



ALASKA RAILROAD CORPORATION

ENGINEERING SERVICES

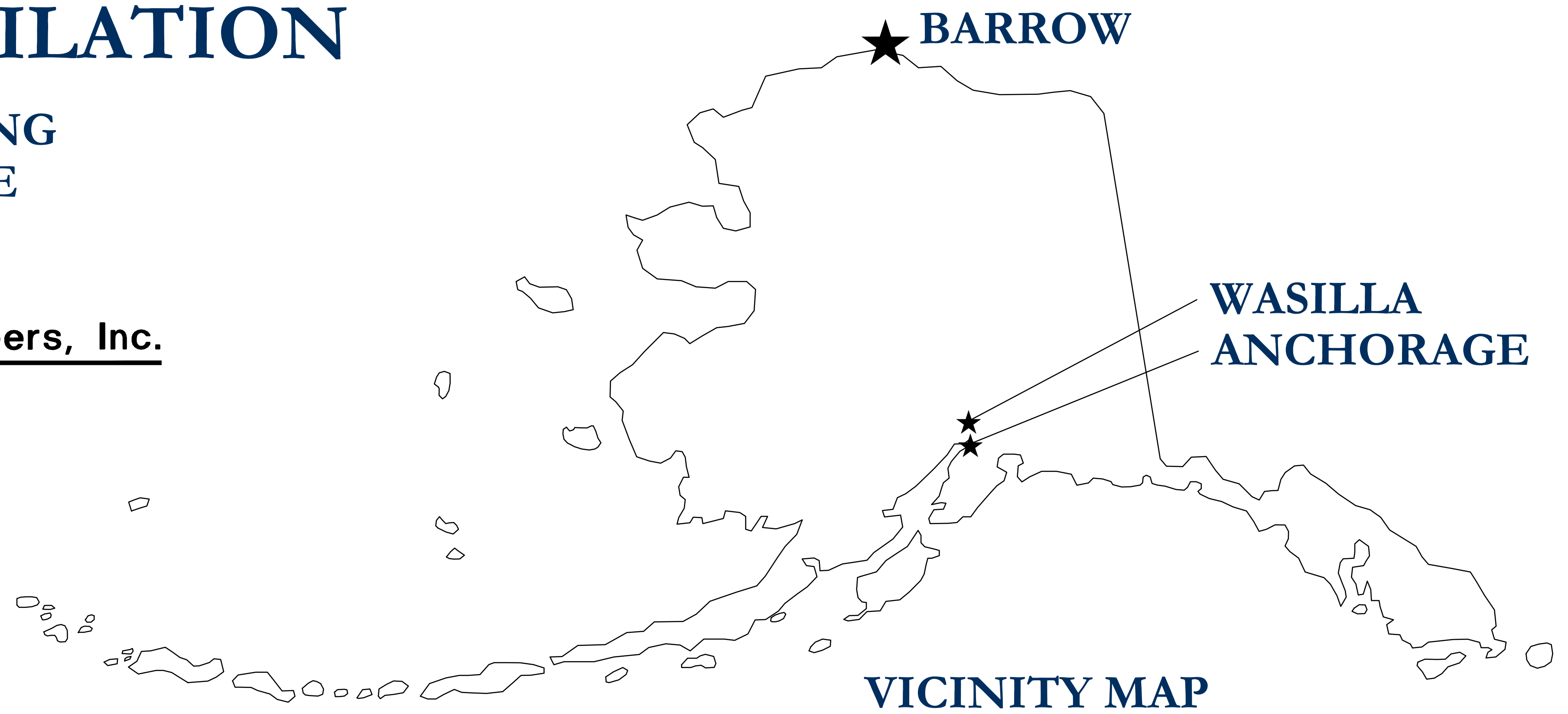
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

ALL SEASONS CLOTHING COMPANY RETAIL VENTILATION

KENAI SUPPLY BUILDING
WASILLA SHOPS CIRCLE
WASILLA, ALASKA

MBA Consulting Engineers, Inc.

3812 Spenard Road, Suite 200
ANCHORAGE, AK 99517





VICINITY MAP

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REV.	DATE	BY	REVISION
0	1/11/19	MBA	BID SET

	ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
	ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION	
TITTLE SHEET		
DESIGNED BY: MBA	SCALE: AS NOTED	AFE NO.:
DRAWN BY: MBA	DATE: 1/11/2019	ACAD FILE:17034_TTS
CHECKED BY: MBA		DWG NO.
APPROVED BY: MBA		1 OF 12

HEATING COIL SCHEDULE														
SYMBOL	LOCATION	MBH	MAX CFM	VEL FPM	GPM	AIR TEMP		FLUID (%)	FLUID TEMP.		ΔP AIR	MAX. FLUID	VALVE TYPE	RELATED SYSTEM
						IN	OUT		IN	OUT				
(E)HC-1	HALL 114	7.8	--	500 MAX	0.8	--	70	WATER	190	170	0.15"	2.0'	2-WAY	HRV-1
HC-2	GARAGE 107	229	6,100	500 MAX	16.9	20	55	50% PG	180	160	0.15"	2.0'	3-WAY	AHU-1
HC-3	RETAIL 101	63.4	3,450	500 MAX	6.3	55	72	WATER	190	170	0.15"	2.0'	2-WAY	REHEAT COIL
HC-4	STORAGE 216	10.7	1,280	500 MAX	2.4	55	72	WATER	190	170	0.15"	2.0'	2-WAY	REHEAT COIL
HC-5	STORAGE 216	19.5	1,370	500 MAX	2.5	55	72	WATER	190	170	0.15"	2.0'	2-WAY	REHEAT COIL

FAN SCHEDULE													
SYMBOL	LOCATION	CFM	S.P.		RPM	O.V. FPM	TYPE		USE	MOTOR HP/VOLTS/PH	DESIGN BASIS PRODUCT		
			TOT	EXT			SIZE	WHL					
AHU-1	GARAGE 107	6,100	2.9	1.0	1,706	1,307	22.25	PLEN	S/A	7.5/208/3	TRANE MODEL CSAA012UA, MIXING BOX W/ FILTER, HEATING COIL, COOLING COIL, S/A FAN SECTION, 30" H PERFORATED PLENUM, FACTORY VFD, UC600 CONTROL, LCD, ENTHALPY CONTROL, MIN O/A 3,390 CFM		
RF-1	ROOF	6,100	0.5	--	515	--	--	--	E/A	1-1/2 /208/3	GREENHECK GB 300-VGD-15, VFD, 0-10VDC INPUT, ROOF FAN		

ROOF HOOD SCHEDULE									
SYMBOL	SERVICE	AIR CFM	SP IN	THROAT AREA IN x IN	CURB CAP IN x IN	VELOCITY FPM	DESIGN BASIS PRODUCT		
								RH-1	AHU-1 O/A

GAS FIRED HEATING UNIT SCHEDULE										
SYMBOL	TYPE	FUEL	MBH		CFM	RPM	TOTAL AMPS	MOTOR HP/VOLTS/PH	DESIGN BASIS PRODUCT	
			IN	OUT						
GUH-1	HORIZONTAL UNIT HEATER	GAS	100	80.5	1,900	--	2.1	1/8 /120/1	LENNOX MODEL LP24-100S, HORIZONTAL DISCHARGE, PROPELLER UNIT HEATER	

COOLING COIL SCHEDULE										
SYMBOL	LOCATION RELATED SYSTEM	TOTAL SENSIBLE	CFM	VEL FPM	TYPE	EAT LIQUID SUCTION		FLUID	PRESS. DROP	DESIGN BASIS PRODUCT
						75°F	115°F			
CC-1	GARAGE 107 AHU-1	153 MBH 133 MBH	6,100	500 MAX	DX	75°F	115°F	R-410A	0.02 PSI	4 ROW, 1/2" DIA, 94 PPF & ALUMINUM, INTERTWINED CIRCUITS

CONDENSING UNIT SCHEDULE										
SYMBOL	TONS	ARI NET	EDB	LDB	UNIT CONFIG.	FLUID IEER	MCA MFS	ELECTRICAL VOLTS/PH	DESIGN BASIS PRODUCT	
										CU-1

FAN SOUND POWER SCHEDULE																		
SYSTEM	FAN	OCTAVE BAND FREQUENCY								FAN	OCTAVE BAND FREQUENCY							
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
		63	125	250	500	1K	2K	4K	8K		63	125	250	500	1K	2K	4K	8K
AHU-1	SF-1	74	74	70	77	70	69	66	53	RF-1	78	81	73	63	60	57	50	46

BOILER SCHEDULE									
SYMBOL	TYPE	FLUID (%)	FUEL	AGA INPUT MBH	GROSS OUTPUT MBH	MOTOR		DESIGN BASIS PRODUCT	
						HP	VOLTS/PH		
(E) B-1	CAST IRON BOILER	H2O	GAS	305	247	--	120/1	WEIL MCLAIN PFG-06	
(E) B-2	CAST IRON BOILER	H2O	GAS	305	247	--	120/1	WEIL MCLAIN PFG-06	

HEAT EXCHANGER SCHEDULES												
SYMBOL	MBH	FLUID		GPM		HOT TEMP.		COLD TEMP.		PRESS. DROP		DESIGN BASIS PRODUCT
		HOT	COLD	HOT	COLD	IN	OUT	IN	OUT	HOT	COLD	
HX-1	229	H 20	50% PG	15.6	16.9	190	160	150	180	0.53 PSI	0.76 PSI	TACO MODEL TB80x90, TYPE: BRAZE PLATE, 1-1/4"NPT

TANK SCHEDULE						
SYMBOL	FUNCTION	MEDIUM	TOTAL VOLUME GALLONS	MATERIALS	LABEL	DESIGN BASIS PRODUCT
(E)AS-2	AIR SEPARATOR	WATER	---	BRASS	---	1-1/2" SPIROVENT MODEL VJR150, COPPER COALESCING MEDIUM, BRASS BODY, AUTO AIR VENT, 4.5 LBS
AS-3	AIR & DIRT SEPARATOR	50% P.G.	---	BRASS	---	1-1/2" SPIROVENT VDR-150FT, COPPER COALESCING MEDIUM, BRASS BODY, AUTO AIR VENT, 9.0 LBS
(E)ET-1	HYDRONIC EXPANSION	WATER	6.0	STEEL/BUTYL	---	FLEXCON MODEL HXT-60, ACCEPTANCE VOLUME = 3.0
(E)ET-2	HYDRONIC EXPANSION	WATER	6.0	STEEL/BUTYL	---	FLEXCON MODEL HXT-60, ACCEPTANCE VOLUME = 3.0
ET-4	HYDRONIC EXPANSION	50% P.G.	6.0	STEEL/BUTYL	---	FLEXCON MODEL HXT-60, ACCEPTANCE VOLUME = 3.0
GT-1	GLYCOL MIX TANK	50% P.G.	6.6	---	---	AXIOM MODEL MF200, POLYETHYLENE CONTAINER, PRV, DIAPHRAGM PUMP, LOW LEVEL ALARM, 50 W, 120 V, 1ø

PUMP SCHEDULE									
SYMBOL	LOCATION	SERVICE	FLUID		GPM	HEAD FT.	RPM	MOTOR HP/VOLTS/PH	DESIGN BASIS PRODUCT
			TYPE	TEMP.					
(E)PMP-1	MECH ROOM	BUILDING HEAT	WATER	190	10.2	--	1/3 /120/1	GRUNDFOS UPS40-40/4 3 SPEED	
(E)PMP-2	MECH ROOM	UH-1 TO 3, HC-1	WATER	190	4.8	--	1/20 /120/1	TACO HEC-2, FLOW CHECK, EC MOTOR CONSTANT POWER CONTROL	
(D)PMP-3	MECH ROOM	UH-6A	WATER	190	--	--	1/20 /115/1	TACO HEC-2, FLOW CHECK, EC MOTOR CONSTANT POWER CONTROL	
PMP-4	MECH ROOM	BUILDING VENTILATION	WATER	190	26.8	22	--	0.68 /120/1	TACO VR15, EC MOTOR, LEAD / LAG, 0-10VDC IN/OUT, PRESSURE CONTROL
PMP-5	MECH ROOM	HC-2	50% PG	180	16.9	19	1100 4400	2.5A /115/1	TACO VR3452-FC1A01, ECM, 0-10VDC INPUT, PRESSURE CONTROL, LEAD/LAG

AIR OUTLET SCHEDULE						
SYMBOL	UNIT SIZE	SCFM	FINISH	USE	DESIGN BASIS PRODUCT	
					(A)	SEE PLAN
(B)	SEE PLAN	SEE PLAN	WHITE POWDER	R/A	PRICE MODEL 630L, ALUMINUM, 3/4" BLADE SPACING, 35 DEGREE DEFLECTION, DUCT MOUNT	
(C)	SEE PLAN	SEE PLAN	WHITE POWDER	S/A	PRICE MODEL 620, DOUBLE DEFLECTION, 3/4" BLADE SPACING, FRONT BLADES PARALLEL TO LONG DIMENSION, WALL OR DUCT MOUNT AS SHOWN	

LEGEND & ABBREVIATIONS		
ABBR.	EXPLANATION	SYMBOL
AAV	AUTOMATIC AIR VENT	
AFF	ABOVE FINISHED FLOOR	
BDD	BACKDRAFT DAMPER	
BD	BALANCING DAMPER	
	BALANCING/ISOLATION VALVE	
	BALL VALVE	
CFM	CUBIC FEET/MINUTE	
CO	CLEANOUT	
CV	CHECK VALVE	
CW	COLD WATER	
(D)	DEMOLISH	
(E)	EXISTING	
E/A	EXHAUST AIR	
FCO	FLOOR CLEANOUT	
FDC	FIRE DEPARTMENT CONNECTION	
FD	FLOOR DRAIN	
	FLEXIBLE DUCT	
GS	GLYCOL SUPPLY	
GR	GLYCOL RETURN	
HB	HOSE BIBB	
HC	HEATING COIL	
HW	HOT WATER	
HWC	HOT WATER CIRCULATION	
HWR	HEATING WATER RETURN	
HWS	HEATING WATER SUPPLY	
MOD	MOTOR OPERATED DAMPER	
MOV	2-WAY MOTOR OPERATED VALVE	
MOV	3-WAY MOTOR OPERATED VALVE	
NIC	NOT IN CONTRACT	
O/A	OUTSIDE AIR	
	PIPE ANCHOR	
	PIPE GUIDE	
POC	POINT OF CONNECTION	
	PRESSURE GAGE	
PRV	PRESSURE RELIEF VALVE	
R/A	RETURN AIR, RELIEF AIR	
RV	RELIEF VALVE	
	RETURN AIR SLOT	
	RETURN/EXHAUST AIR REG. OR GRILLE	
S	SANITARY SOIL	
S/A	SUPPLY AIR	
	STRAINER WITH DRAIN VALVE	
SL	ACOUSTICALLY LINED DUCT	
	STATIC PRESSURE SENSOR	
	SUPPLY AIR SLOT W/FLEX DUCT	
	SUPPLY AIR REG. GRILLE, OR DIFFUSER	
TW	TEMPERED WATER	
	THERMALLY INSULATED DUCT OR PIPE	
	THERMOMETER	
T'STAT	THERMOSTAT	
T'STAT	RETURN AIR THERMOSTAT	
	UNION	
V	VENT	
VTR	VENT THRU ROOF	
WCO	WALL CLEANOUT	
W	WASTE	

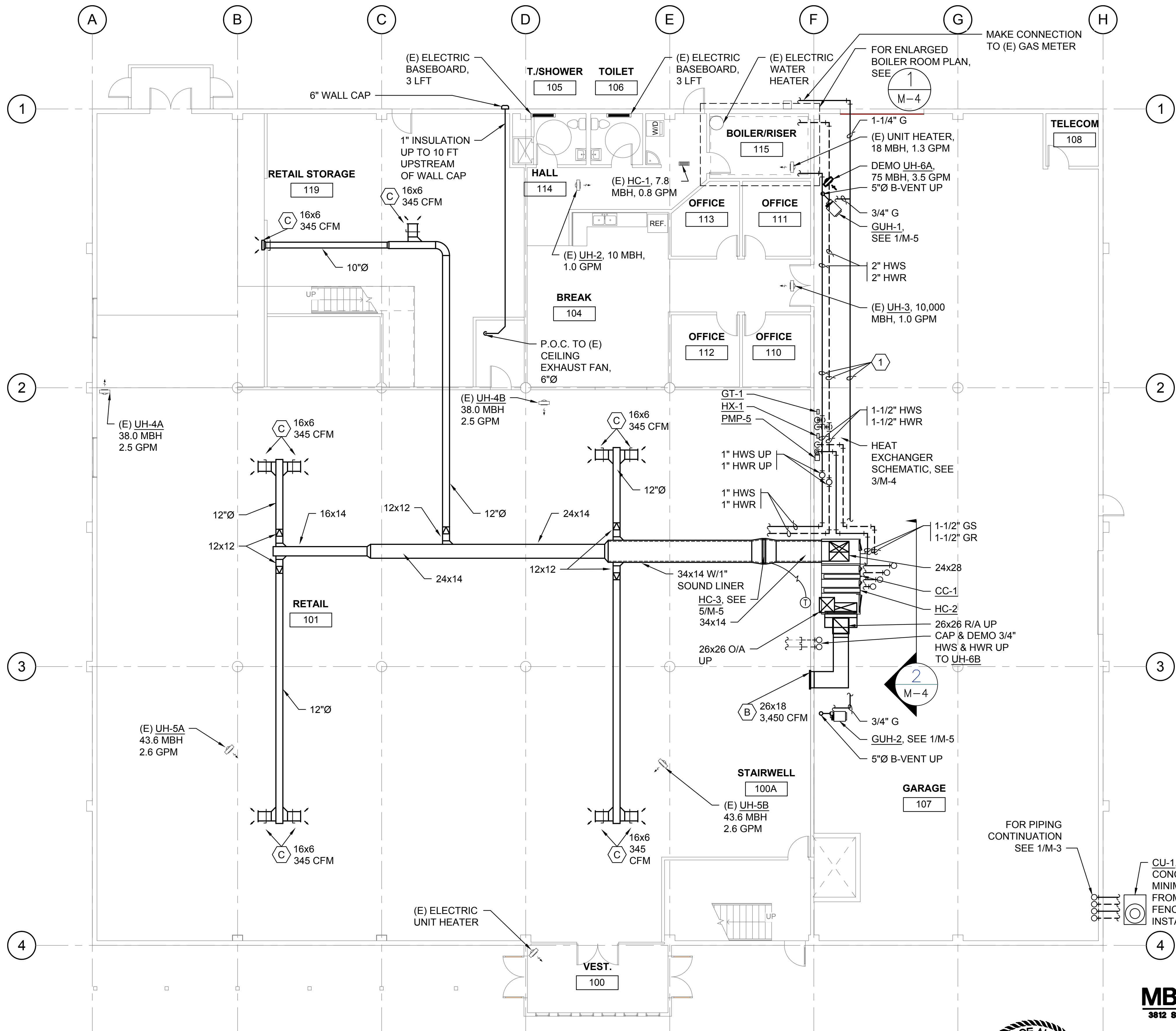
THIS IS A STANDARD LEGEND, SOME SYMBOLS SHOWN ON LEGEND ARE NOT NECESSARILY ON THE DRAWING.



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ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION	
MECHANICAL LEGEND & SCHEDULES	
DESIGNED BY: MSM DRAWN BY: MSM CHECKED BY: SCH APPROVED BY: MSM	SCALE: AS NOTED DATE: 1/11/2019
AFE NO.: ACAD FILE:17034-M-1 DWG NO.: 2 OF 12	M-1



SHEET NOTES:

- 1 HEATING AND GAS LINES SHOWN DIAGRAMMATICALLY FOR CLARITY. ROUTE LINES ON WALL.
2. ROUTE NEW DUCTWORK IN RETAIL EXPOSED, UNDER CEILING GRID.
3. FIELD VERIFY SPRINKLER HEAD AND SECURITY CAMERA LOCATIONS. ADJUST DUCT ROUTING TO AVOID OBSTRUCTIONS.

LEVEL 1 - HVAC PLAN
 1/8" = 1'-0"



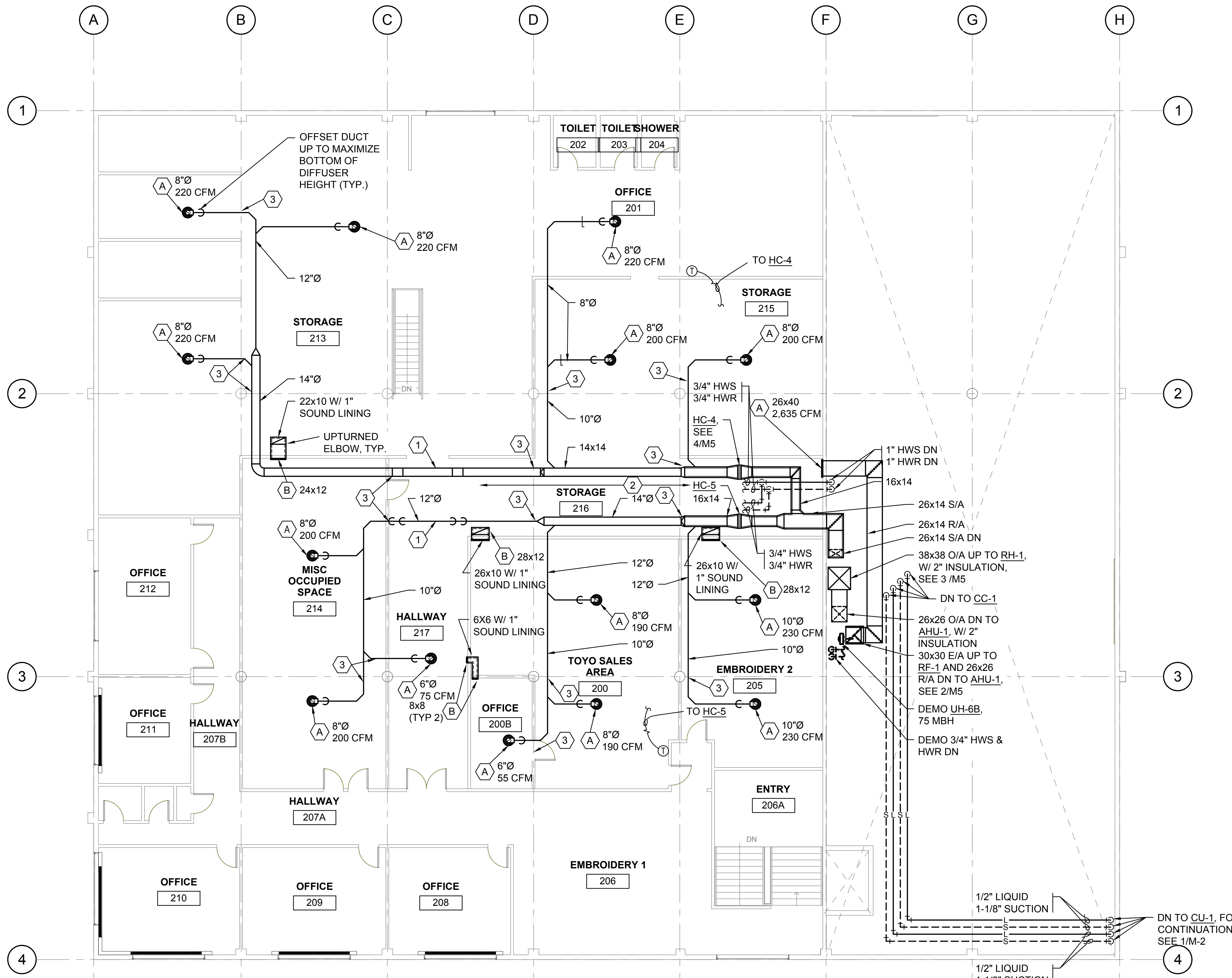
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<p>ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION</p>	
<p>TITLE: FIRST FLOOR HVAC PLAN</p>	
DESIGNED BY: MSM DRAWN BY: MSM CHECKED BY: SCH APPROVED BY: MSM	SCALE: AS NOTED DATE: 1/11/2019
AFE NO.: ACAD FILE: 17034-M1 DWG NO.	<p style="font-size: 2em; font-weight: bold;">M-2</p> <p>3 OF 12</p>

SHEET NOTES:

- 1 OFFSET DUCTWORK OVER LIGHTS RUNNING DOWN HALLWAY 217.
- 2 RELOCATE SPRINKLER HEADS AND BRANCHES IN STORAGE 216 AS REQUIRED TO RUN DUCT MAINS.
- 3 OFFSET UNDER BEAM, THIS LOCATION.
- 4 DUCTWORK SHALL BE ROUTED TIGHT TO BEAMS. BOTTOM OF DUCT SHALL REMAIN HIGHER THAN 7'-6" PER IBC.
- 5 RECONFIGURE SPRINKLER BRANCH LINES AND HEADS AS REQUIRED TO ACCOMMODATE HVAC SYSTEM.



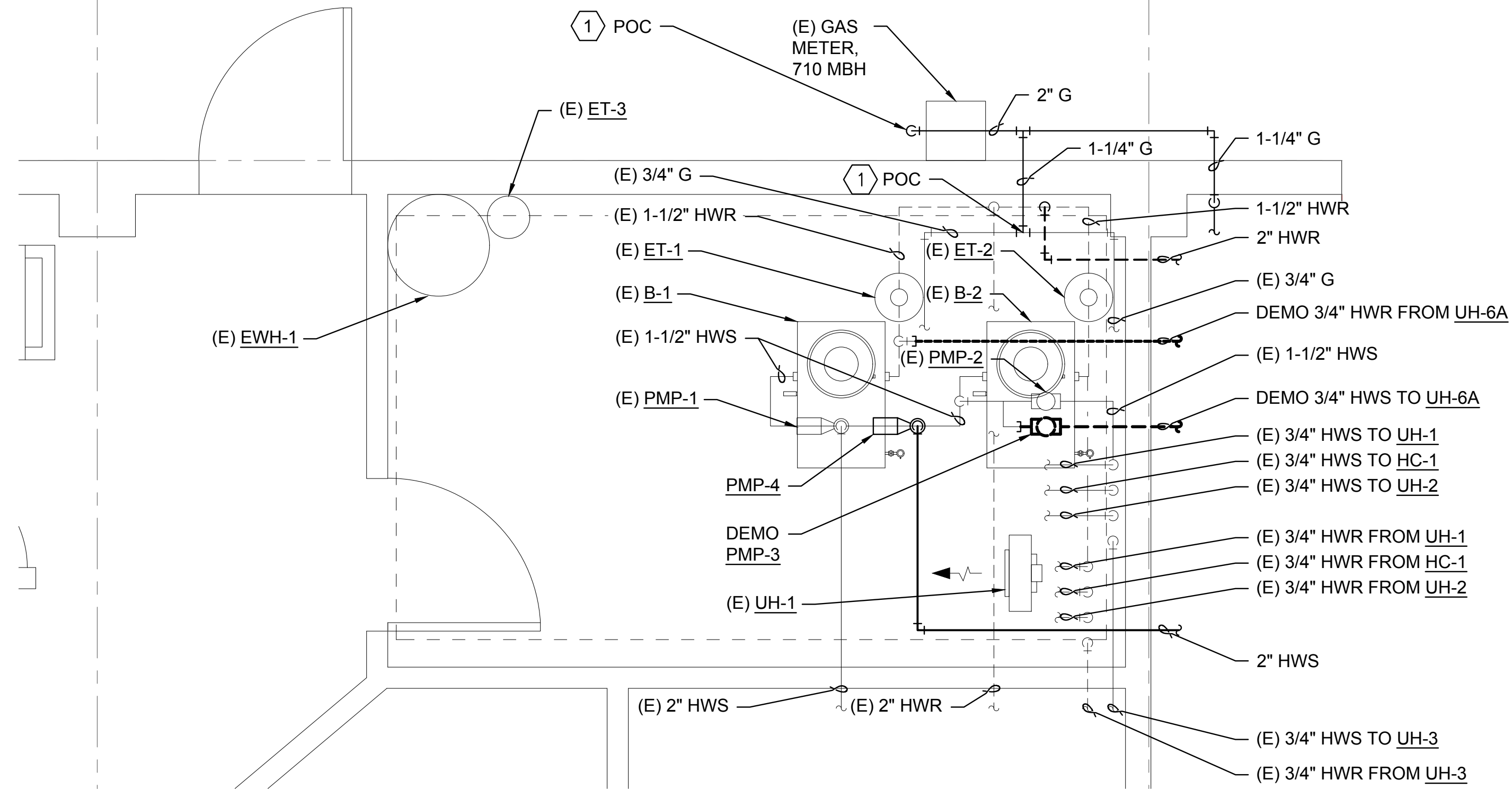
LEVEL 2 - HVAC PLAN
 1
 M-3 1/8"=1'-0"



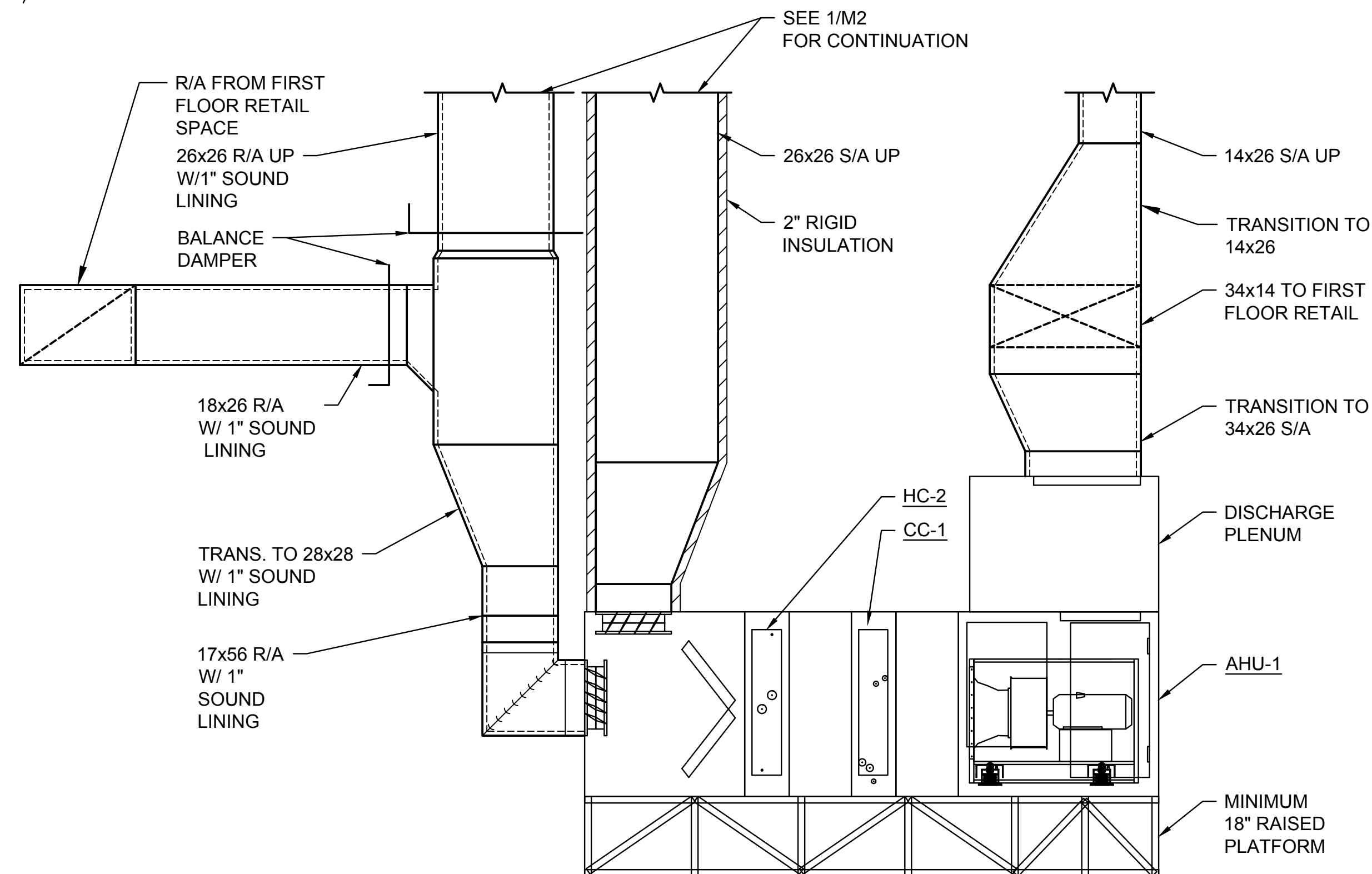
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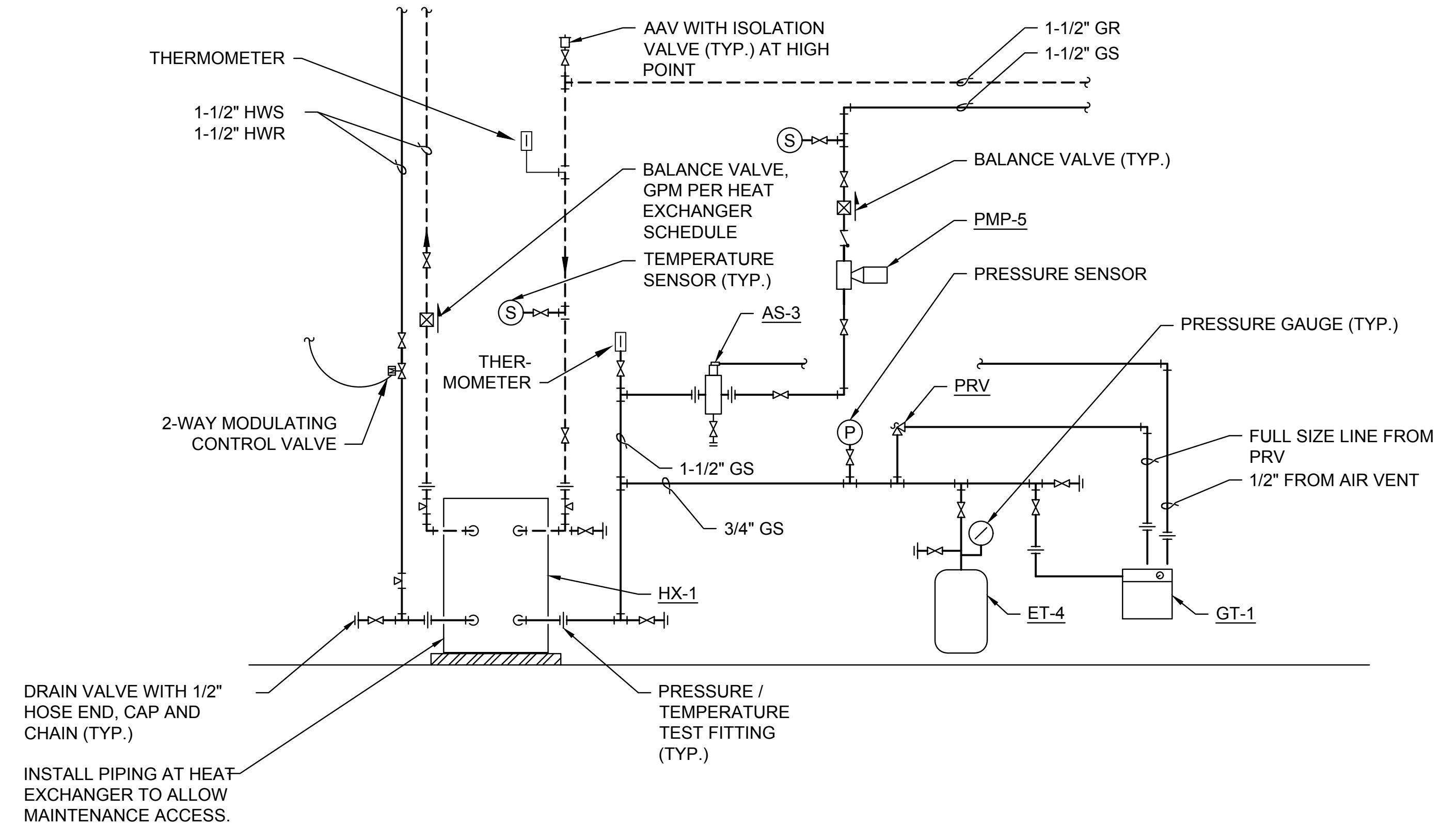
<p>ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500</p>	
<p>PROJECT: ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION</p>	
<p>TITLE: SECOND FLOOR HVAC PLAN</p>	
DESIGNED BY: MSM DRAWN BY: MSM CHECKED BY: SCH APPROVED BY: MSM	SCALE: AS NOTED DATE: 1/11/2019
AFE NO.: ACAD FILE: 17034-M1 DWG NO.: 4 OF 12	<p style="font-size: 2em; font-weight: bold; text-align: center;">M-3</p>



1 BOILER ROOM PLAN
M-4 1/2"=1'-0"



2 AHU-1 ELEVATION
M-4 1/2"=1'-0"



3 HEAT EXCHANGER SCHEMATIC
M-4 NTS

SHEET NOTES:

- 1 DEMOLISH EXISTING GAS LINE TO MECHANICAL ROOM, PROVIDE NEW GAS LINE TO METER.

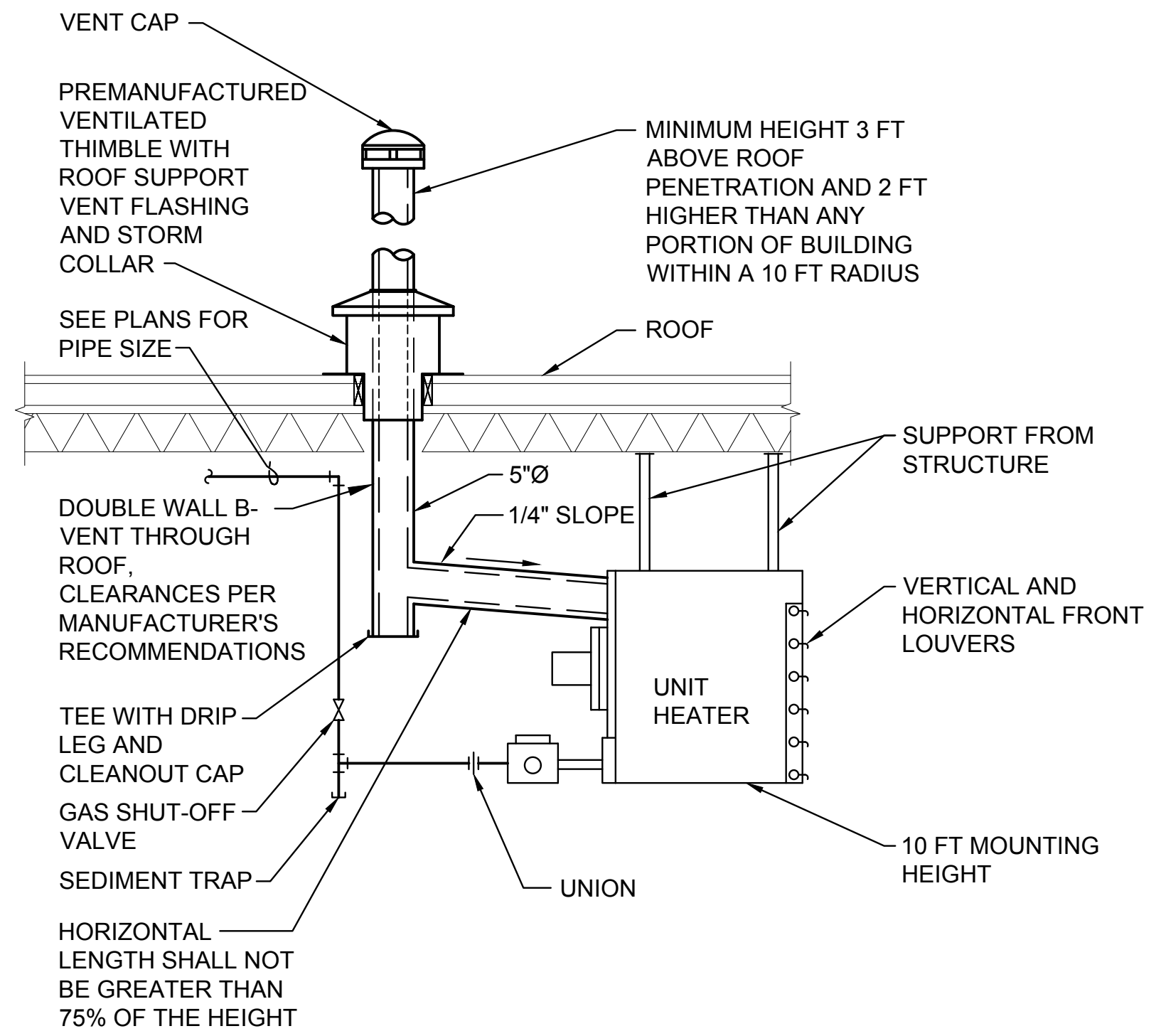
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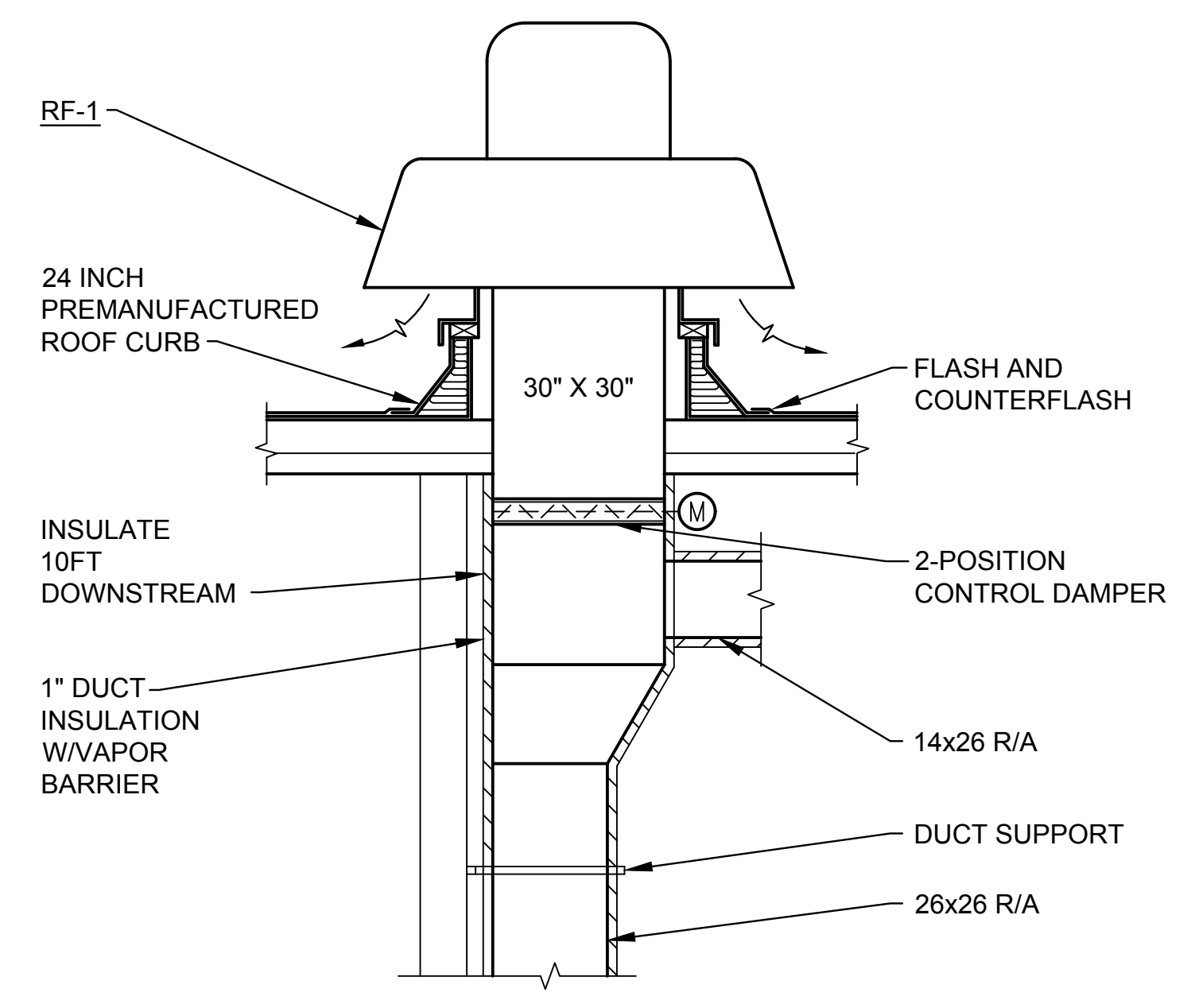
PROJECT: ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION		TITLE: BOILER DEMOLITION & REMODEL PIPING SCHEMATIC	
DESIGNED BY: MSM	DRAWN BY: MSM	CHECKED BY: SCH	APPROVED BY: MSM
SCALE: AS NOTED	DATE: 1/11/2019	<div style="font-size: 2em; font-weight: bold; text-align: center;">M-4</div>	
<small>AFE NO.: ACAD FILE:17034-M-4 DWG NO. 5 OF 12</small>			

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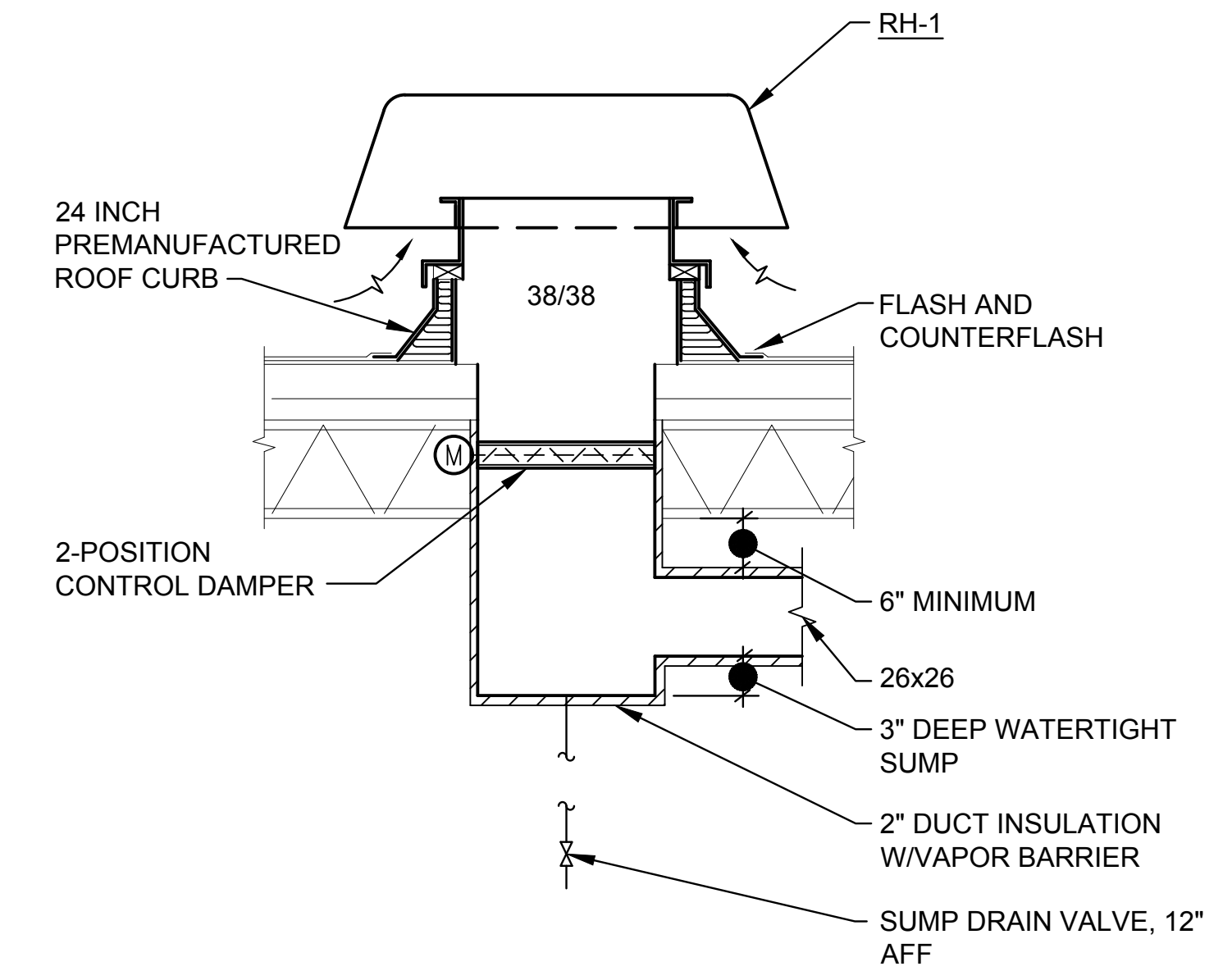




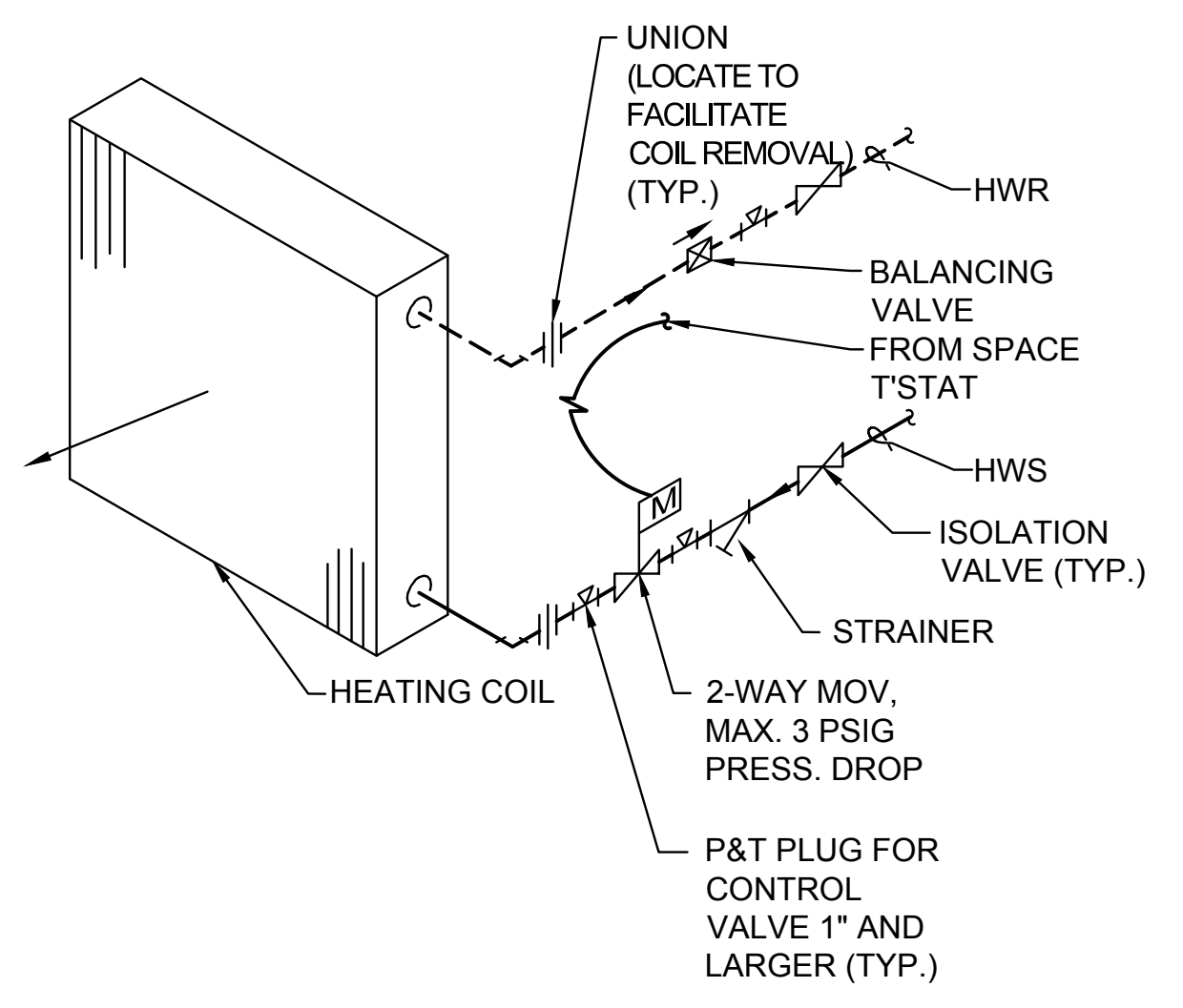
1 GAS FIRED UNIT HEATER DETAIL
M-5 NTS



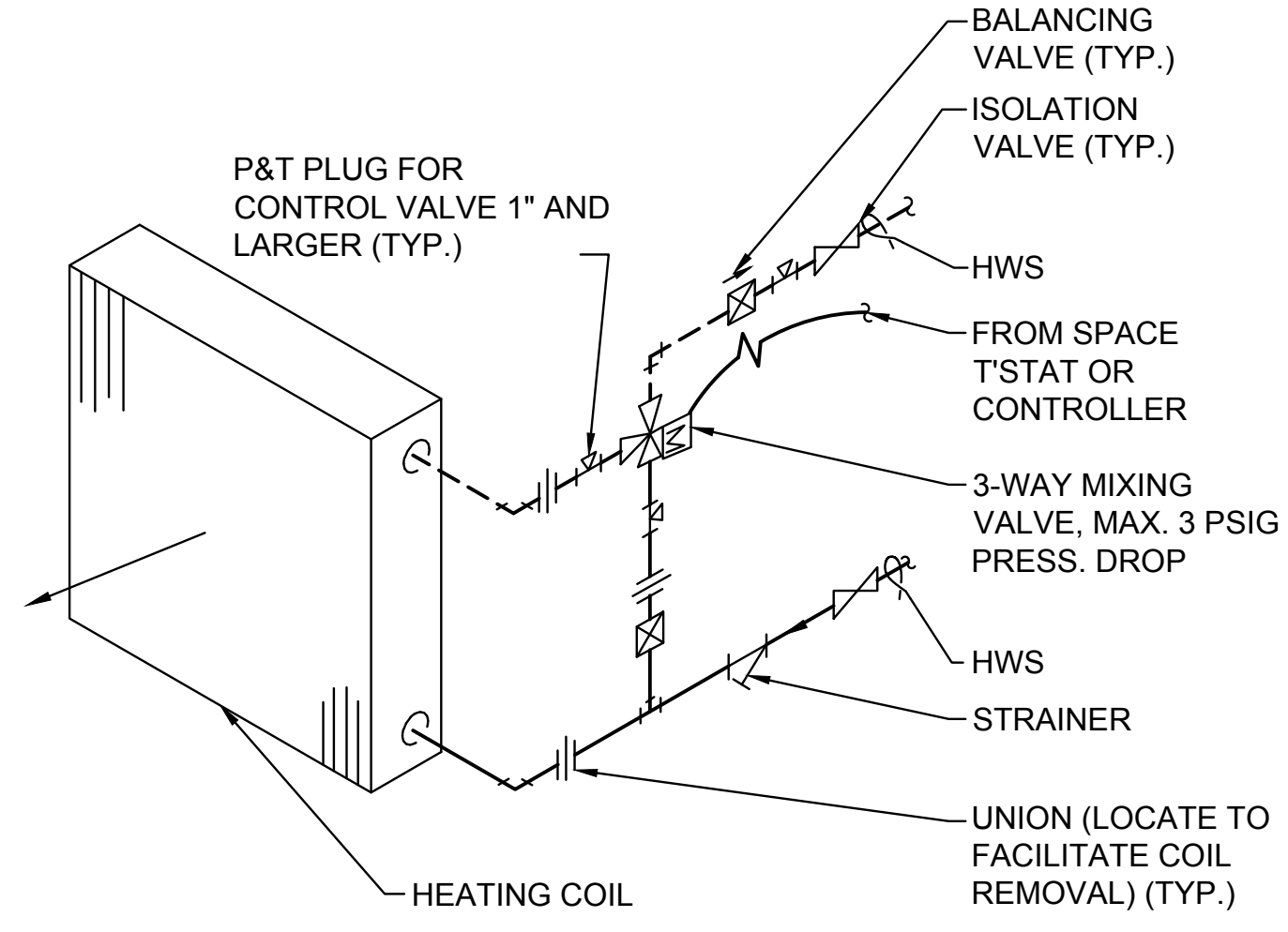
2 RELIEF FAN DETAIL
M-5 NTS



3 ROOF HOOD DETAIL
M-5 NTS



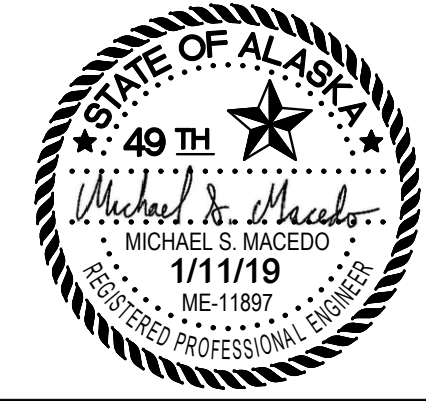
4 2-WAY HEATING COIL DETAIL
M-5 NTS



5 3-WAY HEATING COIL DETAIL
M-5 NTS

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AFE NO.: ACAD FILE: 17034-M-5 DWG NO. 6 OF 12	

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DIVISION 15 - MECHANICAL

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Work consists of providing labor, products, and in performing all operations required for the complete operating installation of all mechanical systems as shown and specified, in strict accordance with specifications, applicable drawings, terms, and conditions of the contract and all applicable codes and ordinances governing installation of the various mechanical systems. Correlate all work fully with the work of other crafts. Provide all systems complete and in proper operating order.

1.2 REGULATORY REQUIREMENTS

A. Comply with all applicable local, state, and national codes, ordinances and regulations in existence at bid date affecting materials and methods of installation of the mechanical systems. Follow recommended practices as set down by ASME, SMACNA, International Building Code, International Mechanical Code, Uniform Plumbing Code, International Fire Code, National Electrical Code, AGA, and OSHA as they apply to this project except in cases where statutes govern.

1.3 MANUFACTURER'S WARRANTIES

A. In the event of equipment or component failure, it is the Contractor's responsibility to repair or replace such defective equipment or components and bear all associated costs. The Contractor shall pursue Manufacturer's written implied warranties to the extent necessary to obtain replacement equipment or components prior to any other action being initiated.

1.4 ELECTRICAL WORK

A. All wiring shall be in accordance with NEC, State and Local Codes.

1.5 TESTS AND INSPECTIONS

A. Schedule, obtain, and pay all fees and/or services required by local authorities and by these specifications, to test the mechanical systems as specified.

B. Deficiencies: Immediately correct all deficiencies, which are evidenced during the tests and repeat tests until system is approved. Do not cover or conceal piping, equipment, or other portions of the mechanical installations until satisfactory tests are made and approved.

C. Completion: Upon completion of the mechanical installation, demonstrate to the contracting agency's satisfaction that the systems have been installed in a satisfactory manner in accordance with the plans, specifications, and applicable codes. Demonstrate dynamic operation of all systems. Show that all controls are operable and are properly adjusted in accordance with the requirements of the final systems balance, that all systems are properly balanced, that all equipment operates properly, that filters and strainers are clean, and that all components of all systems are installed and adjusted for proper operation.

1.6 PROJECT/SITE CONDITIONS

A. Install work in locations shown on drawings, unless prevented by project conditions.

B. Provide information showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections or interference with site conditions not in the contract. Obtain permission of Owner before proceeding.

1.7 SUBMITTALS

A. Submittal review is for general design and arrangement only and does not relieve the contractor from any requirements of contract documents. Provision of a complete and satisfactory working installation is the sole responsibility of the contractor.

B. Submittals shall be made in accordance with Division 1 requirements.

1.8 OPERATION AND MAINTENANCE MANUALS

A. Provide Operation and Maintenance (O&M) Manuals for training of and future reference by, Owner's personnel in operation and maintenance of systems and related equipment. Bind each manual in a hard-backed, loose-leaf, three-ring binder. Use 8-1/2" x 11" white paper.

B. Submittal of O&M Manuals shall be made in accordance with Division 1 requirements.

1.9 SEISMIC RESTRAINT

A. Contractor shall submit structural calculations and structurally engineered shop drawings for seismic restraint of all new mechanical components and equipment, including ductwork and piping. Calculations to be performed in accordance with the requirements of Chapter 16 of the 2012 International Building Code and are to be stamped by a registered professional structural engineer licensed in the State of Alaska.

B. Seismic Restraint design to be based on Seismic Occupancy Category II and Seismic Design Category D.

PART 2 - PRODUCTS

2.1 SUPPORTS AND ANCHORS

2.1.1 PIPE HANGERS AND SUPPORTS

A. Hangers for pipe sizes 1/2 to 1-1/2 inch: Adjustable swivel, loop hanger.

B. Hangers for pipe sizes 2 to 4 inches: Adjustable, swivel.

C. Michigan Hanger Co. Model No. 100 for steel and plastic and Model #101 for copper pipe.

D. Piping support spacing per Uniform Plumbing Code.

E. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work. Place a hanger within 12 inches of each horizontal elbow. Use hangers with 1-1/2 inch minimum vertical adjustments.

2.1.2 HANGER RODS

A. Steel hanger rods: Threaded both ends, threaded one end, or continuous threaded.

2.1.3 SLEEVES

A. Sleeves for piping and ductwork through non-fire rated floors, beams, walls, footings, and potentially wet floors: Form with steel pipe or 18 gauge galvanized steel. Extend sleeves through floors one inch above finished floor level. Caulk sleeves full depth and provide floor plate. Where piping or ductwork penetrates ceiling or wall, close off space between pipe or duct and adjacent work with fire-stopping insulation and caulk seal airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration. Fire stopping insulation: Glass fiber type, non-combustible. Caulk: Acrylic sealant.

B. Sleeves for pipes through fire rated and fire resistive floors and walls, and fireproofing: Prefabricated fire rated sleeves including seals, UL listed.

C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Install chrome-plated steel escutcheons at finished surfaces.

2.1.4 DUCTWORK HANGERS AND SUPPORTS

A. Ducts 24 inches and less: Provide with one inch x 18 gauge straps fastened to ductwork and to building construction. Space not more than eight feet on center.

B. Ducts 25 inches through 42 inches: Provide mild steel rods fastened to angle iron stiffeners with nuts and to building construction with appropriate inserts, flanges, or clamps. Space not more than eight feet on center.

C. Ducts over 42 inches: Fasten hanger rods to angle stiffeners not more than four feet on center.

D. Recommended methods of fastening bracing to ductwork, include riveting, bolting, and tack welding.

2.2 MECHANICAL IDENTIFICATION

2.2.1 EQUIPMENT

A. Plastic Nameplates: Laminated three-layer plastic with engraved white letters on dark contrasting background color.

2.2.2 VALVES AND PUMPS

A. Plastic Tags: Laminated three-layer plastic with engraved white letters on dark contrasting background color. Tag size minimum of 1-1/2 inch diameter.

B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

2.2.3 PIPING

A. Stencils: With clean cut symbols and letters indicating flow direction arrow and fluid being conveyed.

B. Stencil Paint: Semi-gloss enamel, colors conforming to ASME A13.1.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering, and indicating flow direction arrow and fluid being conveyed. Brandystrap-on, Seton or approved.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Brandystrap-on, Craftmark, Seton or approved.

E. Underground Plastic Pipe Markers: Bright colored continuously printed plastic ribbon tape of not less than 6 inch wide by 4 mil thick, manufactured for direct burial service.

2.2.4 DUCTWORK

A. Identify ductwork with plastic nameplates or stenciled painting. Identify as to air handling unit number, and area served.

2.2.5 VALVE CHART AND SCHEDULE

A. Provide valve chart and schedule in aluminum frame with clear plastic shield. Install at location as directed.

2.3 PIPING INSULATION

2.3.1 INSULATION

A. Acceptable Manufacturers: Armstrong, Certainteed, Manville, Knauf, Pittsburgh Corning.

B. Glass fiber insulation: ASTM C547, "K" value of 0.24 at 75 degrees F, noncombustible, minimum service temperature -20, maximum service temperature 300 degrees F, maximum moisture absorption 0.20 percent by volume, vapor retarder jacket composed of white Kraft paper and aluminum foil laminate. Flame spread/smoke developed rating of 25/50 or less in accordance with UL 723.

2.3.2 HOT PIPING REQUIREMENTS

A. Insulation and Jacket.

1. On piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation at such locations. Insulate flanges and unions at equipment when fluid temperatures exceeds 140 degrees F. Insulate fittings, joints, and valves with same insulation and thickness as scheduled. Staples may be used to seal jackets.

2. Cover insulation on fittings with pre-molded PVC fittings covers.

3. Indoor, exposed applications: Size for finish paint application.

B. Insulate heating water or glycol supply and return lines thru 2 inches with 1 inch thick glass fiber insulation, and lines over 2 inches with 1-1/2 inch insulation.

C. Insulate all domestic hot water lines with 1/2 inch thick glass fiber insulation.

2.3.4 SPECIAL INSULATION REQUIREMENTS

A. Insulate refrigeration suction line with 1 inch Armaflex or equal.

2.3.5 DUCT INSULATION REQUIREMENTS

A. Insulate outside air ductwork with 2 inch of rigid glass fiber insulation, k = .24 at 75 degrees F, 450 degrees F service temperature, 0.02 perm vapor transmission, 5 percent water vapor sorption.

B. Insulate interior concealed supply air duct with 1-1/2 inches FSK faced flexible duct wrap, k = .24 at 75 degrees F, 250 degrees F service temperature, .02 perm vapor transmission, 5 percent water vapor sorption.

B. Insulate exhaust air ductwork with 1 inch rigid FSK faced glass fiber insulation, k = .24 at 75 degrees F, 450 degrees F service temperature .02 perm vapor transmission, 5 percent water vapor sorption.

C. Duct liner, Certainteed Toughgard Type 150 or equal.

2.4 SPRINKLER SYSTEM

A. Provide system design, materials, tools, equipment, supervision, labor, and transportation to complete the work and obtain specified performance.

B. Provide a complete wet type sprinkler system.

C. Coordinate and resolve details to achieve compatibility between the sprinkler system and other building elements.

D. Provide system to IBC and NFPA 13 requirements.

E. Interface system with building fire and smoke alarm system.

F. Conceal piping, except in mechanical spaces and unfinished spaces.

G. All materials shall bear UL or FM label or marking.

H. Coordinate sprinkler system piping and head locations with ceiling types, light fixtures, air diffusers, ducts, and structural members.

I. Center heads in two directions in ceiling tiles.

2.5 PLUMBING AND HYDRONIC PIPING

2.5.1 MATERIALS

A. Heating Glycol Piping, Above Grade.

1. Steel Pipe: ASTM A53, Schedule 40, black. Fittings: ASTM B16.3, malleable iron or ASTM A234, forged steel welding type fittings. Joints: AWS D1.1, welded.

2. Copper Tubing: ASTM B88, Type L, hard drawn. Fittings: ANSI/ASME B16.18 cast brass or ASME B16.22 solder wrought copper. Joints: ASTM B32, solder, Engelhard "Silvabrite 100" or other approved lead-free solder. Compatible with glycol.

3. Cross Linked Polyethylene Barrier Tubing: ASTM F876 and F877, DIN Standard 4726 oxygen diffusion barrier, rated at 100 PSI @ 180 degrees F, Uponer hePEX, Viega ViegaPEX, Zurn ZurnPEX or approved equal.

G. Natural Gas Piping, Buried Beyond 5 feet of Building.

1. Polyethylene Pipe: ASTM D2513, SDR 11.5. Fittings: ASTM D2683 or ASTM D2513 socket type. Joints: Fusion welded.

H. Natural Gas Piping, Above Ground

1. Steel Pipe: ASTM A53 Schedule 40 black. Fittings: ASME B16.3, malleable iron, or ASTM A234, forged steel welding type. Joints: NFPA 54, threaded or welded to ASME B31.1, ASME B31.2, ASME B31.9 and ASME Sec. 1. Gas pressure of 2 lbs. or more to be welded fittings and welded joints only.

2.5.2 FLANGES, UNIONS, AND COUPLINGS

A. Pipe size 2 inches and under: Piping: bronze unions for copper pipe, soldered joints.

B. Dielectric connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.5.3 VALVES

A. Select valves of the best quality and type suited for the specific service and piping system used. Minimum working pressure rating 125 psig steam or 150 psig W.O.G. Ball valves are to be used in lieu of gate valves for shut-off and isolation service.

B. Ball valves: Up to and including 3 inches: Bronze or stainless steel body, 400 psi W.O.G. - 150 S.W.P., standard port, stainless steel or bronze ball, Teflon seats, and stuffing box ring, lever handle, solder or threaded ends. Seat material to be compatible with fluid handled.

2.6 REFRIGERATION PIPING

2.6.1 MATERIALS

A. Copper Tubing: ASTM B280, Type ACR hard drawn or annealed.

1. Fittings: ASME B16.22 wrought copper.

2. Joints: Braze AWS A5.8 Bcup silver/phosphorous/copper alloy with melting range 1190 to 1480 degrees F.

B. Copper Tubing to 7/8-inch OD: ASTM B88, Type K, annealed.

1. Fittings: ASME B16.26 cast copper.

2. Joints: Flared.

C. Pre-charged line sets.

SEE M-7 FOR CONTINUATION

ALASKA RAILROAD CORPORATION
ENGINEERING SERVICES
P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500

PROJECT: **ALASKA RAILROAD CORPORATION**
KENAI SUPPLY BUILDING RENOVATION

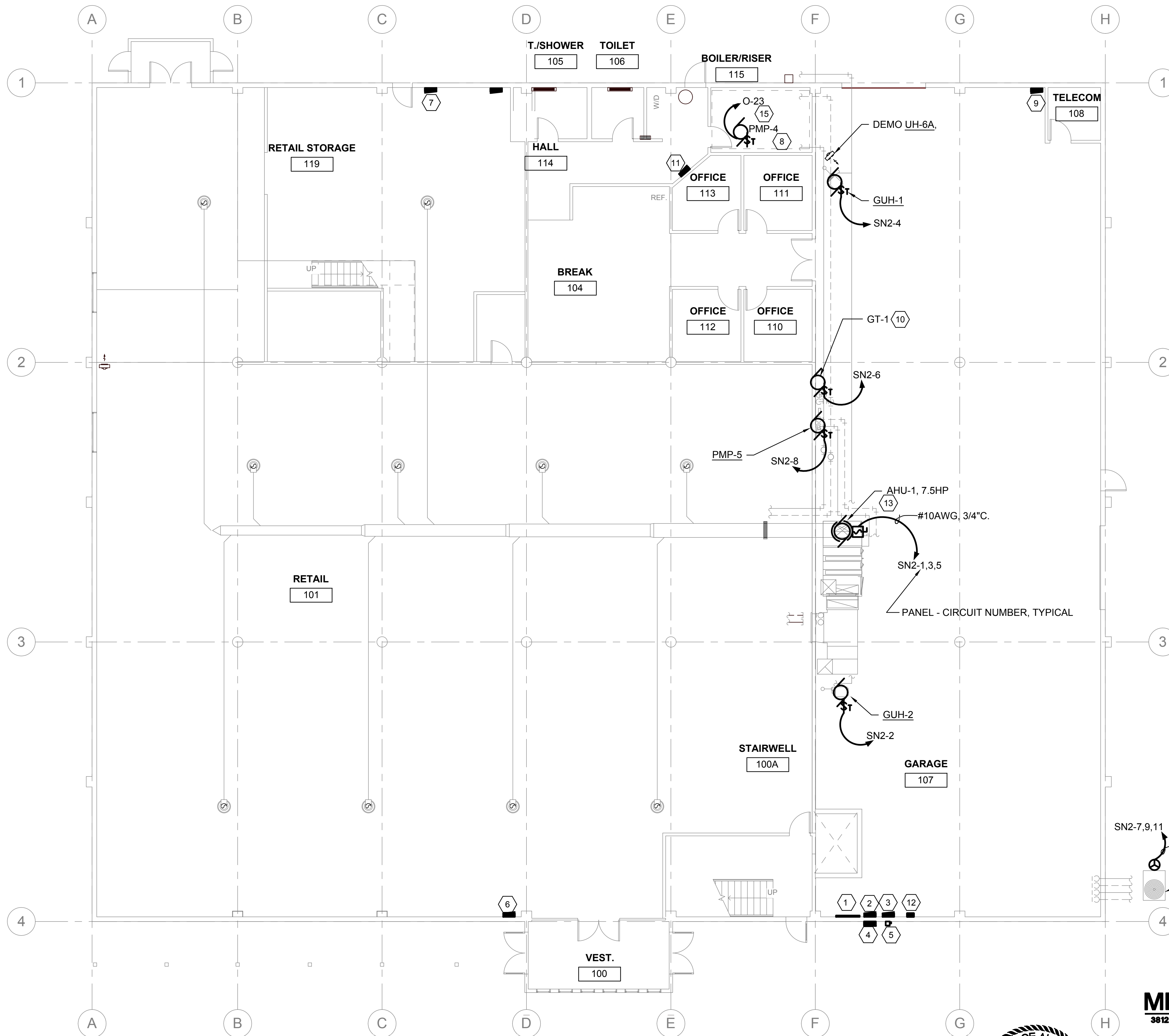
TITLE: **MECHANICAL SPECIFICATIONS**

DESIGNED BY: MSM	SCALE: AS NOTED	M-6	AFE NO.:
DRAWN BY: MSM	DATE: 1/11/2019		ACAD FILE: 17034-M-6
CHECKED BY: SCH			DWG NO.
APPROVED BY: MSM			7 OF 12

MBA Consulting Engineers, Inc.
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(907) 274-2622 • FAX (907) 274-0914



0	1/11/19	MBA	BID SET
REV.	DATE	BY	REVISION



SHEET NOTES:

- 1 TELEPHONE SERVICE ENTRANCE
- 2 PANEL SHOP NORTH (SN)
- 3 MDP
- 4 CT ENCLOSURE
- 5 SERVICE DISCONNECT
- 6 PANEL RS1
- 7 PANEL RS2
- 8 DEMOLISH PMP-3 SEE SHEET M-4.
- 9 PANEL SHOP SOUTH (SS)
- 10 CONNECT GT-1 TO CIRCUIT INDICATED IN PANEL SN2.
- 11 PANEL O
- 12 NEW PANEL SN2
- 13 VFD FURNISHED WITH AHU-1
- 14 SINGLE POINT EQUIPMENT CONNECTION. PROVIDE CONDUIT FOR CONTROL WIRES (INSTALLED BY MECHANICAL) FROM CU-1 TO AHU-1.
- 15 CONNECT PMP-4 TO SPARE 20A/1P CIRCUIT BREAKER IN PANEL O.

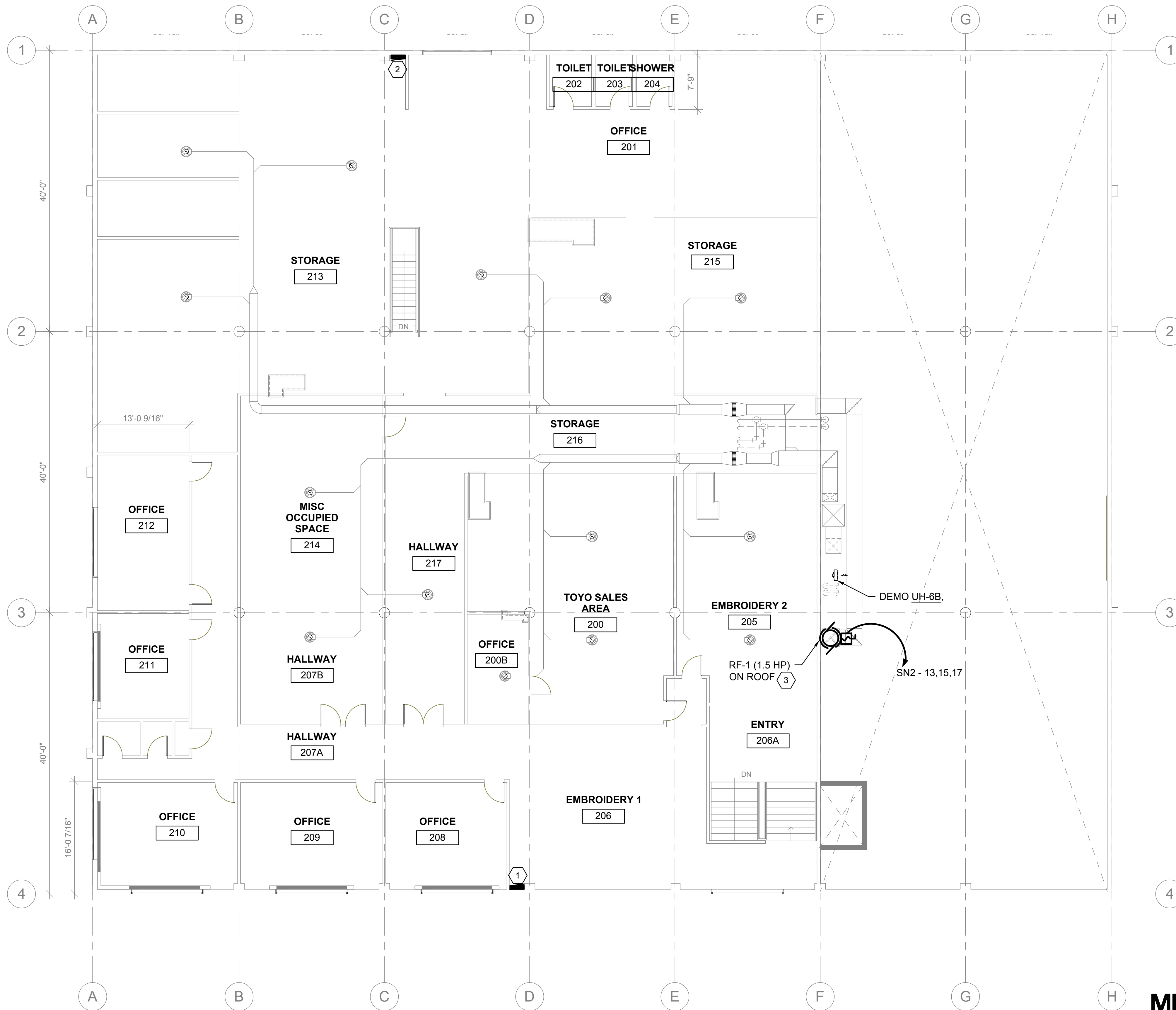
1 LEVEL 1 - ELECTRICAL PLAN
E-2 1/8"=1'-0"



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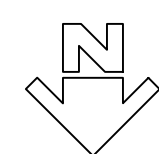
REV.	DATE	BY	REVISION
0	1/11/19	MBA	BID SET

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION	
FIRST FLOOR ELECTRICAL PLAN	
DESIGNED BY: EWC	SCALE: AS NOTED
DRAWN BY: SNS	DATE: 1/11/2019
CHECKED BY: EWC	<div style="font-size: 2em; font-weight: bold;">E-2</div>
APPROVED BY: EWC	
AFE NO.: ACAD FILE:17034-M1 DWG NO. 10 OF 12	

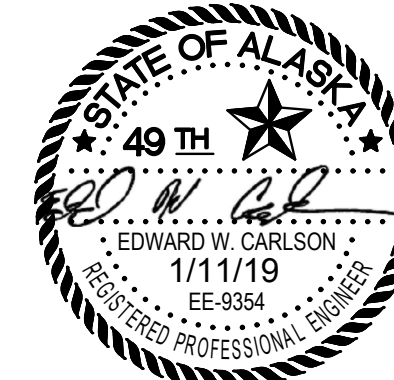
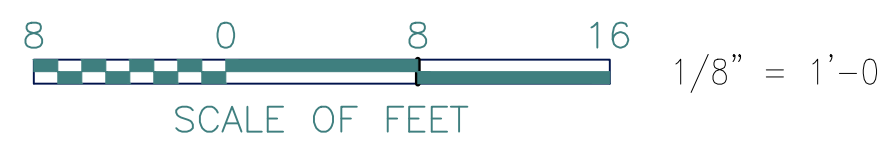


SHEET NOTES:

- ① PANEL RS1B
- ② PANEL RS2B
- ③ CONNECT TO VFD FURNISHED WITH EF-1. PROVIDE CONDUIT FOR CONTROL WIRES (INSTALLED BY MECHANICAL) FROM EF-1 TO AHU-1.



1
E-3 **LEVEL 2 - ELECTRICAL PLAN**
1/8"=1'-0"



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REV.	DATE	BY	REVISION
0	1/11/19	MBA	BID SET

 ALASKA RAILROAD CORPORATION ENGINEERING SERVICES P.O. BOX 107500, ANCHORAGE, ALASKA 99510-7500	
ALASKA RAILROAD CORPORATION KENAI SUPPLY BUILDING RENOVATION	
SECOND FLOOR ELECTRICAL PLAN	
DESIGNED BY: EWC DRAWN BY: SNS CHECKED BY: EWC APPROVED BY: EWC	SCALE: AS NOTED DATE: 1/11/2019
E-3	AFE NO.: ACAD FILE:17034-M1 DWG NO. 11 OF 12

