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**ROGERS MS CENTRAL KITCHEN
A#03-124869
ADDENDUM 1 NARRATIVE**



GENERAL

- 1. G-001 COVER SHEET**
a) Revised Scope of Work.

MECHANICAL:

- 2. M001 MECHANICAL FRONT SHEET**
- a) Revised Mechanical Notes - Scope of Work Note #2.
 - b) Removed "Architectural" from Mechanical Notes - Coordination Notes #2, #6 and #8.
 - c) Added Mechanical Notes - Coordination Note #11.
 - d) Removed "and Architect of Record" from Mechanical Notes – Codes and Permits.
 - e) Removed "Architects" from Mechanical Notes – Substitutions #1.
 - f) Added language in Mechanical Notes – Substitutions #1
 - g) Renumbered #2 through #6 on Mechanical Notes - Substitutions.
 - h) Revised number #3 and #5 on Mechanical Notes – Substitutions to remove language referencing "Architect" and replacing it with "Engineer or Owner".
 - i) Revised Mechanical Notes – Equipment #4 to change Architectural "Drawings" to be Architectural "As-Builts".
 - j) Added Mechanical Notes – Final Tests note #4.
 - k) Revised General Notes list to include commissioning and to remove "Architect".
 - l) Revised Scope of Work to remove the Storage area.
- 3. M-002 MECHANICAL LEGEND AND ABBREVIATIONS**
- a) Added detail 1 for VRF Wiring Diagrams.
 - b) Added Exhaust Fan Schedule.
 - c) Revised notes on Supply/Transfer Grille Sizes.
- 4. M-003 MECHANICAL SCHEDULES**
- a) Removed FC-4, 7, 10 & 11 from VRF Fan Coil Schedule.
 - b) Added note #13 to VRF Fan Coil Schedule.
 - c) Revised selections for all remaining Fan Coils on VRF Fan Coil Schedule.
 - d) Revised selections for VRF Condensing Unit Schedule and removed CU-3.
 - e) Added note #7 to VRF Condensing Unit Schedule.
 - f) Added ASHRAE 15 – A2L Refrigerant Concentration Limit Calculation.
- 5. M-201 MECHANICAL FIRST FLOOR PLAN**
- a) Added Remodel Keynotes 13, 14 and 15.
 - b) Relocated outdoor CU units so they aren't underneath the existing overhang.
 - c) Revised refrigerant piping routing.
 - d) Added note to not penetrate existing exterior stucco overhang or existing exterior stucco walls.
 - e) Removed FC-4, 7, 10 & 11 and associated tstats & refrigerant piping.
 - f) Removed supply air to Workroom 104, Storage 112 and Storage 109.
 - g) Reduced amount of thermostats in the Serving Lines and Kitchen.
 - h) Relocated Electrical equipment shown for reference and coordination purposes.

6. **MP-301 MECHANICAL FIRST FLOOR CONDENSATE PLAN**

- a. Added General Note 'B'.
- b. Revised Remodel Keynotes #1 and #3. Removed Remodel Keynotes #4, #5 and #6 and indicated them as "Not Used".
- c. Revised location of outdoor CU units and method of drainage. Removed underground vents that were serving the CU's.
- d. Clarified Pumped Condensate (PCD) locations.
- e. Clarified routing of gravity drained condensate to the existing floor sinks in Kitchen 101.

7. **M-402 MECHANICAL DETAILS SHEET**

- a) Revised Detail 1 – FCU Condensate Removal Detail so the CD slope is revised and clarified the condensate pump.
- b) Revised Detail 3 to remove language referencing "Architect".
- c) Added Detail 4 - Condensate Drain to (E) Lav or Mop Sink.
- d) Revised Detail 6 - Outdoor Unit – CD Connection Detail so the draining method is simplified.
- e) Revised Detail 7 – Outdoor Unit Mounting Detail so the galvanized sheet metal pan is mounted directly to the concrete pad. Added note for scarification and clarified the drain pan and anchorage method.

8. **M-403 MECHANICAL DETAILS SHEET**

- a) Revised Detail 2 – Wall Piping Riser Diagram to clarify the spacing between the pipes.
- b) Revised Detail 5 – Split System Installation Detail to remove sheet metal cap and to remove the "slope towards drain" language for the sheet metal pan. Added note to clarify condensate pump.
- c) Revised Detail 6 – Condensate Drainage Drywell to add language for "Traffic Rated".

9. **M-404 MECHANICAL DETAILS SHEET**

- a) Added Detail 2 – Fan Coil Condensate Connection Detail to indicate the condensate drainage for gravity draining the fan coils.
- b) Added Detail 3 – Piping Through Roof Detail for refrigerant piping through the roof.
- c) Added Detail 4 – Roof Mounted Exhaust Fan Detail for new exhaust fan 118 that will be placed where the existing relief vent hood is currently located – note that existing curb shall remain.

10. **M-405 MECHANICAL PIPING DIAGRAM**

- a) Revised refrigerant piping diagram.

11. **M-501 MECHANICAL TITLE-24**

- a) Revised T-24 calculations.

12. **M-502 MECHANICAL TITLE-24**

- a) Revised T-24 calculations.

ELECTRICAL:

1. **E-001 ELECTRICAL FRONT SHEET**

- a) Revised note #19 on General Notes.
- b) Revised note #34 on General Notes to remove "General".
- c) On General Notes List pertaining to Acceptance Testing, removed "Architect".

2. **E-003 ELECTRICAL PANEL SCHEDULES**

- a) Revised all panels on this sheet. Also revised the Load Calculation.

3. E-102 ELECTRICAL ENLARGED SITE PLAN

- a) Revised location of 3" conduit drop through the roof into Serving Line 2 to feed Panel 'HK'.
- b) Revised conduit to be EMT conduit.

4. E-103 ELECTRICAL POWER FLOOR PLAN

- a) Revised location of Panel 'HK'.
- b) Added note to not penetrate existing exterior stucco overhang or existing exterior stucco walls.
- c) Relocated Transformer "TR-HK".
- d) Relocated weather-proof exterior power outlet.
- e) Revised location of Panel 'LK'.
- f) Relocated disconnects for CU's to be directly mounted to the CU's.
- g) Removed tstats per Mechanical drawings.
- h) Removed power for FC-4, 7, 10 & 11 and CU-3.
- i) Added power for EF-118. Added Keynote #13.
- j) Added Keynotes #11 and #12.
- k) Revised Keynotes #4 and #5.

CHANGES TO SPECIFICATIONS

Revised items in the following sections are indicated as follows: Items to be deleted are indicated by ~~strikeout~~
Items to be added are indicated in **bold**

1. Table of Contents

- a. Delete Table of Contents in its entirety and replace it with revised Table of Contents issued with this Addendum.

2. Section 23 80 00 – Heating Ventilating & Air Conditioning Equipment

- a. Delete Section 23 80 00 in its entirety and replace it with revised Section 23 80 00 issued with this Addendum.

3. Section 31 10 00 – Site Clearing

- a. Add Section 31 10 00 in its entirety issued with this Addendum.



WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES

LAWNDALE ELEMENTARY SCHOOL DISTRICT

4110 W 154TH ST, LAWNDALE, CA 90260

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AGENCY

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-124869 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☐
DATE: 12/29/2025

PTN_64691-65 APPL_03-124869

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SHEET INDEX

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G-101 SITE PLAN

MECHANICAL

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MP-301 MECHANICAL FIRST FLOOR CONDENSATE PLAN
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M-404 MECHANICAL DETAILS
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E-103 ELECTRICAL POWER FLOOR PLAN
E-301 ELECTRICAL DETAILS

SHEET COUNT: 22 PAGES

PROJECT DATA

SCOPE OF WORK

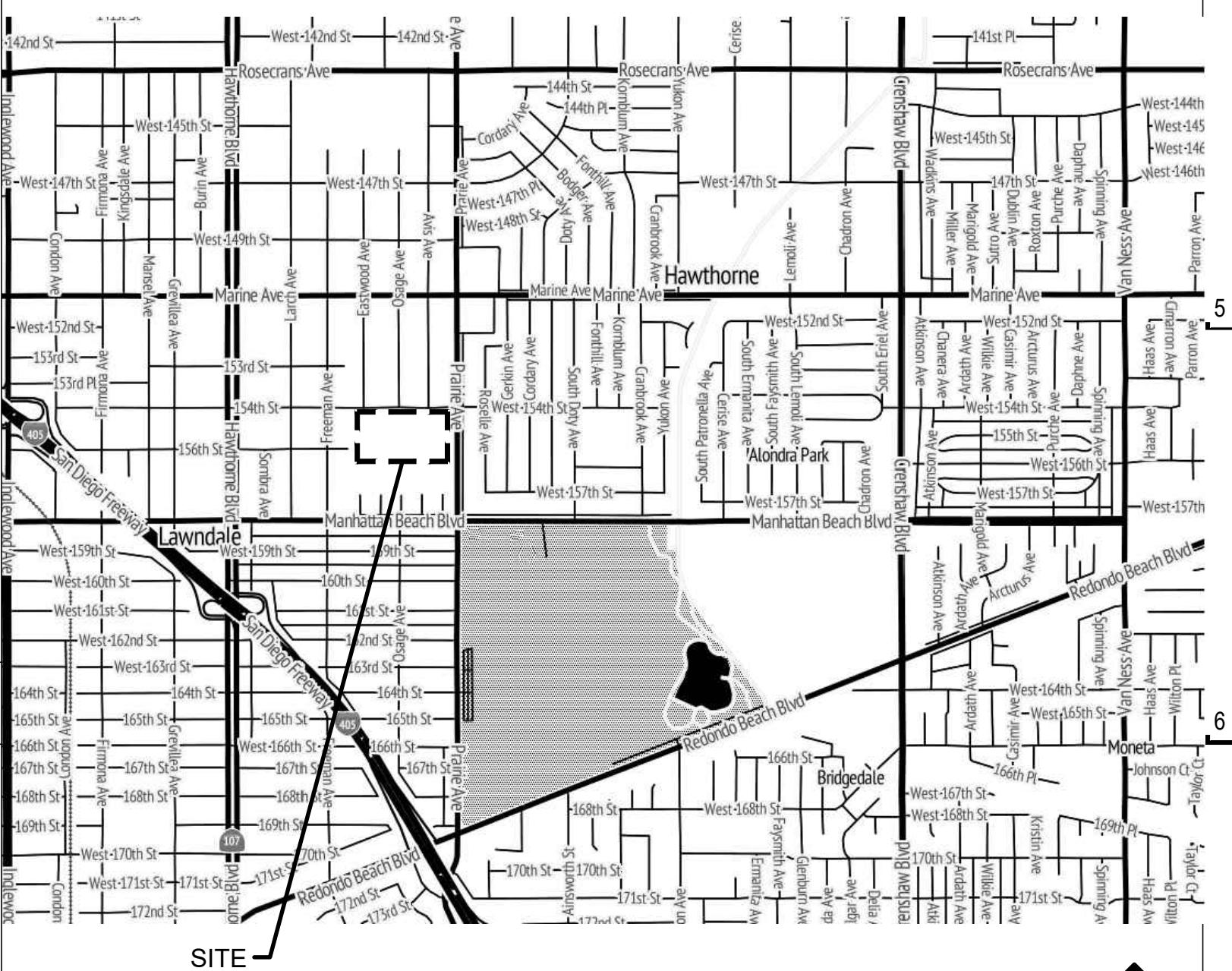
PROJECT SCOPE OF WORK IS TO PROVIDE
SUPPLEMENTAL HVAC TO PROVIDE COOLING IN THE
EXISTING FOLLOWING AREAS:

- KITCHEN 101
- SERVING LINE 103 & 106
- OFFICE 118

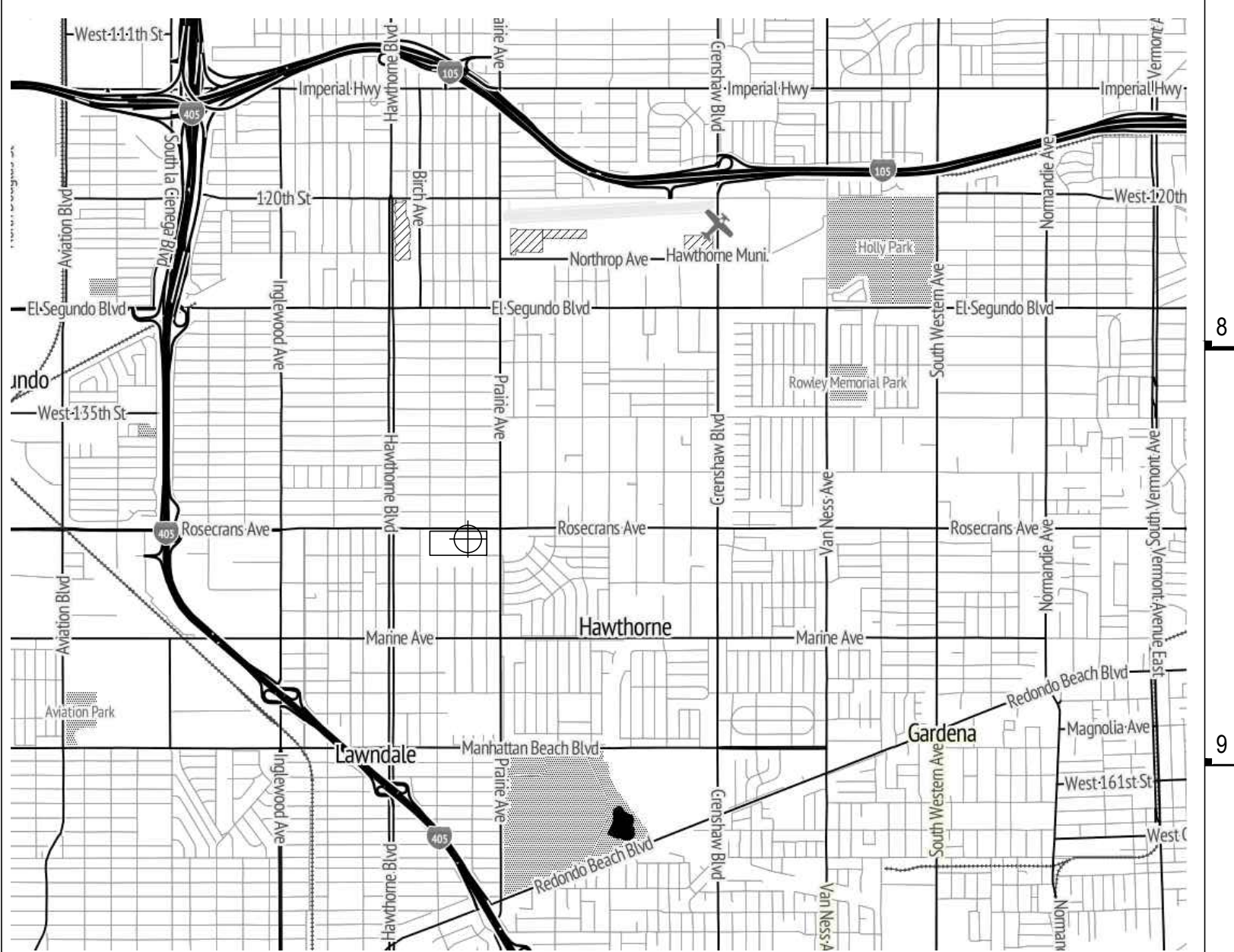
SITE SPECIFIC STRUCTURAL DESIGN CRITERIA

SEISMIC:

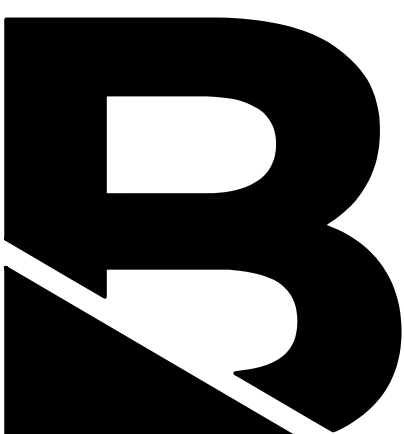
EQUIVALENT LATERAL FORCE FOR EQUIPMENT ANCHORAGE
SITE CLASS = D-DEFAULT
Ss = 1.8, Fa = 1.2, Sds = 1.44, Ip = 1.0
Fp = 0.43 Wp FOR GROUND MOUNTED CONDENSER WITH Ap = 1.0, Rp = 2.5
WIND:
95 MPH EXPOSURE C



VICINITY MAP



LOCATION MAP



An MBE/DBE/DBFV Firm
Glendale/Downtown LA/Fremont/Camarillo
W W W . B U D L O N G . C O M
JOB# - 24-025

AS REVISED
ADDENDUM 1
DSA #03-124869

LES WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWNDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWNDALE, CA 90260

JOB 24-025
SCALE AS NOTED
PM
DATE 01/22/2025
ADDENDUM 1 - 11/13/2025

COVER SHEET

G-001

MECHANICAL NOTES

SCOPE OF WORK

1. THE WORK INCLUDED UNDER THIS SECTION CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR, AND THE PERFORMING OF ALL FUNCTIONS, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS TO BE PERFORMED BY OTHERS, AND FOR THE INSTALLATION OF ALL HEATING AND COOLING EQUIPMENT, PIPING AND ALL DUCTWORK, GRILLES, REGISTERS, ETC., INCLUDING ALL CONNECTIONS TO EACH SYSTEM AS SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS. IT SHALL FURTHER INCLUDE FURNISHING AND INSTALLING ALL MISCELLANEOUS ITEMS REQUIRED FOR THE OPERATION OF THE SYSTEM, WHETHER SPECIFICALLY CALLED OUT OR NOT.
2. SPECIAL INSPECTIONS: BY OWNER. DISTRICT TO FURNISH SPECIAL INSPECTIONS

COORDINATION

1. CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW APPROXIMATE LOCATIONS. COORDINATE WORK WITH ALL TRADES TO AVOID INTERFERENCE. INSTALLED HVAC WORK WHICH INTERFERES WITH THE WORK OF OTHER TRADES DUE TO LACK OF COORDINATION SHALL BE RE-INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF EQUIPMENT, PARTITIONS, WALLS, AND GENERAL CONSTRUCTION.
3. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR COORDINATING WORK WITH OTHER TRADES AFFECTED BY EACH OTHERS WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL FIELD CONDITIONS WHICH MAY AFFECT HIS WORK BEFORE SUBMITTING BIDS.
5. PERFORMANCE OF ALL WORK SHALL BE SCHEDULED AS APPROVED BY THE OWNER. AVOID INTERFERENCE WITH FUNCTIONS IN OTHER PARTS OF THE FACILITY, AND COORDINATE WITH THE WORK OF OTHER TRADES. SERVICES SHALL NOT BE INTERRUPTED WITHOUT WRITTEN PRIOR APPROVAL OF THE OWNER.
6. NO STRUCTURAL MEMBER SHALL BE CUT WITHOUT PERMISSION FROM THE ARCHITECT AND THE STRUCTURAL ENGINEER.
7. PROTECT EXISTING BUILDING STRUCTURE AND GROUNDS FROM DAMAGE WHICH MAY OCCUR DURING DEMOLITION WORK. ANY DAMAGE TO THE EXISTING FACILITIES SHALL BE REPAIRED, REPLACED, OR RESTORED TO THE ORIGINAL CONDITION AT NO ADDITIONAL COST AND TO THE SATISFACTION OF THE OWNER.
8. SPACE ABOVE CEILINGS IS CRITICAL - THE CONTRACTOR SHALL VERIFY SPACE ABOVE CEILING & COORDINATE WITH PLUMBING, ELECTRICAL, STRUCTURAL, FIRE PROTECTION, ARCHITECTURAL, AND ALL OTHER TRADES INVOLVED BEFORE COMMENCEMENT OF WORK.
9. PATCH & PAINT TO MATCH EXISTING SURROUNDING AREA WHERE DUCTS, PIPES, ETC. PASS THROUGH WALL OR CEILING.
10. INSPECTOR SHALL ENFORCE MATT CERTIFICATION
11. COORDINATE ALL EXTERIOR PENETRATIONS INCLUDING ROOF PENETRATIONS WITH OTHER TRADES TO PROVIDE A COMPLETE AND FULLY WEATHER-PROOF INSTALLATION.

CODES AND PERMITS

1. ALL MATERIALS, EQUIPMENT AND INSTALLATION MUST COMPLY WITH ALL APPLICABLE LAWS, CODES, RULES AND REGULATIONS, REQUIRED BY CITY, COUNTY AND STATE, AS WELL AS FEDERAL REQUIREMENTS.
2. COMBUSTIBLE MATERIALS SHALL NOT BE USED IN A NON-COMBUSTIBLE BUILDING AS DEFINED BY THE BUILDING CODE. COMBUSTIBLE MATERIALS MAY BE PROTECTED AS SPECIFIED BY THE ENGINEER AND ARCHITECT OF RECORD.
3. PERMITS: OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES AND FEES.
4. INSPECTIONS: FURNISH OWNER WITH CERTIFICATE OF INSPECTION AND APPROVAL BY LOCAL AUTHORITIES PRIOR TO FINAL ACCEPTANCE OF THE PROJECT BY THE OWNER. ALL WORK MUST BE INSPECTED.

PRODUCTS

1. ALL PRODUCTS SHALL BE NEW AND UNUSED OF ESTABLISHED AND REPUTABLE AMERICAN MANUFACTURERS. ITEMS OF EQUIPMENT USED FOR THE SAME PURPOSE SHALL BE OF THE SAME MANUFACTURER.
2. SYSTEMS SHALL BE COMPLETE AND OPERABLE. ANY ACCESSORIES REQUIRED FOR THE OPERATION OF THE SYSTEM SHALL BE INCLUDED AS THOUGH SPECIFICALLY INDICATED TO BE PROVIDED. SUCH ACCESSORIES INCLUDE BUT ARE NOT LIMITED TO FILTERS, CONDENSATE DRAINS, RELIEF VALVES, SERVICE VALVES, THERMOSTATS, VIBRATION ISOLATORS, ETC. MOTOR STARTERS FOR PREWIRED EQUIPMENT (AND OTHER PROTECTION AND CONTROL DEVICES) ARE ALSO INCLUDED IN THIS SPECIFICATION.
3. SPECIFIC REFERENCE TO A MANUFACTURER'S PRODUCT IS ONLY TO ESTABLISH TYPE, QUALITY, AND PERFORMANCE REQUIRED. THESE QUALIFICATIONS ARE IN ADDITION TO THE REQUIREMENTS SHOWN ON THE DRAWINGS AND SPECIFICATIONS. LISTING OF ALTERNATE EQUIPMENT MANUFACTURERS SHALL NOT BE CONSTRUED AS AN UNCONDITIONAL APPROVAL OF THE PRODUCTS OF THOSE MANUFACTURERS.
4. ACCEPTABLE HVAC EQUIPMENT MANUFACTURERS: AS SPECIFIED ELSEWHERE IN THESE DOCUMENTS.
5. PROVIDE CLEARANCES AS PER MANUFACTURERS RECOMMENDATIONS.

SUBSTITUTIONS

1. SUBSTITUTIONS OF MATERIALS OR PRODUCTS SHOWN HEREIN SHALL BE BY OWNER, ARCHITECT, OR ENGINEER'S WRITTEN APPROVAL. AND SUBSTITUTIONS MUST BE REQUESTED IN WRITING PRIOR TO SUBMISSION OF BIDS. ANY DEVIATION FROM THESE DRAWINGS WILL NOT BE ALLOWED.
2. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ANY SUBSTITUTIONS AND COSTS OF CHANGES INCURRED BY OTHER TRADES DUE TO THE SUBSTITUTIONS. OTHER TRADES INCLUDE: ELECTRICAL, PLUMBING, STRUCTURAL, ROOFING, OR ANY TRADE EFFECTED BY THE SUBSTITUTION.

GENERAL REQUIREMENTS FOR CONTROLS AND CONTROL WIRING

1. ALL CONTROL EQUIPMENT, INTEGRAL STARTERS, INTERLOCKING STARTERS, SMOKE DETECTORS, RELAYS, TRANSFORMERS, PANELS AND OTHER DEVICES SHOWN, SPECIFIED OR NEEDED FOR A COMPLETE CONTROL SYSTEM ARE TO BE PROVIDED AND INSTALLED UNDER THIS MECHANICAL DIVISION. COMPONENTS AND WIRING NOT SHOWN, BUT REQUIRED FOR THE PROPER OPERATION

- OF EQUIPMENT OR CONTROL SYSTEMS, SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE PROJECT.
2. POWER WIRING, LOW VOLTAGE WIRING AND RACEWAYS RELATED TO CONTROLS SYSTEMS ARE TO BE PROVIDED AND INSTALLED UNDER THIS MECHANICAL DIVISION.
3. INSTALLATION OF ALL EQUIPMENT, DEVICES AND WIRING SHALL CONFORM TO THE NATIONAL ELECTRIC CODE. ALL CONTROLS SHALL BE FURNISHED AND PROPERLY IDENTIFIED WITH INSTRUCTIONS FOR PROPER CONNECTIONS. RESPONSIBILITY FOR PROPER CONNECTIONS AND OPERATION IS INCLUDED UNDER THE MECHANICAL CONTRACTORS RESPONSIBILITY. VERIFY ALL VOLTAGES, PHASES AND ELECTRICAL CONNECTIONS WITH THE ELECTRICAL CONTRACTOR BEFORE ORDERING ANY EQUIPMENT, AND IF DISCREPANCIES OCCUR, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK.
4. ALL TEMPERATURE CONTROLS ARE TO BE TESTED, ADJUSTED, AND CALIBRATED FOR PROPER OPERATION.
5. COORDINATE EXACT THERMOSTAT AND/OR MOUNTING HEIGHT ABOVE FINISHED FLOOR AND FINAL LOCATION WITH THE ENGINEER & OWNER.
6. THERMOSTATS LOCATED ON EXTERIOR WALLS SHALL HAVE AN INSULATED SUB-BASE.

RELIEF VENTS

1. ALL RELIEF VENT EXTERIOR PENETRATIONS SHALL BE PROVIDED WITH COUNTERBALANCED BAROMETRIC BACKDRAFT DAMPERS.

EQUIPMENT

1. ALL MECHANICAL EQUIPMENT SHALL BE PROPERLY LISTED AND LABELED BY AN APPROVED AGENCY.
2. ALL EQUIPMENT SHALL BE LABELED WITH STEEL TAGS EMBOSSED WITH 1/4" HIGH LETTERS, PERMANENTLY ATTACHED. TAG SHALL CLEARLY INDICATE THE AREA SERVED BY THE EQUIPMENT.
3. MAINTAIN MANUFACTURER'S RECOMMENDATIONS FOR ALL REQUIRED SERVICE CLEARANCES AND INSTALLATION OF EQUIPMENT.
4. REFER TO ARCHITECTURAL AS-BUILTS FOR ACCESS TO ROOF INSTALLED MECHANICAL EQUIPMENT. ROOF ACCESS MUST COMPLY WITH THE MECHANICAL CODE ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

CLEANUP

1. REMOVE AS MUCH DIRT, SCRAP MATERIAL AND DEBRIS AS POSSIBLE, AT THE END OF EACH WORKING DAY TO PREVENT HAZARDOUS CONDITIONS AND EXCESS DUST.
2. OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT AND APPURTENANCES TO BE REMOVED. CONTRACTOR SHALL MOVE ALL EQUIPMENT NOT REFUSED BY THE OWNER TO A LOCATION ON SITE DESIGNATED BY THE OWNER. COORDINATE REMOVAL WITH THE OWNER PRIOR TO START OF WORK. EQUIPMENT REFUSED BY THE OWNER SHALL BE PROPERLY DISPOSED OF BY THE CONTRACTOR.

FINAL TESTS

1. AN INDEPENDENT AABC, NEBB OR TABB LIFE SAFETY LEVEL 2 CERTIFIED CONTRACTOR SHALL BALANCE AIR DISTRIBUTION TO VALUES LISTED ON DRAWINGS. A FINAL COPY OF THE TEST AND BALANCE REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE REPORT. A PROJECT SHALL NOT BE CONSIDERED IN COMPLIANCE WITH THE PLANS AND SPECIFICATIONS UNTIL SUCH A REPORT HAS BEEN PROVIDED TO THE ENGINEER.
2. BEFORE ACCEPTANCE AND FINAL PAYMENT, IT SHALL BE DEMONSTRATED THAT ALL APPARATUS IS FUNCTIONING PROPERLY AND EFFICIENTLY. THE CONTRACTOR SHALL MAKE A THOROUGH TEST OF EACH SUPPLY, RETURN, AND EXHAUST SYSTEMS TO ASSURE THAT EACH DIFFUSER AND REGISTER HAS THE PROPER QUANTITY OF AIR IN ACCORDANCE WITH AABC OR NEBB. PROVIDE ADDITIONAL COMFORT BALANCE ADJUSTMENTS PER OWNER/TENANT REQUIREMENTS TO ADDRESS ANY NEEDED VARIATIONS IN DESIGN AIR FLOWS.
3. THE TEST AND BALANCE CONTRACTOR HAS THE RIGHT TO COMMUNICATE ANY INFORMATION TO THE MECHANICAL ENGINEER.
4. MECHANICAL EQUIPMENT COMMISSIONING BY MECHANICAL CONTRACTOR.

GUARANTEE

1. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FROM DEFECT OF WORKMANSHIP, AND SHALL REPLACE OR REPAIR WITHOUT ADDITIONAL COST TO THE OWNER ALL DEFECTIVE MATERIAL AND WORKMANSHIP, FOR A PERIOD OF (1) YEAR AFTER COMPLETION AND ACCEPTANCE.

CLOSEOUT

1. SUBMIT THE SPECIFIED NUMBER OF COPIES OF SHOP DRAWINGS FOR MATERIALS, FIXTURES AND EQUIPMENT. INDICATE MANUFACTURERS, TRADE NAMES, SPECIFIC MODEL NUMBERS, AND TECHNICAL INFORMATION FOR EACH ITEM BEING FURNISHED.
2. ASSEMBLE OPERATION MANUALS FOR EACH ITEM INSTALLED. FURNISH EQUIPMENT CUT SHEET AND CONTROL WIRING DIAGRAMS. SUBMIT COPIES AS DEFINED UNDER GENERAL CONDITIONS.
3. ALL SYSTEMS SHALL BE COMPLETE AND FULLY OPERATIONAL. ACCEPTANCE BY THE OWNER SHALL BE A CONDITION OF THE CONTRACT.
4. ALL MATERIALS, WORKMANSHIP, AND EQUIPMENT SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR AFTER SYSTEM ACCEPTANCE.
5. PROVIDE TYPE WRITTEN OPERATING INSTRUCTIONS AND EQUIPMENT WARRANTIES TO THE OWNERS REPRESENTATIVES.
6. CONTRACTOR SHALL FURNISH RECORD SET DRAWINGS CONSISTING OF REPRODUCIBLE CAD FILES UPON COMPLETION OF WORK FOR OWNER'S USE. MINIMUM SCALE SHALL BE 1/8"= 1'-0". THE COMPLETE SET OF RECORD DOCUMENTS IN SHALL BE IN AN AUTOCAD FORMAT AS REQUIRED BY OWNER, ON COMPACT DISC.
7. CONTRACTOR SHALL MAKE FINAL INSPECTION AND TESTS IN THE PRESENCE OF THE OWNER AND SHALL SUPPLY ALL LABOR, MATERIALS, INSTRUMENTS, AND EQUIPMENT REQUIRED FOR TESTING.

ORDER OF PRECEDENCE OF DOCUMENTS

1. SHOULD A CONFLICT ARISE BETWEEN CONSTRUCTION DOCUMENTS, THE ORDER OF PRECEDENCE SHALL BE:
- 1.1. SPECIAL PROVISIONS
- 1.2. GENERAL PROVISIONS
- 1.3. SPECIFICATIONS
- 1.4. DETAILS ON DRAWINGS
- 1.5. PLAN DRAWINGS
2. THE ENGINEER OF RECORD SHALL BE NOTIFIED BEFORE A DECISION IS MADE.

TITLE 24 NOTES

1. ALL THERMOSTATS SHALL HAVE A DEADBAND BETWEEN HEATING AND COOLING, CAPABLE OF ADJUSTMENT UP TO 10°F.
2. ALL EQUIPMENT DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FIXED IN PLACE IN ACCORDANCE WITH SEISMIC REQUIREMENTS.
3. REQUIRED ROUTINE MAINTENANCE ACTION SHALL BE CLEARLY STATED AND INCORPORATED ON A READILY ACCESSIBLE PERMANENT WEATHERPROOF LABEL. THE LABEL MAY BE LIMITED TO CROSS-REFERENCING THE MAINTENANCE MANUAL IF SUCH MAINTENANCE ACTION IS DESCRIBED THEREIN FOR THE LABELED ITEM.
4. AIR-HANDLING DUCT SYSTEMS SHALL BE CONSTRUCTED, INSTALLED, SEALED, AND INSULATED AS PROVIDED IN THE LATEST EDITION OF THE UNIFORM MECHANICAL CODE CHAPTER 6 OR SMACNA GUIDELINES AS A MINIMUM.
5. ALL EQUIPMENT SHALL CONFORM TO AND BE CERTIFIED IN ACCORDANCE WITH THE APPLICABLE STANDARDS AND THE REQUIREMENTS FOR SUCH DEVICES GIVEN IN THE PLANS AND SPECIFICATIONS APPROVED BY THE LOCAL ENFORCEMENT AGENCY.
6. ALL EQUIPMENT SHALL BE LABELED AS TO FUNCTION AND SPACES SERVED. (SEE SCHEDULE)

POLLUTANT CONTROL

INDOOR AIR QUALITY DURING CONSTRUCTION

TEMPORARY VENTILATION DURING CONSTRUCTION SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING:

1. VENTILATION DURING CONSTRUCTION SHALL BE ACHIEVED THROUGH OPENINGS IN THE BUILDING SHELL USING FANS TO PRODUCE NOT LESS THAN THREE AIR CHANGES PER HOUR.
2. THE SUPPLY AND RETURN HVAC SYSTEM OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST OR DEBRIS THAT CAN COLLECT IN THE SYSTEM.
3. THE BUILDING WILL BE OCCUPIED DURING DEMOLITION AND CONSTRUCTION. VENTILATION SHALL BE PROVIDED IN ACCORDANCE WITH THE CONTROL MEASURES OF THE SMACNA IAQ GUIDELINES FOR OCCUPIED BUILDINGS DURING CONSTRUCTION.
4. THE PERMANENT HVAC SYSTEM SHALL NO BE USED DURING CONSTRUCTION TO CONDITION AND VENTILATE THE BUILDING WITHIN THE REQUIRED TEMPERATURE RANGE FOR MATERIAL AND EQUIPMENT INSTALLATION. WHERE REQUIRED, A SUPPLEMENTAL HVAC SYSTEM SHALL BE USED DURING CONSTRUCTION.

APPLICABLE CODES

CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING PARTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR):

PART 1 - 2022 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
PART 2 - 2022 CALIFORNIA BUILDING CODE (CBC) VOLUME 1 AND 2
PART 3 - 2022 CALIFORNIA ELECTRICAL CODE (CEC)
PART 4 - 2022 CALIFORNIA MECHANICAL CODE (CMC)
PART 5 - 2022 CALIFORNIA PLUMBING CODE (CPC)
PART 6 - 2022 CALIFORNIA ENERGY CODE (CEC)
PART 7 - CURRENTLY VACANT
PART 8 - 2022 CALIFORNIA HISTORICAL BUILDING CODE
PART 9 - 2022 CALIFORNIA FIRE CODE (CFC)
PART 10- 2022 CALIFORNIA EXISTING BUILDING CODE
PART 11- 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
PART 12- 2022 CALIFORNIA REFERENCED STANDARDS

PARTIAL LIST OF APPLICABLE STANDARDS:

NFPA 13. AUTOMATIC SPRINKLER SYSTEMS (CALIFORNIA AMENDED) 2022 EDITION
NFPA 14. STANDPIPE SYSTEMS (CALIFORNIA AMENDED) 2024 EDITION
NFPA 17. DRY CHEMICAL EXTINGUISHING SYSTEM 2024 EDITION
NFPA 17A. WET CHEMICAL SYSTEMS 2024 EDITION
NFPA 20. STATIONARY PUMPS 2022 EDITION
NFPA 24. PRIVATE FIRE MAINS (CALIFORNIA AMENDED) 2022 EDITION
NFPA 72. NATIONAL FIRE ALARM CODE (CALIFORNIA AMENDED) 2022 EDITION
(NOTE: SEE UL STANDARD 1971 FOR "VISUAL DEVICES")
NFPA 80. FIRE DOOR AND OTHER OPENING PROTECTIVES 2022 EDITION
NFPA 253. CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 2023 EDITION
NFPA 2001 CLEAN AGENT FIRE EXTINGUISHING SYSTEM 2022 EDITION

GENERAL NOTES

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL SYSTEM ACCEPTANCE TEST TECHNICIAN (MATT). MECHANICAL EQUIPMENT COMMISSIONING BY MECHANICAL CONTRACTOR.

ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER OF RECORD OR THE OWNER'S AGENT.

A LISTING OF CERTIFIED ATT CAN BE FOUND AT: [HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE](https://www.energy.ca.gov/programs-and-topics/programs/acceptance-test-technician-certification-provider-program/acceptance).

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

A DSA CERTIFIED CLASS 3 PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN THE SECTION 4-342 PART 1, TITLE 24, C.C.R.

SCOPE OF WORK

1. PROVIDE THREE NEW HEAT PUMP VRF SPLIT SYSTEM TO SERVER KITCHEN, OFFICE'S STORAGE AND SERVING AREAS.

DSA ANCHORAGE NOTES

APPLICABLE CODE: 2022 CBC

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA-APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G., HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

APPLICABLE CODE: 2022 CBC

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

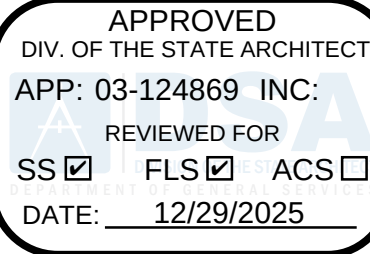
THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☒ E ☐ OPTION 1: DETAILED ON THE APPROVAL DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MECHANICAL SHEET INDEX

NUMBER	SHEET TITLE
M-001	MECHANICAL FRONT SHEET
M-002	MECHANICAL LEGENDS AND ABBREVIATIONS
M-003	MECHANICAL SCHEDULES
M-101	MECHANICAL DEMO FLOOR PLAN
M-201	MECHANICAL FIRST FLOOR PLAN
MP-301	MECHANICAL FIRST FLOOR CONDENSATE PLAN
M-401	MECHANICAL DETAILS SHEET
M-402	MECHANICAL DETAILS SHEET
M-403	MECHANICAL DETAILS SHEET
M-404	MECHANICAL DETAILS SHEET
M-405	MECHANICAL PIPING DIAGRAM
M-501	MECHANICAL TITLE-24
M-502	MECHANICAL TITLE-24



PTN_64691-65 APPL_03-124869



An MBE/ISBE/DBE Firm
Glendale/Downtown LA/Fremont/Camarillo
W.W.B.U.D.L.N.G., C.O.M
JDB# 24-025

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWDALE, CA 90260

JOB	24-025
SCALE	AS NOTED
PM	
DATE	01/22/2025
ADDENDUM 1 - 11/13/2025	

MECHANICAL
FRONT SHEET

AS REVISED
ADDENDUM 1
DSA #03-124869

M-001

DUCTWORK SYMBOLS



SUPPLY DUCT RISER IN PLAN

RETURN DUCT RISER IN PLAN

EXHAUST DUCT RISER

RECTANGULAR DUCTWORK (WIDTH X DEPTH)

RECTANGULAR DUCTWORK (WIDTH X DEPTH)

ROUND DUCTWORK (SIZE, DIAMETER)

FLAT OVAL DUCTWORK

1" ACOUSTICALLY LINED DUCTWORK

SQUARE-THROATED ELBOW W/TURNING VANES

RADIUS ELBOW

RADIUS TEE

SQUARE-THROATED TEE

VOLUME DAMPER

TRANSITION WITH FLAT SIDE

TRANSITION ON CENTER

RECTANGULAR-TO-ROUND TRANSITION

TAKE-OFF TAP TO REC. DUCT AND VOLUME DAMPER

CONICAL TAP TO REC. DUCT AND VOLUME DAMPER

EXISTING DUCTWORK TO REMAIN (DASHED)

NEW DUCTWORK (SOLID)

(L) NEW LINED DUCTWORK (SOLID)

(DWL) NEW DOUBLE WALL LINED DUCTWORK (SOLID)

ACCESS REQUIRED FOR EQUIPMENT SERVICE

SIDE WALL REGISTER/GRILLE

RETURN GRILLE WITH ACOUSTICALLY LINED BOOT

RETURN AIR GRILLE

EXHAUST GRILLE

THERMOSTAT (MAX. 48" A.F.F.)

MANUAL VOLUME DAMPER

EQUIPMENT TAG, DESCRIPTION(FCU), UNIT NUMBER 1, FLOOR NUMBER 1(2ND FLOOR), 2(3RD FLOOR)

DETAIL REFERENCE, DETAIL 1, SHEET NUMBER M-1

DOOR LOUVER MIN. 12x12

DOOR UNDERCUT MAX. 1"

CONSTRUCTION NOTE #1

CU-1

AWG16-AWG14 U1U2

FC 1

FC 2

FC 3

FC 9

FC 8

Group1

Group3

Group4

Programmable Wired Controller

AWG20-AWG14 AB

RBC-AWSU52-UL

ALL WIRE FOR THE SYSTEM MUST BE SHIELDED & STRANDED

CU-2

AWG16-AWG14 U1U2

FC 6

FC 5

FC 12

FC 13

Group1

Programmable Wired Controller

AWG20-AWG14 AB

RBC-AWSU52-UL

ALL WIRE FOR THE SYSTEM MUST BE SHIELDED & STRANDED

VRF WIRING DIAGRAMS

SCALE
NTS
1

SUPPLY / TRANSFER GRILLE SIZES														
SYSTEM	TAG	MANUFACTURER MODEL NO.	NOM. DUCT SIZE	CFM	NOISE CRITERIA	VELOCITY (FPM)	VEL. PRESSURE	TOTAL PRESSURE ("W.G.)			THROW (FT)			REMARKS
								0°	22.5°	45°	0°	22.5°	45°	
OUTSIDE AIR	SG-1	TITUS 300F	6x6	0-57	-	300	0.006	0.016	0.018	0.028	5-7-14	4-5-11	2-3-6	PROVIDE DAMPER SEE NOTES BELOW
OUTSIDE AIR	SG-2	TITUS 300F	22x10	550-685	18	500	0.016	0.046	0.051	0.077	22-33-48	17-26-37	10-15-22	
OUTSIDE AIR	SG-3	TITUS 300F	24x22	1610-1715	22	500	0.016	0.046	0.051	0.077	35-53-76	27-41-59	16-24-34	
TRANSFER AIR	TG-1	TITUS 300R	8x8	0-110	-	300	0.006	0.016	0.018	0.028	6-10-19	5-8-15	3-5-9	

NOTES:

- VERIFY ALL AIR DISTRIBUTION DEVICE LOCATION, APPEARANCES, AND FINISHES WITH OWNER AND ENGINEER FOR APPROVAL BEFORE ORDERING.
- PAINT THE INSIDE OF ALL GRILLE "FLAT-BLACK" TO PREVENT SEE THROUGH EFFECT.
- FRAME TYPE TO MOUNT ON DUCT.
- MODEL NUMBERS AND MATERIALS SHALL NOT BE CONSIDERED COMPLETE. REVIEW THE COMPLETE DESCRIPTION, NOTES, AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

HVAC ABBREVIATIONS					
ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AC	AIR CONDITIONING UNIT	FLR	FLOOR	RG	RETURN GRILLE
AD	ACCESS DOOR	FLA	FULL LOAD AMPS	RLA	RATED LOAD AMPS
AFF	ABOVE FINISHED FLOOR	FPM	FEET PER MINUTE	RPM	REVOLUTIONS PER MINUTE
BDD	BACK DRAFT DAMPER (WEIGHTED)	FT	FEET	SA	SUPPLY AIR
BTU	BRITISH THERMAL UNITS PER HOUR	HPU	HEAT PUMP UNIT	SP	STATIC PRESSURE
CD	CEILING DIFFUSER	HP	HORSE POWER	SR	SUPPLY REGISTER
CFM	CUBIC FEET PER MINUTE	IN	INCHES	TD	TEMPERATURE DIFFERENCE
CLG	CEILING	LAT	LEAVING AIR TEMPERATURE	TEMP	TEMPERATURE
CONT.	CONTINUOUS	LBS	POUNDS	TG	TRANSFER GRILLE
CU	CONDENSING UNIT	MAX	MAXIMUM	TSTAT	THERMOSTAT
CSFD	COMBINATION FIRE/SMOKE DAMPER	MBH	ONE THOUSAND BTUH	TYP	TYPICAL
DBT	DRY BULB TEMPERATURE	MCA	MINIMUM CIRCUIT AMPS	TSP	TOTAL STATIC PRESSURE
DN	DOWN	MCOOP	MAXIMUM CIRCUIT AMPS	UH	UNIT HEATER
DTR	DOWN THROUGH ROOF	MIN	MINIMUM	UNO	UNLESS NOTED OTHERWISE
EA	EACH	MVD	MANUAL VOLUME DAMPER	UTR	UP THROUGH ROOF
EAT	ENTERING AIR TEMPERATURE	MD	MOTORIZED DAMPER	V	VOLT
EF	EXHAUST FAN	N/A	NOT APPLICABLE	VENT	VENTILATION
EG	EXHAUST GRILLE	NC	NOISE CRITERIA	VTR	VENT THROUGH ROOF
EFF	EFFICIENCY	NO	NUMBER	W	WATT
EMS	ENERGY MANAGEMENT SYSTEM	NTS	NOT TO SCALE	WBT	WET BULB TEMPERATURE
ESP	EXTERNAL STATIC PRESSURE	OSA	OUTSIDE AIR		
F	FAHRENHEIT	RA	RETURN AIR		
FCU	FAN COIL UNIT				

NOTES:

- INTERLOCK EXHAUST FAN WITH REFRIGERANT LEAK DETECTION SENSOR ON FC-3.
- FAN SHALL BE NORMALLY OFF AND SHALL ENERGIZE ONLY WHEN A REFRIGERANT LEAK IS DETECTED BY THE SENSOR.
- PROVIDE BACKDRAFT DAMPER.
- PROVIDE ADAPTER CURB TO REUSE EXISTING ROOF CURB.

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AGENCY

APPROVED

DIV. OF THE STATE ARCHITECT

APP: 03-124869 INC.

REVIEWED FOR

SS ☒ FLS ☒ ACS ☐

DATE: 12/29/2025

PTN. 64691-65 APPL. 03-124869

An MBEISBEIDBEILSBE Firm
GlendaleDowntown LAFremontCamarillo
W W W . B U D L O N G . C O M
JOB# - 24-025

AS REVISED
ADDENDUM 1
DSA #03-124869

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST., LAWDALE, CA 90260

MECHANICAL
LEGEND AND
ABBREVIATIONS

M-002

VRF FAN COIL UNIT SCHEDULE

FC X SYMBOL	MANUFACTURER AND MODEL NO.	OUTDOOR UNIT CONNECTION	AREA SERVED	FAN COIL TYPE	FAN DATA			COOLING RATED CAPACITY	HEATING RATED CAPACITY	NOMINAL COOLING DESIGN EAT	PROJECT HEATING DESIGN EAT	ESTIMATED COOLING COIL LAT	ESTIMATED HEATING COIL LAT	ELECTRICAL					DX LINES (IN)			OPERATING WEIGHT (LBS.)	MOUNTING DETAIL	NOTES
					CFM			Btu/h	Btu/h	DB/WB (°F)	DB (°F)	(°F)	(°F)	MCA	MOCP	VOLTAGE	Ø	HZ	LIQUID	SUCTION	DRAIN			
FC 1	TOSHIBA - CARRIER MMK-UB0301HP-UL	CU 1	SERVICE LINE - 3 106	HIGH WALL	705	825	940	30000	34000	80/67.1	70	59.2	99.5	0.83	15.0	208-230	1	60	3/8	5/8	7/8	46.3	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12
FC 2	TOSHIBA - CARRIER MMK-UB0301HP-UL	CU 1	SERVICE LINE - 3 106	HIGH WALL	705	825	940	30000	34000	80/67.1	70	59.2	99.5	0.83	15.0	208-230	1	60	3/8	5/8	7/8	46.3	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10 &12
FC 3	TOSHIBA - CARRIER MMK-UB0071HP-UL	CU 1	OFFICE 118	HIGH WALL	160	225	285	7500	8500	80/67.1	70	62.9	94.3	0.21	15.0	208-230	1	60	1/4	3/8	7/8	27	3/M-402	SEE NOTES 1,2,3,4,5,6,7,8,9,10,11,12
FC 5	TOSHIBA - CARRIER MMK-UB0241HP-UL	CU 2	KITCHEN 101	HIGH WALL	355	530	700	24000	27000	80 / 67.1	70	-	-	0.6	15.0	208-230	1	60	3/8	5/8	7/8	40	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12
FC 6	TOSHIBA - CARRIER MMK-UB0241HP-UL	CU 2	KITCHEN 101	HIGH WALL	355	530	700	24000	27000	80 / 67.1	70	-	-	0.6	15.0	208-230	1	60	3/8	5/8	7/8	40	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12
FC 8	TOSHIBA - CARRIER MMK-UB0301HP-UL	CU 1	SERVICE LINE - 1 103	HIGH WALL	705	825	940	30000	34000	80/67.1	70.0	59.2	99.5	0.83	15.0	208-230	1	60	3/8	5/8	7/8	46.3	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12
FC 9	TOSHIBA - CARRIER MMK-UB0301HP-UL	CU 1	SERVICE LINE - 1 103	HIGH WALL	705	825	940	30000	34000	80/67.1	70.0	59.2	99.5	0.83	15.0	208-230	1	60	3/8	5/8	7/8	46.3	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12
FC 12	TOSHIBA - CARRIER MMK-UB0241HP-UL	CU 2	KITCHEN 101	HIGH WALL	355	530	700	24000	27000	80 / 67.1	70	-	-	0.6	15.0	208-230	1	60	3/8	5/8	7/8	40	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12
FC 13	TOSHIBA - CARRIER MMK-UB0241HP-UL	CU 2	KITCHEN 101	HIGH WALL	355	530	700	24000	27000	80 / 67.1	70	-	-	0.6	15.0	208-230	1	60	3/8	5/8	7/8	40	3/M-402	SEE NOTES - 1,2,3,4,5,6,7,8,9,10&12

NOTES:

- NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR AIR TEMPERATURE OF 80°F DB / 67°F WB, OUTDOOR AIR TEMPERATURE OF 95°F (DB).
- NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR AIR TEMPERATURE OF 70°F DB, OUTDOOR AIR TEMPERATURE OF 47°F DB / 43°F WB.
- LATS ESTIMATED USING FORMULA FOR SENSIBLE CAPACITY = (1.08 BTU/(HR CFM °F)) X CFM X DELTA T.
- ALL DUCTLESS FMA/FCM/FMU OR FV4 SERIES INDOOR UNITS REQUIRE A PIPING ADAPTOR KIT (MODEL #S: 331831-701 OR 40MD000003).
- WARNING: ACCESSORIES ARE FILTERED BY SYSTEM AND UNIT TYPE. CHECK PRODUCT DATA TO CONFIRM ACCESSORY COMPATIBILITY WITH VOLTAGE, PRODUCT TIER, ETC.
- WARNING: ONE OR MORE OUTSIDE AIR INDOOR UNITS IN THIS SYSTEM HAVE COOLING OR HEATING TEMPERATURES THAT ARE OUT OF RANGE.
- FAN COILS SHALL BE FACTORY FURNISHED WITH PULSE WIDTH MODULATING CONTROL VALVES. PMV SHALL SHUT OFF 100% OF FLOW WHEN SPACE TEMPERATURE SETPOINT IS SATISFIED.

- PROVIDE COMMUNICATION WIRING PER MANUFACTURER'S RECOMMENDATION.
- PROVIDE REFRIGERATION ISOLATION VALVES AT EACH FAN COIL UNIT. CONTRACTOR TO CONFIRM QUANTITY AND SIZE PER MANUFACTURERS RECOMMENDATION.
- PROVIDE AND INSTALL NEW DDC THERMOSTAT PER MANUFACTURER RECOMMENDATION AND MOUNT AT 48" ABOVE FINISHED FLOOR.
- PROVIDE CONDENSATE PUMP TO FAN COIL UNIT. BLUE DIAMOND MAXI BLUE 110V-X87-711.
- PROVIDE INTEGRAL REFRIGERANT DETECTION SYSTEM.
- FOR REFRIGERANT PIPING: DO NOT PROVIDE FLARED FITTINGS. PROVIDE BRAZED CONNECTIONS & FITTINGS.

VRF CONDENSING UNIT SCHEDULE

CU X SYMBOL	MANUFACTURER AND MODEL NO.	NOMINAL COOLING CAPACITY (BTUH)	NOMINAL HEATING CAPACITY (BTUH)	NOMINAL TONS	UNIT WEIGHT (LBS.)	EFFICIENCY		REFRIGERANT PIPING		ELECTRICAL POWER REQUIREMENTS			TOTAL OPERATING WEIGHT (LBS.)	REFRIGERANT TYPE	MOUNTING DETAIL	NOTES
						EER	HEATING COP	LIQUID HIGH PRESSURE LINE (IN.)	GAS LOW PRESSURE LINE (IN.)	VOLT/PH/HZ	MCA	MOCP				
CU 1	TOSHIBA CARRIER MMY-MUB1441HT6P-UL	144,000	162,000	12.0	721	11.2	4.00	5/8	1-1/8	460/3/60	24.6	35	800	R-454B	7/M-402	SEE NOTES - 1,2,3,4,5 & 6
CU 2	TOSHIBA CARRIER MMY-MUB1201HT6P-UL	120,000	135,000	10.0	721	11.4	4.20	1/2	1-1/8	460/3/60	24.2	30	800	R-454B	7/M-402	SEE NOTES - 1,2,3,4,5 & 6
Δ																

NOTES:

- NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR AIR TEMPERATURE OF 80°F DB / 67°F WB, OUTDOOR AIR TEMPERATURE OF 95°F (DB).
- NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR AIR TEMPERATURE OF 70°F DB, OUTDOOR AIR TEMPERATURE OF 47°F DB / 43°F WB.
- VRF EFFICIENCY VALUES FOR EER, IEER AND COP ARE FOR MIXED DUCTED AND NON-DUCTED INDOOR UNITS
- DUCTLESS AND SINGLE-PHASE VRF HEAT PUMP EFFICIENCY VALUES FOR EER, SEER, AND HSPF ARE FOR MIXED DUCTED AND NON-DUCTED INDOOR UNITS BASED ON AHRI 210/240 TEST METHOD.
- PROVIDE EACH CONDENSING UNIT MODULE WITH SEPARATE POWER AND DISCONNECT.
- PROVIDE CONDENSING UNITS WITH DUAL TWIN ROTARY COMPRESSORS.
- FOR REFRIGERANT PIPING: DO NOT PROVIDE FLARED FITTINGS. PROVIDE BRAZED CONNECTIONS & FITTINGS.

SUPPLY FAN SCHEDULE

SF X SYMBOL	MANUFACTURER AND MODEL NO.	LOCATION	TYPE	DRIVE	FAN DUTY			MOTOR	ELECTRICAL						OPERATING WEIGHT (LBS)	MOUNTING DETAIL	REMARKS
					CFM	E.S.P.	RPM		VOLTS	PH	Hz	FLA	MCA	MOCP			
SF 1	GREENHECK SQ-7-M1-VG	SERVING LINE 3 106	INLINE	DIRECT	700	1.45	3385	1/2	208	1	60	4	5	15	60	8/M-401, 1/M-404	SEE NOTES - 1
SF 2	GREENHECK SQ-15-M2-VG	KITCHEN 101	INLINE	DIRECT	1700	0.87	1224	1	460	3	60	1.8	2.2	15	150	8/M-401, 1/M-404	SEE NOTES - 1
SF 3	GREENHECK SQ-7-M1-VG	SERVING LINE 1 103	INLINE	DIRECT	700	1.45	3385	1/2	208	1	60	4	5	15	60	8/M-401, 1/M-404	SEE NOTES - 1

NOTES:

- PROVIDE SUPPLY FAN WITH MERV-13 FILTER.

ASHRAE 15 - A2L REFRIGERANT CONCENTRATION LIMIT CALCULATION

SYSTEM	ZONE NAME	AREA (SQ. FT.)	HEIGHT (FT.) (Max. 9 FT.)	VOLUME (CU. FT.)	REFRIGERANT TYPE	LOWER FLAMMABILITY LIMIT (LBS/CU.FT)	AIR CIRCULATION (YES/NO)	CONCENTRATION FACTOR	INSTITUTIONAL OCCUPANCY (YES/NO)	OCCUPANCY ADJUSTMENT FACTOR	RELEASABLE REFRIGERANT (LBS)	EFFECTIVE DISPERSAL VOLUME CHARGE (LBS)	VENTILATION				COMPLIES (EDVC= > Mrel)	REMARKS	
				Ve		LFL		CF		Focc			Mrel	EDVC = Ve	x LFL	x CF			x Focc
CU/1	FC/1&2 (SERVICE LINE-3 #106)	404	9.0	3636	R-454B	18.5	YES	0.50	NO	1.0	26.76	33.63	NO	-	-	-	YES	PASSED AS IS	
CU/1	FC/3 (OFFICE #A118)	131	8.0	1048	R-454B	18.5	YES	0.50	NO	1.0	26.76	9.69	YES	490	17.40	27.10	YES	PASSED AS IS	
CU/1	FC/8&9 (SERVICE LINE-1 #103)	470	9.0	4230	R-454B	18.5	YES	0.50	NO	1.0	26.76	39.13	NO	-	-	-	YES	PASSED AS IS	
CU/2	FC/5,6,12 &13 (KITCHEN #101)	807	9.0	7263	R-454B	18.5	YES	0.50	NO	1.0	23.57	67.18	NO	-	-	-	YES	PASSED AS IS	

EDVC = Ve x LFL x CF x Focc

Ve = EFFECTIVE DISPERSAL VOLUME

LFL - LOWER FLAMMABILITY LIMIT - (19.1 Lbs/ 1000 Cu.ft FOR R32, 18.5 Lbs/ 1000 Cu.ft FOR R454B)

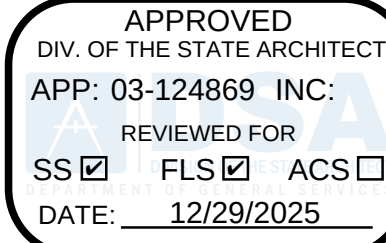
CF - CONCENTRATION FACTOR - FOR SYSTEMS WITH AIR CIRCULATION, CF VALUE = 0.5 (WITHOUT = 0.25)

Focc - OCCUPANCY ADJUSTMENT FACTOR - FOR ALL OCCUPANCIES OTHER THAN INSTITUTIONAL,

Focc HAS A VALUE OF 1.0 FOR INSTITUTIONAL OCCUPANCIES, Focc HAS A VALUE OF 0.5

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AGENCY



PTN_64691-65 APPL_03-124869



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W W W . B U I L D I N G . C O M
JOB# - 24-025

AS REVISED
ADDENDUM 1
DSA #03-124869

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWDALE, CA 90260

MECHANICAL
SCHEDULES

M-003

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-124869 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☐
DATE: 12/29/2025

PTN. 64691-65 APPL. 03-124869

REMODEL
KEYNOTES

- EXISTING EXHAUST HOOD TO REMAIN.
- EXISTING AIR CURTAIN TO REMAIN.
- EXISTING RELIEF GRILLE TO REMAIN AND REUSE.
- EXISTING SUPPLY GRILLE TO REMAIN AND REUSE.
- PROVIDE NEW VENT LOUVER ON THE WALL ABOVE LOWER ROOF.
- PROVIDE NEW FAN COIL UNIT AS PER SCHEDULE.
- PROVIDE NEW VRF HEAT PUMP AS PER SCHEDULE.
- PROVIDE NEW SUPPLY FAN WITH MERV-13 FILTER AS PER SCHEDULE.
- PROVIDE NEW THERMOSTAT.
- FOR REFRIGERANT PIPE SIZING REFER SHEET M-405.
- PROVIDE NEW 8 x 8 TRANSFER GRILLE.
- SEE MP-301 FOR DRAINING OF OUTDOOR UNITS.
- ROUTE DX LINES FOR CU-1 & 2 THROUGH EXTERIOR WALL THEN UP THROUGH ROOF. SEE KEYNOTE 14 FOR CONTINUATION. FIELD LOCATE EXISTING WALL FRAMING & ROOF FRAMING. DO NOT CUT.
- RUN CU-1 & 2 DX LINES ALONG ROOF. PENETRATE THROUGH EXISTING UPPER CLERESTORY WINDOW INFILL TO SERVE INDOOR UNITS. FIELD VERIFY EXISTING ROOF FRAMING. DO NOT CUT.
- REMOVE EXISTING ROOF GRAVITY VENT. CURB TO REMAIN. INSTALL NEW EF-118 ON EXISTING CURB AND PROVIDE CURB ADAPTER AS REQUIRED.



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JOB# - 24-025

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DSA #03-124869

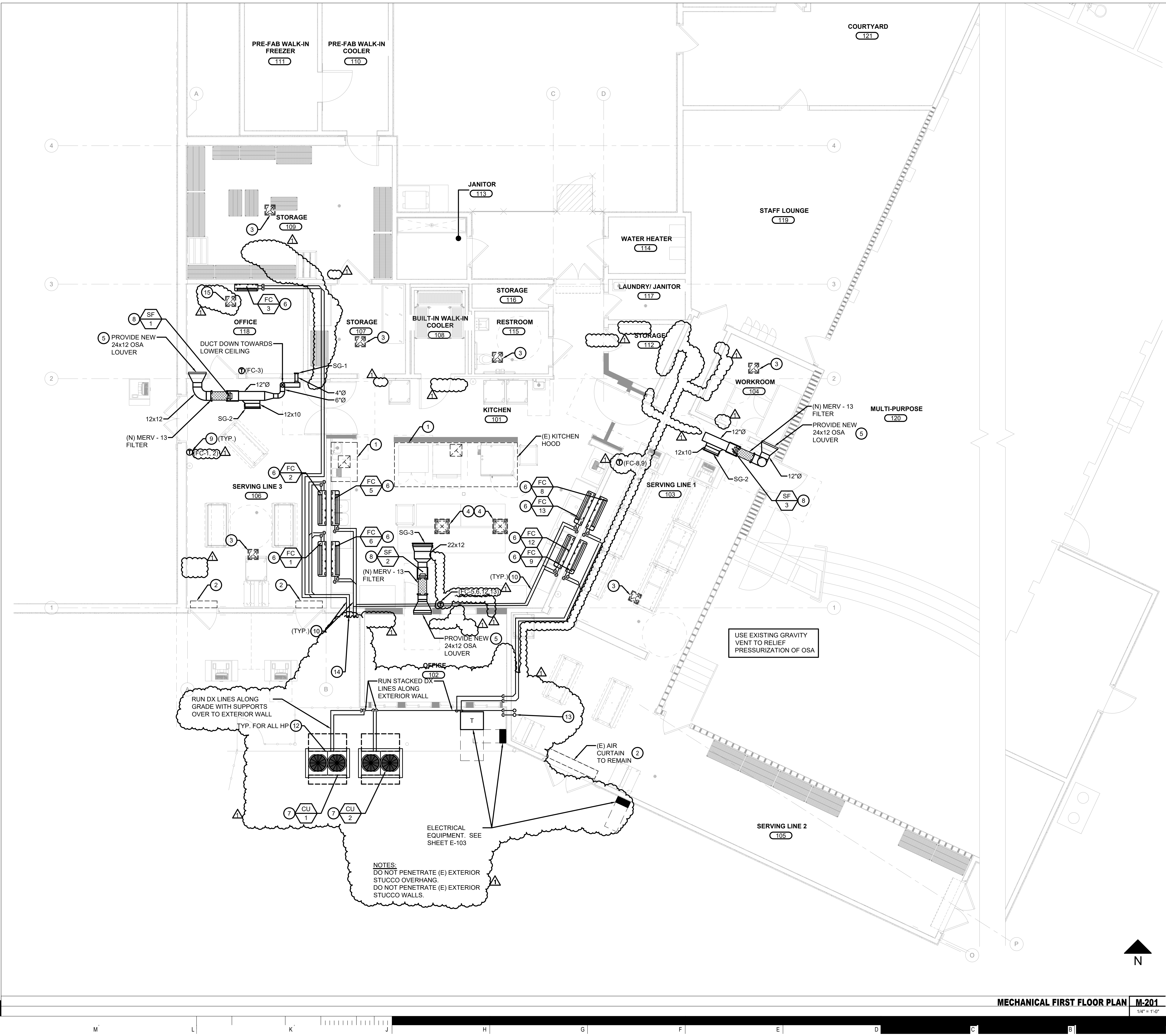
LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES

LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWDALE, CA 90260

JOB	24-025
SCALE	AS NOTED
PM	
DATE	01/22/2025
ADDENDUM 1 - 11/13/2025	

MECHANICAL
FIRST FLOOR
PLAN

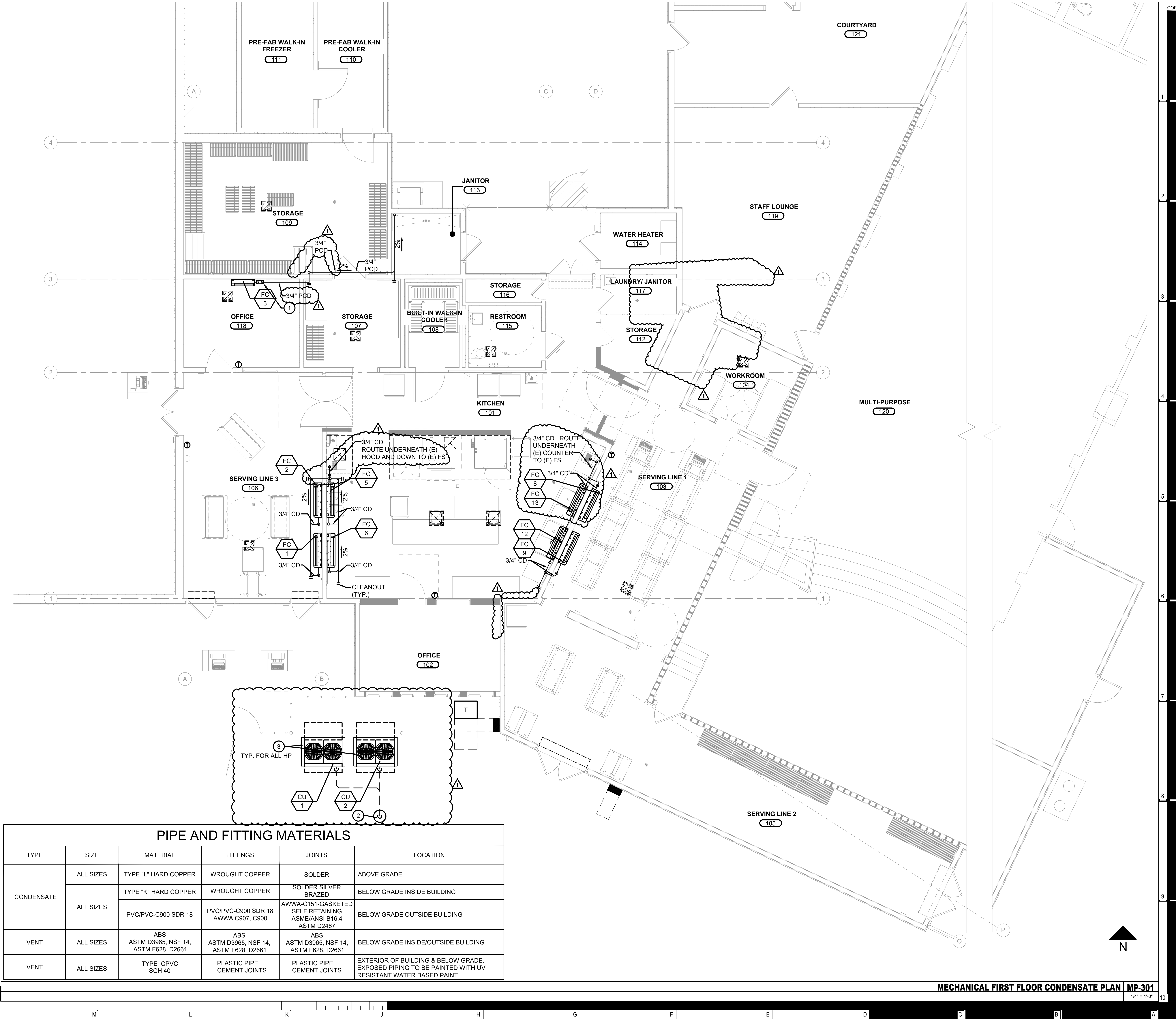
M-201



MECHANICAL FIRST FLOOR PLAN M-201

1/4" = 1'-0"

1/24/2025 LESD Rogers MS Central Kitchen HVAC Upgrades\W24-025 MP-301 MECHANICAL FIRST FLOOR CONDENSATE PLAN.dwg 11/13/2025 5:05:02 PM patrick



PIPE AND FITTING MATERIALS					
TYPE	SIZE	MATERIAL	FITTINGS	JOINTS	LOCATION
CONDENSATE	ALL SIZES	TYPE "L" HARD COPPER	WROUGHT COPPER	SOLDER	ABOVE GRADE
	ALL SIZES	TYPE "K" HARD COPPER	WROUGHT COPPER	SOLDER SILVER BRAZED	BELOW GRADE INSIDE BUILDING
		PVC/PVC-C900 SDR 18	PVC/PVC-C900 SDR 18 AWWA C907, C900	AWWA-C151-GASKETED SELF RETAINING ASME/ANSI B16.4 ASTM D2467	BELOW GRADE OUTSIDE BUILDING
VENT	ALL SIZES	ABS ASTM D3965, NSF 14, ASTM F628, D2661	ABS ASTM D3965, NSF 14, ASTM F628, D2661	ABS ASTM D3965, NSF 14, ASTM F628, D2661	BELOW GRADE INSIDE/OUTSIDE BUILDING
VENT	ALL SIZES	TYPE CPVC SCH 40	PLASTIC PIPE CEMENT JOINTS	PLASTIC PIPE CEMENT JOINTS	EXTERIOR OF BUILDING & BELOW GRADE. EXPOSED PIPING TO BE PAINTED WITH UV RESISTANT WATER BASED PAINT

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DATE: 12/29/2025

PTN_ 64691-65 APPL_ 03-124869

GENERAL NOTES
A. PROVIDE INSULATION ON ALL INTERIOR CONDENSATE DRAINS.
B. FC-3 SHALL BE PROVIDED WITH CONDENSATE PUMPS. ALL OTHER FAN COILS WILL HAVE GRAVITY CONDENSATE DRAINAGE TO AN APPROVED RECEPTOR.

REMODEL KEYNOTES
1 PLUMBING CONTRACTOR SHALL PROVIDE INSULATION FOR CONDENSATE DRAIN PIPE & PUMP WITH 2% SLOPE TO FLOOR SINK OR APPROVED RECEPTOR.
2 INSTALL DRYWELL AT 10 FEET MINIMUM AWAY FROM BUILDING. REFER TO DETAIL #6/M-403
3 PROVIDE SHEET METAL PAN UNDER HEAT PUMP UNIT WITH DRAIN. CONNECT 3/4" CD TO PAN AND RUN BELOW GRADE AT 2% SLOPE TOWARDS DRYWELL. SEE #6 & 7/M-402
4 NOT USED.
5 NOT USED.
6 NOT USED.

REGISTERED PROFESSIONAL ENGINEER
WILL A. LAMBERT
No. 5430
Exp. 06/30/2026
STRUCTURAL
STATE OF CALIFORNIA
1240287P/24W/24G/24E
KITCHEN HVAC REVIEW

REGISTERED PROFESSIONAL ENGINEER
SHIVIL PATEL
No. 29448
EXP. 06-30-27
MECHANICAL
STATE OF CALIFORNIA

24-025
AS NOTED
01/22/2025
ADDENDUM 1 - 11/13/2025

MECHANICAL FIRST FLOOR CONDENSATE PLAN

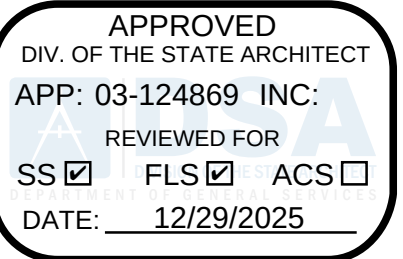
AS REVISED
ADDENDUM 1
DSA #03-124869

MP-301

1/4" = 1'-0"

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWDALE, CA 90260

AGENCY



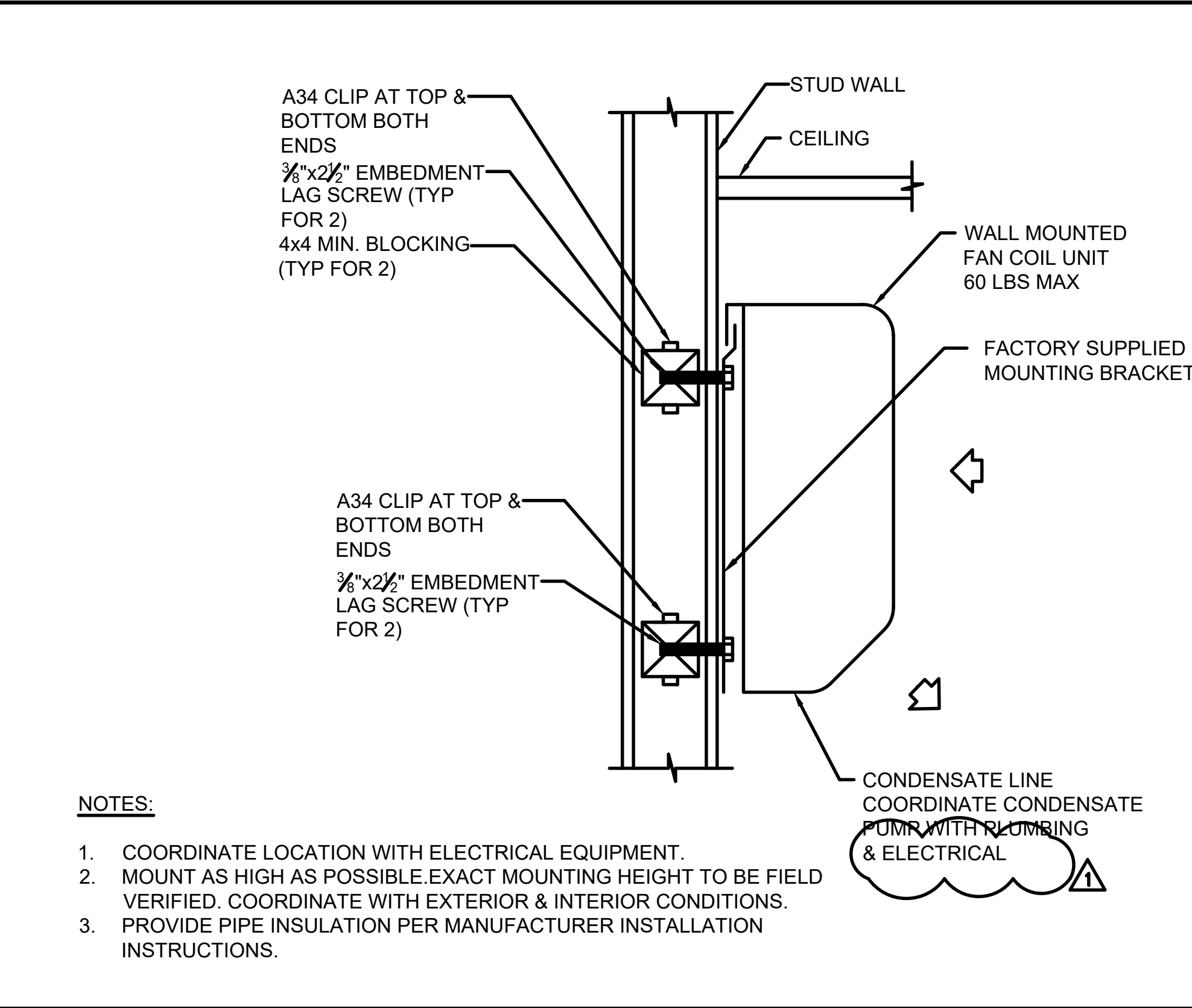
PTN. 64691-65 APPL. 03-124869

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ADDENDUM 1
DSA #03-124869

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST., LAWDALE, CA 90260

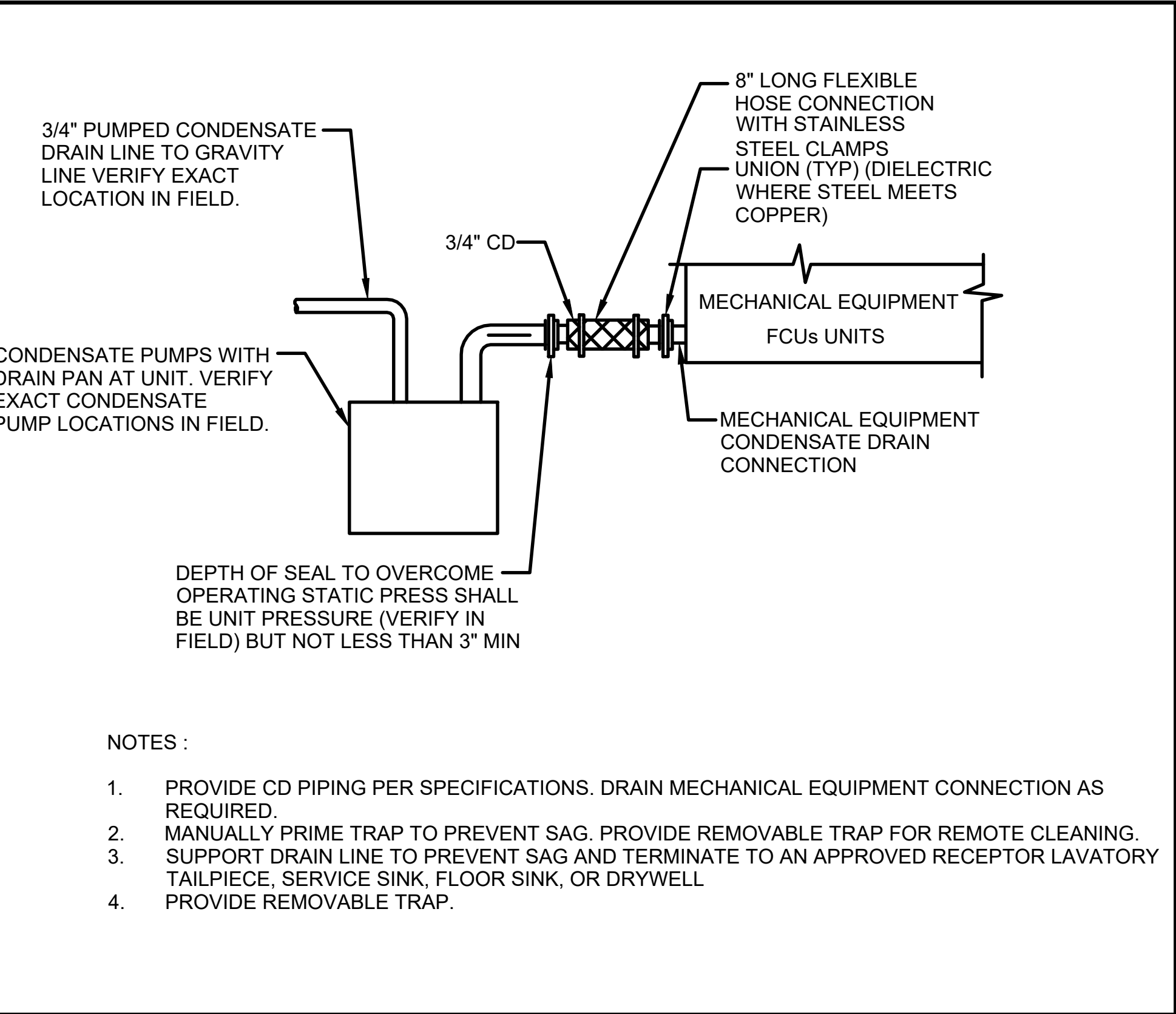
MECHANICAL DETAILS
SHEET

M-402



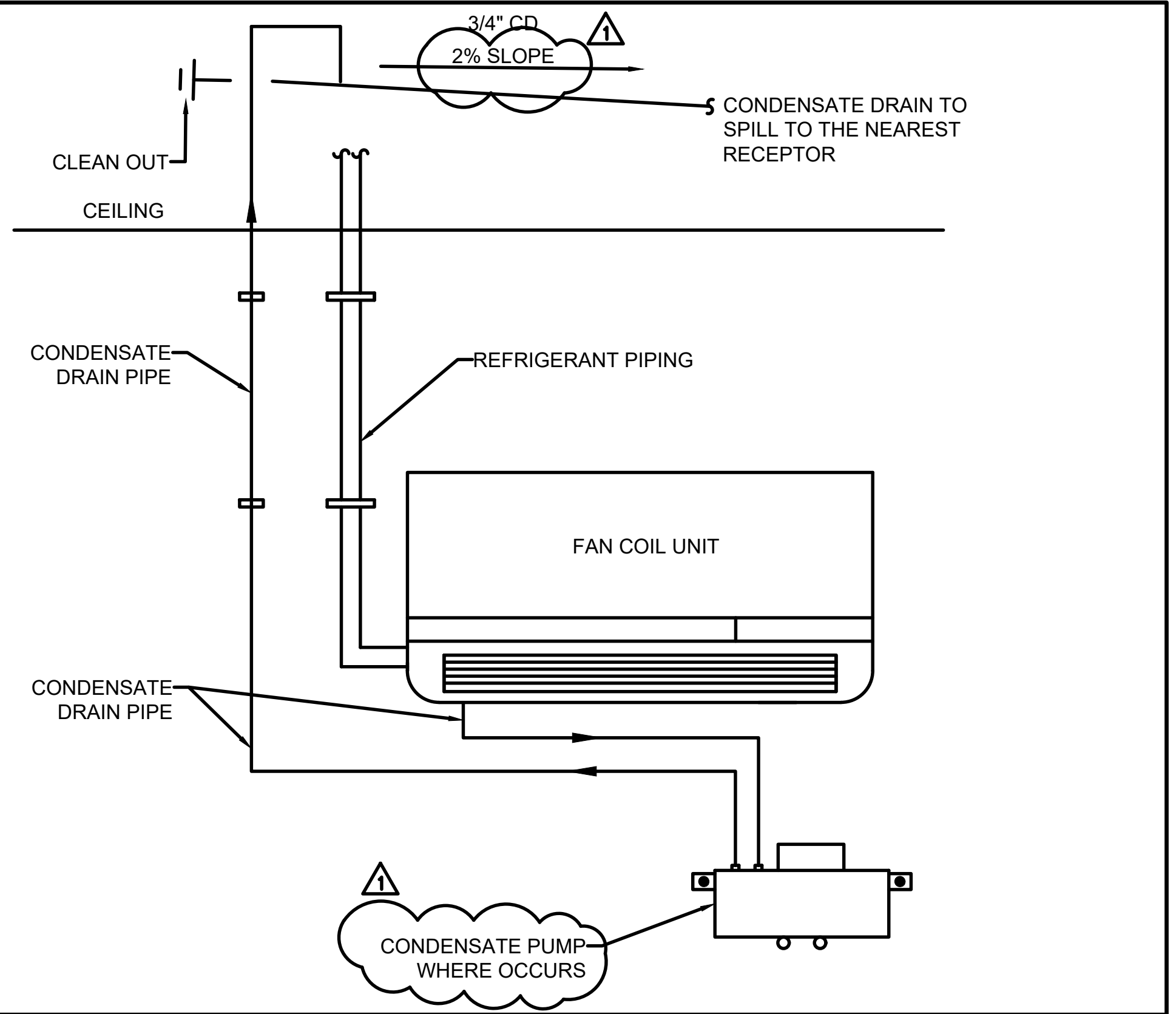
WALL MOUNTED FAN COIL

SCALE NTS 3



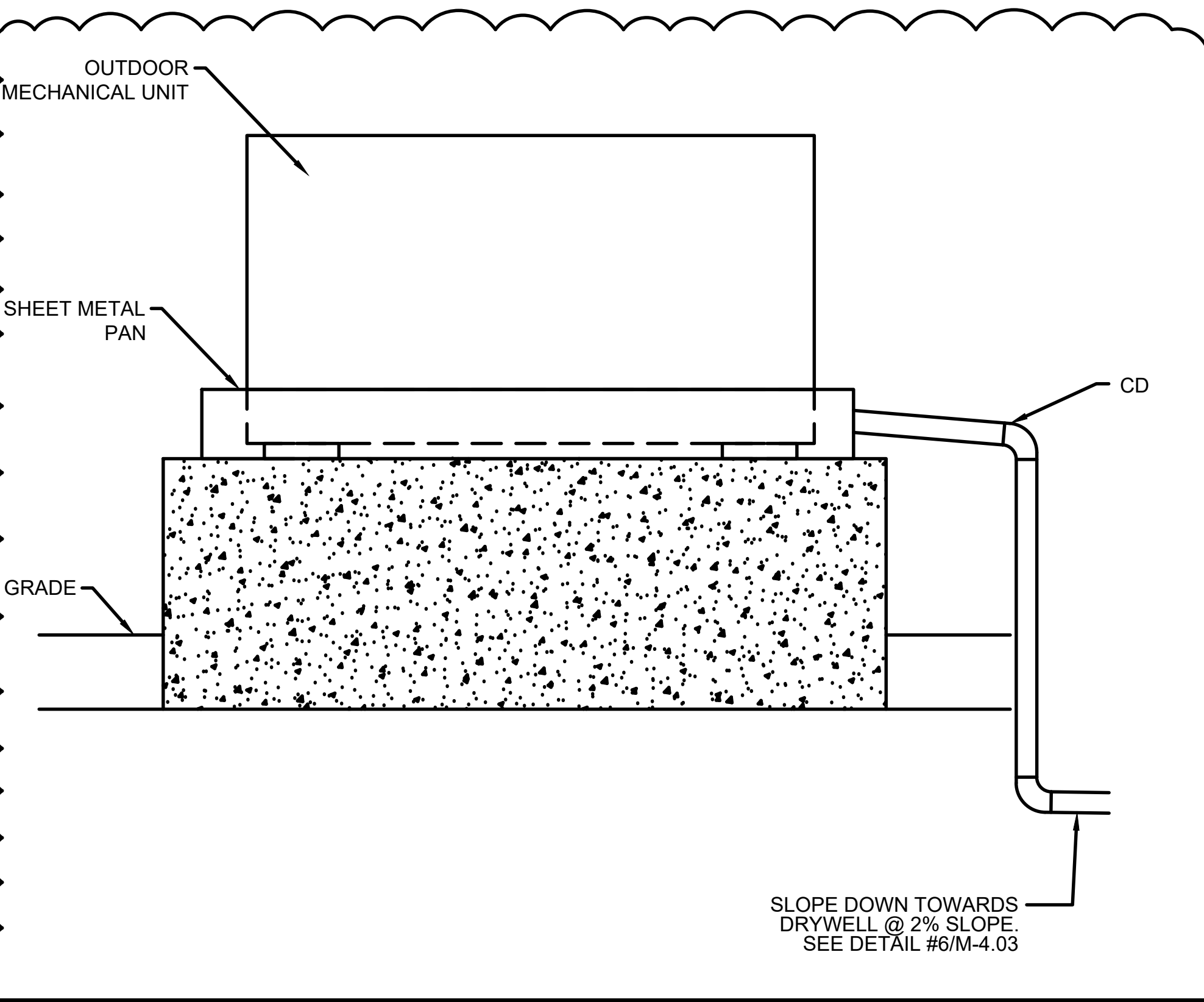
CONDENSATE DRAIN WITH CONDENSATE PUMP

SCALE NTS 2



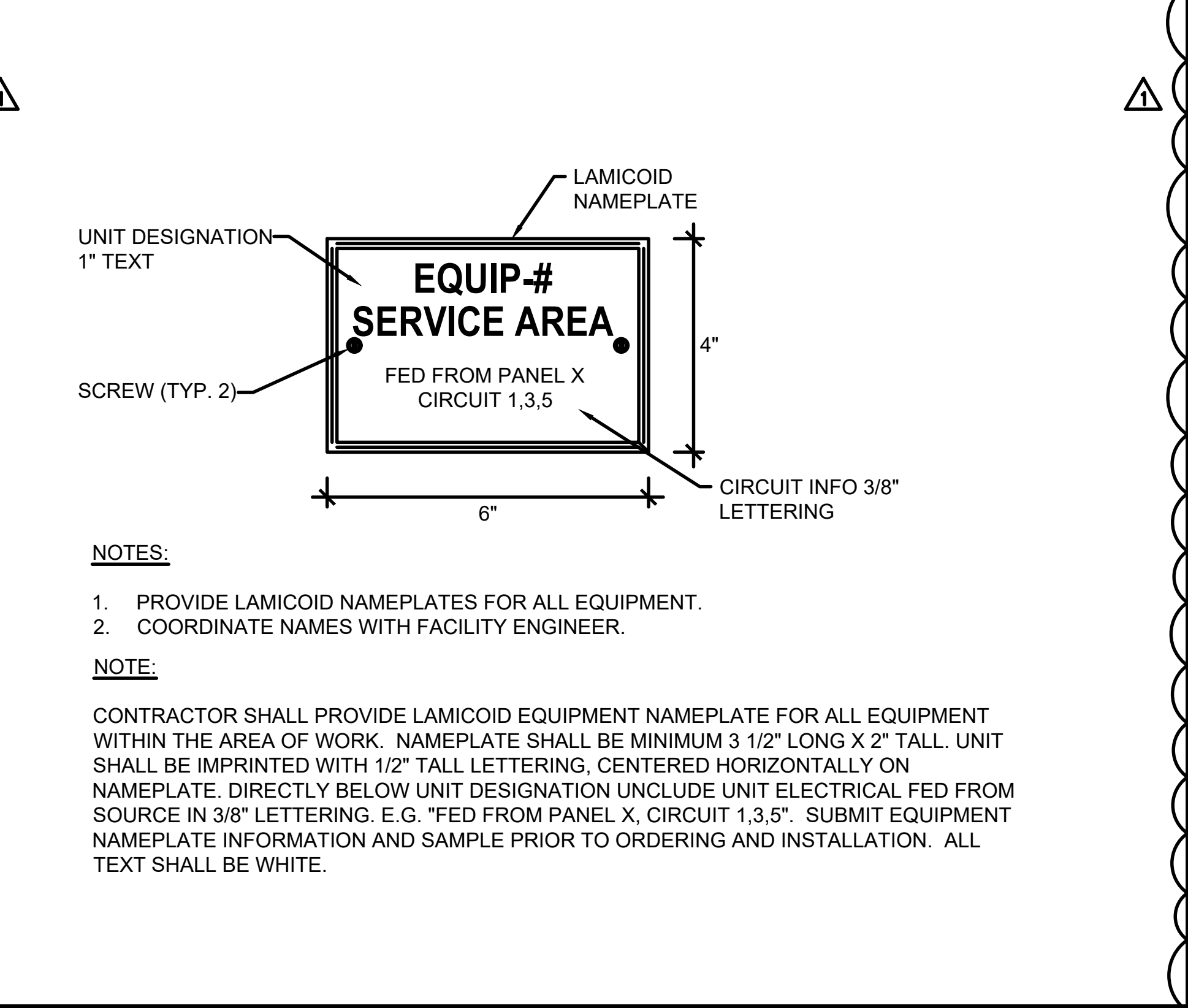
FCU CONDENSATE REMOVAL DETAIL

SCALE NTS 1



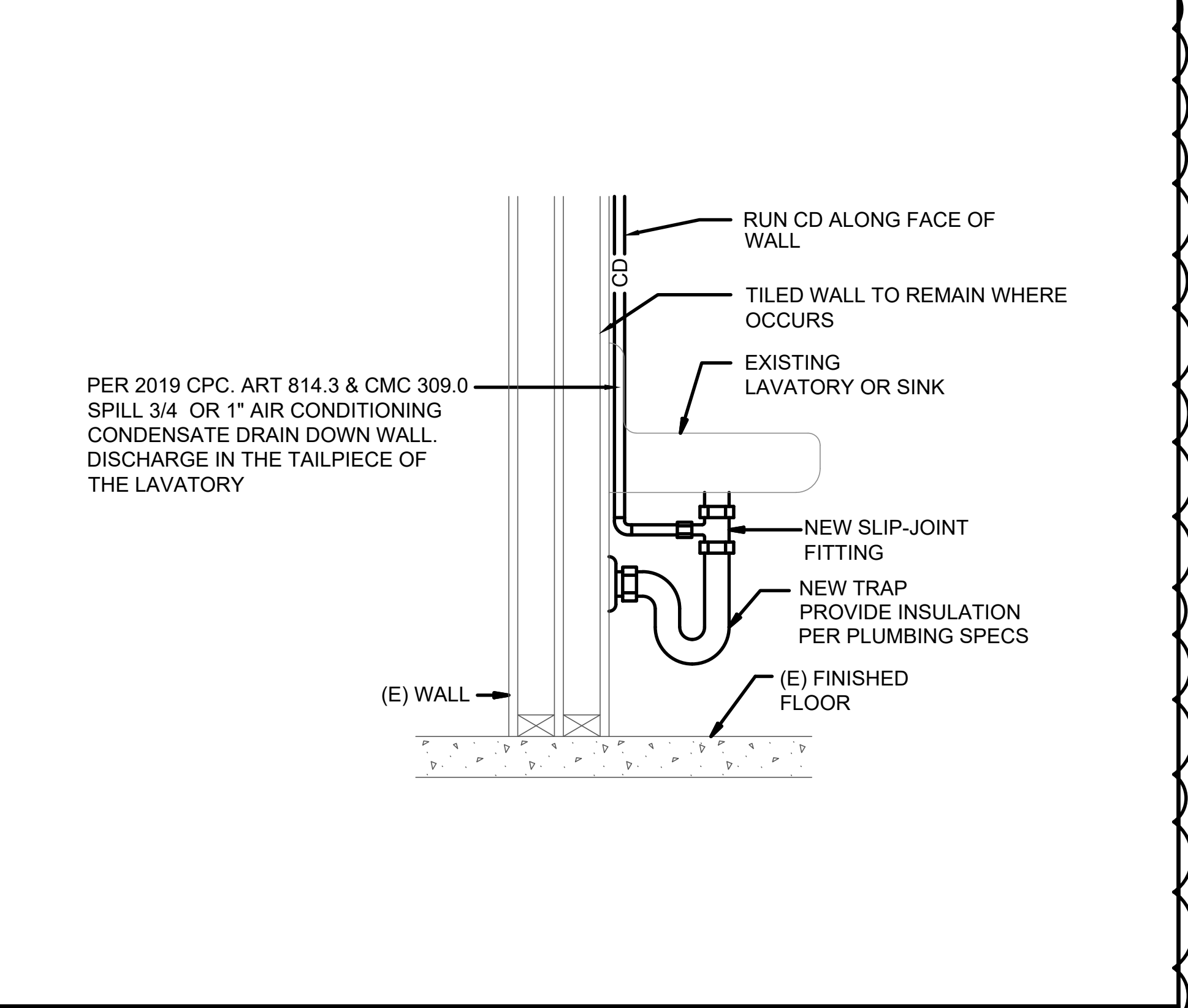
OUTDOOR UNIT - CD CONNECTION DETAIL

SCALE NTS 6



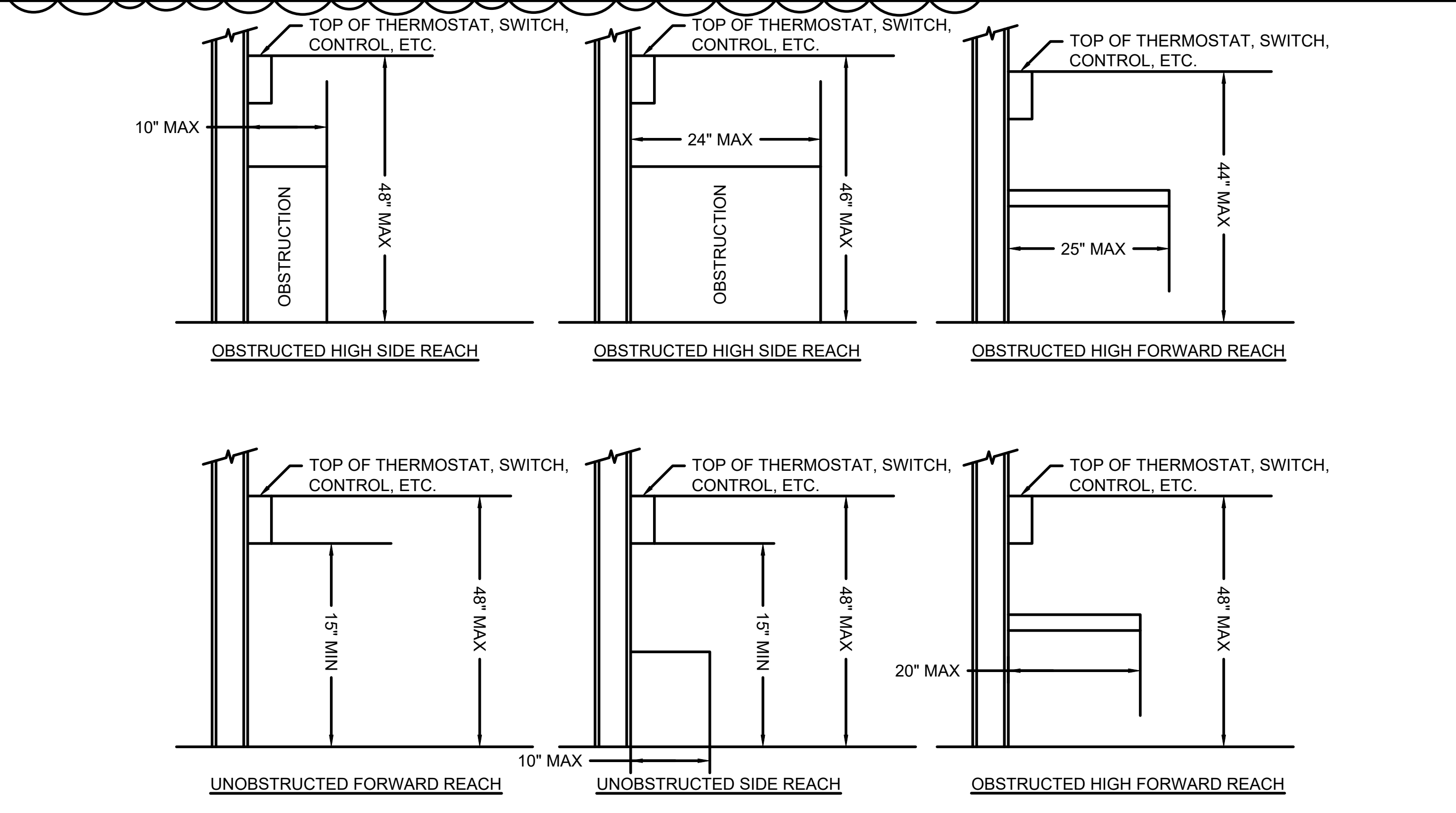
EQUIPMENT NAME PLATE

SCALE NTS 5



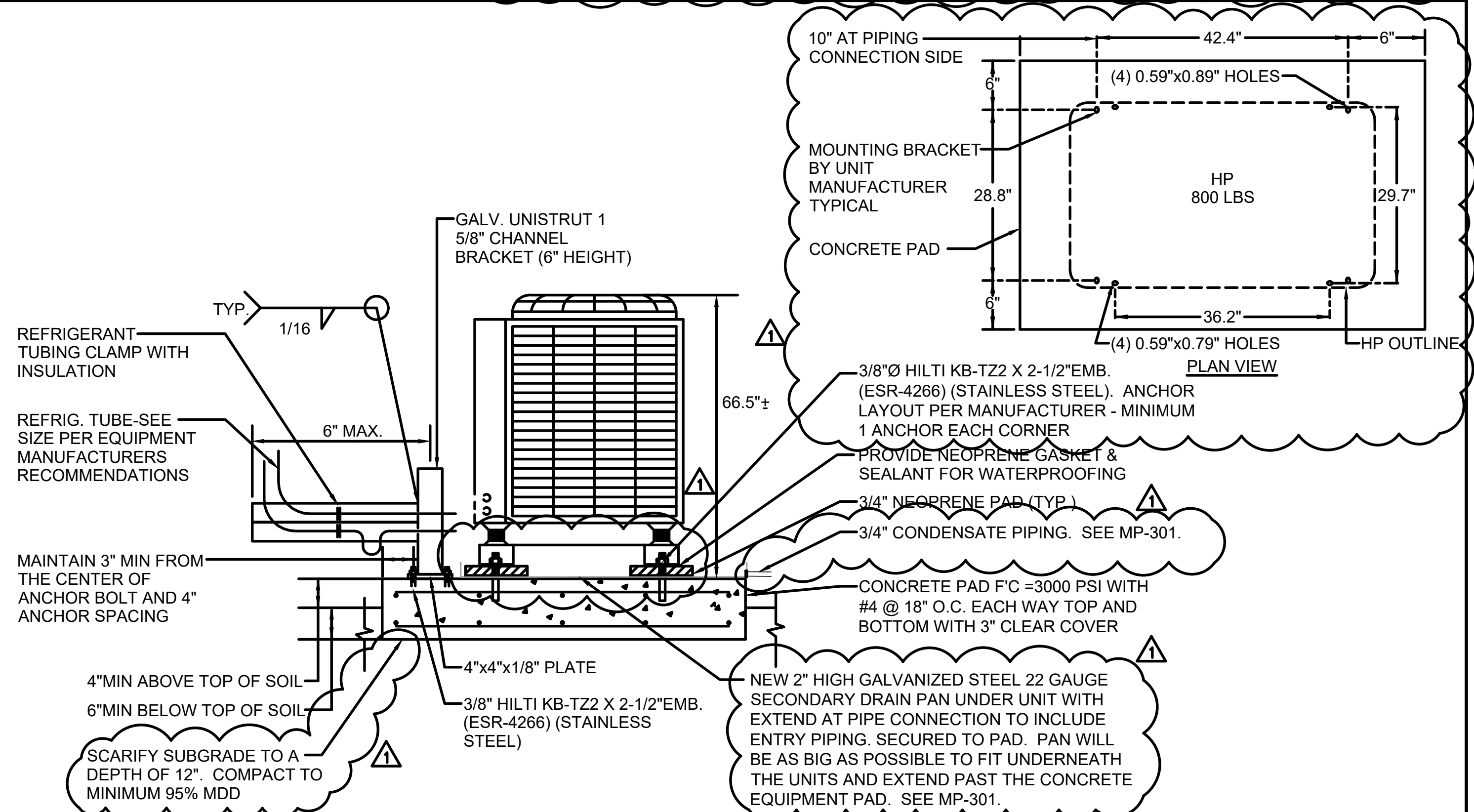
CONDENSATE DRAIN TO (E) LAV OR MOP SINK

SCALE NTS 4



THERMOSTAT INSTALLATION DIAGRAM

SCALE NTS 8



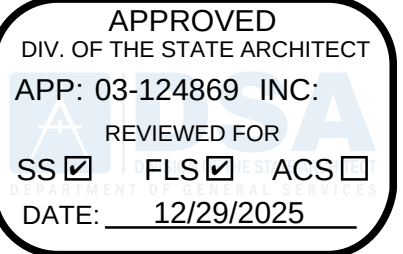
OUTDOOR UNIT MOUNTING DETAIL

SCALE NTS 7



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AS REVISED
ADDENDUM 1
DSA #03-124869

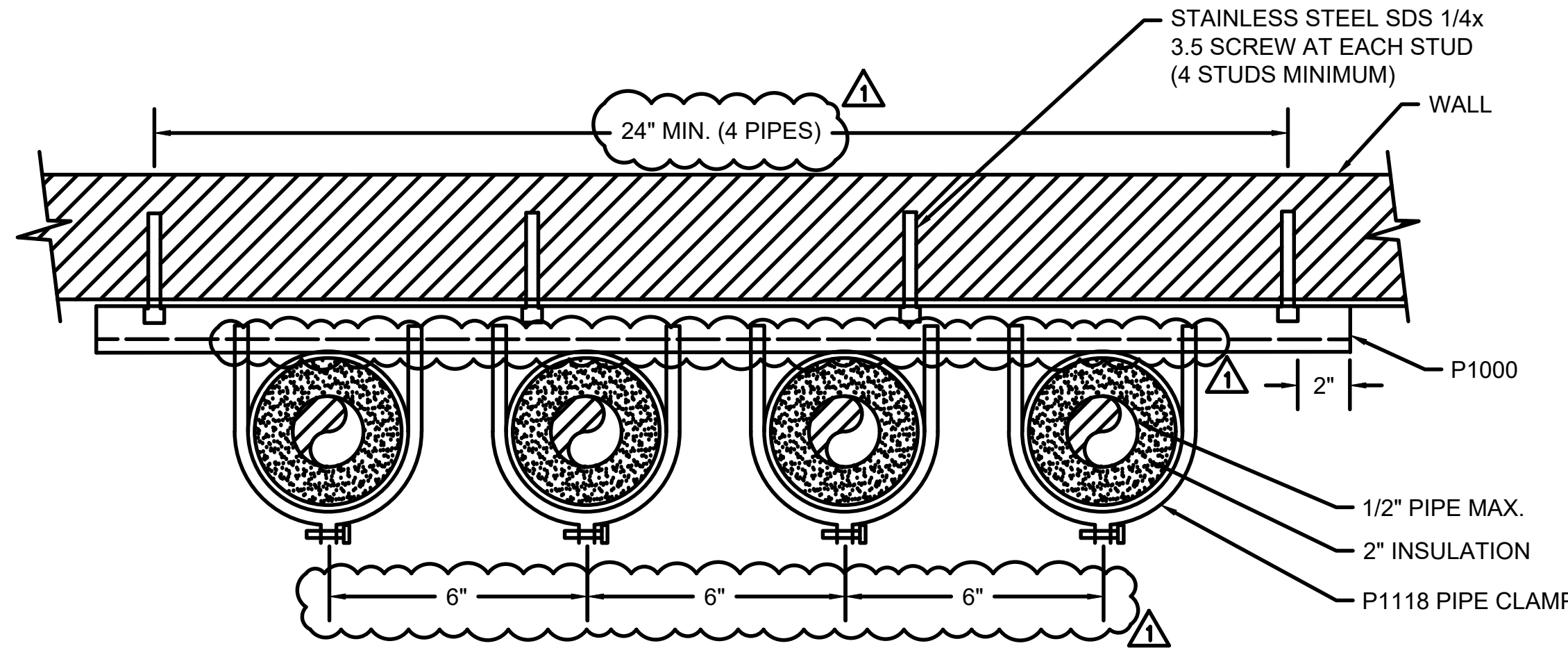
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LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST., LAWDALE, CA 90260



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JOB# - 24-025

MECHANICAL DETAILS
SHEET

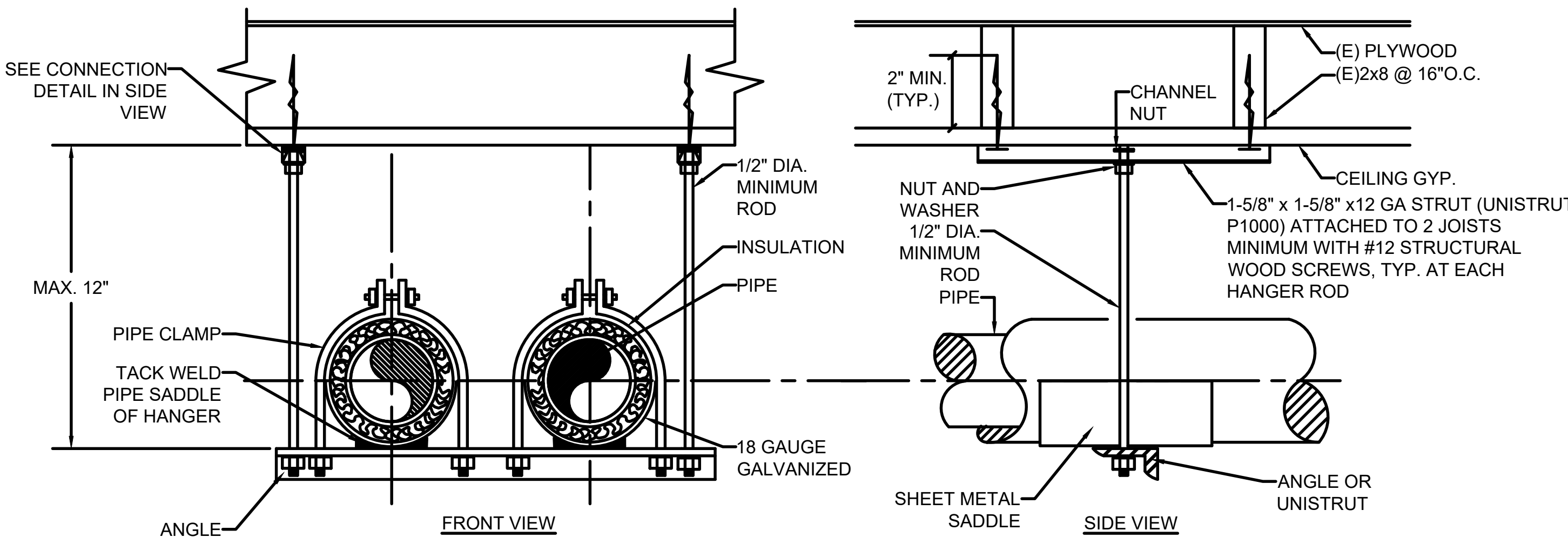
M-403



SUPPORT SPACING NOT TO EXCEED 10'-0"

WALL PIPING RISER DIAGRAM

SCALE
NTS 2



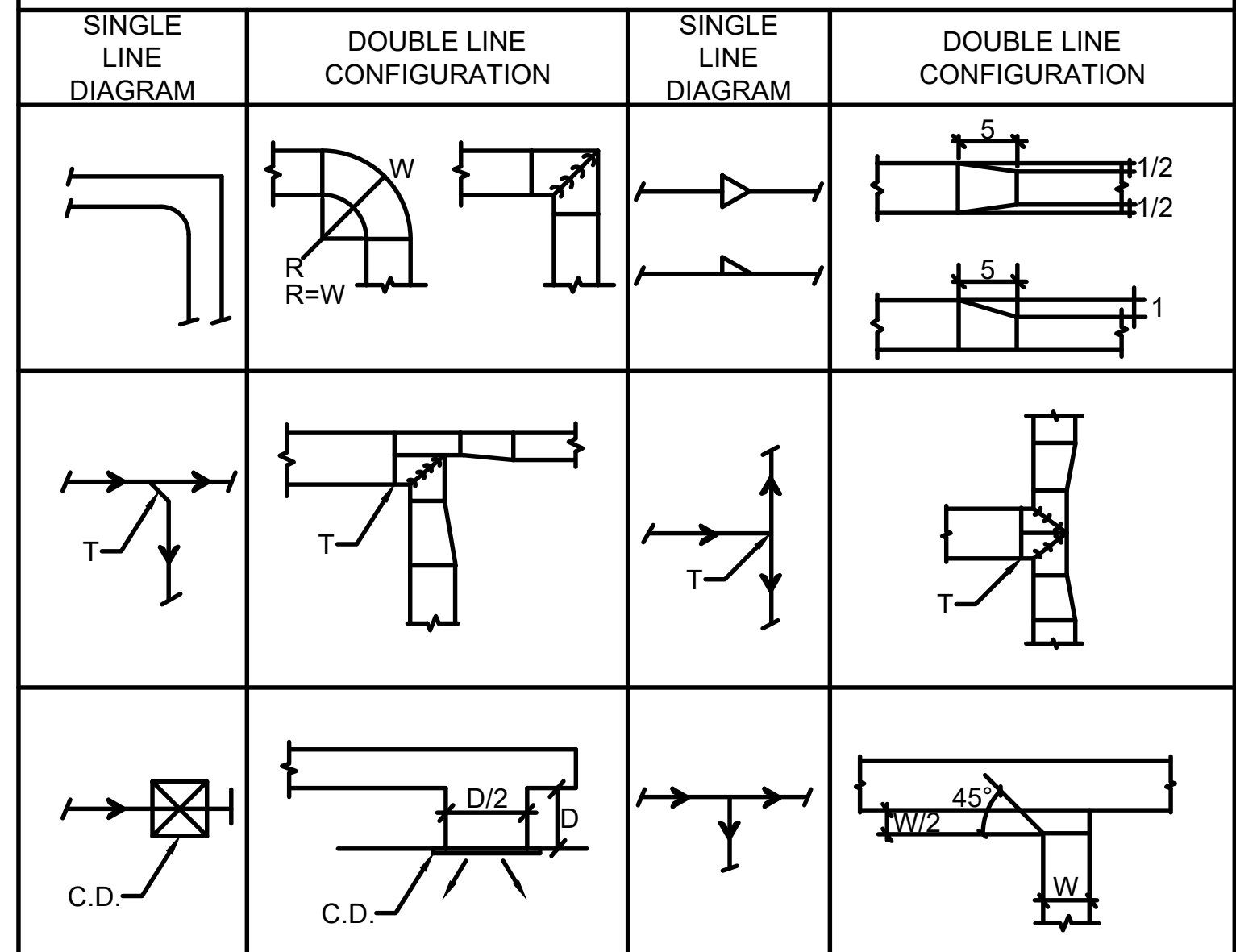
PIPE SUPPORT SPACING SCHEDULE		
TYPE OF PIPE	NOM SIZE	MAX. SPACING
COPPER	3/4" AND SMALLER	5 FT.
	1" TO 1-1/4"	6 FT.
	1-1/2" TO 3"	7 FT.

MAX. PIPE SIZE: 1-1/8" DIAMETER = 7 LBS. PER LINEAR FOOT.

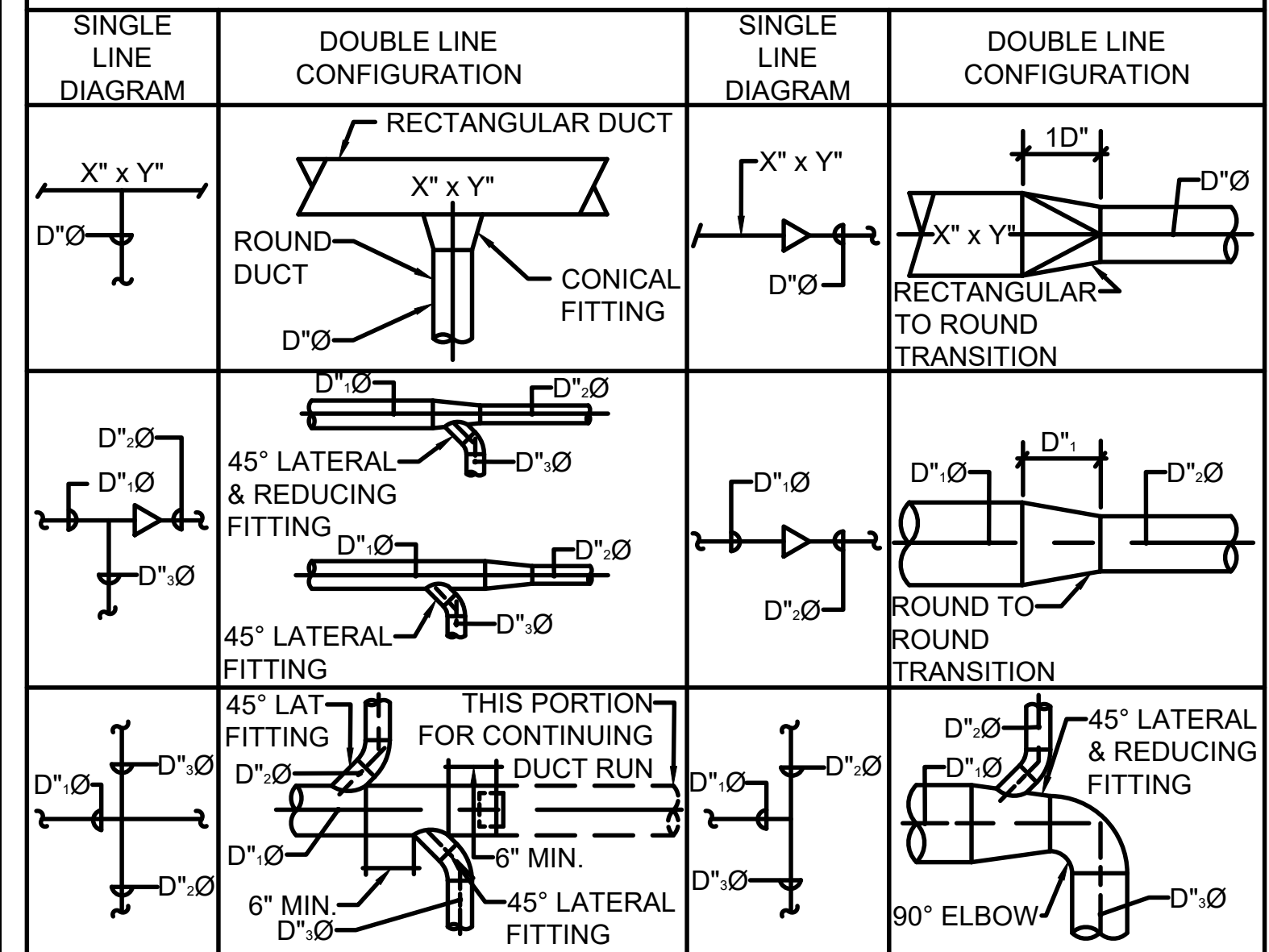
REFRIGERANT PIPING HANGER DETAIL

SCALE
NTS 1

RECTANGULAR LOW PRESSURE DUCTWORK



ROUND LOW PRESSURE DUCTWORK

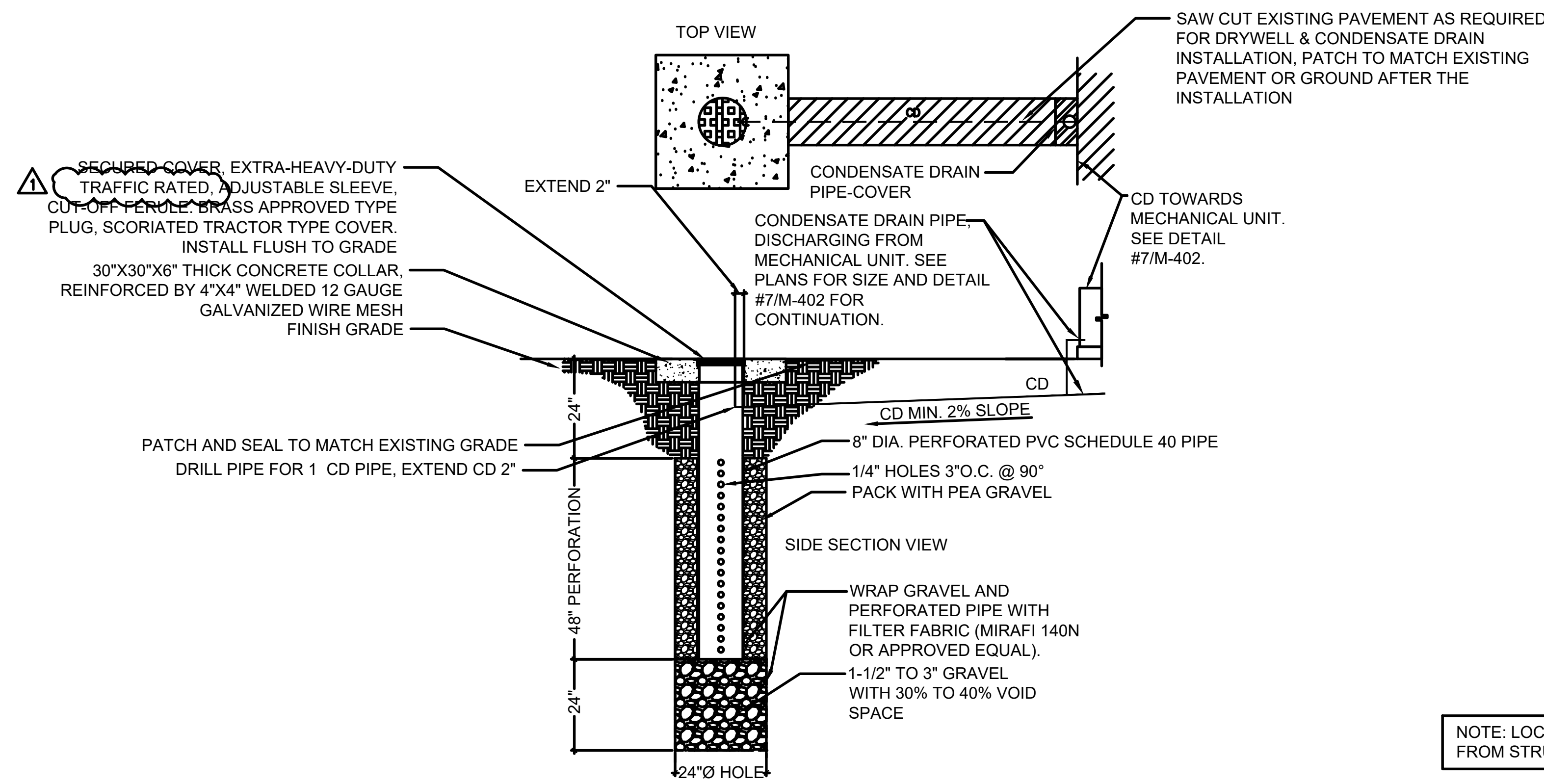
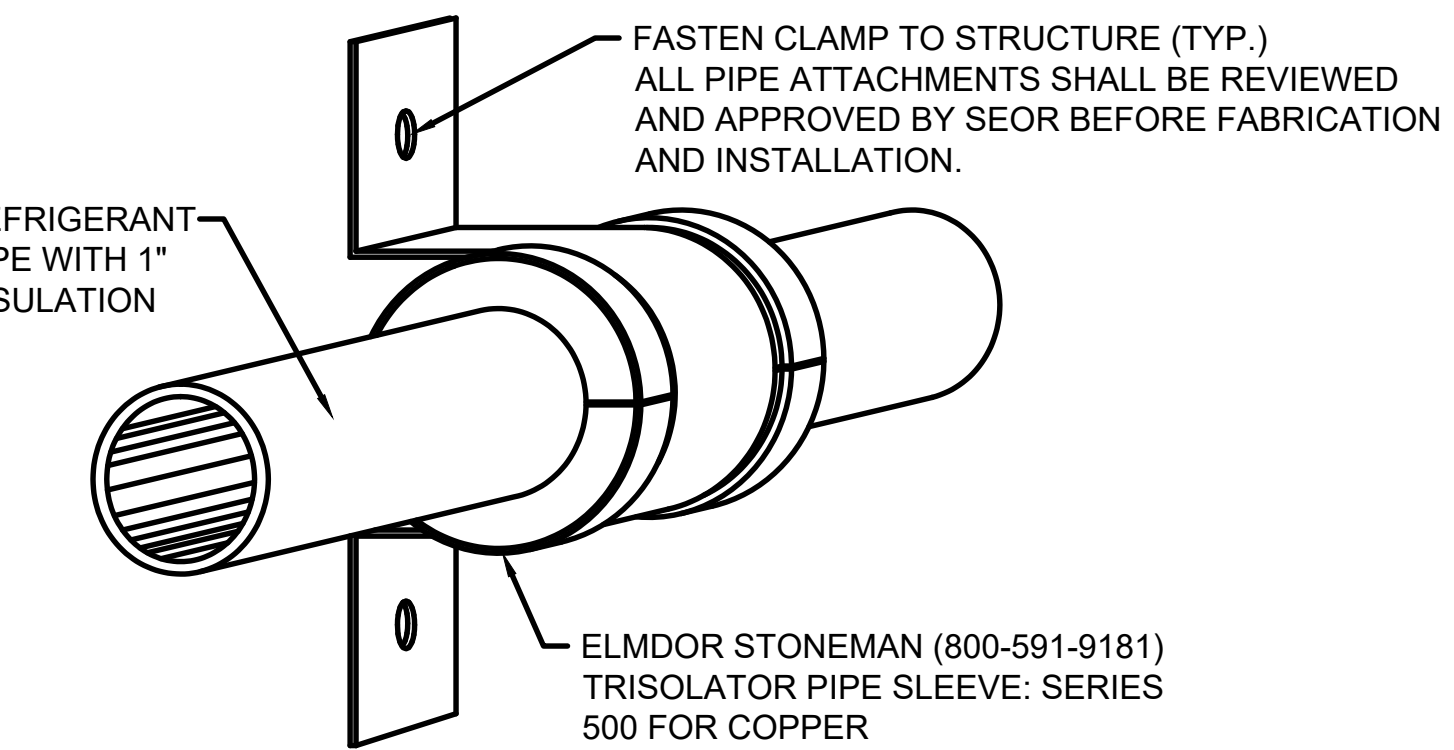


DUCT WORK

SCALE
NTS 4

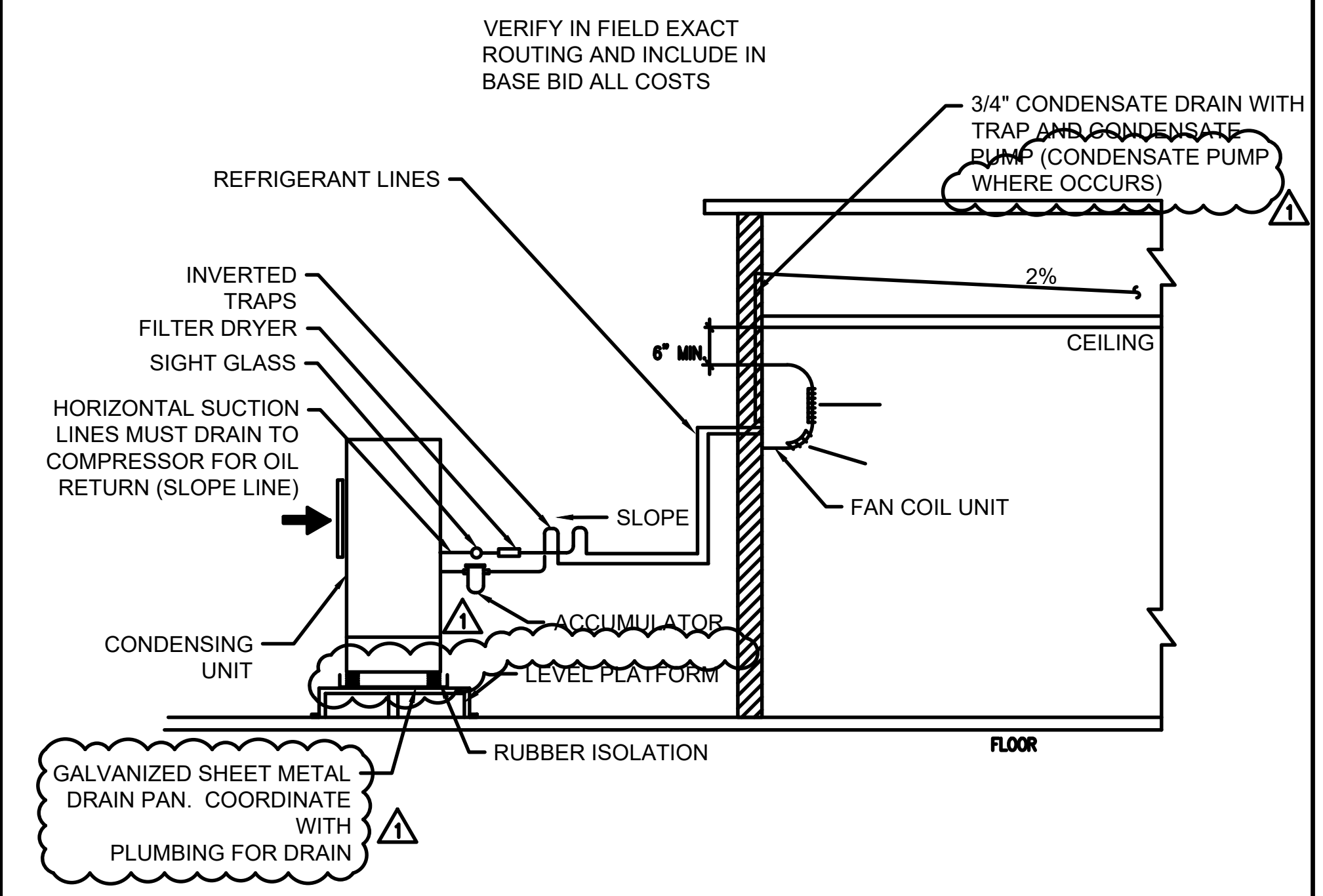
REFRIGERANT PIPE WALL ATTACHMENT DIAGRAM

SCALE
NTS 3



CONDENSATE DRAINAGE DRYWELL

SCALE
NTS 6

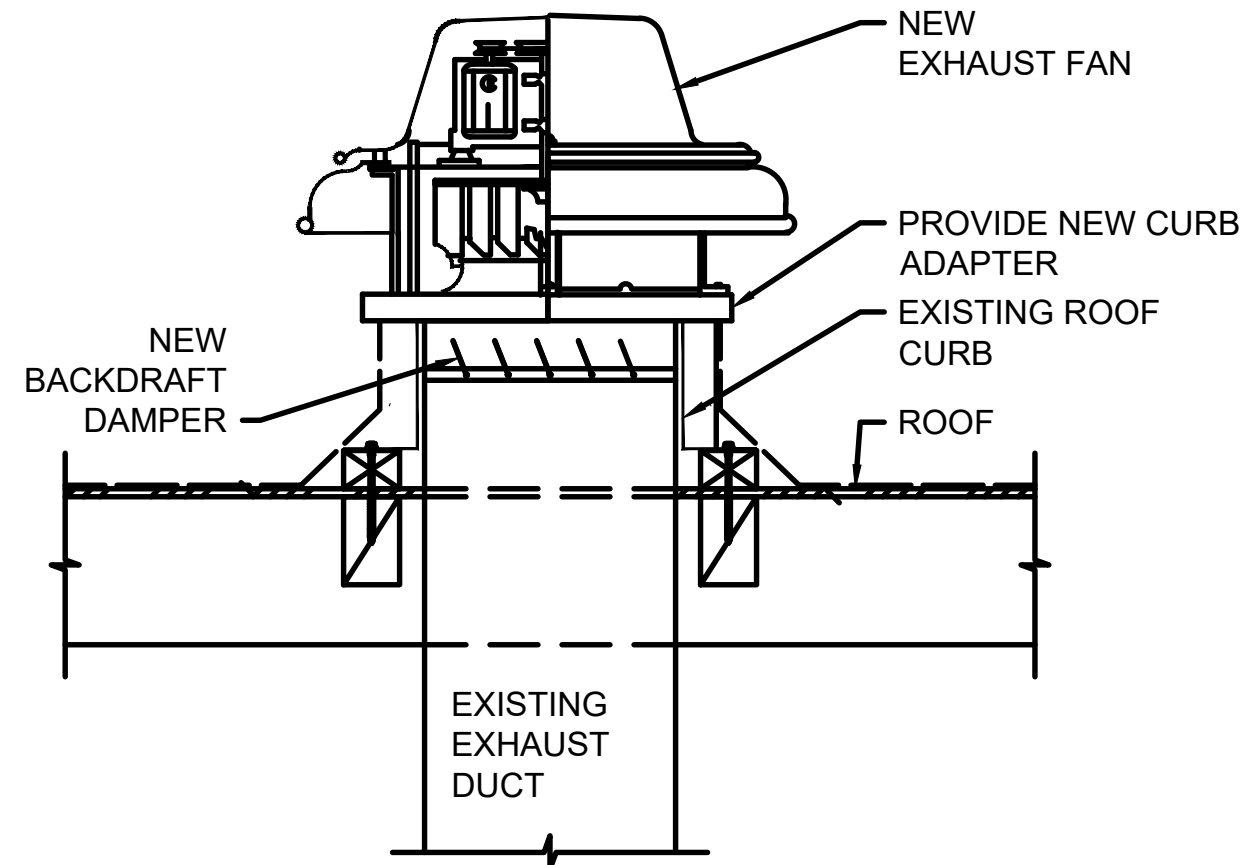


SPLIT SYSTEM INSTALLATION DETAIL

SCALE
NTS 5

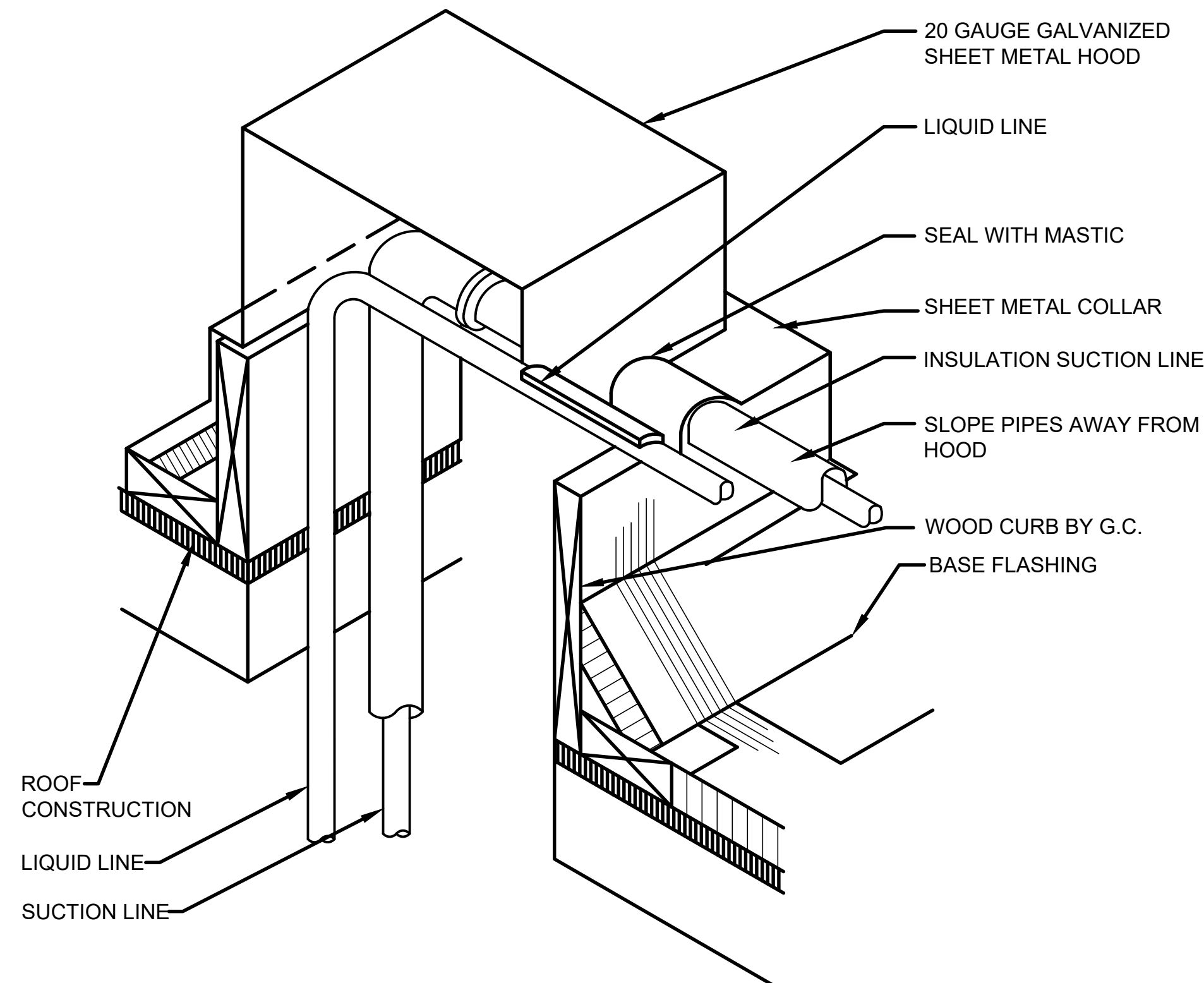
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DATE: 12/29/2025

PTN_64691-65 APPL_03-124869



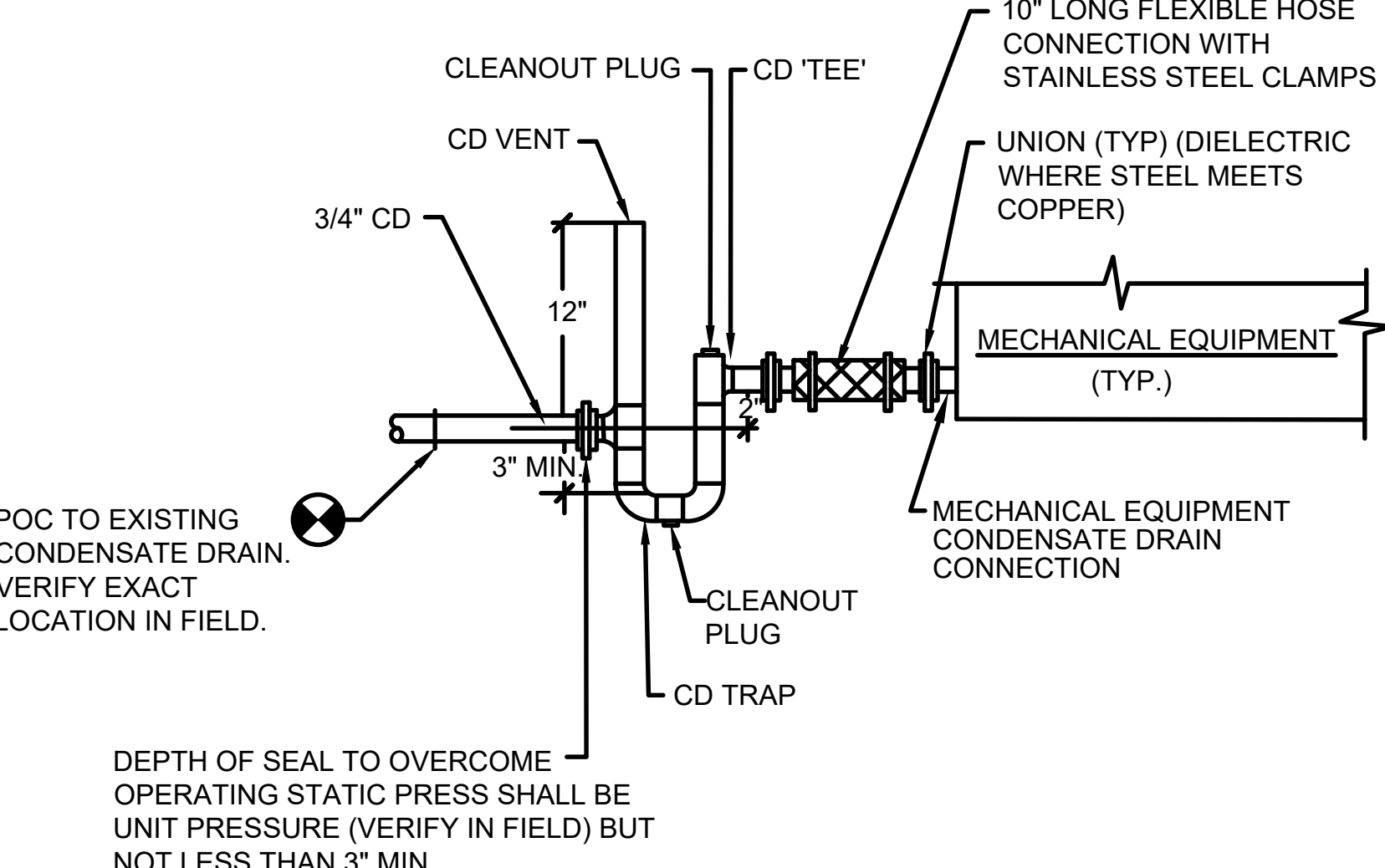
ROOF MOUNTED EXHAUST FAN DETAIL

SCALE
NTS 4



PIPING THROUGH ROOF DETAIL

SCALE
NTS 3

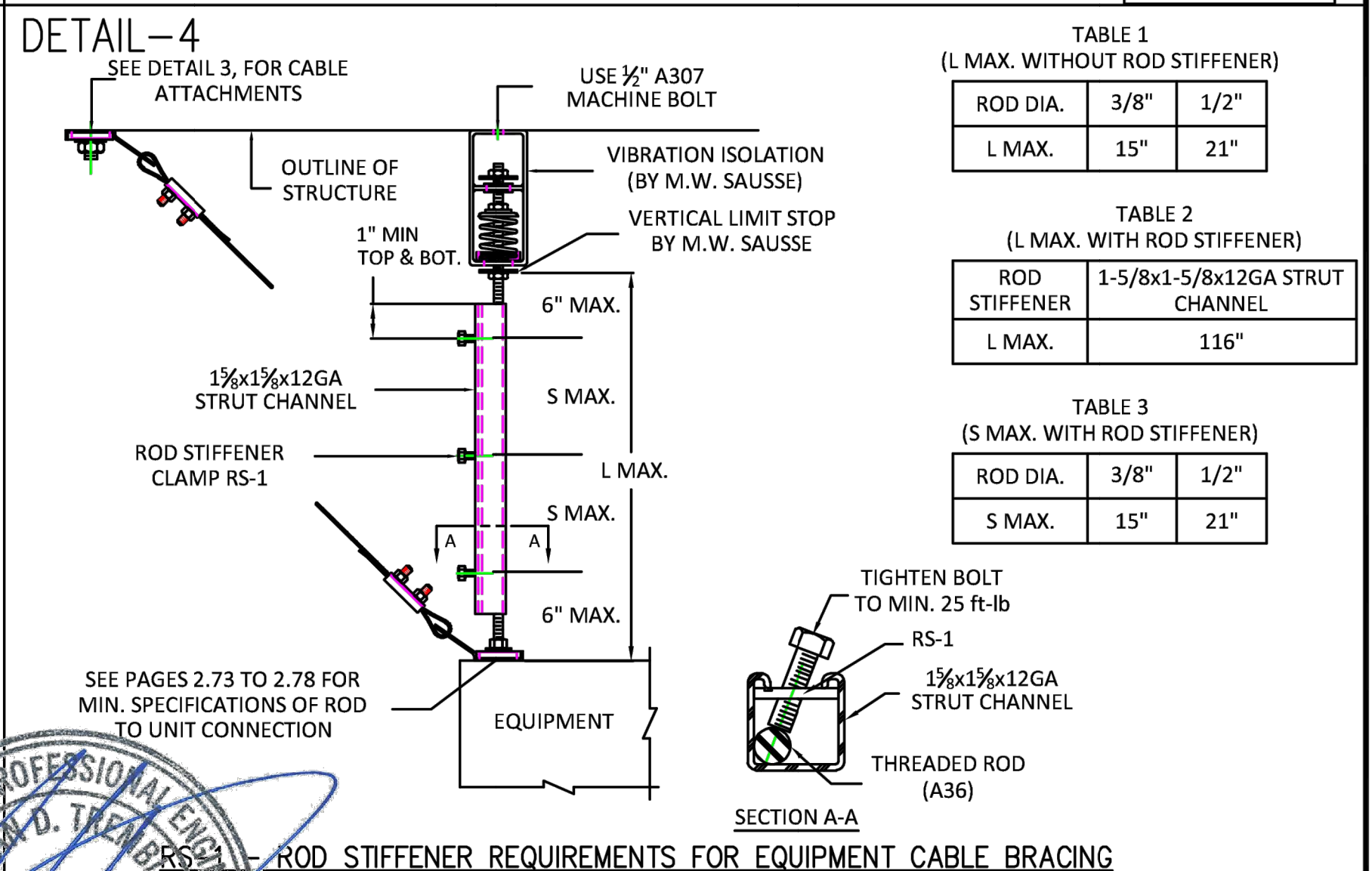
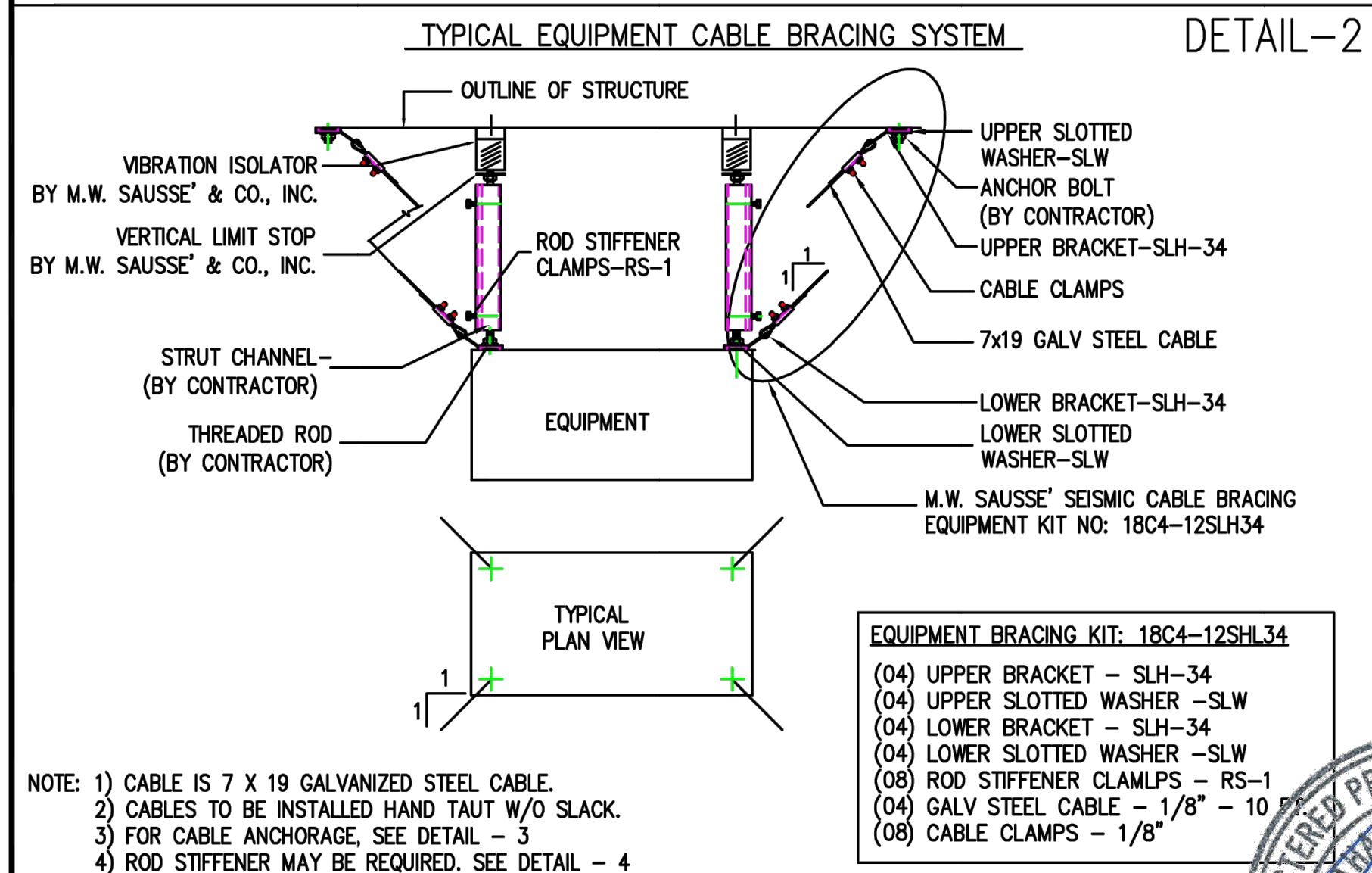
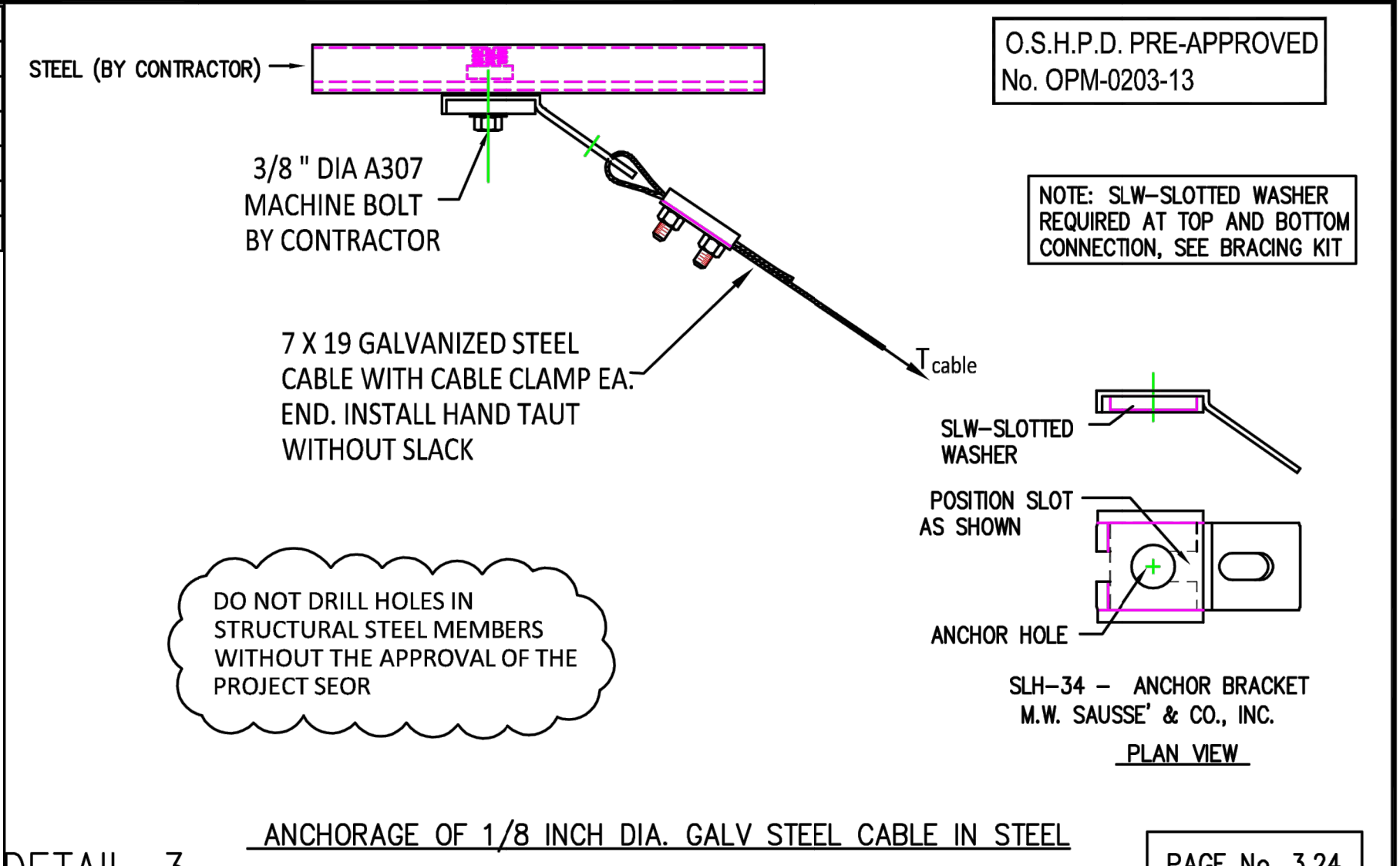
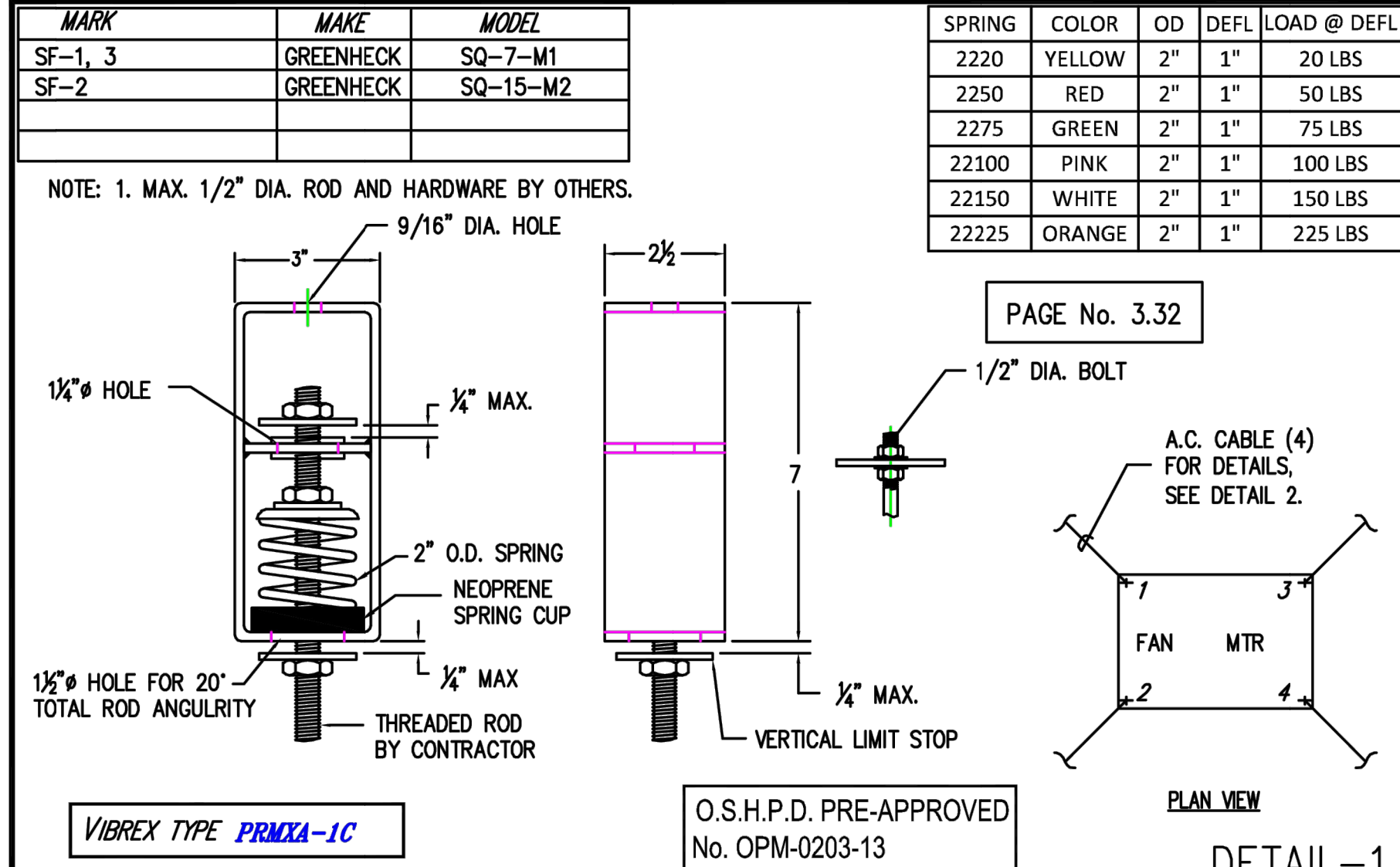


NOTES

1. PROVIDE CD PIPING PER SPECIFICATIONS. DRAIN MECHANICAL EQUIPMENT CONNECTION AS REQUIRED.
2. MANUALLY PRIME TRAP TO PREVENT SAG. PROVIDE REMOVABLE TRAP FOR REMOTE CLEANING.
3. SUPPORT DRAIN LINE TO PREVENT SAG AND TERMINATE TO AN APPROVED RECEPTOR LAVATORY TAILPIECE, SERVICE SINK, OR FLOOR SINK.
4. PROVIDE REMOVABLE TRAP.

FAN COIL CONDENSATE CONNECTION DETAIL

SCALE
NTS 2



M. W. SAUSSE & CO., INC.
28774 Whitherspoon Pkwy. Valencia, CA 91355
Phone: (661) 257-3311 Fax: (661) 257-7673

Vibrex PRMXA-1C & CBK

JOB NAME: WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
CUST.:
CUST. P.O.:
MECH. ENGR.: BUDLONG
MARK: SF-1, 2, 3 12/06/2024

DRN: JO
DATE: 12/6/24
DRAWING NO.: -1

SUPPLY FAN SUPPORT DETAILS

SCALE
NTS 1



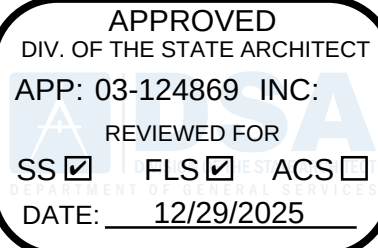
LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWDALE, CA 90260

MECHANICAL DETAILS
SHEET

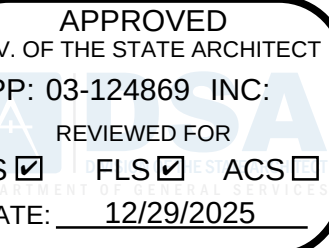
M-404

AS REVISED
ADDENDUM 1
DSA #03-124869

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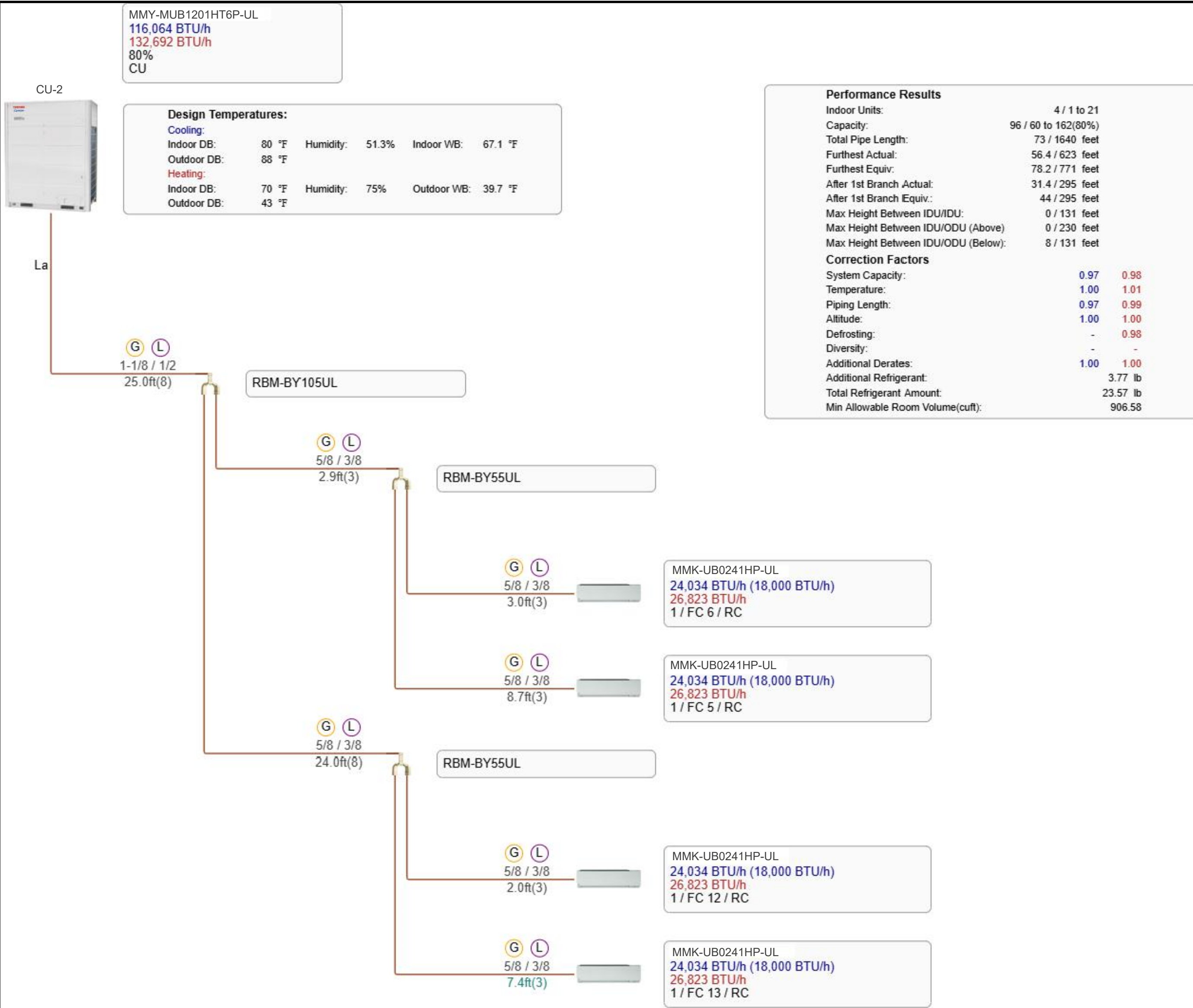
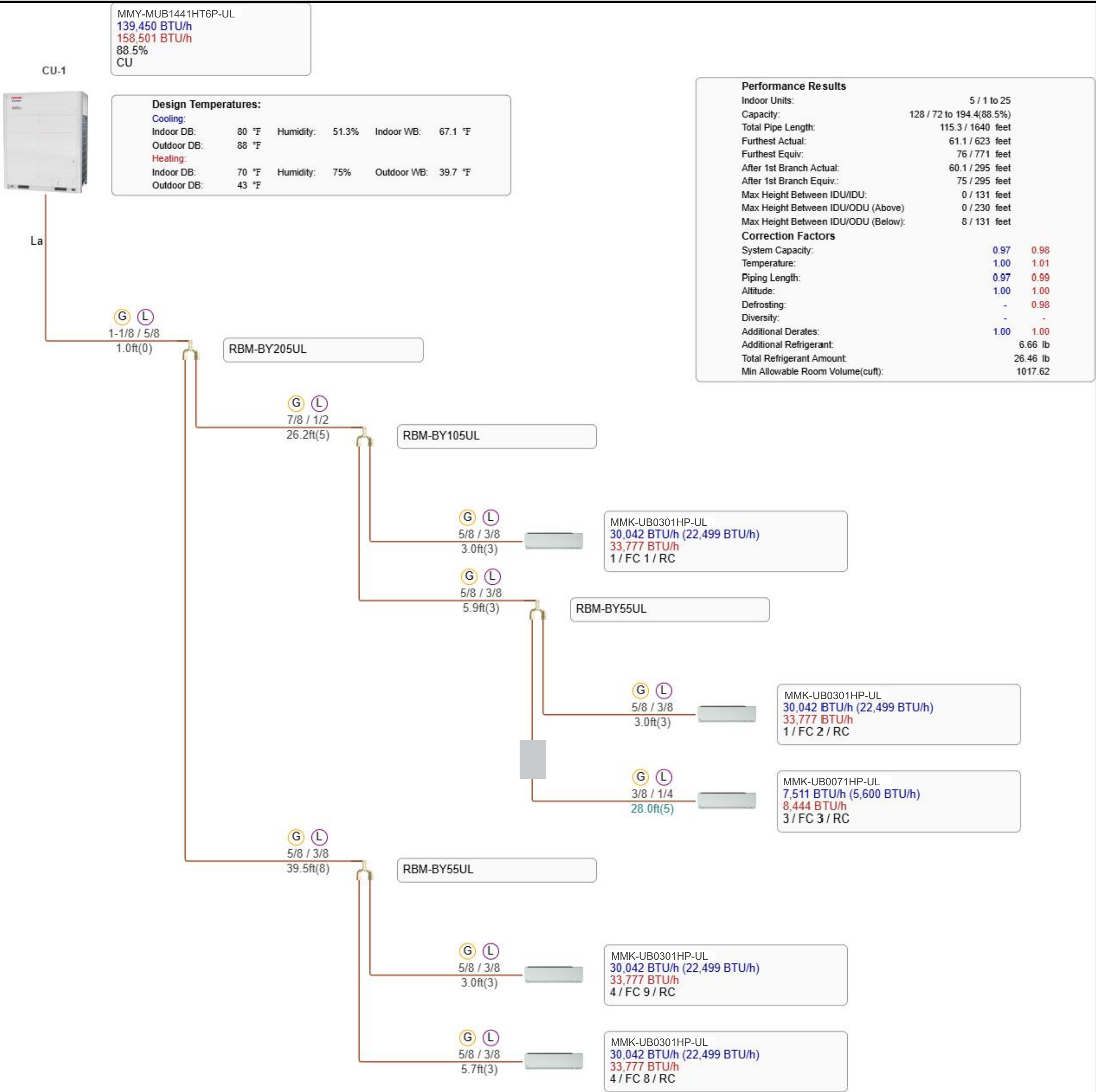


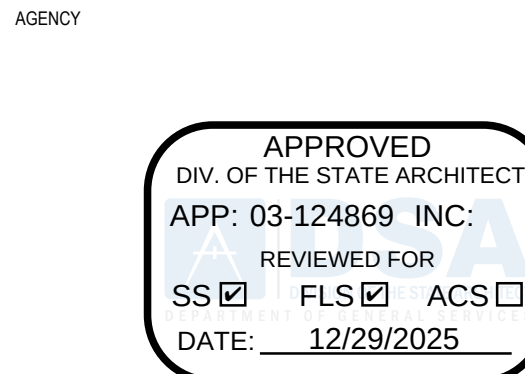
AS REVISED
ADDENDUM 1
DSA #03-124869

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST., LAWDALE, CA 90260

MECHANICAL PIPING
DIAGRAM

M-405





APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-124869 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☐
DATE: 12/29/2025

PTN: 64691-65 APPL: 03-124869

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
Project Name: WILL ROGERS MS - KITCHEN Date Prepared: 2025-11-06

1 Project Name

WILL ROGERS MS - KITCHEN

2 Run Title

Title 24 Analysis

3 Project Location

4110W 154TH ST.

4 City

LAWDALE

5 Standards Version

Compliance 2022

6 Zip code

90260

7 Compliance Software (version)

EnergyPro 9.4

8 Climate Zone

8

9 Building Orientation (deg)

0

10 Building Type(s)

• Nonresidential

11 Weather File

FULLERTON_STYP20.apw

12 Project Scope

• Existing alteration

13 Number of Dwelling Units

0

14 Total Unconditioned Floor Area in Scope (ft²)

1813

15 Total # of hotel/motel rooms

0

16 Total Unconditioned Floor Area (ft²)

0

17 Fuel Type

Natural gas

18 Nonresidential Conditioned Floor Area

1813

19 Total # of Stories (Habitable Above Grade)

1

20 Residential Conditioned Floor Area

0

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220601
Report Generated: 2025-11-06 00:28:18
Compliance ID: EnergyPro-5468-1125-0849

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
B. PROJECT SUMMARY
Table B shows which building components are included in the performance calculation. If indicated as not included, the project must show compliance prescriptively if within the permit application.

Envelope (See Table G)

Nonres Multifam

Not Included

Solar Thermal Water Heating (See Table I3)

☐ Performance

☒ Not Included

Mechanical (See Table H)

Nonres Multifam

Not Included

Covered Process: Commercial Kitchens (see Table J)

☐ Performance

☒ Not Included

Domestic Hot Water (See Table I)

Nonres Multifam

Not Included

Covered Process: Laboratory Exhaust (see Table J)

☐ Performance

☒ Not Included

Lighting (Indoor Conditioned, see Table K)

Nonres Multifam

Not Included

Photovoltaics (see Table F)

☐ Performance

☒ Not Included

Battery (see Table F)

☐ Performance

☒ Not Included

The following building components are ONLY eligible for prescriptive compliance and should be documented on the NRCC form (and if within the scope of the permit application (i.e. compliance will not be shown on the NRCC-PRF-E).

Indoor Lighting (Unconditioned) 140.6 & 170.2(e)

NRCC-LTI-E is required

Outdoor Lighting 140.7 & 170.2(e)

NRCC-LTO-E is required

Sign Lighting 140.8 & 170.2(e)

NRCC-LTS-E is required

Building Components Complying with Mandatory Measures

Electrical power systems, commissioning, solar ready, elevator and escalator requirements are mandatory and should be documented on the NRCC form listed if applicable (i.e. compliance will not be shown on the NRCC-PRF-E.)

Electrical Power Distribution 110.11

NRCC-ELC-E is required

Commissioning 120.8

NRCC-CXR-E is required

Solar and Battery 110.10

NRCC-SAB-E is required

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220601
Report Generated: 2025-11-06 00:28:18
Compliance ID: EnergyPro-5468-1125-0849

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
C1. COMPLIANCE SUMMARY
COMPLIES¹

Time Dependent Valuation (TDV)

Efficiency¹ (kBtu/ft² - yr)

Total² (kBtu/ft² - yr)

Source Energy Use

Total³ (kBtu/ft² - yr)

Standard Design

1112.03

n/a

n/a

Proposed Design

776.75

n/a

n/a

Compliance Margins

335.28

n/a

n/a

Pass

n/a

n/a

¹ Efficiency measures include improvements like a better building envelope and more efficient equipment

² Compliance Totals include efficiency, photovoltaics and batteries

³ New Construction, Complete Addition Scope: Building complies when all efficiency and total compliance margins are greater than or equal to zero and unmet load hour limits are not exceeded

Existing, Addition and Alteration Scope: Building complies when efficiency compliance margin is greater than or equal to zero and unmet load hour limits are not exceeded

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220601
Report Generated: 2025-11-06 00:28:18
Compliance ID: EnergyPro-5468-1125-0849

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
C2. TDV ENERGY COMPLIANCE RESULTS FOR PERFORMANCE COMPONENTS (Annual TDV Energy Use, kBtu/ft² - yr)

COMPLIES²

Energy Component

Standard Design (TDV)

Proposed Design (TDV)

Compliance Margin (TDV)¹

Space Heating

32.18

97.61

-65.43

Space Cooling

317.79

218.56

99.23

Indoor Fans

492.39

190.91

301.48

Heat Rejection

0

0

0

Pumps & Misc.

0

0

0

Domestic Hot Water

176.73

176.73

0

Indoor Lighting

92.94

92.94

0

Flexibility

EFFICIENCY COMPLIANCE TOTAL

1112.03

776.75

335.28 (30.2%)

Photovoltaics

Batteries

TOTAL COMPLIANCE

1112.03

776.75

335.28 (30.2%)

¹ Notes: This number in parenthesis following the Compliance Margin in column 4, represents the Percent Better than Standard.

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220601
Report Generated: 2025-11-06 00:28:18
Compliance ID: EnergyPro-5468-1125-0849

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
C3. TDV ENERGY RESULTS FOR NON-REGULATED COMPONENTS¹

Non-Regulated Energy Component

Standard Design (TDV)

Proposed Design (TDV)

Compliance Margin (TDV)¹

Receptacle

146.25

146.25

Process

436.12

436.12

Other Ltg

Process Motors

TOTAL (TOTAL COMPLIANCE + NON-REGULATED COMPONENTS)

1694.4

1359.12

335.28 (19.8%)

¹ Notes: This table is not used for Energy Code Compliance.

C3. ABOVE CODE QUALIFICATIONS

☐ This project is pursuing CalGreen Tier 1

☐ This project is pursuing CalGreen Tier 2

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
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Schema Version: rev 20220601
Report Generated: 2025-11-06 00:28:18
Compliance ID: EnergyPro-5468-1125-0849

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
C7. ENERGY USE SUMMARY

Energy Component

Standard Design Site (MWh)

Proposed Design Site (MWh)

Margin (MWh)

Standard Design Site (MBtu)

Proposed Design Site (MBtu)

Margin (MBtu)

Space Heating

6

20.5

Space Cooling

17.4

10

7.4

Indoor Fans

31.6

12.2

19.4

Heat Rejection

Pumps & Misc.

Domestic Hot Water

0.2

0.2

0

123.7

123.7

0

Indoor Lighting

5.9

5.9

0

Flexibility

EFFICIENCY TOTAL

55.1

34.3

20.8

144.2

123.7

20.5

Photovoltaics

Batteries

ENERGY USE SUBTOTAL

55.1

34.3

20.8

144.2

123.7

20.5

Receptacle

9.3

9.3

0

Process

27.9

27.9

0

Other Ltg

Process Motors

ENERGY USE TOTAL

92.3

71.5

20.8

144.2

123.7

20.5

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220601
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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
C8. ENERGY USE INTENSITY (EUI)

Standard Design (kBtu/R² / yr)

Proposed Design (kBtu/R² / yr)

Margin (kBtu/R² / yr)

Margin Percentage

GROSS EUI¹

253.24

202.79

50.45

19.92

NET EUI¹

253.24

202.79

50.45

19.92

¹ Notes: Gross EUI is Energy Use Total (not including PV)/Total Building Area. Net EUI is Energy Use Total (including PV)/Total Building Area.

D1. EXCEPTIONAL CONDITIONS

• The building does not include service water heating. Verify that service water heating is not required and is not included in the design.

• The user model includes space(s) that are designed to be served by mechanical cooling systems, but the cooling systems were not included in the simulation model. A cooling system has been modeled for both the proposed and standard cases.

• The user model includes space(s) without sufficient cooling equipment. Cooling equipment has been added to the model to meet cooling loads.

• Designed Occupancy used for Calculating Ventilation

H1. DRY SYSTEM EQUIPMENT (FURNACES, AIR HANDLING UNITS, HEAT PUMPS, VRF, ECONOMIZERS ETC.)

01

02

03

04

05

06

07

08

09

10

11

12

Equipment Name

Equipment Type

Qty

Total Heating Output (kBtu/h)

Supp Heat Output (kBtu/h)

Efficiency Unit

Efficiency

Total Cooling Output (kBtu/h)

Efficiency Unit

Efficiency

Economizer Type (if present)

Status¹

CU-01

Variable Refrigerant Flow

1

162

N/A

COP

4

144

EER

11.2

23.1

N/A

N

CU-02

Variable Refrigerant Flow

1

135

N/A

COP

4.2

120

EER

11.4

23

N/A

N

¹ Status: N - New, A - Altered, E - Existing

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
H3. NONRESIDENTIAL / COMMON USE AREA FAN SYSTEMS SUMMARY

01

02

03

04

05

06

07

08

09

10

11

12

13

Name or Item Tag

Qty

Design OA CFM

CFM

Power

Power Units

Control

Fan Type

CFM

Power

Power Units

Control

Status¹

2-Serving line 3 106-VRF

2

330

940

0.07

BHP

VSD

N/A

N/A

N/A

N/A

N/A

N

3-Office 118-VRF

1

30

285

0.03

BHP

VSD

N/A

N/A

N/A

N/A

N/A

N

4-Serving line 1 103-VRF

2

330

940

0.07

BHP

VSD

N/A

N/A

N/A

N/A

N/A

N

5-Kitchen 101-VRF

4

0

700

0.03

BHP

VSD

N/A

N/A

N/A

N/A

N/A

N

¹ Status: N - New, A - Altered, E - Existing

H5. GENERAL EXHAUST FAN SUMMARY

01

02

03

04

05

06

07

08

System ID

Zone Name

Qty

CFM

Power

Power Units

Continuous Operation?

Status¹

Kitchen 10144-EF

4-Kitchen 101

1

2500

1.5

BHP

No

E

¹ Status: N - New, A - Altered, E - Existing

H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01

02

03

04

05

06

07

Zone Name

Ventilation Function

of People

Supply OA CFM

Exhaust CFM

Conditioned Area (sf)

DCV or Occupant Sensor Controls, or Both

1-Serving line 3 106

Calentaria/fast-food dining

44

660

0

404

N/A

2-Office 118

Office - Office space

2

30

0

132

N/A

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CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method
H9. NONRESIDENTIAL / COMMON USE AREA & HOTEL/MOTEL VENTILATION

01

02

03

04

05

06

07

Zone Name

Ventilation Function

of People

Supply OA CFM

Exhaust CFM

Conditioned Area (sf)

DCV or Occupant Sensor Controls, or Both

3-Serving line 1 103

Food Service - Cafeteria/fast-food dining

44

660

0

470

N/A

4-Kitchen 101

Food Service - Kitchen (cooking)

10

150

2500

807

N/A

H11. ZONAL SYSTEM AND TERMINAL UNIT SUMMARY

01

02

03

04

05

06

07

08

09

10

11

12

System ID

System Type

Qty

Rated Capacity (kBtu/h)

Heating

Cooling

Design

Min.

Min. Ratio

Power

Power Units

Cycles

VSD

2-Serving line 3 106-VRF

Variable Refrigerant Flow

2

34

30

940

705

0.75

0.07

BHP

Continuous

☒

3-Office 118-VRF

Variable Refrigerant Flow

1

8.5

7.5

285

160

0.56

0.03

BHP

Continuous

☒

4-Serving line 3 103-VRF

Variable Refrigerant Flow

2

34

30

940

705

0.75

0.07

BHP

Continuous

☒

5-Kitchen 101-VRF

Variable Refrigerant Flow

4

27

24

700

355

0.51

0.03

BHP

Continuous

☒

L. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections made by Documentation Author indicate which Certificates of Installation must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the Building Inspector during construction and can be found online

Building Component

Form/Title

Envelope

NRCC-ENV-E - Envelope (for all buildings)

Mechanical

NRCC-MCH-E - For all buildings with Mechanical Systems

Indoor Lighting

NRCC-LTI-E - Indoor Lighting (for all buildings)

CA Building Energy Efficiency Standards - 2022 Nonresidential Compliance
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An MBEISBEILSBE Firm
Glendale/Downtown LA/Fremont/Camarillo
W W W . B U D L O N G . C O M
JDBP - 24-025

LES WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST., LAWDALE, CA 90260

JOB 24-025
SCALE AS NOTED
PM
DATE 01/22/2025
ADDENDUM 1 - 11/13/2025

MECHANICAL
TITLE-24

AS REVISED
ADDENDUM 1
DSA #03-124869

M-501

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 03-124869 INC.
REVIEWED FOR
SS ☒ FLS ☒ ACS ☐
DATE: 12/29/2025

PTN_64691-65 APPL_03-124869

1
2
3
4
5
6
7
8
9
10



An MBEISBEIDBEILSBE Firm
GlendaleDowntown LAFremontCamarillo
W W . B U D L O N G . C O M
JOB# - 24-025

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWNDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWNDALE, CA 90260

JOB	24-025
SCALE	AS NOTED
PM	
DATE	01/22/2025
▲	ADDENDUM 1 - 11/13/2025
▲	
▲	
▲	

MECHANICAL
TITLE-24

AS REVISED
ADDENDUM 1
DSA #03-124869

M-502

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method

M. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Selections made by Documentation Author indicate which Certificates of Acceptance must be submitted for the features to be recognized for compliance. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP).

Building Component	Form/Title & System Name(s)
Envelope	NRCA-ENV-02-F - NRFC label verification for fenestration
Indoor Lighting	NRCA-LTI-02-A - Occupancy Sensors and Automatic Time Switch Controls.
Indoor Lighting	NRCA-LTI-03-A - Automatic Daylight Controls.

N. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION
Selections made by Documentation Author indicate which Certificates of Verification must be submitted for the features to be recognized for compliance. These documents must be retained and provided to the building inspector during construction and can be found online.
There are no Certificates of Verification applicable to this project

CERTIFICATE OF COMPLIANCE - NONRESIDENTIAL PERFORMANCE COMPLIANCE METHOD
Nonresidential Performance Compliance Method

Documentation Author's Declaration Statement
I, I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Sunil Patel	Documentation Author Signature:
Company: Budlong & Associates	Signature Date: 2025-11-06
Address: 700 N. Central Ave Suite 520	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Glendale, CA 91203	Phone:

- Responsible Person's Declaration statement
I certify the following under penalty of perjury, under the laws of the State of California:
- The information provided on this Certificate of Compliance is true and correct.
 - 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).
 - 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.
 - 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.
 - I understand that a registered copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections, and I will take the necessary steps to accomplish this requirement.
 - I understand that a registered copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy, and I will take the necessary steps to accomplish these requirements.

Responsible Designer Name: Sunil Patel	Responsible Designer Signature:
Company: Budlong & Associates	Date Signed: 2025-11-06
Address: 700 N. Central Avenue, Ste 520,	License #: 29448
City/State/Zip: Glendale, CA 91203	Title: Mechanical Engineer
Phone: (818) 638-8780	Scope:

1

1/24/2025 LESD Rogers MS Central Kitchen HVAC Upgrades/024-025 E-001 ELECTRICAL FRONT SHEET.dwg, 11/13/2025 5:05:33 PM, partick

GENERAL NOTES	
1. CONSULT WITH THE OWNER BEFORE STARTING WORK.	
2. NO CONDUITS ARE TO BE INSTALLED ON ARCADES OR ROOF U.O.N. ALL EXPOSED CONDUITS, SUPPORTS AND JUNCTION BOXES SHALL BE PAINTED TO MATCH THE PREDOMINANT COLOR OF THE BUILDING, AS APPROVED BY OWNER AND ENGINEER OF RECORD, EXCEPT WIREMOLD.	
3. WIREMOLD SHALL BE WITH THE FACTORY FINISH MOST CLOSELY MATCHING THE COLOR OF WALL ON WHICH WIREMOLD IS TO BE INSTALLED. DO NOT PAINT WIREMOLD.	
4. COORDINATE THE ELECTRICAL WORK WITH THE WORK OF OTHER TRADES.	
5. THE CONTRACTOR SHALL USE SUFFICIENT BARRICADES AND TEMPORARY PROTECTION DEVICES TO PREVENT PEDESTRIANS OR NON-AUTHORIZED PERSONNEL ACCESS TO OPEN TRENCHES OR CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL ERECT A SAFETY BARRICADE AT ALL OPEN TRENCHES, DITCHES, PITS, SUMPS, ETC FOR THE PROTECTION AND SAFETY OF THE PUBLIC. ALL TRENCHES OUTSIDE OF THE BARRICADE LIMITS SHALL BE BACKFILLED AND PAVED NOT LATER THAN 72 HOURS AFTER BEING OPENED. DURING THE TIME THE TRENCHES ARE OPEN IN TRAFFIC AREAS, THE CONTRACTOR SHALL PROVIDE TRAFFIC PLATES. SAFETY BARRICADES SHALL BE PANELIZED CHAIN LINK FENCE. EACH FENCE PANEL SHALL BE 6FT TALL X 10FT WIDE WITH STAND AND TIED TOGETHER END TO END WITH A MINIMUM 8-GAUGE WIRE. NO TRENCHES SHALL BE LOCATED OUTSIDE BARRICADES.	25. ALL CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS SHALL BE COPPER, TYPE THWN/THHN, RATED FOR 75°C. SIZES #12 AWG MAY BE SOLID OR STRANDED, #10 AND LARGER SHALL BE STRANDED. PROVIDE 75°C RATED AND APPROVED TERMINATION FOR ALL CONDUCTORS.
6. WHERE STRUCTURAL WALLS ARE CORED FOR NEW CONDUIT RUNS, SEPARATION BETWEEN CORED HOLES SHALL BE THREE INCHES FROM NEW HOLES, UNLESS DIRECTED OTHERWISE BY THE OWNER. PROVIDE X-RAY TO PROTECT REBAR. STRUCTURAL ENGINEER APPROVAL IS REQUIRED FOR REBAR CUTTING OR REMOVAL.	26. ALL ELECTRICAL WORK SHALL BE PER THE APPLICABLE NEC CODE. CONTRACTOR SHALL INCLUDE IN HIS BID ALL REQUIRED LABOR, MATERIAL, EXPERTISE AND QUALIFIED PERSONNEL TO COMPLETELY INSTALL IN A CODE COMPLIANT MANNER. ALL WORK SHOWN ON THE PLANS OR REFERRED TO IN THE SPECIFICATIONS.
7. ALL FEEDERS AND BRANCH CIRCUITS SHALL CARRY A GROUND WIRE, SIZED AS PER N.E.C. ARTICLE 250.	27. WHEN THERE ARE DISCREPANCIES BETWEEN CONTRACT DOCUMENTS (DRAWINGS AND/OR SPECIFICATIONS), OBTAIN CLARIFICATION FROM THE ENGINEER PRIOR TO BID. FOR BIDDING PURPOSES THE MORE STRINGENT OR MORE EXPENSIVE REQUIREMENT(S) SHALL APPLY.
8. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND EQUIPMENT AND MATERIAL APPROVED FOR USE UNDER THIS CONTRACT.	28. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A DAILY RECORD OF ALL DEVIATIONS FROM THE BID DRAWINGS, ALL DIMENSIONS AND OTHER INFORMATION NECESSARY TO COMPLETELY EXPLAIN AND LOCATE ALL ELEMENTS OF THESE DEVIATIONS SHALL BE RECORDED. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL SUBMIT TO THE OWNER, ONE COMPLETE SET OF REPRODUCIBLE DRAWINGS CORRECTED TO REFLECT "AS-BUILT" CONDITIONS OF THE WORK.
9. PRIOR TO PULLING ANY CONDUCTORS, CLEAN AND MANDREL ALL CONDUITS.	29. ANY SUBMITTALS FOR EQUIPMENT DIFFERENT FROM THE SPECIFIED ITEMS SHOWN ON THE PLANS SHALL BE ACCOMPANIED BY CUT SHEETS FOR THE ORIGINAL SPECIFIED ITEM(S). SUBMITTALS WITHOUT THE SPECIFIED CUT SHEETS WILL BE REJECTED AS INCOMPLETE.
10. CONTRACTOR SHALL INSTALL EQUIPMENT PER ADA (AMERICAN DISABILITIES ACT) REQUIREMENTS.	30. CONDUIT INSTALLED BELOW EXISTING SLAB-ON-GRADE SHALL BE LOCATED BELOW BOTTOM OF EXISTING SLAB.
11. EXTERIOR EQUIPMENT, JUNCTION BOXES, ENCLOSURES AND CONNECTIONS SHALL BE WEATHERPROOF TYPE SUITABLE FOR EXTERIOR INSTALLATION.	31. "PROVIDE" SHALL BE DEFINED AS: FURNISH AND INSTALL.
12. COORDINATION: A. IN THE EVENT THAT CERTAIN FEATURES OF THE CONSTRUCTION ARE NOT FULLY SHOWN ON THE CONSTRUCTION DOCUMENTS, THE FEATURES SHALL BE OF THE SAME CHARACTER AS SIMILAR CONDITIONS THAT ARE SHOWN.	32. ALL MATERIALS, EQUIPMENT, CONDUIT AND WIRING SHALL BE NEW AND PROVIDED BY THE CONTRACTOR. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR EQUIPMENT AND MATERIAL APPROVED FOR USE UNDER THIS CONTRACT.
13. ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDUITS SHALL BE VERIFIED ON THE SITE BY GENERAL CONTRACTOR, AND EACH SUB-CONTRACTOR BEFORE THE WORK BEGINS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE OWNER'S ATTENTION BEFORE CONSTRUCTION BEGINS.	33. WIRING FOR ALL LOW VOLTAGE SYSTEMS SHALL BE ENCLOSED IN CONDUIT AND/OR RACEWAY.
14. THE ENGINEER HAS PREPARED THESE DOCUMENTS ONLY FOR IMPROVEMENTS SPECIFIED, DETAILED OR SHOWN AS NEW WORK, AND ASSUMES NO RESPONSIBILITY FOR OTHER CONSTRUCTION, MATERIAL OR EQUIPMENT NOTED AS "PROVIDED BY OTHERS".	34. ALL DIMENSIONS AND ELEVATIONS SHALL BE CHECKED AND VERIFIED ON THE SITE BY THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR BEFORE THE WORK BEGINS. ALL PERCEIVED ERRORS, OMISSIONS AND DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION BEFORE CONSTRUCTION BEGINS.
15. PROVIDE NYLON PULL CORD OR STRINGS IN ALL EMPTY CONDUITS.	35. ALL RACEWAYS INSIDE OF BUILDING SHALL BE CONCEALED. INCLUDE ALL REQUIRED DEMOLITION, CUTTING, PATCHING AND FINISH TO MATCH EXISTING INSTALLATION AS REQUIRED TO INSTALL NEW CONDUIT AND RACEWAYS IN EXISTING BUILDING.
16. ALL JUNCTION BOX COVER PLATES FOR BRANCH CIRCUIT SYSTEM SHALL BE CLEARLY MARKED WITH PERMANENT INK FELT PEN IDENTIFYING THE BRANCH CIRCUIT (BOTH PANEL NUMBER AND CIRCUIT NUMBER) CONTAINED IN THE BOX.	36. ALL CONDUIT PENETRATIONS THROUGH FIRE-RATED FLOOR SLABS, SHAFTS AND WALLS SHALL BE SEALED AGAINST THE SPREAD OF FIRE OR SMOKE WITH APPROVED CABLE & CONDUIT FIRE STOPS OR FIRE RESISTANT SEALANT TO GIVE THE EQUIVALENT FIRE RATING OF THE STRUCTURE BEFORE THE PENETRATION. ALL OTHER NON-RATED PENETRATIONS OF STRUCTURES SHALL BE SEALED.
17. THE CONTRACTOR SHALL MAINTAIN THE UNIFORMITY AND CONTINUITY OF THE GROUNDING SYSTEM IN ALL CONDUITS/RACEWAYS.	37. EXPOSED AND CONDUITS ABOVE T-BAR CEILINGS SHALL BE INSTALLED PARALLEL TO OR AT RIGHT ANGLES TO EXISTING BEAMS OR WALLS. EXPOSED CONDUITS UP TO 7'-0" ABOVE FINISH FLOOR SHALL BE RIGID GALVANIZED STEEL AND ABOVE 7'-0" MAY BE EMT.
18. TEST THE ENTIRE SYSTEM TO DEMONSTRATE TO THE OWNER THAT THE ELECTRICAL COMPONENTS AND SPECIAL SYSTEMS ARE COMPLETE AND FUNCTION PROPERLY. MAKE NECESSARY CORRECTIONS AND LEAVE SYSTEMS READY FOR OPERATION.	38. PROVIDE ELECTRICAL PANELS WITH TYPEWRITTEN "AS-BUILT" PANEL SCHEDULE. PANEL SCHEDULE SHALL INCLUDE LOCATION, QUANTITY AND TYPE OF DEVICES SERVED.
19. EXPOSED CONDUITS SHALL BE INSTALLED ALONG MECHANICAL PIPES. INSIDE BUILDING THE EXPOSED CONDUITS UP TO 7'-0" SHALL BE EMT AND ABOVE 7'-0" MAY BE EMT. ALL EXPOSED EXTERIOR CONDUITS SHALL BE EMT CONDUITS. THREADLESS CONNECTORS & COUPLINGS SHALL NOT BE USED. ALL EXPOSED CONDUITS, RACEWAYS, AND BOXES SHALL BE PAINTED TO MATCH THE SURFACE WHERE INSTALLED. DO NOT PAINT THE WIREMOLD.	39. PROVIDE ELECTRICAL PANELS WITH ENGRAVED NAMEPLATE ON OUTSIDE OF PANEL ABOVE DOOR OPENING.
20. DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND THE SIZE AND LOCATION OF EQUIPMENT IS INDICATED TO SCALE WHENEVER POSSIBLE. COORDINATE LOCATION AND LAYOUT WITH OTHER WORK. CONTRACTOR SHALL PROVIDE TO THE ENGINEER A 1/8"=1'-0" SCALED DRAWING OF ELECTRICAL EQUIPMENT ROOMS SHOWING LOCATION AND CLEARANCES OF SUBMITTED EQUIPMENT FOR REVIEW AND APPROVAL PRIOR TO ORDERING OF ELECTRICAL EQUIPMENT.	40. SUPPORT CONDUIT 2-1/2 INCH TRADE SIZE OR SMALLER WITH U.L. LISTED CLAMPS AND HANGERS IN ACCORDANCE WITH SMACNA STANDARDS.
21. THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS AND WIREWAY SHALL BE IN ACCORDANCE WITH THE "GUIDELINE FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS", PUBLISH BY SMACNA AND PPIC.	41. EQUIPMENT SPECIFIED ON THESE DRAWING ARE BASIS OF DESIGN CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ALL ADDITIONAL DESIGN AND CONSTRUCTION COSTS INCURRED BY THE USE OF ANY PRODUCT OTHER THAN THE BASIS OF DESIGN.
22. PROVIDE HANGERS, SUPPORTS, SEISMIC RESTRAINTS AND/ OR BRACING FOR ALL EQUIPMENT, CONDUIT, AND LIGHTING FIXTURES TO SUSTAIN VERTICAL LOADS AND RESIST HORIZONTAL FORCES IN ANY DIRECTION TO COMPLY WITH 2022 EDITION OF TITLE 24, PART 2, CALIFORNIA BUILDING CODE, CHAPTER 16, TABLE 16A AND ASSOCIATED NOTES.	42. PROVIDE BREAKERS TIES TO BREAKERS FEEDING MULTI WIRE RUNS.
23. PER CEC 300-21, "OPENINGS AROUND ELECTRICAL PENETRATIONS THROUGH FIRE-RESISTANT-RATED WALLS, PARTITIONS, FLOORS, CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING."	43. THESE PLANS ARE DIAGRAMMATIC. CONDUIT EXACT ROUTING, BOXES, FASTENERS, ETC. ARE CONSIDERED AS PART OF THE MEANS AND METHODS THAT THE CONTRACTOR IS USING TO PROVIDE AN OPERABLE AND APPROVED INSTALLATION
24. ALL OUTLETS SHALL BE OFFSET BY A MINIMUM OF 24".	44. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCREDITED BY THE UNITED STATES OCCUPATIONAL SAFETY HEALTH ADMINISTRATION.
	45. CONTRACTOR TO PROVIDE AUXILIARY J-BOXES WHEREVER REQUIRED TO FACILITATE THE INSTALLATION.
	46. FOR ANY J-BOXES, PULL-BOXES AND HANDHOLES WITHOUT ANY SIZING INFORMATION ON THE PLANS CONTRACTOR SHALL BE RESPONSIBLE TO SIZE ENCLOSURES PER CEC SEC 314.
	47. IN CASE OF ANY CONFLICTS BETWEEN PLAN SHEETS, CALCS AND SPECS CONTRACTOR SHALL CHOOSE MORE STRINGENT SPECIFICATIONS. CONTRACTOR TO PROVIDE QUESTIONS IN WRITING PRIOR TO BEGINNING OF WORK.
	48. PATCH & PAINT TO MATCH EXISTING SURROUNDING AREA WHERE CONDUITS, ETC. PASS THRU WALL OR CEILING.
	49. PATCH ROOF WHERE CONDUITS PASS THRU ROOF. SEAL WATERTIGHT. CONTRACTOR TO ENGAGE AND PAY FOR ROOF MANUFACTURER'S INSPECTION OF ROOF PATCHES AND PENETRATIONS. PROVIDE LETTER FROM ROOF MANUFACTURER EVIDENCING SATISFACTORY COMPLETION OF ROOF PATCHES AND PENETRATIONS AND CONTINUATION OF ROOF WARRANTY.

ELECTRICAL SYMBOLS	
	A-1,3,5 HOMERUN TO PANEL "A". CIRCUITS 1,3,5. CROSS LINES INDICATE NUMBER OF #12 IN ADDITION TO #12 GREEN GROUND. 3/4"C., U.O.N.
	3/4"C, 2 #12 & 1 #12 GND.
	3/4"C, 3 #12 & 1 #12 GND.
	3/4"C, 4 #12 & 1 #12 GND.
	3/4"C, 5 #12 & 1 #12 GND.
	1"C, 6 #10 & 1 #10 GND.
	1"C, 7 #10 & 1 #10 GND.
	1"C, 8 #10 & 1 #10 GND.
	(E) CONDUIT: IN OR BELOW FLOOR OR BELOW GRADE
	CONDUIT: IN OR BELOW FLOOR OR BELOW GRADE
	CONDUIT: EXPOSED IN UNFINISHED AREAS; CONCEALED ABOVE CEILING OR IN WALL IN FINISHED AREAS. EXPOSED ABOVE CANOPY.
POWER SYSTEM	
	JUNCTION BOX: SURFACE MOUNTED OR INSIDE WALL
	JUNCTION BOX WEATHER PROOF : SURFACE MOUNTED OR INSIDE WALL
	G.F.I. DUPLEX RECEPTACLE, 20A, 125 VOLTS, NEMA 5-20R, +18" U.O.N.
	WEATHER RESISTANT TYPE WITH HEAVY DUTY WEATHERPROOF COVER
	GROUND ROD IN GROUND YARD BOX INSIDE LANDSCAPED AREA.
	480V, HEAVY DUTY DISCONNECT SWITCH, H.P. RATED, PER EQUIPMENT MFC., 3P U.O.N. "F" INDICATES FUSED, PROVIDE FUSE SIZE BASED ON NAMEPLATE RATING OF EQUIPMENT.
	HEAVY DUTY COMBINATION FUSED MOTOR DISCONNECT SWITCH W/WRK5 FUSE AND MAGNETIC MOTOR STARTER SIZED ACCORDING TO MOTOR MANUFACTURER RECOMMENDATIONS (STARTER SIZE 1, MIN.) WITH A SOLID STATE ADJUSTABLE OVERLOAD PROTECTION, WITH HOA SWITCH AND (2)FORM C CONTROL CONTACTS, MOUNTED, +48" TO TOP OF OPERATING HANDLE, U.O.N.
	SURFACE MOUNTED PANELBOARD
	MAIN SWITCHBOARD
	TRANSFORMER
+18": ALL DUPLEX RECEPTACLES, WALL OUTLETS FOR DESK TELEPHONE, COMPUTER OUTLETS, UNLESS OTHERWISE NOTED (MEASURED TO CENTER OF BOX).	

APPLICABLE CODES	
PARTIAL LIST OF APPLICABLE CODES	
2022 CALIFORNIA ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.	
2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.	
(2021 INTERNATIONAL BUILDING CODE VOLUMES 1 & 2 AND 2016 CALIFORNIA AMENDMENTS)	
2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.	
(2020 NATIONAL ELECTRICAL CODE AND 2022 CALIFORNIA AMENDMENTS)	
2022 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.	
(2021 UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS)	
2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R.	
(2021 UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)	
2022 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R.	
2022 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.	
(2021 INTERNATIONAL FIRE CODE AND 2022 CALIFORNIA AMENDMENTS)	
2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR	
(2021 INTERNATIONAL EXISTING CODE AND 2022 CALIFORNIA AMENDMENTS)	
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 C.C.R.	
2022 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.	
TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.	
PARTIAL LIST OF APPLICABLE STANDARDS	
NFPA 13	STANDARD FOR AUTOMATIC FIRE SPRINKLER SYSTEMS (CA AMENDED)
NFPA 14	STANDARD FOR STANDPIPE AND HOSE SYSTEMS
NFPA 17	STANDARD FOR DRY CHEMICAL EXTINGUISHING SYSTEMS
NFPA 17A	STANDARD FOR WET CHEMICAL EXTINGUISHING SYSTEMS
NFPA 20	STANDARD FOR STATIONARY PUMPS FOR FIRE PROTECTION
NFPA 22	STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION
NFPA 24	STANDARD FOR THE INSTALLATION OF PRIVATE FIRE MAINS AND THEIR APPURTENANCES.
NFPA 72	NATIONAL FIRE ALARM & SIGNALING CODE (CA AMENDED)
NFPA 80	STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES
NFPA 2001	STANDARD ON CLEAN AGENT FIRE EXTINGUISHING SYSTEMS
UL 300	STANDARD FOR FIRE TESTING OF FIRE EXTINGUISHING SYSTEMS FOR PROTECTION OF COMMERCIAL COOKING EQUIPMENT
UL 464	AUDIBLE SIGNAL APPLIANCES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES
UL 521	STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS
UL 1971	STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED
ICC 300	STANDARD FOR BLEACHERS, FOLDING AND TELESOPING SEATING AND GRANDSTANDS
FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2022 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE CHAPTER 80. SEE CALIFORNIA BUILDING CODE, CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS.	

STANDARD ABBREVIATIONS			
A OR AMP	AMPERES	CLK.	CLOCK SYSTEM
AFF	ABOVE FINISH FLOOR	J.BOX	JUNCTION BOX
BKR.	BREAKER	KW	KILOWATTS
BC	BARE COPPER	MDF	MAIN DISTRIBUTION FRAME
C	CONDUIT	N.I.C.	NOT IN CONTRACT
CKT.	CIRCUIT	PA	PUBLIC ADDRESS
C.O.	CONDUIT ONLY	PABX	PHONE BOARD EXCHANGE
D	DEPTH	PH OR Ø	PHASE
F.A.	FIRE ALARM	SL	SECURITY LIGHTING.
FLA	FULL LOAD AMPERES	SLC	SIGNALING LINE CIRCUIT
FO	FIBER OPTIC	SW.	SWITCH
GRND.	GROUND	TYP.	TYPICAL
G.F.I.	GROUND FAULT INTERRUPTER	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
H.P.	HORSEPOWER	UG	UNDERGROUND
IDF	INTERMEDIATE DISTRIBUTION FRAME	U.O.N.	UNLESS OTHERWISE NOTED
Isc	AVAILABLE SHORT CIRCUIT CURRENT	W.P. / WP	WEATHERPROOF
SEC.	SECURITY SYSTEM	W.R.	WEATHER RESISTANT
LADWP	LOS ANGELES DEPARTMENT OF WATER AND POWER	XFMR	TRANSFORMER
LV	LOW VOLTAGE.	C	CONTROLLED RECEPTACLES

APPLICABLE CODE: 2022 CBC
<u>MEP COMPONENT ANCHORAGE NOTE</u> ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA-APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30: 1. ALL PERMANENT EQUIPMENT AND COMPONENTS. 2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G., HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. *PERMANENTLY ATTACHED INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE. 3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS: A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR A LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT. B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL. THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.
APPLICABLE CODE: 2022 CBC
<u>PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE</u> PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26. THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., HCAI OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS. MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E): MP □ MD □ PP □ E □ OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.
SCOPE OF WORK
1. PROVIDE POWER TO NEW HVAC EQUIPMENT. 2. PROVIDE NEW PANELBOARD AND TRANSFORMER TO SUPPLY POWER TO NEW HVAC EQUIPMENT. 3. PROVIDE NEW PANELBOARD FOR FUTURE USE OF KITCHEN EQUIPMENT. 4. CONNECT NEW PANELBOARD TO EXISTING MAIN SWITCHBOARD. 5. PROVIDE SINGLE DIAGRAM, PANEL SCHEDULE AND CALCULATION.
GENERAL NOTES
THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE. LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT). MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021. ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TESTS SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR, ENGINEER OF RECORD OR THE OWNER'S AGENT. A LISTING OF CERTIFIED ATT CAN BE FOUND AT: HTTPS://WWW.ENERGY.CA.GOV/PROGRAMS-AND-TOPICS/PROGRAMS/ACCEPTANCE-TEST-TECHNICIAN-CERTIFICATION-PROVIDER-PROGRAM/ACCEPTANCE . THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA. PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.

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E-001	ELECTRICAL FRONT SHEET
E-002	ELECTRICAL SINGLE LINE DIAGRAM
E-003	ELECTRICAL PANEL SCHEDULES
E-101	ELECTRICAL SITE PLAN
E-102	ELECTRICAL ENLARGED SITE PLAN
E-103	ELECTRICAL POWER FLOOR PLAN
E-301	ELECTRICAL DETAILS SHEET

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PTN_ 64691-65 APPL_ 03-124869

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JOB# - 24-025

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWNDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWNDALE, CA 90260

ELECTRICAL
FRONT SHEET

AS REVISED
ADDENDUM 1
DSA #03-124869

E-001

(N)PANEL: LKP

LOCATION: KITCHEN

MOUNTING: SURFACE

120/208 VOLT, 3 PH, 4W

(PANEL TO HAVE BOLT-ON BREAKERS)

225 AMP COPPER BUS

MAIN: 200 A

LOAD: 44.8 kVA

SCCR: 10 KAIC

130 AMPS

CK #	VA LOAD			LOAD DESCRIPTION	OUTLETS			CKT BKR	OUTLETS			LOAD DESCRIPTION	VA LOAD			CK #						
	LINE A	LINE B	LINE C		O	R	L		P	A	A		P	L	R		O	LINE A	LINE B	LINE C		
1	967.2			HL 400 MIXER (FUTURE)				2	15		125	3		SKILLET VARIO PRO XL (FUTURE)	11333		2					
3		967.2						-	-		-	-				11333	4					
5			1100	RATIONAL COMBI OVEN (FUTURE)				2	15		-	-					6					
7	1100							-	-		20	2		TBC SERIES CHILLER (FUTURE)	1664		8					
9		1664		TBC SERIES CHILLER (FUTURE)				2	20		-	-				1664	10					
11			1664					-	-					SPACE			12					
13				SPACE										SPACE			14					
15				SPACE										SPACE			16					
17				SPACE										SPACE			18					
19				SPACE										SPACE			20					
21				SPACE										SPACE			22					
23				SPACE										SPACE			24					
25				SPACE										SPACE			26					
27				SPACE										SPACE			28					
29				SPACE										SPACE			30					
31				SPACE										SPACE			32					
33				SPACE										SPACE			34					
35				SPACE										SPACE			36					
37				SPACE										SPACE			38					
39				SPACE										SPACE			40					
41				SPACE										SPACE			42					
2067.2 2631.2 2764										SUB - TOTALS										12997	12997	11333

NOTE: 1.

2.

3.

4.

SUB - TOTALS

LINE TOTALS:

LCL ADDER

TOTAL VA PER PHASE

LINE AMPS

15065

15629

0

15065

15629

126

14097

0

14097

117

LOAD CALCULATION							
(E) MAIN SWITCHBOARD - "MSA" 1600 A, MAIN, 480/277V, 3PH, 4W							
I.	EXISTING LOAD (HIGHEST PEAK LOAD AS PER 12 MONTH BILLING) 217 KW, 261.1 A 216.1 A x 1.25 = 270.12 A						
II.	NEW LOAD <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">1. PANEL - HK (157.7 KVA)</td> <td style="padding: 5px; text-align: right;">190.2 A</td> </tr> <tr> <td style="padding: 5px;">2. PANEL - LK (48.7 KVA)</td> <td style="padding: 5px; text-align: right;">58.6 A</td> </tr> <tr> <td style="padding: 5px; text-align: center;">TOTAL DEMAND LOAD</td> <td style="padding: 5px; text-align: right;">248.8 A</td> </tr> </table>	1. PANEL - HK (157.7 KVA)	190.2 A	2. PANEL - LK (48.7 KVA)	58.6 A	TOTAL DEMAND LOAD	248.8 A
1. PANEL - HK (157.7 KVA)	190.2 A						
2. PANEL - LK (48.7 KVA)	58.6 A						
TOTAL DEMAND LOAD	248.8 A						
THEREFORE: THE 1600 A MAIN BREAKER IS SUFFICIENT ENOUGH TO HANDLE THE EXISTING AND NEW LOAD.							



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DSA #03-124869

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWNDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWNDALE, CA 90260

ELECTRICAL PANEL SCHEDULES

E-003

JOB	24-025
SCALE	AS NOTED
PM	
DATE	01/22/2025
1	ADDENDUM 1 - 11/13/2025

ARKING

TOW-AWAY
N
03-103412

(E) BUILDING K
A# 6840
A# 9109

(E) BUILDING L
A# 6840
A# 9109/A# 103412

(E) ADMIN BUILDING J
A# 6840
A# 9109
A# 103412

(E) BUILDING M
A# 6840
A# 9109/A# 103412

(E) MPR
BUILDING I
DSA A# 9109 /
65078/ A # 103412

(E) BUILDING N
A# 6840
A# 9109/A# 103412

(E) BLDG H
A# 3920
A# 16137
A# 03-103406

FF RESTROOM
IGINAL A9109-1951
DERNIZATION
03412 (CLOSED
ERTIFICATION)

(E) BLDG. I CENTRAL
KITCHEN SCOPE
AREA OF WORK:
ADD NEW SUPPLEMENTAL
AIR FOR COOLING.

(E) MENS/WOMENS RESTROOM
A# 3920, A# 9109, A# 65078, A# 103412
(CLOSED WITH CERTIFICATION)

(E) RELOCATABLES
A# 56842 / 65078/ A# 103412

(E) RELO

(E) RELO

(E) RELO

(E) RELO

(E) RELO
(E) RELO

(E) RELO

(E) RELO

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PTN. 64691-65 APPL. 03-124869

KEY NOTES

- ① CONDUIT RUN EXPOSED ABOVE EXISTING CANOPY. REFER TO DETAIL SHEET 4/E-301 FOR CONDUIT SUPPORT.
- ② CONDUIT PENETRATE THROUGH WALL. REFER TO DETAIL SHEET 5/E-301.
- ③ CONDUIT DOWN AND TERMINATE TO PANEL-HK BELOW. REFER TO SHEET E-103 FOR EXACT LOCATION OF PANEL. REFER TO DETAIL SHEET 4/E-301 FOR ROOF/CANOPY PENETRATION.
- ④ CONDUIT TERMINATED ABOVE EXISTING MAIN SWITCHBOARD-MSA TO WALL REFER TO DETAIL SHEET 4/E-301 FOR ROOF/CANOPY PENETRATION AND SINGLE LINE DIAGRAM ON SHEET E-002 FOR POWER CONNECTION.
- ⑤ CONDUIT RUN INSIDE THE ELECTRICAL ROOM ABOVE THE EXISTING "MSA". TERMINATE ON SWITCHBOARD IN DISTRIBUTION SECTION.



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ADDENDUM 1
DSA #03-124869

LESD WILL ROGERS MS CENTRAL KITCHEN HVAC UPGRADES
LAWDALE ELEMENTARY SCHOOL DISTRICT
4110 W 154TH ST, LAWDALE, CA 90260

JOB	24-025
SCALE	AS NOTED
PM	
DATE	01/22/2025
ADDENDUM 1 - 11/13/2025	

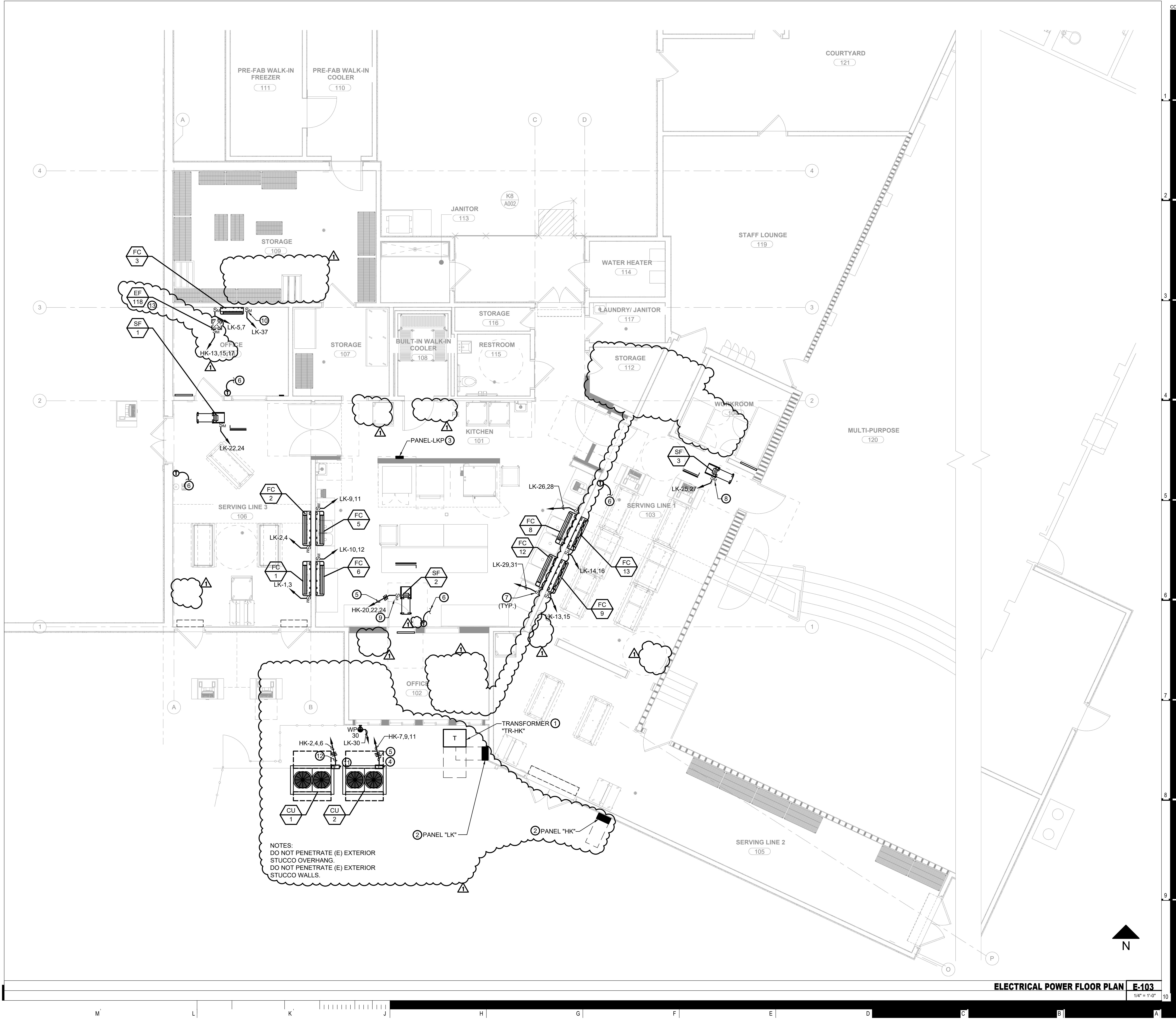
ELECTRICAL
ENLARGED SITE PLAN

E-102

ELECTRICAL ENLARGED SITE PLAN E-102

1/16" = 1'-0"

1/24/2025 LESD Rogers MS Central Kitchen HVAC Upgrades/E-103 ELECTRICAL POWER FLOOR PLAN.dwg, 11/13/2025 5:05:49 PM, patrick



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PTN. 64691-65 APPL. 03-124869

KEY NOTES

- 1 DRY TYPE TRANSFORMER, NEMA 3R. REFER TO DETAIL SHEET 2/E-301 FOR MOUNTING.
- 2 PANELBOARD, NEMA 3R. REFER TO DETAIL SHEET 1/E-301 FOR MOUNTING.
- 3 PANELBOARD, NEMA 1. REFER TO DETAIL SHEET 1/E-301 FOR MOUNTING.
- 4 PROVIDE 30AS/30AFU, 480V, 3P (NEMA 3R) WEATHERPROOF DISCONNECT SWITCH. PROVIDE CONDUIT, CONDUCTORS, BOXES AND ALL NECESSARY ACCESSORY WITH UNISTRUT SUPPORT.
- 5 PROVIDE 3/4" C, 3#10 CU., 1#10 CU. GND.
- 6 PROVIDE 3/4" CONDUIT FROM HVAC UNIT TO CORRESPONDING THERMOSTAT / OUTDOOR HVAC UNIT FOR CONTROL WIRING. COORDINATE WITH MECHANICAL CONTRACTOR AND REFER TO MECHANICAL SHEETS FOR WIRING.
- 7 PROVIDE NEMA 1 TOGGLE MOTOR RATED CONTROLLER/DISCONNECT SWITCH, 2P, 15A, 208V TYPICAL TO ALL FCS, U.O.N..
- 8 PROVIDE NEMA 1 TOGGLE MOTOR RATED CONTROLLED/DISCONNECT SWITCH, 2P, 208V.
- 9 PROVIDE NEMA 1 TOGGLE MOTOR RATED CONTROLLED/DISCONNECT SWITCH, 3P, 460V.
- 10 PROVIDE 15AMP MOTOR RATED SWITCH FOR THE CONDENSATE PUMP, FIELD VERIFY MOUNTING HEIGHT.
- 11 PROVIDE 60AS/35AFU, 480V, 3P (NEMA 3R) WEATHERPROOF DISCONNECT SWITCH. PROVIDE CONDUIT, CONDUCTORS, BOXES AND ALL NECESSARY ACCESSORY WITH UNISTRUT SUPPORT.
- 12 PROVIDE 3/4" C, 3#8 CU., 1#10 CU. GND.
- 13 REFER MECHANICAL PLANS, FOR EXACT LOCATION OF EF 118.



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4110 W 154TH ST, LAWDALE, CA 90260

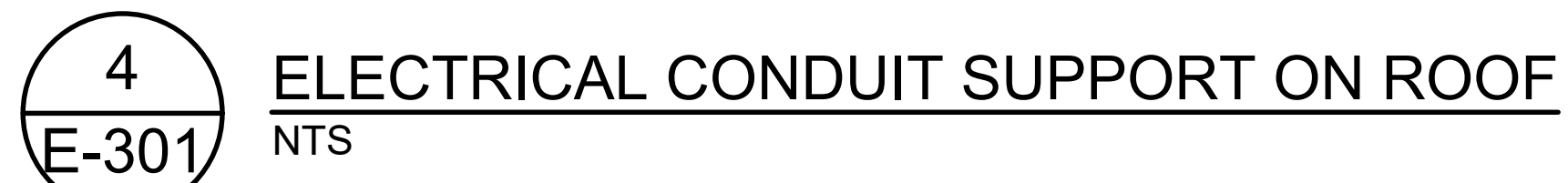
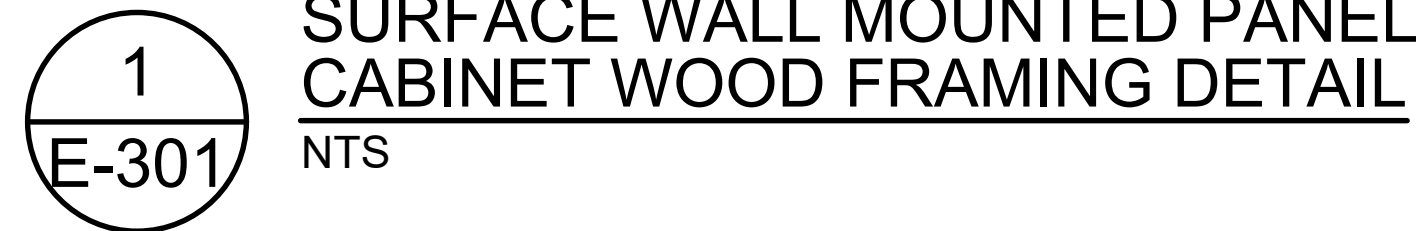
ELECTRICAL
POWER FLOOR
PLAN

E-103

ELECTRICAL POWER FLOOR PLAN E-103

1/4" = 1'-0"

PTN. 64691-65 APPL. 03-124869



ELECTRICAL DETAILS SHEET

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E-301

**PROJECT MANUAL
FOR
ROGERS MIDDLE SCHOOL
CENTRAL KITCHEN HVAC UPGRADES**

**For
LAWNDALE ELEMENTARY SCHOOL
DISTRICT
Lawndale, California**

Prepared by

BUDLONG
700 N. Central Avenue
Suite 520
Glendale, CA 91203

December 06, 2024

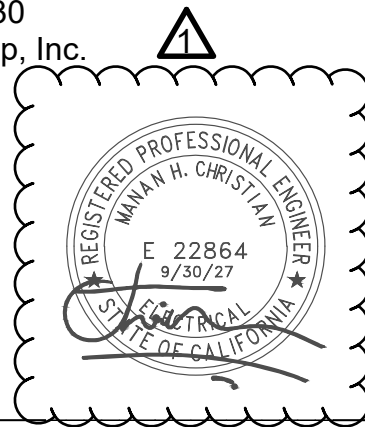


STRUCTURAL

Will Lambert, 5430
Orion Structural Group, Inc.



MECHANICAL ENGINEER
Sunil Patel, 29448
Budlong



ELECTRICAL ENGINEER
Manan Christian, E22864
Budlong

Budlong
Project No. 24-025

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26 05 33 ELECTRICAL RACEWAYS AND BOXES

26 05 53 ELECTRICAL IDENTIFICATION

26 08 00 WORK INCLUDED

26 22 10 DRY TYPE TRANSFORMERS

26 23 10 DISCONNECT SWITCHES

26 24 16 PANELBOARDS

26 27 16 ELECTRICAL CABINETS AND ENCLOSURES

26 27 26 WIRING DEVICES

26 28 13 FUSES (600 VOLT AND BELOW)

26 28 16 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

DIVISION 28 ELECTRONIC SAFETY AND SECURITY – NOT USED

DIVISION 31 EARTHWORK

31 10 00 SITE CLEARING

BUDLONG



DIVISON 32 EXTERIOR IMPROVEMENTS – NOT USED

SECTION 23 80 00

HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Air conditioning and air handling equipment including but not limited to:
 - 1. Split System Heat Pump Units.
 - 2. Single Packaged Air Conditioning Units.
 - 3. VRF Heat Pump and Fan Coil Units
- B. Related Requirements:
 - 1. Division 01: General Requirements.
 - 2. Section 07 60 00: Flashing and Sheet Metal.
 - 3. Section 23 05 00: Common Work Results for HVAC.
 - 4. Section 23 05 48: HVAC Sound, Vibration and Seismic Control.
 - 5. Section 23 30 00: Air Distribution.

1.2 DESIGN REQUIREMENTS

- A. The work of this Section is based on HVAC equipment units indicated as Basis of Design in Part 2 of this Section. Products from the different HVAC equipment manufacturers listed are never identical, although equivalent in capacity, performance and quality. In the cases where dimensions, weight, configuration and utility requirements differ from the products used as a basis of design, the Contractor, at no additional cost to the Owner, shall coordinate and submit, for Architect review, revisions to the design.

1.3 SUBMITTALS

- A. Provide in accordance with Division 01 and Section 23 0500: Common Work Results for HVAC.
- B. For products listed that are not the basis of design, submit the following in addition to above requirements:
 - 1. Title 24 Calculations: Replace HVAC unit values in calculation files provided by the Architect and submit for review.

1.4 QUALITY ASSURANCE

- A. Provide submittals in accordance with Section 23 0500: Common Work Results for HVAC.

1.4 PROJECT RECORD DOCUMENTS

- A. Provide Owner instructions on equipment operation and maintenance procedures, as indicated in Section 23 0500: Common Work Results for HVAC.

1.5 WARRANTY

- A. Compressors shall be provided with manufacturer's five year warranty, replacement only.
- B. Manufacturer shall warrant parts, except heat exchangers, for a period of five years.
- C. Heat exchangers shall be provided with manufacturer's ten year warranty, replacement only.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Capacities of air conditioning equipment indicated on Drawings are net capacities actually required. Standard catalog ratings shall be adjusted to actual Project site environmental conditions.

2.2 VRF HEAT PUMP AND FAN COIL UNITS

- A. Manufacturer: Daikin, Mitsubishi, Carrier, Trane, York, Lennox, American Standard Heating & Air Conditioning, or equal.

- 1. Basis of Design: Toshiba - Carrier

- B. HP and matching indoor fan coil units and condenser unit: Furnish VRF heat pump, split type, air-cooled, roof or ground installation with ducted connections or free blow. Units shall be air-cooled heat pump/direct expansion fan coil combinations. Heat pump outdoor section shall be factory assembled and furnished with direct-drive condenser fans with horizontal or vertical air discharge, scroll type compressor, refrigerant coil, fan motors, pre-wired control panel. Unit shall also be provided with a fully piped refrigerant circuit, fully charged with an environmentally friendly refrigerant that is not scheduled for phase out. Provide additional refrigerant for extended lines. Indoor fan coil units shall be furnished with horizontal discharge and will include evaporator coil, fan and motor, condensate pan with drain, thermal expansion valve, pre-wired control panel and remote thermostat control. Nominal unit cooling, heating capacities, electrical characteristics, and operating conditions shall be as indicated on Drawings. Provide wired thermostat with 24 Interface Kit.

- C. Quality Assurance:

- 1. Cooling capacity rated in accordance with current AHRI Standard 210/240 and 270. Units shall be listed in AHRI.
 - 2. Unit construction shall comply with ANSI/ASHRAE 15, latest revision, and with NEC.
 - 3. Units shall be constructed in accordance with UL standards and shall carry UL label of approval. Units shall have CSA approval.

4. Units shall be listed in CEC directory.
 5. Unit cabinet shall be capable of withstanding ASTM B117 500 hour salt spray test.
 6. Unit shall provide an EER/SEER/COP complying with CCR, Title 24, Building Energy Efficiency Standards and per the drawings.
- D. Evaporator and condenser coils: Evaporator and condenser coils shall be copper with mechanically bonded, smooth aluminum plate fins. Tube joints shall be brazed with copper or silver alloy. Coils shall be pressure-tested at the factory. Protective metal guard for inlet and outlet of outdoor coil.
- E. Fans:
1. Condenser Fan and Motors: Condenser fan shall be ECM type motor direct driven, propeller type arranged for horizontal or vertical discharge. Condenser fan motors shall be furnished with inherent protection, and shall be permanently lubricated type, resiliently mounted for quiet operation. Each fan shall be furnished with a safety guard.
 2. Evaporator fan section shall be furnished with ECM type motor centrifugal, forward curved, double width, double inlet fan or fans installed on a solid shaft. Fan shall be statically and dynamically balanced and shall rotate on permanently lubricated bearings.
- F. Unit Cabinets:
1. Cabinets shall be fabricated of galvanized steel, bonderized and finished with baked enamel.
 2. Cabinet interior shall be insulated with minimum one inch thick foil face fiberglass.
 3. Outdoor unit compartment shall be isolated and have an acoustic lining to assure quiet operation.
- G. Compressor: Compressor shall be two stage or variable speed type hermetic scroll.
1. VRF Compressor shall be furnished with access valves and it shall be installed on rubber isolators to reduce sound vibration.
 2. Furnish with high and low-pressure protection.
 3. Each heat pump shall be furnished with factory installed suction accumulator. Field installed accumulators are not permitted.
 4. It shall be furnished with high and low-pressure protection, brass external vapor supply line service valves, vapor return line service valves with service gage connection port, service gage port connections on compressor suction and discharge lines with Schrader-type fittings with brass caps, filter drier, pressure relief, liquid line solenoid valves, thermostatic expansion valves, and a holding charge of refrigerant.
- H. Refrigeration Components: Refrigerant circuit components shall include brass external liquid line service valve with service gage port connections, suction line service valve with service

gage connection port, service gage port connections on compressor suction and discharge lines with Schrader type fittings with brass caps, accumulator, bi-flow filter drier, pressure relief, reversing valve, heating mode metering device, and a holding charge of refrigerant.

I. Controls and Safeties:

1. Compressor motor assembly shall be protected with high and low-pressure switches, internal overloads, internal thermostat, internal relief valve, and anti-recycle relay, or time cycle device to prevent rapid cycling of compressor after any off cycle.
2. Control panel shall be pre-wired in unit casing.
3. The control circuit shall incorporate a safety circuit to render refrigerant system (compressor and outdoor air motor) inoperative should there be a loss of airflow or refrigerant.
4. Units shall also be furnished with automatic condenser-fan motor protection, high condensing temperature protection, compressor motor current and temperature overload protection, high pressure relief and condenser fan failure protection.

J. Low Ambient Operation: Head pressure control shall be provided for operation at outside air temperature below 45 degrees F.

K. Safeties:

1. High condensing temperature protection.
2. Compressor motor current and temperature overload protection.
3. High pressure relief.
4. Outdoor fan failure protection.

L. Filters:

1. Filters shall be 1-inch standard size high capacity replaceable media type, MERV 13, or equal, installed in an external 1-inch rack filter section and complete with an access door.
2. An-line filter-drier shall be furnished with equipment and installed at Project site.

M. Provide programmable digital thermostat with following features:

1. 7-day time clock.
2. Heat, cool, automatic changeover.
3. Occupied / Unoccupied modes.
4. Dry contact switch for input from an external device such as a central time clock, occupancy sensor.



5. Basis of Design: Provide factory programmable controller that comes with the HVAC unit as a standard from manufacturer with built-in occupancy sensor, hard mounted to the wall. a. No occupancy sensor for HVAC units in Kitchen. Provide occupancy sensor for units in offices.

- N. Start-up: Factory test each unit before shipment to Project site. Performance test shall include full refrigeration start-up, fan and controls start-up. Each unit shall be provided with its own report with its own serial number. Non-tested units are not permitted to be delivered to Project site. Provide full start-up of units to include full refrigeration and provide a written report.
- O. Parts Availability: Submit proof in writing that majority (minimum 80 percent) of replacements parts are commonly available and not proprietary. Also, submit proof in writing that a local parts sales and service facility exists, where replacement parts will be warehoused in quantity. Guarantee timely availability for parts that are proprietary.

2.3 ROOF MOUNTED CENTRIFUGAL EXHAUST FANS

A. RMCEF-1:

1. Manufacturer:

CARNES	GREENHECK	LOREN COOK	PENNBARRY	TWIN CITY & BLOWER	OR EQUAL
VBBB Series	SWB Series	CPS	Dynamo	BCV	

2. Provide single width, single inlet, backward inclined steel wheel, belt driven centrifugal vent sets of sizes, capacities and configurations indicated on drawings, complete with accessories for installation of fans. Also, provide accessories for proper operation and balancing of fans in accordance with design intent and sequence of operation.
3. Certification: Fan shall be listed by Underwriters Laboratories (UL 705). Fan shall bear AMCA Certified Ratings Seal for Sound, Air Performance and be manufactured with Type C spark resistant construction.
4. Housing: The fan shall be of bolted and welded construction utilizing corrosion resistant fasteners. The scroll wrapper shall be a minimum 14 gage steel with scroll drain and scroll side panels shall be a minimum 12 gage steel. The entire fan housing shall have continuously welded seams for leak proof operation. A performance cut-off shall be furnished to prevent re-circulation of air in fan housing. The fan housing shall be field rotatable to any one of eight discharge positions and shall have a minimum 1 ½-inch outlet discharge flange. Bearing support shall be minimum 10 gage welded steel. Side access inspection ports shall be provided with quick release latches for access to motor compartment without removing weather cover. Lifting lugs shall be provided for ease of installation. Unit shall bear an engraved aluminum nameplate.
5. Finish: Steel fan components shall be an electrostatically applied, baked epoxy powder coating. Each component shall be subject to a five stage environmentally friendly wash system, followed by a minimum 2.5 mil thick baked powder finish. Paint must exceed 1,000 hour salt spray under ASTM B117 test method. Interior and exterior parts of the

fan exposed to the air being moved shall be coated with minimum 15 mils of baked epoxy.

6. Wheel: Wheel shall be steel centrifugal backward inclined, non-overloading flat blade type. Blades shall be continuously welded to backplate and deep spun inlet shroud. Wheel hub shall be keyed and securely attached to fan shaft. Wheel inlet shall overlap a one piece aerodynamic aluminum inlet cone to provide maximum performance and efficiency. Wheel shall be balanced in accordance with AMCA Standard 204, Balance Quality and Vibration Levels for Fans.
7. Motor: Motor shall be heavy-duty, explosion proof type with permanently lubricated sealed ball bearings and furnished at specified voltage, phase, and enclosure.
8. Bearing: Bearings shall be designed and tested specifically for use in air handling applications. Construction shall be heavy duty re-greasable anti friction ball or roller type in a cast iron pillow block housing selected for a minimum L50 life in excess of 200,000 hours at maximum cataloged operating speed.
9. Shaft: Blower shaft shall be AISI C1045/SAE 1045 hot rolled steel and accurately turned, ground, and polished. Shafting shall be sized for a critical speed of at least 143 percent of maximum RPM.
10. Belts and Drives: Belts shall be oil and heat resistant, non-static type. Drives shall be precision machined cast iron type, keyed and securely attached to wheel and motor shafts. Drives shall be sized for 150 percent of installed motor horsepower. The variable pitch motor drive must be factory set to specified fan RPM.

2.4 INLINE FANS

A. ILF-1:

1. Manufacturer:

LOREN COOK	OR EQUAL
SQN-B or SQN-D	

2. Fan shall be duct mounted, belt driven centrifugal square inline.
3. Certification: Fan shall be manufactured at an ISO 9001 certified facility. Fan shall be listed by Underwriters Laboratories (UL 705) and UL listed for Canada (cUL 705). Fan shall bear the AMCA certified ratings seal for sound and air performance.
4. Housing: The fan shall be of bolted construction utilizing corrosion resistant fasteners. Housing shall be minimum 18 gauge galvanized steel with integral duct collars. Bolted access doors shall be provided on three sides, sealed with closed cell neoprene gasketing. Pivoting motor plate shall utilize threaded L-bolt design for positive belt tensioning. Housing shall be pre-drilled to accommodate universal mounting feet for vertical or horizontal installation. Unit shall bear an engraved aluminum nameplate. Nameplate shall indicate design CFM, static pressure, and maximum fan RPM. Unit shall be shipped in ISTA certified transit tested packaging.

5. Finish: Steel fan components shall be coated with polyester powder coating to exceed 1,000 hour salt spray test under ASTM B117 test method.
6. Wheel: Wheel shall be centrifugal backward inclined, constructed of 100% aluminum, including a precision machined cast aluminum hub. Wheel inlet shall overlap an aerodynamic aluminum inlet cone to provide maximum performance and efficiency. Wheel shall be balanced in accordance with AMCA Standard 204-05, Balance Quality and Vibration Levels for Fans.
7. Motor: Motor shall be NEMA design B with class B insulation rated for continuous duty and furnished at the specified voltage, phase and enclosure.
8. Shaft: Blower shaft shall be AISI C1045/SAE 1045, or 1040 hot rolled and accurately turned, ground, and polished. Shafting shall be sized for a critical speed of at least 143 percent of maximum RPM.
9. Bearings: Bearings shall be designed and tested specifically for use in air handling applications. Construction shall be heavy-duty regreasable ball or roller type in a cast iron pillow block housing and selected for a minimum L50 life in excess of 200,000 hours at maximum cataloged operating speed.
10. Drive: Fans shall be direct drive or belt driven as indicated on drawings.
11. Belts and Drives: Belts shall be oil and heat resistant, static conducting. Drives shall be precision machined cast iron type, keyed and securely attached to the wheel and motor shafts. Drives shall be sized for 150% of the installed motor horsepower. The variable pitch motor drive must be factory set to the specified fan RPM.

2.6 FILTERS

- A. Air filters shall be of pleated, high capacity, disposable type of efficiencies indicated on drawings. Each filter shall consist of a non-woven cotton fabric media, media support grid, and enclosing frame. Filter shall be UL 900 listed, Class 2.
- B. Filter media shall provide an average efficiency as specified on drawings per ASHRAE Standard 52.2.
- C. Initial resistance of air filters shall not exceed following limits for each efficiency level at face velocities indicated. Lower resistance requirements, if indicated on drawings shall have precedence.

30 percent (MERV 8)	0.27 inch water gage at 500 feet per minute
75 percent (MERV 11)	0.28 inch water gage at 500 feet per minute
85 percent (MERV 13)	0.30 inch water gage at 500 feet per minute
95 percent (MERV 14)	0.38 inch water gage at 500 feet per minute
- D. Use standard size Filter Medias only.
- E. Media support shall be a welded wire grid or a rigid frame with an effective open area of not less than 96 percent.
 1. Media support shall be bonded to filter media to eliminate possibility of media oscillation and media pull-away.

2. Media support grid shall be formed in such a manner that it effectively forms a radial pleat design, providing total use of filter media.
 - F. Enclosing frame shall be bonded to air entering and air exit side of each pleat, to ensure pleat stability. Inside periphery of enclosing frame shall be bonded to filter pack, thus eliminating possibility of air bypass.
 - G. Holding frames shall be factory fabricated of 16 gage galvanized steel, or equivalent and shall be furnished with gaskets and spring type positive sealing fasteners. Fasteners shall be capable of being attached or removed without use of tools.
 - H. Manufacturers: Camfil Farr, Koch, or AAF.
- 2.7 LOUVERS, AIR CONDITIONING (use in conjunction with relief damper)
- A. Standard steel louvers shall be furnished complete with frames, blades, finish and construction details per Drawings and manufacturer's recommendations.
 - B. Louvers shall be furnished with horizontal blades, 2 inches deep for air through wall installation in conjunction with gravity relief damper for backdraft protection that will open at 0.01 inch wc room static pressure as indicated on Drawings. Blades shall be 16-gage steel, spaced at 1 7/8-inch at 30 degrees angle, and with baked epoxy coating. Panel size shall be as indicated but not less than 24 inches width by 18 inches in height.

PART 3 - EXECUTION

3.1 GENERAL

- A. Examine areas under which Work of this Section will be performed. Correct conditions detrimental to proper and timely completion of Work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 EQUIPMENT FOUNDATIONS

- A. Provide foundations (housekeeping pads, level platforms or curbs) for mechanical equipment whether indicated on drawings or not. Equipment foundations shall be of sufficient size and weight, and of proper design to preclude shifting of equipment under operating conditions, or under abnormal conditions imposed upon equipment.
- B. Provide foundations (housekeeping pads, level platforms or curbs) for mechanical equipment whether indicated on drawings or not. Foundations shall meet requirements of equipment manufacturer and, when required by Architect, obtain from equipment manufacturer, approval of foundation design and construction, for equipment to be installed. Equipment vibration shall be maintained within design limits, and shall be dampened and isolated. Isolators shall be bolted to a structural member so as to be readily removable.

3.3 EQUIPMENT DESIGN AND INSTALLATION

- A. Uniformity: Unless otherwise specified, equipment of same type or classification shall be product of same manufacturer.
- B. Application: Only provide equipment as reviewed by Architect.

- C. Equipment Installation: Equipment installation shall be in strict accordance with these Specifications, and installation instructions of manufacturers. Equipment installed on concrete foundations shall be grouted before piping is installed. Piping shall be installed in such a manner as not to place a strain on equipment. Flanged joints shall be adequately extended before installation. Piping shall be graded, anchored, guided and supported, without low pockets.
1. Install equipment in a neat and skillful manner, properly aligned, leveled, and adjusted for satisfactory operation.
 2. Install so connecting and disconnecting of piping and accessories can be readily accomplished, parts are readily accessible for inspection, service and repair. Space shall be provided to readily remove filters, coils, compressors and fan wheels. Access doors shall be hinged with cam lock door handles.
 3. Provide flexible connections for duct, pipe and conduit connections at moving equipment.

3.4 ROOF-TOP EQUIPMENT MOUNTING

- A. Downflow Packaged Units: Install unit on a prefabricated mounting frame or curb secured directly to roof. Follow manufacturers recommended installation manuals. Submit Shop Drawings for review by Architect.
- B. Horizontal Flow Packaged Units: Install unit on platform or prefabricated mounting frame or curb secured directly to roof designed to suit roof conditions and requirements of provided unit. Submit Shop Drawings for review by Architect.

3.5 NOISE AND VIBRATION

- A. Operation of Equipment: Mechanical equipment and piping systems shall operate without exceeding specified noise and/or vibration levels.
- B. Corrective Measures: If specified noise and/or vibration levels are exceeded, provide necessary changes to reduce noise and/or vibration levels to within specified levels.

3.6 FIELD TESTS AND INSPECTION

- A. General: Perform field inspections, field tests, and trial operations as specified in Section 23 05 00: Common Work Results for HVAC. Provide labor, equipment and incidentals required for testing. The Project Inspector will witness field tests and trial operations as specified in Section 23 05 00: Common Work Results for HVAC.
- B. Equipment and Material: Equipment and material certified as being successfully tested by manufacturer, in accordance with referenced Specifications and standards, will not require re-testing before installation. Equipment and materials not tested at place of manufacture will be tested before or after installation, as applicable or necessary, to determine compliance with reference Specifications and standards.
- C. Start-Up and Operational Test: System shall be started up and initially operated with components operating. During this test, various strainers or filters shall be periodically cleaned until no further accumulation of foreign material occurs. Adjust safety and automatic control

instruments as required to provide proper operation and control sequence. Refer to Section 23 05 00: Common Work Results for HVAC.

- D. Extent of Field Tests: After installation and before completion, Work of this Section shall be subjected to required field tests, including those specified here and in Section 23 0500: Common Work Results for HVAC.
- E. Operation and Maintenance Data: Provide required operation and maintenance data as specified in Section 23 0500: Common Work Results for HVAC.

3.7 REFRIGERANT PIPING

- A. Unless otherwise indicated, main liquid and suction lines from condensing unit to evaporator coil shall be of sizes specified by manufacturer.
- B. Refrigeration piping shall be refrigeration grade copper tubing, type L hard-drawn. In instances where refrigeration lines are installed in an inaccessible location and must be snaked through conduit or a trench, that portion of tubing required to complete connections through conduit or trench may be soft drawn. Maintain entire system clean and dry during installation. Pipe shall be sealed until installed.
- C. Refrigeration piping, both hard and soft-drawn, shall be straight and free from kinks, restrictions and horizontal runs shall be sloped towards compressor one inch to 10 feet wherever possible. Vapor line oil traps shall be installed on bottom of vertical risers and inverted oil trap shall be installed on top of vertical risers.
- D. Joints shall be installed with Sil-Fos 15, Silvaloy 15, or equal.
- E. Flare nuts required on suction lines shall be of short forged or frost-proof type. Other fittings shall be standard sweat-soldered type. Ells and return bends shall be long radius type. Install leak lock material.
- F. Refrigeration Piping: Joints shall be silver brazed and leak tested. Field fabricated lines shall be thoroughly flushed and cleaned before connection. Bleed nitrogen through lines during silver brazing, and cap and seal lines when not completed and connected to equipment.
- G. Sleeve penetrations of floors, walls and ceiling to allow for free motion of piping. Provide 24 gage galvanized iron pipe and chrome-plated escutcheon plates. Pack annular space between pipe and sleeve with incombustible material such as fiberglass and seal each end with mastic to provide a waterproof seal.
- H. Install insulated couplings at points of connection between dissimilar metals for cathodic protection. Insulate copper tubing from ferrous materials and hangers with 2-inch thickness of 3-inch wide strip, 10 mil polyvinyl tape wrapped around pipe.
- I. Support piping by iron hangers and supports. Hydra-Zorb cushion clamps, LSP Products Group Acousto Clamp, or equal, on non-insulated piping, and Klo-Shure coupling clamp on insulated piping, or equal.
- J. Provide saddles to protect pipe insulation.

- K. Provide connections of copper, copper plated steel, steel, and brass pipe and tubing with Harris Products Group Safety-Silv 56, Lucas-Milhaupt, Inc., or equal, complying with ANSI/AWS A5.8 and NSF 51.
- L. Insulate refrigerant suction lines.
- M. On split heat pump systems, insulate both vapor and liquid lines. For insulation materials, refer to Section 23 07 00: HVAC Insulation.

3.8 CLEANUP

- A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

3.9 PROTECTION

- A. Protect Work of this Section until Substantial Completion.

END OF SECTION

SECTION 31 10 00

SITE CLEARING



NEW SPECIFICATION
SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removal of vegetation, grass, grass roots, shrubs, tree stumps, trees, upturned stumps, weed growth, tree roots, brush, masonry, concrete, rubbish, debris and other materials.
2. Removal of concrete and bituminous surfaces.
3. Removal of existing fences and gates.

B. Related Requirements:

1. Division 01 - General Requirements.
8. Section 32 31 13 - Chain Link Fences and Gates.

1.02 SUBMITTALS

- A. Shop Drawings: Submit site plan indicating extent of site clearing.

1.03 QUALITY ASSURANCE

- A. Comply with Standard Specifications for Public Works Construction, current edition, as a minimum requirement.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 TREE AND STUMP REMOVAL

- A. Remove trees and stumps indicated or required to be removed. Remove trees, together with bulk of roots, to a minimum depth of 4 feet below required grade, and within a radius of approximately 7 feet beyond perimeter of trunk at grade.
- B. Fill and compact excavation from tree and stump removal. Fill in 6 inch layers, each compacted to 90 percent of maximum density in accordance with ASTM D1557.

1. Back filling shall not commence until the excavation is inspected and tested.

3.02 CONCRETE AND BITUMINOUS SURFACING REMOVAL

- A. Break up and completely remove existing concrete surfacing, curbs, gutters, walks and bituminous surfacing to indicated limits. Cutting shall be performed to a neat and even line with proper tools or a concrete cutting saw. Minimum depth of cut shall be 1 1/2-inch, unless otherwise indicated. Remove concrete broken beyond the indicated limits to the nearest joint or score line and replace with new concrete to match existing.

3.03 FENCING

- A. Existing fences scheduled to remain may be removed to facilitate the Work, provided they are installed to their original condition in accordance with requirements of Section 32 31 13 - Chain Link Fences and Gates.
- B. Fencing indicated to be removed and not reinstalled shall be completely removed, including footings. Fill and compact excavations.
- C. Install chain link fencing indicated to be relocated or reset in accordance with applicable requirements specified under Section 32 31 13 - Chain Link Fences and Gates.

3.04 CLEANUP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION