

DOCUMENT 00 90 00
ADDENDUM

ADDENDUM NO. [2] **Date: October 29, 2020**

RE: SOUTHWEST WISCONSIN TECHNICAL COLLEGE
BUILDING 400 LECTURE HALL
1800 BRONSON BLVD
FENNIMORE, WI
BID NUMBER: 2021-02

FROM: HSR Associates, Inc
100 Milwaukee Street
La Crosse, WI 54603
(608) 784-1830

To: Prospective Bidders

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated October 2020. Acknowledge receipt of this Addendum in the space provided on the bid form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of [2] pages, [1] specification sections, and [2] 30 x 42 drawings.

CHANGES TO PREVIOUS ADDENDUM: Addendum 1

1. Delete Item 5 completely. Follow work categories in Demarcation Table on AV001 issued in Addendum 1.
2. Revise Item 13, j as follows:
~~Clarification: All references to Cat. 6A or Cat. 5E cabling shall be furnished and installed by the electrical contractor. HDMI, USB cables and Control wiring shall be furnished and installed by the AV contractor. Refer to sheet AV001 - Scope of work demarcation table remains as revised on Sheet AV001.~~

CHANGES TO SPECIFICATIONS:

1. Section 06 41 00 ARCHITECTURAL WOOD CASEWORK
 - a. Include plastic laminate wall panels with alum joint and edge trim as part of this section.
Aluminum Panel Joint Trim:
 1. Millwork Channel with Return Keys: Installed at panel to panel joints.
 2. Millwork Channel L Angle With Return Key: Installed at panel edges.
 3. Manufacturer: Fry Reglet. www.fryreglet.com.
 - a. Color: Clear anodized.
2. Section 09 54 23 LINEAR METAL CEILINGS
 - a. 2.03, A, 2: Change "12" to "6".
3. Section 23 62 13 AIR COOLED CONDENSING UNITS
 - a. Section attached hereto as part of Contract Documents.

CHANGES TO DRAWINGS

4. Sheet M100 HVAC DUCTWORK REMODEL PLAN 30 x 42 attached hereto
 - a. Revisions clouded on Drawing.
 - b. Moved HVAC Piping Remodel Plan, Mini-Split Unit Detail – Roof Mounted, and Air Cooled Condensing Unit Schedule to sheet M101.
 - c. Revised Ductless AC Unit Schedule to show AC-1 model number change from “PKA-A12HA7” to “PKA-A18HA7”.
 - d. Revised unit model of “AC-1” and “CU-1” to depict correct capacity.
5. Sheet M101 HVAC PIPING REMODEL PLAN 30 x 42 attached hereto
 - a. Add Drawing attached hereto as part of Contract Documents.
 - b. Added condensing unit CU-2 and associated refrigerant piping.
 - c. Revised Air Cooled Condensing Unit Schedule to include CU-2.
 - d. Revised Air Cooled Condensing Unit Schedule to show CU-1 model number change from “PUY-A30NKA7(-BS)” to “PUY-A18NKA7(-BS)”.
 - e. Refrigerant piping running between air handling unit cooling coil and air-cooled condenser shall be per 23 07 19 and have outdoor pipe insulation jacketing per 23 07 19 section.

END OF DOCUMENT 00 90 00

SECTION 23 62 13

AIR-COOLED CONDENSING UNITS

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Conditions of the Contract and portions of Division One of this Project Manual apply to this Section as though repeated herein.
- B. The requirements of Section 23 05 00 apply to this Section.

1.02 SUBMITTALS

- A. Submit in accord with Section 01 30 00.
 - 1. Shop drawings and descriptive product data describing all material furnished under Part 2 of this Section.
 - 2. Provide matched system capacities, EER and IEER with associated AHU DX coils with submittal.
 - 3. Clearly state the energy efficiency in units indicated in the schedules and specifications.
 - 4. At substantial completion, submit warranty certificate and copy of start-up report as part of the O&M manuals.

1.03 WARRANTY

- A. One year parts only warranty on entire unit beginning upon substantial completion of project.
- B. Five year replacement compressor(s) warranty beginning upon substantial completion of project.
- C. One year labor warranty from date of substantial completion to be covered by mechanical contractor.

1.04 AHRI STANDARD CAPACITY RATING CONDITIONS

- A. AHRI Standard 210/240 Rating Conditions.
 - 1. Cooling 80°F DB, 67°F WB air entering indoor coil, 95°F DB air entering outdoor coil.
 - 2. High Temperature Heating 47°F DB, 43°F WB air entering outdoor coil, 70°F DB air entering indoor coil.
 - 3. Low Temperature Heating 17°F DB air entering indoor coil.
 - 4. Rated indoor airflow for heating is the same as for cooling.

1.05 EQUIPMENT START-UP

- A. Provide system start-up; the equipment manufacturer's representative will provide supervision and be in attendance during unit start-up.
 - 1. **Startup services shall include the upgrades RTU controller with the new condenser.**
 - 2. Adjust units for maximum operating efficiency, adjust all controls to required final settings and demonstrate that all components are functioning properly. Submit four copies of a written startup report following the initial start up to be included to O&M manuals. Include in the report: work done to the system, all readings taken, a statement certifying that the refrigeration system(s) are leak free and a statement certifying that the unit(s) have been placed in proper running condition as recommended by the manufacturer and as intended in the drawings and specifications.

PART 2: PRODUCTS

2.01 AIR-COOLED CONDENSING UNITS

A. Based on product by Aaon.

1. No other equals are acceptable.
2. Unit shall match existing rooftop and evaporator coil (Aaon RN-055-3-0-B204-3N9)

B. Unit to be of model, type, size and capacities listed in Schedules on Drawings.

C. General Description

1. Air-Cooled condensing unit shall include compressors, air-cooled condenser coils, condenser fans, filter driers, suction and liquid service valves and supervisory controls.
2. Unit shall be factory assembled and tested including leak testing of the coils and pressure testing of the refrigeration circuit. Run test report shall be supplied with the unit in the controls compartment's literature pocket.
3. Unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.
4. Unit components shall be labeled, including pipe stub outs, refrigeration system components and electrical and controls components.
5. Installation, Operation and Maintenance manual shall be supplied within the unit.
6. Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment's access door.
7. Unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit and affixed to the interior of the control compartment's access door.

D. Construction

1. All cabinet walls, access doors, and roof shall be fabricated of double wall, impact resistant, rigid polyurethane foam panels.
2. Unit insulation shall have a minimum thermal resistance R-value of 13. Foam insulation shall have a minimum density of 2 pounds/cubic foot and shall be tested in accordance with ASTM D-1929-11 for a minimum flash ignition temperature of 610°F.
3. Unit construction shall be double wall with G90 galvanized steel on both sides and a thermal break. Double wall construction with a thermal break prevents moisture accumulation on the insulation, provides a cleanable interior, reduces heat transfer through the panel, and prevents exterior condensation on the panel.
4. Access to compressors and electrical and controls components shall be through hinged access doors with quarter turn, zinc cast, lockable handles. Full length stainless steel piano hinges shall be included on the doors. Cabinet shall have rain break overhang above access doors.
5. Controls cabinet shall include a vent fan and vent hood. The vent fan shall be controlled by an adjustable temperature switch.
6. Exterior paint finish shall be capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.
7. Unit shall include lifting lugs at the top of the unit.
8. Unit shall be completely factory assembled, piped, and wired and shipped in one section.
9. Unit shall be specifically designed for outdoor application.

E. Electrical

1. Unit shall be provided with standard power block for connecting power to the unit.
2. Control circuit transformer and wiring shall provide 24 VAC control voltage from the line voltage provided to the unit.
3. Unit shall have a 5kAIC SCCR.
4. Unit shall be provided with factory installed and factory wired, non-fused disconnect switch.
5. Unit shall be provided with factory installed and factory wired 115V, 12 amp GFI outlet in the unit control panel.

F. Refrigeration System

1. Unit shall be provided with two VFD controlled R-410A scroll compressors, both with thermal overload protection and individually circuited.
2. Each compressor shall be furnished with a crankcase heater.
3. Each circuit shall ship with a 100 psi nitrogen holding charge.
4. Compressors shall be mounted in an isolated service compartment which can be accessed without affecting unit operation. Lockable hinged access doors shall be fabricated of double wall, rigid polyurethane foam insulated panels and provide access to the compressors.
5. Compressors shall be isolated from the base pan with the compressor manufacturer's recommended rubber vibration isolators to reduce any transmission of noise from the compressors into the building area.
6. Each refrigeration circuit shall be equipped with automatic reset low pressure and manual reset high pressure refrigerant safety controls, Schrader type service fittings on both the high pressure and low pressure sides, and service valves for liquid and suction connections. Each liquid line circuit shall include a pressure relief valve and a replaceable core liquid line filter drier with isolation valves. Each suction line circuit shall include a replaceable core suction line filter with isolation valves. Field installed refrigerant circuits shall include the low side cooling components, refrigerant, thermal expansion valve, liquid line and insulated suction line.
7. Each capacity stage shall be equipped with a 5 minute off delay timer to prevent compressor short cycling. Each additional capacity stage shall be equipped with an adjustable, 20 second delay timer to prevent multiple capacity stages from starting simultaneously.
8. Refrigerant circuits shall be provided with adjustable compressor lockout.
9. Each refrigeration circuit shall be equipped with a liquid line sight glass.
10. Each refrigeration circuit shall be equipped with compressor isolation valves.
11. Units shall be provided with a suction pressure transducer on each refrigeration circuit.

G. Fans

1. Condenser fan shall be vertical discharge, axial flow, direct drive fans.
2. Variable frequency drive controlled variable speed condenser fans shall be provided for head pressure control. Factory provided and factory programmed VFDs shall continuously modulate the fan air flow to maintain head pressure at acceptable levels. Cooling operation shall be allowed down to 35°F with adjustable compressor lockouts. Fan motor shall be weather protected, three phase, direct drive, and totally enclosed, air over (TEAO) with thermal overload protection.

H. Coils

1. Coils shall be designed for use with R-410A refrigerant. Coils shall be multi-pass and fabricated from aluminum microchannel tubes.
2. Coils shall be designed for a minimum of 10°F of refrigerant sub-cooling.
3. Coils shall be hydrogen leak tested.
4. Exposed condenser coils shall be protected by a painted perforated aluminum screen condenser coil guard.

I. Controls

1. Factory provided and installed refrigeration system supervisory controls shall include a controller for the VFD controlled compressor refrigeration system. The system shall control the VFDs, compressors, and condenser fans based on a cooling enable and a 0-5 VDC capacity signal from a field provided and installed controller. Unit shall be provided with a terminal block to interface with controls by others.
2. Unit shall be provided with factory installed isolation relays to prevent voltage drop in the controls circuit.

J. Existing RTU Controls

1. **The existing Aeon model RN Air Handling Unit's DDC controller needs to be upgraded to interface with the new remote air cooled condensing unit. The existing Aeon VCM-X AHU control board is to be upgraded to the current version VCC-X refrigeration control module. Installation of the controller and internal unit wiring to be provided by an authorized Aeon service agency. Manufacturer's start-up services for the upgraded AHU controller and new ACCU is required.**
 - a) All described work shall be under this section.

PART 3: EXECUTION

3.01 INSTALLATION

- A. Neoprene isolators to mount on concrete pad provided by mechanical contractor. Mount unit on isolators; units to be mounted level.
- B. Maintain manufacturer's recommended clearances for service and maintenance.
- C. The unit manufacturer shall verify the ***final refrigeration pipe sizing*** process to insure conformance to specific unit requirements such as max lengths, refrigerant velocities, unloading considerations and proper oil return. This contractor shall provide refrigeration piping drawings from the field which details the way the piping will actually be installed.
- D. Loose Components: Install electrical components, devices, and accessories that are not factory mounted.
- E. **Refrigerant piping running between air handling unit cooling coil and air-cooled condenser shall be per 23 07 19 and have outdoor pipe insulation jacketing per 23 07 19 section.**
- F. Units shall be completed with all accessory components installed, ready for operation.
- G. Provide refrigerant piping and insulation between outdoor condensing unit and air supply unit coils. Include thermal expansion valve, sight glass, solenoid valve, strainer and service stops in liquid line inside building at coils and service stops on suction line at condensing unit.
 1. Install a full-sized, 3 shutoff valve bypass around filter dryer(s) to permit easy replacement.
 2. Provide shutoff valves on either side of solenoid valve(s).
- H. All interconnecting electrical wiring required shall be included under this Section.

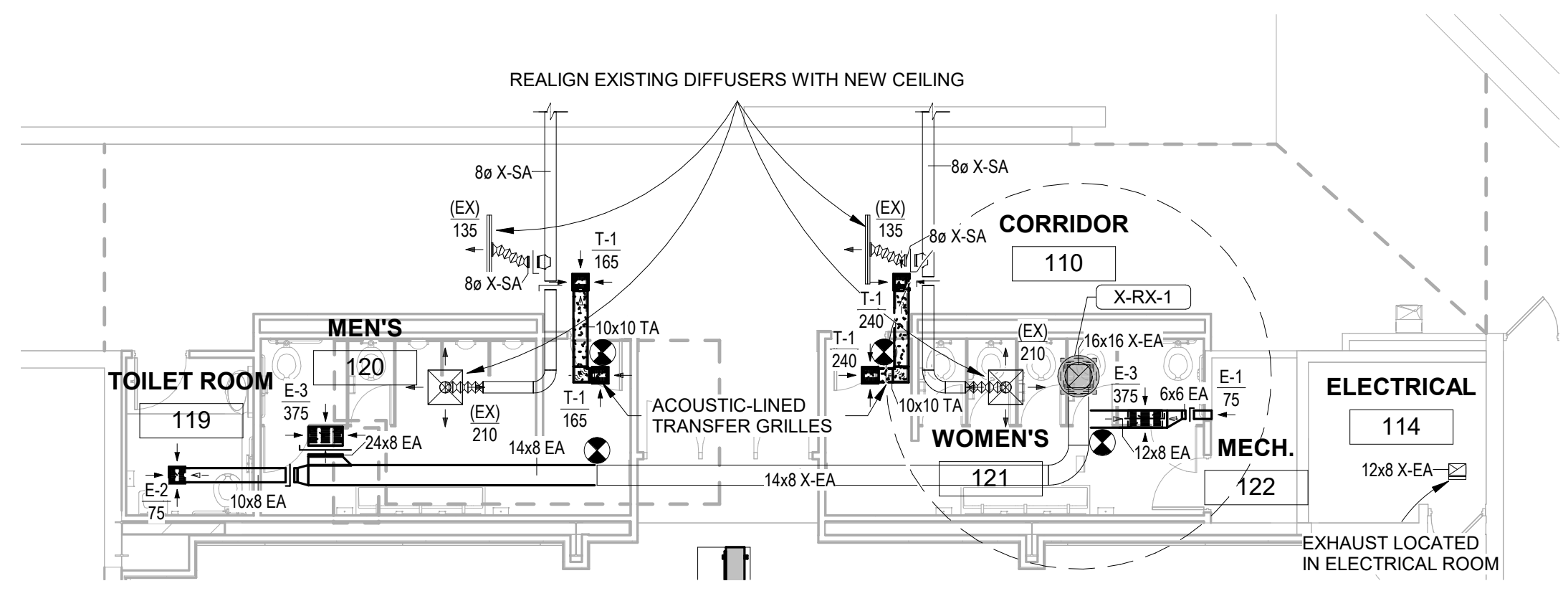
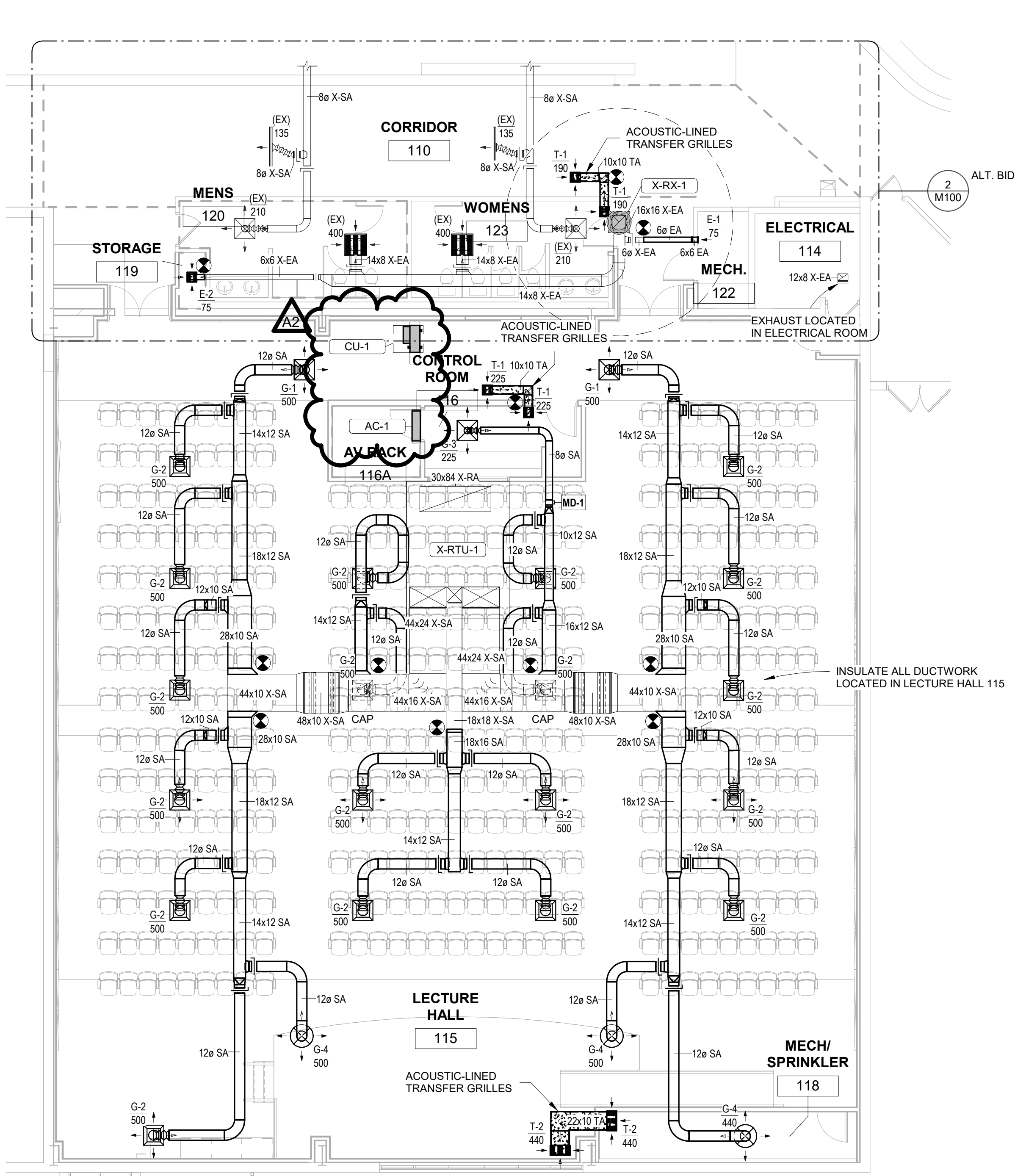
- I. Power wiring of units shall be done under Division 26, Electrical.
- J. Contractor to include R-410A refrigerant charge of complete installed system.

3.02 CODE REQUIREMENTS

- A. The Mechanical Room leak detector shall indicate in parts per million.
- B. Post a permanent sign indicating name and address of installer, refrigerant R designator and quantity and type and amount of oil in the Mechanical Room.
- C. Label all refrigerant piping.
- D. Provide a schematic drawing of the system.
- E. Provide emergency shutdown procedures, precautions to observe in event of a leak. Include the name, address and day or night telephone numbers for obtaining service and the fire department telephone number on the card or sign.
- F. Register the system on the required State form.

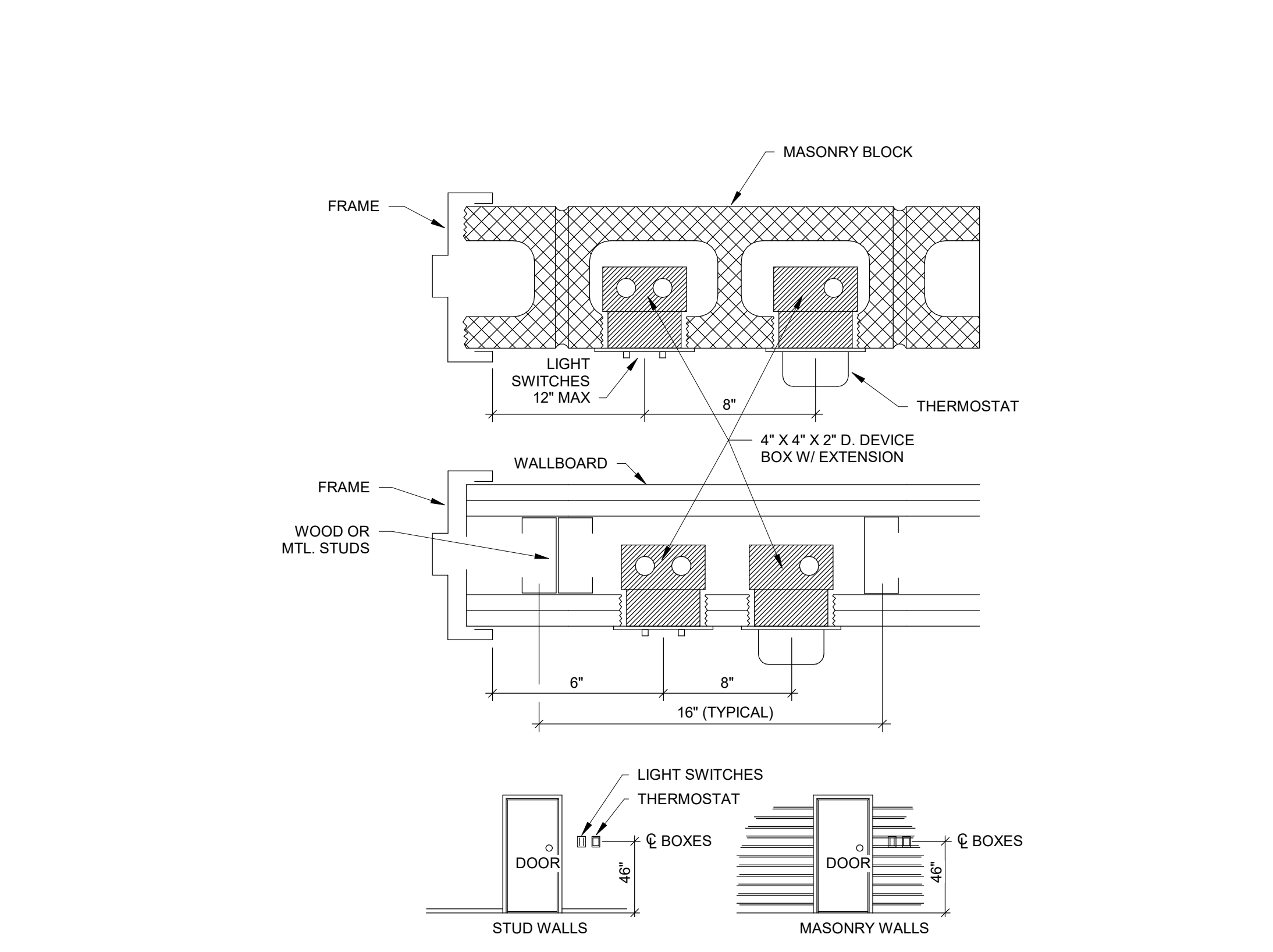
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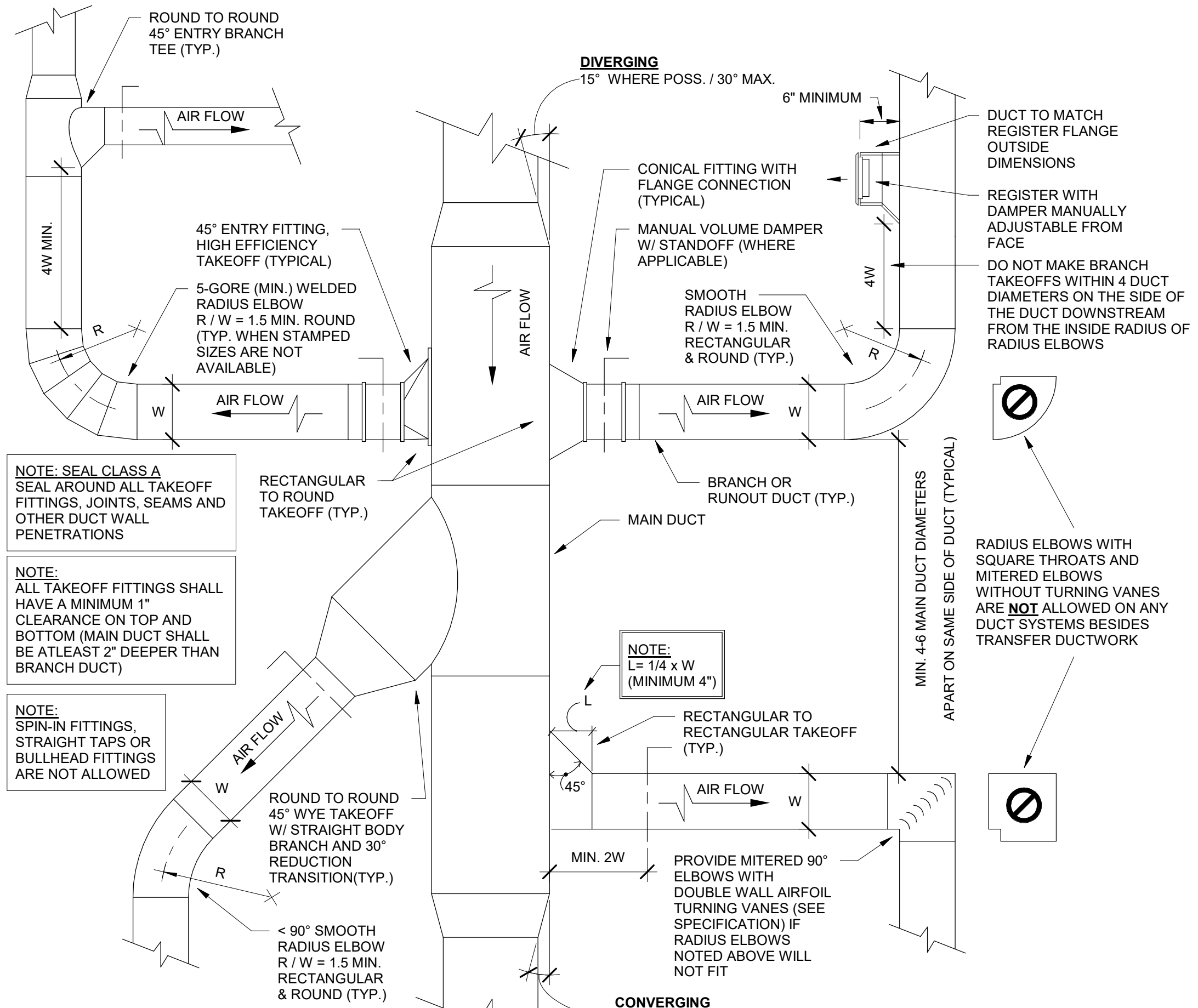
HVAC DUCTWORK REMODEL - ALTERNATE BID

1/8" = 1'-0"



THERMOSTAT MOUNTING DETAIL

N.T.S.



TYPICAL BRANCH DUCT TAKE-OFF

N.T.S.

HVAC DUCTWORK REMODEL PLAN

1/8" = 1'-0"

AIR DISTRIBUTION DEVICES							
UNIT NO.	SYSTEM CLASSIFICATION	SIZES	LOCATION	DAMPER	INLET SIZE	MODEL NUMBER	COMMENTS
E-1	Exhaust Air	8" x 8"	SIDEWALL	-	6" x 6"	S80H 3/4" FIXED DEFLECT	SELECTION BASED ON KRUEGER
E-2	Exhaust Air	12" x 12"	CEILING	-	10" x 10"	S80H 3/4" FIXED DEFLECT	SELECTION BASED ON KRUEGER
E-3	Exhaust Air	24" x 12"	CEILING	-	22" x 10"	S80H 3/4" FIXED DEFLECT	SELECTION BASED ON KRUEGER
G-1	Supply Air	24" x 24"	CEILING	-	12" Ø	SERIES PLQ 4-WAY	SELECTION BASED ON KRUEGER
G-2	Supply Air	24" x 24"	CEILING	-	12" Ø	SERIES PLQ 4-WAY	SELECTION BASED ON KRUEGER
G-3	Supply Air	24" x 24"	CEILING	-	8" Ø	SERIES PLQ 4-WAY	SELECTION BASED ON KRUEGER
G-4	Supply Air	27" Ø	CEILING/DUCT	-	12" Ø	SERIES RA2 ROUND 4-CONE ADJ.	SELECTION BASED ON KRUEGER
T-1	Return Air	12" x 12"	CEILING	-	10" x 10"	S80H 3/4" FIXED DEFLECT	SELECTION BASED ON KRUEGER
T-2	Return Air	24" x 12"	CEILING	-	22" x 10"	S80H 3/4" FIXED DEFLECT	SELECTION BASED ON KRUEGER

DUCTLESS AC UNIT SCHEDULE													
UNIT NO.	LOCATION	MANUFACTURER	MODEL NO.	TYPE	SUPPLY FAN			FILTERS	EVAPORATOR COOLING COIL				UNIT WEIGHT
					AIRFLOW	DRIVE TYPE	MOTOR		TOTAL CLG. CAP.	ENTERING AIR TEMP. DB	LEAVING AIR TEMP. WB	LEAVING AIR TEMP. DB	
AC-1	AV RACK 116A	Mitsubishi Electric	PKA-A19HA7	WALL MOUNTED	425 CFM	ECM	1 30 W	WASHABLE	18000.0 Btu/h	60 °F	67 °F	55 °F	29 lbf
Grand total: 1													

PROVIDE WIRED WALL MOUNTED CONTROLLER. ELECTRICAL TO PROVIDE INTERCONNECTION POWER WIRING FROM CONDENSING UNIT TO INDOOR UNIT.

REMARKS

REMARKS

REMARKS

Consultant:

SOUTHWEST WISCONSIN TECHNICAL COLLEGE
BLDG 400 LECTURE HALL

1800 BRONSON BLVD
FENIMORE, WI 53809

HVAC PIPING REMODEL PLAN

Project Title:
Project Location:
Sheet Title:

Southwest Wisconsin Technical College Bid
Number: 2021-02

HSR Project Number:

20006

Project Date:

OCTOBER 2020

Drawn By:

N. DEERY

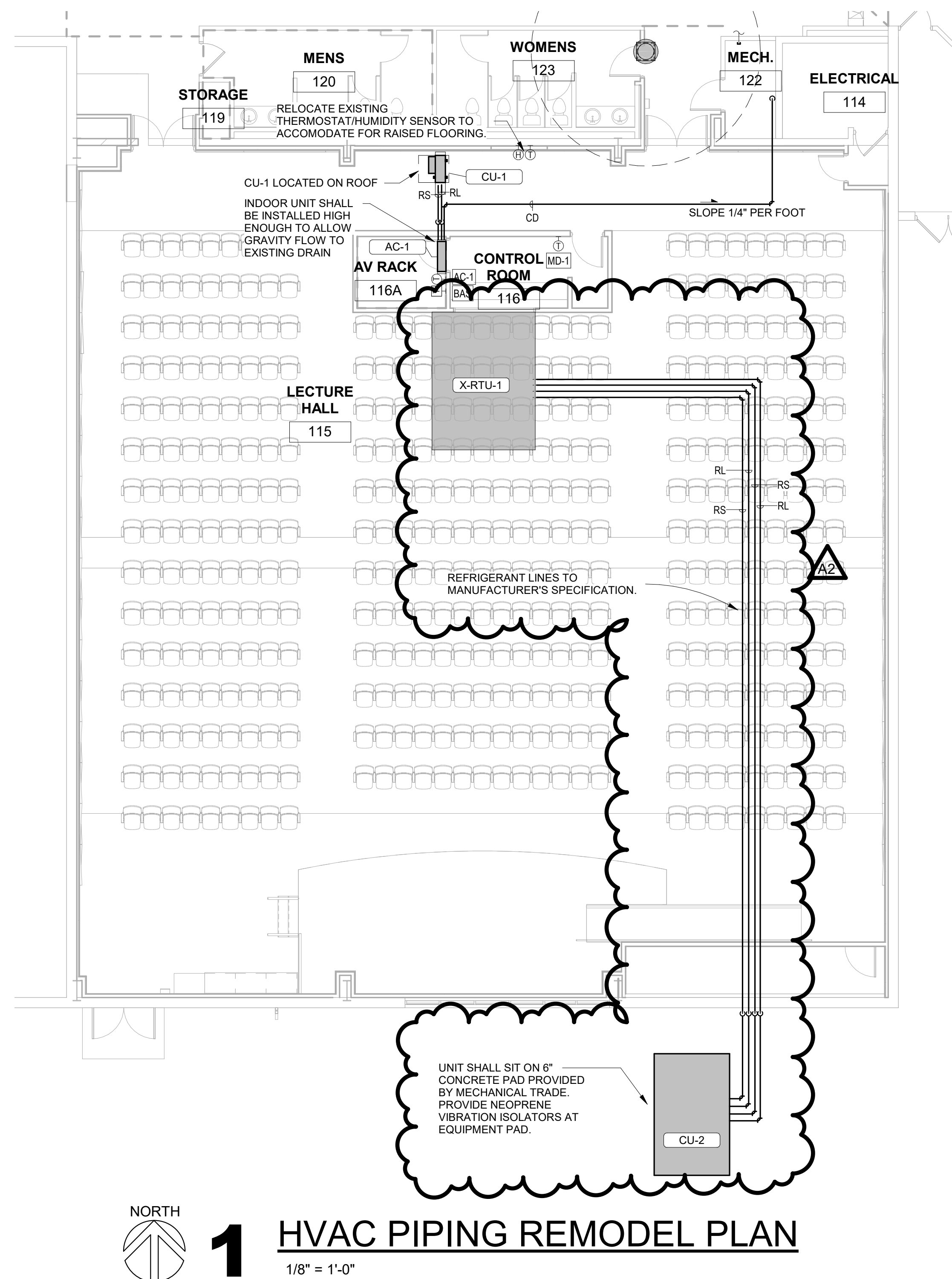
Key Plan:

Revisions:
No. Description Date
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Graphic Scale:
VARIES

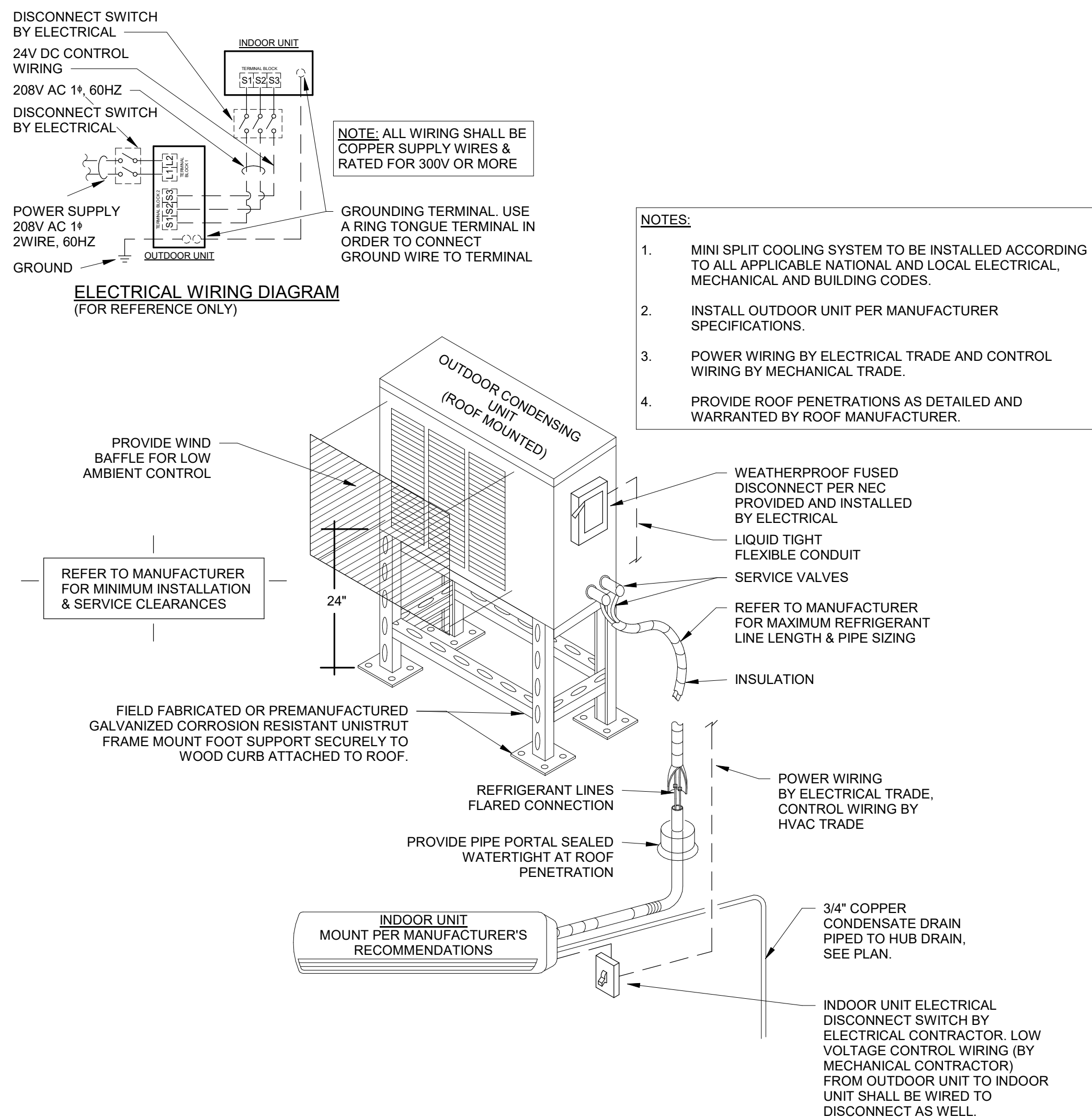
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M101



1 HVAC PIPING REMODEL PLAN

1/8" = 1'-0"



2 MINI-SPLIT UNIT DETAIL - ROOF MOUNTED

N.T.S.

AIR COOLED CONDENSING UNIT SCHEDULE

UNIT NO.	MANUFACTURER	MODEL NO.	EVAPORATOR COIL		COMPRESSOR							UNIT WEIGHT	ELECTRICAL				REFERENCE	REMARKS
			NOMINAL TOTAL CLG. CAP.	TYPE	REFRIGERANT TYPE	OUTDOOR AIR TEMP.	SUCTON TEMP.	APR VALVE	LOW AMBIENT KIT TO -20F	COOLING EFFICIENCY (SEER)	COOLING EFFICIENCY (EER)		MCA	MOP	VOLTAGE	PHASE		
CU-1	Mitsubishi Electric	PUY-A18NKA7-(BS)	1.5 ton	INVERTER DRIVEN TWIN ROTARY	R410A	95 °F	45 °F	No	Yes	18.5	9.9	99 lbf	11	28	208 V	1	2M101	PROVIDE REFRIGERANT LINE SET OF SIZE & LENGTH PER MANUFACTURER'S RECOMMENDATIONS.
CU-2	AAON	CN-055	55.0 ton	INVERTER DRIVEN TWIN ROTARY	R410A	87 °F	40 °F	No	No	--	12	3930 lbf	105	125	460 V	3		PROVIDE REFRIGERANT LINE SET OF SIZE & LENGTH PER MANUFACTURER'S RECOMMENDATIONS.

Grand total: 2