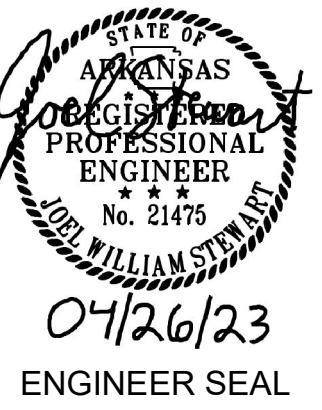




CORPORATE SEAL



ENGINEER SEAL

ARKANSAS HEART HOSPITAL UPS ROOM
ARKANSAS HEART HOSPITAL
LITTLE ROCK, ARKANSAS

RENOVATION GENERAL NOTES:

- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
- REFER TO ALL PROJECT DRAWINGS FOR DETAILS OF CONSTRUCTION AND INSTALLATION REQUIREMENTS.
- THE GENERAL CONTRACTOR IS RESPONSIBLE FOR FULL COORDINATION OF PROJECT INCLUDING THE EQUIPMENT AND INSTALLATION OF THE MECHANICAL WORK.
- CONTRACTOR SHALL BECOME THOROUGHLY FAMILIAR WITH THE REQUIREMENTS OF THESE NOTES AS WELL AS OTHER NOTES SHOWN ON THE CONTRACT DOCUMENTS.
- THESE DRAWINGS REFLECT A SYSTEM DESIGNED AROUND SPECIFIC REFERENCE PRODUCTS (SEE SCHEDULES). THE SELECTION OF WHICH HAS INFLUENCED THE DESIGNS OF OTHER TRADES (ELECTRICAL, STRUCTURAL, ETC.). IF SUBSTITUTE MANUFACTURERS, SIZES, OR MODEL NUMBERS SUBMITTED, IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR AND ALL HIS SUBCONTRACTORS TO COORDINATE ALL DIFFERENCES. ALL COSTS OF ALL TRADES ASSOCIATED WITH THE SUBSTITUTION SHALL BE INCLUDED.
- COORDINATION OF ALL MODIFICATIONS TO EACH DISCIPLINE WHICH RESULT FROM SUBSTITUTION OF EQUIPMENT OR MATERIALS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SUBSTITUTIONS WHICH ARE INSTALLED AND SUBSEQUENTLY ARE PROVEN UNSATISFACTORY BY OWNER AND/OR ENGINEER, WITHIN THE WARRANTY PERIOD, SHALL BE REMOVED COMPLETELY BY THE CONTRACTOR AND REPLACED WITH THE ORIGINAL DESIGN OR CORRECTED AS DIRECTED BY THE ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.
- ALL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENTS OR GEOMETRICAL RELATIONSHIPS OF EQUIPMENT AND SERVICES. THEY ARE NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, SEQUENCE, DEVICE, OPTION, FITTING, OR COMPONENT.
- INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS OR DETAILS, BUT NOT SHOWN ON PLANS, AND VICE VERSA, SHALL BE PROVIDED AS IF EXPRESSLY REQUIRED BY BOTH.
- CONTRACTOR SHALL NOT SCALE DRAWINGS. DRAWINGS SPECIFIC TO THIS DISCIPLINE DO NOT LIMIT THE RESPONSIBILITY OF WORK REQUIRED BY THE CONTRACT DOCUMENTS.
- UNLESS NOTED OTHERWISE, THE INDICATION AND/OR DESCRIPTION OF ANY ITEM, IN THE DRAWINGS OR SPECIFICATIONS CARRIES WITH IT THE INSTRUCTION TO FURNISH AND INSTALL THE ITEM.
- EXACT LOCATIONS OF ALL EQUIPMENT, DUCTS, DIFFUSERS, ETC. SHALL BE COORDINATED WITH OTHER TRADES: SLOPED PIPING (PLUMBING), LIGHTING, AND ELECTRICAL REQUIREMENTS TAKE PRECEDENCE OVER CEILING MOUNTED MECHANICAL REQUIREMENTS. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING GRID AND LIGHTING LAYOUT FOR COORDINATION OF FINAL DIFFUSER LOCATIONS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH THAT OF OTHER TRADES. REFER TO ARCHITECTURAL, ELECTRICAL, AND OTHER DRAWINGS FOR COMPLETE INFORMATION PRIOR TO BID.
- NO OTHER TRADES, I.E. ELECTRICAL, CEILING, PLUMBING, ETC., SHALL BE SUSPENDED, HUNG, OR SUPPORTED FROM DUCTWORK OR PIPING.
- REPLACE ALL ARCHITECTURAL FEATURES REMOVED OR DAMAGED DURING THE COURSE OF THE WORK.

HVAC GENERAL NOTES:

- REFER TO GENERAL NOTES ON DRAWING FOR ADDITIONAL REQUIREMENTS.
- ALL HVAC WORK TO BE PER SMACNA AND ALL APPLICABLE CODES.
- ALL DUCTS SHALL BE MOUNTED HIGH AS POSSIBLE AGAINST BOTTOM OF JOISTS EXCEPT AS REQUIRED TO AVOID CONFLICTS WITH INTERSECTING DUCTS. DIAGONALLY OFFSET DUCTS IMMEDIATELY BEFORE AND AFTER PASSING UNDER INTERSECTING DUCTS OR LARGE STRUCTURAL MEMBERS TO MAINTAIN DUCT TIGHT TO STRUCTURE.
- MAXIMUM 3'-0" FLEX DUCT ON ALL DIFFUSER RUNOUTS. CONNECTIONS TO FLEX DUCT SHALL BE SMOOTH ON AIRFLOW SIDE.
- PROVIDE STREAMLINE TAP AND MANUAL BALANCING DAMPER AT EACH CONNECTION OF ROUND BRANCH DUCTS TO A RECTANGULAR DUCT. DAMPERS SHALL BE ACCESSIBLE TO ALLOW FOR REQUIRED BALANCING.
- SUPPLY DUCTS SHALL BE EXTERNALLY INSULATED WITH FIBERGLASS INSULATION UNLESS OTHERWISE SHOWN. DUCT SIZES SHOWN ON PLANS INDICATE FREE AREA REQUIRED IN DUCTS. ADJUST DUCT SIZES FOR LINER WHERE APPLICABLE OR WHERE SHOWN. SEE SPECIFICATIONS FOR INSULATION TYPE AND STANDARDS.
- INSTALL NEW FILTERS AT THE COMPLETION OF CONSTRUCTION. USE ONE SET OF FILTERS DURING CONSTRUCTION. INSTALL FINAL SET PRIOR TO TEST AND BALANCE.
- BALANCE AIR SYSTEM TO PROVIDE INDICATED AIR FLOWS. SEE SPECIFICATIONS FOR OTHER TEST AND BALANCE REQUIREMENTS. SUBMIT FINAL BALANCE OF AIR AND WATER SYSTEMS (FLOW AND TEMPERATURE) FOR REVIEW.
- MECHANICAL CONTRACTOR (MC) SHALL COORDINATE AND VERIFY THE FOLLOWING WITH THE ELECTRICAL CONTRACTOR (EC) PRIOR TO BID.
 - A) DISCONNECTS: WHERE NOT FURNISHED WITH EQUIPMENT; FURNISHED BY EC, INSTALLED BY EC. WHERE FURNISHED WITH EQUIPMENT; FURNISHED BY MC, INSTALLED BY EC.
- COORDINATE FINAL PLACEMENT OF ALL THERMOSTATS WITH OWNER AND ENGINEER. ANY THERMOSTAT THAT IS REQUIRED TO BE MOUNTED ON AN EXTERIOR WALL SHALL BE MOUNTED ON AN INSULATED PAD.

DEMOLITION AND RENOVATION SYMBOLS

	EQUIPMENT TO BE REMOVED
	EXISTING EQUIPMENT
	NEW EQUIPMENT
	POINT OF CONNECTION TO EXISTING
	TERMINATION OF DEMOLITION
	DUCT TO BE REMOVED
	EXISTING DUCT TO REMAIN
	NEW DUCT
	PIPING TO BE REMOVED
	EXISTING PIPING TO REMAIN
	NEW PIPING

ONE LINE PIPE SYMBOLS

	HEATING WATER SUPPLY
	HEATING WATER RETURN
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	CONDENSATE DRAIN
	BALL VALVE
	BUTTERFLY VALVE (LEVER HANDLE)
	BUTTERFLY VALVE (GEAR OPERATOR)
	GATE VALVE
	OS & Y GATE VALVE
	GLOBE VALVE
	CHECK VALVE (SWING CHECK)
	CHECK VALVE (BUTTERFLY CHECK)
	PRESSURE REDUCING VALVE
	FLOW LIMITING VALVE
	CALIBRATED BALANCING VALVE
	VALVE AT RISER
	STRAINER W/ DRAIN VALVE
	UNION
	AIR TERMINAL / FAN COIL UNIT/HOT WATER RETURN CONTROL VALVE (2-WAY) ELECTRIC OR ELECTRONIC
	AIR TERMINAL / FAN COIL UNIT CONTROL VALVE (3-WAY) ELECTRIC OR ELECTRONIC

ONE LINE PIPE SYMBOLS

	EMERGENCY SHUT-OFF VALVE WITH FUSIBLE LINK
	FLEXIBLE PIPE CONNECTOR
	METAL BELLOWS PUMP CONNECTOR
	AIR VENT (A - AUTO, H - HAND)
	PRESSURE AND TEMPERATURE TAP
	PRESSURE GAUGE
	PRESSURE GAUGE W/ SIPHON
	THERMOMETER W/ INSERTION WELL
	ANCHOR
	PIPE GUIDE
	FLANGE
	ELBOW, TURNED UP
	ELBOW, TURNED DOWN
	RISE OR DROP IN PIPE
	ELBOW
	TEE, SIDE CONNECTION
	TEE, OUTLET UP
	TEE, OUTLET DOWN
	CAPPED OUTLET
	CAPPED PIPE
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	STEAM TRAP (DRIP LEG)
	STEAM TRAP
	DIRECTION OF PITCH
	PIPE TO FLOOR DRAIN
	EMERGENCY MANAGEMENT SYSTEM INSERTION WELL

TWO LINE PIPE SYMBOLS

	ELBOW - FLANGED LONG RADIUS 45°
	ELBOW - FLANGED LONG RADIUS 90°
	ELBOW - WELDED LONG RADIUS 45°
	ELBOW - WELDED LONG RADIUS 90°
	END CAP
	FLANGES - SLIP ON
	FLANGES - WELD NECK
	REDUCERS - FLANGED CONCENTRIC
	REDUCERS - FLANGED ECCENTRIC
	REDUCERS - WELDED CONCENTRIC
	REDUCERS - WELDED ECCENTRIC
	TEE - FLANGED
	TEE - WELDED
	BUTTERFLY VALVE - LEVER OPERATOR
	BUTTERFLY VALVE - WORM GEAR OPERATOR
	BUTTERFLY VALVE - ACTUATOR
	CHECK VALVE - SWING CHECK
	CHECK VALVE - SILENT OR WAFER
	GATE VALVE - NON RISING STEM
	GATE VALVE - OUTSIDE STEM AND YOKE
	GLOBE VALVE
	STRAINER - Y
	STRAINER - BASKET
	SUCTION DIFFUSER
	FLEXIBLE CONNECTORS

DUCTWORK SYMBOLS

	THERMOSTAT
	THERMOSTAT WIRING
	HUMIDISTAT
	TEMPERATURE SENSOR
	GPM FLUID FLOW METER
	SUPPLY AIR DUCT
	RETURN AIR DUCT
	EXHAUST AIR DUCT
	CUBIC FEET PER MINUTE
	ENERGY MANAGEMENT SYSTEM
	AUTOMATIC TEMP CONTROLS
	CARBON DIOXIDE
	PARTS PER MILLION
	ROUND DIAMETER
	FLAT OVAL (MAJOR/MINOR)
	SHORT (1x) RADIUS ELL (RECTANGULAR OR ROUND) CENTERLINE RADIUS = 1d
	LONG (1.5x) RADIUS ELL (ROUND OR OVAL) CENTERLINE RADIUS = 1.5d
	SQUARE ELL
	ELL WITH TURNING VANES
	STREAMLINE TAP (RECTANGULAR)
	STREAMLINE TAP (ROUND)
	CONICAL TAP
	STRAIGHT TAP
	LATERAL TAP
	MANUAL VOLUME DAMPER
	MOTORIZED VOLUME DAMPER
	FIRE DAMPER (FD)
	SMOKE DAMPER
	COMBINATION FIRE / SMOKE DAMPER (FD/S)
	RECTANGULAR DUCT (WIDTH/DEPTH)
	ROUND DUCT OFFSET
	CHANGE IN ELEVATION (RISE, FALL)
	FLEXIBLE DUCT
	SUPPLY DUCT UP
	RETURN DUCT UP
	EXHAUST DUCT UP
	SUPPLY DUCT DOWN
	RETURN DUCT DOWN
	EXHAUST DUCT DOWN
	CEILING DIFFUSER
	RETURN AIR GRILLE
	EXHAUST AIR GRILLE
	ACCESS PANEL
	ACCESS PANEL IN ROUND OR OVAL DUCT
	TYPE - THROW CFM DEVICE
	TYPE - RETURN/EXHAUST CFM AIR DEVICE

SPLIT SYSTEM AIR CONDITIONER

DESIGNATION	EVAPORATOR UNIT		CONDENSING UNIT		SERVES	REFRIGERANT TYPE	AIRFLOW (CFM)	COOLING		EER	HEATING		VOLTS/PHASE	MCA	MOCP	REMARKS
	EVAP REFERENCE PRODUCT	TYPE	DESIGNATION	REFERENCE PRODUCT				TOTAL COOLING CAPACITY (MBH)	OUTDOOR AMBIENT TEMPERATURE MIN / MAX (DEG. F)		CAPACITY (MBH)	OUTDOOR AMBIENT TEMP MIN / MAX (°F)				
AC-101	LG LVN36HV4	VERTICAL AHU	CU-101	LG LUU369HV	UPS ROOM	R410A	990/880/800	36.0	0 / 95	11	37.5	0 / 47	208 / 1	32	40	PROVIDE WITH LOW AMBIENT WIND BATTLE KIT AND OUTDOOR UNIT DRAIN PAN HEATER. ATC CONTRACTOR TO PROVIDE BACNET CAPABLE PROGRAMMABLE THERMOSTAT.
AC-102	LG LVN36HV4	VERTICAL AHU	CU-102	LG LUU369HV	UPS ROOM	R410A	990/880/800	36.0	0 / 95	11	37.5	0 / 47	208 / 1	32	40	PROVIDE WITH LOW AMBIENT WIND BATTLE KIT AND OUTDOOR UNIT DRAIN PAN HEATER. ATC CONTRACTOR TO PROVIDE BACNET CAPABLE PROGRAMMABLE THERMOSTAT.

DUCT CLASSIFICATION SCHEDULE						
DESCRIPTION	DUCT PRESSURE CLASS	SMACNA MINIMUM SEAL CLASS	SMACNA LEAKAGE CLASS	SMACNA DUCT CLEANLINESS LEVEL	DUCT LEAKAGE TEST	
SUPPLY AIR - RECTANGULAR						
BETWEEN AHU AND AIR TERMINAL UNIT	+4"	A	4	C	NOT-REQUIRED	
BETWEEN AIR TERMINAL UNIT AND DIFFUSER	+1"	A	4	C	NOT-REQUIRED	
SUPPLY AIR - ROUND/FLAT OVAL						
BETWEEN AHU AND AIR TERMINAL UNIT	+4"	A	2	C	NOT-REQUIRED	
BETWEEN AIR TERMINAL UNIT AND DIFFUSER	+2"	A	2	C	NOT-REQUIRED	
SUPPLY AIR - FLEXIBLE						
RETURN/EXHAUST/OUTSIDE - RECTANGULAR	-2"	B	4	C	NOT-REQUIRED	
RETURN/EXHAUST/OUTSIDE - ROUND	-2"	B	2	C	NOT-REQUIRED	
RETURN/EXHAUST/OUTSIDE - FLEXIBLE	-2"	NA	NA	C	NOT-REQUIRED	

NOTE: 28 AND 30 GAUGE SHEET METAL PROHIBITED

AIR DISTRIBUTION DEVICES

DESIGNATION	REFERENCE PRODUCT	TYPE	MAXIMUM AIR FLOW (CFM)	TOTAL PRESSURE (IN. WATER)	NECK SIZE (IN.)	DESIGNATION - CFM			FINISH	REMARKS
						PANEL SIZE (IN X IN)	MAX N.C.	MIN.		
A	TITUS 300F	SIWALL SUPPLY	650	0.02	24"18"	NECK + 2"	25	WHITE		FURNISH WITH OBD, DOUBLE DEFLECTION, SET DEFLECTIONS AT 45°
1	TITUS 50FF	CEILING RETURN	1500	0.03	20"20"	24"x24"	-	-		ALUMINUM EGGGRATE, 20"/20" NECK, AND 1" MERV 7 FILTER. NO OBD REQUIRED

- NOTES:
- CONTRACTOR SHALL VERIFY CEILING CONSTRUCTION TO ENSURE AIR DEVICE IS SUITABLE FOR THE APPLICATION BEFORE SUBMISSION.
 - SIWALL DEVICES TO HAVE PRIME FINISH FOR FIELD PAINTING IN HOSPITAL SPACES AND STANDARD WHITE FINISH IN MECHANICAL / ELECTRICAL SPACES.
 - AIR DEVICES IN HARD CEILING TO HAVE PLASTER FRAME TO ALLOW AIR DEVICE TO BE LIFTED UP/OUT OF CEILING EXCEPT AT SECLUSION ROOM WHICH SHALL BE SURFACE MOUNTED.

As-Built
CSUSA
10/18/2023

MARK DATE DESCRIPTION

ISSUE DATE: 04-26-23

PROJECT NUMBER: 01-23-0001

SHEET TITLE:

SCHEDULES AND LEGEND - HVAC

SHEET NUMBER:

M001U



CORPORATE SEAL



ENGINEER SEAL

ARKANSAS HEART HOSPITAL UPS ROOM

ARKANSAS HEART HOSPITAL
LITTLE ROCK, ARKANSAS

SECTION 23 00 00 - MECHANICAL WORK

PART 1 - GENERAL

1.1 CONTRACT DOCUMENTS:

- A. REFER TO AND COMPLY WITH OTHER SECTIONS OF THESE SPECIFICATIONS IN THE INSTALLATION OF ALL MECHANICAL WORK.
- B. DRAWINGS ARE DIAGRAMMATIC; THEREFORE, ALL OFFSETS, FITTINGS, VALVES AND ACCESSORIES ARE NOT INDICATED. COORDINATE WORK AROUND BUILDING DETAILS AND OTHER TRADES.

1.2 CODES, ORDINANCES, INSPECTIONS AND PERMITS:

- A. WORK IS TO BE EXECUTED AND INSPECTED IN ACCORDANCE WITH LOCAL AND STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS APPLICABLE TO PARTICULAR CLASS OF WORK, AND ANY FEES IN CONNECTION THEREWITH ARE TO BE PAID BY THE CONTRACTOR.
- B. COMPLY WITH APPLICABLE PROVISIONS OF ANSI B31.2 "FUEL GAS PIPING"; COMPLY WITH APPLICABLE PROVISIONS OF NFPA 54 (ANSI Z223.1) "NATIONAL FUEL GAS CODE"; AND ANSI Z223.1A "SUPPLEMENT TO NATIONAL FUEL GAS CODE". COMPLY WITH REQUIREMENTS OF LOCAL UTILITY.
- C. ARRANGE WITH GOVERNING AUTHORITY FOR COMPLETE INSPECTION, PAYING ALL CHARGES PERTAINING THERETO.

1.3 SHOP DRAWINGS, SUBMITTALS AND SUBSTITUTIONS:

- A. SUBMIT MANUFACTURER'S CATALOG SHEETS AND/OR SHOP DRAWINGS COVERING ALL PHASES OF WORK INCLUDED IN THIS CONTRACT.
- B. SUBMITTALS SHALL BE ARRANGED IN SETS AND BOUND IN FOLDERS.
- C. SUBMITTALS ARE REQUIRED EVEN THOUGH EQUIPMENT BEING FURNISHED IS EXACTLY AS SPECIFIED.
- D. FINAL DECISION AS TO WHETHER OR NOT A SPECIFIC PIECE OF EQUIPMENT MEETS SPECIFICATIONS SHALL REST WITH ARCHITECT.

1.4 CORRECTION OF WORK AND OPERATION INSTRUCTIONS:

- A. CORRECT DEFECTIVE WORK WITHIN ONE YEAR OF DATE OF SUBSTANTIAL COMPLETION IN ACCORDANCE WITH GENERAL AND SUPPLEMENTARY CONDITIONS, REGARDLESS OF START-UP DATE OF EQUIPMENT. IN ADDITION, TIME PERIOD FOR CORRECTION OF DEFECTIVE MOTORS AND COMPRESSORS SHALL BE FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION.
- B. PREPARE MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT (AND SPECIALTY SYSTEMS) OR OWNER'S USE TO INCLUDE:
 1. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF REPLACEMENT PARTS.
 2. MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN, AND ROUTINE AND NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN, AND EMERGENCY INSTRUCTIONS, AND SUMMER AND WINTER OPERATING INSTRUCTIONS.
- C. SERVICING INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES.
- D. WARRANTIES.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. DELIVER EQUIPMENT AND MATERIALS TO THE SITE AND STORE IN ORIGINAL CONTAINERS, SUITABLY SHELTERED FROM THE ELEMENTS, READILY ACCESSIBLE FOR INSPECTION BY THE ARCHITECT UNTIL INSTALLED. STORE ALL ITEMS SUBJECT TO MOISTURE DAMAGE IN DRY HEATED SPACES. TIGHTLY COVER EQUIPMENT AND PROTECT AGAINST DIRT, WATER, CHEMICAL AND MECHANICAL INJURY, AND THEFT.

1.6 CUTTING AND PATCHING:

- A. PROVIDE ALL CUTTING AND PATCHING REQUIRED TO PERFORM THE MECHANICAL WORK.

1.7 ELECTRICAL:

- A. FURNISH AND INSTALL ALL ELECTRICAL INTERLOCK AND CONTROL WIRING FOR PROPER OPERATION AND CONTROL OF ALL MECHANICAL EQUIPMENT.
- B. SUPERVISE AND COORDINATE ALL ELECTRICAL WORK IN CONNECTION WITH MECHANICAL SYSTEMS.
- C. FURNISH ALL MOTOR CONTROLLERS OR CONTACTORS FOR PROPER OPERATION OF ALL MOTORS.

1.8 ACCESS:

- A. PROVIDE HINGED METAL ACCESS PANELS WHERE INDICATED OR REQUIRED TO MAINTAIN OR SERVICE EQUIPMENT, VALVES OR CONTROLS. KARP MODEL "KDW" WITH FLUSH DOOR, OR EQUAL, 24" X 24" SIZE, UNLESS NOTED OTHERWISE.

PART 2 - PRODUCTS

2.1 PIPING:

- A. CAST-IRON PIPE
 1. ANSI/ASTM A 74, BELL AND SPIGOT TYPE WITH NEOPRENE RUBBER GASKETS CONFORMING TO ANSI/ASTM C 564. FURNISH SERVICE WEIGHT CLASS, PIPE SIZE 2" AND SMALLER: TYPE L, DRAWN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS, AND SOLDERED JOINTS.
- B. CONDENSATE DRAIN PIPING: DWY COPPER WITH WROUGHT-COPPER FITTINGS, AND SOLDERED JOINTS.
- C. REFRIGERATION PIPING: TYPE "K" ACR COPPER BELOW GRADE; TYPE "L" ACR ABOVE GRADE. SLEEVE BELOW GRADE PIPING IN 4" SCHEDULE 40 PVC.

2.2 EXPANSION COMPENSATION:

- A. PROVIDE REQUIRED EXPANSION COMPENSATION PRODUCTS CONSISTING OF EXPANSION COMPENSATORS AND RUBBER PACKLESS EXPANSION JOINTS, SLIP JOINTS, FLEXIBLE BALL PIPE JOINTS, COMBINATION COUPLINGS AND NIPPLES AND SLIP-TYPE EXPANSION JOINTS FOR ROUGH PIPING, AND PIPE ALIGNMENT GUIDES.

2.3 VALVES:

- A. GATE OR BALL VALVES: ALL SYSTEMS FOR PIPING 2" AND SMALLER.
- B. GATE VALVES: ALL SYSTEMS, 2 1/2" AND LARGER.
- C. BUTTERFLY VALVES: HOT/CHILLED WATER SYSTEMS 3" AND LARGER.
- D. CHECK VALVES: SWING CHECK ONLY.

2.4 PIPING SPECIALTIES:

- A. DIELECTRIC UNIONS: PROVIDE BETWEEN DISSIMILAR PIPING MATERIALS.
- B. SLEEVES AND SEALS: PROVIDE AROUND PIPING AND INSULATION WHEN PASSING THROUGH CONCRETE.
- C. SHIELDS: PROVIDE BETWEEN PIPING INSULATION AND PIPE HANGER.

2.5 SUPPORTS, ANCHORS AND SEALS:

- A. EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY-FABRICATED PIPING HANGERS AND SUPPORTS COMPLYING WITH ANSISMS SP-58 TO SUIT PIPING SYSTEMS IN ACCORDANCE WITH MSS SP-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING AND TO EXACTLY TILT AROUND PIPING INSULATION WITH SADDLE OR SHIELD FOR INSULATED PIPING. PROVIDE COPPER-PLATED HANGERS AND SUPPORTS FOR COPPER PIPING SYSTEMS. MASON INDUSTRIES OR APPROVED EQUAL.
 1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MISCELLANEOUS SUPPORTING SYSTEMS.
 2. PROVIDE ADEQUATE PIPE, EQUIPMENT FOUNDATION AND SUSPENSION SYSTEMS.

2.6 METERS AND GAGES:

- A. GLASS THERMOMETERS: PROVIDE GLASS THERMOMETERS OF MATERIALS AND CAPACITIES INDICATED, RANGE OF 30-240 DEGREES, DESIGNED AND CONSTRUCTED FOR USE IN SERVICE INDICATED. MARSH, TRETRICE, WEISS, OR APPROVED EQUAL.
- B. DIRECT MOUNT DIAL THERMOMETERS: PROVIDE DIRECT MOUNT DIAL THERMOMETERS OF MATERIAL AND CAPACITIES INDICATED, RANGE OF 30-240 DEGREES, DESIGNED AND CONSTRUCTED FOR USE IN SERVICE INDICATED. MARSH INSTRUMENT CO., UNIT OF GENERAL SIGNAL, H.O. TRETRICE CO., ALBERT A. WEISS & SON, INC., OR APPROVED EQUAL.
- C. DIAL TYPE INSERTION THERMOMETERS: PROVIDE DIAL TYPE INSERTION THERMOMETERS OF MATERIALS AND CAPACITIES INDICATED, RANGE OF 0-220 DEGREES, DESIGNED AND CONSTRUCTED FOR USE IN SERVICE INDICATED. MARSH, TRETRICE, WEISS, OR APPROVED EQUAL.
- D. THERMOMETER WELLS: PROVIDE THERMOMETER WELLS CONSTRUCTED OF BRASS OR STAINLESS STEEL. PRESSURE RATED TO MATCH PIPING SYSTEM DESIGN PRESSURE. PROVIDE 2" EXTENSION FOR INSULATED PIPING. PROVIDE CAP NUT WITH CHAIN FASTENED PERMANENTLY TO THERMOMETER WELL. PROVIDE THERMOMETER WELLS BY SAME MANUFACTURER AS THERMOMETERS.
- E. TEMPERATURE GAGE CONNECTOR PLUGS: PROVIDE TEMPERATURE GAGE CONNECTOR PLUGS PRESSURE RATED FOR 500 PSI AND 200 F. CONSTRUCT OF BRASS AND FINISH IN NICKEL PLATE, EQUIP WITH 1/2" NPT FITTING, WITH SELF-SEALING VALVE CORE TYPE NEOPRENE GASKETED ORIFICE SUITABLE FOR INSERTING 1/8" O.D. PROBE ASSEMBLY FROM DIAL TYPE INSERTION THERMOMETER. EQUIP ORIFICE WITH GASKETED SCREW CAP AND CHAIN. PROVIDE EXTENSION, LENGTH EQUAL TO INSULATION THICKNESS, FOR INSULATED PIPING. PETERSON ENGINEERING COMPANY OR ACCEPTABLE EQUAL.
- F. PRESSURE GAGES: PROVIDE PRESSURE GAGES OF MATERIALS, CAPACITIES, AND RANGES INDICATED, DESIGNED AND CONSTRUCTED FOR USE IN SERVICE INDICATED. MARSH, MARSHALLTOWN, TRETRICE, WEISS, OR APPROVED EQUAL.
 1. RANGE: CONFORM TO THE FOLLOWING:
 - a. VACUUM: 30" HG - 15 PSI.
 - b. WATER: 0 - 100 PSI.
 - c. STEAM: 0 - 200 PSI.
 - d. COMPRESSED AIR: 0 - 180 PSI.
- G. PRESSURE GAGE COCKS: PROVIDE PRESSURE GAGE COCKS BETWEEN PRESSURE GAGES AND GAGE TEES ON PIPING SYSTEMS. CONSTRUCT GAGE COCK OF BRASS WITH 1/4" FEMALE NPT ON EACH END, AND 1" HANDLE BRASS PLUG. PROVIDE PRESSURE GAGE COCKS BY SAME MANUFACTURER AS PRESSURE GAGES. PROVIDE SIPHON AND SNUBBER AS REQUIRED.
- H. PRESSURE GAGE CONNECTOR PLUGS: PROVIDE PRESSURE GAGE CONNECTOR PLUGS PRESSURE RATED FOR 500 PSI AND 200 F. CONSTRUCT OF BRASS AND FINISH IN NICKEL PLATE, EQUIP WITH 1/2" NPT FITTING, WITH SELF-SEALING VALVE CORE TYPE NEOPRENE GASKETED ORIFICE WITH GASKETED SCREW CAP AND CHAIN. PROVIDE EXTENSION FOR INSULATED PIPING. PETERSON ENGINEERING COMPANY OR ACCEPTABLE EQUAL.

2.7 MECHANICAL IDENTIFICATION:

- A. PIPE MARKERS:
 1. SNAP-ON, PRE-TENSIONED, SEMI-RIGID PLASTIC PIPE MARKERS FOR EXTERNAL DIAMETER LESS THAN 6" (INCLUDING INSULATION, IF ANY).
 2. FULL-BAND OR STRIP-TYPE MARKER (NOT NARROWER THAN THREE TIMES LETTER HEIGHT) STRAPPED TO PIPE (OR INSULATION) WITH MANUFACTURER'S STAINLESS STEEL BANDS.
 3. UNDERGROUND PLASTIC LINE MARKER.
- B. VALVE TAGS: 1-1/2" DIAMETER, 19 GAGE POLISHED BRASS WITH HOLE FOR SOLID BRASS CHAIN (WIRE LINK OR BEADED) OR SOLID BRASS S-HOOKS.
- C. EQUIPMENT: 1/8" THICK ENGRAVED MELAMINE PLASTIC LAMINATE (BLACK WITH WHITE LETTERS) PUNCHED FOR MECHANICAL FASTENING.
 1. FASTENERS: SELF-TAPPING STAINLESS STEEL SCREWS, EXCEPT CONTACT-TYPE PERMANENT ADHESIVE WHERE SCREWS CANNOT OR SHOULD NOT PENETRATE THE SUBSTRATE.
- D. PAINTING:
 1. WHERE PIPING IS EXPOSED TO VIEW, EXCEPT IN BOILER AND MECHANICAL ROOMS, PAINT COLOR SHALL BE AS SELECTED BY ARCHITECT.
 2. STEEL PIPING WHICH IS NOT INSULATED AND IS LOCATED IN BOILER AND MECHANICAL ROOMS, OR WHERE NOT EXPOSED TO VIEW, SHALL BE PAINTED WITH COLORS AS DIRECTED BY OWNER'S REPRESENTATIVE TO MATCH EXISTING COLOR SCHEDULE. IN THE ABSENCE OF AN EXISTING COLOR SCHEDULE, COLOR SHALL COMPLY WITH ANSI A13.1 FOR COLORS.
 3. STEEL SUPPORT COMPONENTS WHICH ARE NOT FACTORY PAINTED SHALL BE PAINTED BLACK.

2.8 INSULATION:

- A. DUCTWORK:
 1. PROVIDE 2" THICK FOIL FACED FIBERGLASS DUCT WRAP WITH VAPOR BARRIER ON ALL DUCT AND THE TOP SURFACE OF CEILING DIFFUSERS.
 - b. 2 10" NOT USED
- B. HEATING WATER PIPING:
 1. INSULATE HEATING WATER SUPPLY AND RETURN PIPING WITH 1" THICK FIBERGLASS FOR OPE SIZES UP TO AND INCLUDING 1", 1-1/2" THICK FOR PIPE SIZES 1-1/4" THROUGH 4", 2" THICK FOR PIPE SIZES 4" AND GREATER.
 2. EXTERIOR PIPING TO BE FIELD JACKETED. JACKET TO BE ALUMINUM, SMOOTH WITH Z-SHAPED LOCKING SEAM: 0.024 INCHES THICK.
- C. REFRIGERANT SUCTION PIPING:
 1. 1/8" AND SMALLER: INSULATION SHALL BE FLEXIBLE ELASTOMERIC, 3/4" THICK OR 1" TYPE 1 MINERAL FIBER, PREFORMED PIPE INSULATION. JACKET EXTERIOR PIPING WITH Z-SHAPED LOCKING SEAM: 0.024 INCHES THICK.

2.9 SPLIT SYSTEMS - 7 1/2 TONS AND SMALLER:

- A. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE SPLIT SYSTEM OF ONE OF THE FOLLOWING: LG, TRANE, CARRIER, DAIKEN, OR APPROVED EQUAL.
- B. HEATING AND COOLING: PROVIDE AIR COOLED CONDENSER, DX COIL, "ON-OFF-AUTO/ HEAT/COOL" SEVEN DAY PROGRAMMABLE TEMPERATURE DISPLAY, FILTER RACK AND FILTERS, AND DX SOLENOID VALVE.

2.10 AIR DISTRIBUTION AND ACCESSORIES

- A. PROVIDE LOCK FORMING QUALITY GALVANIZED STEEL DUCTWORK AND INSTALL IN ACCORDANCE WITH LATEST SMACNA STANDARDS. ALL DUCTWORK WITHIN MRI EXAM ROOM TO BE ALUMINUM.
- B. PROVIDE TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "LOW PRESSURE DUCT STANDARDS".
- C. PROVIDE MANUAL BALANCING DAMPERS OF SINGLE BLADE TYPE OR MULTIBLADE TYPE, CONSTRUCTED IN ACCORDANCE WITH SMACNA LOW PRESSURE DUCT STANDARDS.
- D. PROVIDE ALL DUCTWORK SYSTEMS WITH HARDCAST SEAL. DUCT LEAKAGE NOT TO EXCEED 5%.
- E. USE OF DUCT TAPE, EXCEPT IN CONJUNCTION WITH HARDCAST, IS NOT PERMITTED. PRESSURE SENSITIVE TAPE WITH FOIL BACKING AS MANUFACTURED BY HARDCAST IS ACCEPTABLE.
- F. FLEXIBLE DUCT: WIREMOLD "WK" OR APPROVED EQUAL: 3'-0" MAXIMUM LENGTH.
- G. AIR DISTRIBUTION DEVICES: AS SCHEDULED ON DRAWINGS. TUTTLE & BAILEY, TITUS, METAL-AIRE, OR APPROVED EQUAL.
- H. DAMPERS: RUSKIN, OR APPROVED EQUAL.
- I. SPIN-IN FITTINGS: PROVIDE CONICAL OR SCOOP-TYPE SPIN-IN OR FLANGED WITH NEOPRENE GASKET AND ADHESIVE BACKING, TAKE-OFF FITTINGS MANUFACTURED WITH AIRTIGHT SEAMS USING A LOCKING DOUBLE SEAM. UNITS SHALL BE CONSTRUCTED USING NO LIGHTER THAN 28 GAGE GALVANIZED STEEL WITH A FACTORY INSTALLED VOLUME DAMPER WITH LOCKING SPRING LOADED QUADRANT. DAMPER REGULATOR SHALL BE ELEVATED TWO INCHES TO ALLOW FOR INSULATION THICKNESS. UNITS SHALL BE EQUIPPED WITH FACTORY INSTALLED 45 DEGREE SCOOP.
- J. FIRE AND SMOKE DAMPERS: AMERICAN WARMING AND VENTILATING, INC., RUSKIN MFG. CO. OR APPROVED EQUAL.
- K. FIRE DAMPERS: PROVIDE FIRE DAMPERS OF TYPES AND SIZES INDICATED. CONSTRUCT CASINGS OF 20 GAGE GALVANIZED STEEL WITH MILL GALVANIZED FINISH. PROVIDE FIRE LINK RATED AT 160-185 DEGREES F UNLESS OTHERWISE INDICATED. PROVIDE DAMPER WITH POSITIVE LOCK IN CLOSED POSITION, AND WITH THE FOLLOWING ADDITIONAL FEATURES.
 1. DAMPER BLADE ASSEMBLY; CURTAIN TYPE, OUT OF AIRSTREAM.
 2. BLADE MATERIAL: STEEL, MATCH CASING.
 3. SPRING LOADED DAMPER FOR HORIZONTAL APPLICATIONS.

2.11 SEISMIC RESTRAINTS:

- A. ALL DUCTWORK, PIPING AND EQUIPMENT SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH SEISMIC HAZARD LEVEL (SHL) B OF THE SEISMIC RESTRAINT MANUAL, GUIDELINES FOR MECHANICAL SYSTEMS, LATEST EDITION, AS PUBLISHED BY SMACNA AND IN ACCORDANCE WITH 1993 REVISIONS OF THE 1991 STANDARD BUILDING CODE.
- B. SEISMIC CRITERIA:
 1. GROUP I-2
 2. RISK CATEGORY: IV
 3. SITE CLASS C
 4. SEISMIC DESIGN CATEGORY D
 5. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS: Sds = 0.32
 6. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD, Sd1 = 0.177
 7. COMPONENT IMPORTANCE FACTOR: 1.5
 8. SHEET METAL DUCTWORK:
 - A. COMPONENT AMPLIFICATION FACTOR: Ap = 2.5
 - B. COMPONENT RESPONSE MODIFICATION FACTOR, Rp = 6
 - C. COMPONENT OVERSTRENGTH FACTOR: 2.5

2.12 CONTROLS:

- A. PROVIDE ALL TEMPERATURE CONTROLS, VALVES, DAMPERS, ETC. REQUIRED FOR COMPLETE AND OPERATING MECHANICAL SYSTEM.
- B. CONTROLS SHALL BE ELECTRIC TYPE.
- C. FURNISH COMPLETE WIRING DIAGRAMS SHOWING ALL INTERLOCK WIRING IN ADDITION TO TEMPERATURE CONTROL WIRING DIAGRAMS. WIRING IS TO BE COLOR-CODED AND INSTALLED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NEC).
- D. TESTING, ADJUSTING AND BALANCING:

- A. EMPLOY THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING AGENCY CERTIFIED BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL (AABC) TO BE THE SINGLE SOURCE OF RESPONSIBILITY TO TEST, ADJUST, AND BALANCE THE BUILDING MECHANICAL SYSTEMS IDENTIFIED ABOVE, TO PRODUCE THE DESIGN OBJECTIVES. SERVICES SHALL INCLUDE CHECKING INSTALLATIONS FOR CONFORMITY TO DESIGN, MEASUREMENT AND ESTABLISHMENT OF THE FLUID QUANTITIES OF THE MECHANICAL SYSTEMS AS REQUIRED TO MEET DESIGN SPECIFICATIONS, AND RECORDING AND REPORTING THE RESULTS.
- B. CODES AND STANDARDS:
 1. NEBB: "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS".
 2. AABC: "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE".
 3. ASHRAE: ASHRAE HANDBOOK, 2019 SYSTEMS VOLUME, CHAPTER 39, TESTING, ADJUSTING, AND BALANCING.
- C. TEST, ADJUST, AND BALANCE THE FOLLOWING MECHANICAL SYSTEMS COMPLETE:
 1. SUPPLY AIR SYSTEMS, RETURN AIR SYSTEMS, EXHAUST AIR SYSTEMS, OUTSIDE AIR SYSTEMS, HYDRONIC SYSTEMS, AND VERIFY TEMPERATURE CONTROL SYSTEM OPERATION.
- D. SUBMIT CERTIFIED TESTING, ADJUSTING, AND BALANCING REPORTS BEARING THE SEAL AND SIGNATURE OF THE TAB ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS. ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED; ARE A TRUE REPRESENTATION OF HOW THE SYSTEMS ARE OPERATING AT THE COMPLETION OF THE TESTING, ADJUSTING, AND BALANCING PROCEDURE; AND ARE AN ACCURATE RECORD OF ALL FINAL QUANTITIES MEASURED, TO ESTABLISH NORMAL OPERATING VALUES OF THE SYSTEMS. REPORT FORMS SHALL BE THOSE STANDARD FORMS PREPARED BY THE REFERENCED STANDARD FOR EACH RESPECTIVE ITEM AND SYSTEM TO BE TESTED, ADJUSTED, AND BALANCED PART 3 - EXECUTION 3.1 GENERAL.

- A. VERIFY LOCAL SITE CONDITIONS.
- B. INSTALL EQUIPMENT AND SYSTEMS IN ACCORDANCE WITH LOCAL AND STATE CODES, LAWS, ORDINANCES, RULES AND REGULATIONS, INDUSTRY STANDARDS AND PRACTICES AND IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
- C. INSTALL EQUIPMENT AND SYSTEMS PLUMB, RIGID AND TRUE TO LINE.
- D. COORDINATE INSTALLATION WITH BUILDING COMPONENTS AND WITH ALL TRADES.
- E. REMOVE AND REPLACE DEFECTIVE WORK.
- F. CLEAN MATERIALS, SYSTEMS AND EQUIPMENT THOROUGHLY PRIOR TO START UP. OPERATIONAL TESTS, AND TEST AND BALANCE WORK.
- G. REPAIR MARRED AND DAMAGED FACTORY PAINTED FINISHES WITH MATERIALS TO MATCH ORIGINAL FACTORY FINISH.
- H. START UP FOR SYSTEMS AND COMPONENTS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL A CLEAN SET OF FILTERS PRIOR TO START UP AND BALANCING.
- I. INSTRUCT OWNER REGARDING LOCATION OF EQUIPMENT AND AREAS SERVED, INCLUDING LOCATION OF CRITICAL SHUT-OFF VALVES.
- J. DEMONSTRATE TO OWNER SYSTEMS OPERATION AND CONTROL.

END OF SECTION 23 00 00

MARK	DATE	DESCRIPTION
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ISSUE DATE: 04-26-23

PROJECT NUMBER: 01-23-0001

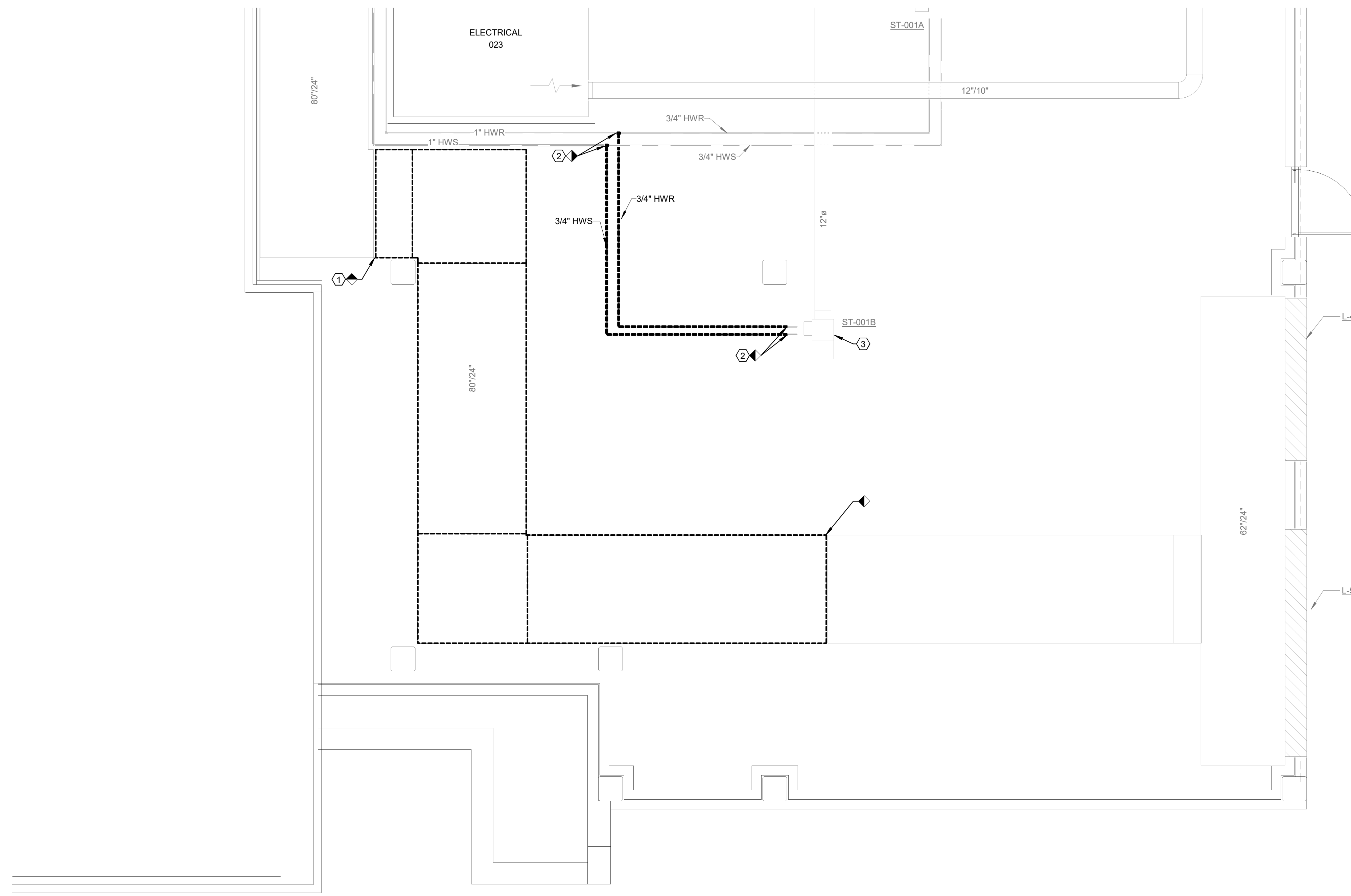
SHEET TITLE:

SPECIFICATIONS - HVAC

SHEET NUMBER:

M002U

As-Built
CSUSA
10/18/2023



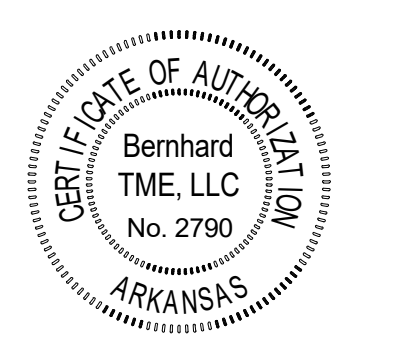
1 BASEMENT FLOOR PLAN - HVAC DEMOLITION
 1/4" = 1'-0"

GENERAL NOTES

1. ALL LOCATIONS AND SIZES OF EXISTING EQUIPMENT, PIPING, DUCTWORK, ETC. ARE APPROXIMATE. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS, AND REPORT DISCREPANCIES TO THE OWNER AND ENGINEER OF RECORD.
2. OWNER SHALL HAVE RIGHT OF REFUSAL FOR ALL EQUIPMENT. CONTRACTOR SHALL COORDINATE WITH OWNER.
3. DUCT SIZES INDICATE A FREE AREA DIMENSION.

KEYED NOTES

1. DEMOLISH EXISTING 80" RETURN DUCT UP TO THIS POINT.
2. DEMOLISH EXISTING 3/4" HWS/HWR LINES UP TO 1" TEES AND HYDRONIC SPECIALTIES FOR VAV BOX TO REMAIN.
3. EXISTING VAV BOX TO REMAIN.



CORPORATE SEAL



04/26/23
 ENGINEER SEAL

ARKANSAS HEART HOSPITAL UPS ROOM
 ARKANSAS HEART HOSPITAL
 LITTLE ROCK, ARKANSAS

MARK	DATE	DESCRIPTION

ISSUE DATE: 04-26-23

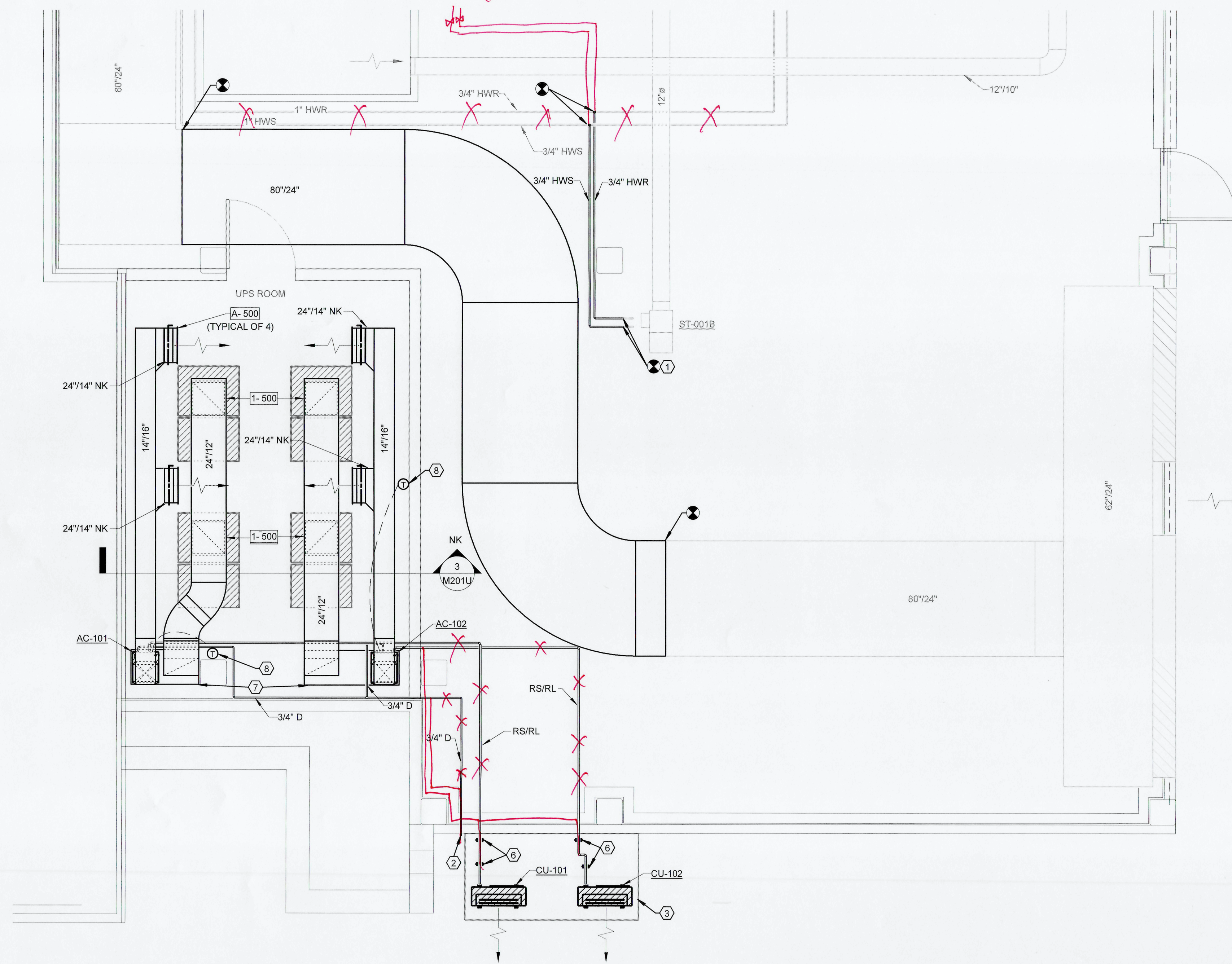
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SHEET TITLE:
 BASEMENT FLOOR
 PLAN - HVAC
 DEMOLITION

SHEET NUMBER:

M101U

As-Builts
 CSUSA
 10/18/2023



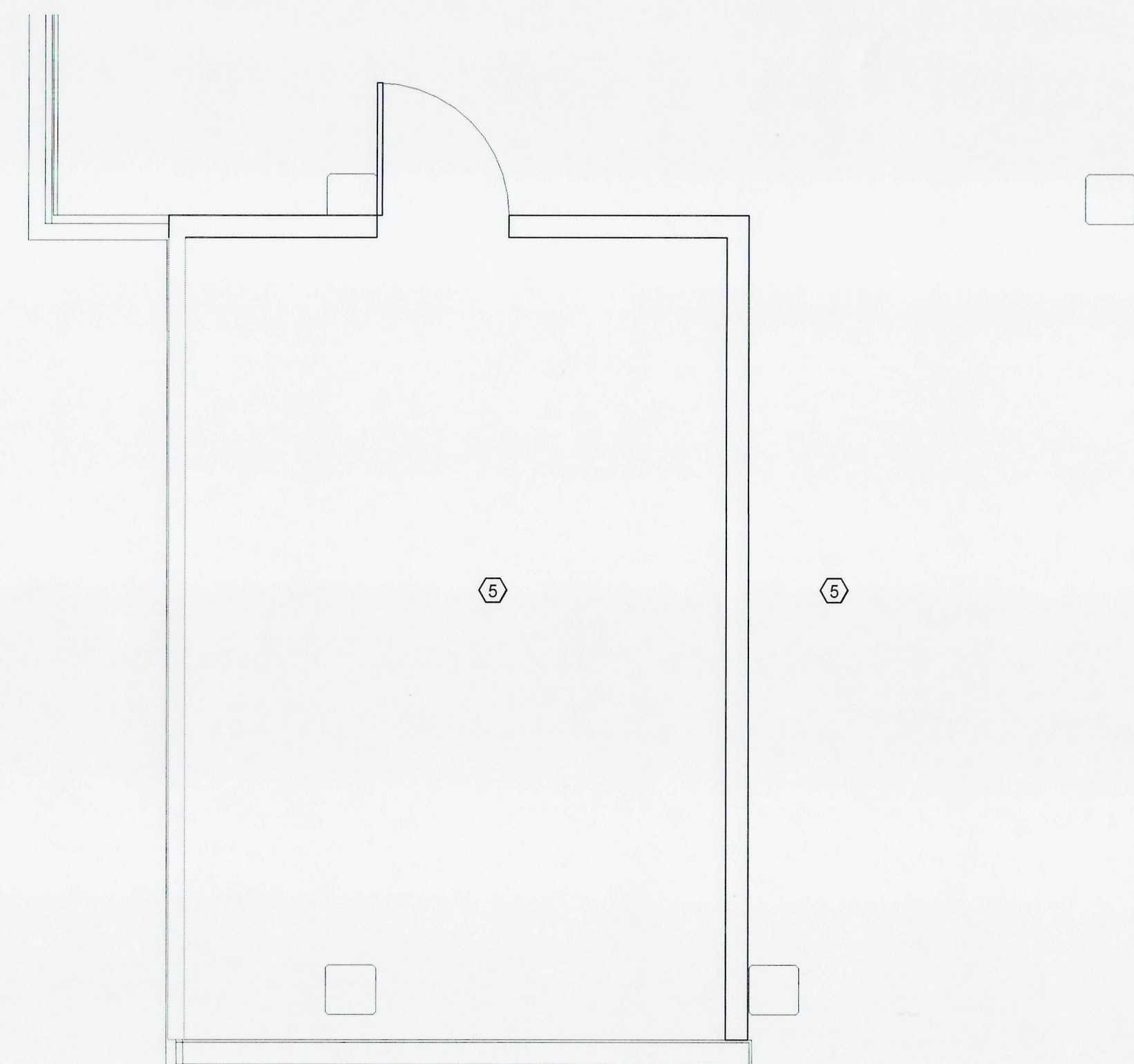
GENERAL NOTES

1. ALL LOCATIONS AND SIZES OF EXISTING EQUIPMENT, PIPING, DUCTWORK, ETC. ARE APPROXIMATE. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS, AND REPORT DISCREPANCIES TO THE OWNER AND ENGINEER OF RECORD.
2. OWNER SHALL HAVE RIGHT OF REFUSAL FOR ALL EQUIPMENT. CONTRACTOR SHALL COORDINATE WITH OWNER.
3. DUCT SIZES INDICATE A FREE AREA DIMENSION.
4. REFRIGERANT SUCTION AND LIQUID LINES ARE SHOWN AS A SINGLE LINE.
5. REFRIGERANT LINES SHALL BE SIZED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS, TONNAGE, AND PIPE SIZES.
6. REFRIGERANT AND CONDENSATE ROUTING ARE SHOWN FOR GENERAL ROUTING AND MAY NOT SHOW ALL OFFSETS REQUIRED. TAKING SHORTEST PATH IS ACCEPTABLE.
7. ARCHITECTURAL RENOVATION SHOWN FOR REFERENCE ONLY. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.

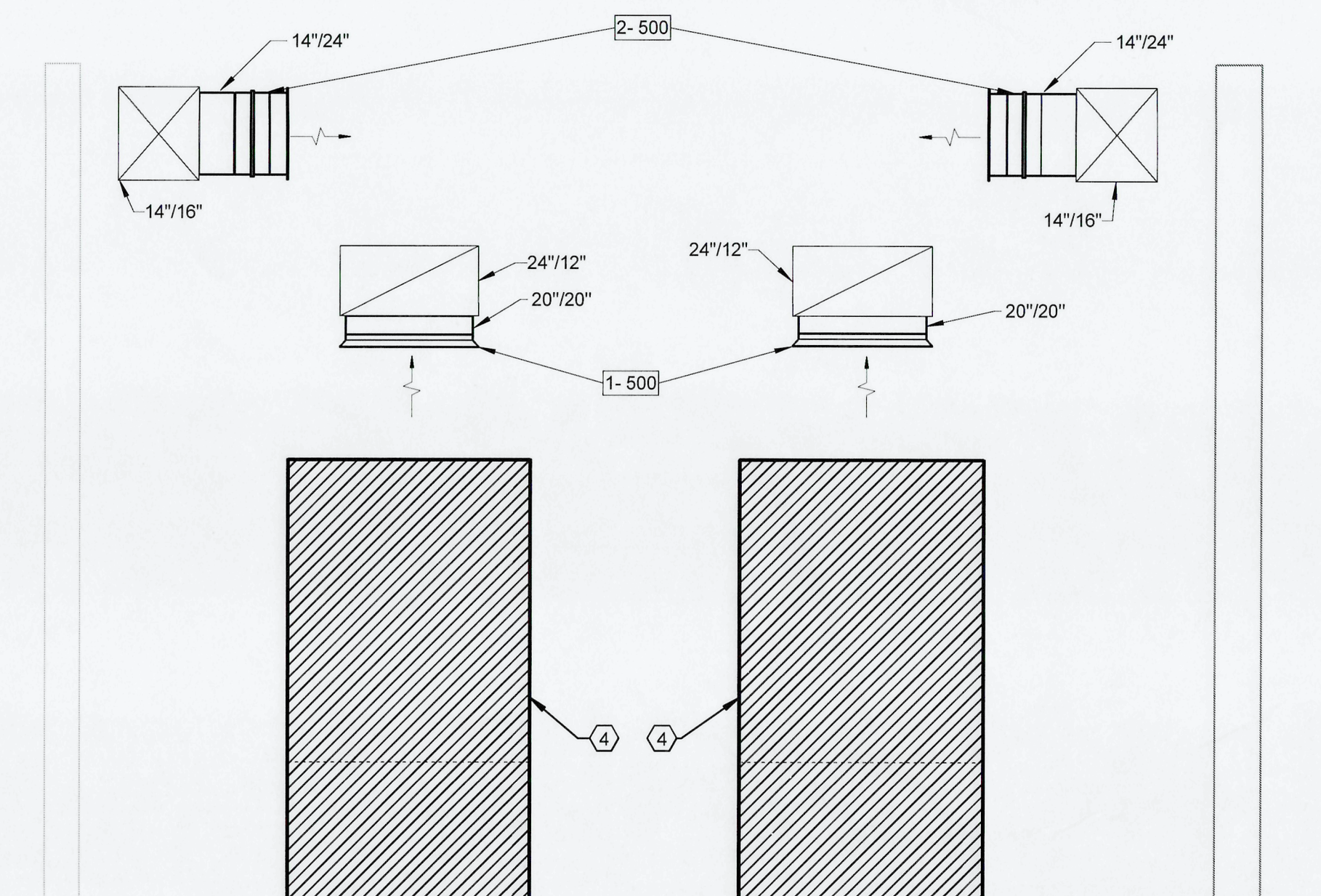
KEYED NOTES

- ① CONNECT EXISTING VAV BOX TO REMAIN.
- ② ROUTE 3/4" DRAIN LINE OUTSIDE THROUGH WALL AND DOWN TO 6" OFF OF GROUND.
- ③ CONCRETE PAD. REFER TO DETAIL.
- ④ UPS FURNISHED BY OWNER AND INSTALLED BY GENERAL CONTRACTOR.
- ⑤ ADD/REMOVE/RELOCATE AUTOMATIC SPRINKLERS AS REQUIRED FOR NEW LAYOUT. MATCH EXISTING SPRINKLER STYLE, RESPONSE, AND COLOR.
- ⑥ PIPE SUPPORT. REFER TO DETAILS.
- ⑦ SPLIT SYSTEM ON SHEET METAL PLENUM. REFER TO DETAIL.
- ⑧ NEW THERMOSTAT FURNISHED AND INSTALLED BY ATC CONTRACTOR.

① **BASEMENT FLOOR PLAN - HVAC RENOVATION**
1/4" = 1'-0"

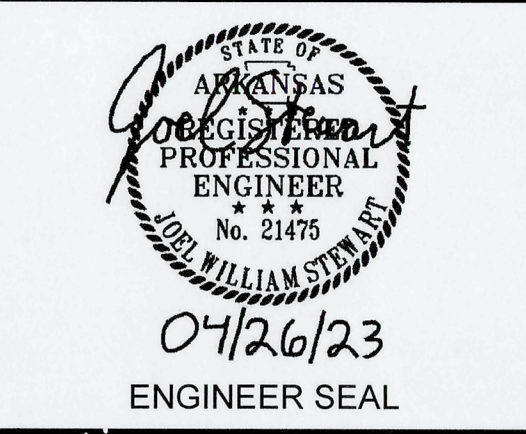


② **BASEMENT FLOOR PLAN - FIRE PROTECTION**
1/4" = 1'-0"



③ **UPS ROOM SECTION VIEW - HVAC RENOVATION**
1/2" = 1'-0"

As-Builts
CSUSA
10/18/2023

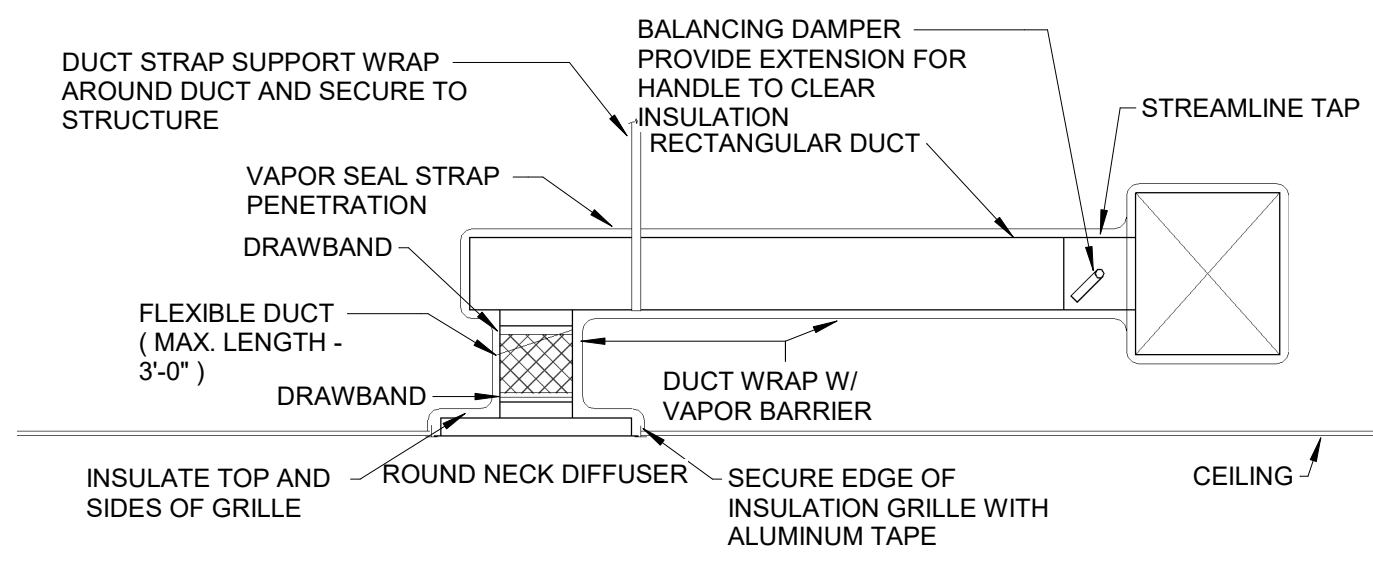


ARKANSAS HEART HOSPITAL UPS ROOM
ARKANSAS HEART HOSPITAL
LITTLE ROCK, ARKANSAS

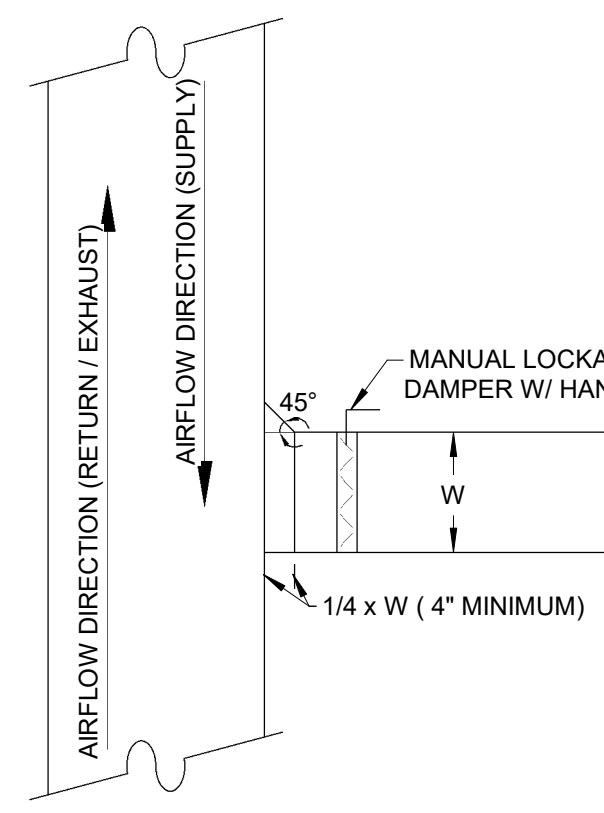
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ISSUE DATE:	04-26-23	
PROJECT NUMBER:	01-23-0001	
SHEET TITLE: BASEMENT FLOOR PLAN - HVAC / FIRE PROTECTION RENOVATION		
SHEET NUMBER: M201U		

NOTE:

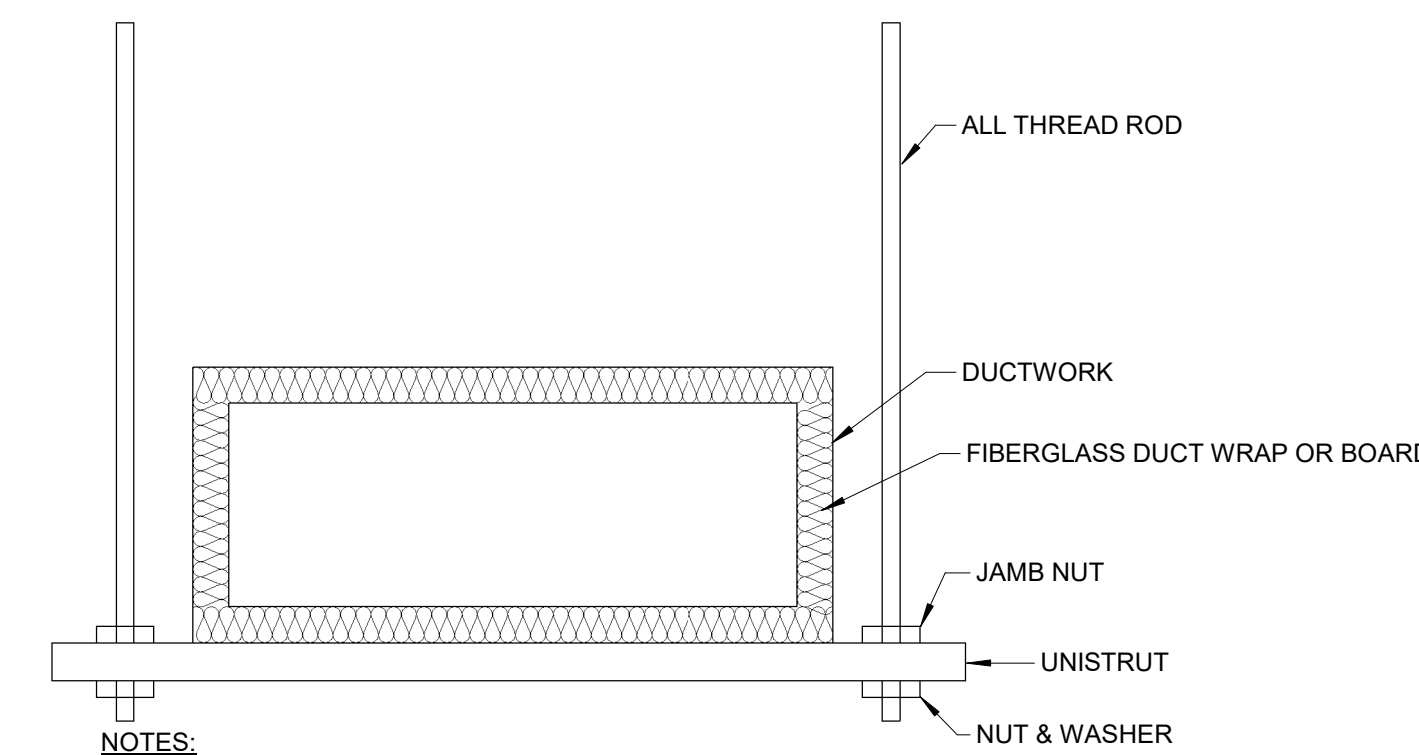
FLEXIBLE DUCT CONNECTIONS SHALL BE INSTALLED TO ADC STANDARDS AND SEALED TO UL STANDARDS PER AMO 603 AND 604.2.1. AS A MINIMUM, THE CONTRACTOR SHALL SECURE THE FLEXIBLE DUCT TO GRILLE AND METAL DUCT WITH DRAWBANDS, AND WRAP 3" WIDE ALUMINUM TAPE EQUAL TO HARDCAST "FOIL GRIP" AROUND DRAWBAND AND EXPOSED END OF FLEXIBLE DUCT INSULATION.



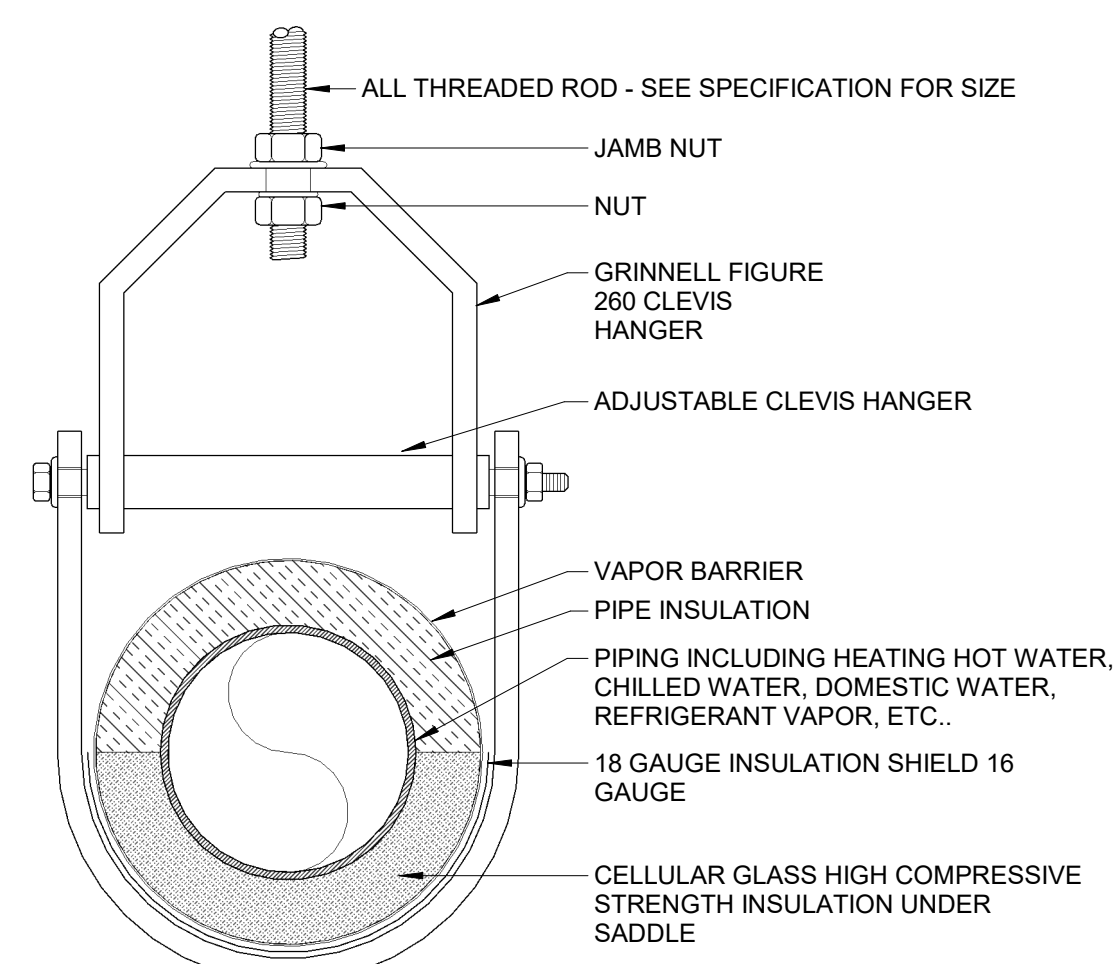
1 DIFFUSER CONNECTION TO RECTANGULAR DUCT
NOT TO SCALE:



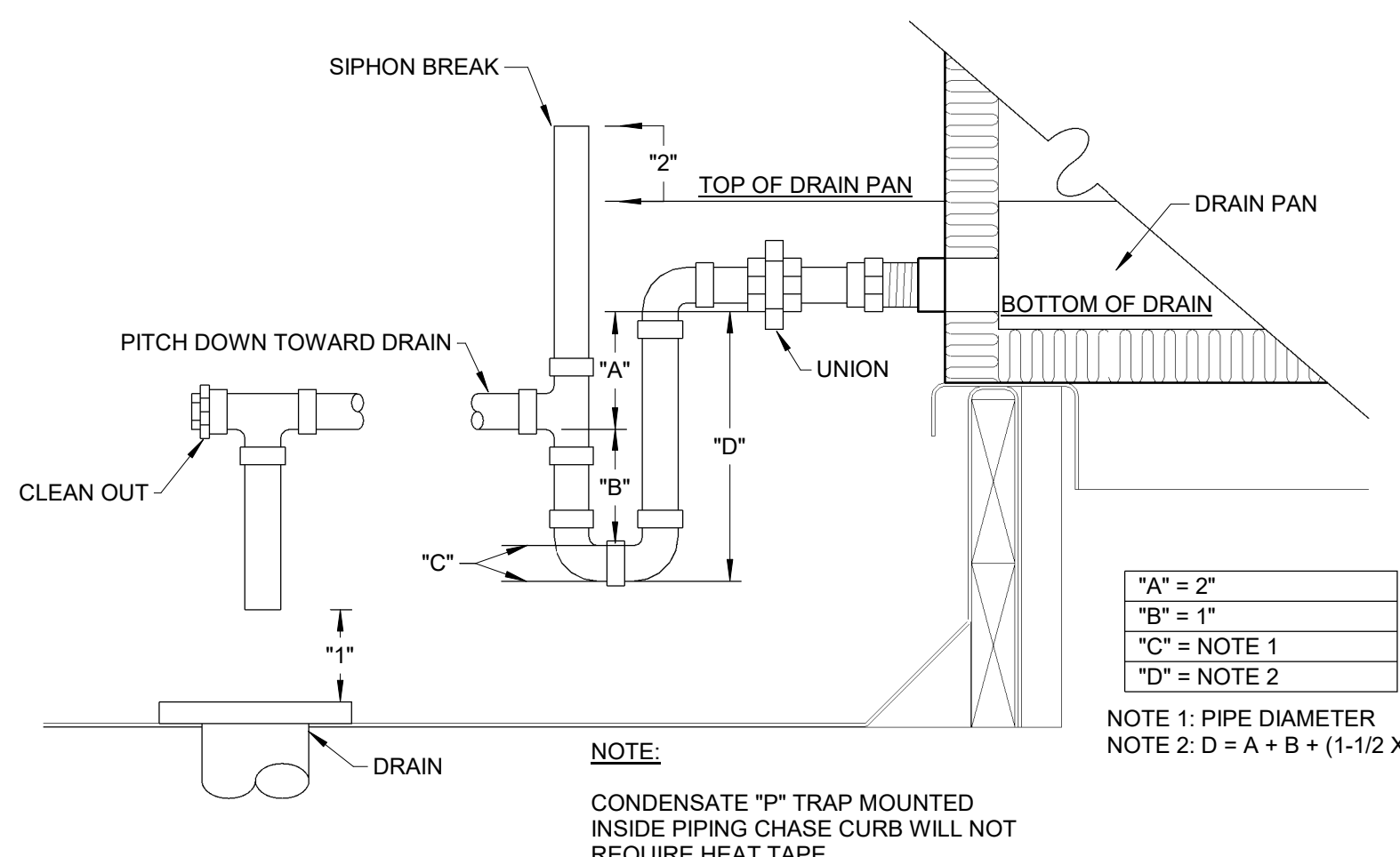
2 RECTANGULAR BRANCH DUCT CONNECTION
NOT TO SCALE:



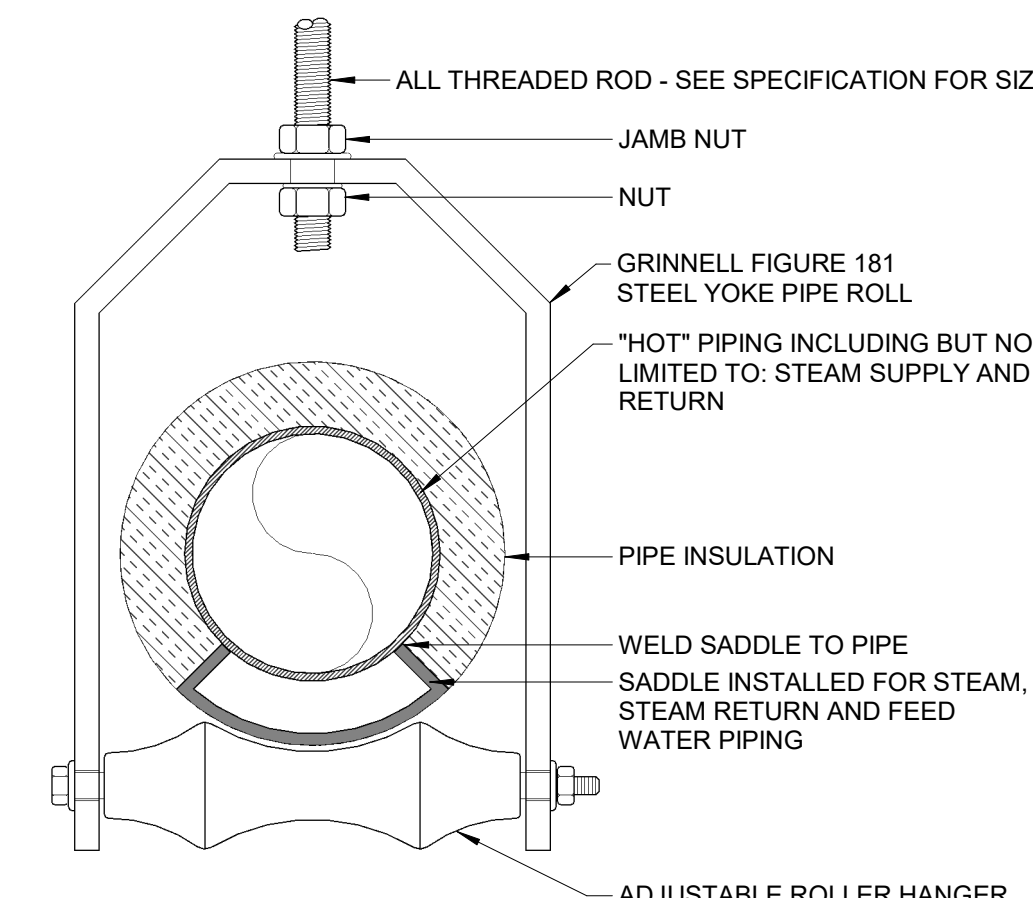
3 INSULATED DUCTWORK SUPPORT DETAIL
NOT TO SCALE:



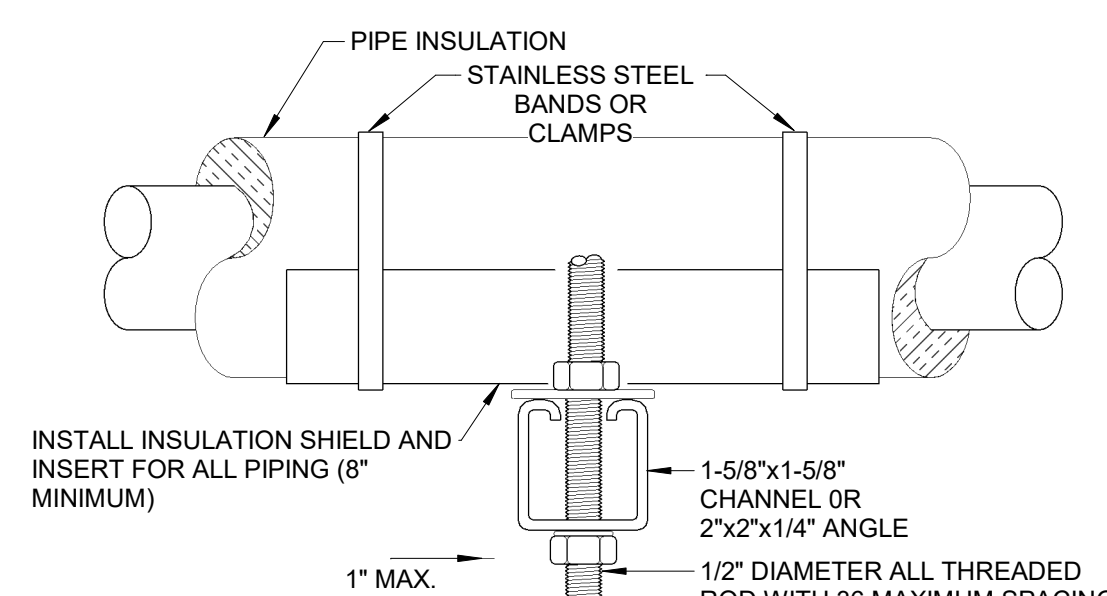
4 CLEVIS PIPE HANGER DETAIL
NOT TO SCALE:



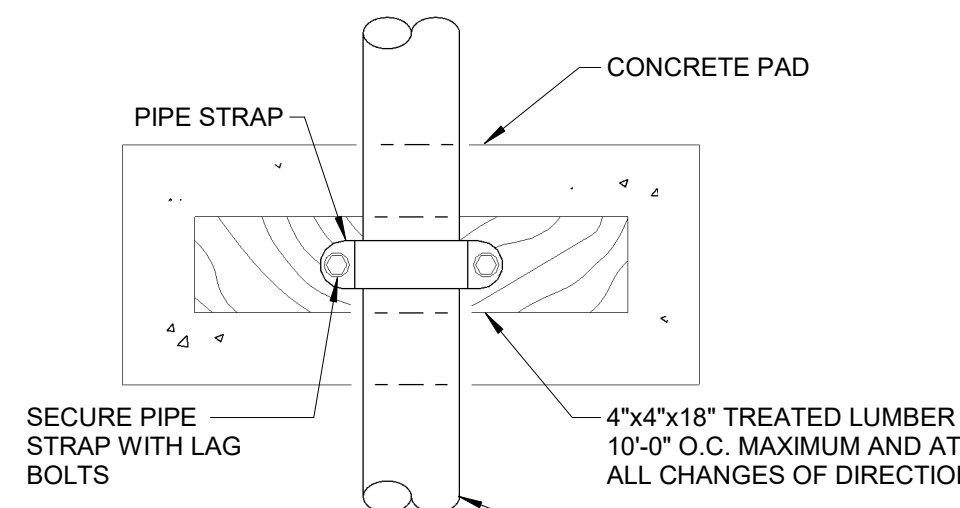
5 CONDENSATE DRAIN PIPING DETAIL
NOT TO SCALE:



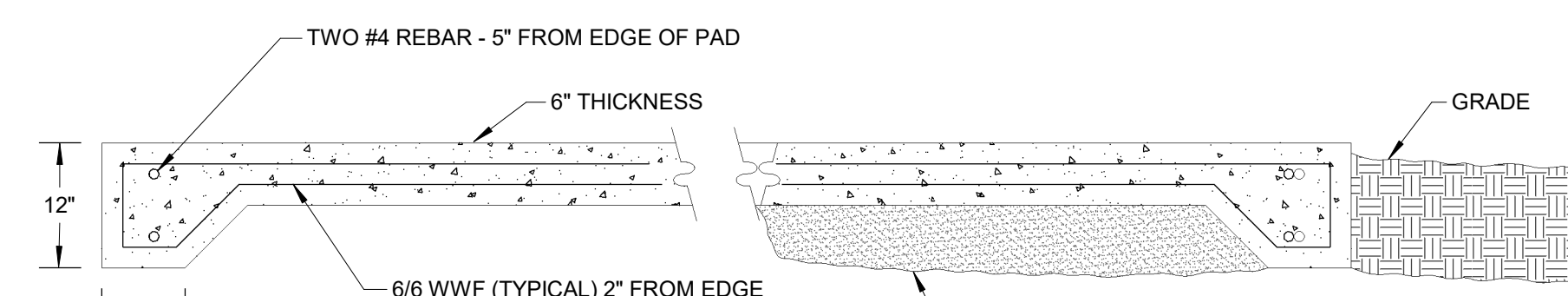
6 ROLLER PIPE HANGER DETAIL
NOT TO SCALE:



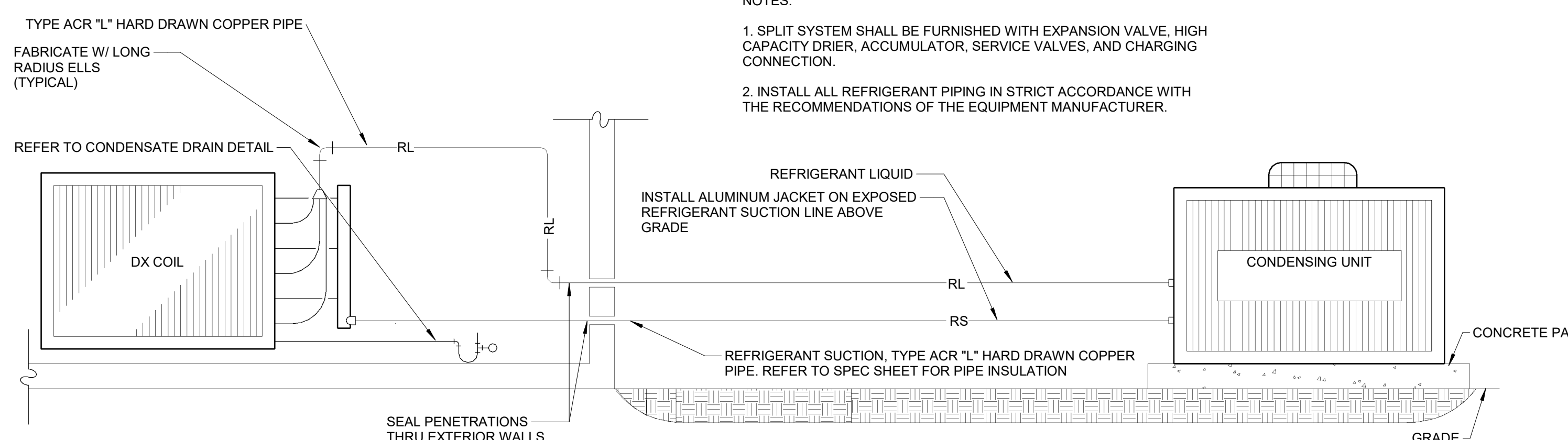
7 TRAPEZE PIPE HANGER DETAIL
NOT TO SCALE:



8 PIPE SUPPORT DETAIL
NOT TO SCALE:



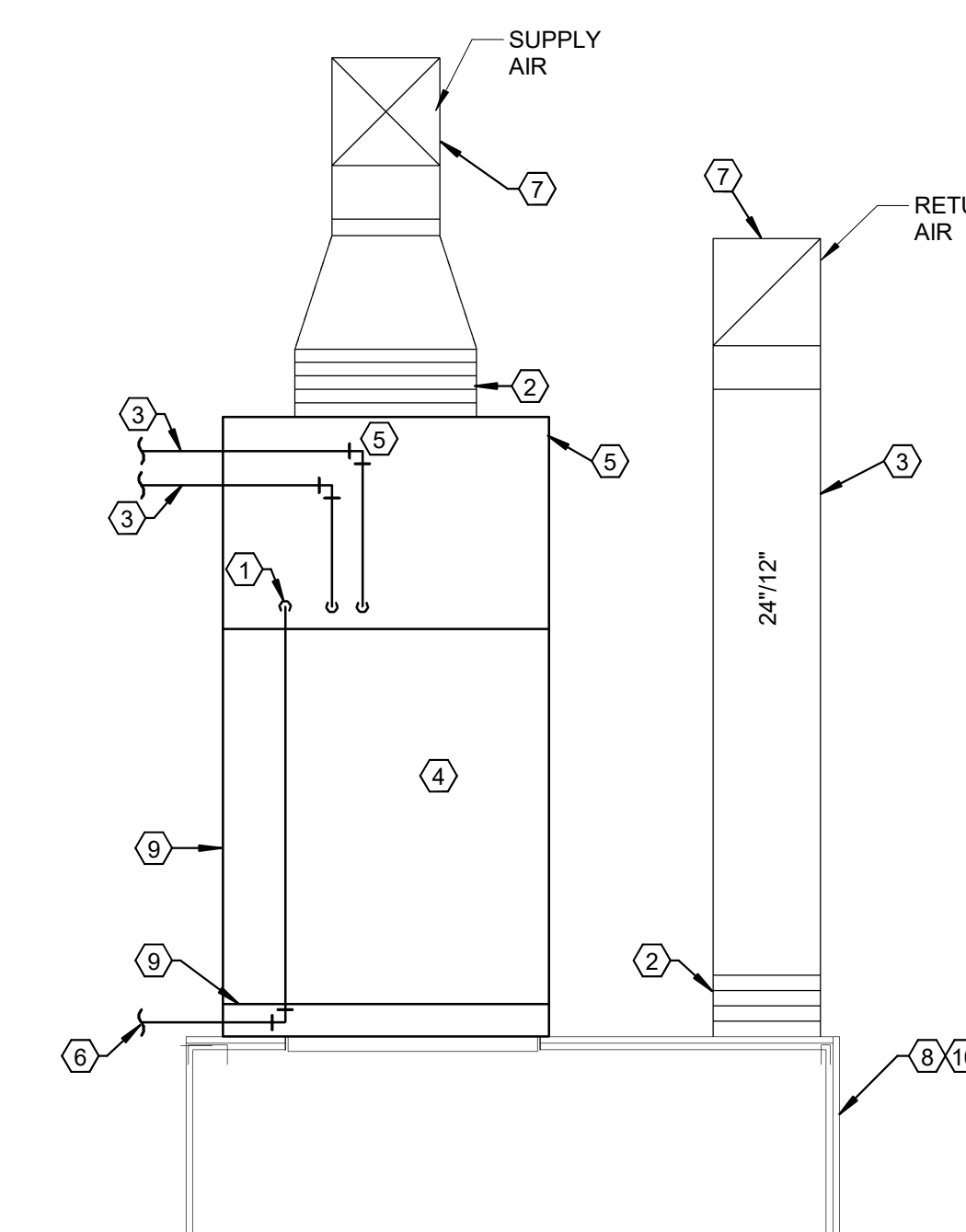
9 HVAC EQUIPMENT PAD DETAIL
NOT TO SCALE:



10 REFRIGERANT PIPING DETAIL
NOT TO SCALE:

KEYED NOTES:

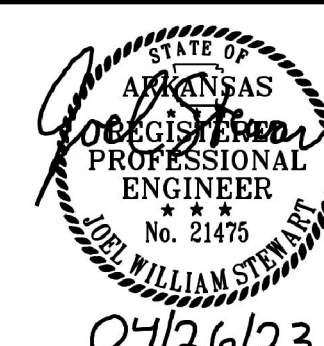
- ① FULL SIZE COIL, CONDENSATE DRAIN, SCHEDULE 40 PVC CONDENSATE DRAIN. REFER TO CONDENSATE DRAIN DETAIL.
- ② FLEX DUCT CONNECTION.
- ③ REFRIGERANT PIPING.
- ④ HEAT PUMP
- ⑤ COOLING COIL.
- ⑥ CONDENSATE DRAIN LINE ROUTED OUTSIDE. REFER TO FLOOR PLAN.
- ⑦ REFER TO PLANS FOR DUCTWORK LAYOUT.
- ⑧ PLENUM SHALL BE FABRICATED FROM MINIMUM 18 GAUGE GALVANIZED SHEET METAL AND 2"x2"x3/16" ANGLE IRON FRAMING. PLENUM SHALL BE FULLY ENCLOSED AND MINIMUM 24" HIGH.
- ⑨ FILTER SECTION
- ⑩ CAULK ALL CORNERS AND SEAMS OF PLENUM.



11 VERTICAL HEAT PUMP DETAIL
NOT TO SCALE:



CORPORATE SEAL



ENGINEER SEAL

ARKANSAS HEART HOSPITAL UPS ROOM
ARKANSAS HEART HOSPITAL
LITTLE ROCK, ARKANSAS

MARK	DATE	DESCRIPTION

ISSUE DATE: 04-26-23
PROJECT NUMBER: 01-23-001

SHEET TITLE:
DETAILS - HVAC

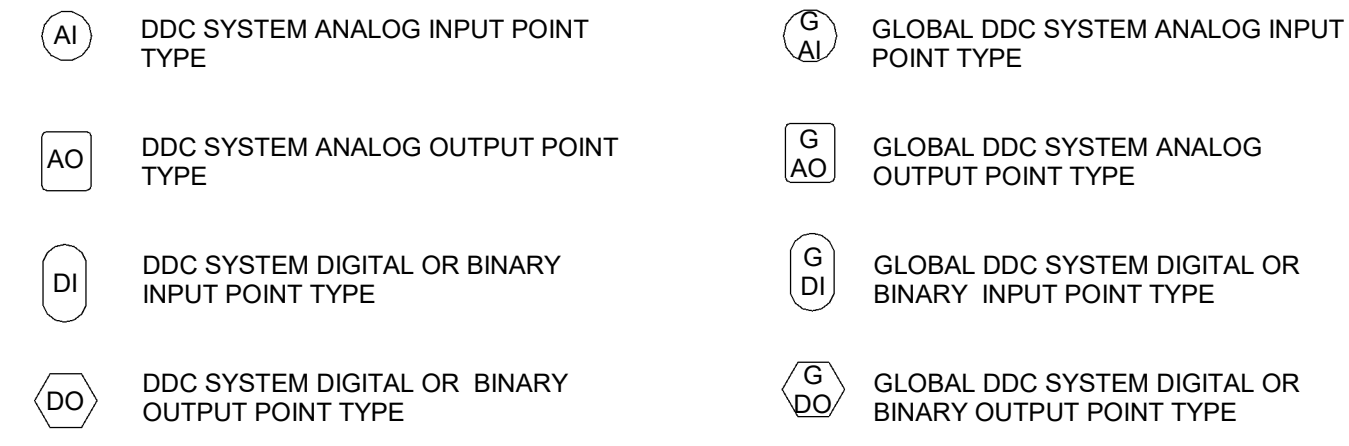
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CSUSA
10/18/2023

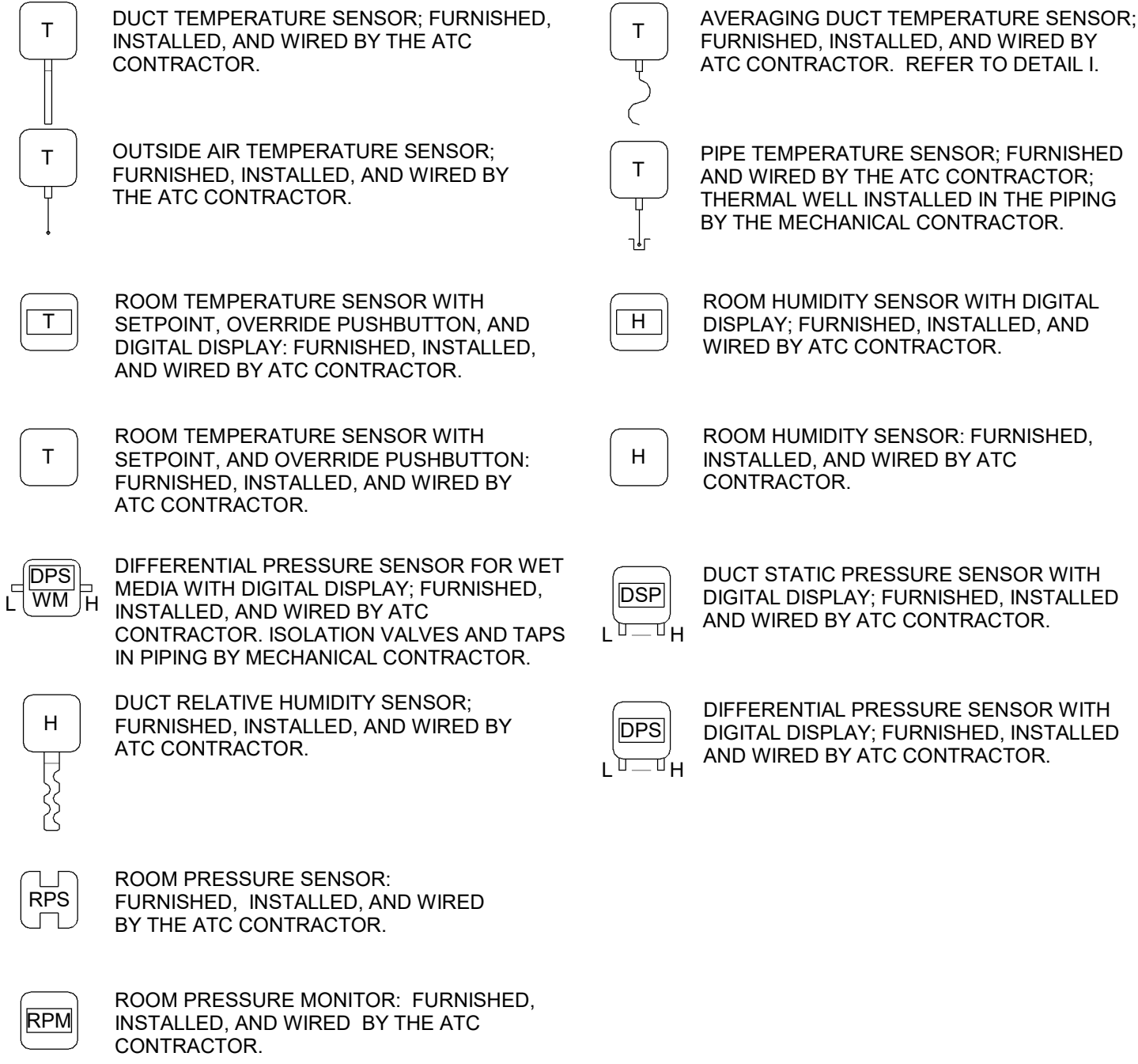
GENERAL NOTES APPLICABLE TO ALL CONTROL DIAGRAMS:

- ALL CONTROL DEVICES SHOWN ON THE CONTROL DIAGRAMS ARE FURNISHED BY THE ATC CONTRACTOR UNLESS OTHERWISE NOTED OR SPECIFIED.
- ALL COMPONENTS REQUIRED FOR THE SEQUENCES OF OPERATION, SHOWN ON THE CONTROL DIAGRAMS, DESCRIBED IN THE SPECIFICATION, OR AS REQUIRED FOR A PROPERLY OPERATING SYSTEM SHALL BE FURNISHED AND INSTALLED BY THE ATC CONTRACTOR UNLESS OTHERWISE NOTED, SHOWN, OR SPECIFIED.
- ATC CONTRACTOR IS RESPONSIBLE TO FURNISH, INSTALL, AND WIRE ALL COMPONENTS REQUIRED FOR INTEGRATION OF INFORMATION SHOWN TO BE ACCESSED BY THE EMS FROM OTHER SYSTEMS AND EQUIPMENT UNLESS OTHERWISE NOTED OR SPECIFIED.
- ALL POWER WIRING AND TRANSFORMERS FOR SENSORS, ACTUATORS, AND OTHER CONTROL COMPONENTS AS REQUIRED FOR THE EMS AND/OR DDC SYSTEMS TO FUNCTION PROPERLY, SHALL BE FURNISHED AND INSTALLED BY THE ATC CONTRACTOR UNLESS OTHERWISE SHOWN, NOTED, OR SPECIFIED.
- ALL POWER WIRING FOR SENSORS, ACTUATORS, AND OTHER DEVICES SHALL BE FROM THE DDC PANEL OR THE FEP PANEL OF THE ASSOCIATED SYSTEM.
- ALL CONTROL, INTERLOCK, AND POWER WIRING SHALL BE INSTALLED PER THE ELECTRICAL SPECIFICATION, LOCAL, STATE, AND NATIONAL CODES. RACEWAY SHALL BE INSTALLED PER THE ELECTRICAL SPECIFICATIONS.
- ALL CONTROL POINTS SHOWN ON THE CONTROL DIAGRAMS SHALL BE PROVIDED AND INTEGRATED INTO AN EMS SYSTEM GRAPHIC REPRESENTATIVE OF THE CONTROL DIAGRAMS.
- ALL CONTROL BANDS, SETPOINTS, SETPOINT LIMITS, SETPOINT INCREMENT VALUES, SETPOINT DECREMENT VALUES, ALARM LIMITS, AND OTHER PARAMETERS SHALL BE ADJUSTABLE FROM THE EMS.
- ALL CONTROL BANDS, SETPOINTS, TIME DELAYS, CONTROL LOOPS, AND OTHER PARAMETERS SHALL BE COMMISSIONED BY THE ATC CONTRACTOR TO PROVIDE STABLE CONTROL OF ALL SYSTEMS.
- ALL SETPOINTS SHALL BE ADJUSTABLE FROM THE EMS SYSTEM GRAPHIC(S).
- SPACE SETPOINTS SHALL BE ADJUSTABLE FROM THE ROOM SENSOR UNLESS OTHERWISE SHOWN ON DRAWINGS OR SPECIFIED.
- THE EMS SYSTEM GRAPHICS SHALL BE LINKED WITH ASSOCIATED BUILDING FLOOR PLANS FROM THE SPACE SENSOR OR AREA SERVED.
- WHERE ONE SYSTEM IS ASSOCIATED WITH ANOTHER SYSTEM, THE SYSTEM GRAPHIC SHALL BE LINKED TO THE ASSOCIATED GRAPHIC AS WELL AS THE BUILDING FLOOR PLAN GRAPHIC. EXAMPLE - AN AIR HANDLING UNIT SYSTEM GRAPHIC SHALL BE LINKED TO THE CHILLED WATER SYSTEM GRAPHIC IN ADDITION TO BOTH BEING LINKED TO THE BUILDING FLOOR PLAN.
- THE BUILDING FLOOR PLAN SHALL DISPLAY THE SPACE TEMPERATURE AT EACH SPACE SENSOR LOCATION WITH AREA SERVED DISPLAYED IN SEPARATE COLORS BASED ON THE CONDITION OF THE ZONE. EXAMPLE - ALARM, NORMAL, HIGH OR LOW TEMPERATURE, HIGH OR LOW HUMIDITY, ETC.
- ALL BUILDING FLOOR PLANS AND SYSTEM GRAPHICS SHALL DISPLAY OUTSIDE AIR TEMPERATURE AND HUMIDITY.
- THE FLOOR PLAN GRAPHICS SHALL BE LINKED TO A BUILDING GRAPHIC WITH A DIGITAL PHOTOGRAPH BACKGROUND OF THE ACTUAL BUILDING. DURING CONSTRUCTION A TEMPORARY GRAPHIC MAY BE USED THAT IS REPRESENTATIVE OF THE BUILDING.
- THE BUILDING GRAPHIC SHALL BE LINKED WITH A CAMPUS MAP FOR THOSE FACILITIES WITH MORE THAN ONE BUILDING OR FACILITY.
- ALL GRAPHICS SHALL BE SUBMITTED IN COLOR WITH THE ATC SUBMITTAL. FAILURE TO INCLUDE ALL GRAPHICS IN SUBMITTAL SHALL BE CAUSE FOR REJECTION OF COMPLETE SUBMITTAL.
- VARIABLE FREQUENCY DRIVES ARE FURNISHED BY THE ATC CONTRACTOR. INSTALLED AND WIRE BY THE ELECTRICAL CONTRACTOR. REFER TO VARIABLE FREQUENCY DRIVE SCHEDULE. VERIFY ALL EXISTING MOTOR HORSEPOWER AND ELECTRICAL RATINGS PRIOR TO SUBMITTAL AND ORDERING VARIABLE FREQUENCY DRIVES.
- POWER WIRING (PWR) FROM POWER SOURCE TO VARIABLE FREQUENCY DRIVES AND FROM VARIABLE FREQUENCY DRIVES TO MOTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
- POWER WIRING (PWR) FROM POWER SOURCE TO MOTOR STARTERS AND FROM MOTOR STARTERS TO MOTORS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
- POWER WIRING (PWR) FROM POWER SOURCE TO DDC AND FEP PANELS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED ON DRAWINGS.
- SYMBOLS USED IN THE LEGEND ARE INCLUDED FOR REFERENCE AND MAY NOT ALL BE USED ON THIS SPECIFIC PROJECT.
- DETAILS SHOWN ON THE DETAIL SHEETS ARE INCLUDED FOR REFERENCE AND MAY NOT ALL BE USED ON THIS SPECIFIC PROJECT.
- GLOBAL DDC SYSTEM POINTS ARE DEFINED AS A SINGLE POINT USED IN ALL SYSTEMS IN A BUILDING OR CAMPUS TO MAINTAIN CONSISTENCY OF CONTROL ACTIONS THROUGHOUT THE BUILDING OR CAMPUS. EXAMPLE: OUTSIDE AIR TEMPERATURE POINT SAMPLED ON THE NORTH SIDE OF A BUILDING USED TO ENABLE/DISABLE AIRSIDE ECONOMIZER OPERATION THROUGHOUT THE BUILDING OR CAMPUS.

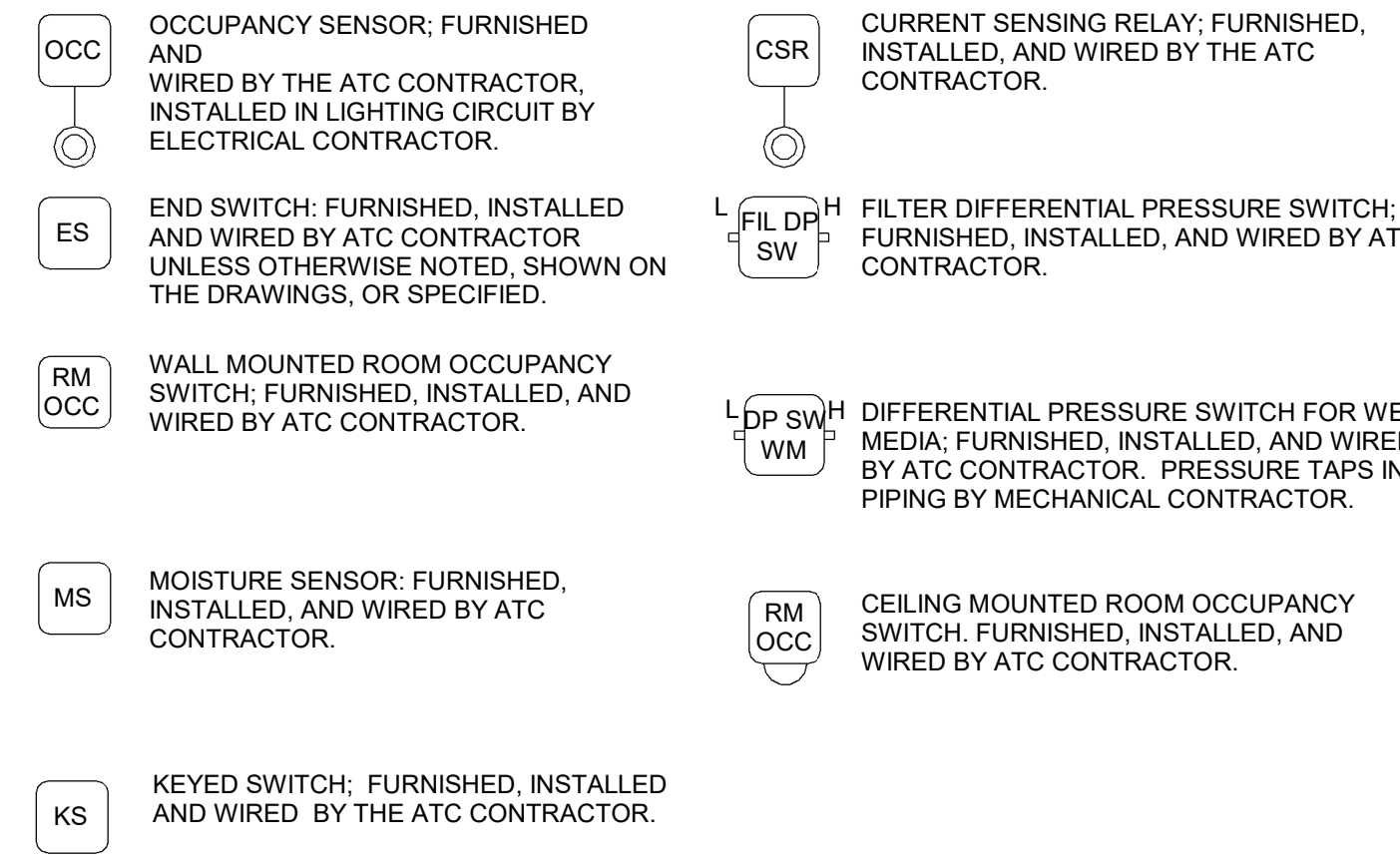
DIRECT DIGITAL CONTROL POINT TYPES



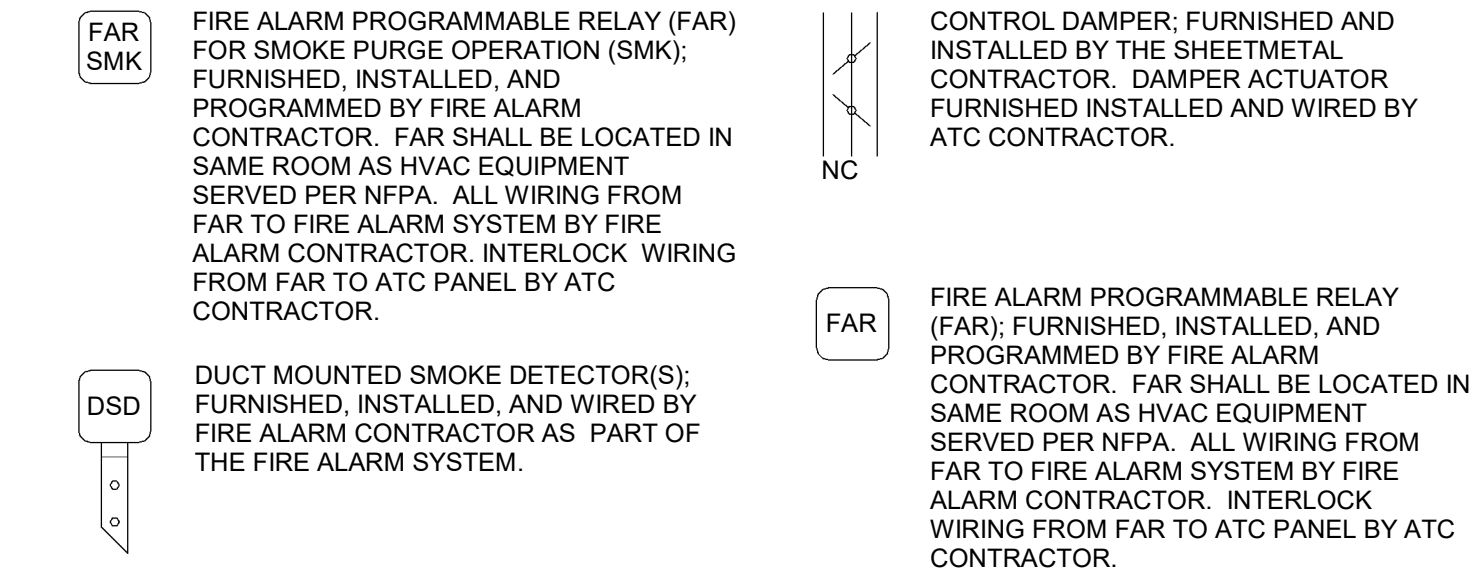
ANALOG INPUT SENSORS



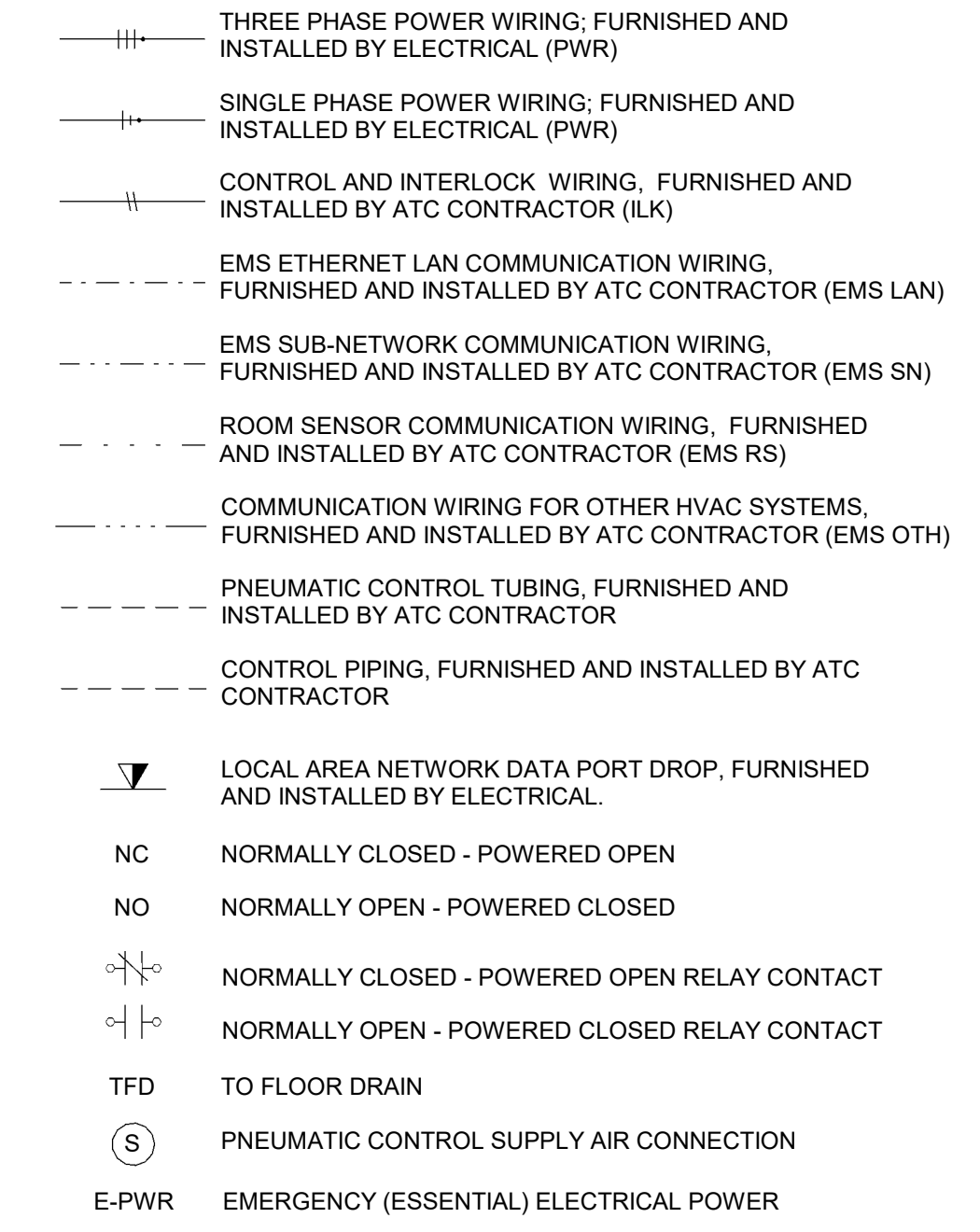
DIGITAL INPUT SENSORS



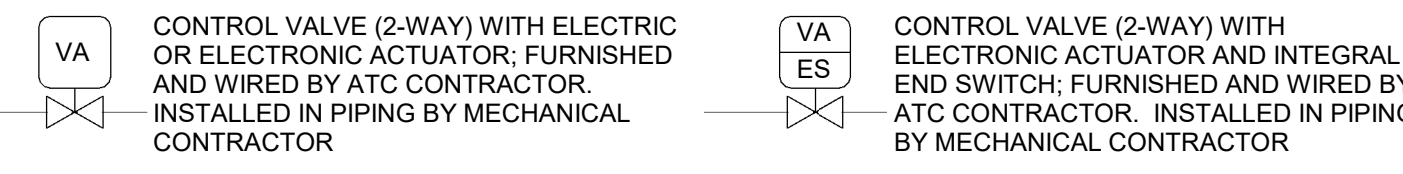
CONTROL DEVICES FURNISHED BY OTHER TRADES:



LEGEND



OUTPUT DEVICES



OTHER CONTROL DEVICES

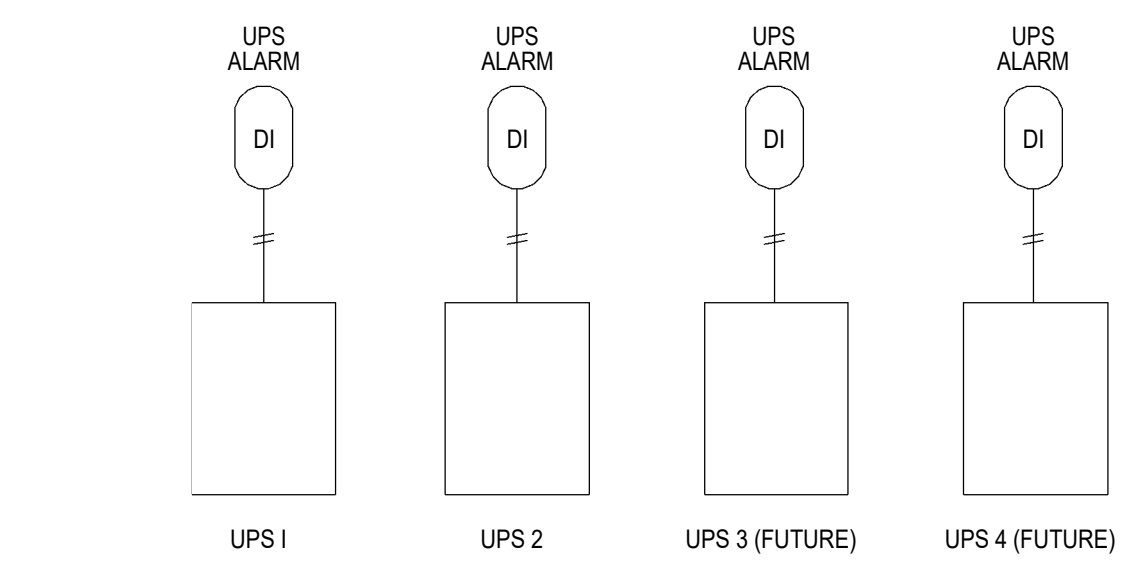
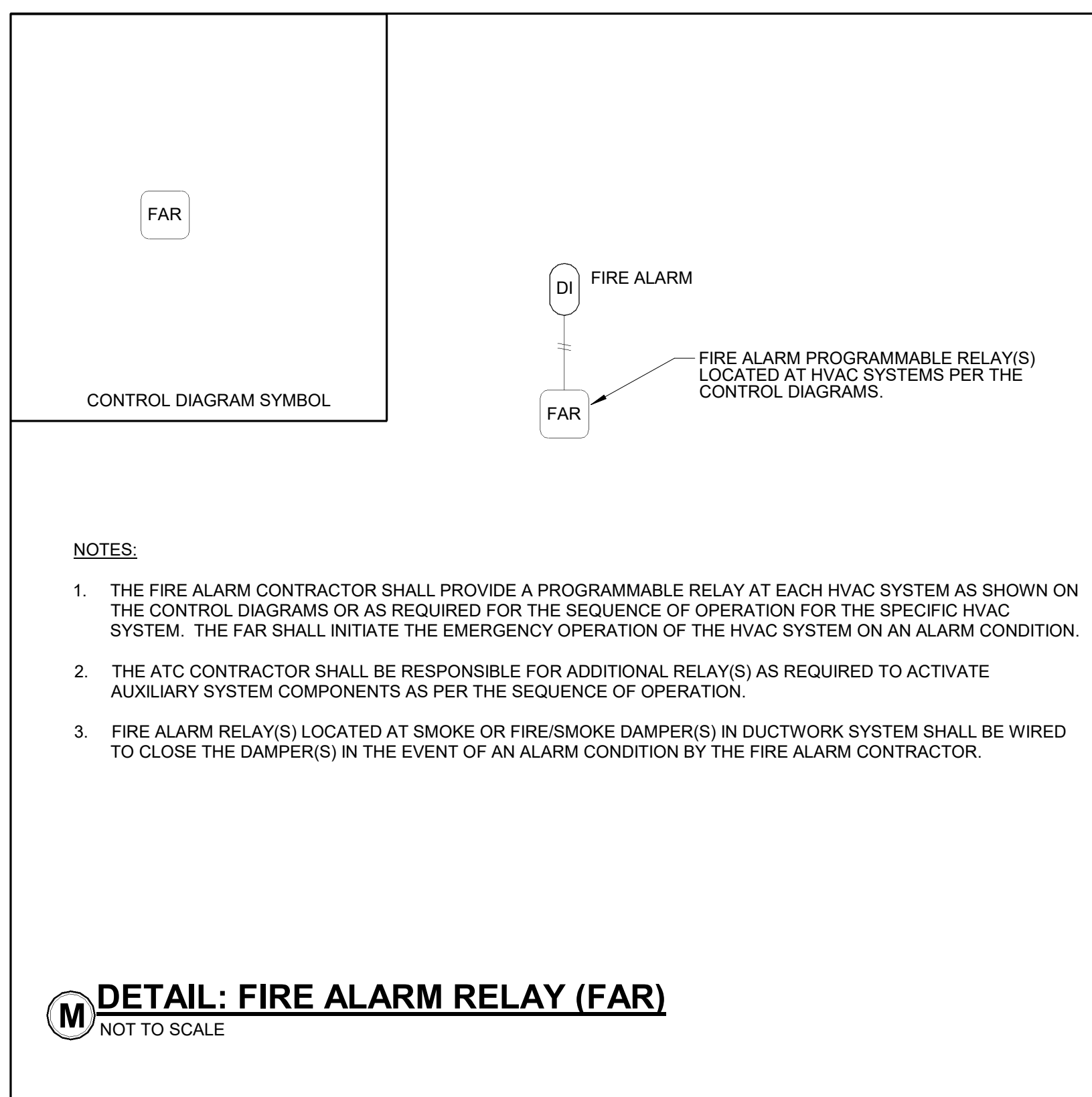
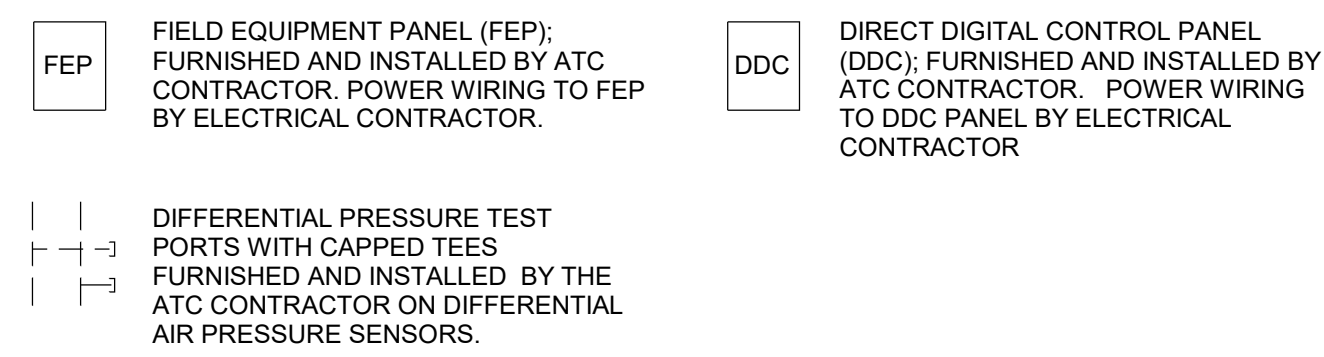
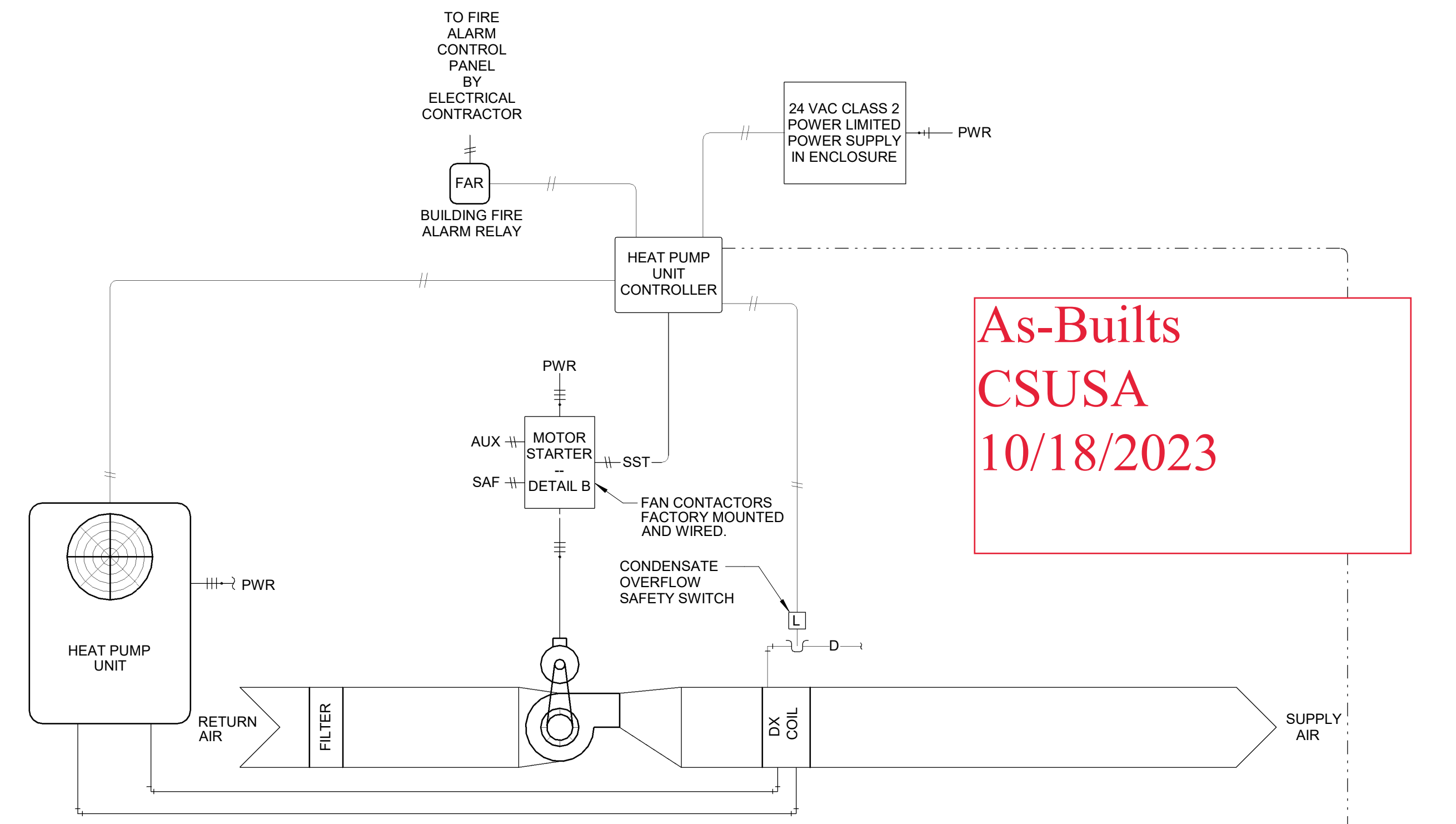


DIAGRAM GENERAL NOTES:

- THE UPS SHALL BE FURNISHED BY THE OWNER AND INSTALLED BY THE GENERAL CONTRACTOR.
- ALARM CONTACT SHALL BE FURNISHED IN EACH UPS FOR UPS ALARM. REFER TO UPS SPECIFICATION FOR ADDITIONAL INFORMATION.

1 UPS MONITORING CONTROL DIAGRAM
NOT TO SCALE



HEAT PUMP SPLIT SYSTEM SEQUENCE OF OPERATION:

MODE OF OPERATION:
HEAT PUMP MODE OF OPERATION SHALL BE EITHER "OCCUPIED" OR "UNOCCUPIED" BASED UPON A SCHEDULE OR AN OPERATION OVERRIDE. HEAT PUMP SHALL OPERATE PER FACTORY CONTROLS.

ENABLED MODE:
FAN OPERATION SHALL BE SELECTABLE BY THE OCCUPANT AT THE ROOM TEMPERATURE SENSOR FOR AUTO OR MANUAL OPERATION. IN AUTO, THE FAN SHALL CYCLE WITH A CALL FOR HEATING OR COOLING. IN MANUAL OPERATION, THE FAN SHALL RUN CONTINUOUSLY.

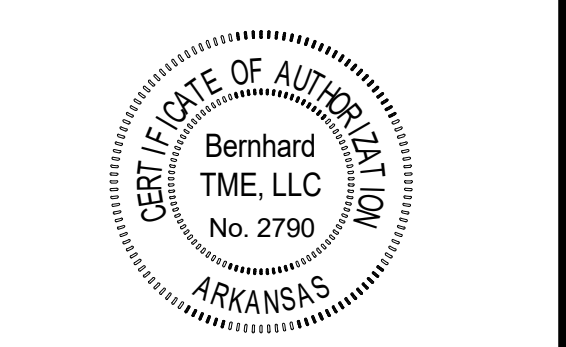
THE SPACE TEMPERATURE SETPOINT SHALL BE ADJUSTABLE BY THE OCCUPANT AT THE THERMOSTAT BETWEEN A MINIMUM OF 68°F AND A MAXIMUM OF 75°F. THE SPACE COOLING SETPOINT SHALL BE EQUAL TO THE SPACE TEMPERATURE SETPOINT PLUS 1°F AND THE SPACE HEATING SETPOINT SHALL BE EQUAL TO THE SPACE TEMPERATURE SETPOINT MINUS 1°F.

ON AN INCREASE IN SPACE TEMPERATURE ABOVE THE OCCUPIED SPACE COOLING SETPOINT, THE COMPRESSOR SHALL OPERATE TO ITS FACTORY CONTROLS TO MAINTAIN THE SPACE TEMPERATURE AT THE OCCUPIED SPACE COOLING SETPOINT. ON A DECREASE IN SPACE TEMPERATURE BELOW THE OCCUPIED SPACE COOLING SETPOINT THE COOLING SHALL STAGE OFF.

ON AN INCREASE IN SPACE TEMPERATURE ABOVE THE OCCUPIED SPACE HEATING SETPOINT, THE CONTROL SHALL CYCLE THE HEATING COMPRESSOR AND REVERSING VALVE TO MAINTAIN SPACE HEATING SETPOINT. ON A DECREASE IN SPACE TEMPERATURE BELOW THE OCCUPIED SPACE HEATING SETPOINT, THE HEATING COMPRESSOR AND REVERSING VALVE SHALL SHUT OFF.

SAFETIES IN ALL MODES OF OPERATIONS:
THE HEATING PUMP HP UNIT SHALL SHUTDOWN AND ALARM SHALL BE GENERATED AT THE EMS OPERATOR WORKSTATION IF THE FIRE ALARM RELAY INDICATES AN UNSAFE CONDITION. ON UNIT SHUTDOWN, THE HEAT PUMP SHALL BE DISABLED.

2 SPLIT SYSTEM CONTROL DIAGRAM (TYPICAL OF AC-101 AND AC-102)
NOT TO SCALE



CORPORATE SEAL



ENGINEER SEAL
01/26/23

ARKANSAS HEART HOSPITAL UPS ROOM

ARKANSAS HEART HOSPITAL
LITTLE ROCK, ARKANSAS

MARK	DATE	DESCRIPTION
ISSUE DATE:	04-26-23	
PROJECT NUMBER:	01-23-0001	
SHEET TITLE: CONTROLS - HVAC		
SHEET NUMBER: M401U		