall be concealed within the building structure, except that certain motor and lighting feeder conduits may be run exposed in certain areas as indicated on the drawings. Conduit shown to be installed in cabinets, counters, and casework shall be run as directed by the Architect.
7. All conduit serving roof mounted equipment and devices including HVAC equipment, GFCI maintenance receptacles and duct type smoke detectors shall be routed in the ceiling space. Conduit shall penetrate roof at equipment locations only. No conduit shall be installed horizontally across roof surface.
8. Flexible metallic and non-metallic conduit systems shall have a code sized copper ground conductor. Increase conduit size as required.
9. Flexible metal conduit/cut-in boxes for low voltage systems (tel/data) may be used in wall cavities provided the installation complies with CEC Article 348. All conduit for low voltage wiring systems in new wall partitions shall be EMT. Flexible metal conduit for these systems is not acceptable in new walls.
10. All empty conduit systems shall have a 200 pound test pull cord installed to facilitate installation of future wire.

B. FITTINGS

1. EMT-Fittings and conduit bodies shall be steel, malleable iron or die cast compression or set screw type.
2. IMC and GRC-Shall be steel or malleable iron type and shall engage a minimum of five (5) threads.

C. OUTLET, PULL AND JUNCTION BOXES

1. Pull and/or junction boxes shall be installed wherever shown on the drawings or as required by code.
2. Each switch, light, receptacle or other outlet shall be provided with a code gauge, galvanized steel outlet box. Junction and pullboxes shall be code gauge, galvanized steel. Outlet boxes shall be of the one piece, knockout type, in general 4-inch square, 2 1/8-inch with plaster ring. Plaster rings shall be set to provide not more than 1/8" from wall surface to ring. In no case shall plaster ring project beyond surface of wall. Single gang rings similar to Steel City 52050 shall be used for 4" boxes in unfinished brick. Number 180 boxes may be used for unfinished masonry flush wall outlets. Center all outlet boxes in block courses.
3. Boxes installed in poured cement floors shall be flush type cast iron with watertight gasketed covers, gray metallic finish. Where boxes are installed in floors with tile or carpet floor covering, covers shall be of the recessed type to accommodate the floor covering.
4. Boxes installed for the alarm, computer and security system shall be provided with appropriate coverplates.
5. Pull boxes shall be the types, size and design as approved by the CEC for the class of installation required.
6. Pull boxes and outlet boxes shall be sized by the Electrical Contractor as required by the CEC based on number of conductors, yokes, straps, etc., used in the installation.

D. WIRE

1. Match building standards if applicable in an existing building condition, unless otherwise follow the specifications below.
2. Conductor sizes shown on the drawings are based on copper wire. Unless otherwise specified, all wire shall be 75 degree C type THWN or XHHW. All branch circuit and feeder wiring shall be copper.
3. Where raceway and cables exposed to direct sunlight on or above rooftops, provide type XHHW-2 insulated conductors.
4. Wires shall be marked with color to simplify circuit identification. Unless otherwise required by local ordinances, identification shall be as follows:
   a. 120/208V and 120/240V
      Phase A: Black. Phase B: Red. Phase C: Blue
      Neutral: White. Ground: Green
   b. 277/480V
      Phase A: Brown. Phase B: Orange. Phase C: Yellow
      Neutral: Gray. Ground: Green
5. The wire shall be #12 AWG unless otherwise indicated.
6. No wire shall be installed in the conduit system until the conduit system is complete. Use U.L. approved lubricant to facilitate the installation of the conductors in the conduit system.
7. Conductors No. 10 AWG and smaller shall be solid. Conductors larger than No. 10 AWG shall be stranded.
8. MC cable may be utilized for #10 and #12 branch circuit wiring with the following limitations.
   a. The installation is in accordance with CEC Article 330.
   b. MC cable use is limited to wiring within partitions and walls and to connections to and between switches and wiring devices.
   c. MC cable is not to be used for home run circuiting. Home run circuiting shall be individual conductors installed in EMT conduit.

E. WIRING DEVICES

1. Switches: Wall switches shall be specification Grade AC silent type switches 20A, 120 – 277 volt. Hubbell 1221 (SP), 1222 (DP), 1223 (3-way) and 1224 (4-way). Dimmers shall be specification grade with preset slide control. Color shall be as approved by the Architect/Owner. Match building standard (if existing).
2. Receptacles: Duplex type outlets shall be heavy duty, specification grade NEMA 5-20R, 20A, 120V grounded type equal to Hubbell 5362. Isolated ground outlets shall be equal to Hubbell IG5362. Special application receptacles shall be as indicated on plans and verified with equipment supplier. Color shall be as approved by the Architect/Owner. Match building standard (if existing).
3. Weatherproof Receptacles: Covers shall be Hubbell WPFS26 with 5362 duplex outlet or equal.
4. GFCI Receptacles: Shall be Hubbell GF5362. GFCI receptacles shall be used in all outdoor applications as well as those placed within 6' of water source and all other CEC required locations.
5. Mounting Heights: Switches – +48 inches. Receptacles – +18 inches. Communication Devices – +18 inches. Fire Alarm Devices – As required by ADA, NFPA 72 or Authority Having Jurisdiction. All mounting heights are to centerline of device.
6. Device plates shall be equal to Sierra smooth-line plastic wall plates. Color shall be as approved by the Architect/Owner. Match building standard (if existing).
7. In all cases, switches controlling lighting are to be located on the strike side of doors. Locations indicated for switches and outlets are approximate. Owner may make minor relocations at no additional charge.

F. LIGHTING FIXTURES

1. Coordinate the final location of fixtures shown diagrammatically on the drawings with other trades in order to avoid interferences. Relocate fixtures as required as part of the work under this Division if new location is within a five foot radius of location shown.
2. Provide all lighting fixtures, wired and connected. The drawings indicate the fixtures for each location. Electrical Contractor shall verify fixture locations, mounting requirements and U.L. labeling of all fixtures prior to ordering. Include all accessories needed for a complete installation including mounting clips, plaster frames, hangers and hardware in base bid. Provide lamps for all fixtures. Verify ceiling construction before ordering recessed units.
3. Adjustable fixtures shall be located and properly aimed as directed by the Architect or the Lighting Designer.
4. Support recessed fixtures from ceiling structural support per adopted building codes.
5. All fixtures to bear the UL label. All outdoor fixtures shall be U.L. labeled for wet or damp location as defined by CEC Article 100.

G. LAMPS

1. Lamps shall be by the same manufacturer. Lamps shall be manufactured by GE, Phillips, Ushio, NICHIA, Samsung LED or CREE.
2. Incandescent – Extended lamp life, inside frosted.
3. Fluorescent – Minimum 75 CRI, 3500K, 20,000 rated lamp hours.
4. Compact Fluorescent (CFL) – Minimum 80 CRI, 3500K, 10,000 rated lamp hours.
5. Metal Halide – Minimum 65 CRI, 15,000 rated lamp hours.
6. High Pressure Sodium (HID) – Minimum 22 CRI, 24,000 rated lamp hours.
7. Light Emitting Diode (LED) – Minimum 80 CRI indoors and 70 CRI outdoors, 3500K (U.N.O.), 50,000 rated lamp hours. LEDs must be from the same manufacturer and batch.

H. BALLASTS / DRIVERS

1. Fluorescent
   a. Electronic, rapid start, high power factor, normal (0.88) ballast factor, less than 20-percent total Harmonic distortion and "A" sound rating.
   b. Compact fluorescent: electronic, fully encapsulated, 90-percent minimum power factor, 20 KHZ or higher operation frequency, less than 5-percent flicker, lump current crest factor of 1.7 or less. Transient protection shall comply with IEEE (62.41) for category A1 locations. Interference shall comply with 47 CFR, Chapter 1, Part 18, subpart C for limitations on electromagnetic and radio frequency interference for noncosumer equipment.
   c. Outdoor fixtures shall have electronic ballasts rated for 0 degrees F starting temperature.
2. High-intensity Discharge (HID)
   a. Ballasts shall comply with ANSI C82.4, shall be constant voltage autotransformer high power factor type. Open circuit operation will not reduce average life of ballast.
   b. The ballast shall be designed for an ambient operating temperature of 104 degrees F and shall start at minus 22 degrees F.
   c. Auxiliary, Instant-on Quartz System – Automatically switches quartz lamp on when fixture is initially energized and when momentary power outages occur. Automatically turns quartz lamp off when high-intensity-discharge lamp reaches approximately 60 percent light output.
3. Light Emitting Diode (LED)
   a. Drivers shall be easily accessible without the use of special tools. Luminares shall be capable of being operated by standard motion/vacancy sensors, daylight sensors, and dimmers. Dimming for 0-10 Volt DC control circuits minimum. Drivers shall be specifically compatible with lighting control system being provided.
   b. Temperature rating; -20 degrees Celsius minimum starting temperature. Luminares accessories shall be able to withstand temperatures in excess of 110 Fahrenheit degrees.
   c. 90-percent minimum power factor, 50-60 Hz frequency, total harmonic distortion less than 20-percent, LED and driver life expectancy of 50,000 minimum projected hours at 6,000 hours testing for both LEDs and drivers; luminaries in contact with insulation materials shall be IC rated; rated for dry and damp locations.
   d. Approved driver manufacturers include Osram, Philips, Kenall, EldoLED, General Electric, and others only if approved.

I. SAFETY SWITCHES

1. Safety switches shall be general duty type, 250 volt for 208 volt equipment and heavy duty type, 600 volt for 480 volt equipment. Safety switches shall have the number of poles required. Wire terminations shall be listed as specified by the CEC. Safety switches for air conditioning use shall be of the fusible type where recommended by equipment manufacturer. Fusible switches shall accept class 'R' fuses only and will reject all other types. The switch size, number of poles and voltage rating shall be as required by code and as indicated on the drawings. Where outside the building, the switches shall be type NEMA 3R weatherproof. All switches shall be lockable.
2. Provide dymo-tape tag inside cover of each fusible switch, indicating size and type of fuses provided.

J. FUSES

1. Fuses shall be dual element time delay type, as manufactured by Bussman Mfg. Company, or as indicated or required by the equipment supplied.
2. Provide two (2) sets of three (3) spare fuses for each size and type provided on this project. Install fuses in a hinged door, sheet metal storage cabinet equipped with clips or cubicles, each marked with the size and type of fuse stored therein. Provide nameplate "Spare Fuses." Install in location as directed by Owner.

K. SERVICE ENTRANCE

1. The service entrance equipment size, voltage and rating shall be as indicated on the drawings. Provide copper busing unless otherwise noted or permitted. Equipment shall carry the U.L. label and shall conform to the power company regulations.
2. Electrical Contractor is responsible to verify and confirm that equipment submitted shall fit within the allotted space requirements shown on the plans. Drawings indicate maximum dimensions for switchboards including clearances between switchboards an adjacent surfaces and other items. Comply with maximum dimensions. If any space or size discrepancies are anticipated it is the Electrical Contractor's responsibility to notify the Engineer prior to submittal. Once the submittals have been approved it is the Electrical Contractor's responsibility to install the equipment within the allotted space at no additional cost to the Owner.
3. Service entrance equipment shall be manufactured by General Electric, Square D, Cutler-Hammer, Siemens or approved equal.
4. All overcurrent protection devices and electrical distribution equipment shall be fully (100%) rated for available fault current indicated. Series rated devices are not acceptable.

L. TRANSFORMERS

1. Transformers shall be dry type with copper windings, 115˚ temperature rise, and DOE10 CFR Part 431 Appendix A of Subpart K 2016. Energy efficiency under DOE 2016 requirements is to be Energy Verfied by UL.
2. All transformers shall be provided with class 220 degree Celsius insulation system and shall be completely enclosed except for ventilation openings
3. Transformers shall be 115 degree temperature rise above 40 degree Celsius ambient temperature.
4. Transformers shall be equipped with four 2-1/2% (2 above and 2 below normal voltage) primary taps.

M. PANELBOARDS

1. Circuit breaker type as indicated on drawings. All panels shall have panelboard type construction with bolt-on circuit breakers. Panels indicated as loadcenters shall have plug-on circuit breakers.
2. Busing shall be copper unless otherwise noted or permitted.
3. Manufacturers shall be General Electric, Square D, Cutler-Hammer, Siemens with voltage, sizes and ratings as indicated on drawings. All panelboards in the facility shall be by the same manufacturer.
4. The circuit breakers shall be operable in any position and be removable from the front of the panelboard without disturbing the adjacent units. Branch breakers shall be of such design that combination of single-pole, double-pole and three-pole breakers can be assembled on the same panel. Each branch circuit shall be clearly numbered. Branch and main terminals shall be of the solderless type. Handle ties to form multi-pole breakers are not acceptable.
5. Wire termination for panelboards, loadcenters and circuit breakers shall be listed as specified by the CEC.
6. Provide a typewritten circuit index behind clear plastic cover on inside of door. Information shall include room and type of load served. All circuit breakers shall be identified, including spares. Index card frame shall be metal, secured to door.
7. Where panelboards are installed flush with the walls, extend empty conduits from the panelboard to an accessible space above or below. Provide 3/4" (minimum size) conduit for every three single spare circuit breakers or space or equivalent multi-pole arrangement, or fraction thereof, but not less than two conduits for each panelboard.

N. SYSTEM GROUNDING

1. Grounding shall comply with requirements of Article 250. All exposed noncurrent-carrying metallic parts of electrical equipment, metallic raceway systems, metallic cable armor, grounding conductor of nonmetallic sheathed cables, grounding conductor in nonmetallic raceways, and grounded conductors of the wiring system shall be grounded.
2. The grounded conductor (neutral) of the wiring system shall be connected to the system grounding conductor at a single place in each system by removable bonding jumpers, sized according to the applicable provisions of the CEC. The grounded conductor (neutral) to the grounding conductor connection shall be located in the enclosure for the system's overcurrent protection or where otherwise indicated on the plans or specifications.
3. Ground bus separate from the neutral bus shall be provided in all switchboards and panelboards. Ground bus shall be retorqued (checked) prior to energizing equipment per manufacturer's recommendations.
4. Ground buses and neutral buses in all distribution panels, switchboards, panelboards and those provided in any equipment shall be isolated except where required to be connected as specified above for the service entrance and in transformer terminal compartments.
5. When indicated on the drawings, equipment grounding conductors shall be extended from the ground bus in the distribution equipment to the receptacle, fixture or device lugs where they are provided. When not provided, they shall be connected to equipment enclosures. The connections shall be arranged such that removal of the receptacle, the equipment ground conductors, or the ground jumpers from ground busing shall not affect the ground system.
6. Raceways may not be used as a grounding conductor for power and lighting circuits. Every conduit supplying power and lighting circuits shall have a separate code sized green ground wire installed in the conduit to ensure a continuous grounding path.
7. In inaccessible locations make connections by exothermic weld process.
8. In accessible locations, connections shall be made with approved bolted bronze grounding devices.

O. EQUIPMENT CONNECTIONS

1. All motors shall be wired to conform with manufacturer's recommendations and with applicable codes. Furnish necessary materials, such as wire, conduit, fittings, etc. required to connect motor. However, motors, controls, etc. shall be furnished by the supplier of the driven equipment. Verify equipment location and sizes with the trade supplying the motor before installing the conduit or outlets.
2. Final connection to all HVAC or motor loads from load side of disconnect shall be made using copper wire only, aluminum wire not acceptable.

P. COMMUNICATION SYSTEMS

1. For all communication outlets provide double gang back box with single gang plaster ring. Provide 1" conduit to 6" above accessible ceiling with 90˚ bend and conduit bushing unless otherwise noted on drawings. For non-accessible ceilings, route conduit to nearest accessible ceiling space or to nearest communication closet. Provide blank cover plates for all unused boxes.
2. Provide 3/4" fire rated plywood for telephone terminal backboard and paint to match wall surface. Refer to drawings for dimensions of backboard.
3. Provide #6 AWG CU ground wire from equipment backboard to building service ground.

Q. LIGHTING CONTROL

1. Furnish and install lighting control panels, override switches, time switches, photocells and contactors required for lighting control as indicated on the drawings. Lighting control panel and all associated components shall conform to adopted energy codes.

R. FIRE ALARM SYSTEM

1. Fire alarm is not shown on these drawings. Fire alarm is required as a part of the Contractor's scope of work. Contractor shall engage the services of a state licensed fire alarm contractor for the design and installation of a complete and operable fire alarm system that complies with all NFPA, CEC and local ordinances and requirements approved by Authority Having Jurisdiction. System design and installation shall be compatible with existing shell building and approved by Landlord prior to bid. Manufacturer of fire alarm system shall be the same manufacturer as the shell building unless otherwise approved by Landlord and Authority Having Jurisdiction. Include all costs in base bid.

((RADAR))
RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

N

-PROGRESS PRINT-
-FOR ESTIMATING ONLY-
-NOT FOR CONSTRUCTION-

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
ELECTRICAL SPECIFICATIONS

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
E0.02

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 1 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

A. General Information

Climate Zone: 9	Conditioned Floor Area: 3,437				
	Unconditioned Floor Area: 0				
Building Type:	☑ Nonresidential	☐	High-Rise Residential	☐	Hotel/Motel
☐ Schools	☐ Relocatable Public Schools	☑	Conditioned Spaces	☐	Unconditioned Spaces
Phase of Construction:	☑ New Construction	☐	Addition	☐	Alteration
Method of Compliance:	☐ Complete Building	☑	Area Category	☐	Tailored
Project Address: 785 N. VIGNES STREET					

B. Lighting Compliance Documents (select yes for each document included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance documents, refer to the Nonresidential Manual published by the California Energy Commission.

YES	NO	COMP. DOC.	TITLE
☑	☐	NRCC-LTI-01-E	Certificate of Compliance. All Pages required on plans for all submittals.
☑	☐	NRCC-LTI-02-E	Lighting Controls, Certificate of Compliance, and PAF Calculation. All Pages required on plans for all submittals.
☑	☐	NRCC-LTI-03-E	Indoor Lighting Power Allowance
☐	☑	NRCC-LTI-04-E	Tailored Method Worksheets
☑	☐	NRCC-LTI-05-E	Line Voltage Track Lighting Worksheets
☐	☐	NRCC-LTI-06-E	Indoor Lighting Existing Conditions

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 2 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

C. Summary of Allowed Lighting Power

Conditioned and Unconditioned space Lighting must not be combined for compliance

	Indoor Lighting Power for Conditioned Spaces		Watts	Indoor Lighting Power for Unconditioned Spaces		Watts
01	Installed Lighting NRCC-LTI-01-E, Table H, page 5	+	2,929	Installed Lighting NRCC-LTI-01-E, Table H, page 5	+	0
02	Portable Only for Offices NRCC-LTI-01-E, Table G, page 4	+				
03	Minus Lighting Control Credits NRCC-LTI-02-E, page 2	-	0	Minus Lighting Control Credits NRCC-LTI-02-E, page 2	-	0
04	Adjusted Installed Lighting Power (row 1 plus row 2 minus row 3)	=	2,929	Adjusted Installed Lighting Power (row 1 minus row 3)	=	0
	Complies ONLY if Installed ≤ Allowed (Box 04 < Box 05)			Complies ONLY if Installed ≤ Allowed (Box 04 < Box 05)		
05	Allowed Lighting Power Conditioned NRCC-LTI-03-E, page 1 — Alterations with replacement luminaires that have at least 50/35% lower power compared to the original existing luminaires, may instead use the allowed wattage from NRCC-LTI-06, page 2		4,324	Allowed Lighting Power Unconditioned NRCC-LTI-03-E, page 1 — Alterations with replacement luminaires that have at least 50/35% lower power compared to the original existing luminaires, may instead use the allowed wattage from NRCC-LTI-06, page 2		0

D. Declaration of Required Certificates of Installation

Declare by selecting yes for all of the Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Compliance Document/Title	
☑	☐	NRCI-LTI-01-E - Must be submitted for all buildings	☐ Field Inspector
☑	☐	NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐ Field Inspector
☑	☐	NRCI-LTI-03-E - Must be submitted for a line-voltage track lighting integral current limiter, or for a supplementary overcurrent protection panel used to energize only line-voltage track lighting, to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room, or a theater to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	☐ Field Inspector
☐	☑	NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	☐ Field Inspector

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 3 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

E. Declaration of Required Certificates of Acceptance

Declare by selecting yes for all of the Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Compliance Document/Title	
☑	☐	NRCA-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.	☐ Field Inspector
☑	☐	NRCA-LTI-03-A - Must be submitted for automatic daylight controls.	☐ Field Inspector
☐	☑	NRCA-LTI-04-A - Must be submitted for demand responsive lighting controls.	☐ Field Inspector
☐	☑	NRCA-LTI-05-A – Must be submitted for institutional tuning power adjustment factor (PAF).	☐ Field Inspector

A Separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:
☐ CONDITIONED SPACE ☐ UNCONDITIONED SPACE

F. Indoor Lighting Schedule and Field Inspection Energy Checklist

☐ The actual indoor lighting power listed on the next 2 pages includes all installed permanent and planned portable lighting systems.
☐ When Complete Building Method is used for compliance, list each different type of luminaire on separate lines.
☐ When Area Category Method or Tailored Method is used for compliance, list each different type of luminaire by each different function area on separate lines
☐ Also include track lighting in schedule, and submit the track lighting compliance document (NRCC-LTI-05-E) when line-voltage track lighting is installed.

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 4 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

G. Installed Portable Luminaires in Offices – Exception to Section 140.6(a)

☐ This section shall be filled out ONLY for portable luminaires in offices (As defined in §100.1). All other planned portable luminaires shall be documented on next page of this compliance document.
☐ This section is used to determine if greater than 0.3 watts of portable lighting is planned for any office
☐ Fill out a separate line for each different office. Small offices that are typical (having the same general and portable lighting) may be grouped together. This allowance shall not be traded between offices having different lighting systems.

Office Portable Luminaire Schedule	Office Installed Portable Luminaire W/ft²							Office Location	Field Inspector	
1	2	3	4	5	6	7	8	9	10	
Complete Luminaire Description (i.e., LED, under cabinet, furniture mounted direct/indirect)	Watts per Luminaire	Number of Luminaires	Installed portable luminaire watts in this office (G02 x G03)	Square feet of this office	Watts per square foot (G04 / G05)	If G06 ≤ 0.3, enter zero; if G06 > 0.3, (G06-0.3)	(G05 x G07)	Identify Office area in which these portable luminaires are installed	Pass	Fail
									☐	☐
									☐	☐
									☐	☐
									☐	☐
									☐	☐
Total installed portable luminaire watts that are greater than 0.3 W/ft² per office:								Enter sum total of all pages into NRCC-LTI-01-E; Page 1		

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 5 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

A Separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces. Installed Lighting Power listed on this Lighting Schedule is only for:
☑ CONDITIONED SPACE ☐ UNCONDITIONED SPACE

H. Indoor Lighting Schedule and Field Inspection Energy Checklist

Luminaire Schedule		Installed Watts					Location	Field Inspector [1]	
01	02	03	04		05	06	07	08	
Name or Item Tag	Complete Luminaire Description (i.e, 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast)	Watts per Luminaire	How wattage was determined: CEC Default from NA8	According to §130.0(c)	Number Luminaires	Total Installed Watts in this area (H03 x H05)	Primary Function area in which these luminaires are installed	Pass	Fail
F1	F1	51.7	☐	☑	2	103	Kitchenette	☐	☐
F1	F1	51.7	☐	☑	10	517	Library, Stacks	☐	☐
F1	F1	51.7	☐	☑	8	414	Office <= 250 sqft	☐	☐
F2	F2	50.0	☐	☑	4	200	Lounge, Recreation	☐	☐
F2	F2	50.0	☐	☑	2	100	Corridor/Restroom/Support	☐	☐
F2	F2	50.0	☐	☑	12	600	Library, Stacks	☐	☐
F2	F2	50.0	☐	☑	6	300	Convention/Conference/Meetin	☐	☐
F2	F2	50.0	☐	☑	2	100	Office <= 250 sqft	☐	☐
F3	F3	38.0	☐	☑	9	342	Corridor/Restroom/Support	☐	☐
INSTALLED WATTS PAGE TOTAL:						2,676	Enter sum total of all pages into NRCC-LTI-01-E; Page 2		

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 5 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

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Luminaire Schedule		Installed Watts					Location	Field Inspector [1]	
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F4	F4	25.3	☐	☑	7	177	Library, Stacks	☐	☐
F5	F5	38.1	☐	☑	2	76	Convention/Conference/Meetin	☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
			☐	☐				☐	☐
INSTALLED WATTS PAGE TOTAL:						253	Enter sum total of all pages into NRCC-LTI-01-E; Page 2		

STATE OF CALIFORNIA
INDOOR LIGHTING
CEC-NRCC-LTI-01-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-01-E
Indoor Lighting	(Page 6 of 6)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Daniel Barahona	Documentation Author Signature: Daniel Barahona
Company: REX Engineering Group	Signature Date: 4/22/2019
Address: 2501 Davidson Drive, 2nd Floor	CEA Certification Identification (if applicable):
City/State/Zip: Monterey Park, CA 91754	Phone: (323) 262-9199

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Responsible Designer Name: TAMARA VOSS	Responsible Designer Signature: Tamara Voss
Company : REX ENGINEERING GROUP	Date Signed: 7/25/2019
Address: 2501 DAVIDSON DRIVE, 2ND FLOOR	License: E21496
City/State/Zip: MONTEREY PARK, CA 91754	Phone: 3232629199

STATE OF CALIFORNIA
INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-02-E
Indoor Lighting - Lighting Controls	(Page 1 of 3)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

A. Mandatory Lighting Control Declaration Statements (Indicate if the measure applies by checking yes or no below.)

YES	NO	Control Requirements
☑	☐	Lighting shall be controlled by self-contained lighting control devices which are certified to the Energy Commission according to the Title 20 Appliance Efficiency Regulations in accordance with Section 110.9.
☑	☐	Lighting shall be controlled by a lighting control system or energy management control system in accordance with §110.9. An Installation Certificate shall be submitted in accordance with Section 130.4(b).
☐	☑	One or more Track Lighting Integral Current Limiters shall be installed which have been certified to the Energy Commission in accordance with §110.9 and §130.0. Additionally, an Installation Certificate shall be submitted in accordance with Section 130.4(b).
☐	☑	A Track Lighting Supplementary Overcurrent Protection Panel shall be installed in accordance with Section 110.9 and Section 130.0. Additionally, an Installation Certificate shall be installed in accordance with Section 130.4(b).
☑	☐	All lighting controls and equipment shall comply with the applicable requirements in §110.9 and shall be installed in accordance with the manufacturer's instructions in accordance with Section 130.1.
☑	☐	All luminaires shall be functionally controlled with manually switched ON and OFF lighting controls in accordance with Section 130.1(a).
☑	☐	General lighting shall be separately controlled from all other lighting systems in an area. Floor and wall display, window display, case display, ornamental, and special effects lighting shall each be separately controlled on circuits that are 20 amps or less. When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled; in accordance with Section 130.1(a)4.
☑	☐	The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot shall meet the multi-level lighting control requirements in accordance with Section 130.1(b).
☑	☐	All installed indoor lighting shall be equipped with controls that meet the applicable Shut-OFF control requirements in Section 130.1(c).
☑	☐	Lighting in all Daylit Zones shall be controlled in accordance with the requirements in Section 130.1(d) and daylit zones are shown on the plans.
☐	☑	Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Responsive Signal in accordance with Section 130.1(e).
☑	☐	Before an occupancy permit is granted for a newly constructed building or area, or a new lighting system serving a building, area, or site is operated for normal use, indoor lighting controls serving the building, area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4.(a). The controls required to meet the Acceptance Requirements include automatic daylight controls, automatic shut-OFF controls, and demand responsive controls.

STATE OF CALIFORNIA
INDOOR LIGHTING – LIGHTING CONTROLS
CEC-NRCC-LTI-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-02-E
Indoor Lighting - Lighting Controls	(Page 2 of 3)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

A separate document must be filled out for Conditioned and Unconditioned Spaces. This page is used only for the following:
☑ CONDITIONED SPACES ☐ UNCONDITIONED SPACES

B. Mandatory and Prescriptive Indoor Lighting Control Schedule, PAF Calculation, and Field Inspection Checklist

Lighting Control Schedule			Standards Complying With [1] (✓ all that apply, or enter 'E' if Exempted)							PAF Credit Calculation [2]: Watts of Controlled Lighting	PAF	Control Credit (K x L)	✓ if Acceptance Test Required	Field Inspector	
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	
Location in Building	Type/Description of Lighting Control (i.e.: occupancy sensor, automatic time switch, dimmer, automatic daylight, etc...)	# of Units	§130.1(a)	§130.0(b)	§130.1(c)	§130.1(d)	§130.1(e)	§140.6(a)2	§140.6(d)					Pass	Fail
Stacks 103	OS, DIM, DL		☑	☑	☑	☑	☐	☐	☐					☐	☐
All Other Areas	OS, DIM		☑	☑	☑	☐	☐	☐	☐					☐	☐
			☐	☐	☐	☐	☐	☐	☐					☐	☐
			☐	☐	☐	☐	☐	☐	☐					☐	☐
			☐	☐	☐	☐	☐	☐	☐					☐	☐
			☐	☐	☐	☐	☐	☐	☐					☐	☐
Control Credit PAGE TOTAL (Sum of Column 13):												0			
IF MULTIPLE PAGES ARE USED, ENTER SUM TOTAL OF Control Credit for all pages HERE (Sum of all Column 13):												0			
												Enter Control Credit total into NRCC-LTI-01-E; Page 1.			

1. §130.1(a) = Manual area controls; §130.0(b) = Multi Level; §130.1(c) = Auto Shut-Off; §130.1(d) = Mandatory Daylight; §130.1(e) = Demand Responsive; §140.6(d) = Additional lighting controls installed to earn a PAF; §140.6(d) = Prescriptive Secondary Sidelit Daylight Controls.
2. Check Table 140.6-A for correct Factor. PAFs shall not be traded between conditioned and unconditioned spaces. As a condition to earn a PAF, an Installation Certificate is also required to be filled out, signed, and submitted.

((RADAR))
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.
423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: mail@rexeg.com w: rexeg.com

N

-PROGRESS PRINT-
-FOR ESTIMATING ONLY-
-NOT FOR CONSTRUCTION-

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
INDOOR TITLE 24

PROJECT 1818
SCALE AS NOTED
DRAWN BY
DATE 09/18/19

SHEET NUMBER
E0.03

STATE OF CALIFORNIA

INDOOR LIGHTING – LIGHTING CONTROLS

CEC-NRCC-LTI-02-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-02-E
Indoor Lighting - Lighting Controls	(Page 3 of 3)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Daniel Barahona	Documentation Author Signature: Daniel Barahona
Company:	Signature Date: 4/22/2019
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City/State/Zip: MONTEREY PARK, CA 91754	Phone: 3232629199

STATE OF CALIFORNIA

INDOOR LIGHTING POWER ALLOWANCE

CEC-NRCC-LTI-03-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-03-E
Certificate of Compliance - Indoor Lighting Power Allowance	(Page 1 of 4)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

A separate page must be filled out for Conditioned and Unconditioned Spaces. This page is only for:
☑ CONDITIONED spaces ☐ UNCONDITIONED spaces

A. SUMMARY TOTALS OF LIGHTING POWER ALLOWANCES

☐ If using Complete Building Method for compliance, use only the total in column (a) as total allowed building watts.
☐ If using Area Category Method, Tailored Method, or a combination of Area Category and Tailored Method for compliance, use only the total in column (b) as the total allowed building watts

	(a)	(b)
01 Complete Building Method Allowed Watts. Documented in section B of NRCC-LTI-03-E (below on this page)		
02 Area Category Method Allowed Watts. Documented in section C-1 of NRCC-LTI-03-E (below on this page)		4,324
03 Tailored Method Allowed Watts. Documented in section A of NRCC-LTI-04-E		0
TOTAL ALLOWED BUILDING WATTS. Enter number into correct cell on NRCC-LTI-01, Page 2, Row 1		4,324

☐ Check here if building contains both conditioned and unconditioned areas.

B. COMPLETE BUILDING METHOD LIGHTING POWER ALLOWANCE

01	02		03		04
TYPE OF BUILDING (From §140.6 Table 140.6-B)	WATTS PER ft^2	X	COMPLETE BLDG. AREA	=	ALLOWED WATTS
Total Area:					
Total Watts. Enter Total Watts into section A, row 1 (Above on this page)					

C -1 AREA CATEGORY METHOD TOTAL LIGHTING POWER ALLOWANCES	Watts
Total from section C-2.	4,324
Total from section C-3.	0
Total Watts. Enter Total Watts into section A, row 2 (Above on this page).	4,324
For Alterations Only – Reduced lighting power option (Total Allowed Watts x 0.85). Enter this value into section A, row 2 if using this option.	

STATE OF CALIFORNIA

INDOOR LIGHTING POWER ALLOWANCE

CEC-NRCC-LTI-03-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-03-E
Certificate of Compliance - Indoor Lighting Power Allowance	(Page 2 of 4)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

A separate page must be filled out for Conditioned and Unconditioned Spaces. This page is only for:
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C -2 AREA CATEGORY METHOD GENERAL LIGHTING POWER ALLOWANCE

☐ Do not include portable lighting for offices. Portable lighting for offices shall be documented only in Section G of NRCC-LTI-01-E.
☐ Separately list lighting for each primary function area as defined in §100.1 of the Standards.

01		02		03		04
AREA CATEGORY (From §140.6 Table 140.6-C)		WATTS PER ft^2	X	AREA (ft^2)	=	ALLOWED WATTS
Location in Building	Primary Function Area per Table 140.6-C					
Private Office 110	Office <= 250 sqft	1.00		54		54
Private Office 111	Office <= 250 sqft	1.00		103		103
Conference Room 112	Convention/Conference/Meeting	1.20		463		556
Record Information Management 109	Library, Stacks	1.50		142		213
Kitchenette 101	Kitchenette	1.20		118		142
Cataloging Room 108	Office <= 250 sqft	1.00		121		121
Private Office 102	Office <= 250 sqft	1.00		119		119
Archive Room 107	Library, Stacks	1.50		438		657
Archive Room 107	Lounge, Recreation	0.90		216		194
Private Office 105	Office <= 250 sqft	1.00		77		77
Private Office 106	Office <= 250 sqft	1.00		102		102
Stacks 103	Library, Stacks	1.50		1,218		1,827
Hallway	Corridor/Restroom/Support	0.60		266		160
			TOTALS	3,437		
Enter sum total Area Category allowed watts into section C-1 of NRCC-LTI-03-E (this compliance document)						4,324 WATTS

STATE OF CALIFORNIA

INDOOR LIGHTING POWER ALLOWANCE

CEC-NRCC-LTI-03-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-03-E
Certificate of Compliance - Indoor Lighting Power Allowance	(Page 3 of 4)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

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C-3 AREA CATEGORY METHOD ADDITIONAL LIGHTING WATTAGE ALLOWANCE (from Table 140.6-C Footnotes)

01	02	03 [2]	04	05	06	07
Primary Function	Sq Ft or Linear ft [1]	Additional Watts Allowed	Wattage Allowance (02 x 03)	Description(s) and Quantity of Special Luminaire Types in each Primary Function Area	Total Design Watts [3]	ALLOWED WATTS Smaller of 04 or 06
TOTALS – Enter into TOTAL AREA CATEGORY METHOD ADDITIONAL ALLOWANCES – Section C-1 .						0

1. Use linear feet only for additional allowance for white board or chalk board. All other additional Area Category allowances shall use watts per square foot.
2. Additional watts are available only when allowed according to the footnotes on bottom of Table 140.6-C, which include: Specialized task work; Ornamental lighting; Precision commercial and industrial work; Per linear foot of white board or chalk board; Accent, display and feature lighting; and Videoconferencing studio lighting..
3. Luminaire classification and wattage shall be determined in accordance with §130.0(c) of the Standards.

STATE OF CALIFORNIA

INDOOR LIGHTING POWER ALLOWANCE

CEC-NRCC-LTI-03-E (Revised 04/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-03-E
Certificate of Compliance - Indoor Lighting Power Allowance	(Page 4 of 4)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Daniel Barahona	Documentation Author Signature: Daniel Barahona
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STATE OF CALIFORNIA

LINE-VOLTAGE TRACK LIGHTING WORKSHEET

CEC-NRCC-LTI-05-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-05-E
Indoor Lighting – Line-Voltage Track Lighting Worksheet	(Page 1 of 2)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

There are four different methods available for determining how many watts of line-voltage track, or line-voltage busway, has been installed. One or more methods may be used to determine how many watts of line-voltage track, or line-voltage busway, has been installed. Use this worksheet to separately calculate the input wattage for each system.

Separately enter each row of this worksheet into the Luminaire Schedule in Section H of NRCC-LTI-01-E

Method 1 is the only option available for determining wattage for track or busway rated for more than 20 amperes

☐ A. METHOD 1 – VOLT-AMPERE (VA) RATING OF THE BRANCH CIRCUIT(S)

01	02
BRANCH CIRCUIT NAME OR ID	VOLT-AMPERE (VA) RATING OF THE BRANCH CIRCUIT

☐ B. METHOD 2 – USE THE HIGHER OF 45 WATTS PER LINEAR FOOT OF TRACK OR TOTAL RATED WATTAGE OF ALL LUMINAIRES

01	02	03	04	05	06
Track or Name #	Linear Feet of Track	(W/LF)	B02 x B03 (W)	Total Rated Wattage of All Luminaires	Larger of B04 or B05
F3	17	45	425	342	425
		45			
		45			

☐ C. METHOD 3 – USE THE HIGHER OF: 12.5 WATTS / LINEAR FOOT OF TRACK – OR VA RATING OF INTEGRAL CURRENT LIMITER

☐ Only integral current limiters which are certified to the Energy Commission shall be recognized by the Standards.
☐ This method shall not be recognized if an Installation Certificate is not submitted.

01	02	03	04	05	06
Track or Name #	Linear Feet of Track	(W/LF)	C02 x C03 (W)	VA Rating of Integral Current Limiter	Larger of C04 or C05
		12.5			
		12.5			
		12.5			

☐ D. METHOD 4 - DEDICATED TRACK LIGHTING SUPPLIMENTARY OVERCURRENT PROTECTION PANEL

☐ This method shall not be recognized if an Installation Certificate is not submitted.
☐ This method shall be used only for line-voltage track lighting, and shall not be recognized for any other lighting systems. If any other lighting systems or devices are installed, the supplementary overcurrent protection panel shall not be recognized for compliance with the Standards

01	02	03	04
NAME OR ID	Voltage of the Branch Circuit	Sum of the Ampere Rating of all Devices Installed in the Panel	Wattage = Sum of the Ampere Ratings of all of the Devices Times the Branch Circuit Voltage (D02 x D03)

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

STATE OF CALIFORNIA

LINE-VOLTAGE TRACK LIGHTING WORKSHEET

CEC-NRCC-LTI-05-E (Revised 01/16) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-LTI-05-E
Indoor Lighting – Line-Voltage Track Lighting Worksheet	(Page 2 of 2)
Project Name: METRO TRANSPORTATION LIBRARY RELOCATION	Date Prepared: 4/22/2019

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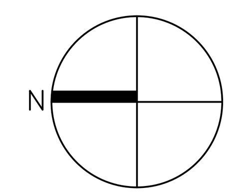
((RADAR))

RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

N 

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NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
INDOOR TITLE 24

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
E0.04

LIGHTING FIXTURE SCHEDULE

FIXTURE SYMBOL	FIXTURE DESIGNATION	DESCRIPTION	LAMP		LED DRIVER WATTAGE	LUMENS	LED COLOR TEMPERATURE	VOLTAGE	MANUFACTURER	CATALOG #	DIMMING TYPE	FINISH COLOR	REMARKS
			WATTS	TYPE									
	F1	ARCFORM LED RECESSED 2' X 2'	51.7	LED	60.8	4400	3500K	277	PHILIPS	3622–D1–L–B–44–7–2–E	0–10V	WHITE	GRID MTD; DRYWALL KIT (ARCHIVE ONLY)
	F1E	SAME AS ABOVE FIXTURE.	51.7	LED	60.8	4400	3500K	277	PHILIPS	3622–D1–L–B–44–7–2–E	0–10V		
	F2	LED FLAT PANEL	50	LED	52.6	5000	3500K	UNV 120–277	LITETRONICS	FP050UF435DL	0–10V	WHITE	GRID MTD
	F2E	SAME AS ABOVE FIXTURE.	50	LED	52.6	5000	3500K	UNV 120–277	LITETRONICS	FP050UF435DL	0–10V		
	F3	HALO STASIS L805LRG HIGH OUTPUT	38	LED	42.2	2399	3000K	120	EATON	L–805–LRG–FL–8–30–P–277	NONE	WHITE	WIDE FLOOD (37 DEGREES)
	F4	4' LINEAR DECORATIVE	25.1	LED	27.9	2600	3500K	UNV 120–277	LEDALITE	2201LBGLN047DECSCA548	0–10V	CUSTOMER COLOR. MATCH DUNN EDWARDS DEA184 PARISIAN NIGHT	SUSPENDED 48"–60"
	F5	6" LINEAR DECORATIVE	37.7	LED	41.9	3900	3500K	UNV 120–277	LEDALITE	2201LBGLN067DECSCA548	0–10V	CUSTOMER COLOR. MATCH DUNN EDWARDS DEA184 PARISIAN NIGHT	SUSPENDED 48"

LIGHTING FIXTURE SCHEDULE NOTES:

1. THE FIXTURE SCHEDULE INDICATES A GENERAL DESCRIPTION OF LIGHTING FIXTURES AND MANUFACTURER'S CATALOG NUMBERS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE CORRECT CEILING CONFIGURATION AND PROVIDE THE FIXTURES WITH ALL NECESSARY TRIMS AND MOUNTING HARDWARE SO THAT BOTH THE CEILING SYSTEM AND THE FIXTURE CONSTRUCTION MATCHES. PROVIDE SEISMIC HANGERS AS REQUIRED.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXACT LOCATION OF ALL LIGHTING FIXTURES AND TYPE OF CEILING WITH ARCHITECTURAL REFLECTED CEILING PLAN PRIOR TO ANY WORK.
3. JUNCTION BOX MUST BE PROVIDED WITH ALL EXIT LIGHTS CONNECTED TO MORE THAN ONE SET OF CONDUCTORS UNLESS THE EXIT LIGHT FIXTURE IS FURNISHED WITH AN APPROVED OUTLET BOX FOR THROUGH WIRING.
4. ALL OUTDOOR FIXTURES UNDER CANOPY SHALL BE UL LISTED FOR DAMP LOCATION.
5. ALL OUTDOOR FIXTURES SHALL BE UL LISTED FOR WET LOCATION.
6. FIXTURES IN ELECTRICAL, MECHANICAL, AND TELECOMMUNICATION EQUIPMENT ROOMS SHALL BE EQUIPPED WITH WIRE GUARDS.
7. VERIFY LAMP, BALLAST, AND DRIVER VOLTAGE REQUIREMENTS WITH CIRCUITING INDICATED ON THE DRAWINGS.
8. VERIFY LAMP COLOR TEMPERATURE RATINGS WITH ARCHITECT AND LIGHTING DESIGNER PRIOR TO ORDERING LAMPS.
9. MOUNTING HEIGHTS OF PENDANT OR WALL MOUNTED EMERGENCY LIGHTING FIXTURES SHALL BE AS SHOWN ON ELECTRICAL DRAWINGS. COORDINATE WITH ARCHITECT IN FIELD.
10. CONTRACTOR SHALL REVIEW ARCHITECTURAL LIGHTING FIXTURE SCHEDULE AND NOTIFY ENGINEER OF ANY DISCREPANCIES DURING BID.

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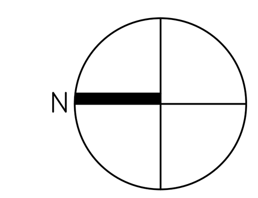

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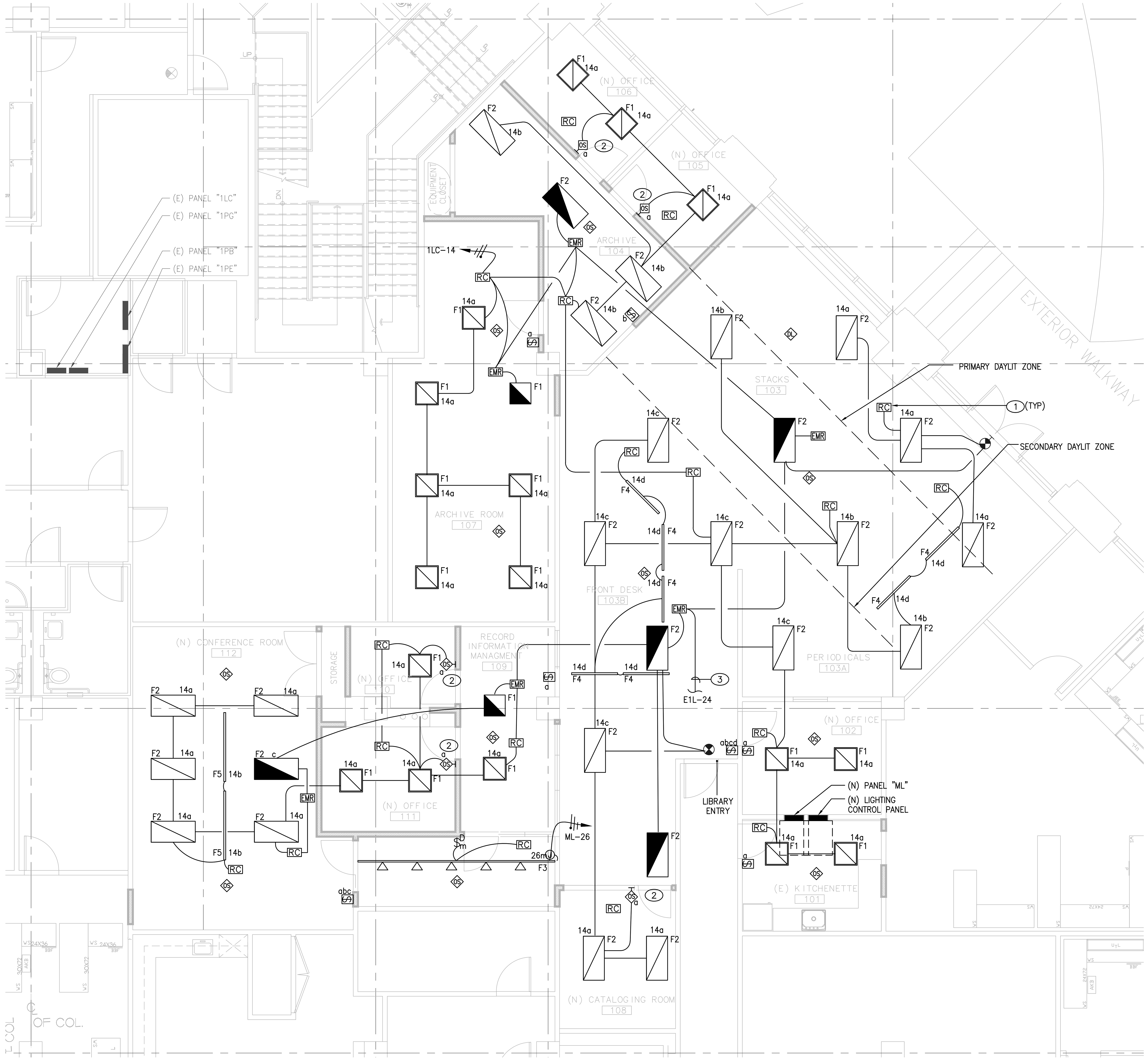


2 **LIGHTING PLAN**
SCALE: 3/16"=1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS, SECTIONS, ELEVATIONS, ETC. FOR EXACT LOCATION OF LIGHTING FIXTURES AND SWITCHES.

B. REFER TO SHEET E0.03 FOR LIGHTING FIXTURE SCHEDULE. REFER TO ARCHITECTURAL PLANS FOR EXACT FIXTURE TYPES AND QUANTITIES.

C. ALL LIGHTING CIRCUITS EXCEPT THOSE FEEDING EXIT SIGNS SHALL BE ROUTED THROUGH THE LIGHTING CONTROL PANEL. PROVIDE RELAY(S) AS REQUIRED. PROVIDE AN UNSWITCHED CIRCUIT CONDUCTOR TO EXIT SIGNS.

D. WHERE MULTIPLE LIGHT SWITCHES ARE INDICATED AT A SINGLE LOCATION, MOUNT SWITCHES UNDER COMMON GANGED FACEPLATE. MULTIPLE SINGLE GANG FACEPLATES ARE NOT ACCEPTABLE.

E. CONTRACTOR SHALL PROVIDE BARRIER IN LIGHT SWITCH OUTLET BOX WITH NORMAL AND EMERGENCY CIRCUIT WIRING FOR SEPARATION.

F. NO EQUIPMENT, J-BOX, ETC. REQUIRED ACCESS SHALL BE LOCATED IN HARD CEILING AREAS UNLESS ACCESS PANEL IS PROVIDED. COORDINATE WITH ARCHITECT. RELOCATE ANY EQUIPMENT, J-BOX, ETC. TO ACCESSIBLE CEILING AREA.

G. FIXTURES RECESSED IN "T-BAR" CEILING SHALL BE SUPPORTED INDEPENDENTLY OF CEILING SYSTEM WITH TWO NO. 12 HANGER WIRES TO OPPOSITE CORNERS OF FIXTURE. CLIP FIXTURE TO GRID ON TWO SIDES WITH FACTORY-FURNISHED CLIPS. FINAL CONNECTION TO FIXTURE SHALL BE MADE WITH A FLEXIBLE U.L. APPROVED ASSEMBLY.

H. QUANTITIES OF LIGHTING CONTROL DEVICES SHOWN FOR DIAGRAMMATIC PURPOSES ONLY. COORDINATE EXACT LOCATIONS, REQUIREMENTS, AND QUANTITIES WITH LIGHTING CONTROLS MANUFACTURER PRIOR TO BID.

I. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER'S REPRESENTATIVE FOR EXACT LOCATIONS OF OCCUPANCY SENSORS AND AIMING FOR BEST COVERAGE PRIOR TO ROUGH-IN.

J. OCCUPANCY SENSORS SHALL CONTROL ALL NORMAL AND EMERGENCY LIGHTING FIXTURES (EXCLUDING EXIT SIGNS) WITHIN THE SAME ROOM, U.N.O.

K. COORDINATE WITH MECHANICAL CONTRACTOR FOR DIFFUSER LOCATIONS. OCCUPANCY SENSORS SHALL BE LOCATED FOUR (4) FEET MINIMUM AWAY FROM DIFFUSER. COORDINATE WITH MANUFACTURER'S REPRESENTATIVE.

L. CONTRACTOR SHALL VERIFY LOCATIONS, FACES, AND ARROWS OF ALL EXIT SIGNS WITH ARCHITECTURAL DRAWINGS.

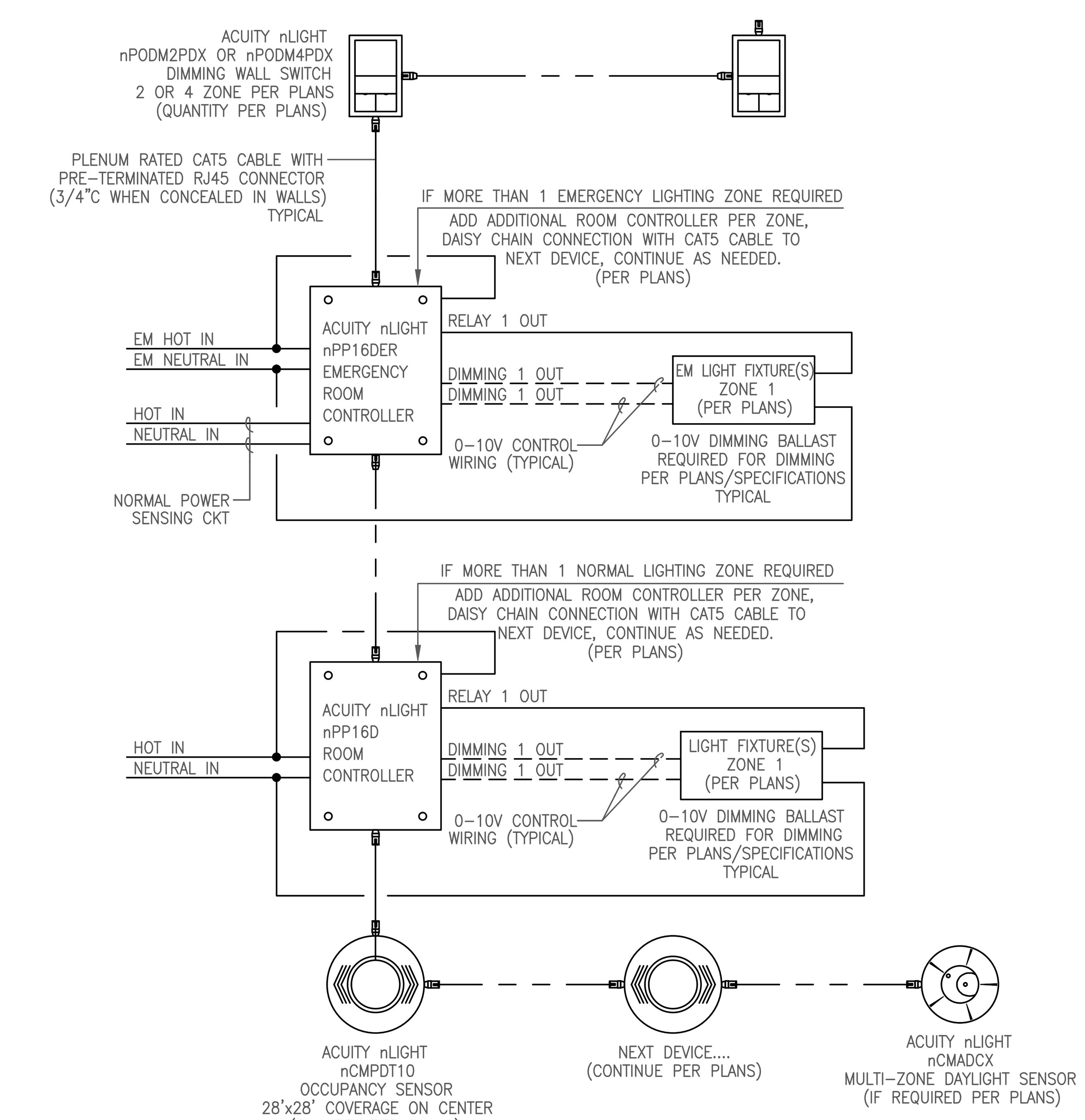
M. REFER TO STRUCTURAL DRAWINGS FOR LOCATIONS OF SEISMIC EXPANSION JOINTS. ALL CONDUIT CROSSING SEISMIC EXPANSION JOINTS SHALL BE PROVIDED WITH FLEXIBLE LIQUID TIGHT FITTINGS.

N. ALL EMERGENCY LIGHTING FIXTURES SHALL TURN TO FULL BRIGHT DURING LOSS OF NORMAL POWER. PROVIDE U.L. LISTED DEVICES, ACCESSORIES, ETC. AS REQUIRED.

N. CONTRACTOR SHALL VERIFY ALL WORK DONE DURING DEMOLITION PHASE OF PROJECT DOES NOT AFFECT CIRCUITS OF AREAS OUTSIDE THIS SCOPE OF WORK. IF CONTRACTOR ENCOUNTERS ELECTRICAL WORK OR EQUIPMENT OUTSIDE SCOPE, NOTIFY METRO IMMEDIATELY. METRO ELECTRICIANS SHALL HANDLE THOSE ELECTRICAL ISSUES FOUND OUTSIDE CURRENT PROJECT'S SCOPE OF WORK.

SPECIFIC NOTES

1. PROVIDE LIGHTING ROOM CONTROL, REFER TO LIGHTING ROOM CONTROL DETAIL 1 IN THIS SHEET FOR MORE INFORMATION.
2. PROVIDE nLIGHT OR EQUAL WALL MOUNTED OCCUPANCY SENSOR/WALL SWITCH FOR SINGLE LEVEL SWITCHING.
3. EXTEND NEW WIRING TO EXISTING J-BOX 277V EMERGENCY LIGHTING FIXTURE AND UTILIZE EXISTING BRANCH CIRCUIT IN THE AREA/ROOM.



NOTE: REFER TO ALL MANUFACTURERS INSTALLATION INSTRUCTIONS FOR CORRECT WIRING INFORMATION. THIS DIAGRAM INDICATES FUNCTIONAL INTENT. PROVIDE ALL PARTS AND ACCESSORIES PER MANUFACTURER FOR A COMPLETE INSTALLATION. LOCATE OCCUPANCY SENSORS AND DAY LIGHT SENSORS PER MANUFACTURERS RECOMMENDATIONS. NOT ALL DEVICES SHOWN IN THIS DETAIL MAY BE USED, REFER TO THE FLOOR PLANS FOR DEVICES USED AND QUANTITY.

1 **TYPICAL ROOM CONTROLLER DETAIL**
SCALE: N.T.S

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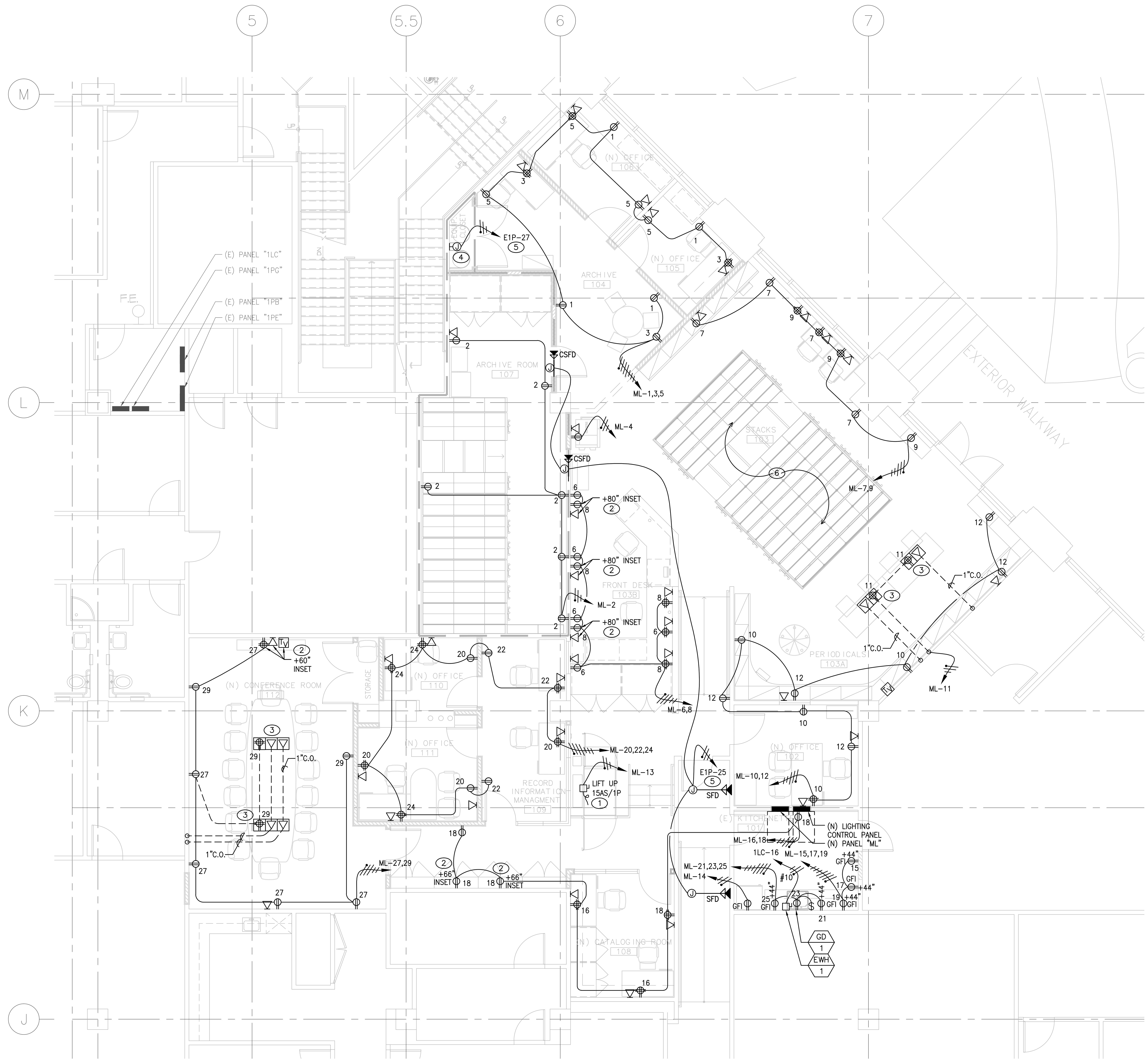
TITLE
LIGHTING PLAN

PROJECT 1818
SCALE AS NOTED
DRAWN BY
DATE 09/18/19
SHEET NUMBER E2.01



2 POWER PLAN
SCALE: 3/16"=1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL ELECTRICAL OUTLETS, DEVICES, AND MOUNTING HEIGHTS.

B. COORDINATE EXACT MECHANICAL EQUIPMENT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. FINAL POWER CONNECTION TO UNIT MOUNTED MECHANICAL EQUIPMENT SHALL BE MADE WITH LIQUID-TIGHT FLEXIBLE CONDUIT.

C. NO EQUIPMENT, J-BOX, ETC. REQUIRED ACCESS SHALL BE LOCATED IN HARD CEILING AREAS UNLESS ACCESS PANEL IS PROVIDED. COORDINATE WITH ARCHITECT. RELOCATE ANY EXISTING EQUIPMENT, J-BOX, ETC. TO ACCESSIBLE CEILING AREA.

D. ALL RECEPTACLES INSTALLED TO SERVE A COUNTERTOP SURFACE WITH SINK SHALL BE GFCI TYPE RECEPTACLES.

E. ALL CORING OF STRUCTURAL FLOOR SLAB SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR AND APPROVED BY OWNER AND BUILDING STRUCTURAL ENGINEER. CONTRACTOR IS HEREBY ALERTED THAT ALL PENETRATIONS AND CONNECTION TO STRUCTURE SHALL BE PREFORMED AS TO AVOID POST-TENSIONING STRANDS, REINFORCING STEEL, ETC. IF APPLICABLE, X-RAY OF EXISTING STRUCTURE TO LOCATE THESE ITEMS IS REQUIRED.

F. SEE MECHANICAL PLANS FOR LOCATION AND QUANTITIES FOR VAV BOXES/ COMBINATION FIRE SMOKE DAMPERS. EXTEND 120V POWER CIRCUIT FROM J-BOX SHOWN ON ELECTRICAL PLANS TO CONNECT EACH VAV BOX/COMBINATION FIRE SMOKE DAMPER. PROVIDE A MOTOR RATED DISCONNECT WITH THERMAL OVERLOAD FOR EACH VAV BOX/COMBINATION FIRE SMOKE DAMPER.

G. REFER TO STRUCTURAL DRAWINGS FOR LOCATIONS OF SEISMIC EXPANSION JOINTS. ALL CONDUIT CROSS SEISMIC EXPANSION JOINTS SHALL BE PROVIDED WITH FLEXIBLE LIQUID TIGHT FITTINGS.

H. FOR ALL COMMUNICATION OUTLETS, PROVIDE DOUBLE GANG BACK BOX WITH SINGLE GANG PLASTER RING. PROVIDE 1" CONDUIT TO 6" ABOVE ACCESSIBLE CEILING WITH 90° BEND AND CONDUIT BUSHING, UNLESS OTHERWISE NOTED ON DRAWINGS. FOR NON-ACCESSSIBLE CEILINGS, ROUTE CONDUIT TO NEAREST ACCESSIBLE CEILING SPACE OR TO NEAREST COMMUNICATION CLOSET. PROVIDE BLANK COVER PLATES FOR ALL UNUSED BOXES.

I. ALL FLUSH MOUNTED DEVICES INSTALLED WITHIN 1-HOUR RATED WALLS AND ON OPPOSING SIDES OF THE WALL ARE TO BE INSTALLED WITH A 24" HORIZONTAL SPACE BETWEEN DEVICES. PROVIDE APPROVED FIRE PROOFING WHEN 24" SEPARATION CANNOT BE ACHIEVED. REFER TO ARCHITECTURAL PLANS FOR WALL RATINGS.

J. VERIFY EXACT LOCATION OF WIRING DEVICE (FLOOR BOXES, CONDUIT STUB-UP, ETC.) WITH OWNER PRIOR TO ROUGH-IN.

K. ALL RECEPTACLES SHALL BE MOUNTED HORIZONTALLY.

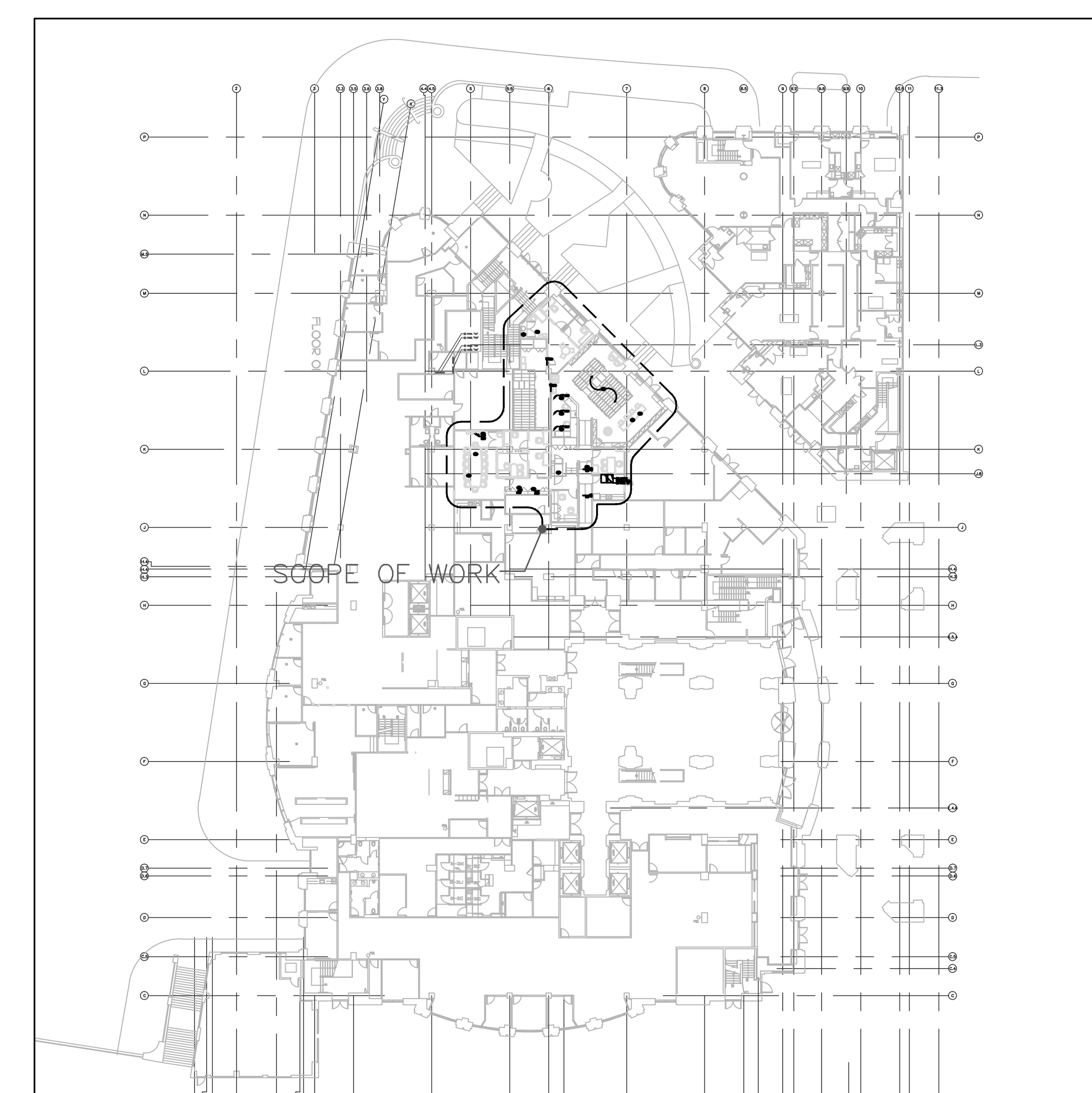
L. ALL OUTLETS HORIZONTAL THROUGHOUT.

M. PER IECC 141.0(b)(2)(P)(iv), CONTROLLED RECEPTACLES ARE NOT REQUIRED FOR TENANT FINISH-OUT SPACES.

N. CONTRACTOR SHALL VERIFY ALL WORK DONE DURING DEMOLITION PHASE OF PROJECT DOES NOT AFFECT CIRCUITS OF AREAS OUTSIDE THIS SCOPE OF WORK. IF CONTRACTOR ENCOUNTERS ELECTRICAL WORK OR EQUIPMENT OUTSIDE SCOPE, NOTIFY METRO IMMEDIATELY. METRO ELECTRICIANS SHALL HANDLE THOSE ELECTRICAL ISSUES FOUND OUTSIDE CURRENT PROJECT'S SCOPE OF WORK.

SPECIFIC NOTES

1. COORDINATE EXACT LOCATION AND REQUIREMENTS OF CHAIR LIFT DISCONNECT WITH ARCHITECT AND LIFT CONTRACTOR IN FIELD PRIOR TO INSTALLATION. DISCONNECT MUST BE WITHIN LINE OF SIGHT OF LIFT.
2. INSET CLOCK RECEPTACLE, HUBBELL # HBL5235
3. PROVIDE HUBBELL "SYSTEMONE" 4" RECESSED FIRE-RATED POKE-THROUGHS. COORDINATE EXACT SPECIFICATION WITH ARCHITECT. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
4. DEDICATED 20A CIRCUIT FOR FIRE SUPPRESSION CONTROL PANEL. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH FIRE SUPPRESSION DRAWINGS PRIOR TO BID.
5. VERIFY CIRCUIT SHOWN IS AVAILABLE, AND IF NOT, USE NEXT AVAILABLE SPARE CIRCUIT.
6. MOBILE SHELVING TO BE MANUALLY OPERATED.



1 KEY PLAN
SCALE: N.T.S

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POWER PLAN

PROJECT
1818
SCALE
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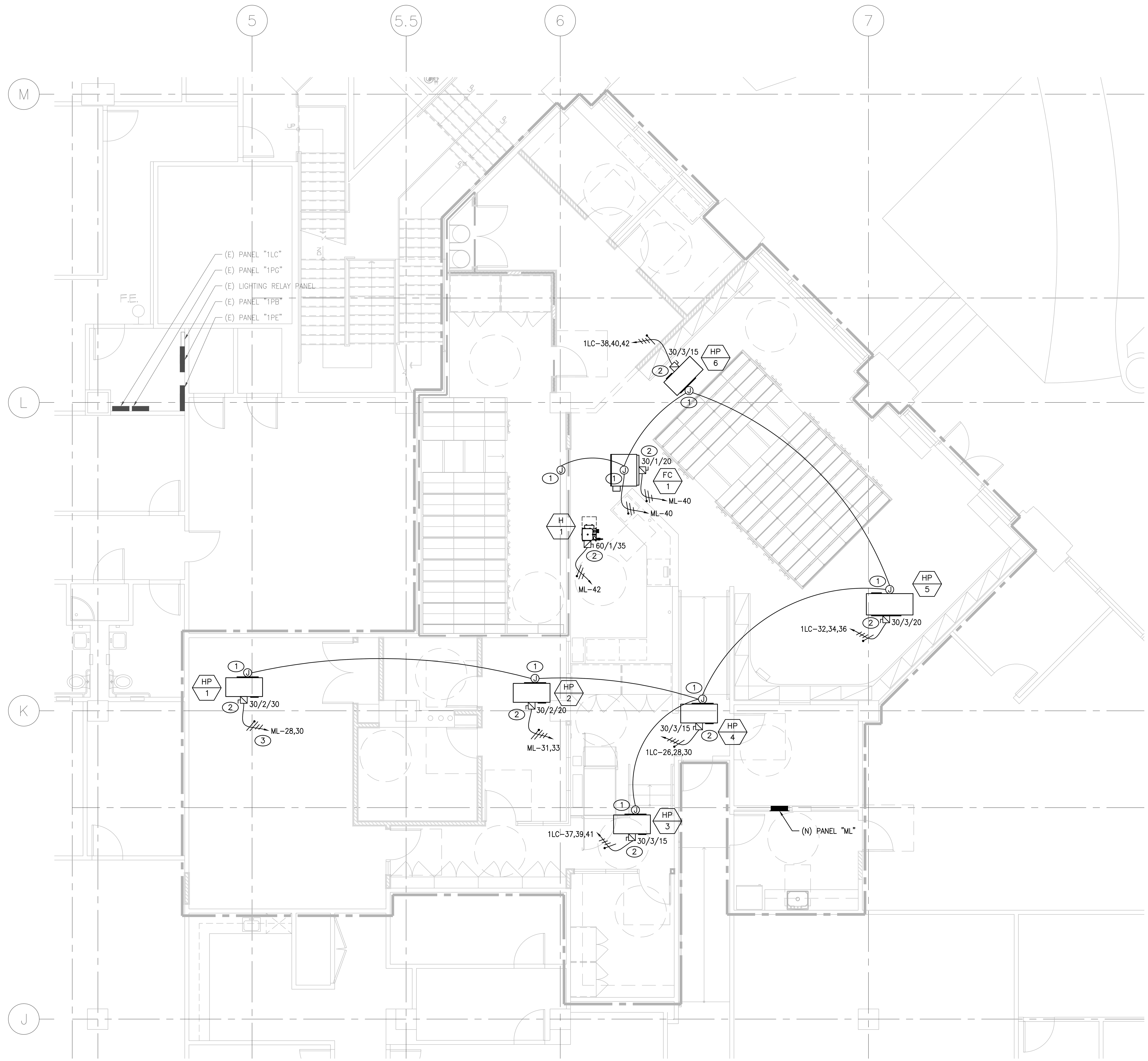
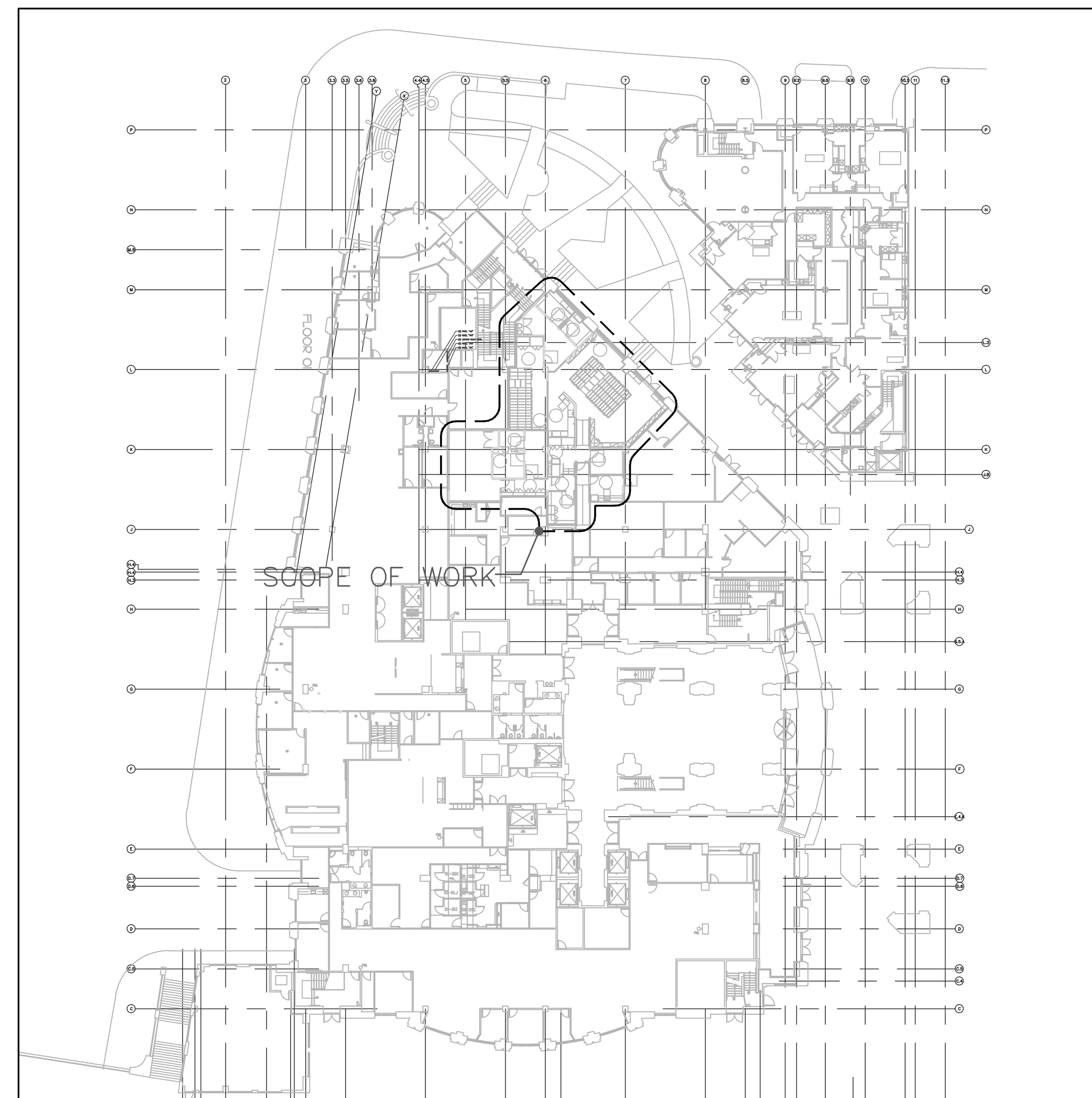


2 POWER PLAN
SCALE: 3/16"=1'-0"

KEYED NOTES 'O'

1. JUNCTION BOX FOR CONDENSATE PUMP CONNECTION. VERIFY EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR. 120V, 60W EACH.
2. DISCONNECT LOCATION TO BE COORDINATED IN FIELD WITH MECHANICAL CONTRACTOR FOR ACCESSIBILITY.
3. CONNECT TO CIRCUIT INDICATED WITH 3#10, 1#10G, 1"C.



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EQUIPMENT POWER PLAN

PROJECT
1818
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SHEET NUMBER
E3.02

LEGEND

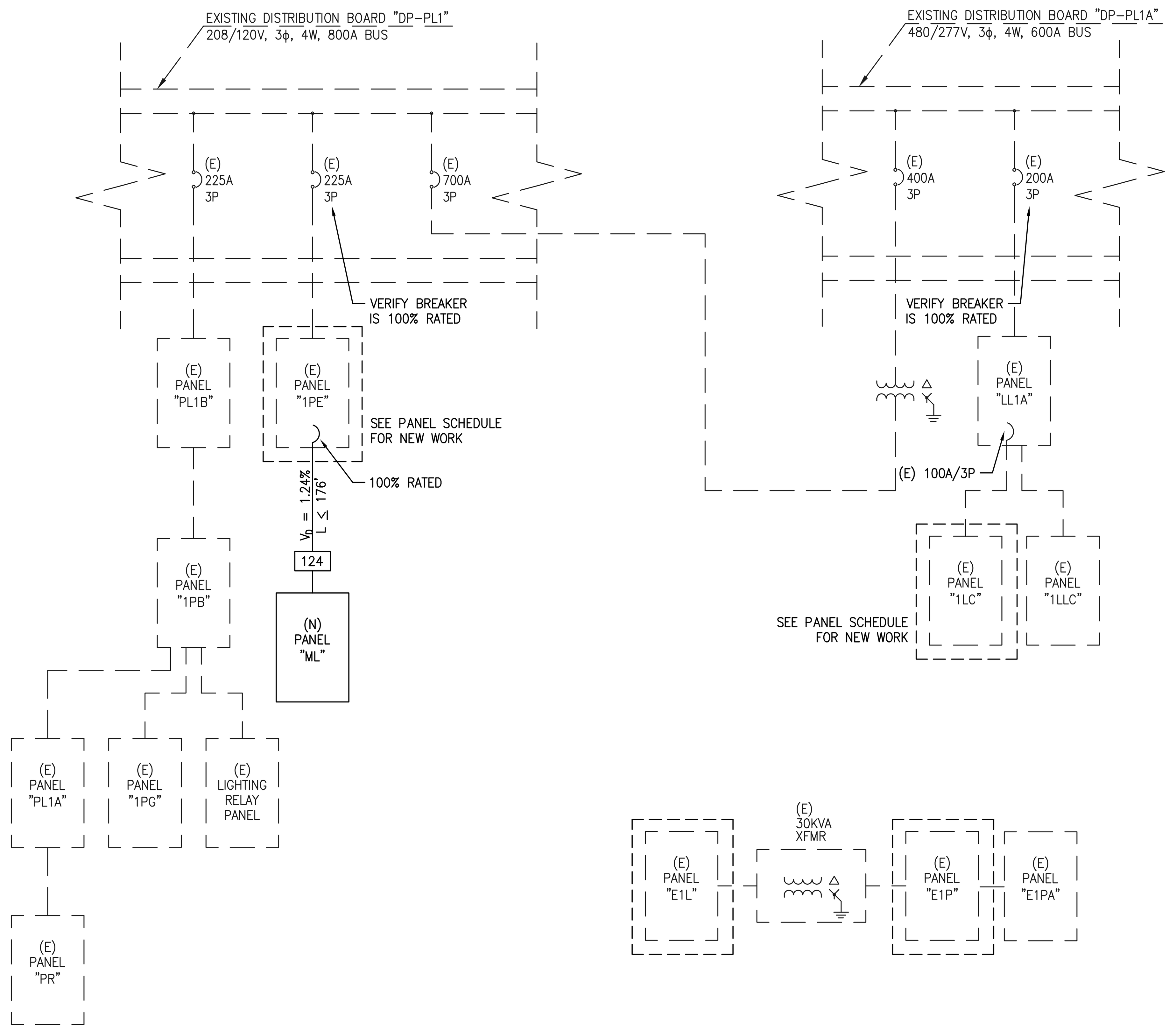
- NEW WORK
- EXISTING TO REMAIN, U.O.N.
- DEMOLITION
- (E) EXISTING TO REMAIN

FEEDER SCHEDULE - CU

Four Wire Feeders

*Quantity of hot and neutral conductors in each conduit.

Feeder Tag	Conduit Qty	Conduit Size	Conductors *Qty	Conductors Size	Conductors GND
024	1 ea	3/4"	4 ea	12	12
034	1 ea	3/4"	4 ea	10	10
044	1 ea	1"	4 ea	8	10
054	1 ea	1 1/4"	4 ea	6	10
064	1 ea	1 1/4"	4 ea	4	10
074	1 ea	1 1/4"	4 ea	4	8
084	1 ea	1 1/2"	4 ea	2	8
094	1 ea	1 1/2"	4 ea	2	8
104	1 ea	2"	4 ea	1	8
114	1 ea	2"	4 ea	1	6
124	1 ea	2"	4 ea	1/0	6
154	1 ea	2"	4 ea	1/0	6
174	1 ea	2"	4 ea	2/0	6
204	1 ea	2 1/2"	4 ea	3/0	6
224	1 ea	2 1/2"	4 ea	4/0	4
254	1 ea	3"	4 ea	250	4



1 PARTIAL SINGLE LINE DIAGRAM

SCALE: N.T.S.

GENERAL NOTES

A. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE FULLY RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT ESTABLISHED. SERIES RATING IS NOT ACCEPTABLE.

B. FEEDER LENGTH SHOWN ON SINGLE LINE DIAGRAM IS AN ESTIMATION FOR VOLTAGE DROP CALCULATION PURPOSES ONLY, NOT FOR PRICING. CONTRACTOR SHALL FIELD COORDINATE AND DETERMINE FEEDER ROUTING AND VERIFY FEEDER LENGTHS. UPDATE INFORMATION ON SINGLE LINE DIAGRAM.

C. ALL TERMINATIONS AND ENCLOSURES TO BE RATED FOR USE WITH 75° C CONDUCTORS.

D. SEE SPECIFICATIONS FOR FAULT CURRENT AND COORDINATION STUDIES REQUIREMENTS.

E. ALL FUSE TYPES SHALL BE VERIFIED WITH EQUIPMENT MANUFACTURERS. ALL FUSE HOLDERS SHALL HAVE REJECTION CLIPS. FUSE TYPE SHALL BE DUAL ELEMENT TIME DELAY.

F. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE MARKINGS SHALL INCLUDE THE DATE THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.

G. ANY MODIFICATIONS TO THE ELECTRICAL INSTALLATION THAT AFFECT THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SERVICE SHALL BE VERIFIED OR RECALCULATED AS NECESSARY TO ENSURE THE SERVICE EQUIPMENT RATINGS ARE SUFFICIENT FOR THE MAXIMUM AVAILABLE FAULT CURRENT AT THE LINE TERMINALS OF THE EQUIPMENT. THE REQUIRED FIELD MARKINGS SHALL BE ADJUSTED TO REFLECT THE NEW LEVEL OF MAXIMUM AVAILABLE FAULT CURRENT.

H. ALL PANELBOARDS, DISTRIBUTION BOARDS, DISCONNECT SWITCHES, AND CIRCUIT BREAKERS SHALL BE MARKED TO INDICATE THE DEVICE OR EQUIPMENT WHERE THE POWER SUPPLY ORIGINATES.

I. ALL PANELBOARDS, DISTRIBUTION BOARDS, DISCONNECT SWITCHES, AND CIRCUIT BREAKERS SHALL BE OF SAME MANUFACTURER.

J. WHERE NEW CIRCUIT BREAKERS ARE TO BE ADDED TO EXISTING PANELBOARDS, ETC., THEY SHALL BE OF THE SAME MANUFACTURER AND DESIGN AS THE EXISTING BREAKERS AND SHALL BE OF THE SIZES INDICATED. PROVIDE ALL REQUIRED MOUNTING HARDWARE AS A PART OF THE BASE BID. REARRANGE ANY AND ALL CIRCUIT BREAKERS WITHIN THE EXISTING EQUIPMENT AS REQUIRED TO ACCOMMODATE THE NEW CIRCUIT BREAKERS BEING ADDED.

K. IN ALL PANELBOARDS AND DISTRIBUTION BOARDS, NEUTRAL BUS SHALL BE THE SAME SIZE AS THE LINE BUS.

L. NO PIPING, DUCTS, OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN THE DEDICATED SPACE ABOVE THE ELECTRICAL EQUIPMENT.

M. DEDICATED NEUTRALS SHALL BE PROVIDED FOR ALL CIRCUITS.

N. PANELBOARDS, CONTROL PANELS, AND HVAC UNITS SHALL BE FIELD MARKED BY CONTRACTOR TO WARN QUALIFIED PERSONNEL OF POTENTIAL ARC FLASH HAZARDS AND APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) PER 02 NEC ART 110-16 AND NFPA 70E-1250. THE MARKINGS SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONALS BEFORE EXAMINATION, ADJUSTMENT, SERVICING, OR MAINTENANCE OF EQUIPMENT.

O. EXISTING CIRCUITS USED FOR THIS PROJECT ARE ASSUMED SPARES PER PANEL DIRECTORY AT SITE. CONTRACTOR SHALL FIELD VERIFY AVAILABILITY OF INDICATED CIRCUIT BREAKERS AND NOTIFY ENGINEER PRIOR TO BID IF EXISTING CONDITIONS DIFFER FROM THAT SHOWN ON DRAWINGS.

SPECIFIC NOTES

1. ALL NEW CIRCUIT BREAKERS SHALL MATCH EXISTING TYPE AND AIC RATING ON EXISTING CIRCUIT BREAKER.
2. CONTRACTOR SHALL VERIFY THE EXISTING BREAKERS BEING REUSED OUT OF THIS PANEL ARE AVAILABLE AFTER DEMOLITION WORK IN CURRENT TI SPACE IS COMPLETE. BRING TO THE ENGINEER'S ATTENTION WHERE THE NUMBER OF AVAILABLE CIRCUITS SHOWN DOES NOT MATCH FIELD CONDITION.

LOAD CALCULATION - 1PE

CKT	LOAD DESCRIPTION	KW	KVA
1	EXISTING LOAD MAX DEMAND PER 12 MONTH LADWP		26.1
	26.1 KW / 0.80 PF		32.6
	25% FACTOR (NEC 220.87) ON MAX DEMAND PER 12 MONTH LADWP		8.2
2	NEW LOADS		32.3
	TOTAL KVA		73.1

203 AMP@ 208 / 120 V, 3 P / 4 W , 60HZ

CALCULATION INCLUDES 125% FOR CONTINUOUS LOAD

Metro Library

LOAD CALCULATION - LL1A

CKT	LOAD DESCRIPTION	KW	KVA
1	EXISTING LOAD MAX DEMAND PER 12 MONTH LADWP		84.4
	REMOVED LOADS		6.0
	78.4 KW / 0.80 PF		98.0
	25% FACTOR (NEC 220.87) ON MAX DEMAND PER 12 MONTH LADWP		24.5
2	NEW LOADS		41.7
	TOTAL KVA		164.2

198 AMP@ 480 / 277 V, 3 P / 4 W , 60HZ

CALCULATION INCLUDES 125% FOR CONTINUOUS LOAD

Metro Library

(N) "ML"

VOLTAGE: 120/208 VOLTS 3 PHASE, 4 WIRE
BUS RATING: 225 AMPS
MAIN: 150A MCB
LOCATION: SEE PLANS

CB OPT:

AIC RATING

OPTIONS: FLUSH MOUNTED, 100% RATED

LOAD TYPE	LOAD (VA)	CKT	LOAD SERVED	CB AMP/P	COBPT	PHASE	COBPT	CB AMP/P	LOAD SERVED	CKT	LOAD (VA)	LOAD TYPE
RECEPTACLE	720	1	ARCHIVE 104, OFFICES 106 & 108	20/1		A		20/1	ARCHIVE ROOM 107	2	1080	RECEPTACLE
RECEPTACLE	900	3	ARCHIVE 104, OFFICE 108	20/1		B		20/1	COPIER - STACKS 103	4	1200	RECEPTACLE
RECEPTACLE	900	5	ARCHIVE 104, OFFICES 106 & 108	20/1		C		20/1	FRONT DESK 103B	6	1080	RECEPTACLE
RECEPTACLE	720	7	STACKS 103	20/1		A		20/1	FRONT DESK 103B	8	720	RECEPTACLE
RECEPTACLE	540	9	STACKS 103	20/1		B		20/1	PERIODICALS 103A, OFFICE 102	10	720	RECEPTACLE
RECEPTACLE	720	11	PERIODICALS 103A	20/1		C		20/1	PERIODICALS 103A, OFFICE 102	12	900	RECEPTACLE
MOTOR	864	13	VERTICAL LIFT	15/1		A		20/1	KITCHENETTE REFRIGERATOR	14	1000	KITCHEN
KITCHEN	500	15	KITCHENETTE 101	20/1		B		20/1	CATALOGING ROOM 108	16	900	RECEPTACLE
KITCHEN	500	17	KITCHENETTE 101	20/1		C		20/1	CATALOGING ROOM 108	18	1080	RECEPTACLE
KITCHEN	500	19	KITCHENETTE 101	20/1		A		20/1	OFFICE 110, OFFICE 111	20	720	RECEPTACLE
KITCHEN	500	21	KITCHENETTE 101	20/1		B		20/1	RECORD INFO. MANAGEMENT 109	22	720	RECEPTACLE
KITCHEN	1656	23	KITCHENETTE 101 DISPOSAL	20/1		C		20/1	OFFICE 110, OFFICE 111	24	540	RECEPTACLE
KITCHEN	500	25	KITCHENETTE 101	20/1		A		20/1	TRACK LIGHTS	26	342	LIGHTING
RECEPTACLE	900	27	CONFERENCE ROOM 112	20/1		B		30/2	HP-1	28	1696	MOTOR
RECEPTACLE	720	29	CONFERENCE ROOM 112	20/1		C		-	-	30	1696	MOTOR
MOTOR	1061	31	HP-2	20/2		A			SPACE	32		
MOTOR	1061	33	-	-		B			SPACE	34		
		35	SPACE			C			SPACE	36		
		37	SPACE			A			SPACE	38		
		39	SPACE			B		20/1	FC-1, PUMPS	40	1640	MOTOR
		41	SPACE			C		35/1	H-1	42	3000	MOTOR

EXISTING METERED LOAD X 125% — PHASE A | PHASE B | PHASE C

FEED THROUGH PANEL — LOAD (kVA)

SUB FEED LOADS — AMP/P — LOAD TYPE

PANEL CALCULATIONS:

LOAD TYPE	LOAD (VA)	DEMAND FACTOR	DEMAND LOAD	
RECEPTACLE	15780	PER NEC ARTICLE 220.14	12890	VA
LIGHTING	342	125%	428	VA
MOTOR	11018	100%	11018	VA
7 KITCHEN	5156	65%	3351	VA
0 ELEVATORS	0	100%	0	VA
HEAT	0	100%	0	VA
MISC	0	100%	0	VA
HOTEL/RES. UNIT	0	PER NEC ARTICLE 220.42	0	VA
0 UNIT PANELS	0	100%	0	VA
25% OF LARGEST MOTOR			848	VA
HOTEL SQFT		RESIDENTIAL SQFT		

LOAD SUMMARY CONNECTED LOAD	VA	AMPS
PHASE A	8227	68.6
PHASE B	11277	94.0
PHASE C	12792	106.6
TOTAL CONNECTED LOAD	32.3 kVA	
TOTAL DEMAND LOAD	28.5 kVA	
LINE TO LINE VOLTAGE	208 VOLTS	
PANEL AMPS	79.2 AMPS	

1 2

(E)"1PE"

VOLTAGE: 120/208 VOLTS 3 PHASE, 4 WIRE
BUS RATING: 225 AMPS
MAIN: MLO
LOCATION: SEE PLANS

CB OPT: * PROVIDE NEW CIRCUIT BREAKER

OPTIONS: SURFACE MOUNTED

LOAD TYPE	LOAD (VA)	CKT	LOAD SERVED	CB AMP/P	COBPT	PHASE	COBPT	CB AMP/P	LOAD SERVED	CKT	LOAD (VA)	LOAD TYPE
		1	SPARE	20/1		A		20/1	EXIST GENERAL LIGHTING	2		
		3	EXIST GEN USE WKSTN 68,69,70	20/1		B		20/1	EXIST GEN USE WKSTN 71,65	4		
		5	EXIST GEN USE WKSTN 68,69,70	20/1		C		20/1	EXIST GEN USE WKSTN 71,65	6		
		7	EXIST PC REC WKSTN 68,69,70	20/1		A		20/1	EXIST PC REC WKSTN 71,65	8		
		9	EXIST GEN USE WKSTN 64	20/1		B		20/1	EXIST GEN USE WKSTN 64	10		
		11	EXIST GEN USE WKSTN 64	20/1		C		20/1	EXIST GEN USE WKSTN 64	12		
		13	EXIST PC REC WKSTN 64	20/1		A		20/1	EXIST PC 64	14		
		15	SPARE	20/1		B		20/1	SPARE	16		
		17	EXIST GEN USE WKSTN 65	20/1		C		20/1	EXIST GEN USE WKSTN 63	18		
		19	EXIST GEN USE WKSTN 65	20/1		A		20/1	EXIST GEN USE WKSTN 63	20		
		21	EXIST PC REC WKSTN 70,65	20/1		B		20/1	EXIST PC REC WKSTN 59	22		
		23	EXIST GEN USE WKSTN 70	20/1		C		20/1	EXIST GEN USE WKSTN 59	24		
		25	EXIST GEN USE WKSTN 70	20/1		A		20/1	EXIST GEN USE WKSTN 59	26		
		27	EXIST PC REC WKSTN 63	20/1		B		20/1	EXIST PC REC WKSTN 59	28		
		29	EXIST TASK LTS 38 58G	20/1		C		20/2	EXIST WHEELCHAIR LIFT	30		
		31	EXIST GENERAL 53B 58G	20/1		A		-	-	32		
		33	EXIST CREDIT UNION DOUBLE DUPLEX L	20/1		B		20/1	EXIST COPY MACHINE	34		
		35	EXIST CREDIT UNION DOUBLE DUPLEX R	20/1		C	*	125/3	NEW PANEL "ML"	36	8227	MISC
		37	EXIST FRONT COUNTER COPIER	20/1		A		-	-	38	11277	MISC
		39	SPARE	20/1		B		-	-	40	12792	MISC
		41	EXIST TASK FORCE COPIER 20A	20/1		C		20/1	SPARE	42		

EXISTING METERED LOAD X 125% — PHASE A | PHASE B | PHASE C

FEED THROUGH PANEL — LOAD (kVA)

SUB FEED LOADS — AMP/P — LOAD TYPE

PANEL CALCULATIONS:

LOAD TYPE	LOAD (VA)	DEMAND FACTOR	DEMAND LOAD	
RECEPTACLE	0	PER NEC ARTICLE 220.14	0	VA
LIGHTING	0	125%	0	VA
MOTOR	0	100%	0	VA
0 KITCHEN	0	100%	0	VA
0 ELEVATORS	0	100%	0	VA
HEAT	0	100%	0	VA
MISC	32296	100%	32296	VA
HOTEL/RES. UNIT	0	PER NEC ARTICLE 220.42	0	VA
0 UNIT PANELS	0	100%	0	VA
25% OF LARGEST MOTOR			0	VA
HOTEL SQFT		RESIDENTIAL SQFT		

LOAD SUMMARY CONNECTED LOAD	VA	AMPS
PHASE A	11277	94.0
PHASE B	12792	106.6
PHASE C	8227	68.6
TOTAL CONNECTED LOAD	32.3 kVA	
TOTAL DEMAND LOAD	32.3 kVA	
LINE TO LINE VOLTAGE	208 VOLTS	
PANEL AMPS	89.6 AMPS	

1 2

(E)"1LC"

VOLTAGE: 277/480 VOLTS 3 PHASE, 4 WIRE
BUS RATING: 100 AMPS
MAIN: MLO
LOCATION: EXIST ROOM 316S

CB OPT: * PROVIDE NEW CIRCUIT BREAKER

OPTIONS: SURFACE MOUNTED

LOAD TYPE	LOAD (VA)	CKT	LOAD SERVED	CB AMP/P	COBPT	PHASE	COBPT	CB AMP/P	LOAD SERVED	CKT	LOAD (VA)	LOAD TYPE
		1	SPARE (EXISTING HP-16 TO BE REMOVED)	15/3		A		15/3	SPARE (EXISTING HP-14 TO BE REMOVED)	2		
		3	-	-		B		-	-	4		
		5	-	-		C		-	-	6		
		7	EXIST HP-15	15/3		A		15/3	EXIST HP-13	8		
		9	-	-		B		-	-	10		
		11	-	-		C		-	-	12		
		13	EXIST LIGHTING	20/1		A	*	20/1	LIGHTING	14	2643	LIGHTING
		15	EXIST LIGHTING	20/1		B	*	30/1	EWH-1	16	8310	MISC
		17	EXIST LIGHTING	20/1		C			SPACE	18		
		19	EXIST HEAT PUMP	20/1		A			SPACE	20		
		21	SPACE			B			SPACE	22		
		23	SPACE			C			SPACE	24		
		25	SPACE			A	*	15/3	HP-4	26	2383	MOTOR
		27	SPACE			B		-	-	28	2383	MOTOR
		29	SPACE			C		-	-	30	2383	MOTOR
		31	SPACE			A	*	20/3	HP-5	32	3269	MOTOR
		33	SPACE			B		-	-	34	3269	MOTOR
		35	SPACE			C		-	-	36	3269	MOTOR
MOTOR	1995	37	HP-3	15/3		A	*	15/3	HP-6	38	1552	MOTOR
MOTOR	1995	39	-	-		B		-	-	40	1552	MOTOR
MOTOR	1995	41	-	-		C		-	-	42	1552	MOTOR

EXISTING METERED LOAD X 125% — PHASE A | PHASE B | PHASE C

FEED THROUGH PANEL — LOAD (kVA)

SUB FEED LOADS — AMP/P — LOAD TYPE

PANEL CALCULATIONS:

LOAD TYPE	LOAD (VA)	DEMAND FACTOR	DEMAND LOAD	
RECEPTACLE	0	PER NEC ARTICLE 220.14	0	VA
LIGHTING	2643	125%	3304	VA
MOTOR	27597	100%	27597	VA
0 KITCHEN	0	100%	0	VA
0 ELEVATORS	0	100%	0	VA
HEAT	0	100%	0	VA
MISC	8310	100%	8310	VA
HOTEL/RES. UNIT	0	PER NEC ARTICLE 220.42	0	VA
0 UNIT PANELS	0	100%	0	VA
25% OF LARGEST MOTOR			2452	VA
HOTEL SQFT		RESIDENTIAL SQFT		

LOAD SUMMARY CONNECTED LOAD	VA	AMPS
PHASE A	11842	42.8
PHASE B	17609	63.2
PHASE C	9199	33.2
TOTAL CONNECTED LOAD	38.6 kVA	
TOTAL DEMAND LOAD	41.7 kVA	
LINE TO LINE VOLTAGE	480 VOLTS	
PANEL AMPS	50.1 AMPS	

((RADAR))
RACHEL ALLEN DEVELOPMENT ARCHITECTURE RESEARCH INC.
423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group
2501 Davidson Drive, 2nd Floor, Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: mail@rexeg.com w: rexeg.com

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-FOR ESTIMATING ONLY-
-NOT FOR CONSTRUCTION-

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE

SINGLE LINE DIAGRAM AND PANEL SCHEDULES

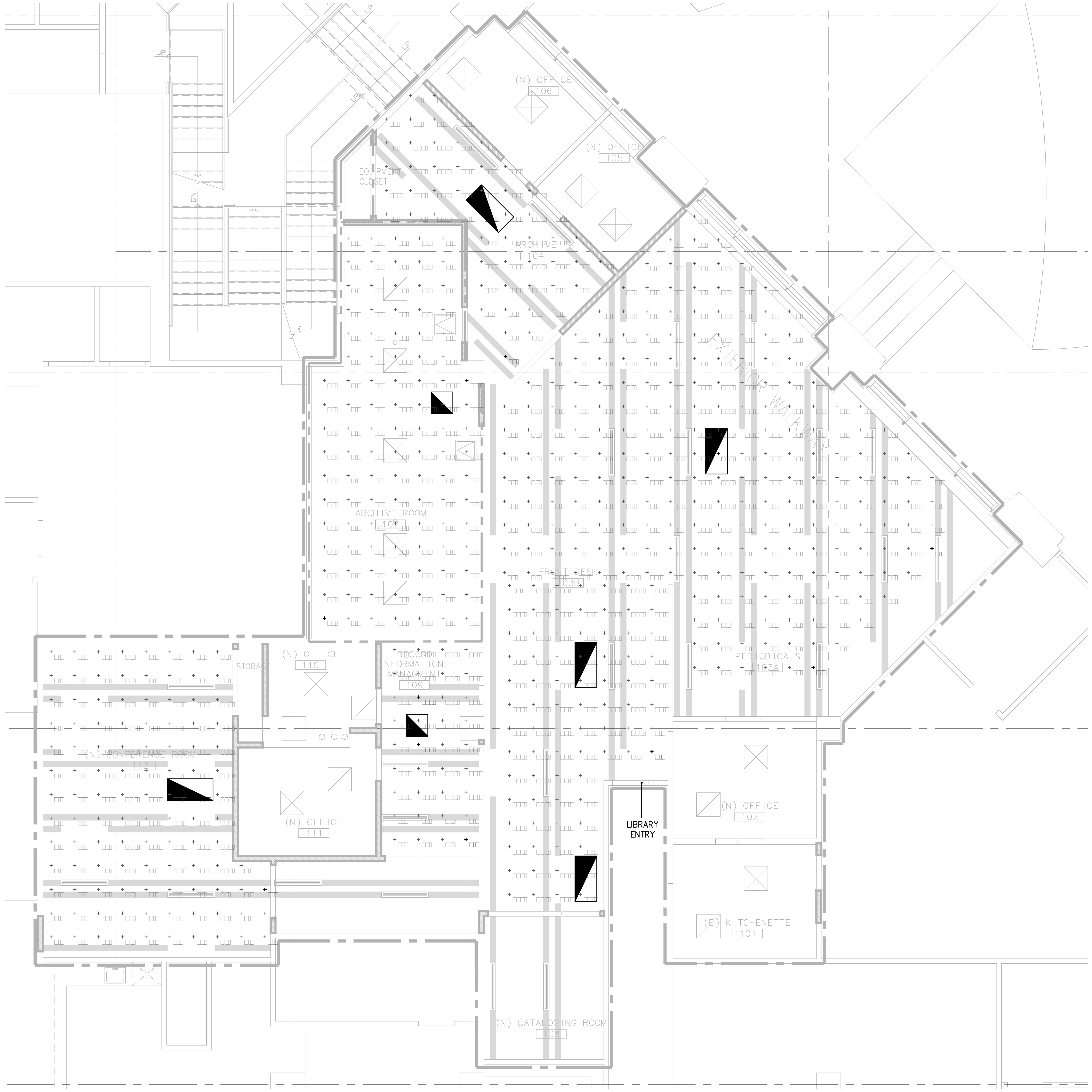
PROJECT 1818

SCALE AS NOTED

DRAWN BY

DATE 09/18/19

SHEET NUMBER E5.01



1 EMERGENCY LIGHTING PHOTOMETRIC PLAN
SCALE: 3/16"=1'-0"

S[illegible]						
D[illegible]r[illegible]	S[illegible]	A[illegible]	M[illegible]	M[illegible]	M[illegible]M[illegible]	A[illegible]M[illegible]
Ar[illegible]	+	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ar[illegible]R[illegible]	+	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
C[illegible]r[illegible]R[illegible]	+	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
H[illegible]C[illegible]rr[illegible]d[illegible]r	+	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
R[illegible]rd I[illegible]r[illegible]M[illegible]	+	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
S[illegible]P[illegible]r[illegible]d[illegible]A	+	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S[illegible]d[illegible]									
S[illegible]	L[illegible]	[illegible]T[illegible]	C[illegible]N[illegible]r	D[illegible]r[illegible]	L[illegible]	N[illegible]r L[illegible]	L[illegible] [illegible]r L[illegible]	LLF	[illegible]
	A	[illegible]	[illegible]D[illegible]LB[illegible]	LEDALITE [illegible]ARCFORM	LED	[illegible]	[illegible]	[illegible]	[illegible]
	B	[illegible]	FP[illegible]UF[illegible]DL	FP[illegible]UF[illegible]DL	LED	[illegible]	[illegible]	[illegible]	[illegible]

((RADAR))
RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

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NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
EMERGENCY LIGHTING PHOTOMETRIC CALCULATIONS

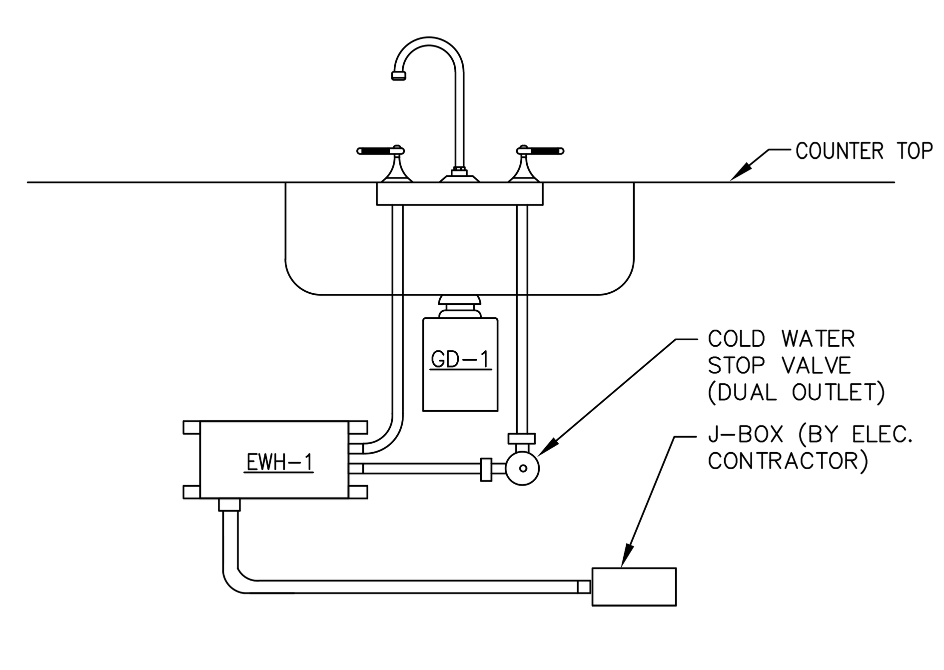
PROJECT
1818
SCALE
AS NOTED
DRAWN BY

SHEET NUMBER
E7.01

DATE
09/18/19

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	HW	CW	W	V	DESCRIPTION
KS–1	KITCHEN SINK	1/2"	1/2"	2"	2"	PER ARCH. SPECIFICATION, 1.5 GPM FLOW RATE FAUCET
EWH–1	ELECTRIC WATER HEATER	1/2"	1/2"	–	–	CHRONOMITE #M–40, 8.3KW, 277V, 1PH, 30 AMP 1.0 GPM AT 57°F TEMPERATURE RISE.
GD–1	GARBAGE DISPOSAL	–	–	–	–	IN–SINK–ERATOR CONTRACTOR 333 3/4 HP, 120V
BFP–1	BACKFLOW PREVENTER	–	1/2"	–	–	ZURN 975XL2, REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER, 1/2"
FUD–1	FUNNEL DRAIN	–	–	2"	2"	ZURN Z1019
IM–1	ICE MAKER OUTLET BOX	–	1/2"	–	–	SIOUX CHIEF OXBOX



NOTE: POINT OF USE WATER HEATER SHALL BE POSITIONED SO AS NOT TO ENCROACH INTO ANY REQUIRED ACCESS CLEARANCES BENEATH THE SINK

WATER HEATER DETAIL — SCALE: NONE — A

ABBREVIATIONS

ABBR.	DESCRIPTION	ABBR.	DESCRIPTION
ABV	ABOVE	GPF	GALLONS PER FLUSH
AP	ACCESS PANEL	GPM	GALLONS PER MINUTE
BEL	BELOW	HZ	HERTZ
CI	CAST IRON	HP	HORSEPOWER
CLG	CEILING	IN	INCHES
CONN	CONNECTION	KW	KILOWATT
CONT	CONTINUATION	PH	PHASE (ELECTRICAL)
CD	CONDENSATE DRAIN	LBS	POUNDS
DN	DOWN	PCD	PUMP CONDENSATE DRAIN
DS	DOWNSPOUT	PSI	POUNDS PER SQUARE INCH
DWG	DRAWINGS		
EX	EXISTING	STN	STAINLESS
FLR	FLOOR	STL	STEEL
FT	FEET	TYP.	TYPICAL
FU	FIXTURE UNIT	W/	WITH
FH	FIRE HOSE	WCO	WALL CLEANOUT
FCO	FLOOR CLEANOUT		

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	S OR W	SOIL OR WASTE BELOW FLOOR OR GRADE
	S OR W	SOIL OR WASTE
	SD OR OD	STORM OR OVERFLOW DRAIN BELOW FLOOR OR GRADE
	SD OR OD	STORM OR OVERFLOW DRAIN
	V	SANITARY VENT
	CW	DOMESTIC COLD WATER
	HW	DOMESTIC HOT WATER
SCW	SCW	SOFT COLD WATER
G	G	GAS
MPG	MPG	MEDIUM PRESSURE GAS
CD	CD	CONDENSATE DRAIN
	FS	FLOOR SINK
	SOV	SHUT OFF VALVE
	CV	CHECK VALVE
	—	UNION
	—	PIPING DOWN
	—	PIPING UP
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
	POC	POINT OF CONNECTION

PIPE MATERIAL SCHEDULE

SERVICE		TYPE "L" COPPER W/LEAD FREE SOLDERED FTGS.	TYPE "K" COPPER W/LEAD FREE BRAZED FTGS.	SCHED. 40 BLACK STEEL W/THREADED FTGS.	NO–HUB C.I. SOIL PIPE CISPI 301	TYPE "M" COPPER W/LEAD FREE SOLDERED FTGS.	CORRUGATED STAINLESS STEEL PER ANSI LC–1	REMARKS
WATER	INSIDE	*						
	BURIED		*					
SANITARY DRAINAGE	INSIDE				*			
	BURIED				*			
SANITARY VENT	INSIDE				*			
	BURIED				*			
INDIRECT WASTE	INSIDE					*		CONDENSATE DRAIN
	OUTSIDE							

MATERIAL

SHEET INDEX

P0.00	PLUMBING COVER SHEET
P2.01	PLUMBING FLOOR PLAN

PLUMBING NOTES

1. CONTRACTOR VERIFICATION: ALL EXISTING PIPING SHOWN ARE BASED ON SITE INVESTIGATION AND ASSUMPTION WHERE NECESSARY AND MAY NOT REFLECT THE ACTUAL EXISTING CONDITION. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL EXISTING CONDITIONS INCLUDING INVERT ELEVATIONS, SIZES AND LOCATION OF EXISTING PIPING FOR NEW POINT OF CONNECTIONS OR DEMOLITION/ ALTERATIONS AS REQUIRED PRIOR TO START OF WORK. INFORM THE ARCHITECT/ ENGINEER OF ANY DISCREPANCIES.
2. FIXTURE: ALL MANUFACTURERS, LOCATIONS, MOUNTING HEIGHTS AND COLORS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS. FIXTURES SPECIFIED BUT NOT ALLOWED MAY BE SUBSTITUTED WITH AN APPROVED EQUAL DURING SUBMITTAL REVIEW PROCESS.
3. DISABLED ACCESS FIXTURE: SEE ARCHITECTURAL DRAWINGS TO VERIFY REQUIREMENT AND MOUNTING HEIGHTS. INSULATE ALL EXPOSED PIPING, INCLUDING TRAP DRAIN OUTLET AND SUPPLIES OF SINK PER FIXTURE SCHEDULE.
4. INTERFERENCE: ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID STRUCTURAL FRAMING.
5. CLEANOUTS: CLEANOUTS SHALL BE INSTALLED WHERE INDICATED, WHERE ACCESSIBLE AND AS REQUIRED BY CODE. COORDINATE ALL LOCATIONS WITH WITH EQUIPMENT, CABINETS, ETC., AND ARCHITECT PRIOR TO INSTALLATION.
6. VENT TERMINATION: EACH VENT PIPE OR STACK SHALL TERMINATE VERTICALLY NOT LESS THAN SIX INCHES ABOVE ROOF NOR LESS THAN ONE FOOT FROM ANY VERTICAL SURFACE. IN ADDITION, EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN TEN FEET FROM OR AT LEAST THREE FEET ABOVE ANY WINDOW, DOOR, OPENING, AIR INTAKE OR VENT SHAFT.
7. FULL SIZE: ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS LINE SIZE UNLESS OTHERWISE INDICATED ON DRAWINGS.
8. LATERAL SUPPORT: ALL EQUIPMENT SHALL BE LATERALLY SUPPORTED IN ALL DIRECTIONS TO RESIST A MIN. OF 50% OF ITS' OPERATING WEIGHT.
9. CODE COMPLIANCE: ALL WORK AND MATERIAL SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE INSPECTING AUTHORITY. NOTHING DIAGRAMMATICALLY INDICATED ON THESE DRAWINGS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THIS PROJECT:

   NOTE: AS MODIFIED BY THE AUTHORITIES HAVING JURISDICTION.

   A. 2016 CALIFORNIA BUILDING CODE
   B. 2016 CALIFORNIA ELECTRICAL CODE
   C. 2016 CALIFORNIA MECHANICAL CODE
   D. 2016 CALIFORNIA PLUMBING CODE
10. FIELD VERIFICATION: BEFORE ANY FABRICATION OR INSTALLATION, THIS CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND ALL EQUIPMENT PROVIDED UNDER ANOTHER SECTION OF SPECIFICATIONS. EXACT AND FINAL ROUGH–IN LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED IN FIELD.
11. COORDINATION: THE PLUMBING CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS FOR ALL POINTS OF CONNECTION WITH THE GENERAL CONTRACTOR AND OTHER TRADES PRIOR TO BID.
12. PIPE SLOPE: UNLESS INDICATED OTHERWISE, ALL WASTE AND VENT PIPING SHALL SLOPE AT 2% MINIMUM.
13. ACCESSIBILITY: ALL VALVES, OR EQUIPMENT SHOWN IN WALLS OR ABOVE NON–ACCESSIBLE CEILINGS SHALL BE INSTALLED WITHIN 24" OF, AND BEHIND, AN ACCESS PANEL.
14. SPECIFICATION: THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH, AND BE CONSIDERED TO BE A PART OF, THE SPECIFICATIONS.
15. PATCHING: THE CONTRACT SHALL BE RESPONSIBLE FOR REPAIRING, PATCHING AND PAINTING ALL AREAS WHICH ARE USED AND/OR DAMAGED BY HIS OPERATIONS.
16. MATERIAL CONNECTION: CONNECTIONS BETWEEN INCOMPATIBLE MATERIALS ABOVE GRADE AND INSIDE BUILDING SHALL BE MADE THRU THE USE OF DIELECTRIC UNIONS.
17. SUBMITTALS AND SHOP DRAWINGS: THE PLUMBING CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON ALL WORK AND SUBMITTALS ON ALL VALVES, FIXTURES, EQUIPMENT AND ACCESSORIES FOR REVIEW AND APPROVAL PRIOR TO ORDERING, FABRICATION AND INSTALLATION.
18. ALL PLUMBING FIXTURES AND RELATED EQUIPMENT SHALL HAVE ANGLE STOPS. PROVIDE BALL–TYPE SHUT–OFF VALVE.
19. PIPING SUBJECT TO MECHANICAL DAMAGE SHALL BE PROTECTED IN AN APPROVED MANNER.
20. PLUMBING CONTRACTOR SHALL PROVIDE UNIT PRICES PER LINEAR FOOT FOR GIVEN PIPE SIZES FOR COLD WATER, SEWER, VENT AND GAS THAT MAY HAVE TO BE ADDED BECAUSE OF INACCURATE INFORMATION.
21. PLUMBING CONTRACTOR SHALL VISIT THE JOBSITE AND FAMILIARIZE HIMSELF WITH CONDITIONS ON THE JOBSITE THAT HE MIGHT ENCOUNTER ON THE INSTALLATION OF PLUMBING SYSTEM.
22. ALL FIXTURES, EQUIPMENT, PIPING, AND MATERIALS SHALL BE LISTED.
23. ALL PLUMBING FIXTURES SHALL MEET THE FLOW REQUIREMENTS SPECIFIED IN LOS ANGELES PLUMBING CODE.
24. ALL FAUCETS IN PUBLIC RESTROOMS SHALL BE SELF–CLOSING OR SELF–CLOSING METERING FAUCETS.
25. ALL PLUMBING FIXTURES THAT PROVIDE WATER FOR HUMAN CONSUMPTION SHALL COMPLY WITH THE CALIFORNIA LEAD FREE LAW (PER SECTION 116875 OF THE CALIFORNIA HEALTH AND SAFETY CODE).

((RADAR))

RACHEL
ALLEN
DEVELOPMENT
ARCHITECTURE
RESEARCH
INC.

423 GIN LING WAY, LOS ANGELES CA 90012
213.617.0075
INFO@RACHELALLEN.NET
WWW.RACHELALLEN.NET

REX Engineering Group

2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

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NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

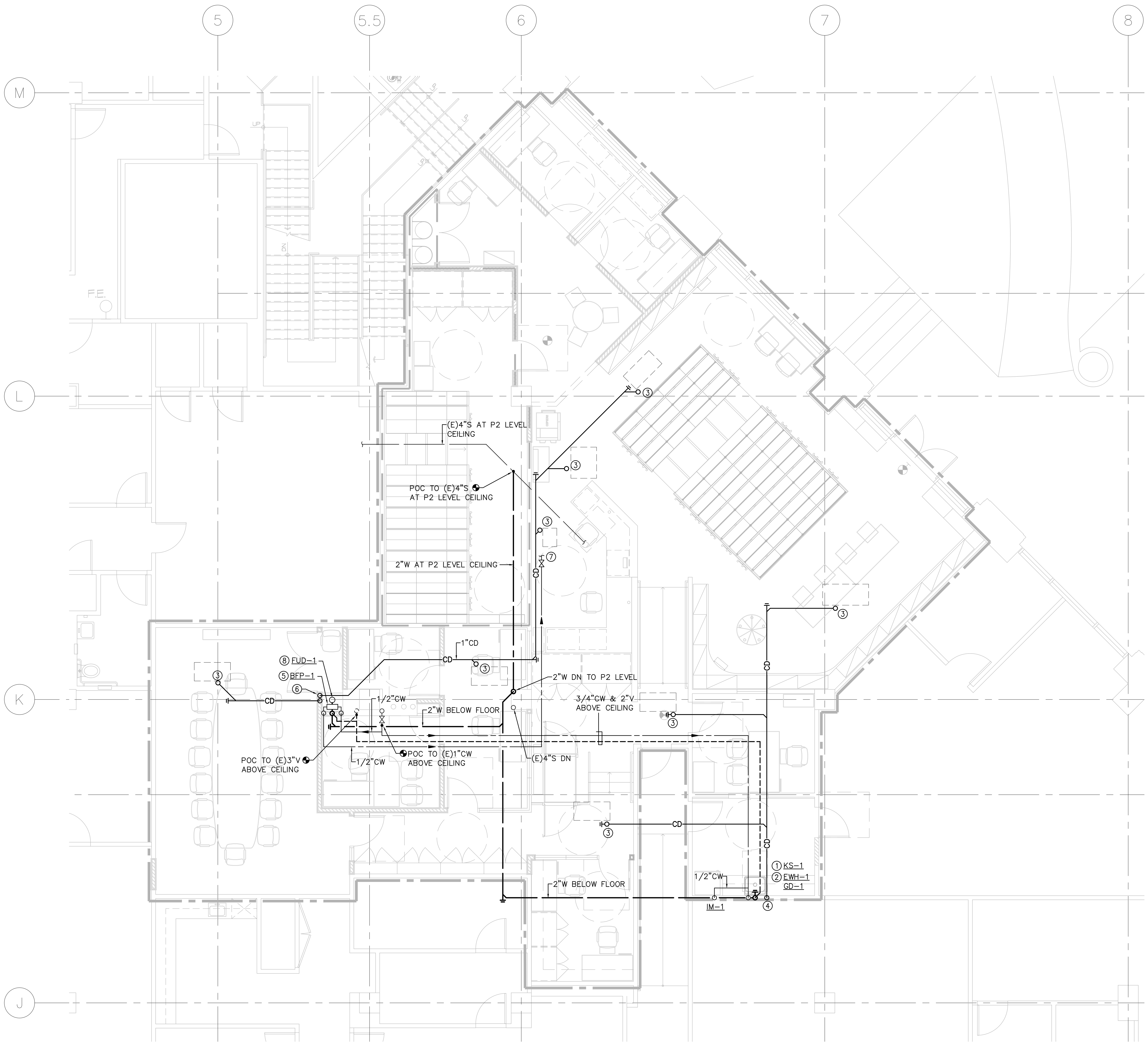
TITLE

PLUMBING COVER SHEET

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
P0.00



KEY NOTES:

1. 2"W DN, 2"V UP, 3/4"CW
2. SEE DETAIL A/P0.00
3. 3/4"CD TO MECH. UNIT
4. 3/4"CD DN TO SINK TAILPIECE
5. LOWEST PORTION OF ASSEMBLY AT 30" A.F.F.
6. CONDENSATE DRAIN DN TO FUNNEL DRAIN W/AIR GAP
7. 1/2"CW TO HUMIDIFIER
8. 2"W DN, 2"V UP

1 **PLUMBING PLAN**
SCALE: 3/16"=1'-0"

((RADAR))

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PROJECT
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P2.01

SCOPE OF WORK

SUPPLY AND INSTALL A COMPLETE CLEAN AGENT DETECTION & CONTROL SYSTEM. SYSTEM SHALL INCLUDE THE INSTALLATION OF AN ADDRESSABLE CONTROL PANEL, AREA SMOKE DETECTION, AIR SAMPLING SMOKE DETECTION, MANUAL CONTROL DEVICES, AUDIBLE / VISUAL NOTIFICATION DEVICES, AGENT STORAGE CYLINDER(S), AND DISCHARGE PIPING. AREA SMOKE DETECTION & AIR SAMPLING DETECTION TO BE CROSS-ZONED FOR CLEAN AGENT RELEASE.

PANEL SHALL BE CONNECTED TO THE MAIN BUILDING F.A.C.P. BY DESIGNATED BUILDING FIRE ALARM CONTRACTOR HOLDING U.L. CERTIFICATE, SUBMITTED UNDER SEPARATE PERMIT.

THE DESIGN CONTAINED HEREIN DOES NOT CONSTITUTE OR SUPERCEDE CONFORMITY WITH GOVERNING CODES AND AUTHORITIES. IT IS THE RESPONSIBILITY OF THE AWARDED INSTALLATION CONTRACTOR TO COORDINATE WITH OTHER TRADES, VERIFY FIELD CONDITIONS, AND CONSTRUCT IN ACCORDANCE AND COMPLIANCE WITH CODES, STANDARDS, AND CONTRACT DOCUMENTS.

BUILDING DATA

FIRE PROTECTION: FULLY SPRINKLERED THROUGHOUT
USE: MICROFILM / PHOTO STORAGE
OCCUPANCY: B
AREA OF WORK: 440 sq.ft.
APPLICABLE CODES AND STANDARDS:
HEALTH & SAFETY CODE
ADA AMERICANS DISABILITIES ACT
CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 19
2016 CALIFORNIA BUILDING CODE (CBC)
2014 CALIFORNIA ELECTRICAL CODE (CEC)
2016 CALIFORNIA MECHANICAL CODE (CMC)
2016 CALIFORNIA FIRE CODE (CFC)
2016 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 72)
2015 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 2001)
2015 NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 170)

ELECTRICAL NOTES:

1. ALL WIRING MUST COMPLY WITH ARTICLES 760 AND 310 OF THE NATIONAL ELECTRICAL CODE. ALL SYSTEM WIRING SHALL BE A MINIMUM #14 AWG THHN 600V STRANDED, NON-SHIELDED, COPPER, COLOR CODED & LABELED UNLESS OTHERWISE NOTED. SYSTEM WIRING TO BE IN DEDICATED CONDUIT SYSTEM SIZED IN ACCORDANCE WITH THE NEC OR THE SITE SPECIFICATIONS.

2. THE CONTROL PANEL SHALL BE WIRED TO A SEPARATE DEDICATED 120 VAC 20 Amp CIRCUIT BREAKER, MIN. #12 AWG SHALL BE USED. THE NEUTRAL SHALL BE ISOLATED AND DEDICATED. THE CIRCUIT BREAKER SHALL BE MECHANICALLY PROTECTED AND LOCKED IN THE "ON" POSITION. CIRCUIT DISCONNECTING MEANS SHALL HAVE A RED MARKING, ACCESSIBLE BY AUTHORIZED PERSONNEL ONLY AND BE PERMANENTLY IDENTIFIED IN ELECTRICAL PANEL AS "FIRE ALARM". (CIRCUIT TO BE PROVIDED BY OTHERS).

3. POWER LIMITED AND NON POWER LIMITED CIRCUITS SHALL BE RAN IN SEPARATE RACEWAYS. HIGH AND LOW VOLTAGE SHALL BE RAN IN SEPARATE CONDUITS.

4. WITH THE EXCEPTION OF EMERGENCY CONTROL FUNCTIONS, ALL CIRCUITS SHALL BE SUPERVISED. WHERE UNSUPERVISED EMERGENCY CONTROL INTERFACES ARE REQUIRED, SUCH AS A LISTED RELAY INTERFACE, THE DEVICE / RELAY SHALL BE LOCATED WITHIN 3 FEET OF THE COMPONENT BEING CONTROLLED PER NFPA 21.2.4

5. T-TAPPING OR PARALLEL BRANCHING OF DEVICE CIRCUITS ARE PROHIBITED ON ALL CONVENTIONAL SYSTEMS. T-TAPING ADDRESSABLE ANALOG LOOPS ARE ALLOWED WHEN THE MANUFACTURER'S GUIDELINES AND RECOMMENDATIONS ARE ADHERED TO.THESE INCLUDED BUT ARE NOT LIMITED TO:

- DO NOT T-TAP DIRECTLY AT THE CONTROL PANEL OR DEVICE TERMINALS. ALL T-TAPS SHOULD BE MADE WITHIN JUNCTION BOXES.
- ALL WIRE TYPE, GAUGE, AND COLOR SHALL BE IDENTICAL ON ALL T-TAP BRANCHES.
- DO NOT T-TAP OFF OF A T-TAP.
- DO NOT EXCEED MORE THAN TEN (10) T-TAPS ON A SINGLE SIGNALING LINE CIRCUIT (SLC).
- DO NOT EXCEED MORE THAN TWENTY-FIVE (25) DEVICES ON A SINGLE T-TAP BRANCH.

6. EXACT CONDUIT ROUTING AND ATTACHMENT METHODS SHALL BE FIELD DETERMINED AND NOTED ON AS-BUILTS .

7. ALL WIRING SHALL BE COLOR CODED AND LABELED.

8. POLARITY OF ALL CIRCUITS MUST BE OBSERVED.

9. RED-LINED "AS-BUILT" SHOWING EXACT CONDUIT ROUTING, CIRCUIT WIRING, INSTALLED COLORS, AND DEVICE WIRING SHALL BE KEPT BY INSTALLING ELECTRICIANS AND SUBMITTED TO FPS WHEN INSTALLATION IS COMPLETE.

10. REVIEW PROJECT ELECTRICAL SPECIFICATIONS PRIOR TO INSTALLATION.

11. CEILING SMOKE DETECTORS SHALL BE CENTERED IN CEILING TILES WHEN POSSIBLE.

12. SMOKE DETECTORS SHOULD NOT BE LOCATED WITHIN 3'-0" OF ANY AIR REGISTER.

13. ALL AUDIBLE/VISUAL DEVICES SHALL BE MOUNTED AT A HEIGHT OF 80" MIN. ABOVE WALKING SURFACE.

14. LOCATE ALL DEVICES PER MANUFACTURER'S RECOMMENDATIONS AND NFPA 72 & NFPA 2001.

15. ALL OUTSIDE FIRE ALARM DEVICES SHALL BE LISTED FOR OUTDOOR USE OR PROTECTED BY AN APPROVED WEATHERPROOF ENCLOSURE. ALL OUTSIDE FIRE ALARM DEVICE ENCLOSURES SHALL HAVE TAMPER PROOF SCREWS.

16. ALL ADDRESSABLE DEVICES WHICH REQUIRE A SEPARATE BACK BOX ARE SHOWN ON THE FLOOR PLANS. REFER TO SINGLE LINE DIAGRAM FOR ADDRESSABLE DEVICES WHICH WILL BE HOUSED IN THE SAME BACK BOX OF THE DEVICE IT CONTROLS OR MONITORS, OR INSTALLED IN DEDICATED ENCLOSURES USED TO HOUSE MULTIPLE MODULES.

GENERAL NOTES:

1. THE CLEAN AGENT SYSTEM SHALL BE DESIGNED AND TESTED IN ACCORDANCE WITH NFPA 2001, STANDARD ON CLEAN AGENT FIRE SUPPRESSION EXTINGUISHING SYSTEMS. THE TRADE NAMES ECARO-25 AND FE-25 HAVE AN ASHRAE DESIGNATION OF HFC-125. HFC-125 IS A HYDROFLUOROCARBON WITH THE CHEMICAL FORMULA OF CHF_2CF_3 (PENTAFLUOROETHANE).

2. ROOM INTEGRITY TESTING SHALL BE DONE IN ACCORDANCE WITH THE NFPA 2001, APPENDIX "C" (DOOR FAN TEST). ALL OTHER TESTING SHALL BE DONE IN ACCORDANCE WITH NFPA 72.

3. ALL WALLS WITHIN ZONES SHALL BE FULL HEIGHT CONSTRUCTION "SLAB TO SLAB" WITH ALL PENETRATIONS SEALED. FOR AREAS WITH GYPSUM BOARD CEILINGS, FULL HEIGHT WALL CONSTRUCTION IS NOT NECESSARY.

4. ITEMS WHICH MUST BE COMPLETED PRIOR TO AN ACCEPTABLE ROOM INTEGRITY TEST ARE AS FOLLOWS:
   A) ALL AIR HANDLING WITHIN THE HFC-125 PROTECTED AREA MUST SHUTDOWN AUTOMATICALLY UPON SYSTEM ALARM. ALL DUCT WORK SERVING THE PROTECTED AREA SHALL BE PROVIDED WITH MOTORIZED FIRE SMOKE DAMPERS. FPS RECOMMENDS RUSKIN FSD60 LOW LEAKAGE FIRE DAMPERS WITH 120V ACTUATOR. WIRING AND CONDUIT TO THE HFC-125 CONTROL PANEL FOR HVAC FUNCTIONS SHALL BE PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.
   B) LOCAL CODES MAY REQUIRE POWER TO THE HFC-125 PROTECTED AREA TO AUTOMATICALLY SHUTDOWN UPON SYSTEM ALARM, IF THIS FUNCTION IS REQUIRED THE CONDUIT AND WIRE TO SHUTDOWN POWER INSIDE THE HFC-125 PROTECTED SPACE SHALL BE RAN TO THE HFC-125 CONTROL PANEL AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
   C) ALL DOORS MUST BE SELF-CLOSING AND BE EQUIPPED WITH DOOR SWEEPS AND SEALS, PROVIDED AND INSTALLED BY GENERAL CONTRACTOR. FPS RECOMMENDS PEMIKO #430CR DOOR SWEEPS.
   D) ALL CABLE AND PIPE PENETRATIONS, AS WELL AS ANY OTHER OPENINGS WHICH WOULD CAUSE LOSS OF AGENT, MUST BE SEALED WITH APPROVED METHODS BY GENERAL CONTRACTOR.

5. THIS SYSTEM IS DESIGNED USING A 360 PSI VESSEL TO PROVIDE A MINIMUM OF 9% CONCENTRATION TO EXTINGUISH AND MAINTAIN A MINIMUM CONCENTRATION IN ALL AREAS FOR 10 MINUTES, AFTER DISCHARGE.

6. NOZZLES SHALL BE PERMANENTLY MARKED TO IDENTIFY ORIFICE SIZE AND PROVIDED WITH DEFLECTOR PLATES IN AREAS WITH FALSE CEILINGS.

VESDA AIR SAMPLING NOTES:

1. THE MAIN SAMPLING PIPE SHALL CONSIST OF 3/4" POLYVINYL CHLORIDE (CPVC PIPE SCHEDULE 40 WITH O.D. OF 1.050 INCHES & I.D. OF 0.874 INCHES. THE COLOR OF THE AIR SAMPLING PIPE MAY BE ORANGE SO THAT IT IS EASILY DISTINGUISHED FROM OTHER PIPING AND WIRING IN THE ROOM.

2. SAMPLING PIPES SHALL BE SUPPORTED WITH MECHANICAL PIPE HANGERS ATTACHED TO THE STRUCTURE OF THE BUILDING OR FLOOR SUPPORT SYSTEM. DISTANCES BETWEEN THE HANGERS SHOULD NOT EXCEED FIVE (5) FEET ON CENTER. ALSO, NOT MORE THAN ONE (1) FOOT OF PIPE TO EXTEND PAST THE LAST ATTACHMENT POINT.

3. ATTACHMENT OF AIR SAMPLING PIPES TO CABLE TRAYS, "GRAY IRON", AND TELECOMMUNICATIONS EQUIPMENT IS PROHIBITED .

4. THE VESDA POWER SUPPLY SHALL BE WIRED TO A 120 VAC 3 WIRE DEDICATED 20 amp. CIRCUIT BREAKER, MINIMUM #12 AWG SHALL BE USED (THIS CIRCUIT TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR). REVIEW PROJECT ELECTRICAL SPECIFICATIONS PRIOR TO INSTALLATION.

5. RED-LINED "AS-BUILT" WIRING DIAGRAMS SHOWING EXACT CONDUIT AND DETECTOR WIRING SEQUENCE SHALL BE PROVIDED BY AND KEPT BY THE INSTALLING COMPANY.

6. ALL SAMPLING PIPE SHALL BE CLEANED INSIDE AND OUT, AND JOINED USING THE MANUFACTURER'S APPROVED METHODS AND MATERIALS FOR AIR TIGHT CONNECTIONS. THE SAMPLING PIPE ADJACENT TO THE DETECTOR SHALL BE FASTENED TIGHT AGAINST THE STRUCTURAL ELEMENT WHICH THE DETECTOR IS MOUNTED ON. REFER TO ASTM F 402-88 STANDARD PRACTICE FOR SAFE HANDLING OF SOLVENT CEMENTS, PRIMERS, AND CLEANERS USED FOR JOINING THERMOPLASTIC PIPE AND FITTINGS.

7. ALL VESDA SYSTEM PIPE & SAMPLING POINTS SHALL BE CLEARLY LABELED WITH ADHESIVE LABELS SUPPLIED BY THE SYSTEM MANUFACTURER.

8. THE FURTHERMOST END OF ALL BRANCH LINES SHALL HAVE A REMOVABLE "END CAP" FOR MAINTENANCE BACK FLUSHING OF THE SYSTEM. A PIPE UNION AND CLOSE NIPPLE CAN OFTEN BE USED FOR THIS PURPOSE.

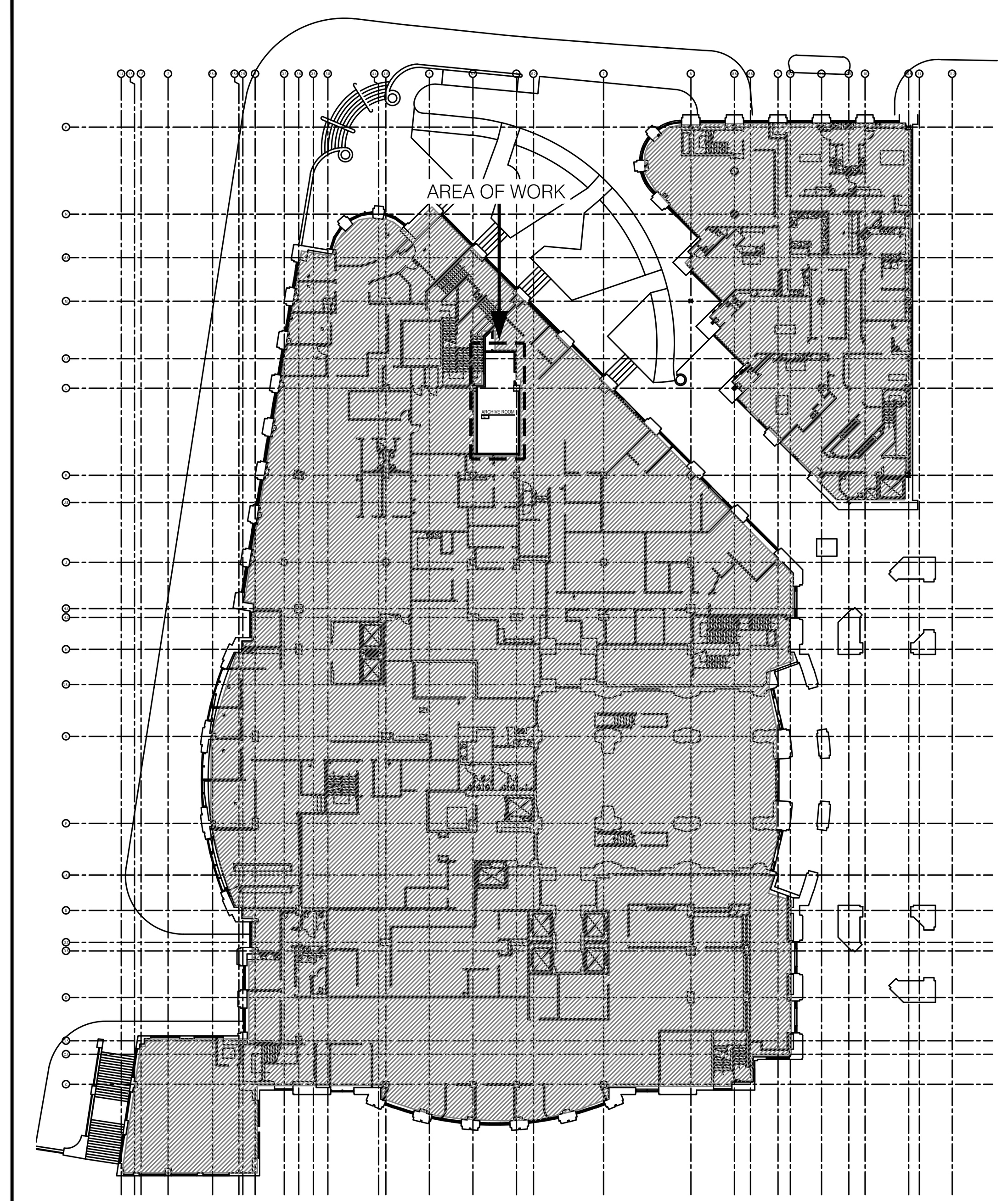
9. VESDA EARLY WARNING SAMPLING SHALL CONSIST OF MAIN TRUNK OR BRANCH PIPES WITH TEE FITTINGS, CAPILLARY TUBES , AND MINIATURE SAMPLING POINT ASSEMBLY EXTENDING DOWN INTO THE FALSE CEILING AT LOCATIONS INDICATED ON PLANS. SAMPLING POINTS SHALL NOT EXCEED 200 SQ.FT. PER SAMPLING POINT AND SMOKE TRANSPORTATION TIME SHALL NOT EXCEED 120 SECONDS FROM THE FURTHERMOST SAMPLING POINT TO THE DETECTOR. ENSURE THERE IS A MINIMUM OF 20 INCHES OF STRAIGHT PIPE BEFORE THE SAMPLING PIPE ENTERS THE DETECTOR.

10.ALL SAMPLING ORIFICE SIZES ARE PRE-DETERMINED BY THE FLOW CALCULATION SOFTWARE USING THE DIMENSIONS AS SHOWN ON PLANS. IF THE PIPING LAYOUT CHANGES FROM THE ORIGINAL DESIGN, AS-BUILT DRAWINGS MUST BE SUBMITTED TO THE ENGINEER BY THE CONTRACTOR BEFORE ANY SAMPLING POINTS ARE DRILLED.

CONTROL MATRIX

INPUTS \ OUTPUTS	FSCP PANEL LOCAL ANNUNCIATOR TO SOUND	FSCP PANEL LED INDICATOR TO ILLUMINATE	FSCP PANEL TROUBLE CONDITION DISPLAYED	FSCP PANEL ALARM CONDITION DISPLAYED	FSCP PANEL SUPERVISORY CONDITION DISPLAYED		TROUBLE SIGNAL SENT TO BUILDING FACP	ALARM SIGNAL SENT TO BUILDING FACP	SUPERVISORY SIGNAL SENT TO BUILDING FACP		ALARM HORN/STROBE TO SLOW PULSE	ALARM HORN/STROBE TO FAST PULSE	ALARM HORN/STROBE TO SOUND CONTINUOUSLY	ALARM DISCHARGE STROBE TO ACTIVATE		ACTIVATE 30 SECOND DISCHARGE TIME DELAY	DISCHARGE AGENT	AGENT DISCHARGE BY-PASSED (WHEN DEPRESSED)	AGENT DISCHARGE CIRCUIT DISABLED		FSCP RELAY TO ENERGIZE FOR SHUTDOWNS
LOW BATTERY	●	●	●				●														
GROUND FAULT	●	●	●				●														
OPEN CIRCUIT	●	●	●				●														
NAC SHORT	●	●	●				●														
AIR SAMPLING FAULT	●	●	●				●														
AIR SAMPLING ACTION	●	●			●				●												
AIR SAMPLING FIRE 1*	●	●		●				●			●										
ANY ONE SMOKE DETECTOR	●	●		●				●			●										
ANY ONE SMOKE DETECTOR & AIR SAMPLING FIRE 1*	●	●		●				●				●				●					●
30 SECOND TIME EXPIRATION	●	●											●	●			●				
MANUAL RELEASE SWITCH	●	●		●				●					●	●			●				●
SYSTEM ABORT SWITCH	●	●	●				●											●			
KEY DISABLE BY-PASS	●	●	●		●		●		●										●		
IMPULSE VALVE DISCONNECT	●	●			●				●												

NOTES
* AIR SAMPLING FIRE 1 ALARM THRESHOLD SETTING IS DETERMINED BY THE FLOW CALCULATION SOFTWARE.
REFER TO AIR SAMPLING PIPING ISOMETRIC(S) FOR REFLECTED THRESHOLD SETTINGS.



BUILDING FLOOR PLAN / AREA OF WORK

NOT TO SCALE

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SHEET INDEX

SHEET	DESCRIPTION
FP2.00	HFC-125 / PRE-ACTION GENERAL NOTES, DEVICE ELEVATIONS & LEGEND
FP2.01	HFC-125 / PRE-ACTION DETECTION & CONTROL / NOTIFICATION FLOOR PLANS
FP2.02	AIR SAMPLING PIPING ISOMETRIC
FP2.03	CONTROL PANEL / SINGLE LINE DIAGRAMS & BATTERY CALCULATIONS
FP2.04	ELECTRICAL INSTALLATION DETAILS AND DEVICE ELEVATION
FP2.05	ELECTRICAL INSTALLATION DETAILS
FP2.06	HFC-125 GENERAL PIPING NOTES & PIPING FLOOR PLAN
FP2.07	HFC-125 PIPING ISOMETRIC / INSTALLATION DETAILS

LEGEND / EQUIPMENT LIST

ITEM	BACK BOX	FIKE P/N	MFG P/N	QTY	DESCRIPTION	C.S.F.M.
FSCP	22.10" X 14.35" X 3.25"	10-071-R-1	———	1	CHEETAH XI 50 FIRE CONTROL PANEL	7165-0900:0149
	———	———	BSL1115	1	12V / 18 AH SEALED LEAD ACID BATTERY	———
IVO	TANK	70-279	———	1	IMPULSE VALVE OPERATOR KIT (IVO)	7165-0900:0149
IRM	4S DEEP	10-2748	———	———	IMPULSE RELEASE MODULE (INCLUDED W/ IVO KIT)	7165-0900:0149
IVOS	———	02-14263	———	———	IMPULSE VALVE OPERATOR SUPERVISOR (INCLUDED W/ IVO KIT)	———
SRD	———	———	SSU00690	1	SYSTEM RECORD DOCUMENT CABINET	7300-0533:0110
S	BASE	63-1052	———	4	CEILING PHOTO DETECTOR	7272-2010:0100
S	BASE	63-1052	———	2	ABOVE CEILING PHOTO DETECTOR	7272-2010:0100
———	4S DEEP W/3-0 RING	63-1055	———	6	4" DETECTOR BASE	7300-0900:0138
S AS	———	68-072	VLF-500	1	VESDA LASER FOCUS	7259-1728:0110
	———	68-031	E700-SP	4	MINIATURE SAMPLING POINT	———
ADM	4S DEEP	55-052	———	1	RELEASE CONTROL MODULE	7300-0900:0143
AIM	4S DEEP	55-041	———	8	MONITOR MODULE	7300-2010:0101
AIMM	4S DEEP	55-045	———	3	MINI MONITOR MODULE	7300-2010:0101
AOM	4S DEEP	55-042	———	1	CONTROL MODULE	7300-2010:0101
ARM	4S DEEP	55-043	———	1	RELAY MODULE	7300-2010:0101
MR	4S DEEP	10-1640	———	1	MAIN / RESERVE SWITCH	6760-0900:0103
CA	4S DEEP W/ DOUBLE GANG RING	10-1638	———	1	MANUAL RELEASE SWITCH	6760-0900:0103
A	4S DEEP W/ DOUBLE GANG RING	10-1639	———	1	SYSTEM ABORT SWITCH	6760-0900:0103
K	DBLE GANG RING	———	———	1	KEYED DISABLE MAINTENANCE BY-PASS SWITCH	———
CD C	4S DEEP W DBL RING	———	PC4RL	1	HFC SELECTABLE CANDELA CEILING HORN/STROBE (RED)	7135-1653:0503
CD	4S DEEP SINGLE RING	———	SCRL	1	HFC SELECTABLE CANDELA CEILING DISCHARGE STROBE (RED)	7125-1653:0504
———	———	———	BZRC-AG	1	HFC DEVICE AGENT CEILING RED BEZEL (5 EACH)	7125-1653:0504

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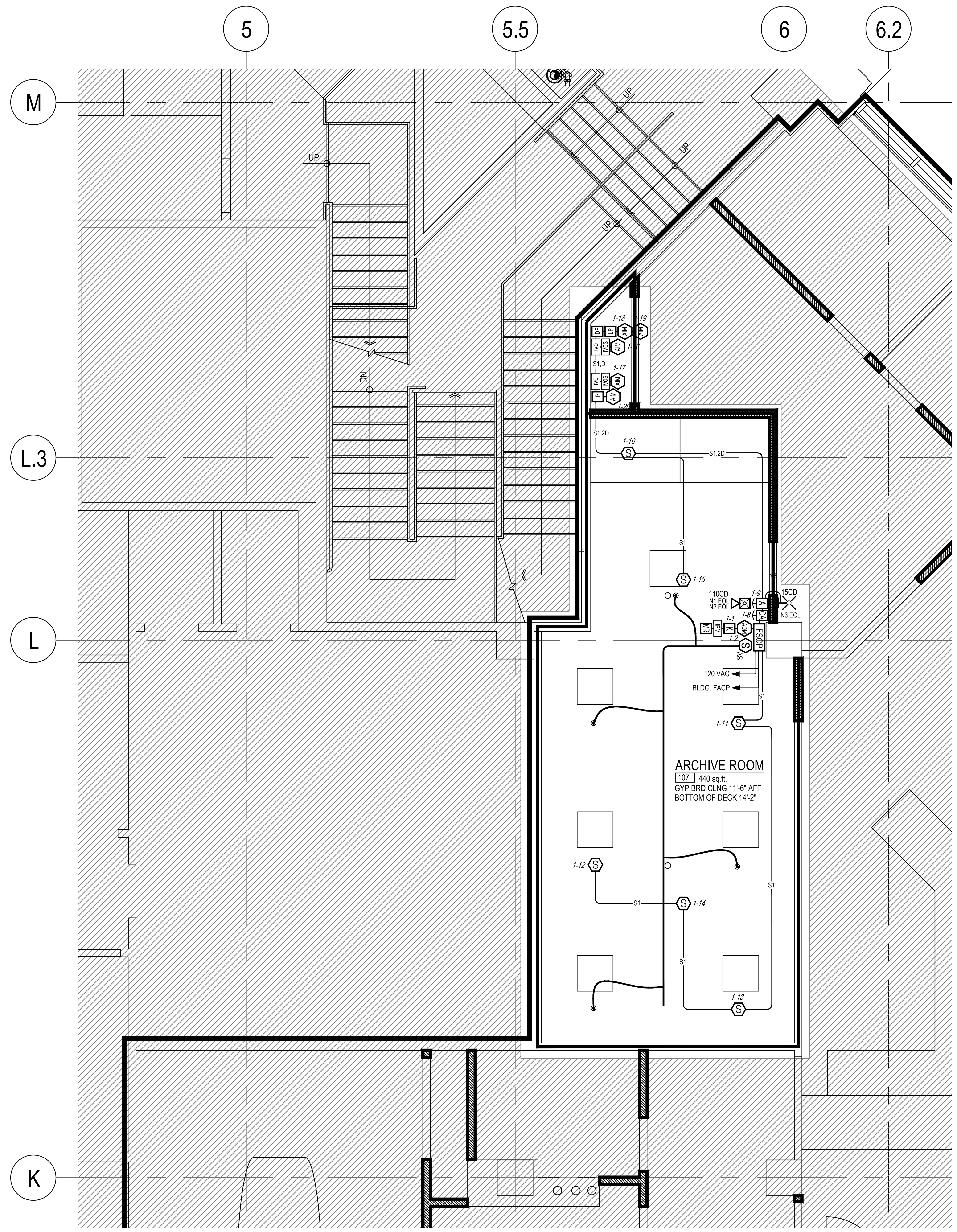

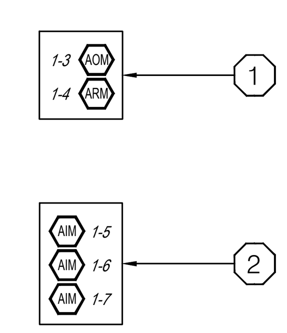

FIRE PROTECTION DETECTION AND CONTROL FLOOR PLAN

SCALE: 1/4" = 1'-0"

0 1 2 3 4 5 10

FLOOR PLAN NOTES:

1. THESE MODULES TO BE LOCATED ABOVE THE "FSCP" PANEL.
2. THESE MODULES TO BE LOCATED ADJACENT TO THE VESDA AIR SAMPLING DETECTOR (VLF).

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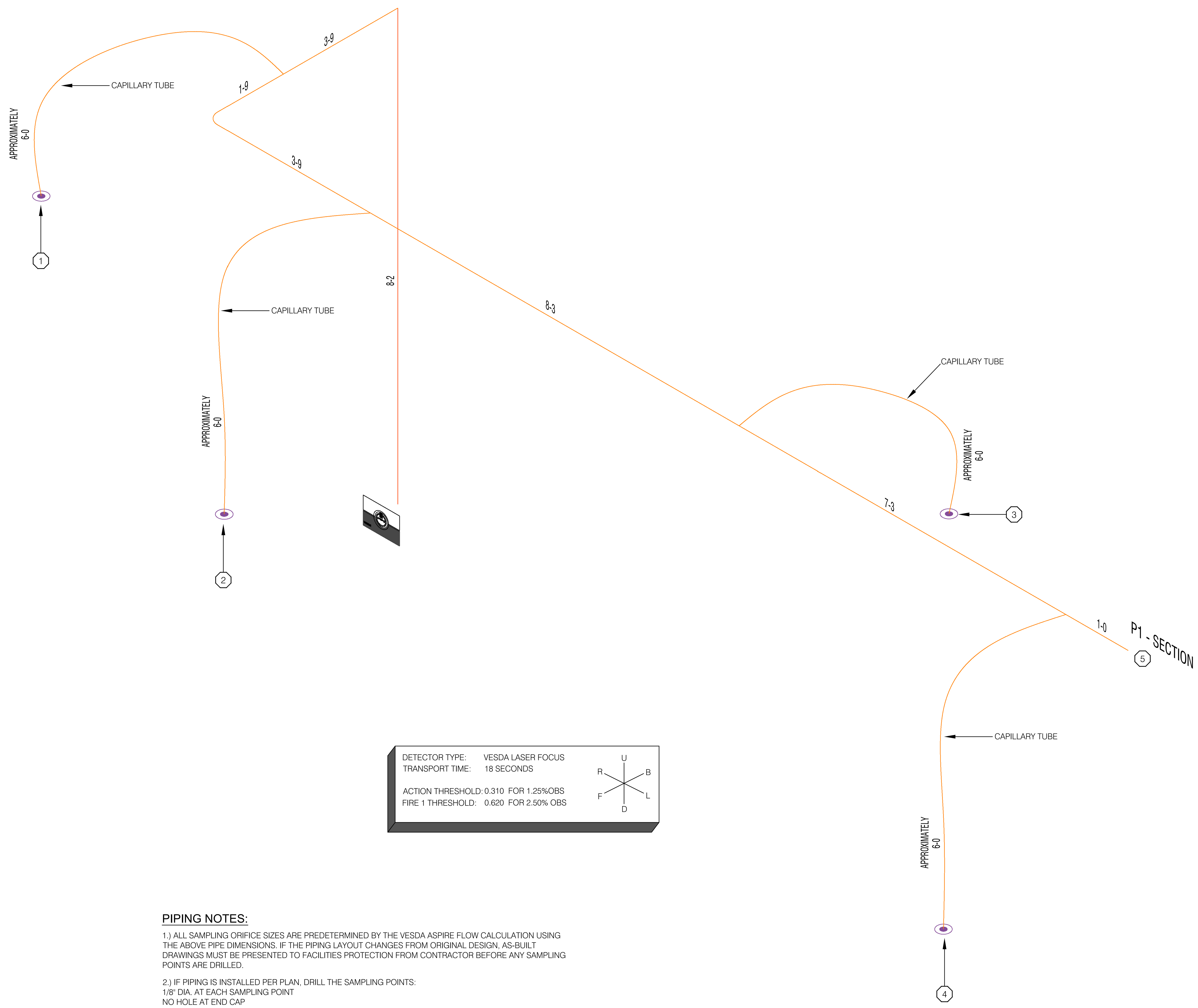

DETECTOR TYPE:	VESDA LASER FOCUS
TRANSPORT TIME:	18 SECONDS
ACTION THRESHOLD:	0.310 FOR 1.25%OBS
FIRE 1 THRESHOLD:	0.620 FOR 2.50% OBS

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PIPING NOTES:

1.) ALL SAMPLING ORIFICE SIZES ARE PREDETERMINED BY THE VESDA ASPIRE FLOW CALCULATION USING THE ABOVE PIPE DIMENSIONS. IF THE PIPING LAYOUT CHANGES FROM ORIGINAL DESIGN, AS-BUILT DRAWINGS MUST BE PRESENTED TO FACILITIES PROTECTION FROM CONTRACTOR BEFORE ANY SAMPLING POINTS ARE DRILLED.

2.) IF PIPING IS INSTALLED PER PLAN, DRILL THE SAMPLING POINTS:
1/8" DIA. AT EACH SAMPLING POINT
NO HOLE AT END CAP

3.) ALL PIPING / TUBING LENGTHS ARE APPROXIMATE. ACTUAL LENGTHS TO BE DETERMINED IN THE FIELD.

AIR SAMPLING PIPING ISOMETRIC

SCALE: NONE

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STATE OF CALIFORNIA

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com

N

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-NOT FOR CONSTRUCTION-

NO	ISSUE	DATE
1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
	90% CD	7/25/19
	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

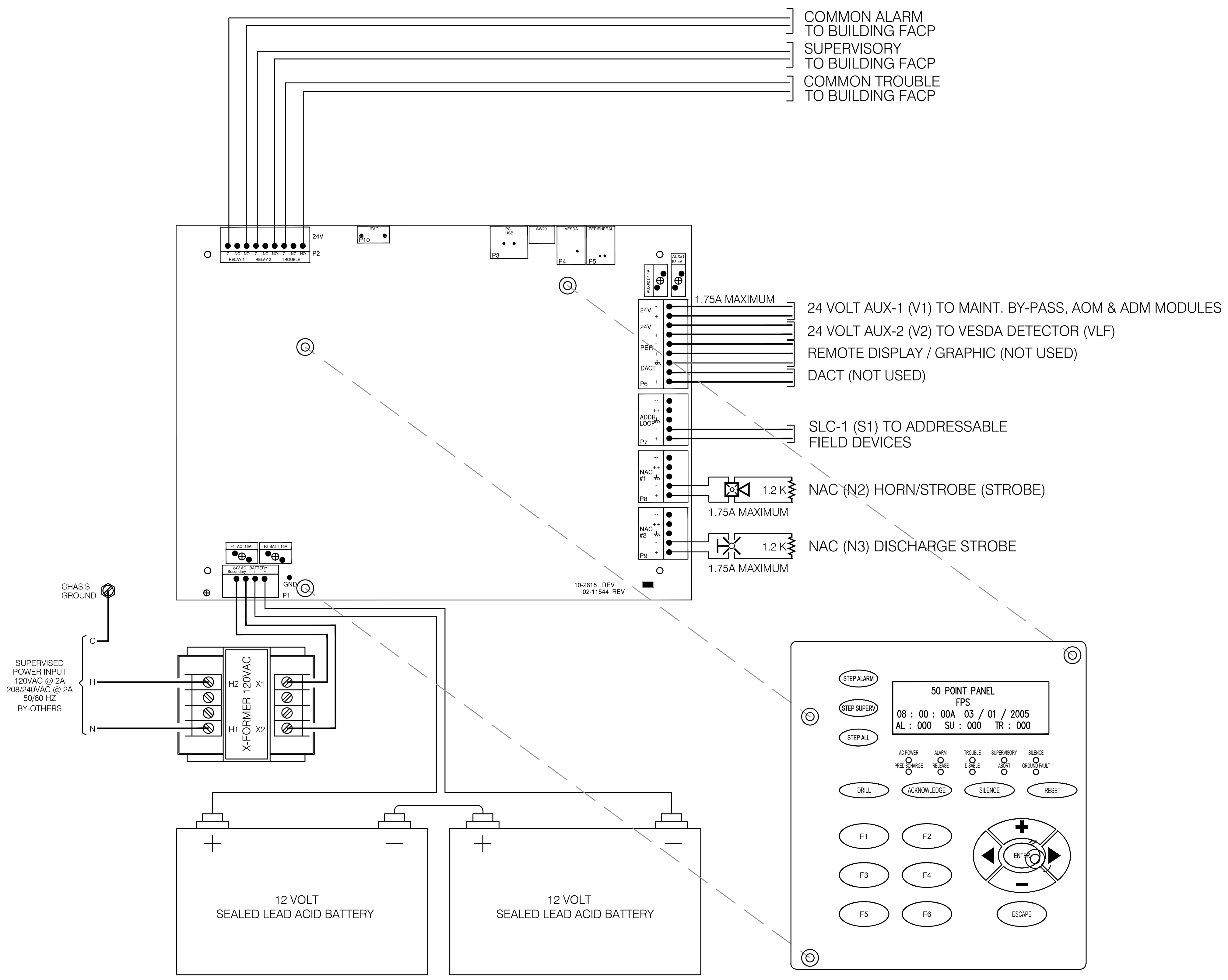
TITLE

FIRE PROTECTION PLAN

PROJECT
1818
SCALE
AS NOTED
DRAWN BY

DATE
09/18/19

SHEET NUMBER
FP2.02



CHEETAH XI 50 CONTROL PANEL

N.T.S.

ADDRESSABLE DEVICE TABLE

ADD	DEVICE	DESCRIPTION
1-1	AIMM	MAINTENANCE BY-PASS SWITCH
1-2	ADM	AGENT DISCHARGE
1-3	AOM	HORN/STROBE (HORN)
1-4	ARM	SHUTDOWNS
1-5	AIM	VESDA FAULT
1-6	AIM	VESDA ACTION
1-7	AIM	VESDA FIRE 1
1-8	AIMM	AGENT RELEASE STATION
1-9	AIMM	AGENT ABORT STATION
1-10		CEILING SMOKE DETECTOR
1-11		CEILING SMOKE DETECTOR
1-12		CEILING SMOKE DETECTOR
1-13		CEILING SMOKE DETECTOR
1-14		ABOVE CEILING SMOKE DETECTOR
1-15		ABOVE CEILING SMOKE DETECTOR
1-16	AIM	IVO SUPERVISOR (CYLINDER "A")
1-17	AIM	IVO SUPERVISOR (CYLINDER "B")
1-18	AIM	DISCHARGE PRESSURE SWITCH
1-19	AIM	LOW PRESSURE SWITCH (CYLINDER "A")
1-20	AIM	LOW PRESSURE SWITCH (CYLINDER "B")
1-21		
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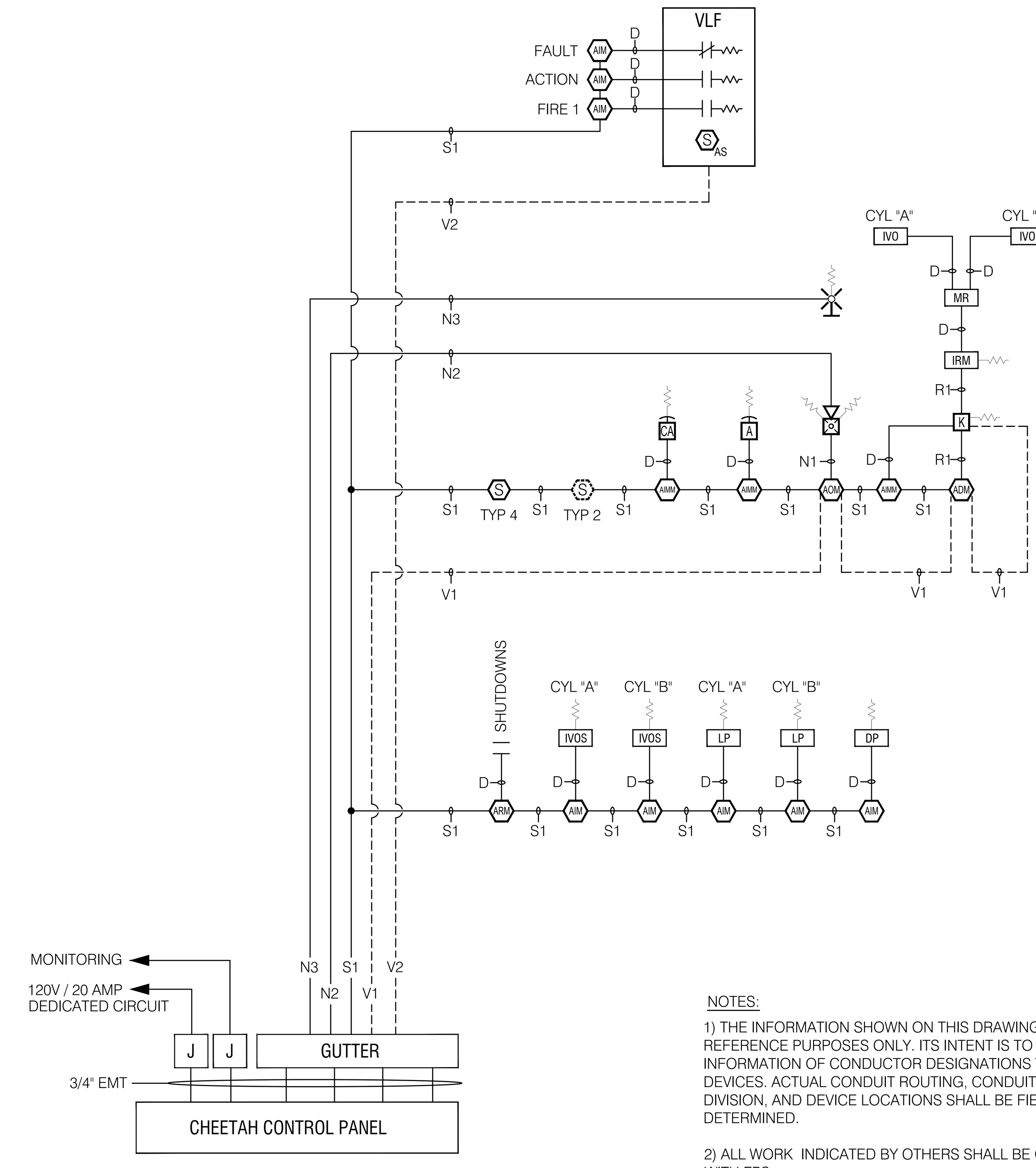

NOTES:

1) THE INFORMATION SHOWN ON THIS DRAWING IS FOR REFERENCE PURPOSES ONLY. ITS INTENT IS TO PROVIDE INFORMATION OF CONDUCTOR DESIGNATIONS TO FIELD DEVICES. ACTUAL CONDUIT ROUTING, CONDUIT SIZE, CIRCUIT DIVISION, AND DEVICE LOCATIONS SHALL BE FIELD DETERMINED.

2) ALL WORK INDICATED BY OTHERS SHALL BE COORDINATED WITH FPS.

3) NO PENETRATIONS 8" FROM BOTTOM OF PANEL.

SINGLE LINE DIAGRAM

NOT TO SCALE

WORSE CASE VOLTAGE DROP

WORSE CASE CIRCUIT: N2

HORN/STROBE 110CD (STROBE): 1 X 0.148 AMPS = .148 AMPS

LEGEND

I = TOTAL AMPS ON CIRCUIT
L = CIRCUIT LENGTH 35'
E = END OF LINE VOLTAGE
R = RESISTANCE OR Ohms
S = SUPPLY VOLTAGE 20.4V
V = TOTAL VOLTAGE DROP
W = RESISTANCE PER 1000' #14 STRAN.
O= MINIMUM OPERATING VOLTAGE OF DEVICE 16.0V

RESISTANCE	VOLTAGE DROP	EOL VOLTAGE
R= W (L X 2) / 1000	V= R X I	E= S - V
R= (3.14 X 70) /1000)	V= 0.22 X 0.148	E= 20.4 - .033
R=0.22 Ohms	V= .033 V	E= 20.36 V O= 16.00 V
		"E" MUST EXCEED "O"

THE CONTROL PANEL SUPPLY VOLTAGE IS PER UL 864, "STANDARD FOR CONTROL UNITS FOR FIRE SIGNALING SYSTEMS". ALL POWER PROVIDED IS FROM A REGULATED SOURCE. CALCULATIONS ARE PER NFPA 72, AND THE NEC . DC VOLTAGE RANGE LIMITS: 16-33 V. DO NOT APPLY 80% AND 110% OF THIS RANGE FOR SYSTEM OPERATION.

BATTERY CALCULATIONS

SLC STAND-BY CURRENT

Device	Used		millAmps per			Totals	
PHOTO:	6	X	0.481	mAMPS	=	2.89	mAMPS
MINI MONITOR MODULE (AIMM):	3	X	0.485	mAMPS	=	1.46	mAMPS
MONITOR MODULE (AIM):	8	X	0.485	mAMPS	=	3.88	mAMPS
SUPERVISED CONTROL MODULE (AOM):	1	X	0.630	mAMPS	=	0.63	mAMPS
RELEASING CONTROL MODULE (ADM):	1	X	0.450	mAMPS	=	0.45	mAMPS
RELAY MODULE (ARM):	1	X	0.580	mAMPS	=	0.58	mAMPS
			Total mAMPS		=	9.89	mAMPS
					X	0.001	
			Total Amps Used		=	**.010**	**AMPS**

SLC ALARM CURRENT

Device	Used		millAmps per			Totals	
PHOTO:	6	X	2.00	mAMPS	=	12.0	mAMPS
MINI MONITOR MODULE (AIMM):	3	X	2.00	mAMPS	=	6.0	mAMPS
MONITOR MODULE (AIM):	8	X	2.00	mAMPS	=	16.0	mAMPS
SUPERVISED CONTROL MODULE (AOM):	1	X	2.00	mAMPS	=	2.0	mAMPS
RELEASING CONTROL MODULE (ADM):	1	X	6.00	mAMPS	=	6.0	mAMPS
RELAY MODULE (ARM):	1	X	2.00	mAMPS	=	2.0	mAMPS
			Total mAMPS		=	44.0	mAMPS
					X	0.001	
			Total Amps Used		=	**.044**	**AMPS**

NAC OUTPUT ALARM CURRENT

N2	Used		Amps per			Totals	
HORN/STROBE 110CD (STROBE):	1	X	0.148	AMPS	=	.148	AMPS
			Total AMPS		=	.148	AMPS
N3							
DISCHARGE STROBE 15CD:	1	X	0.043	AMPS	=	.043	AMPS
			Total AMPS		=	.043	AMPS
			Total Amps Used		=	**.191**	**AMPS**

AUXILIARY POWER STAND-BY CURRENT

24V AUX. OUTPUT 1 (V1)	Used		Amps per			Totals	
HORN/STROBE 110cd (HORN):	1	X	0.000	AMPS	=	.000	AMPS
BY-PASS SWITCH:	1	X	0.001	AMPS	=	.001	AMPS
IMPULSE RELEASE MODULE (IRM):	1	X	0.003	AMPS	=	.003	AMPS
			Total AMPS		=	.004	AMPS
24V AUX. OUTPUT 2 (V2)							
VESDA DETECTOR (VLF):	1	X	0.410	AMPS	=	.410	AMPS
			Total AMPS		=	.410	AMPS
			Total Amps Used		=	**.414**	**AMPS**

AUXILIARY POWER ALARM CURRENT

24V AUX. OUTPUT 1 (V1)	Used		Amps per			Totals	
HORN/STROBE 110cd (HORN):	1	X	0.047	AMPS	=	.047	AMPS
BY-PASS SWITCH:	1	X	0.001	AMPS	=	.001	AMPS
IMPULSE RELEASE MODULE (IRM):	1	X	0.037	AMPS	=	.037	AMPS
			Total AMPS		=	.085	AMPS
24V AUX. OUTPUT 2 (V2)							
VESDA DETECTOR (VLF):	1	X	0.490	AMPS	=	.490	AMPS
			Total AMPS		=	.490	AMPS
			Total Amps Used		=	**.575**	**AMPS**

SUMMARY

CURRENT	STAND-BY	ALARM
CONTROLLER:	.116 AMPS	.176 AMPS
SLC DEVICES:	.010 AMPS	.044 AMPS
ON BOARD NAC OUTPUTS:	.000 AMPS	.191 AMPS
AUXILIARY POWER:	.414 AMPS	.575 AMPS
	TOTALS = .540 AMPS	TOTAL = .986 AMPS
BATTERY USE & SUPPLY	X	X
BACK-UP HOURS REQUIRED:	24 HOURS	.083 5 MIN
	12.96 AH	0.08 AH
TOTAL POWER REQUIRED:	13.04 AH X 1.2 FACTOR = 15.65 AH	

BATTERY SUPPLIED: 18 AH

CONDUCTOR DESCRIPTION

S : ADDRESSABLE SIGNALING LINE CIRCUIT (POWER LIMITED SLC) CLASS "B"
D : INITIATING DEVICE CIRCUIT (POWER LIMITED IDC) CLASS "B"
N : NOTIFICATION APPLIANCE CIRCUIT (POWER LIMITED NAC) CLASS "B"
R : SUPERVISED RELEASING CIRCUIT (POWER LIMITED) CLASS "B"
V : 24 VOLT DC AUXILIARY OUTPUT CIRCUIT (POWER LIMITED)
+ : OUT GOING AND RETURN CONDUCTORS (IN & OUT)

SYM	DESCRIPTION	CONDUCTOR	SIZE	TYPE	COMMENTS
S1	SLC ADDRESSABLE LOOP-1 CKT.	TWO	#14 AWG	THHN	BLUE / WHITE
R1	IMPULSE RELEASING MODULE (IRM) CKT.	TWO	#14 AWG	THHN	WHITE / PURPLE
N1	NAC ALARM HORN/STROBE (HORN) CKT.	TWO	#14 AWG	THHN	BROWN / ORANGE
N2	NAC ALARM HORN/STROBE (STROBE) CKT.	TWO	#14 AWG	THHN	BLUE / YELLOW
N3	NAC ALARM DISCHARGE STROBE CKT.	TWO	#14 AWG	THHN	GREEN / PINK
V1	24 VOLT AUXILIARY CKT. 1	TWO	#14 AWG	THHN	RED /BLACK
V2	24 VOLT AUXILIARY CKT. 2	TWO	#14 AWG	THHN	RED / BLACK

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FACILITIES PROTECTION SYSTEMS
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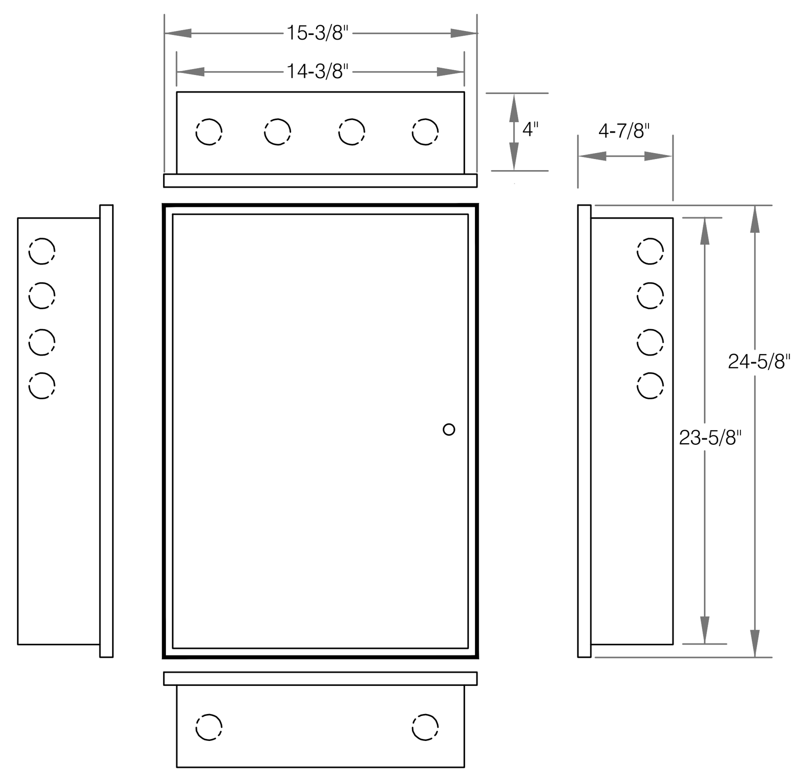
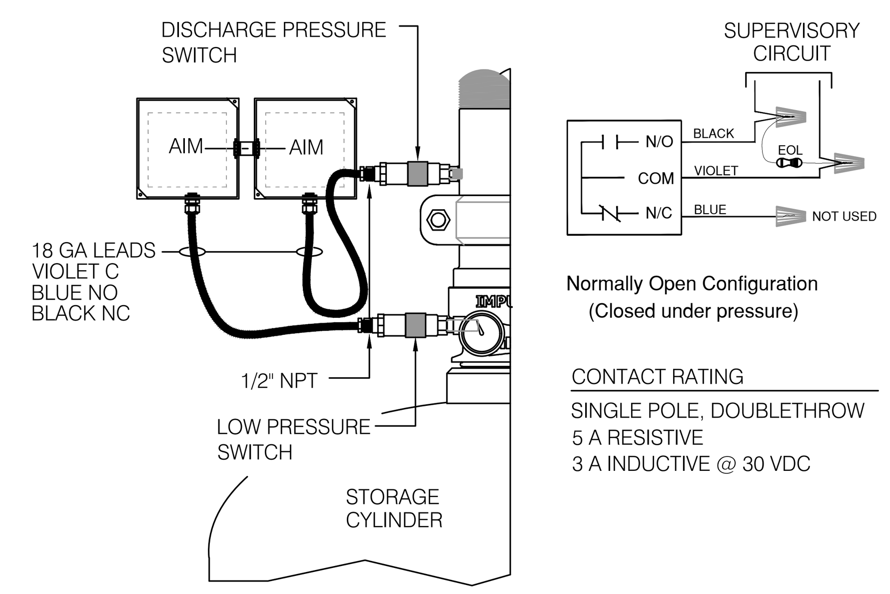
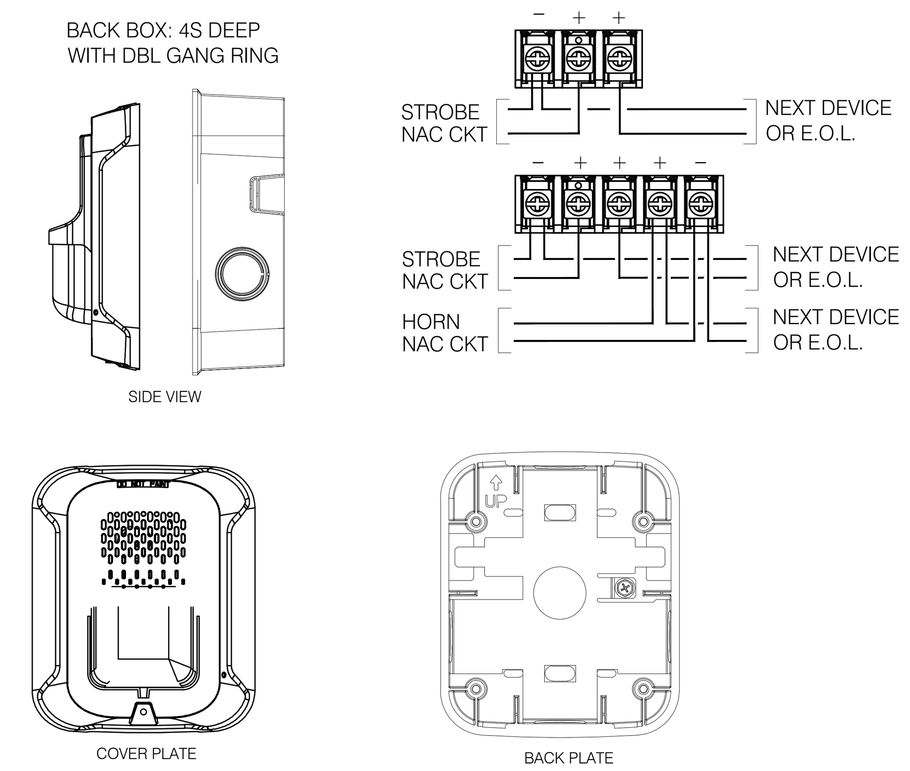


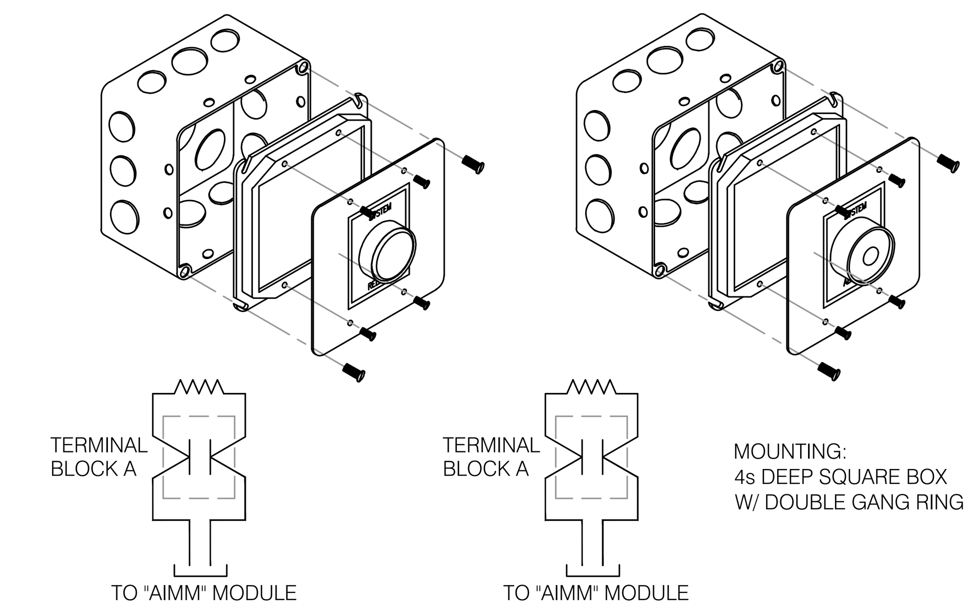
"FSCP" CHEETAH XI PANEL ENCLOSURE
N.T.S.



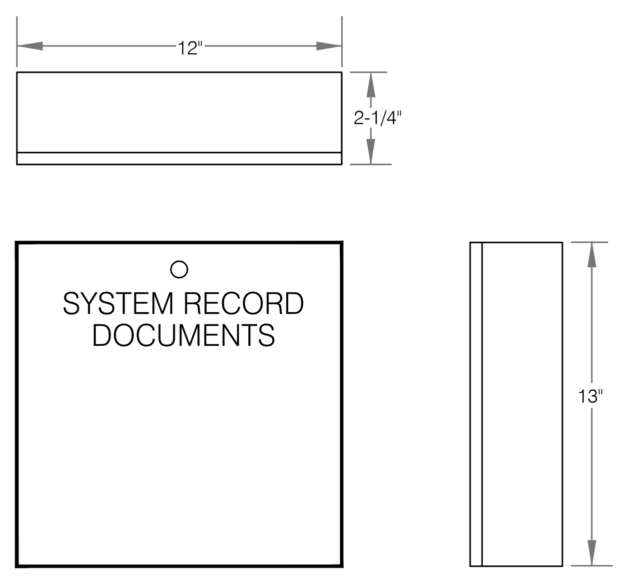
CYLINDER LOW PRESSURE SWITCH / DISCHARGE PRESSURE SWITCH DETAIL
N.T.S.



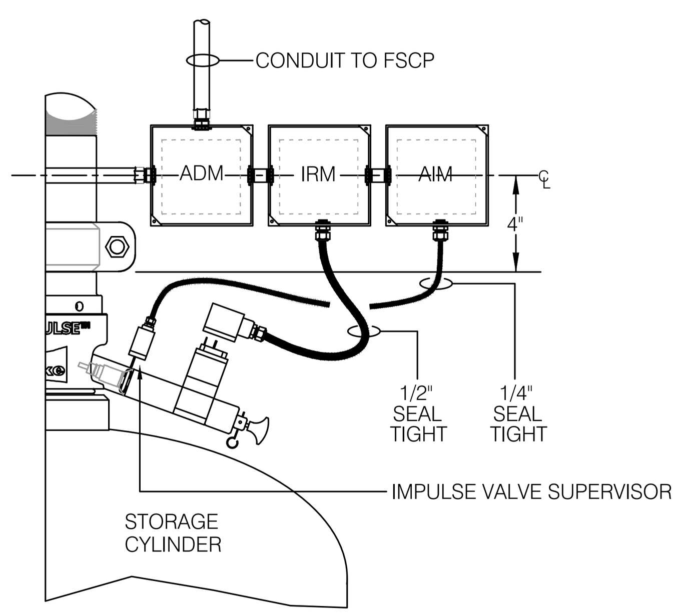
HFC ALARM WALL HORN/STROBE DETAIL
N.T.S.



MANUAL RELEASE / ABORT STATIONS
N.T.S.

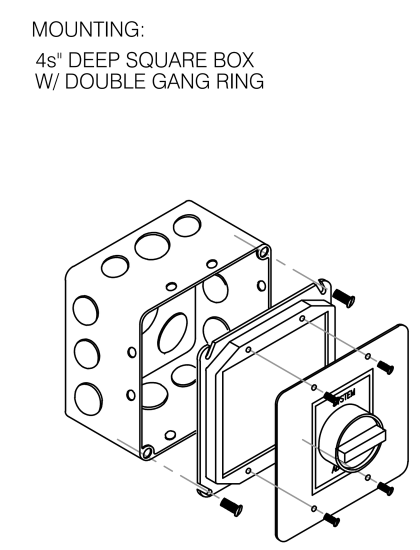


SRD CABINET
P/N: SSU00690 N.T.S.

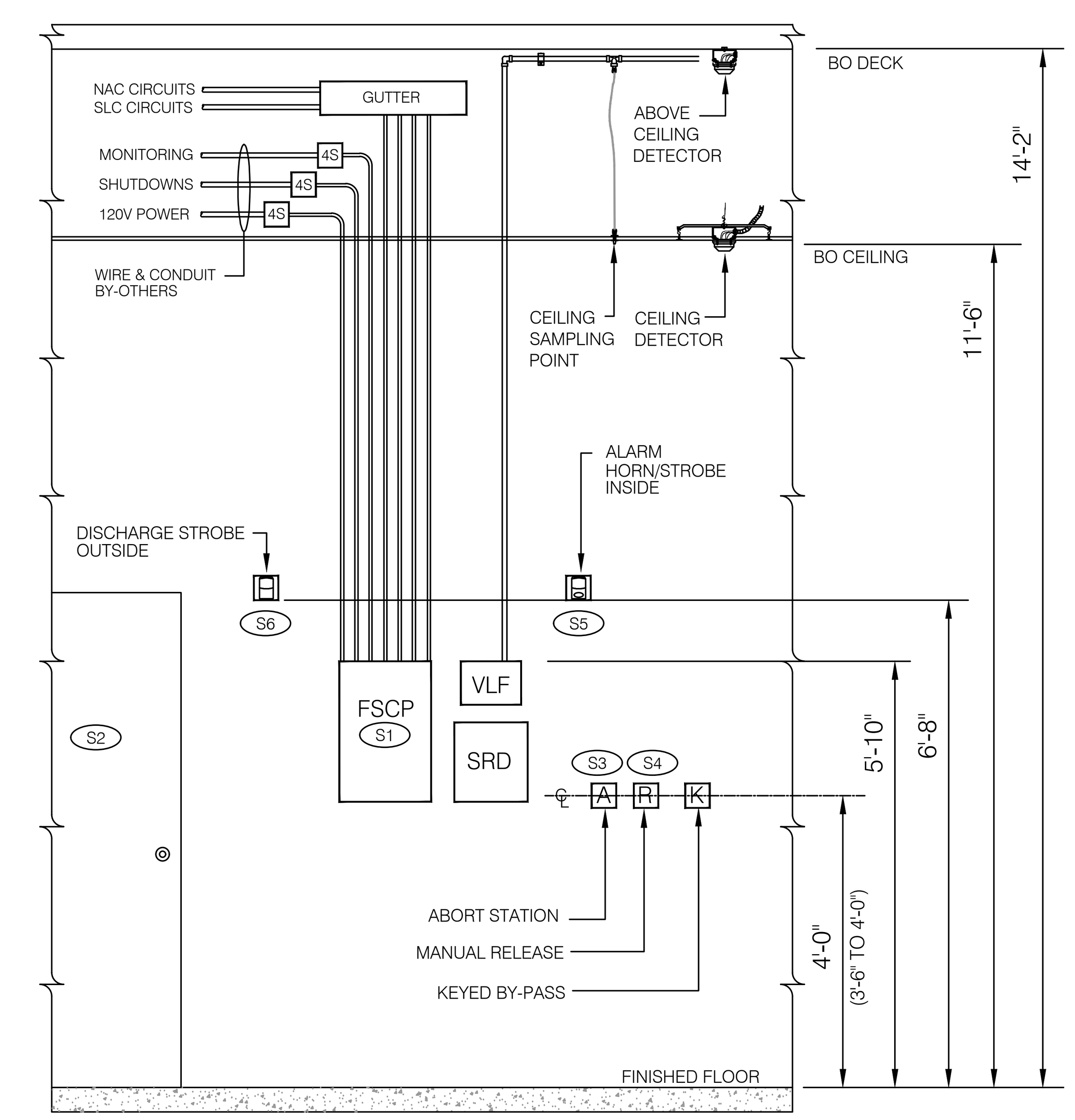


1. LOW PRESSURE AND DISCHARGE PRESSURE SWITCHES INCLUDING THEIR RESPECTIVE MODULES ARE OPTIONAL AND MAY NOT BE PART OF SCOPE.
2. ACTUAL LAYOUT SHALL BE FIELD DETERMINED.

CYLINDER ASSEMBLY
N.T.S.

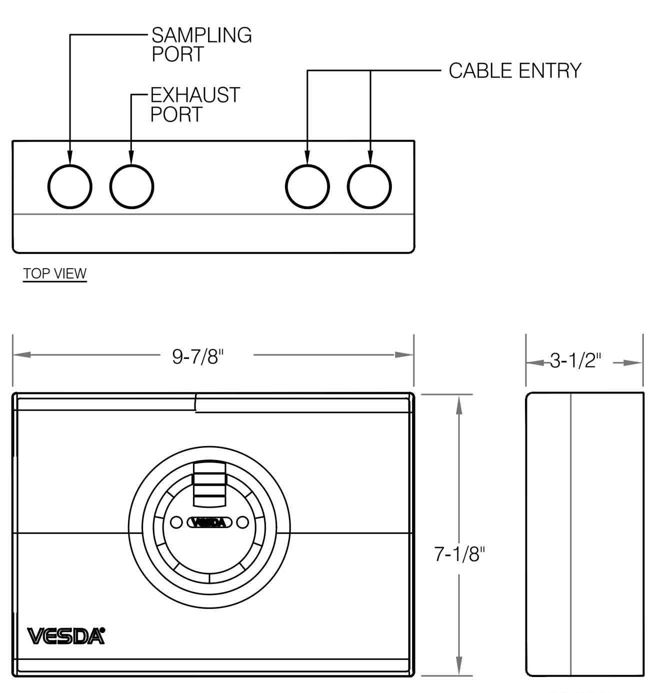


MAIN / RESERVE SWITCH
N.T.S.

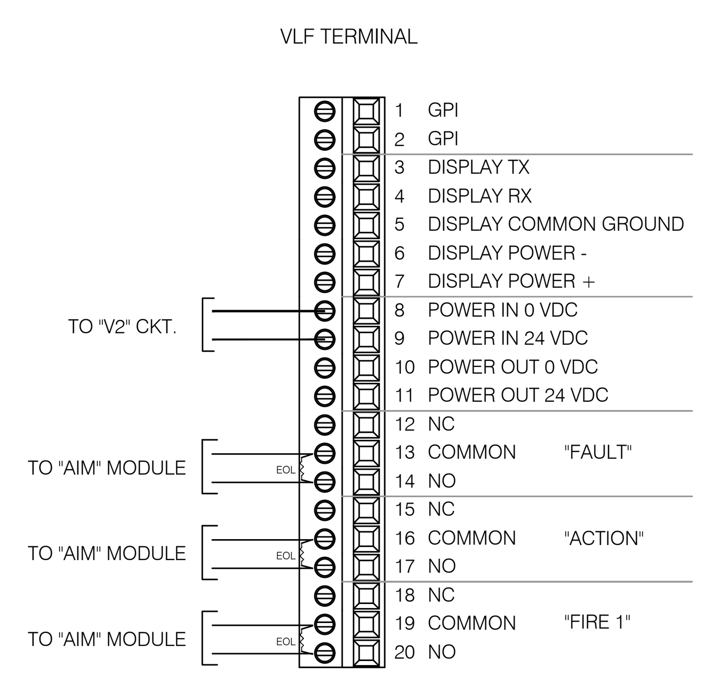


NOTES:
1. FIELD INSTALLER TO DETERMINE ANCHORING TYPE & BRACING POINTS.
2. ALL DEVICES BELOW T-BAR TO BE FLUSH MOUNTED WHEN POSSIBLE.
3. FOR CEILING HEIGHTS UNDER 86", TOP OF DEVICE TO BE 6" BELOW CEILING.
4. ELEVATIONS SHOWN ARE FOR EQUIPMENT BACK BOXES.

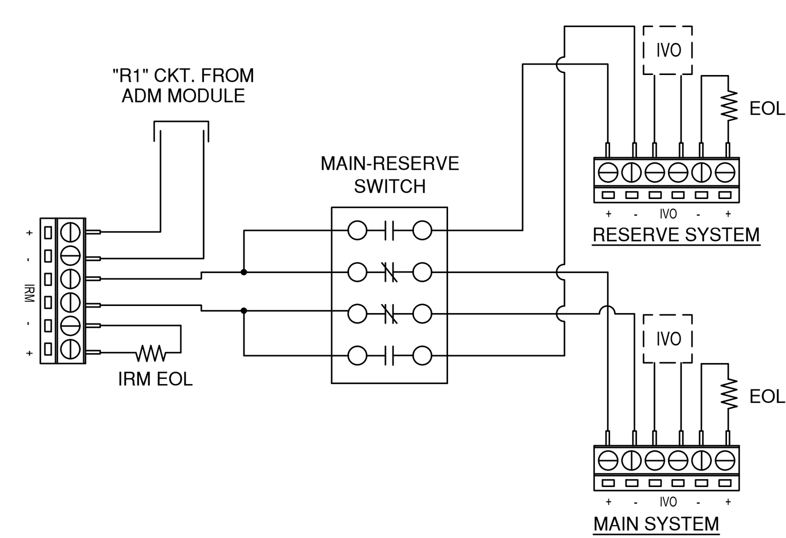
TYPICAL DEVICE ELEVATIONS / BUILDING SECTION
SCALE: 1/2"=1'-0"



"VLF" VESDA LASER FOCUS
N.T.S.



VESDA LASER FOCUS TERMINAL
N.T.S.



MAIN / RESERVE SWITCH TERMNATION
N.T.S.

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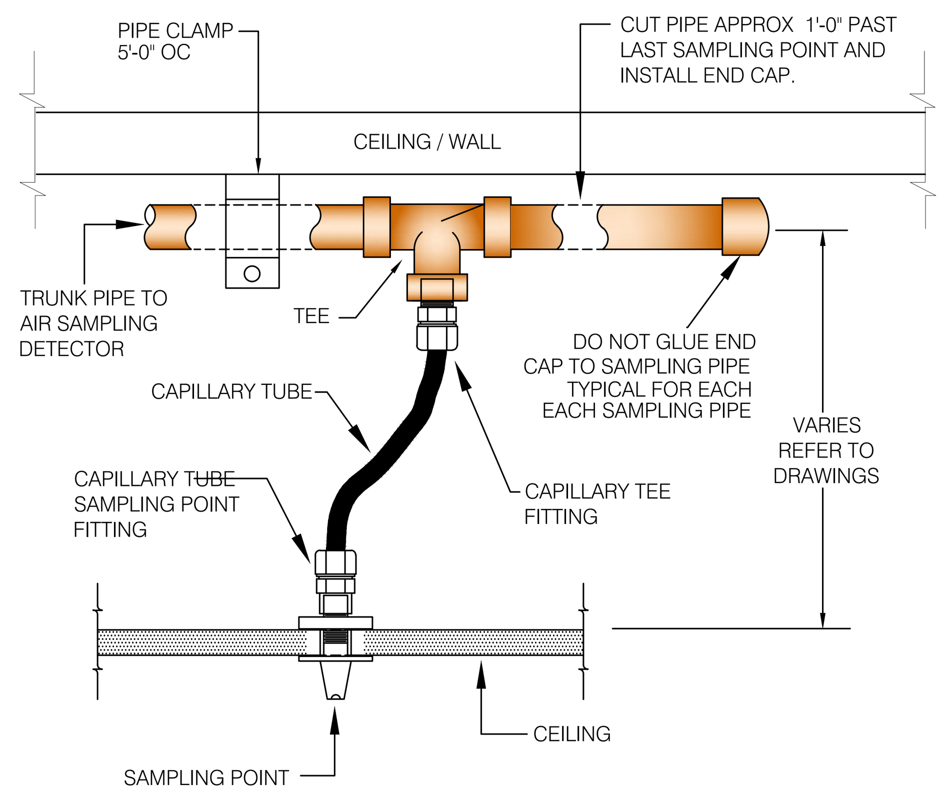
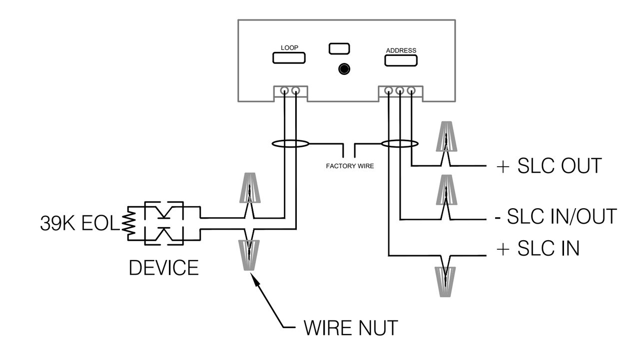
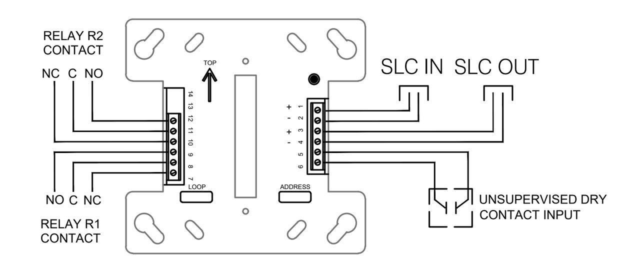


CAPILLARY SAMPLING POINT DETAIL
N.T.S.



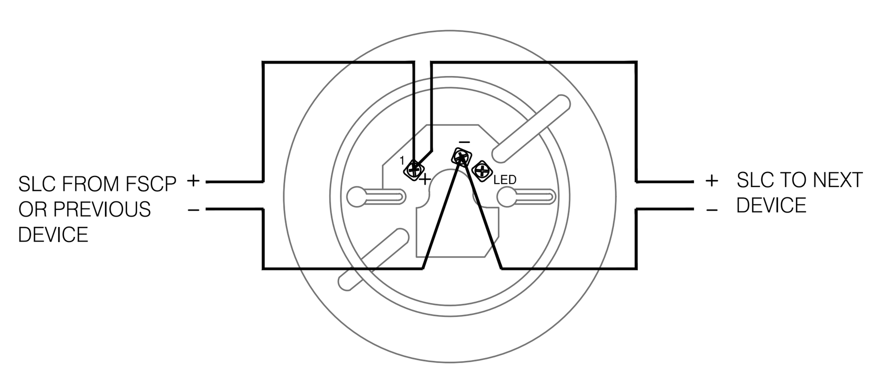
1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG.
2. THE INPUT CIRCUIT IS INTENDED FOR USE WITH ANY LISTED/APPROVED CONTACT CLOSURE TYPE DEVICE. NORMALLY OPEN OR CLOSED CONTACTS ONLY. 100 ohm MAX LINE IMPEDANCE, POWER LIMITED, SUPERVISED. FOR PROPER SUPERVISION, USE 39K EOL RESISTOR.
3. INSTALLED AT MONITORED DEVICE. (POWER LIMITED)

AIMM INTERFACE
P/N: 55-045 MINI MONITOR MODULE N.T.S.



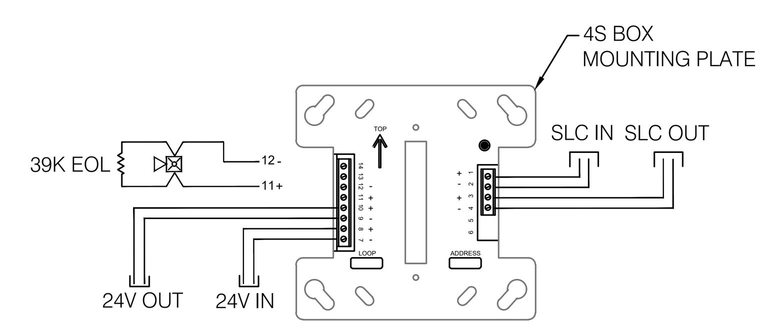
1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG. FORM C DRY CONTACTS ARE RATED FOR 2.0A MAX @ 30VDC., OR 0.5A MAX @ 110VAC.
2. MAY CONNECT TO POWER-LIMITED OR NON-POWER LIMITED SOURCES, IF BOTH ON SAME TERMINAL BLOCK, ONE TERMINAL MUST BE LEFT VACANT TO PROVIDE REQUIRED SEPARATION BETWEEN SOURCES.

ARM INTERFACE
P/N: 55-043 RELAY MODULE N.T.S.



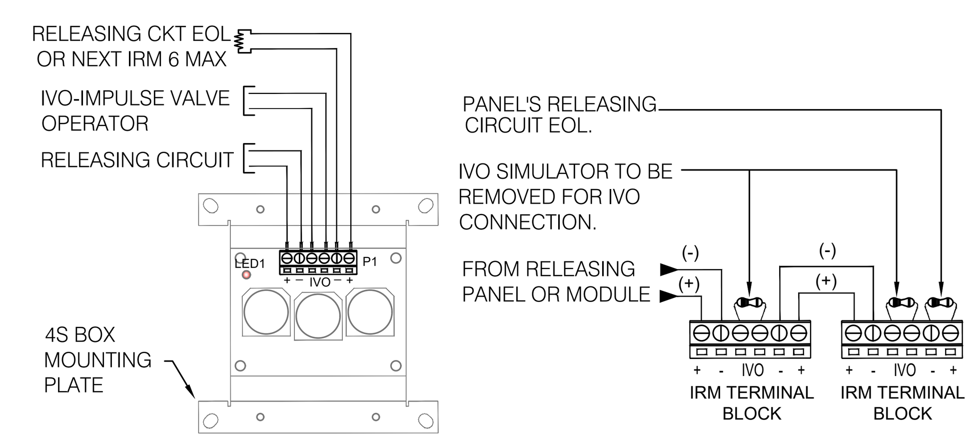
1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG.
2. ALL DETECTORS TO HAVE FORK TERMINALS AT TERMINATION POINT

BASE INTERFACE
P/N: 63-1054 / 63-1055 N.T.S.



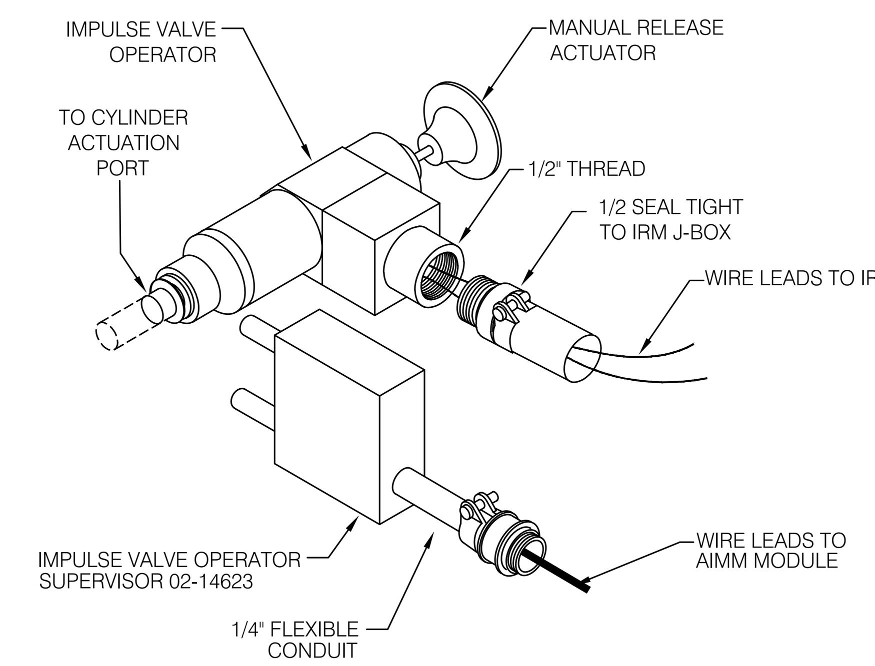
1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG.
2. NOTIFICATION CIRCUIT IS RATED FOR 30VDC @ 2A MAX.POWER LIMITED, SUPERVISED. 100 OHMS LINE IMPEDANCE MAXIMUM.
3.39K E.O.L. RESISTOR MUST BE INSTALLED AT LAST DEVICE ON CIRCUIT FOR PROPER SUPERVISION.

AOM INTERFACE
P/N: 55-042 CONTROL MODULE N.T.S.

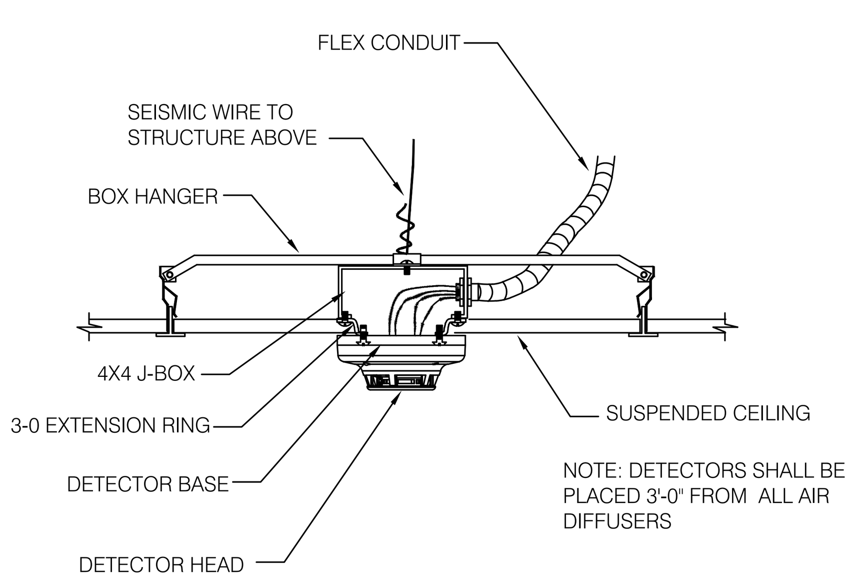


1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG.
2. 24VDC @ 2.0 AMPS MAX. SUPERVISED, POWER LIMITED.
3. MAXIMUM OF SIX (6) IRM'S WIRED IN PARALLEL, CAN BE CONNECTED CONNECTED TO A SINGLE RELEASE CIRCUIT.

IRM INTERFACE
P/N: 10-2748 N.T.S.

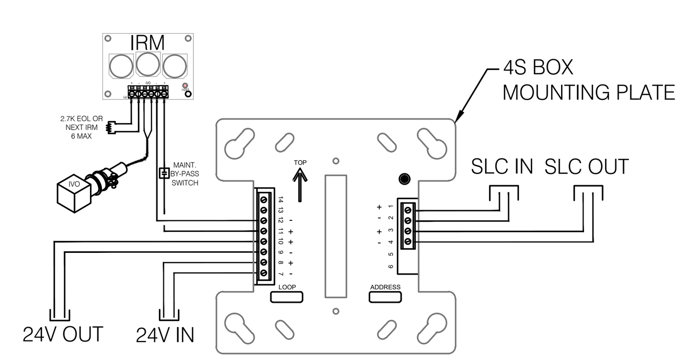


IVO IMPULSE VALVE OPERATOR
P/N: 06-492 W/ WIRE LEADS N.T.S.



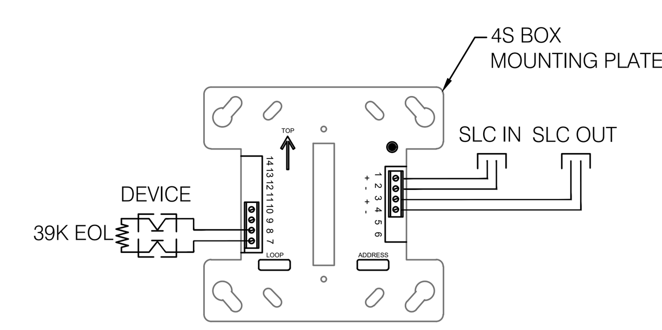
NOTE: DETECTORS SHALL BE PLACED 3'-0" FROM ALL AIR DIFFUSERS

SUSPENDED CEILING DETECTOR
N.T.S.



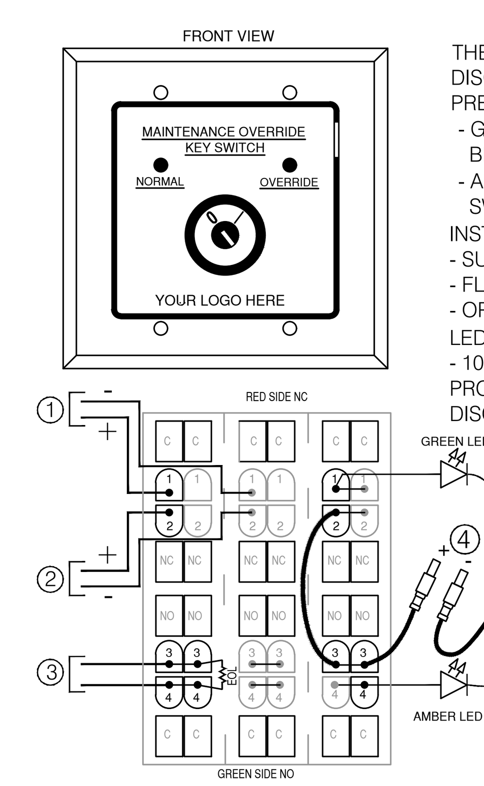
1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG.
2. 24VDC @ 2.0 AMPS MAX. SUPERVISED, POWER LIMITED. 100 OHMS LINE IMPEDANCE MAXIMUM.
3. THE INITIATOR RELEASING CIRCUIT IS CAPABLE OF FIRING UP TO 6 IRM'S. A 2.7K E.O.L. PROVIDED WITH MODULE IS REQUIRED FOR USE WITH IRM'S.

ADM INTERFACE
P/N: 55-052 RELEASING CONTROL MODULE N.T.S.



1. MAXIMUM WIRE SIZE FOR TERMINALS IS #14 AWG.
2. THE INPUT CIRCUIT IS INTENDED FOR USE WITH ANY LISTED/APPROVED CONTACT CLOSURE TYPE DEVICE. NORMALLY OPEN CONTACTS ONLY. 100 ohm MAX LINE IMPEDANCE, POWER LIMITED, SUPERVISED. 2500' MAX LENGTH.
3. FOR PROPER SUPERVISION, 39K EOL RESISTOR MUST BE INSTALLED AT MONITORED DEVICE.

AIM INTERFACE
P/N: 55-041 MONITOR MODULE N.T.S.



THE MAINTENANCE OVERRIDE KEY SWITCH IS A DISCONNECTING MEANS TO ACTUATION CIRCUITS TO PREVENT AN ACCIDENTAL DISCHARGE.
- GREEN LED = SYSTEM ARMED (THE KEY CAN ONLY BE REMOVED IN THIS POSITION)
- AMBER LED = SYSTEM OVERRIDE (WHEN KEY SWITCH IS TURNED, THE KEY CANNOT BE REMOVED)

INSTALLATION:
- SURFACE MOUNTED TO DEEP 2 GANG BOX
- FLUSH MOUNTED W/ 2 GANG PLASTER RING
- OPERATES ON 24VDC

LED RATING:
- 10MA EA.

PROVIDED WITH MALE AND FEMALE INSULATED DISCONNECT TERMINAL ON 24VDC

1. AGENT RELEASE CKT. FROM CONTROL PANEL OR ADDRESSABLE RELEASING MODULE.
2. TO CYLINDER RELEASING DEVICE
3. MAINTENANCE SWITCH SUPERVISORY CKT. FROM RELEASING PANEL OR ADDRESSABLE MODULE.
4. 24VDC FROM RELEASING PANEL

KEY DISABLE MAINTENANCE BY-PASS SWITCH
N.T.S.

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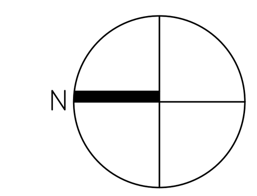
LICENSED FIRE PROTECTION CONTRACTOR
Classification C-16 C-10
LICENSE No. 592289
STATE OF CALIFORNIA

REX Engineering Group
2501 Davidson Drive, 2nd Floor
Monterey Park, CA 91754
t: 323.262.9199 f: 323.262.9198
e: main@rexeg.com w: rexeg.com



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1	SCHEMATIC DESIGN	1/25/19
	PROGRESS SET	2/27/19
	60% DD	3/07/19
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	100% CD	9/18/19

Metro Transportation Library Relocation

MTA Building
One Gateway Plaza
785 N. Vignes Street
Los Angeles, CA 90012

TITLE
FIRE PROTECTION PLAN

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1818
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FP2.05

GENERAL PIPING NOTES:

1. PIPING DIMENSIONS ON THE PIPING ISO'S AND FLOOR PLANS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY PIPE INSTALLER. IF THE PIPE LENGTHS CHANGE BY MORE THAN 1'-0", FITTINGS ARE ADDED TO THE SYSTEM OR AN ADJUSTMENT IN THE INSTALLATION FEE IS MADE, THE PIPING CONTRACTOR SHALL BE RESPONSIBLE FOR COMMUNICATING CHANGES TO FPS IN WRITING.

2. ALL PIPING SHALL BE SCHEDULE 40 SEAMLESS A-53 GRADE A, ERW A -53 GRADE B, SEAMLESS A-106 GRADE A, B, OR C; DUCTILE OR FORGED STEEL AS REQUIRED IN THE CURRENT NFPA STANDARD 2001. THE USE OF COPPER TUBING, NON-FERROUS PIPE OR CAST IRON PIPING IS NOT ACCEPTABLE.

3. ACCEPTABLE PIPE JOINT METHODS INCLUDE THREADED, WELDED, FLANGED AND ROLL/CUT-GROOVE FITTINGS.

4. ALL PIPE SIZE REDUCTIONS ARE TO BE MADE USING CONCENTRIC REDUCING FITTINGS. REDUCING BUSHINGS AND FITTINGS WITH REDUCING "PLATES" ARE NOT ACCEPTABLE.

5. PER NFPA 2001 CURRENT EDITION SECTION 2-2.3 AND MANUFACTURER'S RECOMMENDATIONS CLASS 300 WSP MALLEABLE OR DUCTILE IRON FITTINGS ARE ACCEPTABLE THROUGH 3" NPT. 1000 LB. DUCTILE OR FORGED STEEL FITTINGS ARE REQUIRED FOR SIZES GREATER THAN 3" NPT. CLASS 300 FLANGED JOINTS ARE ACCEPTABLE FOR ALL PIPE SIZES. ROLL/CUT-GROOVE FITTINGS THAT ARE RATED FOR A MINIMUM OF 500 PSI JOINT WORKING PRESSURE OR HIGHER ARE ACCEPTABLE.

6. PIPE DOPE SHALL BE USED ON ALL THREADED PIPE CONNECTIONS. ALL PIPE DOPE, TAPE OR THREAD LUBRICANT SHALL BE APPLIED TO THE MALE THREADS OF THE JOINT ONLY.

7. ALL PIPING SHALL BE THOROUGHLY CLEANED WITH A SUITABLE CLEANING SOLVENT SUCH AS TRICHLORETHANE, FREON TF, ACETONE, OR EQUIVALENT AFTER CUTTING AND THREADING.

8. ALL PIPE SHALL BE SECURELY SWAYED BRACED TO THE BUILDING USING RIGID PIPE HANGERS, BRACES AND SUPPORTS. THE PIPE SYSTEM SHALL BE FREE FROM ANY LATERAL OR VERTICAL MOVEMENT DURING SYSTEM DISCHARGE. SPECIAL ATTENTION SHALL BE PAID TO ALL CHANGES OF PIPE DIRECTION.

9. ALL PIPE AND BRACING INSTALLATIONS ARE TO BE DONE IN ACCORDANCE WITH THE CURRENT NFPA STANDARD 2001 AND ANSI B31.1 POWER PIPING CODE.

10. DISCHARGE NOZZLES SHALL NOT BE ORDERED OR INSTALLED UNTIL "AS BUILT" CALCULATIONS HAVE BEEN PERFORMED FOR EACH PIPE SYSTEM.

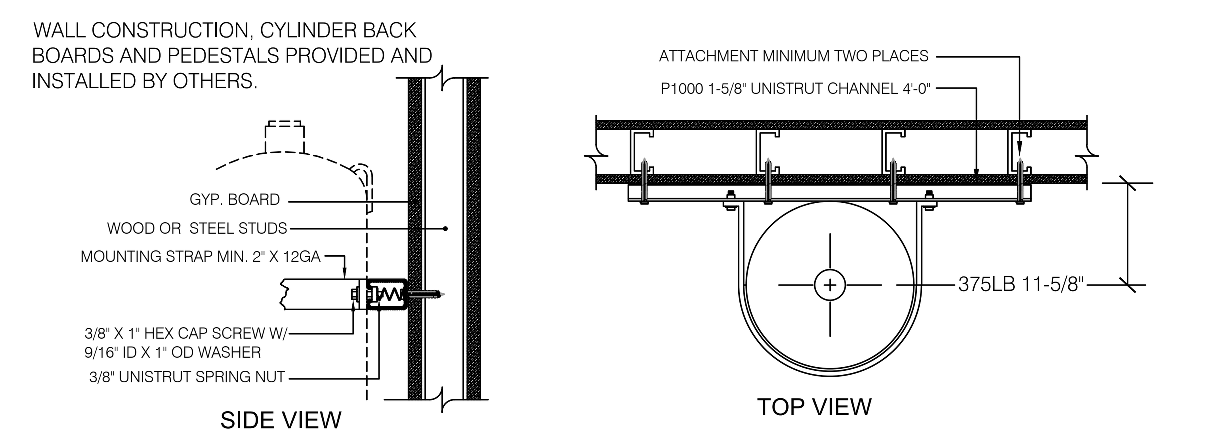
11. ADDITIONAL PEDESTALS TO BE INSTALLED UNDER STORAGE CYLINDERS WHERE CYLINDERS ARE LOCATED IN SUBFLOOR AREAS.

12. ADDITIONAL STRUCTURAL REINFORCEMENT MAY BE REQUIRED BY LOCAL AHJ FOR SEISMIC FACTORS. TYPICAL REINFORCEMENT METHODS INCLUDE ADDITIONAL ROD IRON WITHIN WALL BEHIND CYLINDERS AND 1/2" FIRE RATED PLYWOOD. ANY ADDITIONAL REINFORCEMENT SHALL BE PROVIDED AND INSTALLED BY OTHERS.

PIPE BRACING

N.T.S.

CYLINDER ATTACHMENT TO METAL / WOOD STUD



SIDE VIEW

TOP VIEW

BRACING DATA

MAXIMUM DISTANCE BETWEEN HANGERS							
PIPE SIZE	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
DISTANCE	7-0	7-0	7-0	9'-0	10'-0	11'-0	12'-0

HARDWARE				
UNISTRUT 1-5/8"		BEAM SPAN	UNIFORM BEAM LOAD & DEFLECTION X- AXIS	UNIFORM BEAM LOAD & DEFLECTION Y- AXIS
		30"	1,350 lbs.	2,107 lbs.
		36"	1,125 lbs.	1,756 lbs.
		48"	855 lbs.	1,317 lbs.
SPRING NUT		PULLOUT	SLIP RESISTANCE	TORQUE
	3/8"	1100 lbs.	800 lbs.	19 ft.lbs
	1/2"	2000 lbs.	1500 lbs.	50 ft.lbs
ROD		DESIGN LOAD		
	3/8"	610 lbs.		
	1/2"	1,130 lbs.		

FASTENERS

WEDGE ANCHOR 3/8" / 1/2" X 3-3/4" (CONCRETE)
PULLOUT fc=3000 PSI : 1460 Lbs.
SHEAR fc= 3000 PSI : 2130 Lbs
TENSION: 6,500 lbs

LAG SCREW 3/8" X 1-1/2" (WOOD)

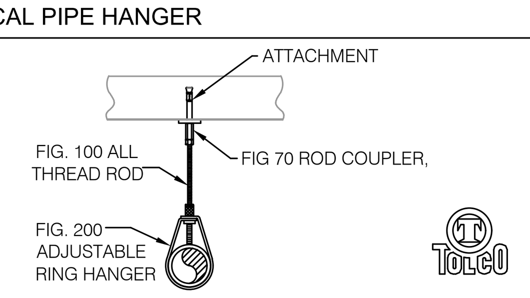
#12 OR #14 SELF TAPPING SCREW 1/4" X 2" (METAL)

NOTES:

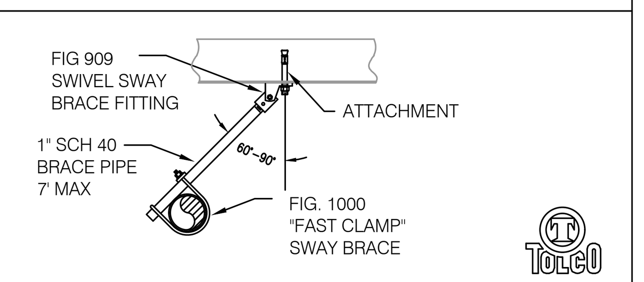
1) MAXIMUM DISTANCE BETWEEN HANGERS AND ROD SIZES ARE PER MANUFACTURE SYSTEM GUIDELINES, AND ARE MORE STRENGTHEN THAN THOSE SET FORTH IN NFPA 13.

2) RIGID PIPE SUPPORTS ARE REQUIRED TO SUPPORT THE "LIVE LOAD" OF THE PIPE SYSTEM DURING DISCHARGE. RIGID BRACING IS REQUIRED AT EACH DIRECTIONAL CHANGE, FITTING, TEE AND NOZZLE. ALL DROPS TO 180° NOZZLES REQUIRE BACK BRACING IN THE OPPOSITE DIRECTION OF THE DISCHARGE.

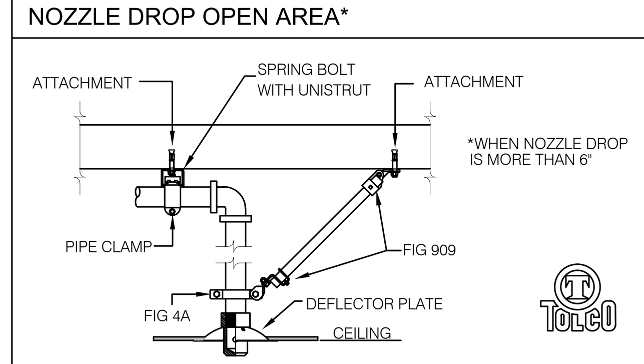
VERTICAL PIPE HANGER



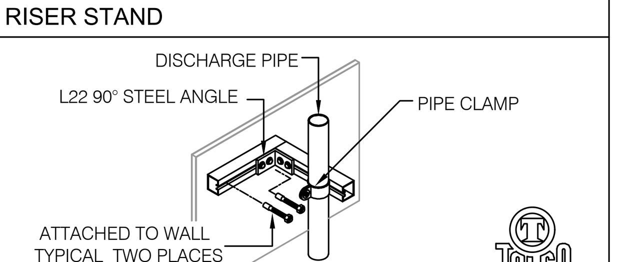
LATERAL SWAY BRACE

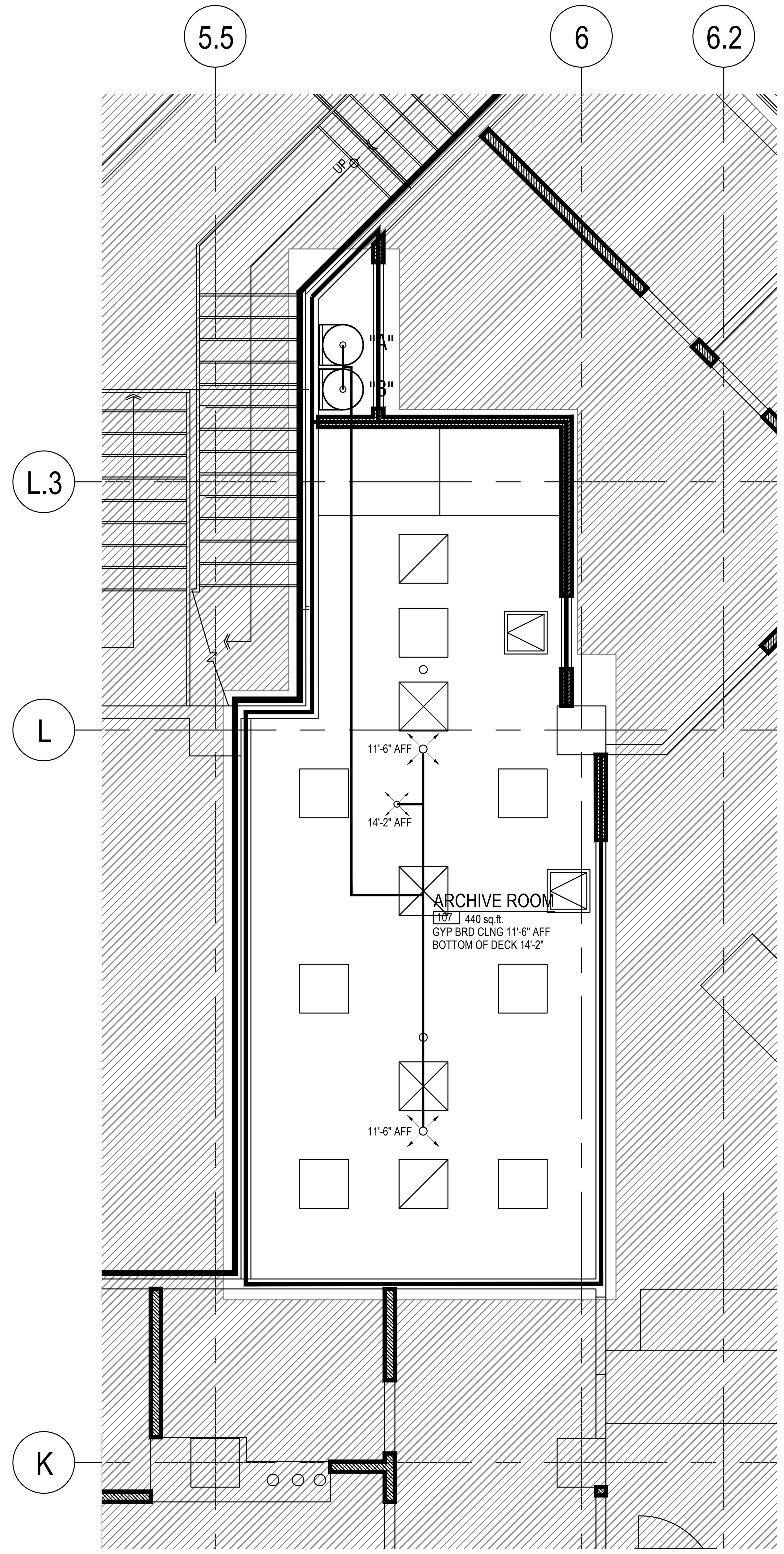


NOZZLE DROP OPEN AREA*



RISER STAND





NOTES:

1) ROOM DIMENSIONS SHALL BE VERIFIED IN THE FIELD. COORDINATE ANY DEVIATION WITH FPS.

2) PIPING SHOWN IS FOR CONCEPTUAL PURPOSES ONLY TO REFLECT GENERAL ROUTING. REFER TO PIPING ISOMETRIC FOR ACTUAL CONFIGURATION.

3) ANY ADDITIONAL FITTINGS, LENGTH OF PIPES, NOZZLE RELOCATION, OR CYLINDER RELOCATIONS SHALL BE COORDINATED WITH FPS PRIOR TO INSTALLATION.

FIRE SUPPRESSION PIPING FLOOR PLAN

SCALE: 1/4" = 1'-0"

0 1 2 3 4 5 10

PRESSURE VENTING DESIGN DATA

ZONE	ENCLOSURE STRENGTH LIMIT (lbs/sq.ft.)	DISCHARGE MAXIMUM POSITIVE PRESSURE (lbs/sq.ft.)	DISCHARGE MAXIMUM NEGATIVE PRESSURE (lbs/sq.ft.)	ESTIMATED OUT FLOW EQUIVALENT LEAK AREA ELA (sq.in.)	*ACTUAL OUTFLOW EQUIVALENT LEAK AREA ELA (sq.in.)	ESTIMATED INFLOW EQUIVALENT LEAK AREA ELA (sq.in.)	*ACTUAL INFLOW EQUIVALENT LEAK AREA ELA (sq.in.)
ARCHIVE ROOM 107	5	10	10	60		58	
ARCHIVE ROOM 107 (ABOVE CEILING)	5	10	10	14		14	

1) THE PROTECTED AREA MUST MEET THE ELA (EQUIVALENT LEAK AREA) VALUE AS INDICATED ABOVE. IF THE ELA VALUE IS LESS THAN THE MINIMUM VENTING REQUIREMENT, ADDITIONAL VENTING SHALL BE PROVIDED. DOOR FAN TESTING SHALL BE CONDUCTED AND THE ACTUAL ELA VALUES SHALL BE SHOWN ON THIS PLAN TO CONFIRM THAT THE VENTING REQUIREMENTS ARE MET.

2) THE DISCHARGE MAXIMUM POSITIVE AND NEGATIVE PRESSURE LIMITS ARE THE ANTICIPATED PEAK PRESSURES THAT WILL OCCUR IN THE EVENT OF A DISCHARGE.

3) THE PRESSURE VENTING ANALYSIS IS BASED ON A MAXIMUM ENCLOSURE STRENGTH LIMIT OF 5 LBS PER SQUARE FOOT (239pa) AT 38% RELATIVE HUMIDITY. THE DISCHARGE MAXIMUM POSITIVE AND NEGATIVE PRESSURES ARE CONSTANTS PER THE SPECIFIED CLEAN AGENT. THE ESTIMATED ELA VALUES INDICATE THE VENTING REQUIRED TO PREVENT THE PRESSURE WITHIN THE ENCLOSURE(S) FROM EXCEEDING THE ENCLOSURE STRENGTH LIMIT.

4) *ACTUAL VALUE SHALL BE SHOWN AS-BUILTS BASED FROM THE RESULTS OF REQUIRED DOOR FAN OR DISCHARGE TESTS.

5) WORST CASE PRESSURE VENTING REQUIREMENT CALCULATIONS PROVIDED. SIZE OF PRESSURE VENTING RECOMMENDATION IS BASED UPON A COMPLETELY SEALED ENCLOSURE. DOOR FAN TESTING MAY SHOW A DIFFERENT REQUIRED VENT SIZE. FPS RECOMMENDS INSTALLING VENTING BASED UPON WORST CASE REQUIREMENTS TO ENSURE ENCLOSURE STRUCTURAL INTEGRITY. ALL VENTING TO BE PROVIDED BY GENERAL CONTRACTOR, OWNER OR MECHANICAL CONTRACTOR.

HFC-125 DESIGN DATA CHART

CHF_2CF_3

AREA VOLUME X 9% (.0312 PER NFPA 2001) = AGENT REQUIRED
AMDC = ADJUSTED MINIMUM DESIGN CONCENTRATION
FDC = FINAL DESIGN CONCENTRATION

ROOM NAME	ZONE	STORAGE CYLINDER	PROTECTED HEIGHT	AREA SQ.FT.	VOLUME CU.FT.	TEMP.	CONCENTRATION (AMDC)	AGENT REQUIRED	ELEVATION CORRECTION	AGENT SUPPLIED	CONCENTRATION (FDC)
ARCHIVE ROOM 107 CELING	1	A/B	11'-6"	440	5060	70°	9%	157.8	NA	158.8	9.04%
ARCHIVE ROOM 107 ABOVE CEILING	1	A/B	2'-8"	440	1173	70°	9%	36.6	NA	37.2	9.13%
			TOTALS	440	6233	70°	9%	194.4	NA	196.0	

LEGEND / EQUIPMENT LIST

ITEM	FIKE P/N	QTY	DESCRIPTION
A	70-269-W	2	375LB STORAGE CYLINDER WITH 196 LBS OF HFC-125 AGENT AND CONTAINER BRACKET
201	80-079-2340	1	360° DISCHARGE NOZZLE (3/4")
101	80-080-3160	1	360° DISCHARGE NOZZLE (1") W/ DEFLECTOR PLATE
102	80-080-3990	1	360° DISCHARGE NOZZLE (1") W/ DEFLECTOR PLATE
	80-106	2	3/4" & 1" NOZZLE DEFLECTOR PLATE
	02-14028	2	3/4" & 1" RETAINER RING
DP	02-12534	1	DISCHARGE PRESSURE SWITCH
LP	02-12533	2	LOW PRESSURE SWITCH
	70-317	2	3" CHECK VALVE

PROVIDED BY:

FPS
Specialists in Fire Systems
1150 W. Central Ave Suite "D", Brea, CA 92821
T: 714-257-2244 www.fpsys.com

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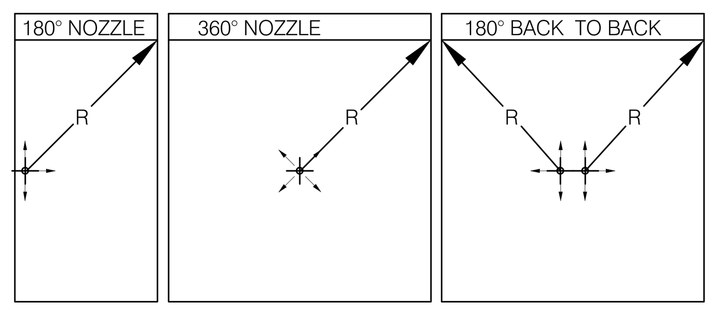
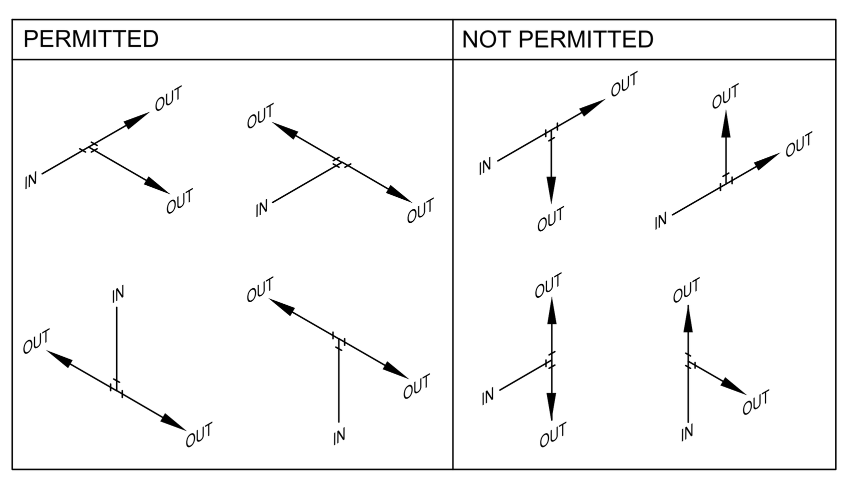
NOZZLE COVERAGE
N.T.S.



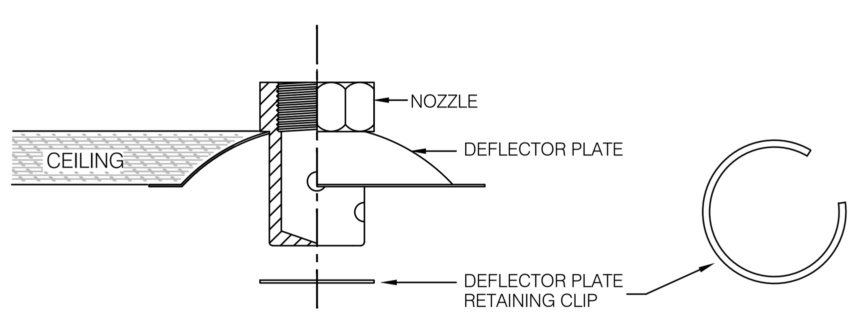
NOZZLE	SIZE	DIMENSION "R"	ENCLOSURE HEIGHT
180°	1/2" - 2"	45'-8"	1'-0" TO 16'
	3/8"	22'-9"	1'-0" TO 16'
360°	1/2" - 2"	29'-8"	1'-0" TO 16'
	3/8"	14'-9"	1'-0" TO 16'

TEE ORIENTATION NOTES

TEE ORIENTATION FIKE ENGINEERED SYSTEMS HAVE BEEN TESTED TO DEFINE THE LIMITATIONS NECESSARY TO ACCURATELY PREDICT HOW THE SYSTEM WILL PERFORM WHEN DISCHARGED. THE TEE ORIENTATION IS AN IMPORTANT CHARACTERISTIC IN MAINTAINING CONSISTENCY OF FLOW SPLIT PERCENTAGES. THEREFORE, A SIMPLE RULE MUST BE OBSERVED CONCERNING TEE ORIENTATION: EVERY OUTLET OF EVERY TEE MUST BE ORIENTATED IN THE HORIZONTAL PLANE.



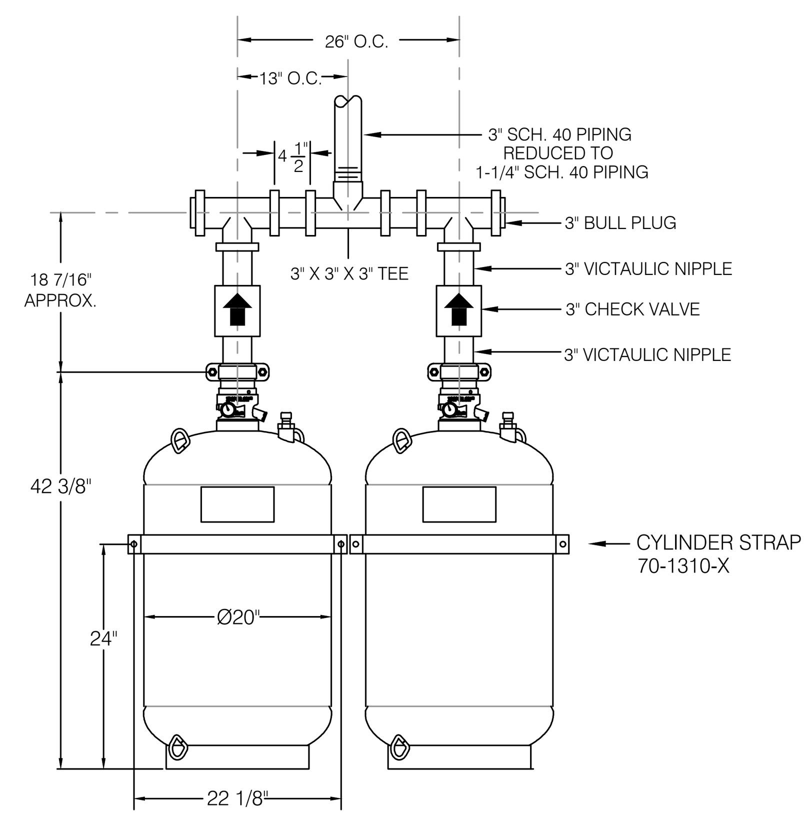
BRASS NOZZLE W/ DEFLECTOR PLATE
N.T.S.



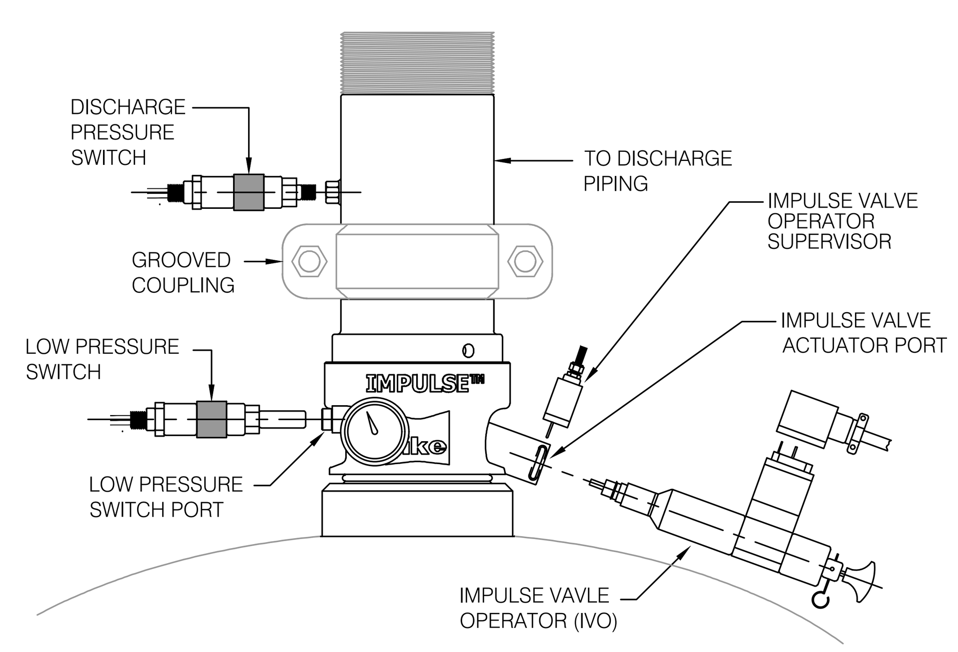
THE FUNCTION OF THE FIKE DEFLECTOR PLATE, IN A FIRE EXTINGUISHING SYSTEM, IS TO AID IN THE QUICK AND EFFECTIVE DISTRIBUTION OF CLEAN AGENT, INTO ANY HAZARD AREA, WITHOUT DAMAGE TO CEILING TILES. DEFLECTOR PLATES ARE NOT NECESSARY FOR HARD CAP CEILINGS OR SUBFLOORS.

DEFLECTOR PLATE	NOZZLE SIZE	DIMENSION			
		A	B	C	D
80-105	1/2"	3/4"	4-1/4"	5/8"	2-3/4"
80-106	3/4",1"	1"	6"	3/4"	5"
80-107	1-1/4",1-1/2",2"	1-3/8"	8"	1"	6-1/4"

DRILLED ORIFICES FOR ENGINEERED NOZZLES			
ECARO -125	ECARO-125	HFC-227EA	HFC-227EA
360°	180°	360°	180°
12 ORIFICES	11 ORIFICES	6 ORIFICES	7 ORIFICES

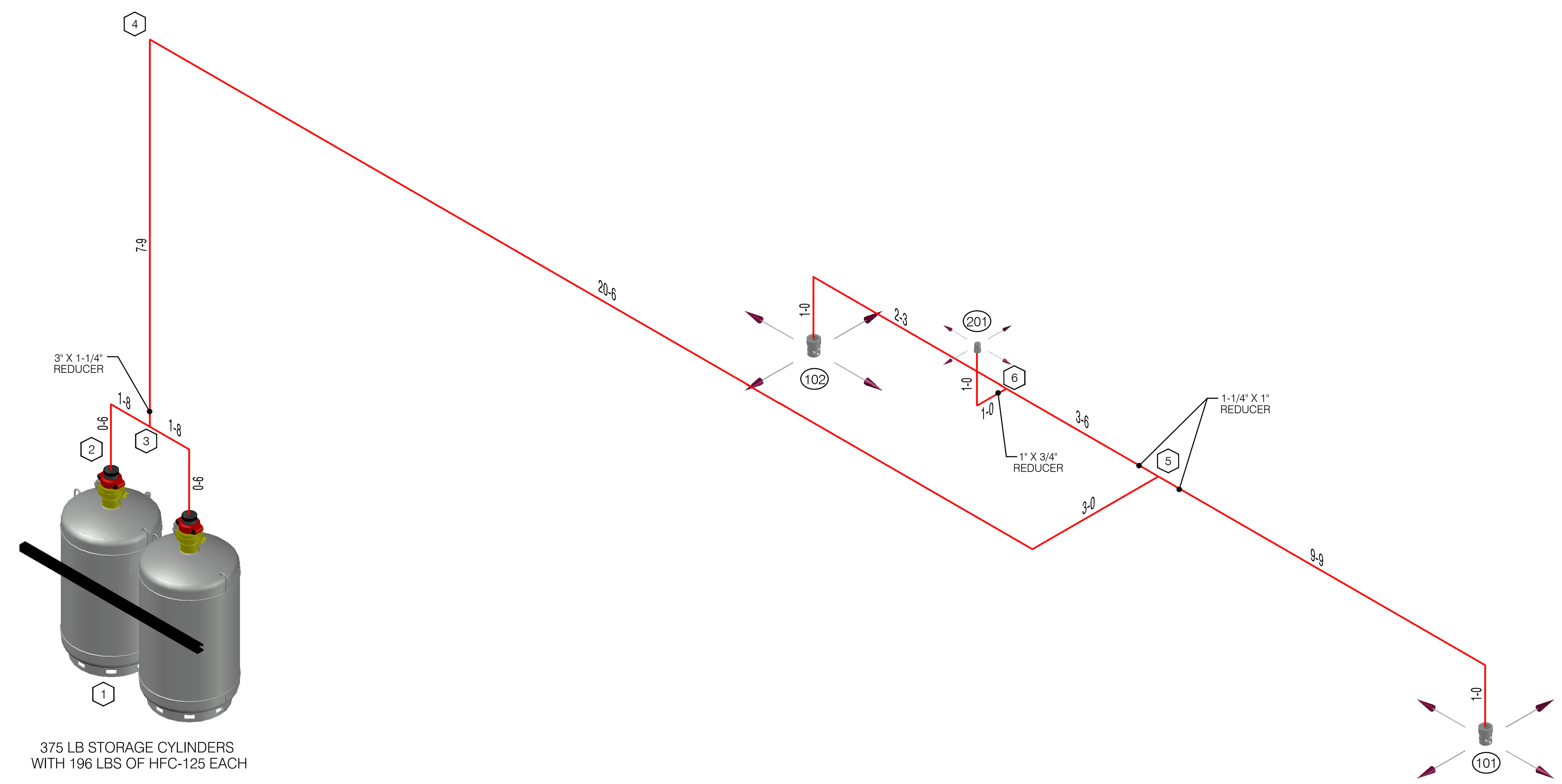


375 LB. STORAGE CYLINDER
70-269-W
N.T.S.



NOTE: NOT ALL DEVICES SHOWN MAY BE INCLUDED WITH THIS PROJECT

IMPULSE VALVE
N.T.S.



Start	End	Length	Elevation	Select Pipe Dia	Select Pipe Sch	90°	Thru	Side	Union	Equ Length	Cyl	Nozz Type	Select Agent	Select Orifice
1	2	3.62 ft	3.62 ft	3 in	SCH 40 T					31.29 ft	1			
2	3	2.17 ft	0.50 ft	3 in	SCH 40 T	1					1			
3	4	7.75 ft	7.75 ft	1-1/4 in	SCH 40 T			1			1			
4	5	23.50 ft		1-1/4 in	SCH 40 T	2								
5	6	3.50 ft		1 in	SCH 40 T			1						
5	101	8.50 ft	-1.00 ft	1 in	SCH 40 T	1		1				360	79.5 lbs	0.3160 in
6	102	5.00 ft	-1.00 ft	1 in	SCH 40 T	1	1					360	79.5 lbs	0.3390 in
6	201	2.00 ft	1.00 ft	3/4 in	SCH 40 T	1		1				360	37.0 lbs	0.2340 in

NOTES:

1) ALL DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.

2) REFER TO PRODUCT SUBMITTAL FOR PIPING FLOW CALCULATIONS.

3) ADDITIONAL FITTINGS, LENGTH OF PIPES, NOZZLE RELOCATION, OR CYLINDER RELOCATIONS SHALL BE COORDINATED WITH FPS PRIOR TO INSTALLATION.

FIRE SUPPRESSION PIPING ISOMETRIC
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