

HVAC & PLUMBING SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
(#)	REFER TO PLAN NOTES	(11)	ROOM CALLOUT
(E)	EXISTING EQUIPMENT OR MATERIAL DESIGNATION	(A)	REVISION NUMBER
---	EXISTING COMPONENT PEN WEIGHT	(C)	CONNECT NEW TO EXISTING. VERIFY EXACT LOCATION.
---	DEMOLITION PEN WEIGHT - COMPONENT MAY ALSO BE SHADED	(D)	DISCONNECT FROM EXISTING. VERIFY EXACT LOCATION.
T.C.C.	TEMPERATURE CONTROL CONTRACTOR	G.C.	GENERAL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR	M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR	TYP.	TYPICAL ALL INSTANCES
	24x12 (UP)DUCT SEC., POSITIVE PRESSURE-FIRST SIZE IS TOP DIM.(TYP.)		BALANCING DAMPER W/ MANUAL LOCKING QUADRANT
	24x12 (DOWN) DUCT SECTION, POSITIVE PRESSURE		BALANCING DAMPER W/ MOTORIZED LOCKING QUADRANT
	24x12 (UP) DUCT SECTION, NEGATIVE PRESSURE		RECTANGULAR - OPPOSED BLADE / ROUND - BUTTERFLY
	24x12 (DOWN) DUCT SECTION, NEGATIVE PRESSURE		DUCT SIZE, FIRST FIGURE IS SIDE SHOWN-CLEAR INSIDE DIM.
	SUPPLY DUCT DROP		DUCT CHANGE OF ELEVATION RISE(R) DROP(D)
	SUPPLY DUCT RISER		FLEXIBLE CONNECTION
	RETURN DUCT DROP		SIDE WALL SUPPLY REGISTER
	RETURN DUCT RISER		ROOFTOP UNIT
	FLEXIBLE DUCT		AIR HANDLING UNIT
	TURNING VANES		VARIABLE AIR VOLUME UNIT
SA	SUPPLY AIR	FTU	FAN POWERED TERMINAL UNIT
OA	OUTSIDE AIR	FCU	FAN COIL UNIT
RA	RETURN AIR	MAU	MAKE-UP AIR UNIT
EA	EXHAUST AIR	SF	SUPPLY AIR FAN
OB	OPPOSED BLADE DAMPER	EF	EXHAUST FAN
BOD	BOTTOM OF DUCT ELEVATION ABOVE FLOOR	SR	SUPPLY REGISTER
BOS	BOTTOM OF STEEL	RG	RETURN GRILLE
TOD	TOP OF DUCT ELEVATION ABOVE FLOOR	F	FURNACE
DP	DIFFERENTIAL PRESSURE	UH	UNIT HEATER
CVR	CONSTANT VOLUME REHEAT UNIT	H	HUMIDIFIER
V V R	VARIABLE VOLUME REHEAT UNIT	VFD	VARIABLE FREQUENCY DRIVE
V V T	VARIABLE VOLUME VARIABLE TEMPERATURE	(T)	ELECTRIC OR DDC THERMOSTAT (TSTAT)
	TEMPERATURE SENSOR	(H)	ELECTRIC OR DDC HUMIDISTAT (HSTAT)
	HUMIDITY SENSOR		
CWS	CHILLED WATER SUPPLY LINE (CWS)	HWS	HOT WATER SUPPLY LINE (HWS)
CWR	CHILLED WATER RETURN LINE (CWR)	HWR	HOT WATER RETURN LINE (HWR)
CHWS	CHILLED HOT WATER SUPPLY	HWRR	HOT WATER REVERSE RETURN LINE (HWRR)
CHWR	CHILLED HOT WATER RETURN	CS	COOLING TOWER WATER SUPPLY (CS)
CWPP	CHILLED WATER PRIMARY PUMP	CR	COOLING TOWER WATER RETURN (CR)
CWSP	CHILLED WATER SECONDARY PUMP	CWP	CHILLED WATER PUMP
HWPP	HOT WATER PRIMARY PUMP	HWP	HOT WATER PUMP
HWSP	HOT WATER SECONDARY PUMP	CHWP	CHILLED/HOT WATER PUMP
	DOUBLE CHECK BACKFLOW ASSEMBLY		BALL VALVE
	REDUCED PRESSURE ZONE BACKFLOW ASSEMBLY		CALIBRATED BALANCE VALVE - CIRCUIT SETTER
	GAS COCK		BUTTERFLY VALVE
	VALVE IN DROP		2-WAY CONTROL VALVE (PNEUMATIC)
	VALVE IN RISER		3-WAY CONTROL VALVE (PNEUMATIC)
	GATE VALVE / SHUT OFF VALVE		2-WAY CONTROL VALVE (ELECTRIC)
	GLOBE VALVE		3-WAY CONTROL VALVE (ELECTRIC)
	3 PIECE BALL VALVE		CHECK VALVE
	HYDRAULIC VALVE		PRESSURE REDUCING VALVE (PRV)
	EMERGENCY VALVE WITH FIRE LINK		WAFER CHECK VALVE
	STRAINER		AUTOMATIC FLOW CONTROL VALVE
	PLUG VALVE		CALIBRATED ORIFICE PLATE FLOW METER
	SPRING HANGER		THERMOMETER
	PIPE HANGER		PRESSURE GAUGE
	CAP		CONCENTRIC REDUCER OR INCREASER
	PIPE RISE		ECCENTRIC REDUCER
	PIPE DROP		TOP CONNECTION, 45° OR 90°
	UNION OR FLANGE CONNECTION		BOTTOM CONNECTION, 45° OR 90°
	DIRECTION OF FLOW		SIDE CONNECTION
	ANCHOR		CAPPED OUTLET
O2	MEDICAL OXYGEN LINE (O2)	N2O	NITROUS OXIDE LINE (N2O)
VAC	MEDICAL VACUUM LINE (VAC)	N2	NITROGEN LINE (N2)
MA	MEDICAL COMPRESSED AIR LINE (MA)		
LPS	LOW PRESSURE (<30psig) STEAM (LPS)	HPS	HIGH PRESSURE (>150psig) STEAM (HPS)
LPR	LOW PRESSURE (<30psig) CONDENSATE RETURN (LPR)	HPR	HIGH PRESSURE (>150psig) CONDENSATE RETURN (HPR)
MPS	MEDIUM PRESSURE (30-150psig) STEAM (MPS)		STEAM TRAP
MPR	MEDIUM PRESSURE (30-150psig) CONDENSATE RETURN (MPR)	(ST)	

NOT ALL MAY BE USED ON PROJECT

GENERAL NOTES

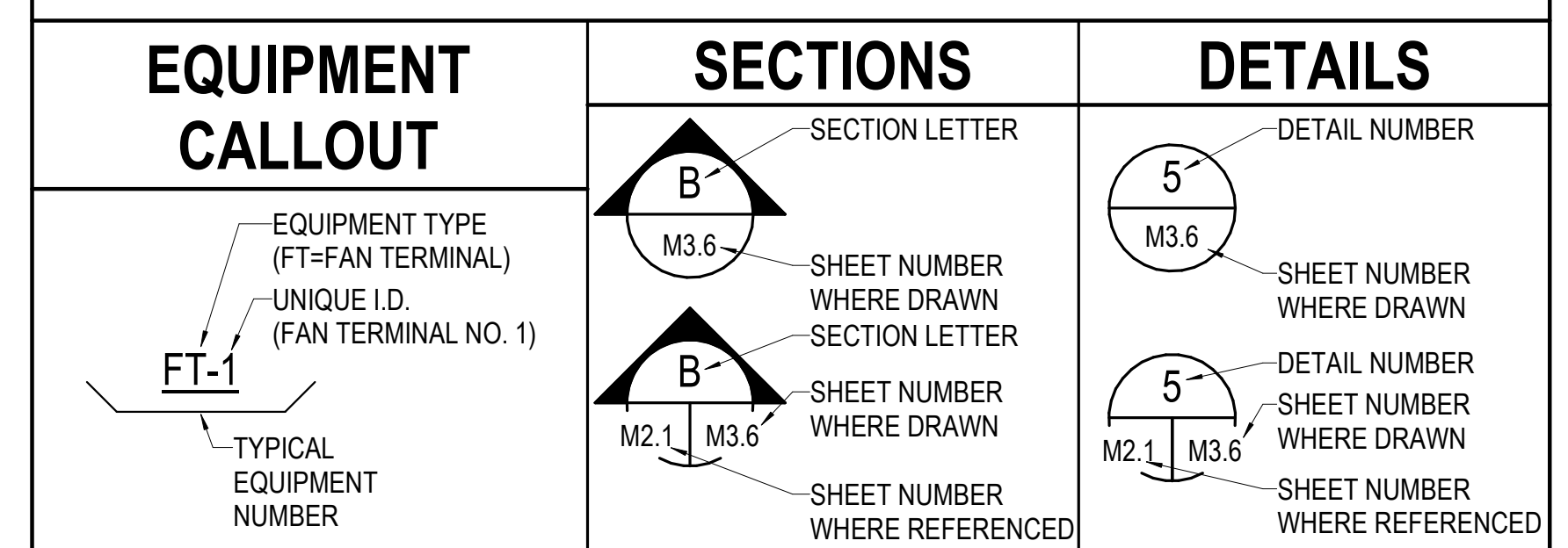
- VERIFY JOB SITE CONDITIONS AND DIMENSIONS BEFORE BEGINNING WORK. PLANS ARE SCHEMATIC IN NATURE. LAYOUT IS BASED ON BEST AVAILABLE INFORMATION. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS.
- NO PIPING, DUCTWORK, ETC. SHALL PENETRATE STRUCTURAL MEMBERS.
- PROVIDE MISCELLANEOUS CUTTING, PATCHING AND REPAIRING OF FINISHES, ROOF, WALLS, ETC., AS REQUIRED TO ACCOMMODATE THE NEW WORK.
- G.C. IS TO PATCH ANY OPENINGS IN CORRIDORS REQUIRED TO BE CONSTRUCTED TO LIMIT THE TRANSFER OF SMOKE AND IN SMOKE BARRIERS AS REQUIRED TO MEET CODE REQUIREMENTS. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXACT LOCATION, CONFIGURATION AND ROUTING OF EXISTING SYSTEMS REQUIRED TO REMAIN IN OPERATION DURING THE PROJECT TO PREVENT DAMAGE DURING DEMOLITION AND PHASING.
- REMOVE ALL EXISTING EQUIPMENT, DUCTWORK AND PIPING THAT IS NOT REQUIRED FOR A WORKING INSTALLATION.
- COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION.
- UNLESS OTHERWISE INDICATED, INSTALL ALL SPACE THERMOSTATS AND OTHER OCCUPANT ADJUSTABLE CONTROL DEVICES SAME HEIGHT AS ADJACENT LIGHT SWITCHES, BUT IN NO CASE HIGHER THAN 48 INCHES ABOVE FINISHED FLOOR PER ADA REQUIREMENTS. COORDINATE EXACT HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.
- ALL CUTTING AND PATCHING SHALL BE CLOSELY COORDINATED WITH THE G.C.
- COORDINATE ROUTING OF PLUMBING, AND HVAC PIPING WITH DUCTWORK, LIGHTS, ARCHITECTURAL CEILING AND STRUCTURAL ELEMENTS. PIPING SHALL RISE AND DROP, JOG OR OFFSET AS REQUIRED TO AVOID CONFLICTS. DUCTWORK SHALL TAKE PRECEDENCE OVER ALL PIPING, EXCEPT WHERE GRADE MUST BE MAINTAINED FOR DRAINAGE. REWORK OF INSTALLED WORK TO RESOLVE CONFLICTS ARISING FROM LACK OF COORDINATION SHALL NOT JUSTIFY AN INCREASE IN THE CONTRACT AMOUNT.
- ALL DIFFUSERS ARE 4-WAY BLOW UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- FLEXIBLE DUCTWORK IS ALLOWED ON RUNOUTS TO SUPPLY DIFFUSERS ONLY. UTILIZE ONLY ABOVE LAY-IN ACCESSIBLE CEILING. DO NOT INSTALL FLEX DUCT ABOVE HARD CEILING OR WHERE EXPOSED. A MAXIMUM LENGTH OF 6'-0" MAY BE USED AT EACH CONNECTION.
- SEAL DUCTWORK AS CALLED OUT BELOW USING HARDCAST DT TAPE AND FTA-20 ADHESIVE OR HARDCAST AFG-1402 "FOIL GRIP" PER MANUFACTURERS INSTRUCTIONS. SEAL TO SMACNA SEAL CLASS A:
 - TYPE OF DUCT: EXHAUST DUCT (ROUND OR RECT), MEDIUM VELOCITY (ROUND), MEDIUM VELOCITY (RECTANGULAR), LOW VELOCITY SUPPLY AND RETURN (RECT), LOW VELOCITY SUPPLY (ROUND)
 - APPLY TO JOINTS: TRANSVERSE AND LONGITUDINAL, TRANSVERSE AND LONGITUDINAL, TRANSVERSE AND LONGITUDINAL, TRANSVERSE AND LONGITUDINAL, TRANSVERSE AND LONGITUDINAL
- INSTALL BALANCE DAMPER WITH STANDOFF AND LOCKING QUADRANT IN AN ACCESSIBLE LOCATION AT EACH RUNOUT TO SUPPLY DIFFUSERS, EXHAUST GRILLES, AND RETURN GRILLES WHERE AIRFLOW IS INDICATED, OR AS INDICATED OTHERWISE.
- ALL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRE STOPPED BY THE TRADE MAKING THE PENETRATION. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR REQUIREMENTS.
- DO NOT ROUTE PIPING OR DUCTWORK OVER ELECTRICAL PANELS OR EQUIPMENT. PIPING OR DUCTWORK SHALL NOT BE ROUTED THROUGH ELECTRICAL ROOMS, TELECOM ROOMS OR ELEVATOR EQUIPMENT ROOMS UNLESS SPECIFICALLY SERVING THAT ROOM. COORDINATE WITH E.C. PROVIDE WATERTIGHT DRIP PAN WITH DRAIN TO NEAREST APPROVED RECEPTOR WHERE REQUIRED.
- COORDINATE SIZE AND LOCATION OF ACCESS DOORS IN CONSTRUCTION REQUIRED FOR ACCESS TO MECHANICAL EQUIPMENT WITH G.C.
- COORDINATE SIZE AND LOCATION OF MECHANICAL EQUIPMENT PADS WITH G.C.
- ALL WORK IS TO CONFORM WITH APPLICABLE CODES AND STANDARDS.
- DUCT SIZES SHOWN ARE OUTSIDE SHEET METAL DIMENSIONS.
- ALL EQUIPMENT SUPPORT STANDS SHALL BE PRIMED AND PAINTED WITH EPOXY ENAMEL.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF ALL CEILING MOUNTED AIR DISTRIBUTION DEVICES.
- PAINT INSIDE OF DUCTWORK BLACK ANYWHERE VISIBLE THROUGH FACE OF GRILLE OR DIFFUSER.
- WHERE HYDRONIC RUNOUT SIZES ARE NOT INDICATED, SIZE PER THE FOLLOWING:
UP TO 1 GPM - 1/2"; UP TO 3 GPM - 3/4"; UP TO 6 GPM - 1"; UP TO 10 GPM - 1-1/4"; UP TO 17 GPM - 1-1/2"
- HYDRONIC PIPING SHALL BE MAINTAINED FULL SIZE UP TO COIL CONNECTIONS. SHUT-OFF VALVES, STRAINERS, BALANCE VALVES, ETC. WILL NOT BE ALLOWED TO REDUCE FROM LINE/RUNOUT SIZE. CONTROL VALVES MAY BE DOWN SIZED FOR FLOW RATE, NOT TO EXCEED 4 PSIG PRESSURE DROP AT DESIGN FLOW.
- TEMPERATURE CONTROLS CONTRACTOR (TCC) SHALL FURNISH AND INSTALL ALL LOW VOLTAGE WIRING AND ASSOCIATED CONDUIT REQUIRED FOR MECHANICAL CONTROL SYSTEM. WIRING SHALL BE IN CONDUIT INSIDE WALLS, IN ROOMS WITH EXPOSED CEILING, AND ABOVE HARD CEILING. LINE VOLTAGE WIRING AND ASSOCIATED CONDUIT SHALL BE PROVIDED AND INSTALLED BY E.C. CONTROL SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH SPECIFICATIONS.
- ALL CONTROL DAMPERS SHALL BE FURNISHED BY TCC AND INSTALLED BY THE MC. MOTOR OPERATORS SHALL BE FURNISHED AND INSTALLED BY THE TCC.
- COORDINATE ACCESS TO EQUIPMENT AND VALVES INSTALLED ABOVE 'HARD' CEILING AND IN MASONRY CHASES WITH GENERAL CONTRACTOR. PROVIDE LOCKING ACCESS DOORS FOR INSTALLATION BY CONTRACTOR AS REQUIRED TO SERVICE CONCEALED DAMPERS, VALVES AND EQUIPMENT. CEILING ACCESS DOORS FOR FIRE DAMPERS, SMOKE DAMPERS AND FIRE SMOKE DAMPERS FURNISHED AND INSTALLED BY CONTRACTOR.
- CONTRACTOR TO INSTALL TEMPORARY FILTERS OVER ALL RETURN AND EXHAUST GRILLES IN WORK AREA DURING CONSTRUCTION.
- THESE DRAWINGS ARE ACCOMPANIED BY SPECIFICATIONS. REFER TO SPECIFICATIONS FOR FURTHER INFORMATION.
- EQUIPMENT THAT REQUIRES MAINTENANCE SHALL BE LOCATED A MINIMUM OF 10'-0" FROM THE BUILDING ROOF EDGE WHERE REQUIRED BY CODE.
- REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF TEMPORARY PARTITIONS.

NOTE: NOT ALL MAY APPLY ON PROJECT.

GENERAL DEMOLITION NOTES

- VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. BRING ANY DISCREPANCIES FROM THE DRAWINGS AND NOTES TO THE ARCHITECT IMMEDIATELY. MINOR CHANGES IN THE SCOPE OF THE DEMOLITION WORK SHALL NOT JUSTIFY AN ADDITIONAL COST.
 - REMOVAL OF EXISTING FIXTURES AND EQUIPMENT WILL REQUIRE ISOLATING THE PIPING RISERS OR MAINS VIA SHUT-OFF VALVES. INSTALL NEW ISOLATION VALVES WHERE REQUIRED FOR COMPLETION OF WORK.
 - REMOVAL OF EXISTING PLUMBING FIXTURES AND EQUIPMENT, ETC. WILL REQUIRE CAPPING AND SEALING EXISTING MAINS OR BRANCHES AS NECESSARY AND REQUIRED TO ALLOW THE REMAINING SYSTEMS TO FULLY OPERATE WITHOUT DEGRADATION.
 - CONTRACTOR SHALL PROVIDE PROTECTIVE PLASTIC DROP CLOTHS TO PROTECT THE EXISTING OCCUPIED AREAS AND EQUIPMENT FROM DUST AND DEBRIS DURING THE CONSTRUCTION WORK, AND SHALL CLEAN THE AREAS OF ALL CONSTRUCTION DIRT DAILY, AND UPON COMPLETION OF THE WORK.
 - ALL DRAINED PIPING RISERS AND MAINS SHALL BE REFILLED WITH PROPER FLUID AND PROPERLY VENTED BY THIS CONTRACTOR, ONCE NEW WORK HAS BEEN INSTALLED.
 - COORDINATE WITH GENERAL CONTRACTOR THE REMOVAL AND REPLACEMENT OF ALL EXISTING CEILING, WALLS, ETC. AS REQUIRED FOR MECHANICAL DEMOLITION WORK.
 - EXISTING PIPING AND EQUIPMENT, ETC., NOT TO BE UTILIZED IN THE COMPLETED BUILDING SHALL BE DISCONTINUED OR REMOVED AS REQUIRED. ALL ENDS OF DISCONTINUED PIPING SHALL BE CAPPED IN THE NEAREST WALL, CEILING OR FLOOR SO THAT THEY ARE COMPLETELY CONCEALED. OPENINGS LEFT IN WALLS, CEILING, ETC., WHERE EQUIPMENT AND PIPE, ETC., ARE REMOVED AND NOT REPLACED, SHALL BE PATCHED NEATLY WITH SIMILAR MATERIAL TO ADJACENT CONSTRUCTION. REFER TO DRAWINGS DELINEATING NEW WORK FOR ADDITIONAL INFORMATION REGARDING SYSTEMS OR PORTIONS OF SYSTEMS WHERE USE IS TO BE DISCONTINUED.
 - EXISTING PIPING, FIXTURES AND EQUIPMENT THAT ARE NOT TO BE REUSED SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE OWNER IF THEY WISH TO RETAIN OWNERSHIP OF SAME. IF NOT, EQUIPMENT SHALL BECOME THE PROPERTY OF THIS CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AS SOON AS PRACTICAL AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.
 - ALL CUTTING AND CHANNELING OF EXISTING BUILDING SHALL BE ACCOMPLISHED IN A NEAT AND WORKMANLIKE MANNER WITHOUT REMOVAL OF EXCESS MATERIALS. THIS CONTRACTOR SHALL PATCH AND REPLACE WITH MATERIAL SIMILAR TO ADJACENT CONSTRUCTION.
 - WHERE EXISTING PIPING AND EQUIPMENT, ETC., THAT ARE TO BE UTILIZED IN THE COMPLETED PROGRAM CONFLICT WITH NEW CONSTRUCTION AND THE REQUIRED DEMOLITION, THEY SHALL BE RELOCATED AND RECONNECTED TO MAINTAIN THE DESIRED SERVICE.
 - PORTIONS OF EXISTING SYSTEMS MAY BE SHOWN FOR CLARITY EVEN THOUGH IT MAY NOT BE NECESSARY TO MODIFY OR REVISE THEM. ALL EXISTING SYSTEMS ARE SHOWN BASED ON ORIGINAL OR REMODEL BUILDING DRAWINGS. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS.
 - ALL WORK MUST BE COORDINATED AND SCHEDULED WITH THE OWNER AND OCCUPANTS OF THIS BUILDING SO AS TO PROVIDE THE LEAST AMOUNT OF DISRUPTION OF BUILDING ACTIVITIES AS POSSIBLE. MAINTAIN CONDITIONED SPACE FOR ALL OWNER OCCUPIED AREAS DURING CONSTRUCTION.
 - ALL ACCESSIBLE ABANDONED PIPING AND DUCTWORK SHALL BE REMOVED AND PROPERLY DISPOSED OF.
- NOTE: NOT ALL MAY APPLY TO PROJECT

DRAWING SYMBOLS



SHEET LIST

M0.0	MECHANICAL COVER SHEET
M0.1	SPECIFICATIONS
M0.2	SPECIFICATIONS
M0.3	DETAILS AND SCHEDULES
M1.1	HVAC FLOOR PLANS



SHEET CONTENTS
MECHANICAL COVER SHEET

PSD CLP MIDDLE SCHOOL
3515 Co Rd 54G
Laporte, CO 80535



NO.	BY	DESCRIPTION	DATE

CHECKED CWS	CHECKED CWH	SHEET NO. M0.0
DATE 12-17-2019		

REVISIONS

THE SEALS AND SIGNS ARE NON-TRANSFERABLE. THEIR USE AS AN INDICATOR OF PROFESSIONAL STATUS IS THE PROPERTY OF THE BOARD OF PROFESSIONAL ENGINEERS AND SURVEYORS OF THE STATE OF COLORADO. ANY UNLAWFUL USE WITHOUT PROPER AUTHORIZATION IS PROHIBITED.

SECTION 200500 – COMMON WORK RESULTS FOR FIRE PROTECTION, PLUMBING, AND MECHANICAL

1.1 GENERAL CONDITIONS

- A. The General Conditions, Supplemental General Conditions, Special Conditions and General Requirements are part of this contract and shall be referred to as they apply to this section of the specifications.

1.2 EXAMINATION OF SITE

- A. Visit the site, inspect the existing conditions and check the drawings and specifications so as to be fully informed of the requirements for completion of the work. Lack of such information shall not justify an extra to the contract price.

1.3 SCOPE

- A. The Mechanical Work shall include labor, materials, and equipment to install systems as shown on plans and hereinafter specified. The installation shall include all labor, materials, tools, transportation, equipment, services and facilities, required for the complete, proper and substantial installation of all mechanical work shown on the plans, and/or outlined in these specifications. The installation shall include all materials, appliances, and apparatus not specifically mentioned herein or noted on the drawings but which are necessary to make a complete working installation of all mechanical systems.

1.4 CODES

- A. Execute work in compliance with all applicable Federal, State and Municipal laws, codes, ordinances, and local customs regarding the trade to perform the work.

1.5 DEFINITIONS

- A. It shall be understood that the drawings and specifications complement one another and items specified shall also meet the criteria set forth on the drawings.

1.6 ABBREVIATIONS

- ADA - Americans with Disabilities Act
AGA - American Gas Association
AISI - American Iron and Steel Institute
AMCA - Air Moving and Conditioning Association, Inc.

1.7 PERMITS

- A. Obtain and pay for all licenses and permits, fees, inspection and certificates required for the execution of this work.

1.8 RESPONSIBILITY

- A. This contractor will be held responsible for any and all damage to any part of the building or to the work of other contractors, as may be caused through his operation.

1.9 WORK TO BE DONE BY GENERAL CONTRACTOR

- A. Build in all openings, sleeves, chases, etc., for piping, as established, furnished and set by this contractor.

1.10 WORK TO BE DONE BY ELECTRICAL CONTRACTOR

- A. The Electrical Contractor shall provide all motor starters complete with auxiliary contacts where required for the function of this system unless specifically noted otherwise on the plans or in these specifications.

1.11 ELECTRICAL REQUIREMENTS BY MECHANICAL CONTRACTOR

- A. Mechanical Contractor shall furnish all motors, motor interlocking control devices, certain magnetic starters, etc.

1.12 WORKMANSHIP AND COORDINATION

- A. Make installation substantially as shown on the plans.

1.13 MATERIALS

- A. Material and equipment shall be new, of best quality and design and free from defects. A manufacturer's nameplate affixed in a conspicuous place will be required on each major component of equipment stating manufacturer's name, address and catalog number.

1.14 MATERIALS OF APPROVED EQUAL

- A. Where items of equipment and/or materials are specifically identified herein by a manufacturer's name, model or catalog number, only such specific items may be used in the base bid, except as hereinafter provided.

1.15 SUBSTITUTION OF EQUIPMENT

- A. After execution of the contract, substitution of equipment of makes other than those specifically named in the contract documents will be approved by the Engineer only if the equipment named in the specifications cannot be delivered to the job in time to complete the work in proper sequence to work of other contractors, due to conditions beyond control of the contractor.

1.16 SUBMITTALS

- A. Contractor shall send to the Architect for approval submittals on all equipment, accessories, and components.

1.17 CUTTING AND PATCHING

- A. Notify the General Contractor in ample time, of the location of all chases, sleeves, and any other openings required in connection with the work of this contract.

1.18 MUTILATION

- A. All mutilation of finishing initiated by installation of plumbing pipes, fixtures, etc., shall be properly pointed up by the respective finishing contractor and paid for by the Mechanical Contractor.

1.19 EXCAVATION AND BACKFILLING

- A. Do all excavation required for water, gas, sewer, drainage, etc.

1.20 TESTING

- A. Furnish testing equipment and test all piping systems under methods and conditions as specified.

1.21 PAINTING

- A. All painting shall be done by the General Contractor.

1.22 LABELING

- A. Install mechanically engraved metal or plastic label at equipment, not less than 2-1/2 inches wide by 3/4 inch tall with letters between 1/4 inch and 1/2 inch tall.

1.23 OPERATING INSTRUCTIONS

- A. Prepare and submit to the Engineer for approval three (3) copies of operating instructions made in conjunction with Equipment Manufacturer's representative.

1.24 MAINTENANCE INSTRUCTIONS

- A. Prepare a brochure in triplicate covering all systems and equipment furnished and installed under this contract. Each brochure shall include certified equipment drawings and/or catalog data as submitted, complete maintenance instructions, parts lists for each item of equipment, any special emergency operating instructions, all equipment warranties with starting dates identified, and a list of service organizations including addresses and telephone numbers.

1.25 LOOSE EQUIPMENT

- A. All keys and special wrenches furnished with the equipment shall be kept in a safe place during construction and presented to the Owner at the completion of the project.

1.26 FINAL INSPECTION

- A. Final inspection will be made upon written request from the Mechanical Contractor after the project is completed.

1.27 GUARANTEE

- A. Guarantee all work, material and equipment for a period of one year after date of final certificate of acceptance by the Architect.

SECTION 200600 – MATERIALS AND METHODS COMMON TO FIRE PROTECTION, PLUMBING, AND MECHANICAL.

1.1 PIPING SYSTEMS - GENERAL

- A. Pipe for piping systems shall be cut accurately to measurements taken on the job.

1.2 PIPE AND FITTINGS

- A. Each piece of pipe must be clearly labeled or stenciled with manufacturer's name, type of pipe and length, in accordance with ASTM standards.

1.3 VALVES

- A. Provide all valves required for operation, service, and maintenance of systems and equipment, i.e. shut off valves both sides of equipment, coils, etc.

1.4 UNIONS

- A. Unions 2" and Smaller (150 WSP - 200 WOG): Standard Weight brass to iron seat malleable iron body with screwed ends - Walworth #7712 or #7762 - equivalent Crane or Stockham.

1.5 SLEEVES AND COVER PLATES

- A. Install for all pipes passing through floors, walls, or partitions. Size sleeves large enough to allow for free movement of the pipes with expansion.

SECTION 200700 - INSULATION

1.1 INSULATION AND PIPE COVERING

- A. Manufacturers: Johns Manville - Owens Corning - CertainTeed - Knauf.

1.2 EQUIPMENT

- A. Insulate roof drain sumps, with Armstrong Armaflex II sheet insulation 1/2" thick. Apply in accordance with manufacturers recommendations.



SHEET CONTENTS
SPECIFICATIONS

PSD CLP MIDDLE SCHOOL
3515 Co Rd 54G
Laporte, CO 80535

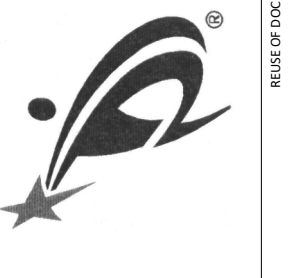


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VERTICAL UNIT VENTILATOR SEQUENCE OF OPERATIONS:

A. CONTROLS NOTES:

1. THE SYSTEM CONSISTS OF AN EXISTING VERTICAL UNIT VENTILATOR WITH EXISTING HOT WATER COIL AND SUPPLY FAN NEW DX COIL AND ASSOCIATED CONDENSING UNIT TO BE ADDED FOR COOLING.
2. SEE BELOW FOR COMPLETE VUV SEQUENCE OF OPERATION. SOME OF THE ITEMS LISTED BELOW ARE EXISTING. UNIT CURRENTLY OPERATES AS A HEATING ONLY UNIT. CONTRACTOR SHALL ENSURE UNIT OPERATES AS NOTED BELOW ONCE COOLING IS ADDED.

B. THE EXISTING HONEYWELL SPYDER DIRECT DIGITAL CONTROLLER (DDC) PROVIDES CONTROL OF THE UNIT AS FOLLOWS.

A USER ADJUSTABLE OCCUPIED/UNOCCUPIED TIME SCHEDULE PER AREA (WEST AND EAST) CONTROLS THE UNIT MODE OF OPERATION.

DAMPER NORMAL POSITION:
OUTSIDE AIR DAMPER NORMALLY CLOSED.
RETURN AIR DAMPER NORMALLY OPEN.

OCCUPIED MODE:
THE DDC ENABLES THE SUPPLY FAN TO RUN CONTINUOUSLY (SEE SPEED CHART) AND THE OUTSIDE AIR DAMPER OPEN TO ITS MINIMUM VENTILATION POSITION. THE DDC MONITORS THE STATUS OF THE FAN VIA A CURRENT SWITCH. IF THE FAN FAILS TO PROVIDE RUN STATUS WHILE COMMANDED "ON" THE DDC RETURNS THE DAMPERS TO THEIR NORMAL POSITIONS AND AN ALARM IS GENERATED AT THE DDC CENTRAL WORKSTATION.

THE DDC MODULATES THE HEATING COIL CONTROL VALVE, MIXED AIR DAMPERS, AND CYCLES THE DX COOLING SECTION IN SEQUENCE TO MAINTAIN THE SPACE TEMPERATURE AT SET POINT.

HEATING MODE:
IF THE SPACE TEMPERATURE FALLS BELOW THE OCCUPIED HEATING SET POINT 70°F (ADJ.) THE DDC MODULATES THE HEATING COIL CONTROL VALVE TO MAINTAIN THE ZONE TEMPERATURE SET POINT. THE DISCHARGE AIR TEMPERATURE WILL BE LIMITED TO 90°F (ADJ.).

COOLING MODE (ECONOMIZER):
WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW THE OUTSIDE AIR DX LOCKOUT SET POINT OF 65°F (ADJ.) THE DDC MODULATES THE OUTSIDE AIR DAMPER TO MAINTAIN THE SPACE OCCUPIED COOLING SET POINT 75°F (ADJ.). THE OUTSIDE AIR DAMPERS WILL BE LIMITED TO A DISCHARGE AIR LOW LIMIT OF 55°F (ADJ.).

COOLING MODE (DX):
WHEN THE OUTSIDE AIR TEMPERATURE IS GREATER THAN THE OUTSIDE AIR DX LOCKOUT SET POINT, THE DDC POSITIONS THE OUTSIDE AIR DAMPER TO ITS MINIMUM VENTILATION POSITION (MINIMUM OUTSIDE AIR POSITION IS COORDINATED WITH THE TAB CONTRACTOR). IF THE SPACE TEMPERATURE RISES ABOVE THE OCCUPIED SPACE COOLING SET POINT THE DDC STAGES THE DX (DXC-# AS 1ST STAGE AND CAPACITY CONTROL SOLENOID AS 2ND STAGE), TO MAINTAIN THE SPACE TEMPERATURE SET POINT.

EXHAUST FAN / CONDENSER FAN:
THE EXHAUST FAN/CONDENSER FAN WILL FOLLOW THE SPEED AS DESCRIBED ON THE FAN SPEED CHART (SEE SPEED CHART).

UNOCCUPIED MODE:
THE SUPPLY FAN AND EXHAUST FAN/CONDENSER FAN ARE OFF, THE OUTSIDE AIR DAMPER IS CLOSED, AND DX COOLING SECTION IS OFF. THE HEATING COIL CONTROL VALVE MODULATES TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT OF 45°F (ADJ.).

UNOCCUPIED MODE (HEATING):
IF THE SPACE TEMPERATURE FALLS BELOW THE SPACE UNOCCUPIED HEATING SET POINT 65°F (ADJ.), THE DDC ENABLES THE SUPPLY FAN AND THE EXHAUST FAN/CONDENSER FAN REMAINS OFF. THE HEATING COIL CONTROL VALVE WILL OPERATE IN OCCUPIED MODE TO MAINTAIN THE OCCUPIED HEATING SET POINT. THE OUTSIDE AIR DAMPER REMAINS CLOSED AND THE DX COOLING SECTION REMAINS OFF. ONCE THE SPACE REACHES THE UNOCCUPIED HEATING SET POINT PLUS A 2 DEG F DEADBAND, THE SUPPLY FAN IS DISABLED.

UNOCCUPIED MODE (COOLING):
IF THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED COOLING SET POINT 85°F (ADJ.), THE DDC ENABLE THE SUPPLY FAN AND EXHAUST FAN/CONDENSER FAN (IF REQUIRED). THE MIXED AIR DAMPERS, DX, EXHAUST/CONDENSER FAN AND SUPPLY FAN WILL OPERATE IN OCCUPIED MODE TO MAINTAIN THE OCCUPIED COOLING SET POINT. ONCE THE SPACE REACHES THE UNOCCUPIED COOLING SET POINT PLUS A 2°F DEADBAND, THE DAMPER IS CLOSED OR THE COOLING IS DISABLED AND THE SUPPLY FAN IS DISABLED. IN DX OPERATION THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

OPTIMAL START:
AN OPTIMAL START PROGRAM PER AREA WILL ENABLE THE UNITS AT THE LATEST POSSIBLE TIME TO INSURE THE SPACES ARE WITHIN THE SPACE SET POINTS AT THE TIME OF OCCUPANCY. THERE WILL BE AN OWNER ADJUSTABLE TIME LIMIT PROVIDED THROUGH THE GRAPHICS TO SCHEDULE HOW MANY HOURS PRIOR TO OCCUPANCY THE UNIT CAN BE ENERGIZED. TIME WILL BE ADJUSTABLE FROM 0 MINUTES TO 8 HOURS. INITIALLY SET TO 30 MINUTES.

WARM-UP:
IF THE AVERAGE OF THE AREAS ZONE TEMPERATURES FALLS BELOW THE MORNING WARM-UP TARGET SET POINT (70°F) THE DDC ENABLES THE SUPPLY FAN AND THE EXHAUST FAN/CONDENSER FAN REMAINS OFF. THE HEATING COIL CONTROL VALVE WILL OPERATE IN OCCUPIED MODE TO MAINTAIN THE OCCUPIED HEATING SET POINT. THE OUTSIDE AIR DAMPER REMAINS CLOSED AND THE DX COOLING SECTION REMAINS OFF. IF THE AVERAGE OF THE AREAS SPACE TEMPERATURES REACHES THE TARGET SET POINT PRIOR TO OCCUPANCY TIME THE UNITS ENTER OCCUPIED MODE.

COOL-DOWN:
IF THE AVERAGE OF THE AREAS ZONE TEMPERATURES RISES ABOVE THE MORNING COOL-DOWN TARGET SET POINT (75°F) THE UNIT IS ENABLED IN THE MORNING COOL-DOWN MODE. THE DDC ENABLE THE SUPPLY FAN AND EXHAUST FAN/ CONDENSER FAN (IF REQUIRED). THE MIXED AIR DAMPERS, DX, EXHAUST/CONDENSER FAN AND SUPPLY FAN WILL OPERATE IN OCCUPIED MODE TO MAINTAIN THE OCCUPIED COOLING SET POINT. IF AVERAGE OF THE AREAS ZONE TEMPERATURES REACHES THE TARGET SET POINT PRIOR TO OCCUPANCY TIME THE UNITS ENTER OCCUPIED MODE. IN DX OPERATION THE OUTSIDE AIR DAMPER SHALL BE CLOSED.

UNIT SAFETIES:
A HARDWIRED LOW LIMIT THERMOSTAT (MFG.) MOUNTED DOWNSTREAM OF THE HEATING COIL, UPON SENSING A TEMPERATURE LESS THAN 38°F (FACTORY SET), STOPS THE SUPPLY FAN, CLOSES THE OUTSIDE AIR DAMPER, OPENS THE HEATING COIL CONTROL VALVE, AND GENERATES AN ALARM AT THE DDC CENTRAL WORKSTATION. THE DDC WILL TRY TO RESTART AFTER A 15 MIN. (ADJ.) DELAY ONCE THE TEMPERATURE RETURNS ABOVE LOW LIMIT THERMOSTAT SET POINT. IF THERE ARE 3 (ADJ.) LOW LIMIT TRIPS WITHIN 60 MIN. (ADJ.), THE DDC WILL SHUT DOWN THE UNIT AND A MANUAL RESET THROUGH THE DDC CENTRAL STATION WILL BE REQUIRED.

SECTION 220400 - PLUMBING

1.1 CONDENSATE DRAIN PIPING (COOLING COIL DRIP)

- A. Type M copper pipe with sweat drainage fittings, galvanized steel pipe with screwed drainage fittings or Schedule 40 PVC plastic pipe with solvent welded fittings.
- B. Pitch all horizontal lines to drain at a minimum fall of 1" per 10 feet of run.
- C. Provide air trap at each equipment connection.

SECTION 230593 - AIR TEST AND BALANCE

1.1 SCOPE

- A. The Mechanical Contractor shall procure the services of Lawrence H Finn & Associates, Jedi Balancing or another independent firm, fully certified with the National Environmental Balancing Bureau (NEEB). The firm shall test air moving equipment and air distribution and exhaust systems and to supervise the balance and adjustment of these systems. All work shall be done under direct supervision of a qualified and licensed Heating and Ventilating Engineer. The mechanical contractor shall provide workmen of the proper trade to make adjustments to the systems as determined by the Engineer. The Contractor shall provide access as required, including any necessary scaffolding, and shall cooperate with testing laboratory personnel. All instruments used in this work shall be accurately calibrated and maintained in good working order. If requested the tests shall be conducted in the presence of the Mechanical Engineer responsible for the project and/or his representative. Air balance and testing shall not begin until the system has been completed and is in full working order. The Contractor shall put all heating, ventilating, and air conditioning systems and equipment into full operation 24 hours prior to the onset of testing and balancing and shall continue the operation of same during each working day until the completion of all test and balance work. The Contractor shall award the test and balance contract upon receipt of his contract to proceed with the air conditioning installation, to allow the Air Balance and Testing Engineer to schedule his work in cooperation with other trades involved and comply with completion date. Upon completion of the air conditioning system installation, the Air Balance and Testing Engineer shall perform the following tests, supervise adjustments and system modifications, and compile the test data as required for evaluation and approval.
- B. In addition to procuring the services of an air balancing engineer as hereinafter specified the mechanical contractor shall:
 - a. Clean air filters, ductwork, coils, fans, etc. in the air system to remove all construction dust and debris.
 - b. Start, lubricate and balance all fans. Change and/or adjust drive pulleys on fans to give required capacity.
 - c. Supply and install all balancing dampers as required for final balancing as determined by the balancing engineer.
 - d. Furnish workmen familiar with this project and of the proper trade to assist the balancing engineer in the air and water balancing. Also make available subject to request by the balancing engineer trained servicemen of the control and equipment suppliers to assist as needed during the testing of their portion of the project.
 - e. Furnish plans, operating manuals, and shop drawings of all equipment installed for use by the Air and Water Balancing Agency.
 - f. Have all systems in full operation a minimum of 24 hours before Balancing Engineer arrives on job.

1.2 AIR SYSTEM TEST AND BALANCE PROCEDURE

- A. Procedure:
 - a. Existing VUV's shall operate as they currently do, except with cooling added. A full test and balance is not expected, but manufactures shall provide start up and ensure unit fan speed is set as it previously was.

SECTION 230800 - AIR DISTRIBUTION

1.1 DEFINITIONS

- Low Velocity Ductwork: Supply, return, make-up, and exhaust ductwork systems that are sized at 2,000 FPM or lower.
- Medium Velocity Ductwork: Supply ductwork systems sized at greater than 2,000 FPM to 3,000 FPM.
- Low Pressure Ductwork: Ductwork connected to fan systems with a 2" w.c. or less deadhead rating.
- Medium Pressure Ductwork: Ductwork connected to fan systems with greater than 2" w.c. and less than 6" w.c. deadhead rating.

1.2 PERFORMANCE REQUIREMENTS

- A. Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. All work shall comply with the Mechanical Codes.
- C. Structural Performance: Duct hangers and supports[and seismic restraints] shall withstand the effects of gravity[and seismic] loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" [and] [ASCE/SEI 7].
- D. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

1.3 DX COOLING COIL AND AIR COOLED CONDENSING UNIT

- A. Coil and associated condensing unit must be by Engineered Air. Coil shall be specifically manufactured for use in the existing unit ventilator. Manufacture must visit site, take measurements and ensure the coil and condensing unit used will provide a complete working system providing heating and cooling once complete.
- B. Refrigerant Piping: Contractor to provide Type "L" hard drawn pre-dehydrated and sealed copper pipe equal to "ACR". Fittings to be forged or wrought copper sweat with "SIL-FOS" or equivalent silver bearing solder. Use long radius ells except for traps. Test system at 300 PSI with Nitrogen. Support piping with "Hydrazorb", "Cush-A-Clamp" or equal vibration absorbing clamps. Equipment supplier to size piping for the indicated installation, and provide all required refrigerant specialties. Contractor's option to utilize pre-charged and insulated line sets.

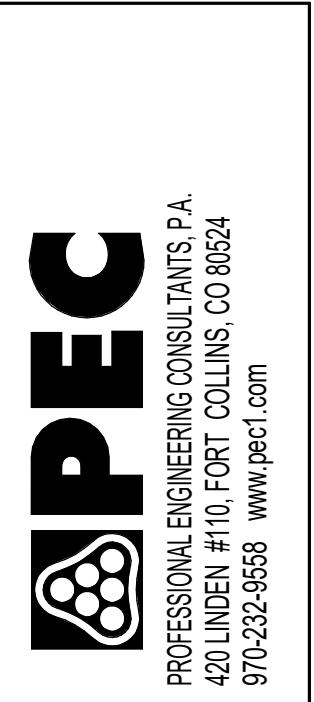
SECTION 230923 - TEMPERATURE CONTROL SYSTEMS

1.1 SYSTEM SUMMARY

- A. The intent of this specification is to provide control strategies for expanding the existing BAS system, and utilizing the same software license agreement for the applications. All equipment as listed on the mechanical drawings/control drawings shown to be controlled by the BAS system shall adhere to this specification. Temperature controls shall match existing, with necessary modifications to allow for the addition of cooling to existing heating only units.

1.2 CLOSEOUT PROCEDURES

- A. Owner's Instructions: Provide services of manufacturer's technical representative to instruct Owner's personnel in operation and maintenance of control systems.



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SPECIFICATIONS

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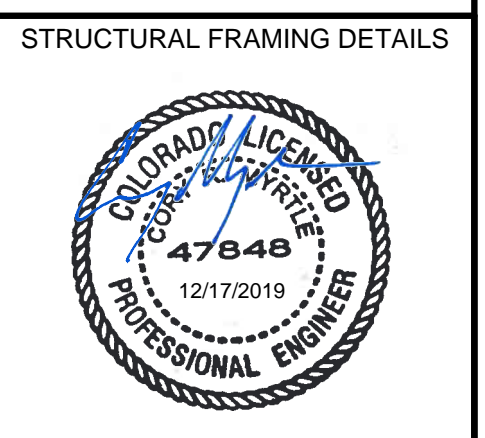
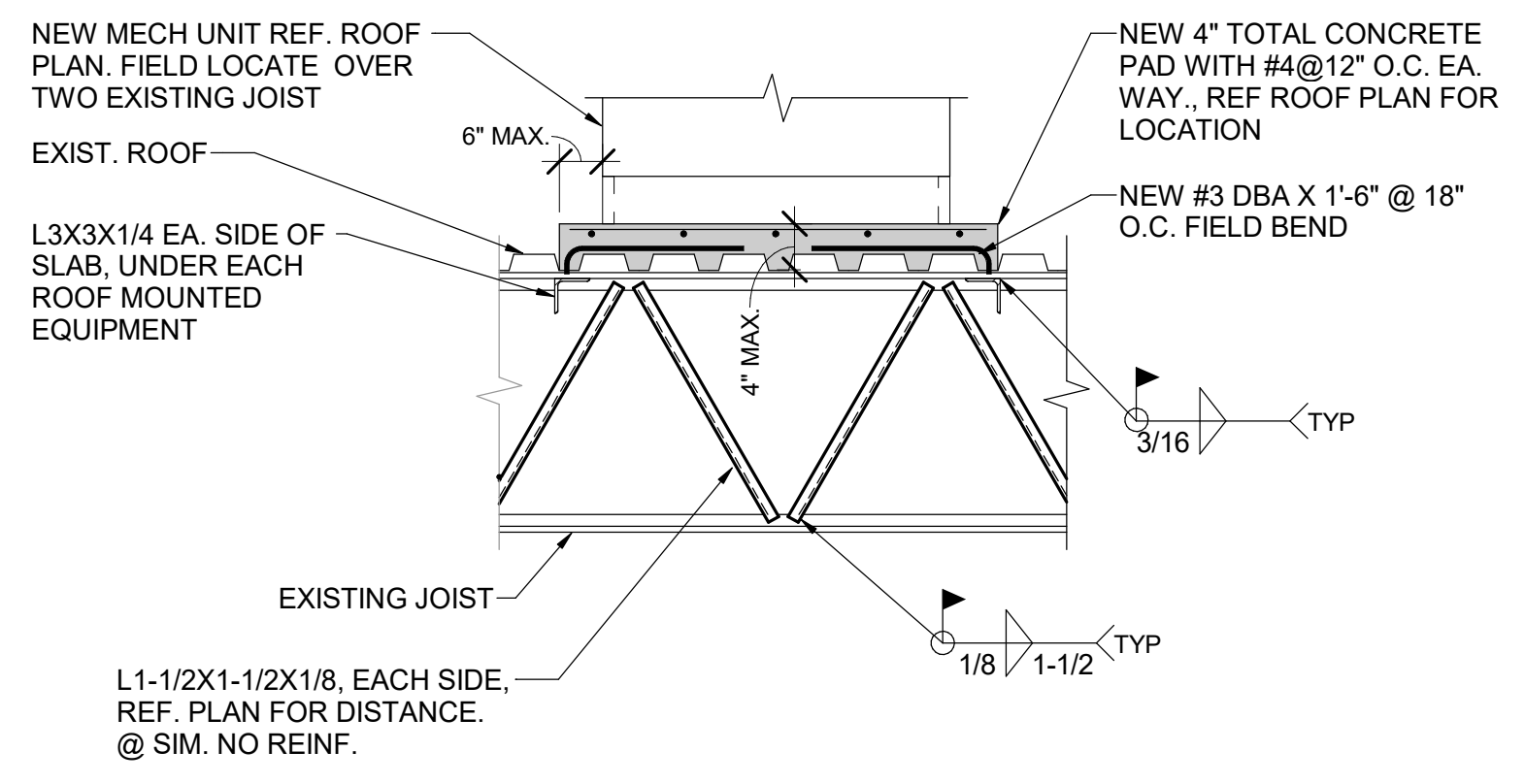
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DESIGNED BY: **CRS**
CHECKED BY: **CWH**
DATE: **12-17-2019**
SHEET NO.: **M0.2**

REVISIONS

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- TYPICAL NOTES:**
1. STEEL TO BE GRADE A36, U.N.O.
 2. REINFORCING STEEL: A615 GR. 60
 3. ALL WELDING SHALL BE IN ACCORDANCE WITH LATEST AWS CODE, SECTION D1.1. ALL WELD MATERIAL SHALL BE 70 KSI TENSILE STRENGTH SLAB ON DECK TO HAVE MIN. $F_c = 4,000$ PSI AND WC RATIO OF 0.45
 4. NOTIFY EOR OF ANY DISCREPANCIES



2 JOIST WEB REINFORCING DETAIL
3/4" = 1'-0"

DX COIL SCHEDULE

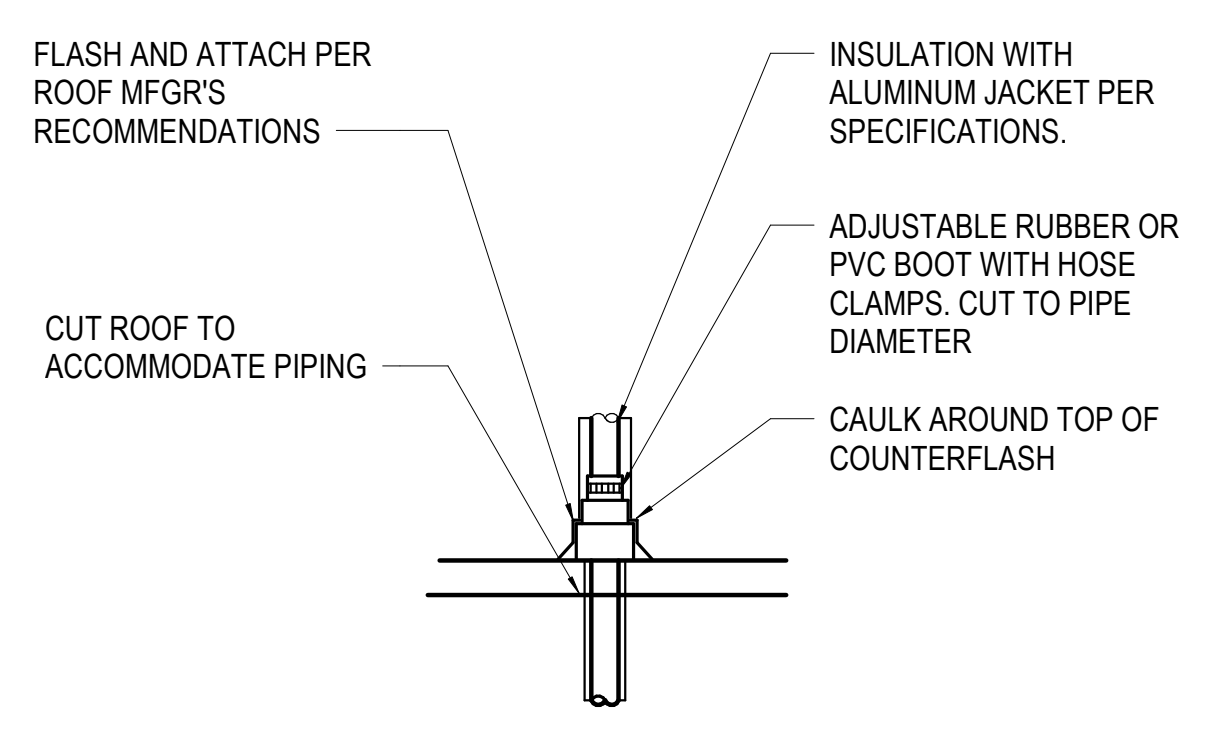
MARK	UNIT	COIL				CAPACITY (MBH)		SUCTION TEMP [°F]	MANUFACTURER AND MODEL	NOTES
		ROWS	CFM	EDB/EWB [°F]	LDB/LWB [°F]	TOTAL	SENS.			
DXC-1	(E)VUV-1-#	3	1200	80/67	54.3/52.9	51.5	33.3	40	ENGINEERED AIR RUV 1200 DX COOLING COIL	1
DXC-2	(E)VUV-2-1-#	3	1600	80/67	55/53.5	66	43.2	40	ENGINEERED AIR RUV 1600 DX COOLING COIL	1, 2

1. NEW DX COIL INSTALLATION INTO EXISTING VUV PER ENGINEERED AIR INSTALLATION INSTRUCTION.
2. PROVIDE WITH CONDENSATE PUMP.

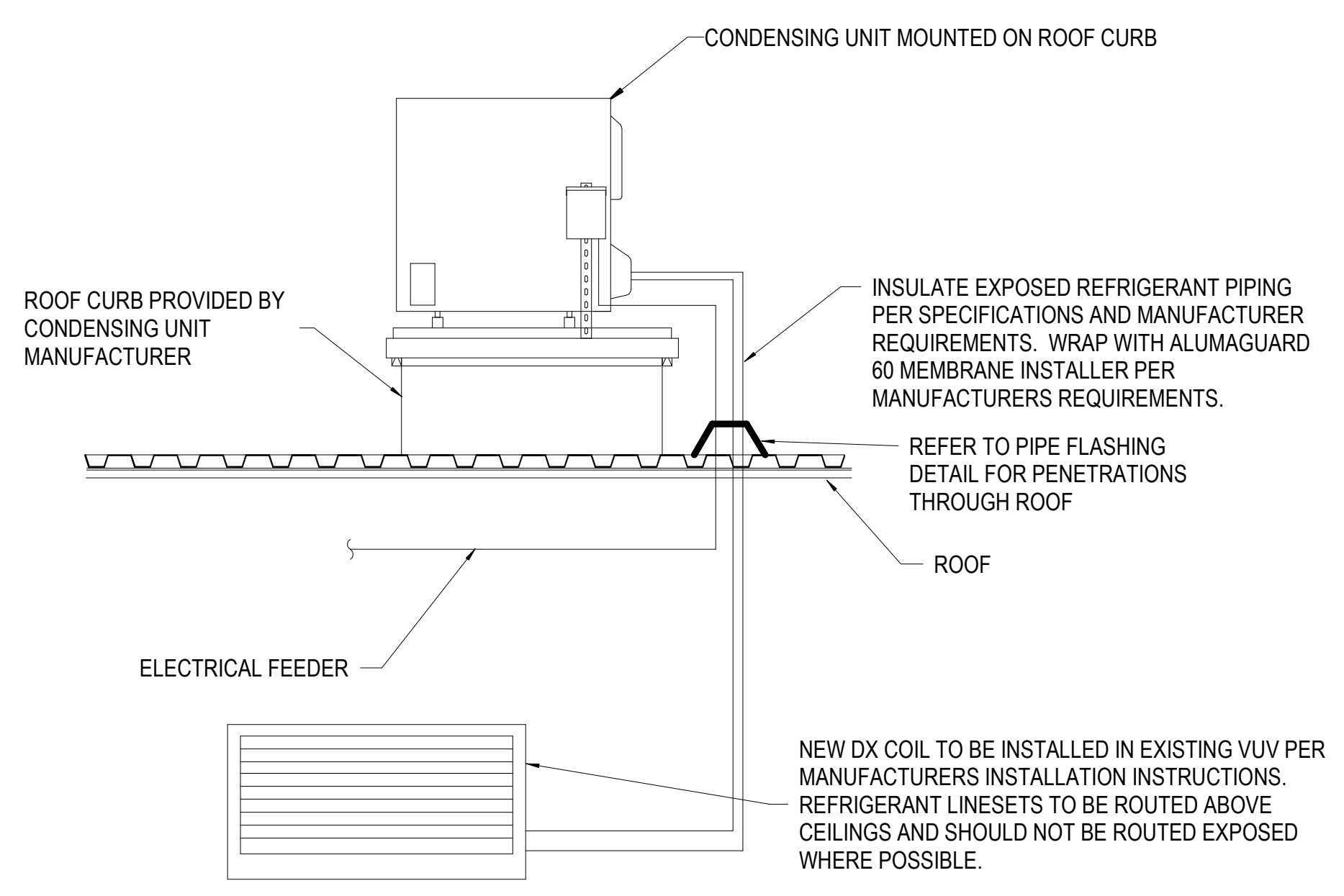
CONDENSING UNIT SCHEDULE

MARK	COOLING		RLA	REFRIGERANT	ELECTRICAL			REMARKS	SERVES	WEIGHT [LBS]
	AMBIENT DB [°F]	TOT CLG [MBH]			VOLT	MCA	MOP			
CU-1	95	46	-	R-410A	208/3	24.5	40	ENGINEERED AIR CU41	DXC-1	590
CU-2	95	62	-	R-410	208/3	32.5	50	ENGINEERED AIR CU61	DXC-2	660

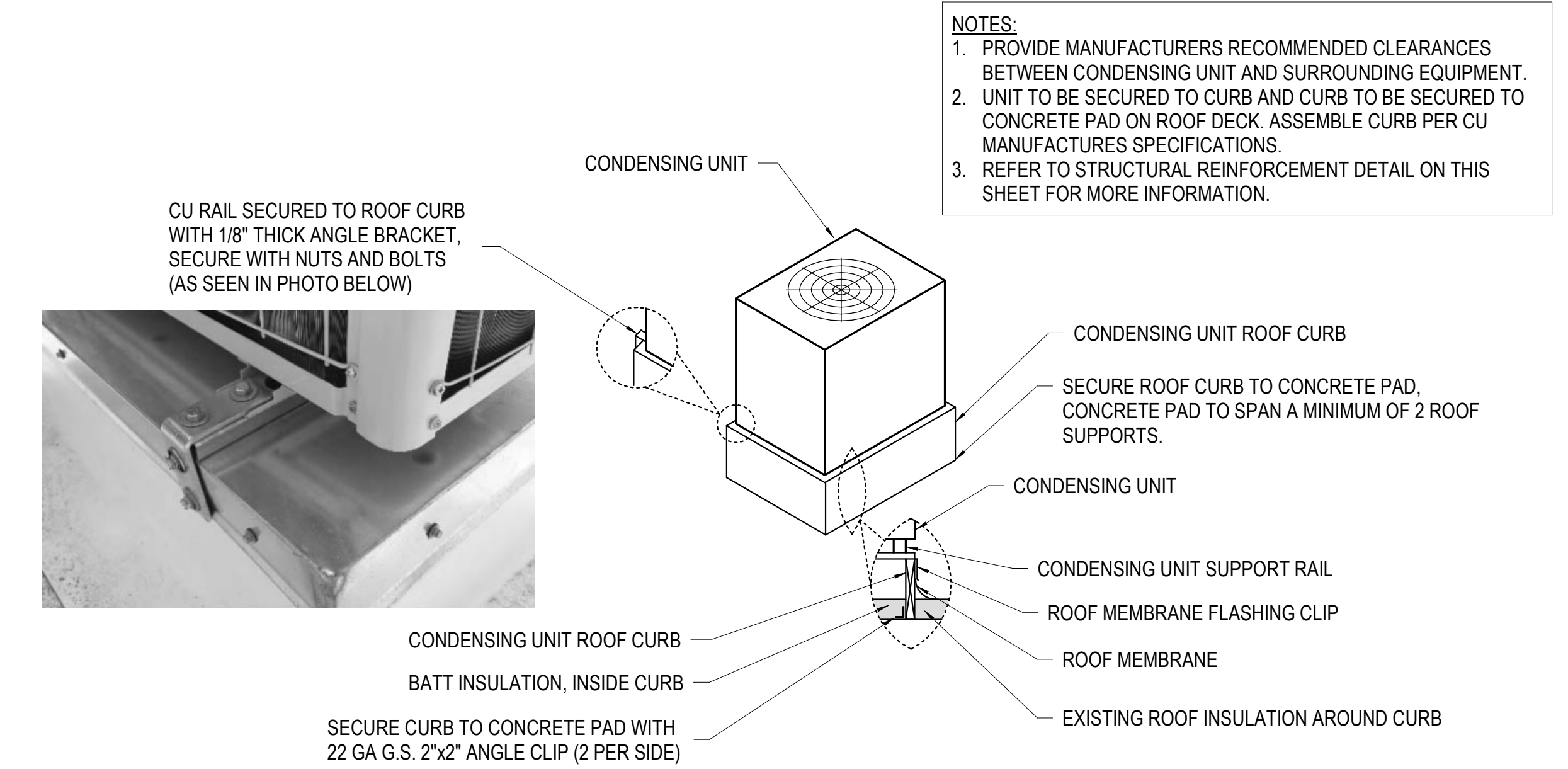
1. PROVIDE WITH DISCONNECT SWITCH AND 12" ROOF CURB.



4 PIPE FLASHING DETAIL
NO SCALE

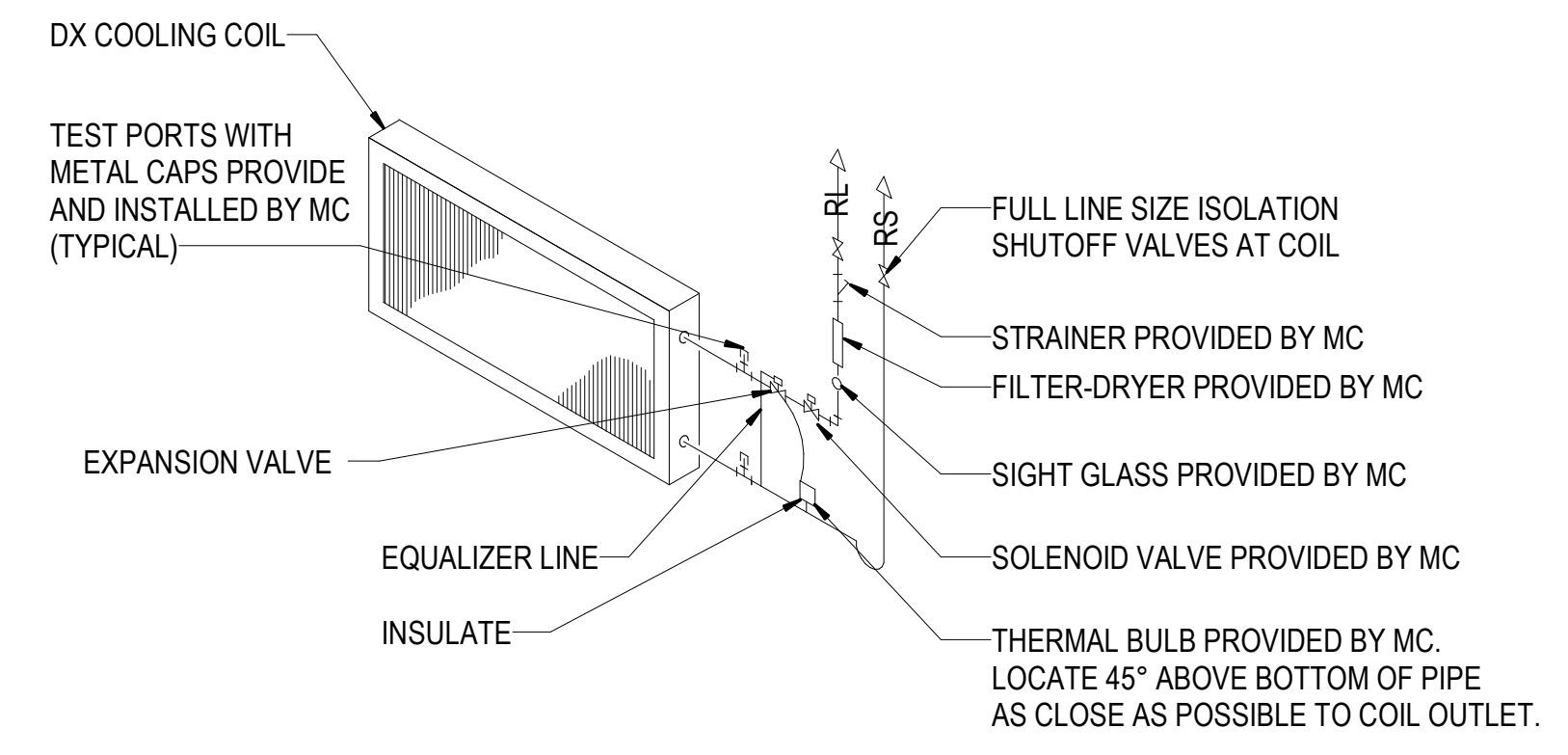


5 REFRIGERANT LINE ROUTING DETAIL
NO SCALE

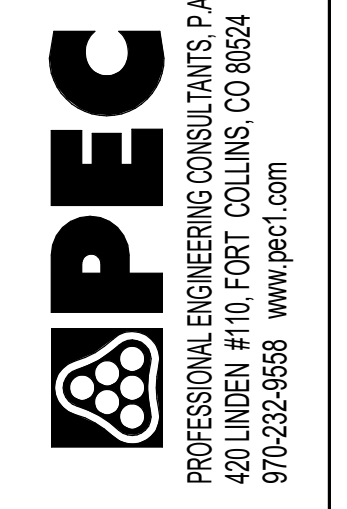


CONDENSING UNIT ROOF MOUNTING
DETAIL
NO SCALE

- NOTES:**
1. CONFIRM FINAL INSTALLATION REQUIREMENTS WITH MANUFACTURER.
 2. PIPING ROUTING AND COORDINATION DRAWINGS SHALL BE SUBMITTED AND APPROVED PRIOR TO BEGINNING WORK.
 3. PIPING INSTALLATION SHALL BE INSPECTED BY MANUFACTURERS FACTORY TECHNICIAN.
 4. PURGE LINES WITH DRY NITROGEN PRIOR TO BRAZING.
 5. INSTALLATION PROCEDURES SHALL BE SUBMITTED PRIOR TO BEGINNING WORK.
 6. CLEANING PROCEDURES SHALL BE SUBMITTED PRIOR TO BEGINNING WORK.
 7. SUBMIT FINAL AS-BUILT DRAWINGS.
 8. PROVIDE START-UP BY MANUFACTURERS FACTORY TECHNICIAN.

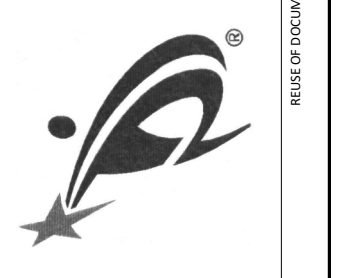


3 DX COIL PIPING DETAIL
NO SCALE



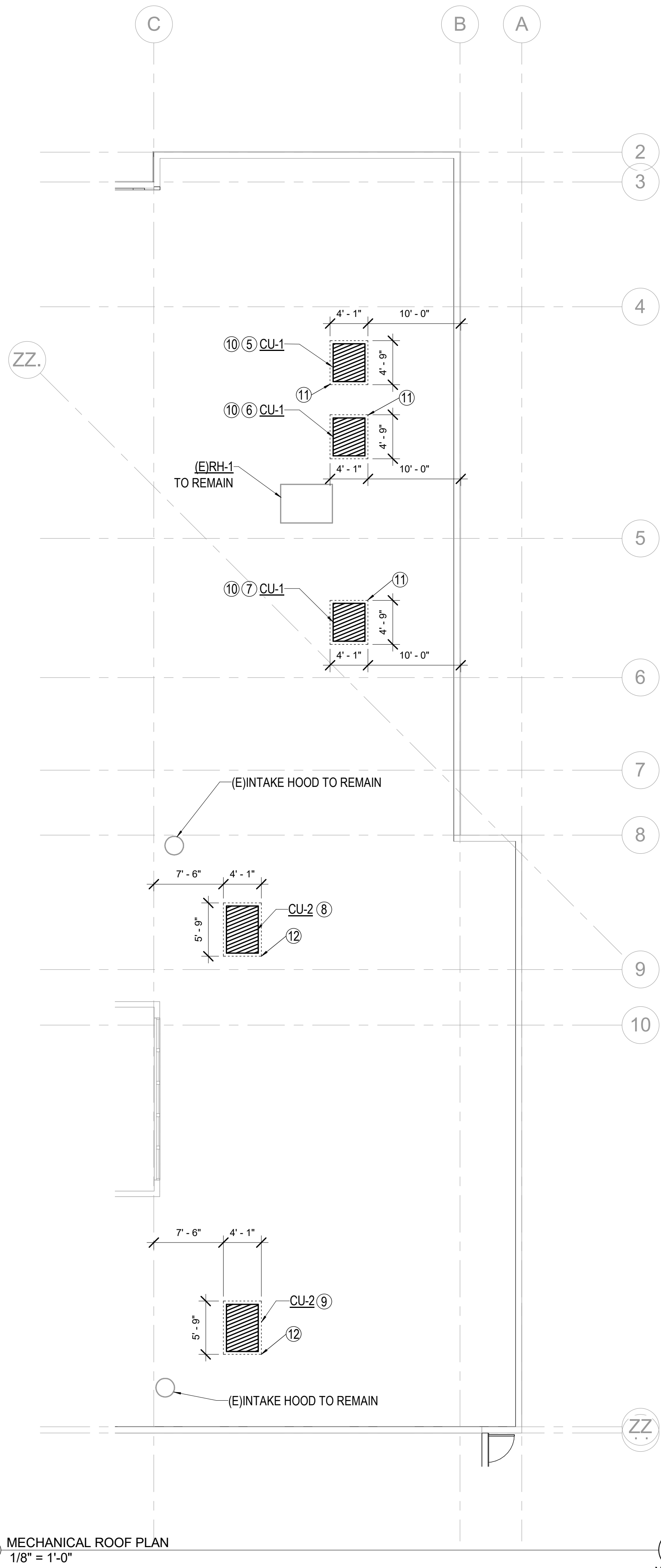
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DETAILS AND SCHEDULES

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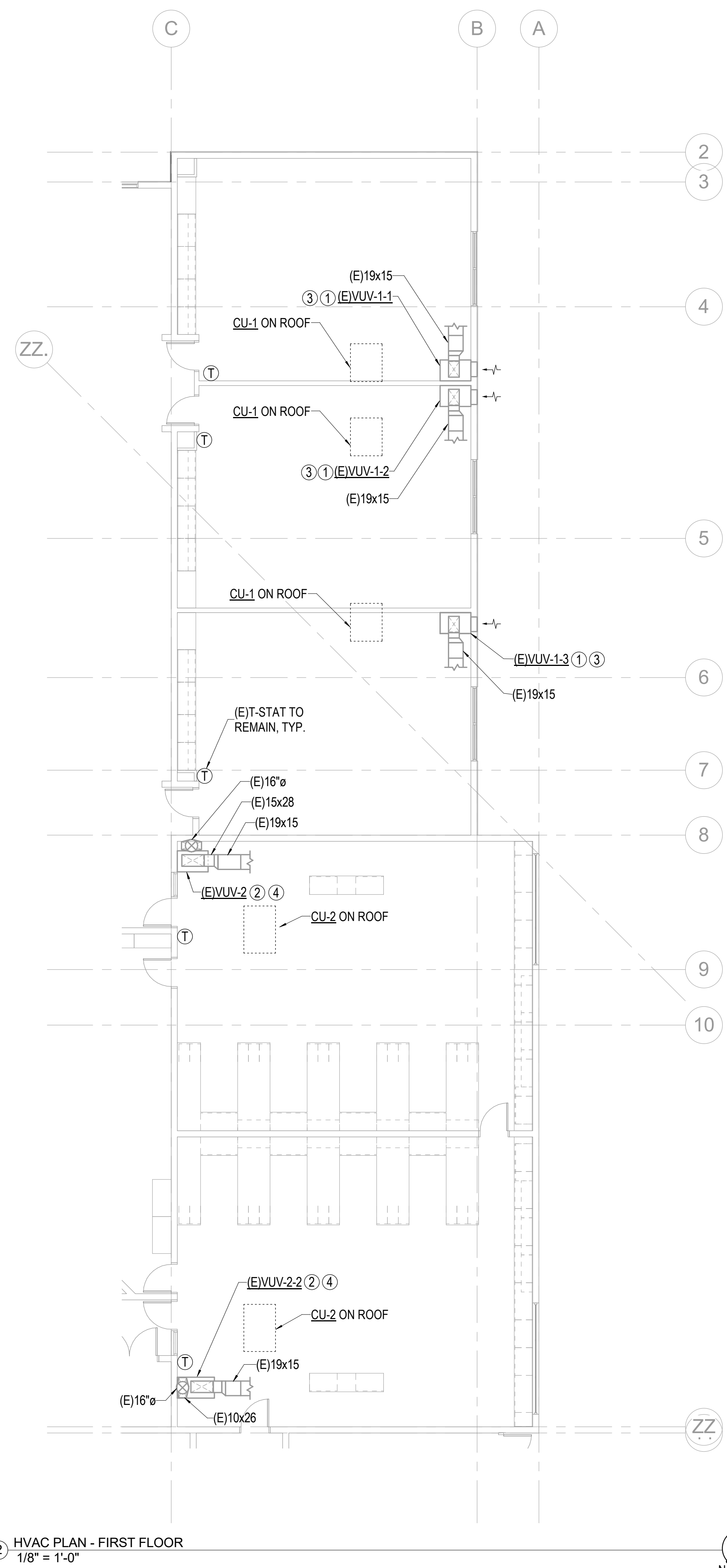


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DESIGNED BY: LCRS
CHECKED BY: CWH
DATE: 12-17-2019
SHEET NO.: M0.3



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



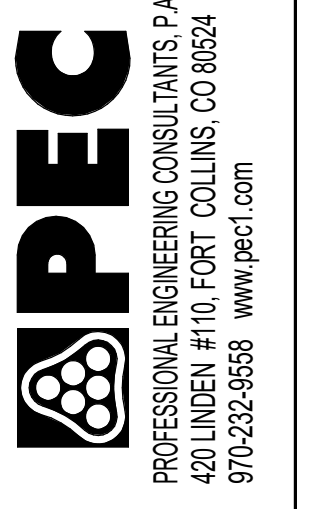
2 HVAC PLAN - FIRST FLOOR
1/8" = 1'-0"

MECHANICAL GENERAL NOTES

- A. DUCT SIZES SHOWN ARE OUTSIDE SHEET METAL DIMENSIONS INCLUDING INTERNAL DUCT LINERS.
- B. REFER TO COVER SHEET FOR GENERAL CONSTRUCTION NOTES.

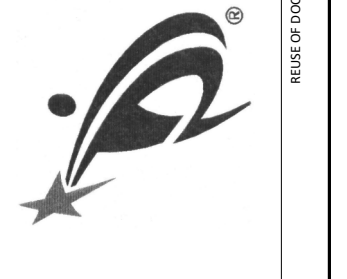
PLAN NOTES

1. NEW DXC-1 TO BE INSTALLED IN (E) VUV-1-#. REFRIGERANT LINES TO BE ROUTED BACK TO CU-1 MOUNTED ON ROOF. REFRIGERANT LINES PROVIDED AND INSTALLED BY CONTRACTOR, NOT DX COIL OR CONDENSING UNIT MANUFACTURE.
2. NEW DXC-2 TO BE INSTALLED IN (E)VUV-2. REFRIGERANT LINES TO BE ROUTED BACK TO CU-2 MOUNTED ON ROOF. REFRIGERANT LINES PROVIDED AND INSTALLED BY CONTRACTOR, NOT DX COIL OR CONDENSING UNIT MANUFACTURE.
3. ROUTE CONDENSATE LINE FROM DXC-1 OUT EXTERIOR WALL.
4. ROUTE CONDENSATE LINE FROM DXC-2 CONDENSATE PUMP UP TO CEILING AND CONNECT TO NEAREST VERTICAL PLUMBING VENT.
5. ROUTE REFRIGERANT LINES TO NEW DX COIL IN (E)VUV-1-1 IN CLASSROOM 109.
6. ROUTE REFRIGERANT LINES TO NEW DX COIL IN (E)VUV-1-2 IN CLASSROOM 110.
7. ROUTE REFRIGERANT LINES TO NEW DX COIL IN (E)VUV-1-3 IN CLASSROOM 111.
8. ROUTE REFRIGERANT LINES TO NEW DX COIL IN (E)VUV-2-1 IN CLASSROOM 112.
9. ROUTE REFRIGERANT LINES TO NEW DX COIL IN (E)VUV-2-2 IN CLASSROOM 113.
10. REFER TO STRUCTURAL REINFORCEMENT DETAIL ON SHEET M0.3 FOR HOW TO REINFORCE ROOF STRUCTURE UNDER CONDENSING UNITS.
11. EDGE OF CONCRETE PAD UNDER UNIT TO BE MOUNTED 10'-0" FROM ROOF EDGE. REINFORCE JOIST WEB W/ STEEL ANGLE FOR 14 FEET FROM GRID B PER DETAIL 2/M0.3.
12. EDGE OF CONCRETE PAD UNDER UNIT TO BE MOUNTED 7'-6" FROM GRID C. REFERENCE DETAIL 2/M0.3 SIM. FOR CONCRETE SLAB CONNECTION.



SHEET CONTENTS
HVAC FLOOR PLANS

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