VARIABLE REFRIGERANT FLOW SYSTEM SCHEDULE

MANUFACTURER: LG ELECTRONICS

INDOOR UNIT											OUTDOOR UNIT											
MARK	MODEL	AIR FLOW (CFM)	TOTAL COOLING CAP (MBH)	ELECTRICAL				FILTERS			NET WEIGHT (LBS)	MARK	MODEL	TOTAL COOLING CAP (MBH)	CORRECTED COOLING POWER INPUT (KW)	ELECTRICAL				NET WEIGHT (LBS)	SEER	HSPF	REMARKS
				V/PH/HZ	MCA	MOCP	RLA	NO.	L	W						V/PH/HZ	MCA	MOCP	FLA				
VRU 1	ZRNU243TSAA	364-512	24.2	208-230/1Ø/60	0.0	-	-	WASHABLE/ INTEGRAL			41	HP 1	ZRUM096DTE6	96.0	6.0	460/3Ø/60	21.8	25.0	-	562	-	-	1 - 5
VRU 2	ZRNU123TCAA	283-351	12.3	208-230/1Ø/60	0.73	-	-	WASHABLE/ INTEGRAL			31												
VRU 3	ZRNU123MAAA	353-494	12.3	208-230/1Ø/60	2.2	-	1.9	WASHABLE/ INTEGRAL			63												
VRU 4	ZRNU243SKSA	371-537	24.2	208-230/1Ø/60	0.0	-	-	WASHABLE/ INTEGRAL			32												
VRU 7	ZRNU243TSAA	364-512	24.2	208-230/1Ø/60	0.0	-	-	WASHABLE/ INTEGRAL			41												
VRU 8	ZRNU123TCAA	283-351	12.3	208-230/1Ø/60	0.73	-	-	WASHABLE/ INTEGRAL			31	HP 5	ZRUN024GSS0	24.0	1.7	208-230/1Ø/60	26.4	30.0	-	148	20.05 (SEER2)	-	1 - 5
VRU 10	ZRNU123TCAA	283-351	12.3	208-230/1Ø/60	0.73	-	-	WASHABLE/ INTEGRAL			31												

REMARKS:
1. PROVIDE WITH ALL NECESSARY REFRIGERATION PIPING & APPURTENANCES; R32 REFRIGERANT
2. PROVIDE INDOOR UNIT WITH AUXILIARY CONDENSATE PUMP AS REQUIRED
3. FULL SIZE CONDENSATE DRAIN PIPING FROM INDOOR UNIT TO TERMINATE TO NEAREST (E)FLOOR SINK OR HOPPER DRAIN
4. PROVIDE INDOOR UNIT WITH MINIMUM MERV 13 FILTERS
5. RECONNECT TO EXISTING BMS

MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
1 / 1 M-1 / 1 M-1 / 1 M-1 / EF 1		DRAWING NUMBER DETAIL/DRAWING NUMBER SHEET NUMBER SECTION NUMBER SHEET NUMBER EQUIPMENT TYPE EQUIPMENT NUMBER
	SA OR OA	SECTION THRU SUPPLY AIR OR OUTSIDE AIR DUCT
	RA	SECTION THRU RETURN AIR DUCT
	EXH	SECTION THRU EXHAUST AIR DUCT
		ROUND DUCT DOWN
DN / DN	DN OR UP	SLOPE DUCT DOWN OR UP IN DIRECTION OF FLOW
	AL	ACOUSTICAL LINING
	FC	FLEXIBLE CONNECTION
	VD	VOLUME DAMPER
	FD OR FSD	FIRE DAMPER OR FIRE/SMOKE DAMPER
	TV	TURNING VANES
		90° RADIUS TURN - ROUND OR RECTANGULAR DUCT
		SQUARE TO ROUND DUCT TRANSITION
		DUCT TRANSITION
		RECTANGULAR DUCT 90° SPLIT
T		THERMOSTAT @ 48" AFF FROM TOP
	AP	ACCESS PANEL
RL/RS	RL/RS	REFRIGERANT LIQUID/SUCTION LINE
CD	CD	CONDENSATE DRAIN LINE
	BHP	BRAKE HORSEPOWER
	HP	HORSEPOWER
	NIMC	NOT IN MECHANICAL CONTRACT
	UTR	UP THRU ROOF

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, 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 CHAPTER 13, 26, AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
3. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT THE ATTACHMENT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE 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.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

MEP DISTRIBUTION SYSTEM BRACING NOTE FOR PIPING, DUCTWORK, AND ELECTRICAL CONDUIT

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7 SECTION 13.3 AS DEFINED IN ASCE 7 SECTION 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 SYSTEMS ARE AS NOTED BELOW. THE MEP DESIGN PROFESSIONAL ENGINEER RESPONSIBLE FOR CONTENT ON THESE SHEETS HAS VERIFIED THAT THE DESIGN METHODS IDENTIFIED BELOW ARE IN ACCORDANCE WITH DSA IR 16-13.

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

MP☒ MD☒ PP☒ E☐ OPTION 1: PROJECT-SPECIFIC DESIGN.

MP☐ MD☐ PP☐ E☐ OPTION 2: DESIGN BASED ON OSHPD OPM, WITHIN PROJECT SUBMITTAL

MP☐ MD☐ PP☐ E☐ OPTION 3: DESIGN BASED ON OSHPD OPM, DEFERRED SUBMITTAL

ACCEPTANCE TESTING

WHEN CERTIFICATION IS REQUIRED BY TITLE 24, PART 1, SECTION 10-103.2, THE ACCEPTANCE TESTING SPECIFIED BY SECTION 120.5(a) SHALL BE PERFORMED BY A CERTIFIED MECHANICAL ACCEPTANCE TEST TECHNICIAN (CMATT). IF THE CMATT IS OPERATING AS AN EMPLOYEE, THE CMATT SHALL BE EMPLOYED BY A CERTIFIED MECHANICAL ACCEPTANCE TEST EMPLOYER. THE CMATT SHALL DISCLOSE ON THE CERTIFICATE OF ACCEPTANCE A VALID CMATT CERTIFICATION IDENTIFICATION NUMBER ISSUED BY AN APPROVED ACCEPTANCE TEST TECHNICIAN CERTIFICATION PROVIDER. THE CMATT SHALL COMPLETE ALL CERTIFICATE OF ACCEPTANCE DOCUMENTATION IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS IN SECTION 10-103(a)4.

APPLICABLE GOVERNING CODES:

2022 CALIFORNIA BUILDING CODE
2022 CALIFORNIA ELECTRICAL CODE
2022 CALIFORNIA MECHANICAL CODE
2022 CALIFORNIA PLUMBING CODE

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MECHANICAL
STATE OF CALIFORNIA

APPROVAL STAMP

CHABOT LAS POSITAS COMMUNITY COLLEGE DISTRICT

BLDG 1600 VRF REPLACEMENT

3033 COLLIER CANYON RD
LIVERMORE, CA 94551

BID SET

PROJECT NUMBER:
CEI # 25030
DATE:
11-13-25
DRAWN BY:
MC.
CHECKED BY:
MS
REVISIONS:

MECHANICAL LEGENDS & SCHEDULES

M1.01

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PART 1 - GENERAL

1.1 INCLUSION OF GENERAL CONDITIONS AND GENERAL REQUIREMENTS

A. The Bidding Requirements, Contract Forms, General Conditions, Supplemental General Conditions, Division 01 - General Requirements are a part of this Section and the Contract for this work and apply to this Section as fully as if repeated herein.

1.2 DESCRIPTION

A. This Specification establishes the required standards for all labor, materials, equipment and workmanship in connection with the furnishing, fabrication and installation of complete "Heating, Ventilating, Air Conditioning" systems. Heating, ventilating, air conditioning work includes, but is not necessarily limited to, the following:

1. Variable refrigerant flow fan coils & outdoor units;
2. Refrigerant piping and appurtenances;
3. Flashings, curbs and caps in connection with all equipment, piping and ductwork supplied under this Section;
4. Thermal and sound insulation for all piping and ductwork supplied under this Section;
5. Condensate drainage piping and connections from points of attachment to equipment to indirect waste locations;
6. Start-up, testing and balancing;

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Section 23 05 00 - General Mechanical

B. Painting, patching, and roofing: See applicable Section(s) of Division 07 - Thermal and Moisture Protection.

C. Condensate drain piping: See Section 22 00 00 - Plumbing.

D. Line voltage wiring, disconnect switches, conduit for temperature control wiring and final connection of electrical equipment: See applicable Sections of Division 26 - Electrical.

E. Finish painting: See applicable Section of Division 09 - Finishes.

1.4 SUBMITTALS:

A. All submittals shall be submitted under the provisions of Section 01 33 00.

1. Submittal No. 23 00 00A (#) - Product Data
   a. Submit manufacturer's product data for all HVAC equipment, in compliance with specification and/or as scheduled.
2. Submittal No. 23 00 00B (#) - Shop Drawings

PART 2 - PRODUCTS

2.1 GENERAL

A. Only specified materials shall be utilized in the work of this Section unless substitutions have been approved by the Architect or in accordance with Division 1 Section(s) for Substitutions and Product Options.

B. All materials shall be new, of the best quality for the intended use, shall be listed by the ASA, AGA, U.L., as meeting their requirements and bearing their label wherever standards have been established and label services are regularly furnished by them.

C. Provide fan drives rated at 150% of motor horsepower. Drives shall be adjustable sheave type unless specified otherwise. Listed fan speeds are only approximate; select and/or change drives to operate at approximately midpoint of adjustable range after final balancing.

D. Provide guards to enclose exposed moving equipment components in accordance with Title 8, California Administrative Code. Fabricate belt guards with rigid angle iron frame, expanded metal screen, pivoted 4 inch diameter tachometer opening covers, and in two pieces to permit lubrication or sheave and belt adjustment without removing guard. Provide removable sheet metal guards at shafts and couplings and removable framed wire mesh guards at openings in mechanical systems.

2.2 VARIABLE REFRIGERANT FLOW SYSTEM

A. The indoor unit (VRU) and outdoor unit (HP-1) system shall be LG Electronics, as scheduled on drawings, or approved equal. Complete with a minimum MERV 13 filter. Install per manufacturer's instructions.

2.3 REFRIGERANT PIPING

A. Refrigerant piping shall be Type "L" de-oxidized, line set, ASTM B 88.

1. At the contractors option, ASTM B210 complying to ASME B31.5, Seamless Aluminum tubing may be substituted. If Aluminum tubing is substituted for copper, the joints must be made without the use of heat. Any joint fitting must be UL or ETL tested to UL 207 and ETL listed, REFLOK alumunum-to-aluminum or copper to aluminum fittings for connection of refrigerant piping. Fittings shall have dielectric coating to allow connection of dis-similar metals. Fittings shall be certified to a working pressure of 600 psi.

B. Mechanical joints on refrigerant piping systems are prohibited, with the exception noted above. All refrigerant piping joints shall be brazed. Use lead-free, silver solder, minimum 15% silver content.

C. Pipe fittings shall be wrought-copper with soldered joints; ASME B16.22.

D. Flexible connections shall be bronze, double braided, sweat solder ends.

E. Moisture/liquid indicators (sight glasses) shall be color change moisture indication type, replaceable element, filter screen and pad, sweat solder ends; Sporlan "See-All", Henry, or equal.

F. Charging and purge valves shall be forged brass, diaphragm packless, globe type, angle or straight through, one end solder, one end flare; Henry 623 and 643 series, Sporlan, or equal.

G. Solenoid valves shall be forged brass, extended end connections, solder ends, molded coil; Sporlan "E" series or equal. Comply with ARI 760 & UL 429.

H. Filter driers shall be replaceable media, angle type; Henry "Dri-Cor" or equal; ARI 730.

I. Thermostatic expansion valves shall have forged brass body, stainless steel seats and pins, ODF solder connections, external equalizer; ARI 750.

J. Pipe hangers: All refrigerant piping shall be supported 8' on center. Hangers and supports shall be as specified in Section 23 0500 - General Mechanical".

K. Split system fan-coil units and heat pump units shall have brazed sweat-fitting connections on the refrigerant piping between the units with a flexible piping section at the outdoor unit.

2.4 REFRIGERANT PIPING INSULATION

A. Insulate all refrigerant liquid, vapor, and suction lines, fittings, and valves with flexible elastomeric thermal insulation, Armacell "AP ArmaFlex" black and white tube insulation, or equal. The insulation shall be formaldehyde free, have microbial protection, and conform to Title 24 standards. Install according to manufacturer's suggested installation procedures.

B. Liquid, suction, and hot gas (where applicable) lines shall be insulated individually.

C. Oil equalization lines between multiple condensing units shall be insulated.

D. All piping exposed to the weather shall be finished with aluminum jacketing with a laminated moisture retarder. ITW Insulation Systems, RPR Products "Insul-Mate" or approved equal. Aluminum jacketing shall be overlapped 2 to 3 inches and held in place with stainless steel bands to form a weather tight system. Elbows and tees shall be fitted with matching aluminum fitting covers. Other fittings in metal-jacketed systems shall be finished with conventional weather-resistant insulating materials with painted aluminum finish.

2.5 CONDENSATE DRAIN PIPING

A. Condensate drainage and indirect waste piping shall be Mueller Streamline, Cerro Flow or equal.

1. 1 ¼" and larger shall be type DWV, drawn temper seamless copper tube, ASTM B306 with wrought copper or cast brass fittings. Wrought copper fittings shall comply with ASME B16.29.
2. 1" and smaller shall be type M, drawn temper, seamless copper tube, ASTM B88 with standard pressure fittings.
3. Drainage fittings shall be ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings. 1 ¼" & smaller, standard pressure fittings.
4. Acidic condensate drainage pipe and fittings shall be Schedule 40, NSF-14, ASTM 439, socket fittings, solvent weld CPVC.

2.6 UNIONS

A. Unions or flanges shall be furnished and installed at each threaded connection to all equipment or valves. The unions shall be located so that the piping can be easily disconnected for removal of the equipment, tank, or valve, and shall be of the type specified in the following:

1. Steel pipe: ASC/Anvil Figure 463 Class 150 union, malleable iron, bronze to iron seat, ground joint, or equal. ASME B16.39, 150lb. wsp, 300lb. wog non-shock
2. Copper pipe: cast copper alloy, soldered joint: Nibco series 633 or 733, Mueller Streamline, or equal. MSS SP-123

2.7 REFRIGERANT PIPING INSULATION

A. Insulate all refrigerant liquid, vapor, and suction lines, fittings, and valves with flexible elastomeric thermal insulation, Armacell "AP ArmaFlex" black and white tube insulation, or equal. The insulation shall be formaldehyde free, have microbial protection, and conform to Title 24 standards. Install according to manufacturer's suggested installation procedures.

B. Liquid, suction, and hot gas (where applicable) lines shall be insulated individually.

C. Oil equalization lines between multiple condensing units shall be insulated.

D. All piping exposed to the weather shall be finished with aluminum jacketing with a laminated moisture retarder. ITW Insulation Systems, RPR Products "Insul-Mate" or approved equal. Aluminum jacketing shall be overlapped 2 to 3 inches and held in place with stainless steel bands to form a weather tight system. Elbows and tees shall be fitted with matching aluminum fitting covers. Other fittings in metal-jacketed systems shall be finished with conventional weather-resistant insulating materials with painted aluminum finish.\

2.8 SUPPORTS

A. Installation of piping shall be such that damage cannot result through loading, expansion or contraction of piping. Anchors shall be installed to obtain uniformity of pipe movement.

B. Trapeze hangers: Grouped pipes may be supported by A-1200 channel bolted to rods. Copper and steel pipe shall be attached to channels with A-716 "Cush-A-Clamp", insulated pipes shall have C-790 galvanized shields.

C. No valve or piece of equipment shall be used to support piping.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Prior to commencing the work of this Section, this Contractor shall inspect the installed work of other trades and verify that their work is sufficiently complete to permit the start of work under this Section and that the completed work will be in complete accordance with the original design. In the event of discrepancy immediately notify the Architect and proceed as he directs.

3.2 INSTALLATION, GENERAL

A. Provide all necessary cutting in connection with the work of this Section. NO structural members shall be drilled, bored, or notched in a manner that will impair their structural capacity; all penetrations of concrete or masonry shall be made with core drills; NO cutting shall be done without the approval of the Architect.

3.3 AIR CONDITIONING EQUIPMENT

A. All units shall be set with curbs plumb, level, and securely attached through framed opening with bolts and/or lag screws as noted on the Drawings. Connections to ductwork shall be secured, filter racks shall be aligned, enclosures and ductwork connections shall be fully waterproofed, and all utility and control connections shall be complete.

3.4 DUCTWORK

A. All ductwork shall be installed within spaces provided where possible. Ducts shall be installed true to line and grade, fully secured to structural framing with specified hangers and supports, insulated, and vibration isolated.

B. Each section of supply air ductwork shall be cleaned at the shop, dust and oil free, using a degreasing agent and detergent and sealed airtight at both ends with visqueen and tape. Supply ducts shall be additionally cleaned with a disinfecting solution. Ends of all supply and internally insulated exhaust ducts shall be kept sealed until the time they are joined. When duct sections are joined, wipe down all interior surfaces with a clean tack cloth. If tack cloth shows any dust, then re-clean duct as described above. The intent is that no foreign matter be allowed to enter the ductwork at any time after factory cleaning and during construction.

3.5 REFRIGERANT PIPING

A. Piping installation shall comply with all federal, state, and local regulations and industry guidelines. In addition, the following practices shall be followed.

1. All piping shall be stored with ends sealed to prevent entry of moisture and debris.
2. A pipe cutter specific to the piping material applied shall be used.
3. All factory and field cut tube ends shall be de-burred and cleaned.
4. Flared fittings shall be formed using tools recommended by the equipment manufacturer.
5. Flare nuts shall be tightened with torque wrench furnished by the equipment manufacturer.
6. Piping shall be continuously purged with dry nitrogen while soldering. Care shall be taken when soldering near valves or other equipment that may be damaged by extreme heat.

B. The refrigerant charge shall be calculated and weighed into the system.

C. After charging with refrigerant, all joints shall be tested with an electric halide leak detector. Precautions shall be taken to keep moisture out of the system, and a drier shall be used.

D. Mechanical joints in refrigerant piping systems are unacceptable. All refrigerant piping joints shall be brazed. Use silver solder, minimum 15% silver content.

E. Service technicians shall be certified in the use of CFC and HCFC refrigerant recovery and recycling equipment and he/she shall use UL listed and labeled recovery equipment when discharging refrigerant.

3.6 REFRIGERANT PIPING INSULATION

A. Insulation shall be applied in complete accordance with the manufacturer's published installation instructions on clean, dry surfaces. All insulation shall be continuous through wall and ceiling openings and sleeves. All joints shall be firmly butted together and longitudinal jacket laps and butt strips shall be smoothly secured. Specified adhesives, mastics and coatings shall be applied at the manufacturer's recommended minimum coverage per gallon.

B. All pipe insulation ends shall be tapered and sealed, regardless of service.

3.7 CONTROLS

A. All new fan coils & outdoor units shall be reconnected back to the existing Building Management System.

B. Installation of the system shall be made under the supervision of the manufacturer of the equipment, or the factory authorized representative.

C. In addition to the submittals required above, and those set forth in "Submittals", the following items shall be furnished:

1. Prior to final inspection, the system contractor shall furnish a letter stating that the entire control system and all "interlock" wiring is installed and operating in a satisfactory manner.

D. This Contractor shall include as a part of the work of this Section, a one (1) year service contract on all portions of the control system.

3.8 SUPPORTS AND HANGERS

A. All hangers, supports and attachments to the structure must be capable of withstanding three times the anticipated load. See Section 23 0500 - General Mechanical for hangers and supports specifications.

3.9 TESTS, INSPECTIONS

A. Make all necessary control adjustments and balancing of air flows. Operate the entire system for a period of time not less than three (3) working days for the purpose of proving satisfactory performance. During this period, instruct such persons as the Owner and/or Architect may designate in the proper operation of the systems. Should further adjustment prove necessary, operating tests shall be repeated until a satisfactory test is obtained.

B. This Contractor shall not allow or cause any work of this Section to be covered or enclosed until it has been inspected, tested, and approved by the Architect and the authorities having jurisdiction over the Work. Should any of this work be enclosed or covered up before such inspection, testing, and approval, this Contractor shall uncover the work, have the necessary inspections, tests, and approvals made and, at NO expense to the Owner, make all repairs necessary to restore both his work and that of other contractors which may have been damaged to be in conformity with the Contract Documents.

C. Furnish all necessary labor, materials, and equipment for conducting tests, and pay all expenses in connection therewith. Should leaks develop while testing, repairs shall be made, and tests shall be repeated until a satisfactory test is obtained.

3.10 CLEANUP

A. Upon completion of the work of this Section, remove all material, debris, and equipment associated with or used in the performance of this work.

END OF SECTION

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STATE OF CALIFORNIA

APPROVAL STAMP

CHABOT LAS POSITAS COMMUNITY COLLEGE DISTRICT

BLDG 1600 VRF REPLACEMENT

3033 COLLIER CANYON RD
LIVERMORE, CA 94551

BID SET

PROJECT NUMBER:
CEI # 25030
DATE:
11-13-25
DRAWN BY:
MC.
CHECKED BY:
MS
REVISIONS:

MECHANICAL SPECIFICATIONS

M1.02

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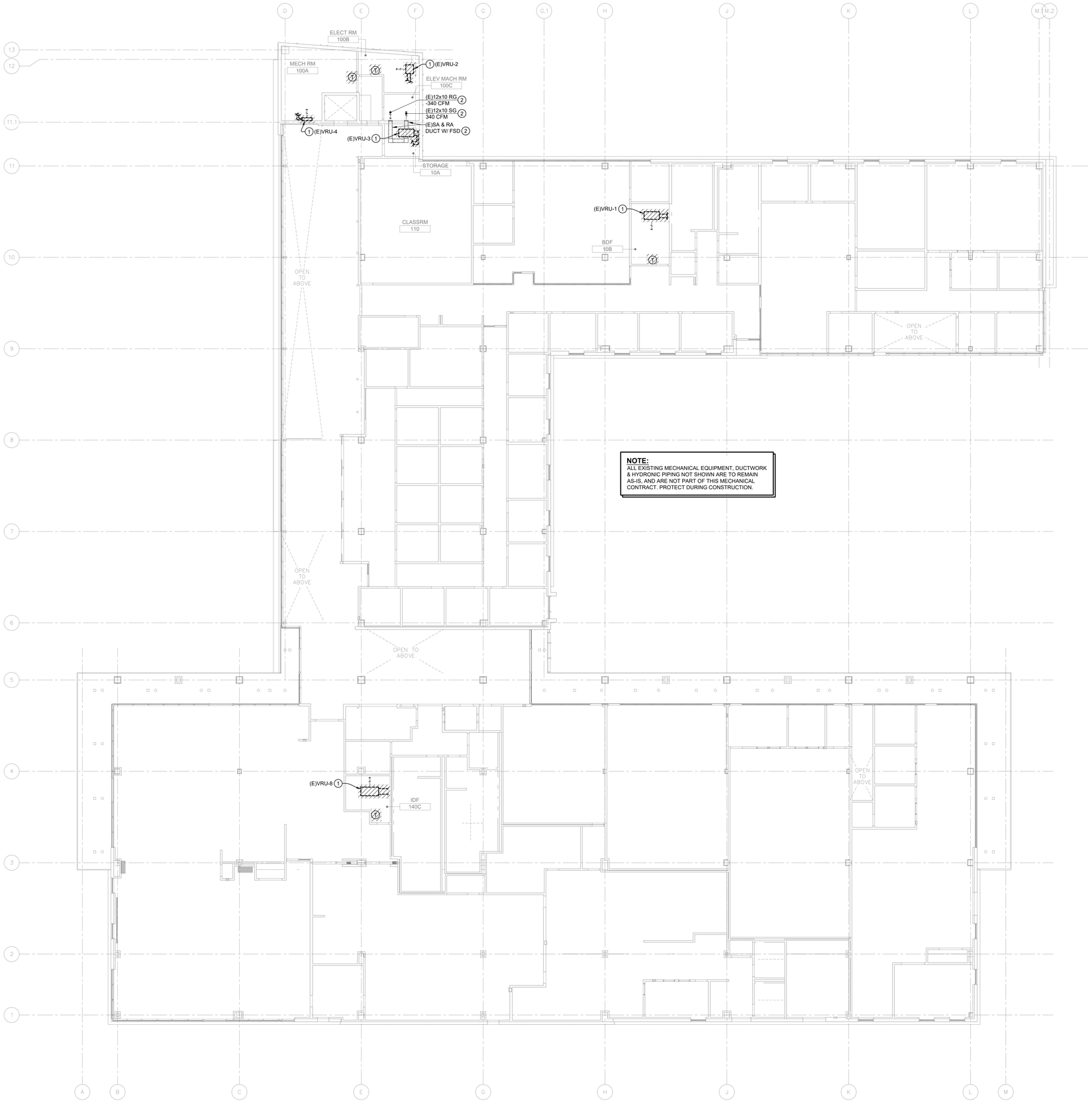

GENERAL DEMOLITION NOTES

A. THIS CONTRACTOR SHALL RETAIN SPECIFIC EQUIPMENT AS DIRECTED BY OWNER AND DELIVER TO OWNER SPECIFIED LOCATION.

B. ALL MECHANICAL EQUIPMENT, PIPING, VALVING, CONTROLS, ETC. RENDERED USELESS BY THIS WORK SHALL BE DEMOLISHED AND REMOVED FROM THE SITE.

C. LOCATION OF EXISTING MECHANICAL/PLUMBING EQUIPMENT, PIPING, ETC. HAS BEEN BASED ON THE BEST AVAILABLE INFORMATION OBTAINABLE AT THE SITE AND THROUGH RECORD DRAWINGS. VERIFY EXACT LOCATIONS, DEPTH, SIZES, AND EXTENT OF EXISTING SYSTEMS PRIOR TO START OF DEMOLITION WORK.

D. PATCH ALL WALLS, FLOORS, CEILINGS, ROOF AND OTHER SURFACES TO MATCH EXISTING CONDITIONS. PAINT TO MATCH EXISTING. SEE STRUCTURAL DRAWINGS FOR INFILL OF EXISTING ROOF OPENINGS AS REQUIRED.

E. ASBESTOS CONTAINING PRODUCTS MAY BE PRESENT IN THE EXISTING BUILDING CONSTRUCTION. IF SUSPECT MATERIALS ARE FOUND, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER'S REPRESENTATIVE FOR INSTRUCTIONS PRIOR TO PROCEEDING WITH ADDITIONAL WORK. THE CONTRACTOR SHALL IMMEDIATELY POST NOTICES AND TAKE PRECAUTIONS NECESSARY TO ENSURE THE HEALTH AND SAFETY OF ALL WORKERS, THE STAFF, AND THE PUBLIC.

DEMOLITION SHEET NOTES

(1) EXISTING FAN COIL, REFRIGERANT PIPING, CONDENSATE PIPING, SUPPORTS, THERMOSTAT, CONTROLS, AND ALL ASSOCIATED APPURTENANCES TO BE REMOVED COMPLETELY, AND REPLACED WITH NEW.
EXISTING REFRIGERANT PIPING ROUTES ARE UNKNOWN. FIELD VERIFY PIPE LOCATIONS, AND DEMOLISH AS MUCH AS POSSIBLE WITHIN ACCESSIBLE AREAS. PIPING IN INACCESSIBLE AREAS SHALL BE CAPPED AND ABANDONED IN PLACE.

(2) EXISTING SUPPLY & RETURN DUCTWORK WITH FIRE DAMPERS TO REMAIN FOR RE-USE. TEMPORARILY CAP DUCTS AT EXISTING UNIT CONNECTION, AND PROTECT DURING CONSTRUCTION. CLEAN AND/OR REPAIR EXISTING DUCT AND GRILLES, AND PREPARE FOR RECONNECTION TO NEW FAN COIL.

1 LEVEL 1 - MECHANICAL DEMOLITION PLAN

SCALE: 3/32" = 1'-0"

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NORTH

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LEVEL 1
MECHANICAL
DEMOLITION PLAN

DM2.01

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GENERAL DEMOLITION NOTES

A. THIS CONTRACTOR SHALL RETAIN SPECIFIC EQUIPMENT AS DIRECTED BY OWNER AND DELIVER TO OWNER SPECIFIED LOCATION.

B. ALL MECHANICAL EQUIPMENT, PIPING, VALVING, CONTROLS, ETC. RENDERED USELESS BY THIS WORK SHALL BE DEMOLISHED AND REMOVED FROM THE SITE.

C. LOCATION OF EXISTING MECHANICAL/PLUMBING EQUIPMENT, PIPING, ETC. HAS BEEN BASED ON THE BEST AVAILABLE INFORMATION OBTAINABLE AT THE SITE AND THROUGH RECORD DRAWINGS. VERIFY EXACT LOCATIONS, DEPTH, SIZES, AND EXTENT OF EXISTING SYSTEMS PRIOR TO START OF DEMOLITION WORK.

D. PATCH ALL WALLS, FLOORS, CEILINGS, ROOF AND OTHER SURFACES TO MATCH EXISTING CONDITIONS. PAINT TO MATCH EXISTING. SEE STRUCTURAL DRAWINGS FOR INFILL OF EXISTING ROOF OPENINGS AS REQUIRED.

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DEMOLITION SHEET NOTES

(1) EXISTING FAN COIL, REFRIGERANT PIPING, CONDENSATE PIPING, SUPPORTS, THERMOSTAT, CONTROLS, AND ALL ASSOCIATED APPURTENANCES TO BE REMOVED COMPLETELY, AND REPLACED WITH NEW.
EXISTING REFRIGERANT PIPING ROUTES ARE UNKNOWN. FIELD VERIFY PIPE LOCATIONS, AND DEMOLISH AS MUCH AS POSSIBLE WITHIN ACCESSIBLE AREAS. PIPING IN INACCESSIBLE AREAS SHALL BE CAPPED AND ABANDONED IN PLACE.

LEVEL 2 - MECHANICAL DEMOLITION PLAN

SCALE: 3/32" = 1'-0"

COSTA ENGINEERS INC.
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REGISTERED PROFESSIONAL ENGINEER
MATTHEW W. SIMON
No. 35021
12-31-26
MECHANICAL
STATE OF CALIFORNIA

APPROVAL STAMP

CHABOT LAS POSITAS COMMUNITY COLLEGE DISTRICT

BLDG 1600 VRF REPLACEMENT

3033 COLLIER CANYON RD
LIVERMORE, CA 94551

NORTH

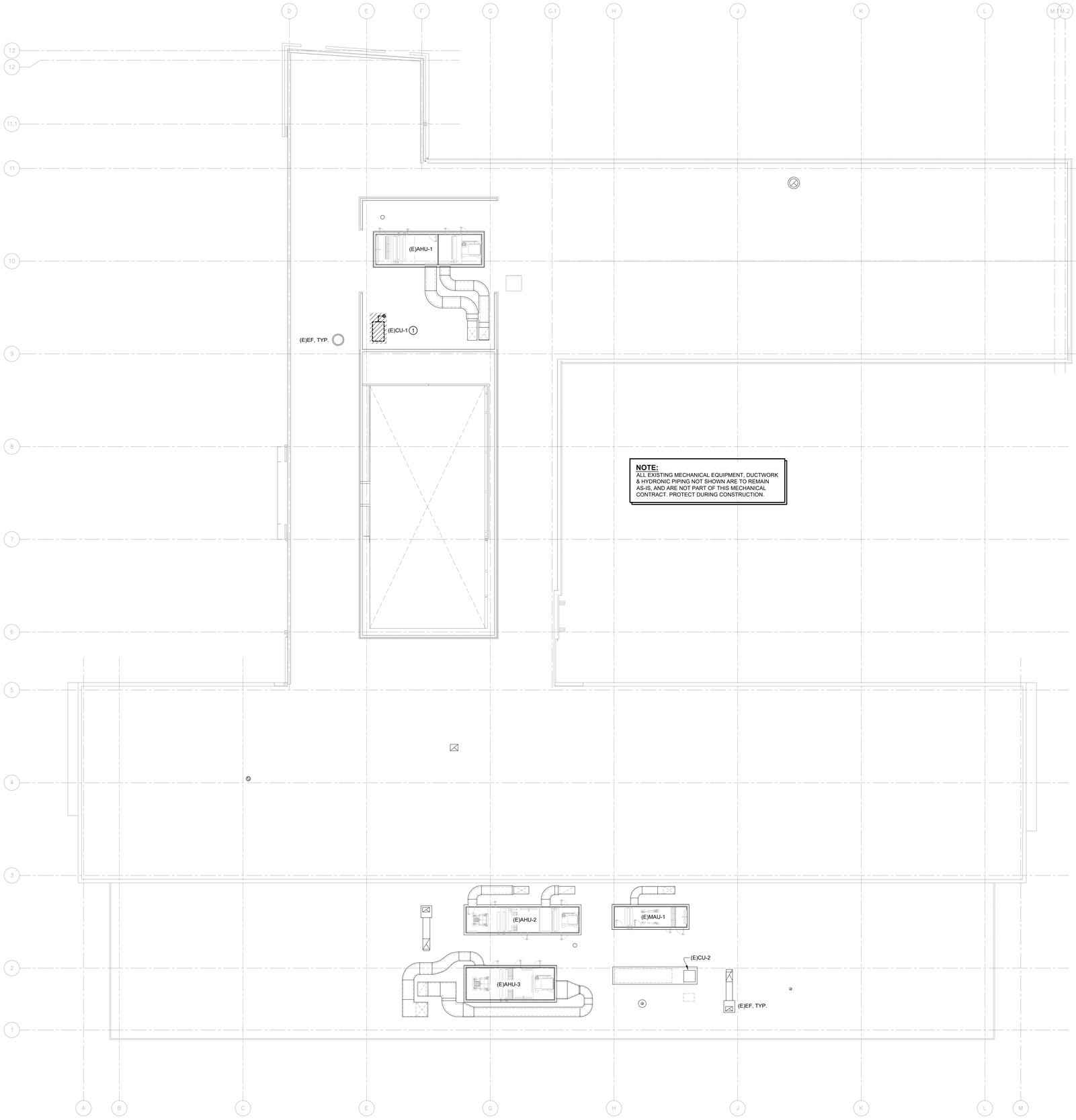
BID SET

PROJECT NUMBER:
CEI # 25030
DATE:
11-13-25
DRAWN BY:
MC.
CHECKED BY:
MS
REVISIONS:

LEVEL 2
MECHANICAL
DEMOLITION PLAN

DM2.02

Nov 13, 2025 - 3:41pm maryann S:\2025\25030 Las Positas Bldg 1600 HVAC\Autocad\Drawings\25030 Las Positas Bldg 1600 - LEVEL 2_DM2.02_M2.02.dwg



NOTE:
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ROOF - MECHANICAL DEMOLITION PLAN

SCALE: 3/32" = 1'-0"

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CHABOT LAS POSITAS COMMUNITY COLLEGE DISTRICT

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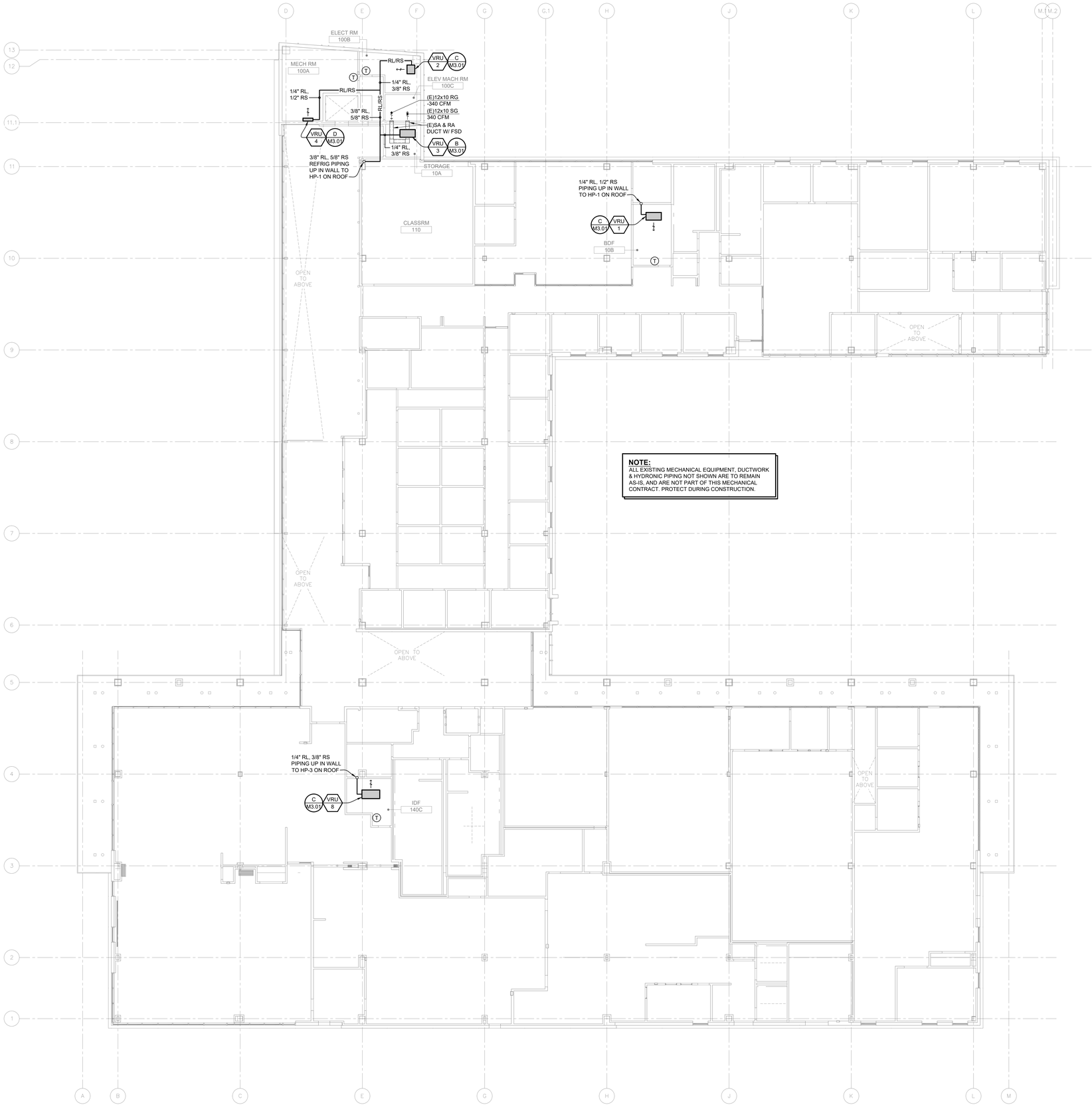
ROOF MECHANICAL DEMOLITION PLAN

DM2.03

Nov 13, 2025 - 3:41pm maryam S:\2025\25030 Las Positas Bldg 1600 HVAC\Autocad\Drawings\25030 Las Positas Bldg 1600 - ROOF_DM2.03_M2.03.dwg



NOTE:
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1 LEVEL 1 - MECHANICAL PLAN

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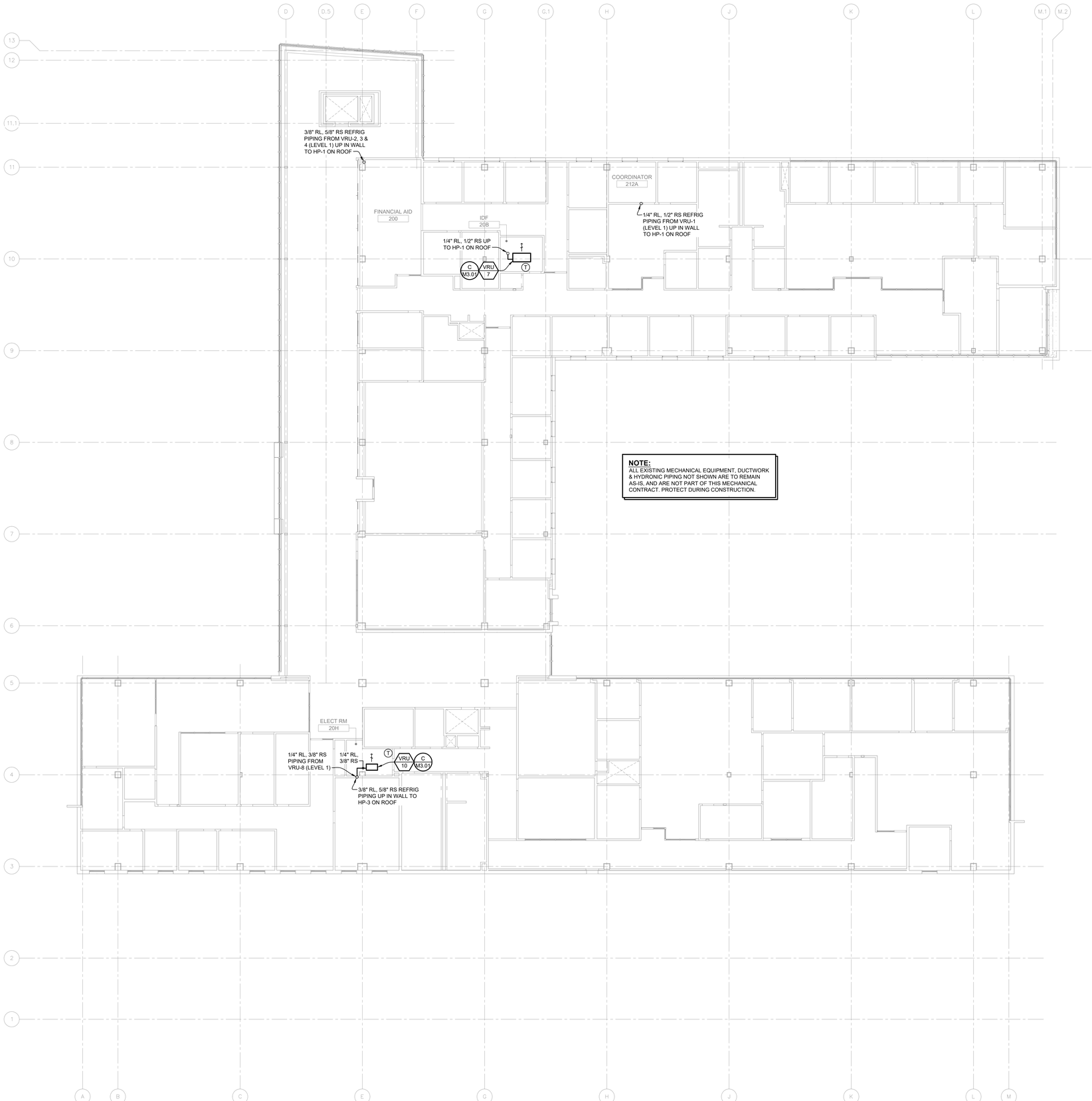
LEVEL 1
MECHANICAL PLAN

M2.01

Nov 13, 2025 - 3:41pm manjann S:\2025\25030 Las Positas Bldg 1600 HVAC\Autocad\Drawings\25030 Las Positas Bldg 1600 - LEVEL 1_DM2.01_M2.01.dwg



LEVEL 2 - MECHANICAL PLAN

SCALE: 3/32" = 1'-0"

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LEVEL 2 MECHANICAL PLAN

M2.02

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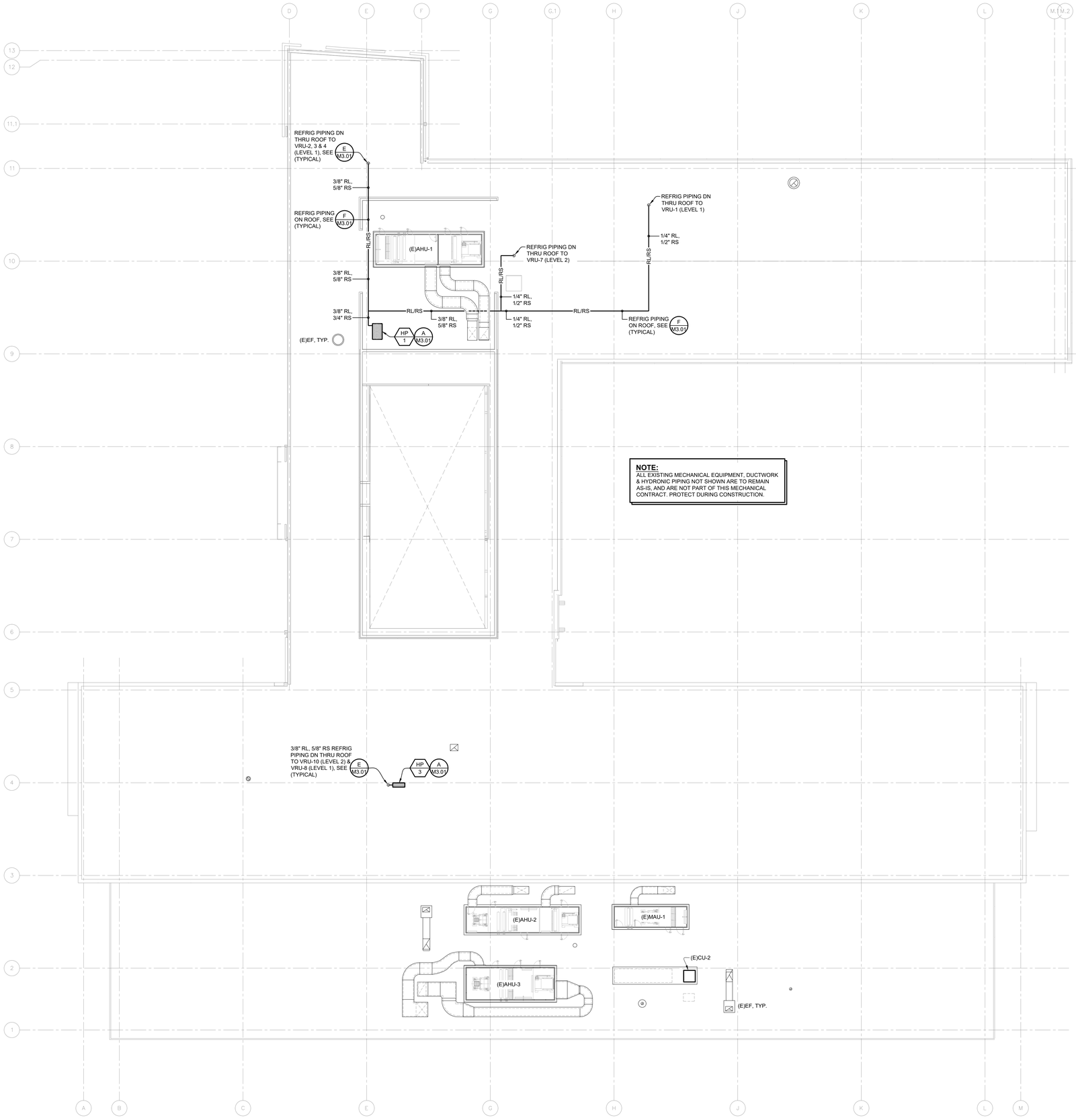

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ROOF - MECHANICAL PLAN

SCALE: 3/32" = 1'-0"

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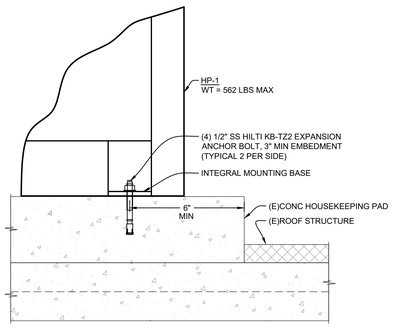
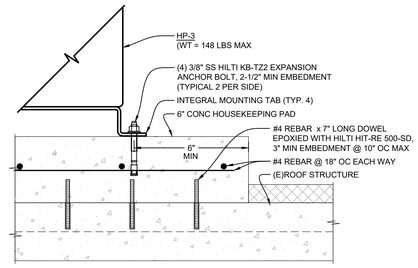
ROOF MECHANICAL PLAN

M2.03

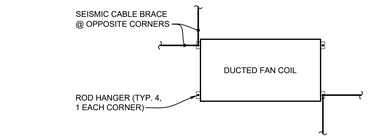
Nov 13, 2025 - 3:41pm maryann S:\2025\25030 Las Positas Bldg 1600 HVAC\Autocad\Drawings\25030 Las Positas Bldg 1600 - ROOF_DM2.03_M2.03.dwg



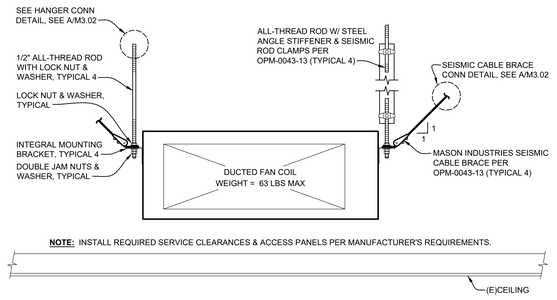


A ROOFTOP HEAT PUMP UNIT MOUNTING DETAILS

SCALE: NONE

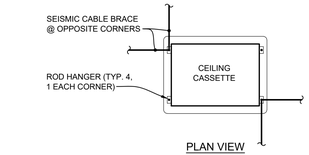


PLAN VIEW

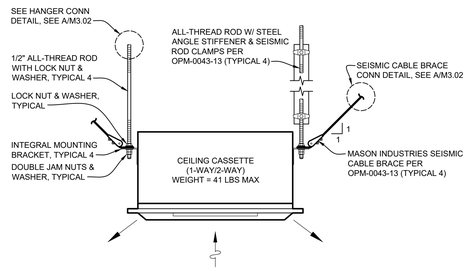


B DUCTED FAN COIL MOUNTING DETAIL

SCALE: NONE

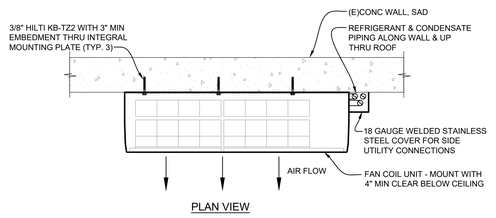


PLAN VIEW



C CEILING CASSETTE MOUNTING DETAIL

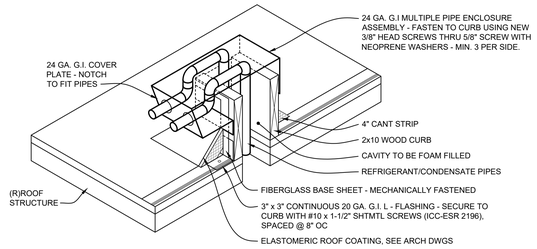
SCALE: NONE



PLAN VIEW

D WALL-MOUNTED FAN COIL ON CONC WALL

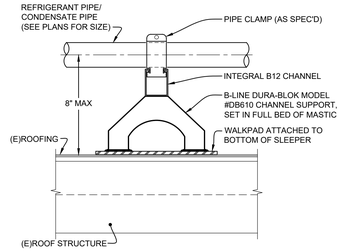
SCALE: NONE



NOTES:
1. ALL PIPES ENTERING THE PIPE ENCLOSURE ASSEMBLY SHALL BE SLOPED UPWARD AS THEY ENTER THE FLASHING SO THAT WATER WILL NOT BE ABLE TO RUN INTO THE BUILDING.
2. WHERE SURFACE IS GRAVEL, SPUD BACK GRAVEL TO ALLOW INSTALLATION OF MODIFIED BITUMEN FLASHING PLY. SURFACE FLASHING PLY WITH ALUMINUM COATING.
3. CLEAN AND PRIME THE ENTIRE TIE-IN AREA.

E REFRIGERANT PIPE ENCLOSURE DETAIL

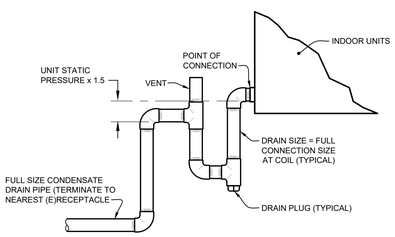
SCALE: NONE



NOTE: SUPPORTS SHALL BE AT 8'-0" ON CENTER & AT ALL CHANGE OF DIRECTION

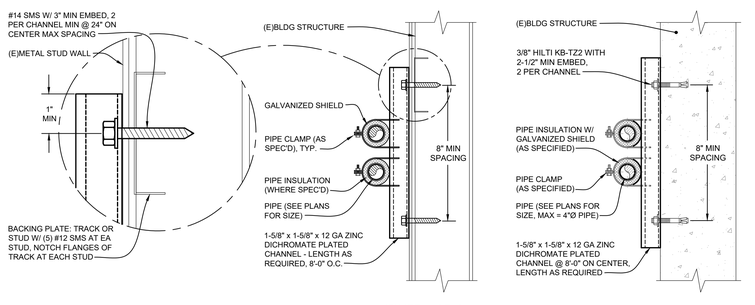
F PIPE SUPPORT ON ROOF DETAIL

SCALE: NONE



G CONDENSATE CONNECTION DETAIL

SCALE: NONE



H CHANNEL SUPPORT DETAILS

SCALE: NONE

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REGISTERED PROFESSIONAL ENGINEER
ARTHUR W. SIMON
No. 39221
12-31-26
MECHANICAL
STATE OF CALIFORNIA

APPROVAL STAMP

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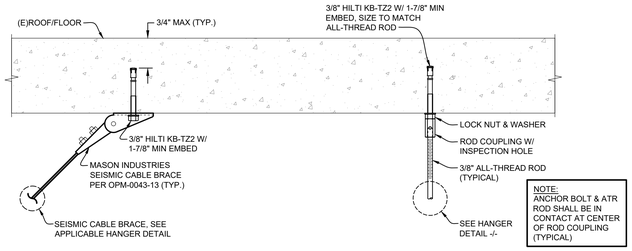
MECHANICAL DETAILS

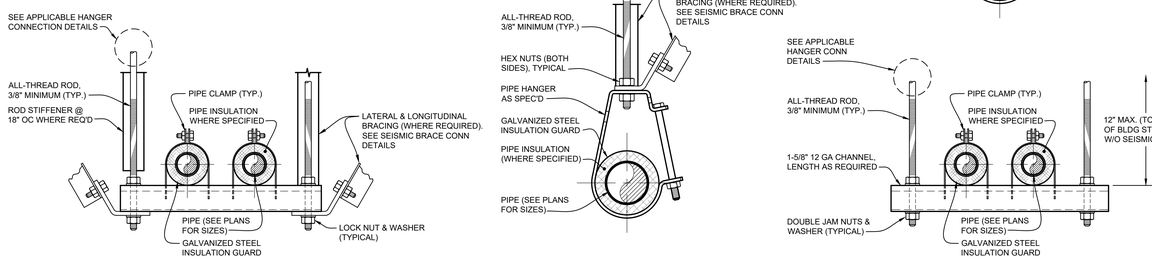
M3.01

Nov 13, 2025 - 3:41pm maryann S:\2025\25030 Las Positas Bldg 1600 HVAC\Autocad\Drawings\25030 Las Positas Bldg 1600 - SCHED-DETAILS.dwg



A HANGER CONNECTION DETAILS @ (E)CONC

SCALE: NONE



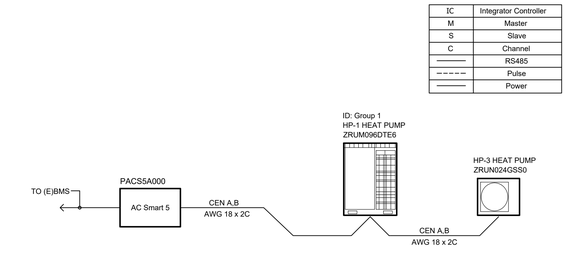
MINIMUM ROD SIZES (INCHES)	PIPE DIAMETER (INCHES)
3/8"	2" & SMALLER PIPE
1/2"	2-1/2" & 3" PIPE

GENERAL NOTES:

1. RUN PIPING TRAPEZE AS CLOSE AS POSSIBLE TO STRUCTURE.
2. SUPPORT PIPING AT A MAXIMUM OF 8'-0" INTERVALS.
3. SEE PLANS FOR PIPE SIZES.
4. CHANNEL DEFLECTION SHALL NOT EXCEED 1/360 OF THE SPAN BETWEEN RODS. DOUBLE-UP CHANNELS AS REQUIRED.
5. B-LINE CHANNEL ROD STIFFENER @ ALL-THREAD WHERE DIAGONAL BRACE OCCURS. INCLUDE SC228 ASSEMBLY AS RECOMMENDED BY MANUFACTURER.
6. NO BRACING IS REQUIRED ON PIPES WITH LESS THAN 1" I.D. AND ALL OTHER PIPES LESS THAN 2-1/2" IN DIAMETER, AND WHEN SUPPORTED LESS THAN 12" FROM BOTTOM OF ROOF STRUCTURE.
7. PIPING SUPPORTED MORE THAN 12" FROM BOTTOM OF ROOF STRUCTURE SHALL BE BRACED TO RESIST THE FORCES PRESCRIBED IN ASCE 7-05 SECTION 13.3 AS DEFINED IN ASCE 7-05 SECTION 13.6.8, 13.6.7, AND 13.6.5.5, ITEM 6, RESPECTIVELY. BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL COMPLY WITH ONE OF THE OSHPD PREAPPROVALS WITH AN OPA NUMBER, AS MODIFIED TO SATISFY ANCHORAGE REQUIREMENTS OF ACI 318, APPENDIX D.

B TYPICAL PIPE HANGER DETAILS

SCALE: NONE



C VRF CONTROL SYSTEM DIAGRAM

SCALE: NONE

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MECHANICAL DETAILS & CONTROL DIAGRAM

M3.02

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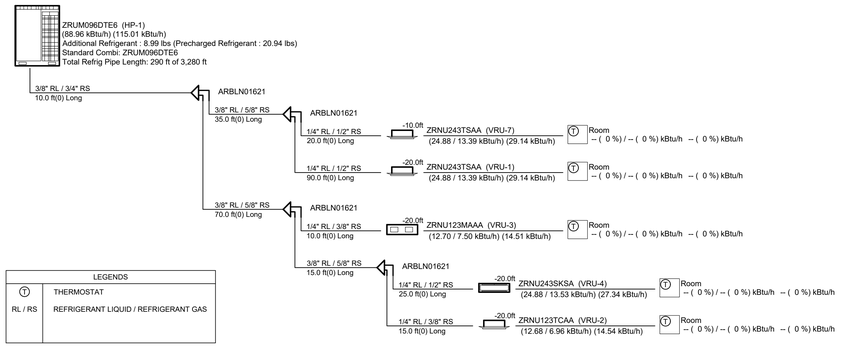
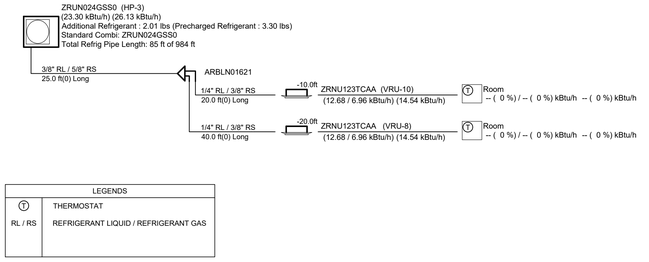


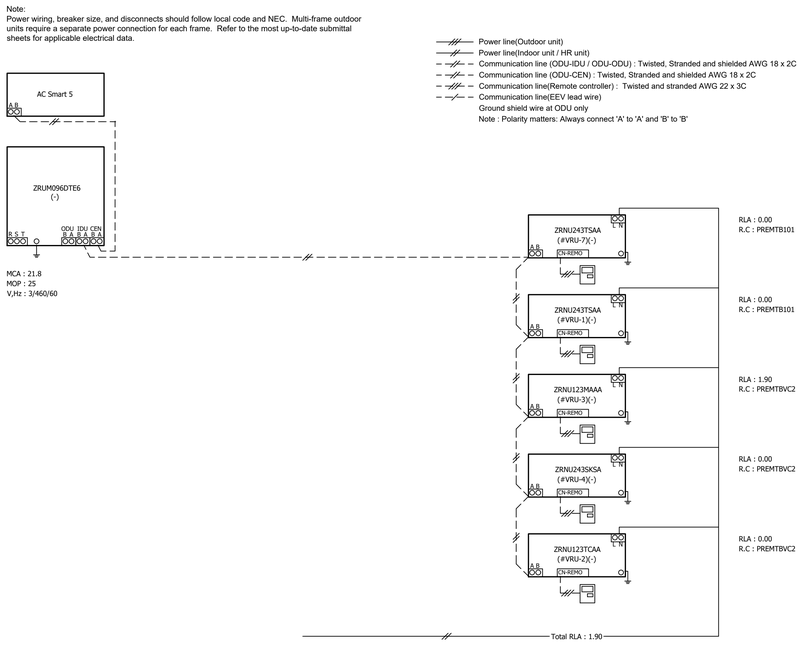
A HP-1 REFRIGERANT PIPING SIZES & DIAGRAM

SCALE: NONE



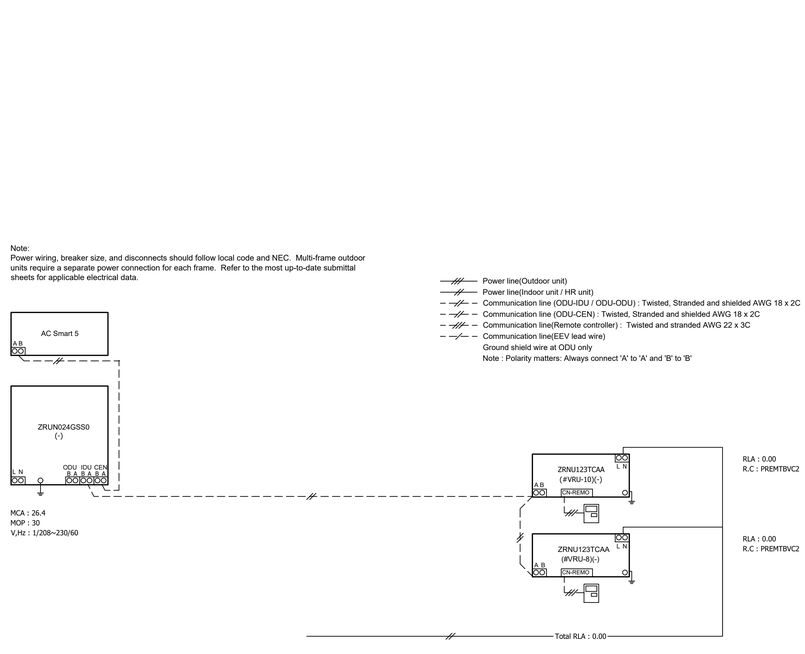
B HP-3 REFRIGERANT PIPING SIZES & DIAGRAM

SCALE: NONE



C HP-1 REFRIGERANT SCHEMATIC DIAGRAM

SCALE: NONE



D HP-3 REFRIGERANT SCHEMATIC DIAGRAM

SCALE: NONE

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REFRIGERANT PIPING DIAGRAMS & SCHEMATIC DIAGRAMS

M3.03

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