





BSA LifeStructures  
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Architectural Registration Number - BR-1590  
Engineering Registration Number - F-7421



# TEXAS

The University of Texas at Austin

The University of Texas at Austin

**vGlass**

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**LANDSCAPE ARCH. | COLEMAN & ASSOCIATES**  
  
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ph. 512.476.2099

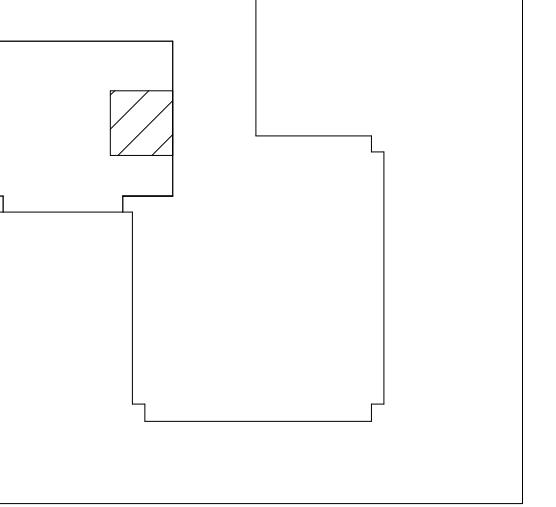
**CODE + FIRE PROTECTION | JENSEN & HUGHES**  
  
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**ACOUSTICS + VIBRATION | DICKENSHEETS DESIGN**  
  
10919 Conchos Trl., Suite 100 | Austin, TX 78726  
ph. 512.331.8977

# SEAY BUILDING ADDITION

IENT PROJECT NO. - CPC 102-1219

# CONSTRUCTION DOCUMENTS





**KEYPLAN**

PLAN NORTH

MARK	DATE	DESCRIPTION
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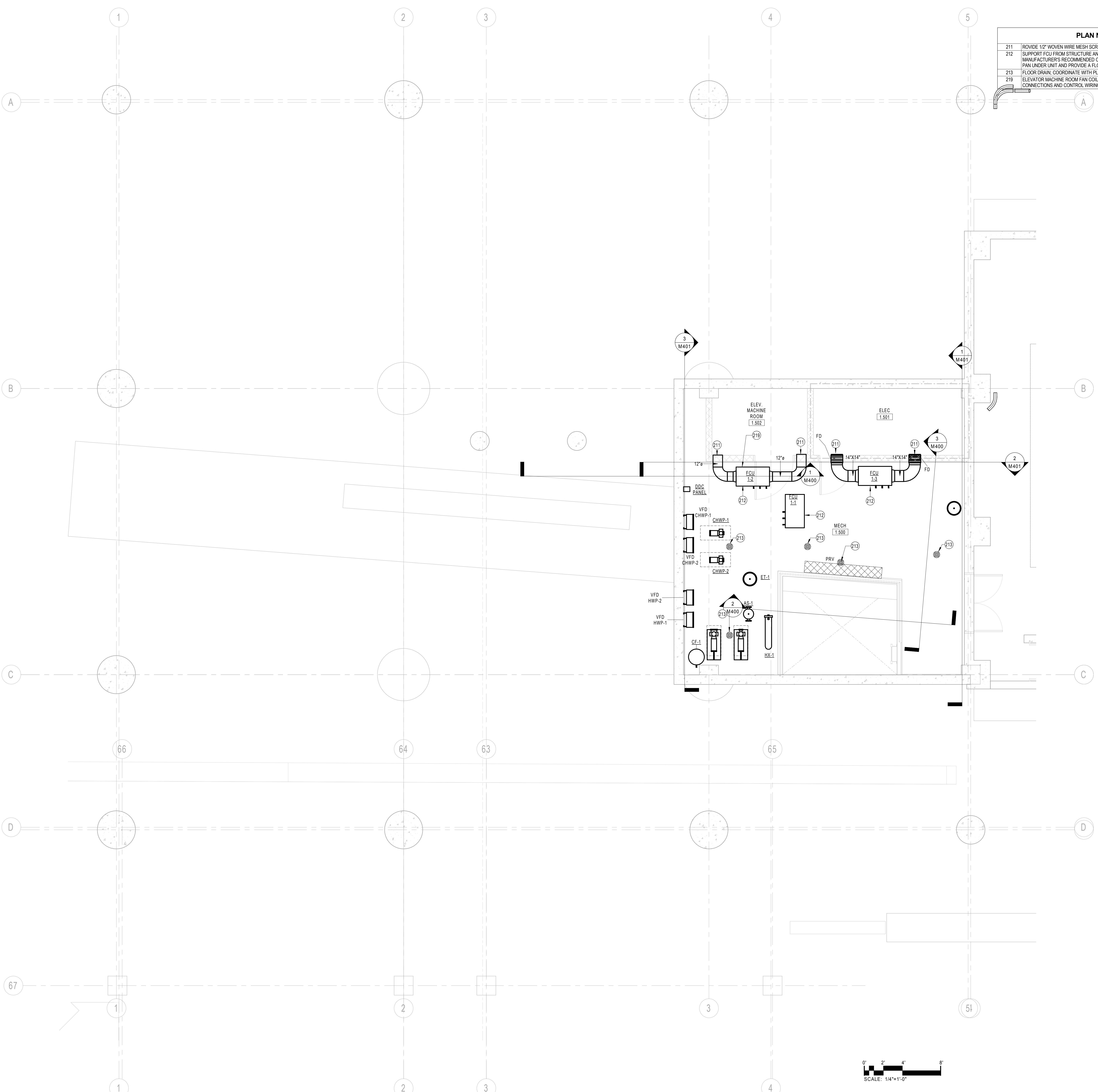
31.2019



# MECHANICAL PLAN - LOWER LEVEL

OCT 31, 2019

M121







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# EASY BUILDING APPLICATION

# **ADDITION**

IT PROJECT NO. - CPC 102-1219

# CONSTRUCTION DOCUMENTS

A diagram showing a surface with a series of horizontal steps. The leftmost part of the surface is shaded with diagonal lines. A vertical line segment is drawn from the top of the second step down to the base of the third step.

# EYPLAN

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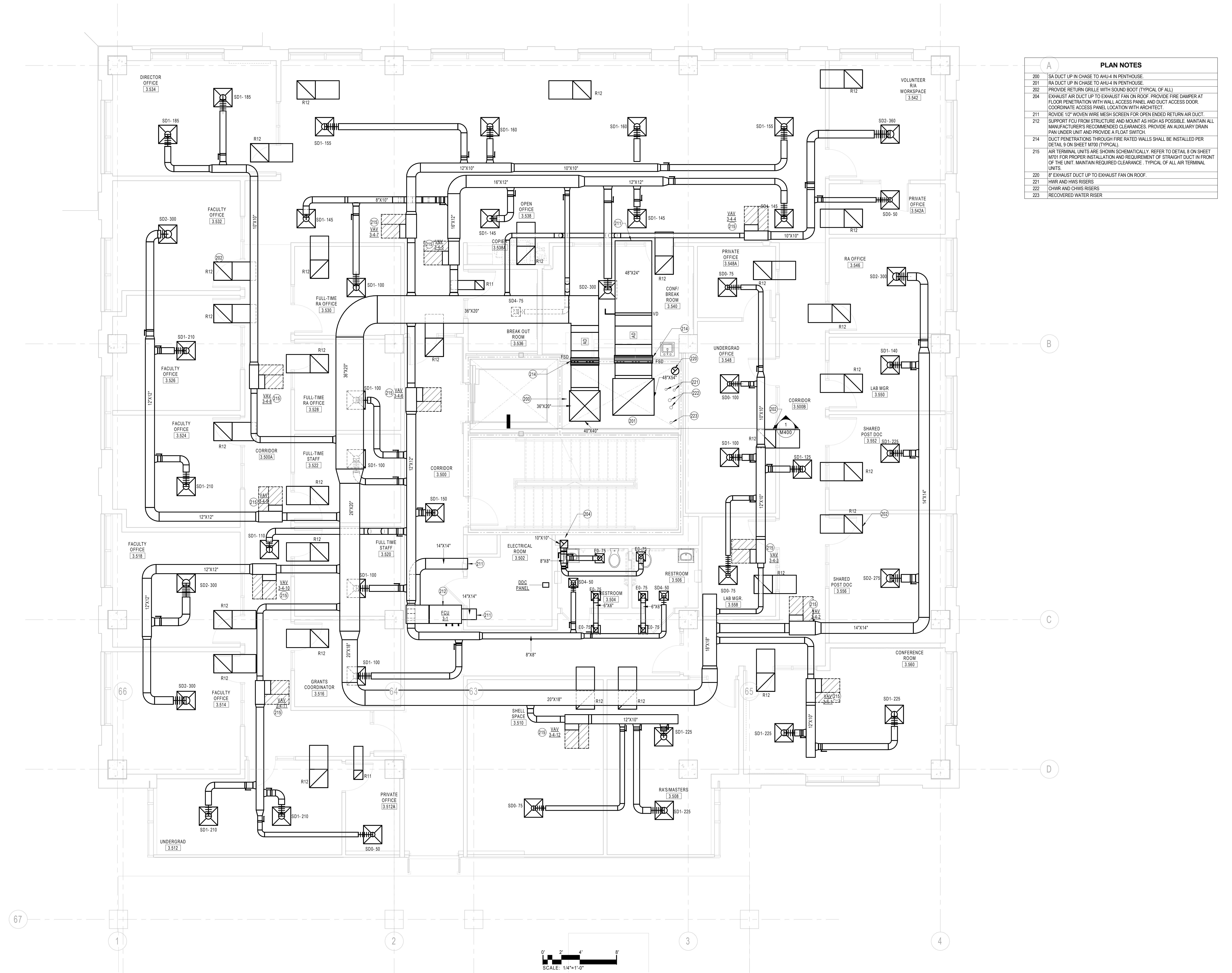
DATE	DESCRIPTION
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10.31.2019

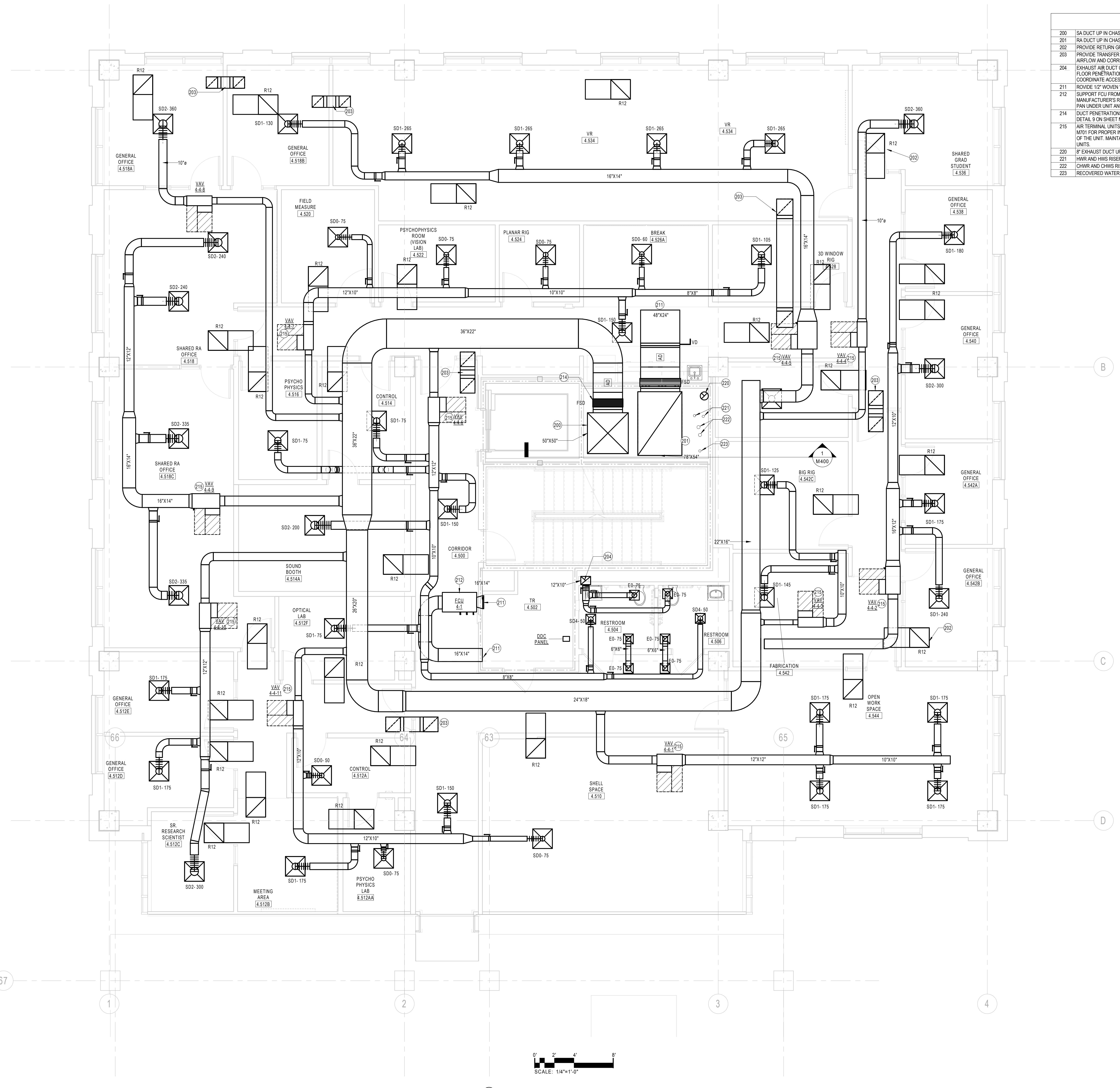
# MECHANICAL PLAN - LEVEL 3

OCT 31, 2019

M123



PLAN NOTES	
200	SA DUCT UP IN CHASE TO AHU4 IN PENTHOUSE.
201	RA DUCT UP IN CHASE TO AHU4 IN PENTHOUSE.
202	PROVIDE RETURN GRILLE WITH SOUND BOOT (TYPICAL OF ALL).
203	PROVIDE TRANSFER BOOT AS SHOWN. REFER TO DETAIL 11 ON SHEET M702 FOR AIRFLOW AND CORRESPONDING SIZES.
204	EXHAUST AIR DUCT UP TO EXHAUST FAN ON ROOF. PROVIDE FIRE DAMPER AT COORDINATE ACCESS PANEL LOCATION WITH ARCHITECT.
205	PROVIDE 1/2" WOVEN WIRE MESH SCREEN FOR OPEN ENDED RETURN AIR DUCT.
211	SUPPORT FDU FROM STRUCTURE AND MOUNT AS HIGH AS POSSIBLE. MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES. PROVIDE AN AUXILIARY DRAIN PAN UNDER UNIT AND PROGRAM FLOW SWITCH.
214	DUCTS AND CONDUITS THROUGH RATED WALLS SHALL BE INSTALLED PER DETAIL 9 ON SHEET M700 (TYPICAL).
215	AIR TERMINAL UNITS ARE SHOWN SCHEMATICALLY. REFER TO DETAIL 8 ON SHEET M701 FOR PROPER INSTALLATION AND REQUIREMENT OF STRAIGHT DUCT IN FRONT OF THE UNIT. MAINTAIN REQUIRED CLEARANCE, TYPICAL OF ALL AIR TERMINAL UNITS.
220	8' EXHAUST DUCT UP TO EXHAUST FAN ON ROOF.
221	HWR AND HWS RISERS.
222	CHVR AND CHWS RISERS.
223	RECOVERED WATER RISER.



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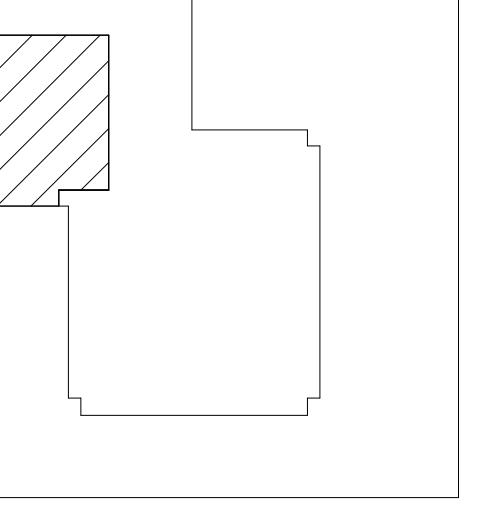
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## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS



KEYPLAN  
PLAN NORTH

MARK DATE DESCRIPTION

10.31.2019  
  
PRISCILLA A. SAGER  
12/2017  
Baylor

## MECHANICAL PLAN - LEVEL 4

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

M124



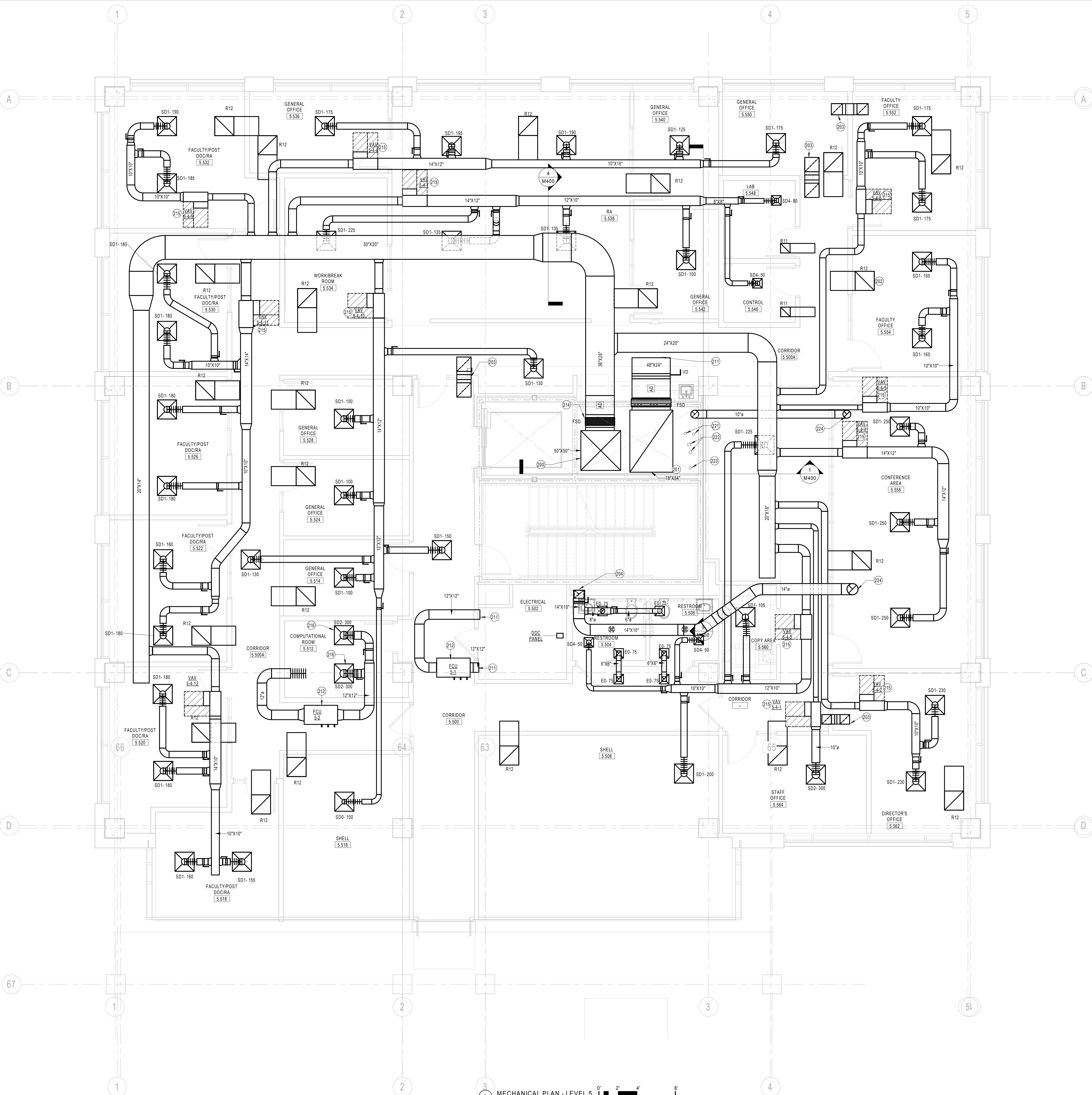
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Engineering Registration Number - E-7421

# TEXAS

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## PLAN NOTES

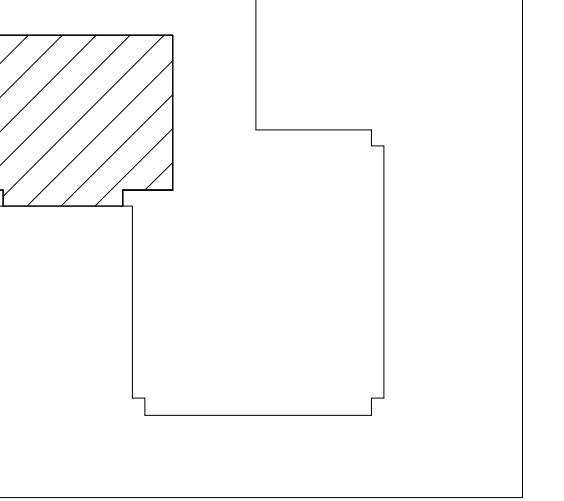
200	SA DUCT UP IN CHASE TO AHU-4 IN PENTHOUSE.
201	RA DUCT UP IN CHASE TO AHU-4 IN PENTHOUSE.
202	PROVIDE RETURN GRILLE WITH SOUND BOOT (TYPICAL OF ALL)
203	PROVIDE TRANSFER BOOT AS SHOWN. REFER TO DETAIL 11 ON SHEET M702 FOR AIRFLOW AND CORRESPONDING SIZES.
204	EXHAUST AIR DUCT UP TO EXHAUST FAN ON ROOF. PROVIDE FIRE DAMPER AT FLOOR PENETRATION WITH WALL ACCESS PANEL AND DUCT ACCESS DOOR. COORDINATE ACCESS PANEL LOCATION WITH ARCHITECT.
211	ROVIDE 1/2" WOVEN WIRE MESH SCREEN FOR OPEN ENDED RETURN AIR DUCT.
212	SUPPORT FCU FROM STRUCTURE AND MOUNT AS HIGH AS POSSIBLE. MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES. PROVIDE AN AUXILIARY DRAIN PAN UNDER UNIT AND PROVIDE A FLOAT SWITCH.
214	DUCT PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE INSTALLED PER DETAIL 9 ON SHEET M700 (TYPICAL).
215	AIR TERMINAL UNITS ARE SHOWN SCHEMATICALLY. REFER TO DETAIL 8 ON SHEET M701 FOR PROPER INSTALLATION AND REQUIREMENT OF STRAIGHT DUCT IN FRONT OF THE UNIT. MAINTAIN REQUIRED CLEARANCE . TYPICAL OF ALL AIR TERMINAL UNITS.
216	CEILING SUPPLY DIFFUSERS SHALL BE LOCATED IN FRONT OF IT RACKS ONCE THE RACK LAYOUT IS FINALIZED.
221	HWR AND HWS RISERS
222	CHWR AND CHWS RISERS
223	RECOVERED WATER RISER
224	EXHAUST DUCT UP TO FAN ON ROOF. TRANSITION DUCT AS REQUIRED TO MATCH FAN OPENING.



# SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

# CONSTRUCTION DOCUMENTS





# KEYPLAN

MARK	DATE	DESCRIPTION
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10.31.2019



# MECHANICAL PLAN - LEVEL 5

PROJECT NO.	OCT 31, 2019
	15830011

# M125

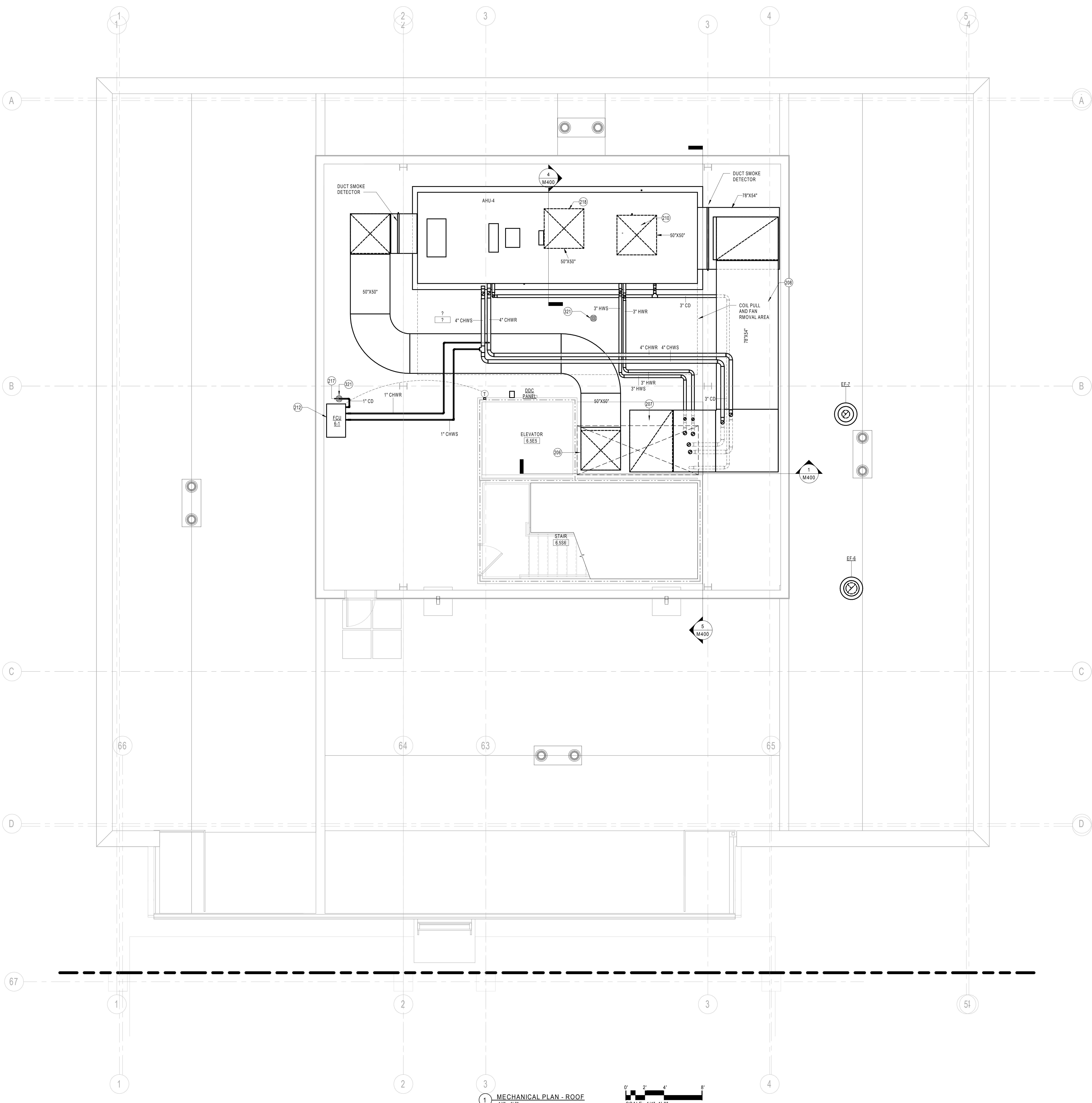


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Engineering Registration Number - F-7421



The logo of The University of Texas at Austin. It consists of a shield-shaped emblem on the left containing a five-pointed star with a laurel wreath around it, and the word "TEXAS" in large, bold, serif capital letters to the right.

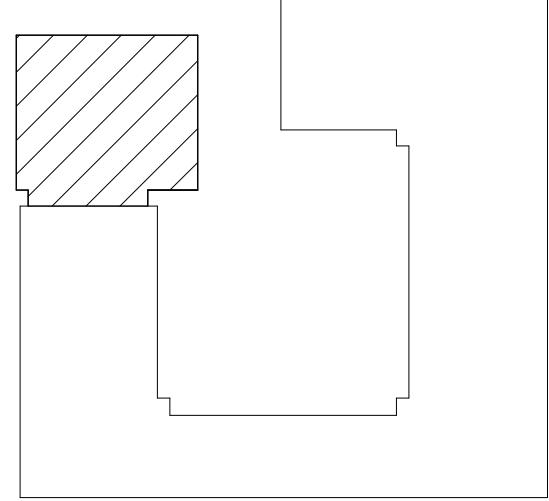
PLAN NOTES	
206	SA DUCT DOWN.
207	RA DUCT DOWN.
208	RUN DUCTWORK TIGHT TO STRUCTURE AND ALONG EXTERIOR WALL. DROP DUCT DOWN AND CONNECT TO RETURN AIR PLENUM BOX BELOW.
210	OA DUCT UP TO INTAKE HOOD MOUNTED ON ROOF OF PENTHOUSE. COORDINATE OA OPENING WITH UNIT MANUFACTURER PRIOR TO PROCUREMENT OF THE UNIT.
212	SUPPORT FCU FROM STRUCTURE AND MOUNT AS HIGH AS POSSIBLE. MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES. PROVIDE AN AUXILIARY DRAIN PAN UNDER UNIT AND PROVIDE A FLOAT SWITCH.
217	CONDENSATE DRAIN PIPE DOWN TO FLOOR DRAIN. COORDINATE WITH PLUMBING DRAWINGS.
218	RELIEF DUCT UP TO INTAKE HOOD MOUNTED ON ROOF OF PENTHOUSE. COORDINATE OA OPENING WITH UNIT MANUFACTURER PRIOR TO PROCUREMENT OF THE UNIT.
321	FLOOR DRAIN; COORDINATE EXACT LOCATION WITH PLUMBING DRAWINGS.



# SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

# CONSTRUCTION DOCUMENTS





**KEYPLAN**  
PLAN NORTH

MARK	DATE	DESCRIPTION
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10.31.2019

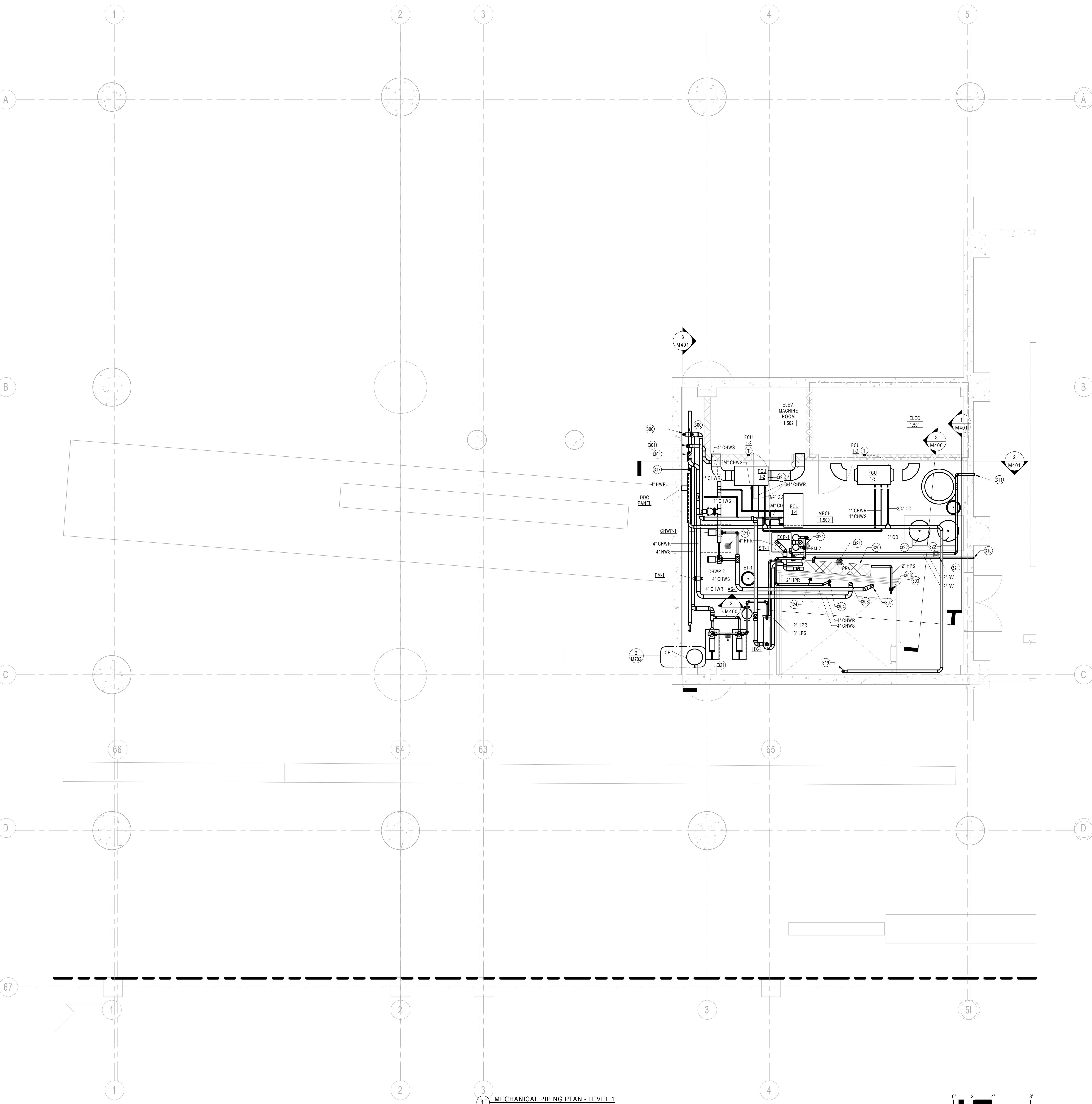


# MECHANICAL PLAN

## PENTHOUSE

TE OCT 31, 20  
ALS PROJECT NO. 158300

M126





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Engineering Registration Number - E-7421

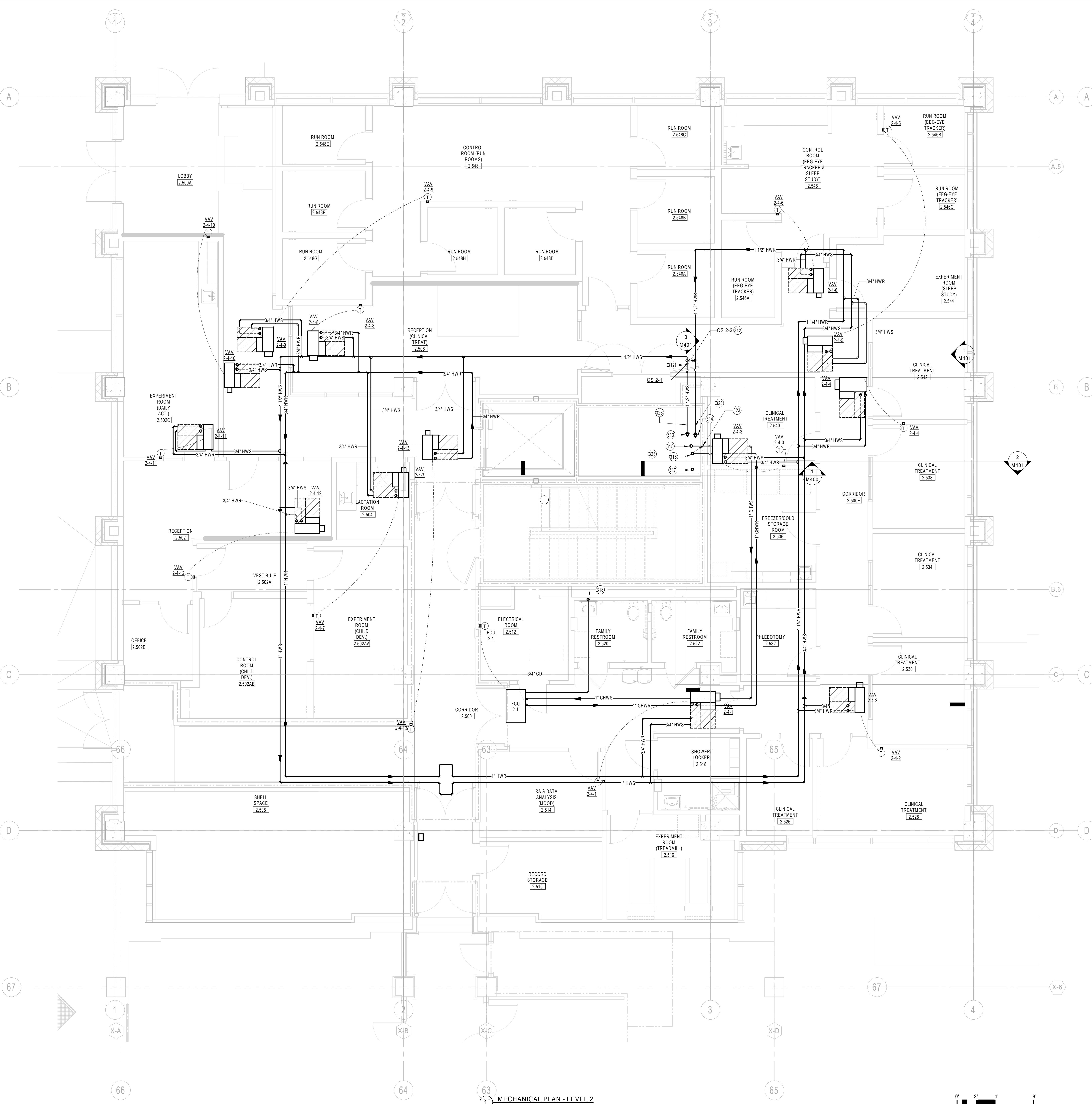


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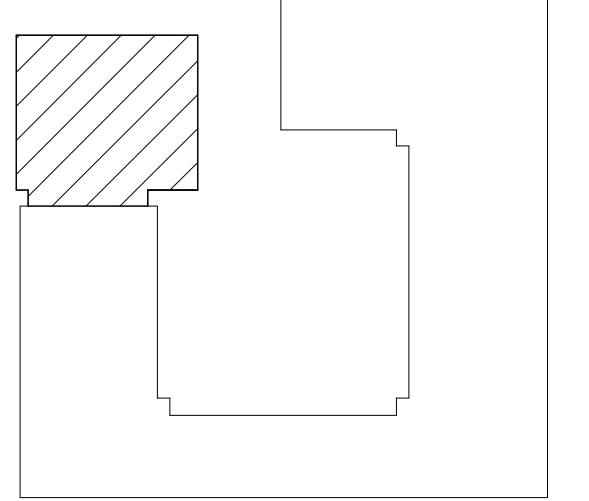
PLAN NOTES	
312	PROVIDE A CIRCUIT SETTER WITH MEMORY STOPS. CIRCUIT SETTER SHALL BE THE SAME LINE SIZE AND HAVE THE ABILITY TO CONTROL TO 1' PRESSURE DROP AT DESIGN AIRFLOW.
313	HOT WATER SUPPLY PIPE UP.
314	HOT WATER RETURN PIPE UP.
315	CHILLED WATER SUPPLY UP.
316	CHILLED WATER RETURN UP.
317	RECOVERED WATER PIPE DOWN FROM ROOF.
318	RUN CONDENSATE IN CEILING AND DROP DOWN IN WALL AND TIE TO LAVATORY TAIL PIECE. SLOPE CONDENSATE PIPE AS REQUIRED PER CODE. FINAL CONNECTION TO TAILPIECE SHALL BE COMPLETED BY DIVISION 22.
323	ALL PIPING PENETRATING FIRE RATED WALLS SHALL BE SEALED PROPERLY. REFER TO DETAIL 5 ON SHEET M701 FOR ADDITIONAL INFORMATION. TYPICAL OF ALL PIPES.



# **SEAY BUILDING ADDITION**

CLIENT PROJECT NO. - CPC 102-1219

# CONSTRUCTION DOCUMENTS





**KEYPLAN**  
PLAN NORTH

MARK	DATE	DESCRIPTION
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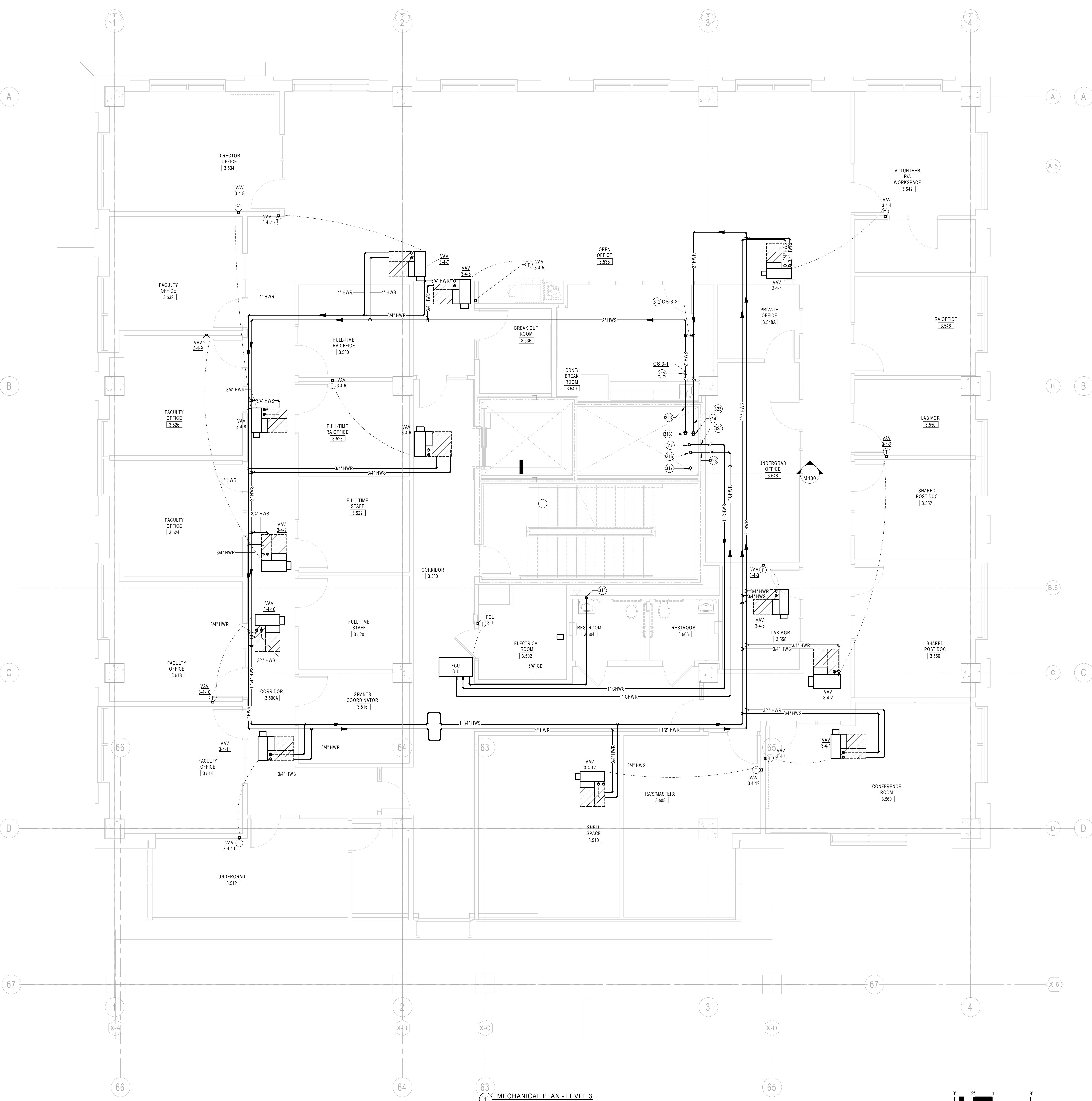
10.31.2019



# MECHANICAL PIPING PLAN - LEVEL 2

OCT 31, 2019

# M22







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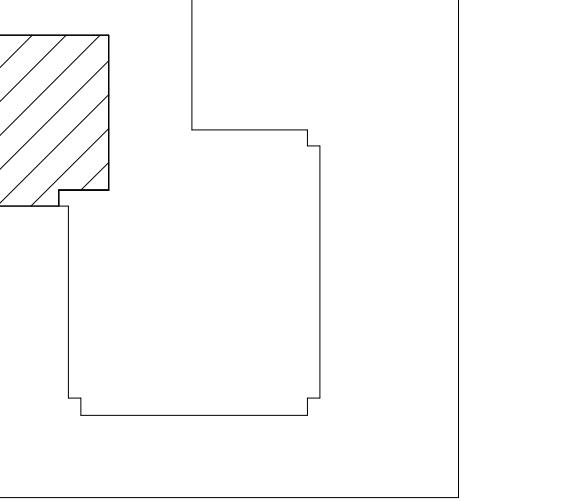
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## SEAY BUILDING ADDITION

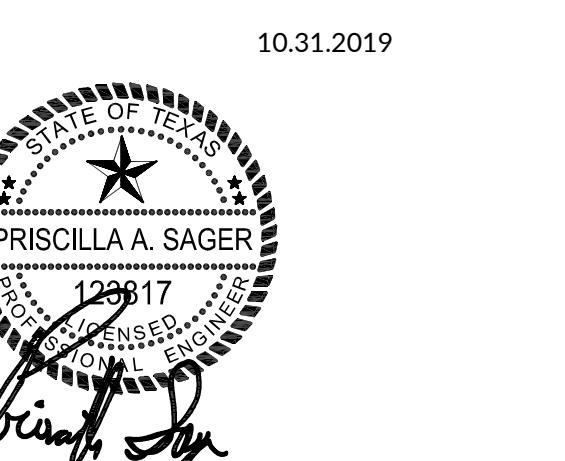
CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS



KEYPLAN  
PLAN NORTH

MARK DATE DESCRIPTION

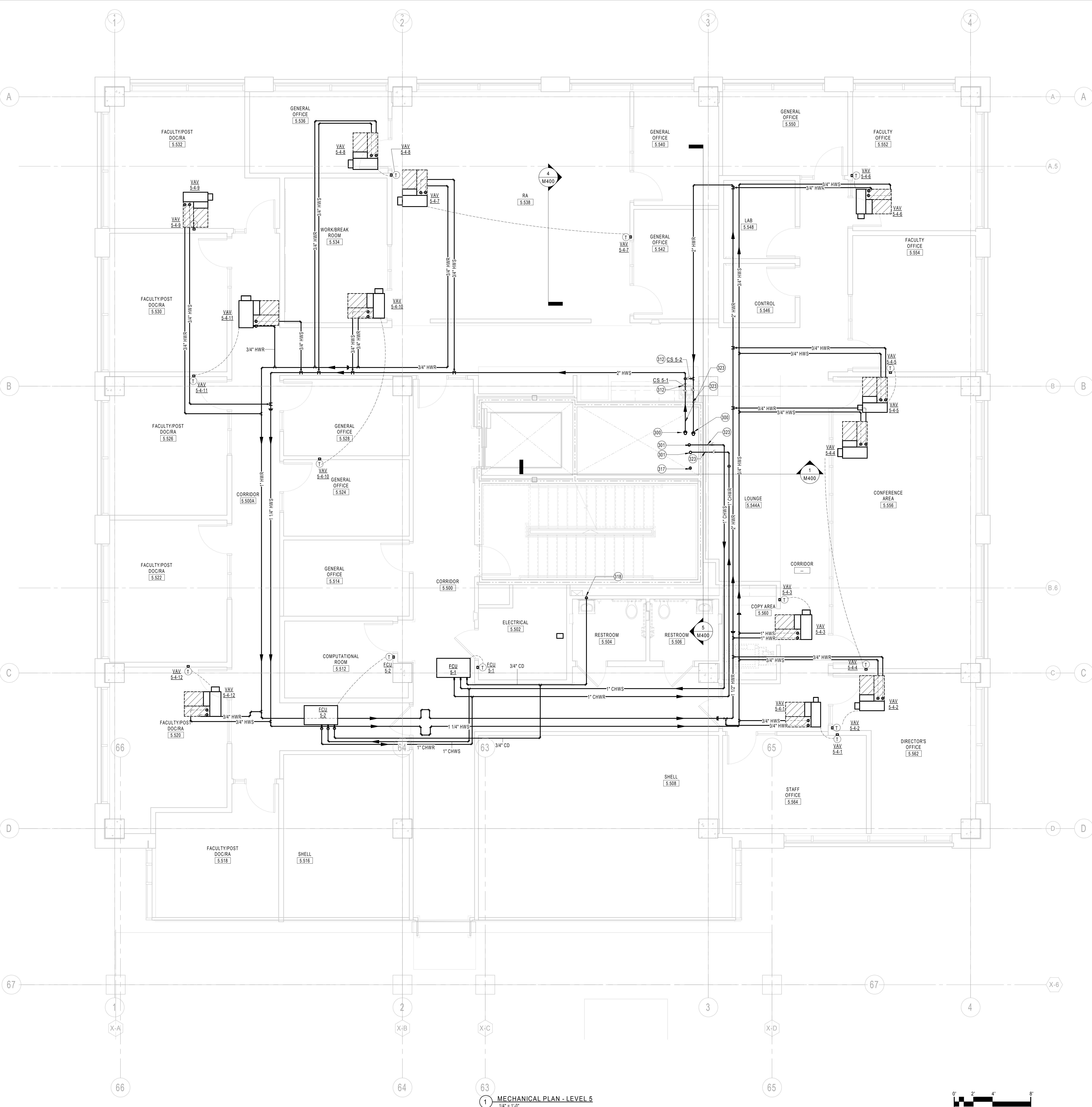


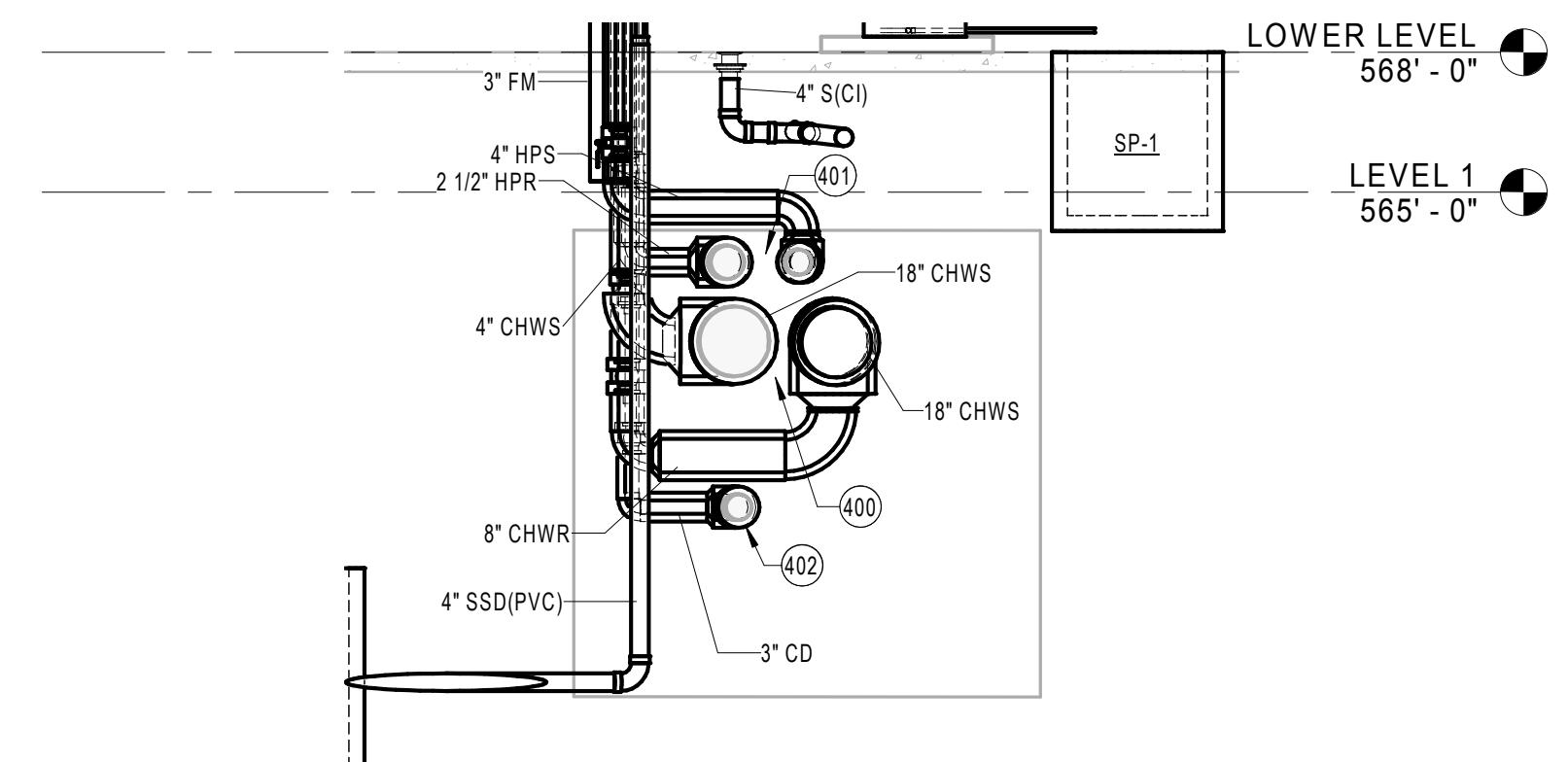
## MECHANICAL PIPING PLAN - LEVEL 5

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

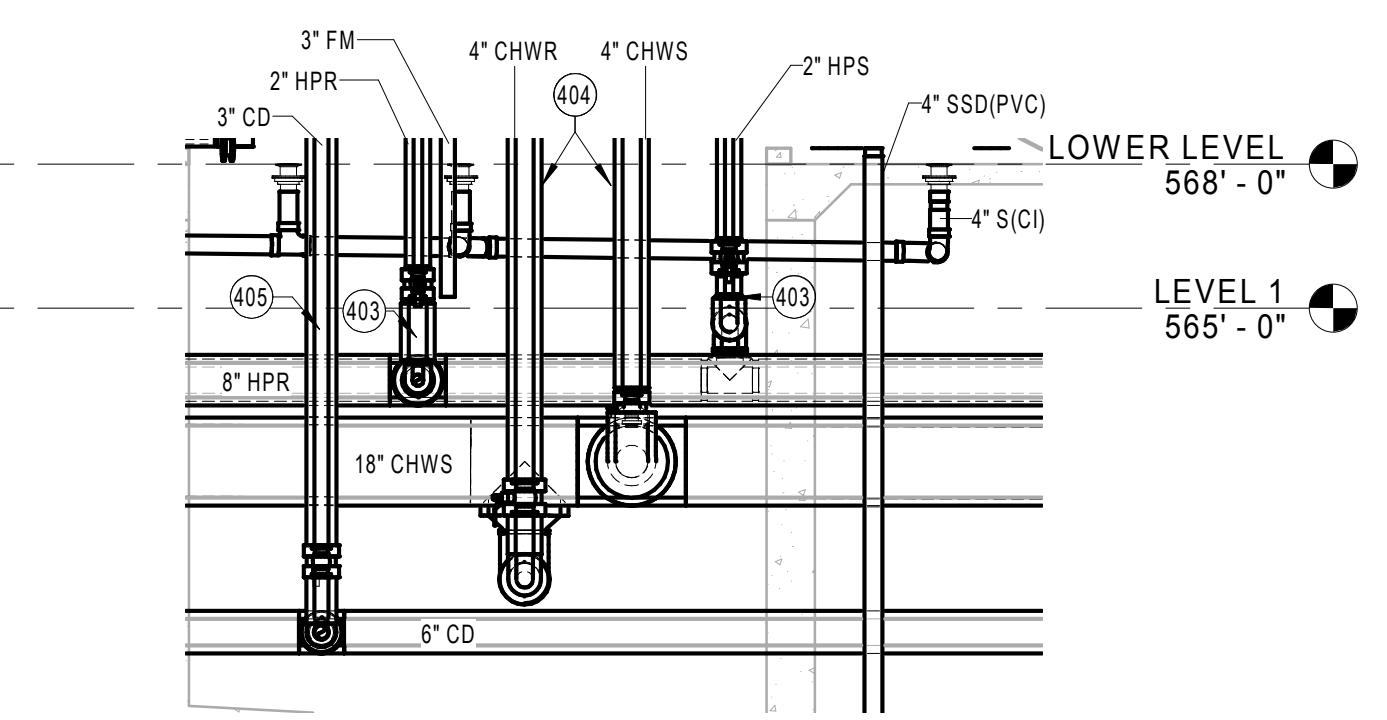
SCALE: 1/4"=1'-0"

M225



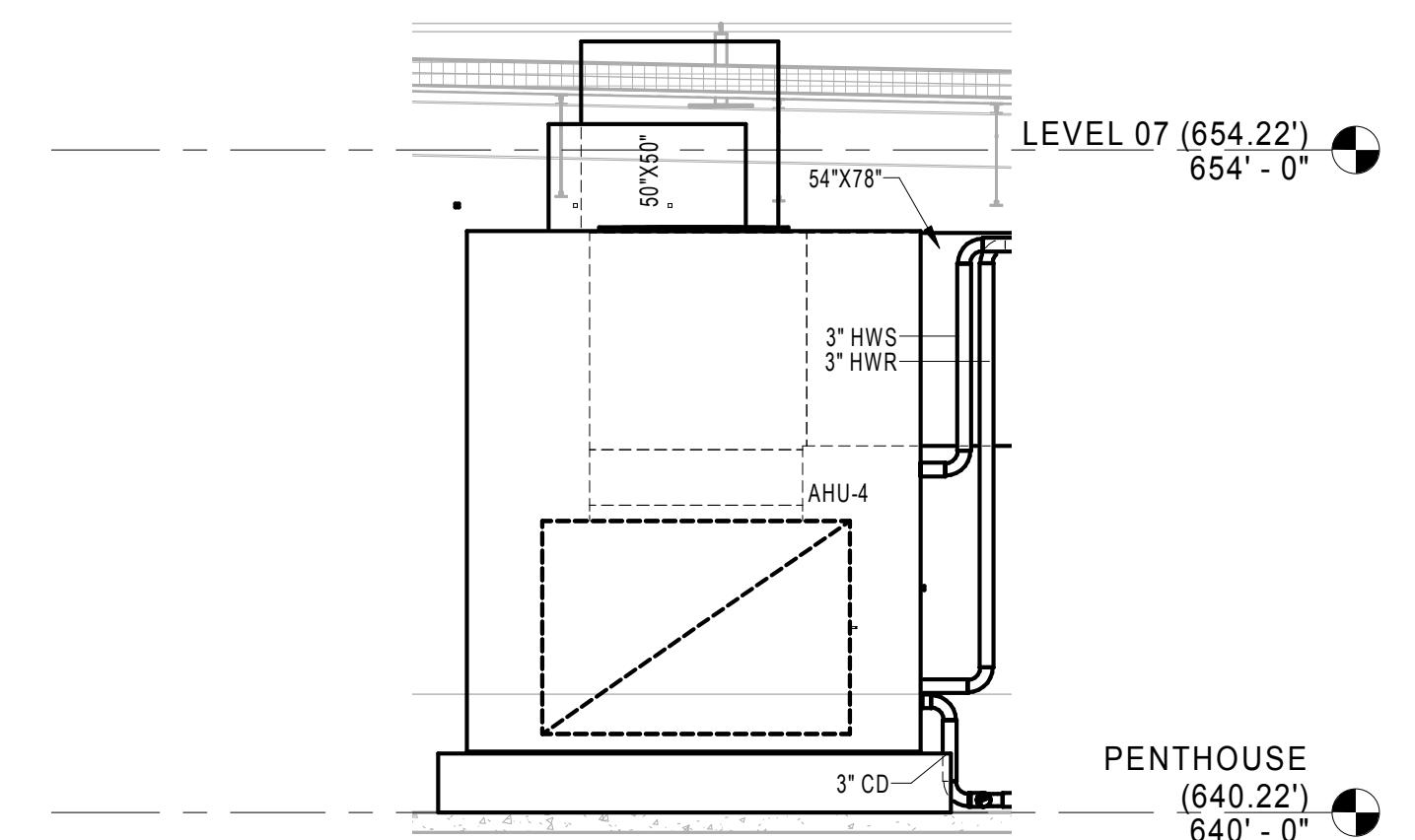


③ NEW PIPE CONNECTION AT TUNNEL CHAMBER  
1/4" = 1'-0"

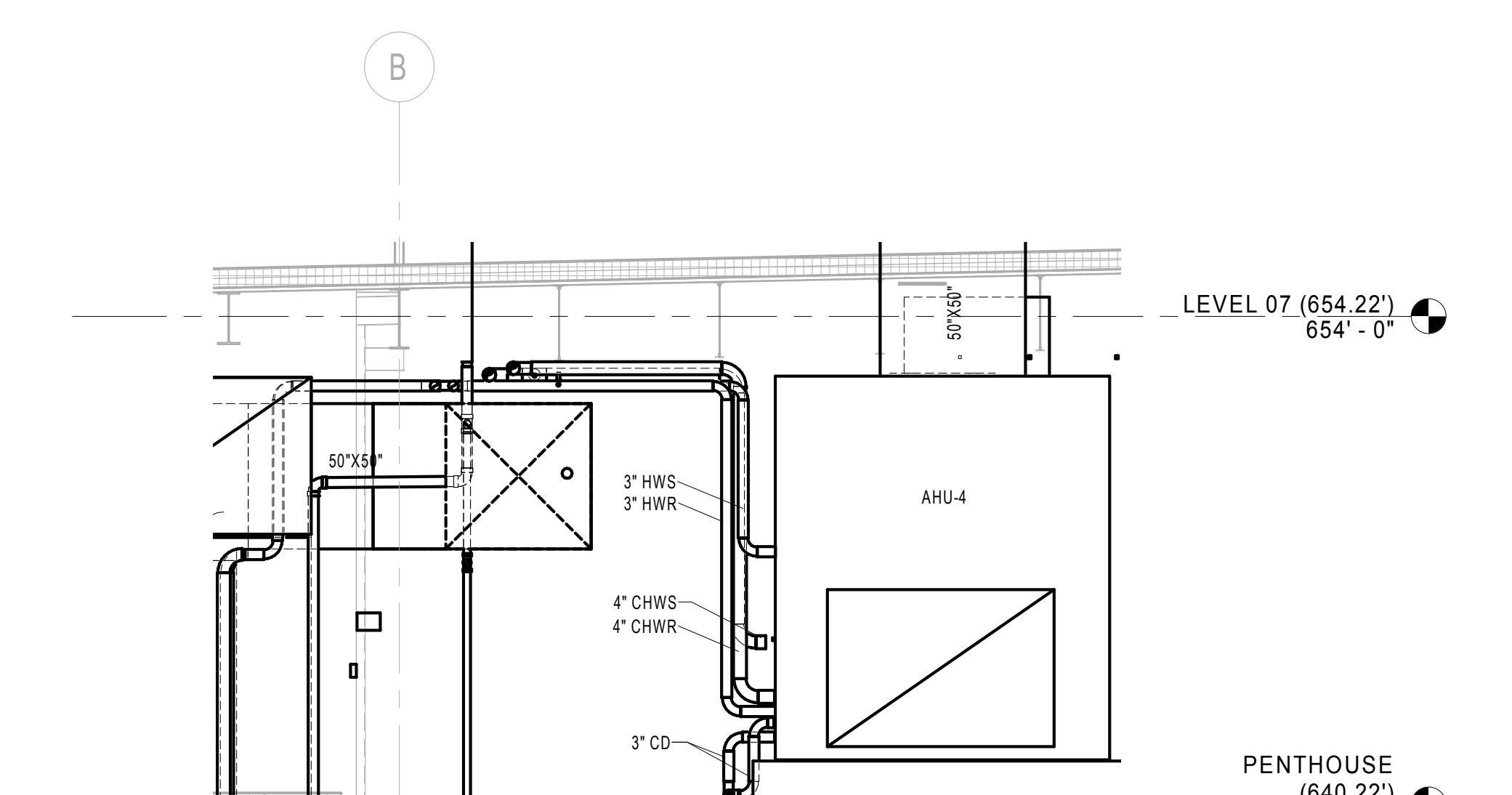


② PIPE CONNECTION FROM WITHIN THE CHAMBER  
1/4" = 1'-0"

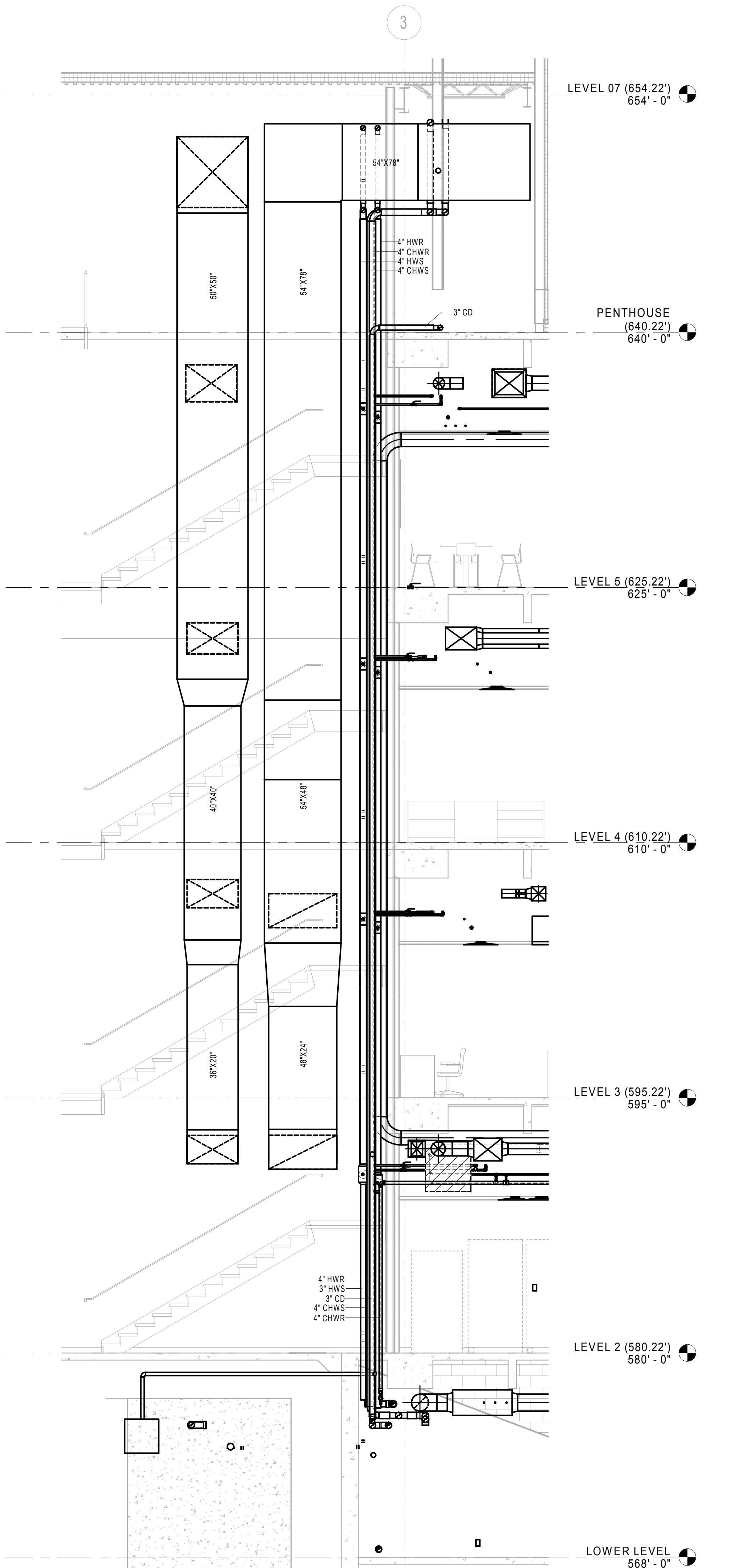
PLAN NOTES	
400	CHW SUPPLY AND RETURN PIPING IN TUNNEL
401	HPS AND STEAM CONDENSATE PIPING IN TUNNEL
402	FIN WATER IN TUNNEL
403	HPS AND STEAM CONDENSATE PIPING IN EXPANSION CHAMBER
404	CHW SUPPLY AND RETURN PIPING IN EXPANSION CHAMBER
405	FIN WATER IN EXPANSION CHAMBER



④ PENTHOUSE MECH RM FACING EAST  
1/4" = 1'-0"



⑤ PENTHOUSE MECH RM FACING WEST  
1/4" = 1'-0"



① PENTHOUSE MECH RM FACING NORTH  
1/4" = 1'-0"

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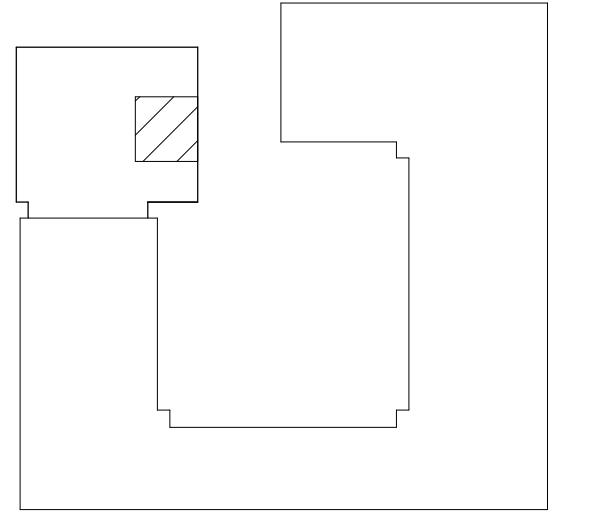
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## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS



KEYPLAN  
PLAN NORTH

MARK DATE DESCRIPTION

10.31.2019  
PRISCILLA A. SAGER  
129017  
BSALS PROJECT NO.  
15830011

## ENLARGED MECHANICAL PLAN

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

M400



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**STRUCTURAL | MARTINEZ MOORE**  
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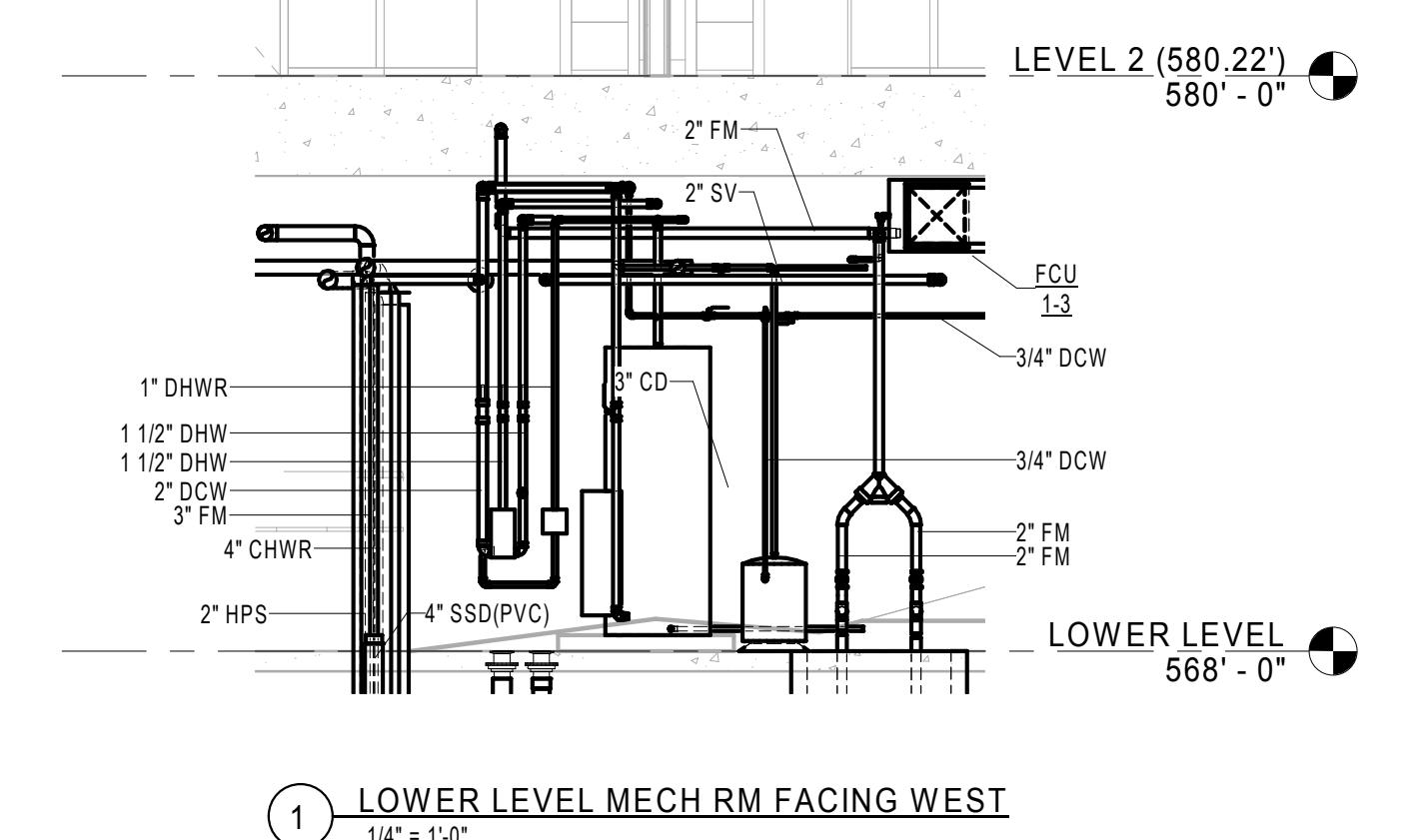
**LANDSCAPE ARCH. | COLEMAN & ASSOCIATES**  
**CH** 9890 Silver Mountain Dr. | Austin, TX 78737  
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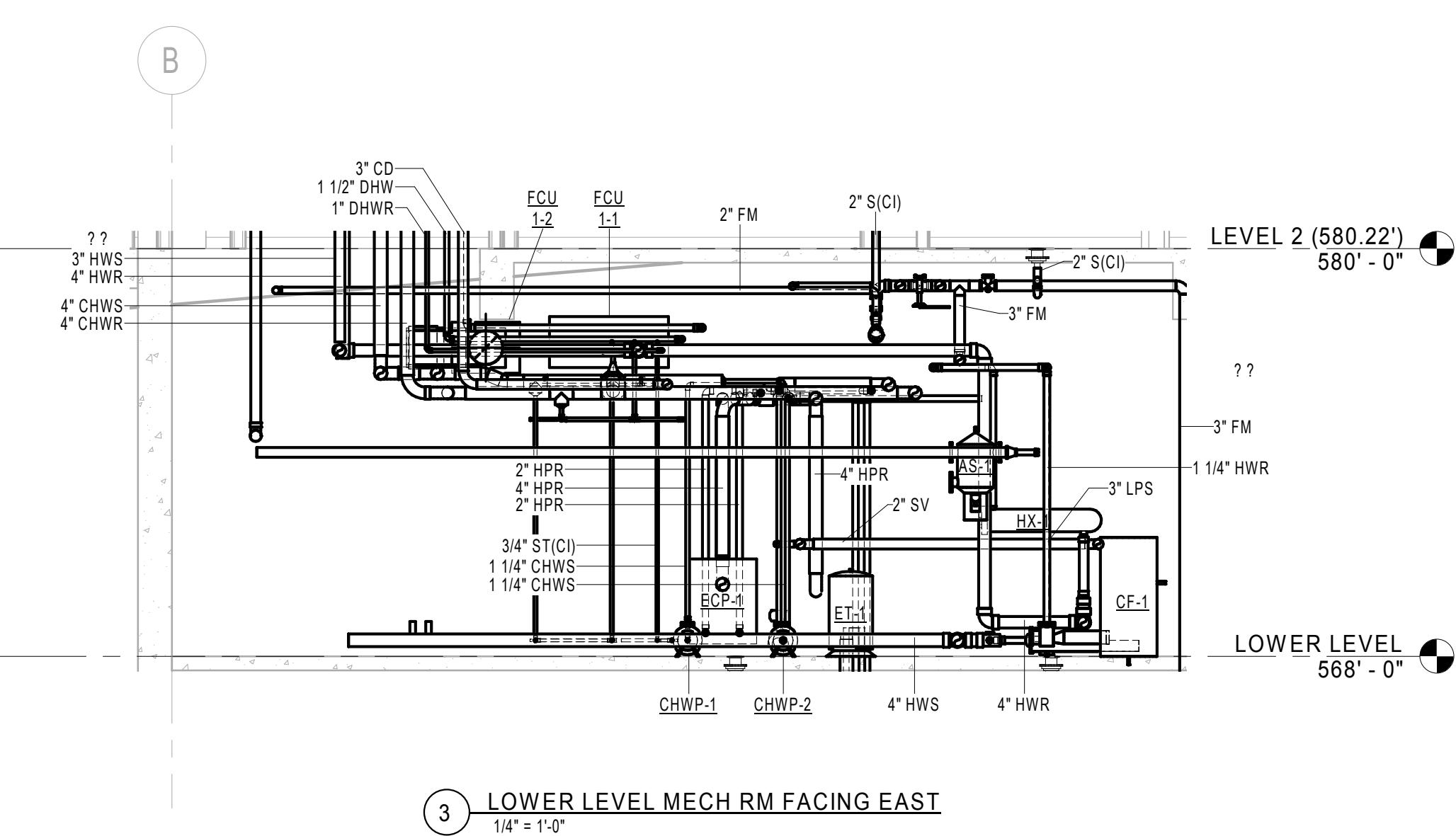
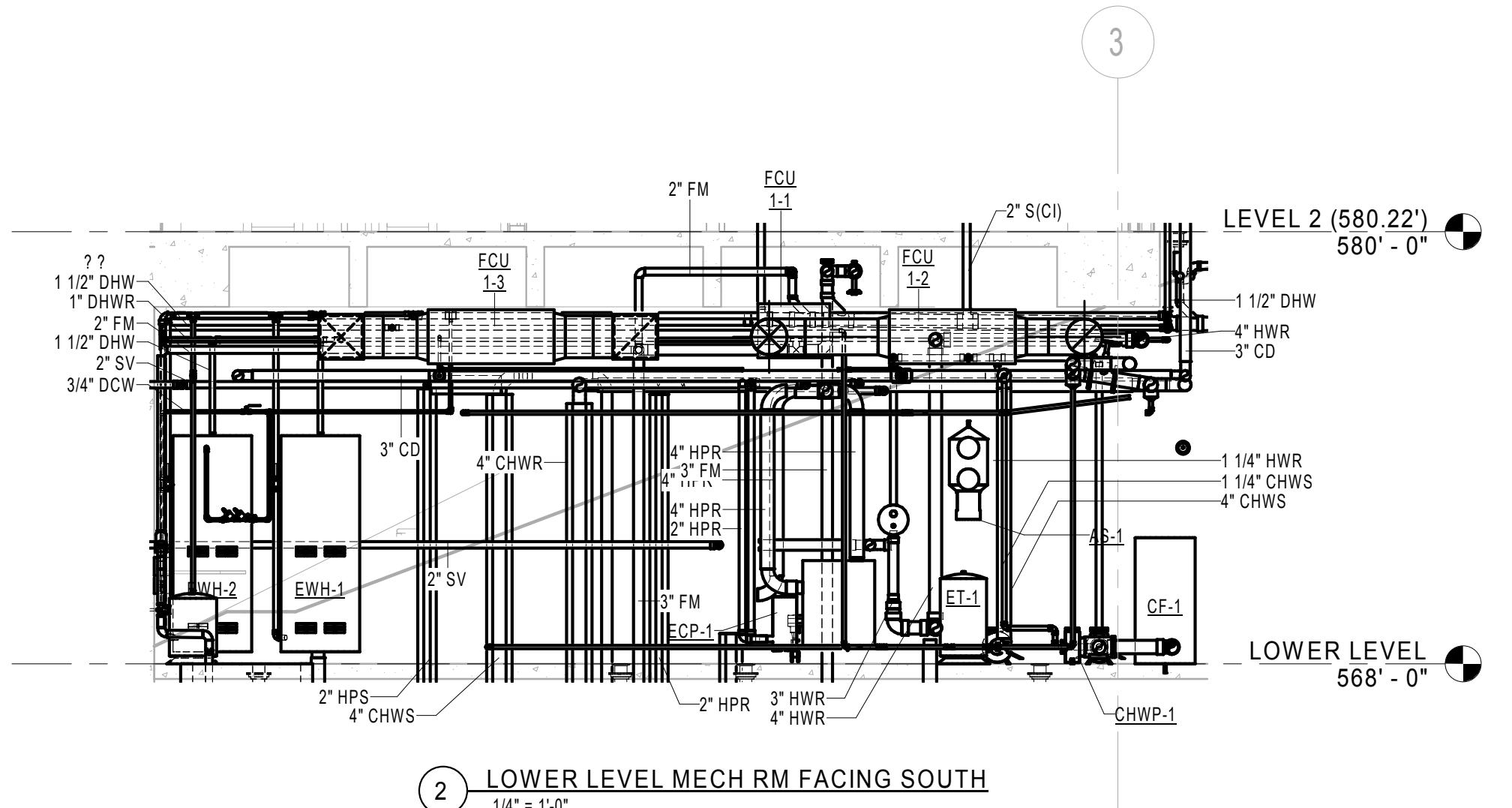
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## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219



## CONSTRUCTION DOCUMENTS



## KEYPLAN

PLAN NORTH

MARK DATE DESCRIPTION

10.31.2019  
STATE OF TEXAS  
PRISCILLA A. SAGER  
125017  
SHERIFF  
Bexar County Sheriff's Office  
Signature

## ENLARGED MECHANICAL PLAN

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011  
APPROVED BY [Signature]

M401



HEAT EXCHANGER SCHEDULE																		
TAG	LOCATION	SYSTEM	CIRCULATING FLUID			CIRCULATING FLUID			STEAM			DESIGN REFERENCE			FOULING FACTOR	MANUFACTURER	MODEL	NOTES
			MIN. MBH	FLUID	GPM	MIN. GPM	ENTERING TEMP. (°F)	LEAVING TEMP. (°F)	MAX. WPD (FT. HD.)	ENTERING CONTROL VALVE (PSIG)	ENTERING CONV. (PSIG)	LBS./HR.						
HX-1	MECH RM 1.500	HOT WATER	2,200	WATER	195	20	160	180	1	15	15	2200	0.001	ARMSTRONG	WS-4H-1204-200E			

CIRCULATING PUMP SCHEDULE																					
TAG	LOCATION	SYSTEM	GPM	DESIGN HEAD (FT. HD.)	MAX. SHUT OFF HEAD (FT. HD.)	NSPHR (FT. HD.)	TARGET EFFICIENCY (%)	PUMP TYPE	FLUID	TEMP. (°F)	MOTOR DATA					PUMP SIZE		DESIGN REFERENCE			
											HP	RPM	VOLT	PHASE	VFD	SUCTION (IN.)	DISCHARGE (IN.)	EMERGENCY POWER	MANUFACTURER	MODEL	NOTES
CHWP-1	MECHANICAL ROOM	CHILLED WATER	200	100	0	100	80	BASE MOUNTED END SUCTION	WATER	42	10	1,760	460	3	YES	3"	2 1/2"	YES	GOULDS	100-3X2.5X11	1
CHWP-2	MECHANICAL ROOM	CHILLED WATER	200	100	0	100	80	BASE MOUNTED END SUCTION	WATER	42	10	1,760	460	3	YES	3"	2 1/2"	YES	GOULDS	100-3X2.5X11	1
HWP-1	MECHANICAL ROOM	HOT WATER	195	100	0	100	67	BASE MOUNTED END SUCTION	WATER	180	15	1,775	460	3	YES	2 1/2"	2"	NO	GRUNDFOS	LCS 20121	
HWP-2	MECHANICAL ROOM	HOT WATER	195	100	0	100	67	BASE MOUNTED END SUCTION	WATER	180	15	1,775	460	3	YES	2 1/2"	2"	NO	GRUNDFOS	LCS 20121	

1. REFER TO SPECIFICATION SECTION 23 21 23\_UEM FOR ADDITIONAL INFORMATION AND REQUIREMENTS FOR THE CHILLED WATER PUMPS

AIR SEPARATOR SCHEDULE											
TAG	LOCATION	SYSTEM SERVED	CAPACITY (GPM)	CONNECTIION SIZE (IN.)	MAX. W.P.D. (FT. HD.)	BUILT-IN STRAINER REQUIRED	NOTES	DESIGN REFERENCE			
								AS-1	MECH RM 1.500	HOT WATER	195

FAN COIL UNIT SCHEDULE																											
TAG	LOCATION	AREA SERVED	CONFIGURATION	FAN CFM	E.S.P. (IN. WG.)	TSP (IN WG)	FILTER	FILTER PRESSURE DROP (IN WC)	COOLING COIL					FAN MOTOR													
									EAT	LAT	MIN. SENSIBLE MBH	MIN. TOTAL MBH	PIPE RUNCUT SIZE (IN.)	GPM	ENTERING TEMP. (°F)	LEAVING TEMP. (°F)	MAX. W.P.D. (FT.)	HP	RPM	VOLT	PHASE	EMERGENCY POWER	MANUFACTURER	MODEL	NOTES		
FCU-1-1	MECH RM 1.500	MECH RM 1.500	HORIZONTAL	1,500	0.05	.05			78.0	65.0	55.0	54.0	37.7	48.4	8.4	42	54	3.63	1/2	1,500	208	1	NO	JOHNSON CONTROLS	FNF12	ECM MOTOR	
FCU-1-2	MECH RM 1.500	ELEV RM 1.502	HORIZONTAL	600	0.25	1			78.0	65.0	52.0	51.0	17.3	24.0	4.1	42	54	3.91	1/4	1,325	208	1	YES	JOHNSON CONTROLS	FHP-D09	ECM MOTOR	
FCU-1-3	MECH RM 1.500	ELEC RM 1.503	HORIZONTAL	1,020	0.25	1			78.0	65.0	54.0	53.0	26.7	35.8	4.0	42	54	2.22	1/4	1,400	208	1	NO	JOHNSON CONTROLS	FHP-D12	ECM MOTOR	
FCU-1-4	OFFICE 1.500	OFFICE 1.505	ELEC RM 3.508	600	0.25	1			78.0	65.0	53.0	52.0	17.3	24.0	4.1	42	54	3.91	1/4	1,325	208	1	NO	JOHNSON CONTROLS	FHP-D09	ECM MOTOR	
FCU-5-1	CORRIDOR 4.500	ELEC RM 3.502	HORIZONTAL	1,020	0.25	1			78.0	65.0	54.0	53.0	26.9	35.8	4.0	42	54	2.22	2 @ 1/4	1,400	208	1	NO	JOHNSON CONTROLS	FHP-D12	ECM MOTOR	
FCU-4-1	CORRIDOR 4.500	TR 4.502	HORIZONTAL	1,380	0.25	1			78.0	65.0	55.0	54.0	35.3	45.7	4.1	7.9	42	54	3.26	1/2	1,500	208	1	YES	JOHNSON CONTROLS	FNP12	ECM MOTOR
FCU-5-1	CORRIDOR 5.500	ELEC RM 5.502	HORIZONTAL	600	0.25	1			78.0	65.0	52.0	51.0	17.3	24.0	4.1	42	54	3.91	1/4	1,325	208	1	NO	JOHNSON CONTROLS	FHP-D09	ECM MOTOR	
FCU-5-2	CORRIDOR 5.500A	COMPUTATIONAL RM 5.518	HORIZONTAL	600	0.25	1.1			78.0	65.0	52.0	51.0	17.3	24.0	4.1	42	54	3.91	1/4	1,325	208	1	YES	JOHNSON CONTROLS	FHP-D09	ECM MOTOR	
FCU-6-1	MECH 2.500.06	MECH 2.50006	HORIZONTAL	1,500	0.05	.05			78.0	65.0	55.0	54.0	37.7	48.4	1"	8.4	42	54	3.63	1/2	1,500	208	1	NO	JOHNSON CONTROLS	FNF12	ECM MOTOR

1. PROVIDE 1" MERV 8 FILTER WITH UNIT.

EXPANSION TANK SCHEDULE														
TAG	LOCATION	SYSTEM SERVED	SIZE		APPROXIMATE SYSTEM VOLUME (GALLONS)		SYSTEM TEMP. RANGE		PRESSURE RANGE		RELIEF VALVE (PSIG)		MAX. AT TANK (PSIG)	MIN. ACCEPT VOL. (GALLONS)
<th rowspan="



SpawGlass CONSTRUCTION MANAGER | SPAWGGLASS  
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STRUCTURAL | MARTINEZ MOORE  
M 221 W. 6th St., Suite 800 | Austin, TX 78701  
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LANDSCAPE ARCH. | COLEMAN & ASSOCIATES  
COH 9890 Silver Mountain Dr. | Austin, TX 78737  
ph. 512.476.2099

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JH 505 E. Huntland Dr., Suite 501 | Austin, TX 78752  
ph. 512.792.3990

ACOUSTICS + VIBRATION | DICKENSHEETS DESIGN  
D 10919 Conchos Trl., Suite 100 | Austin, TX 78726  
ph. 512.331.8577

## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS

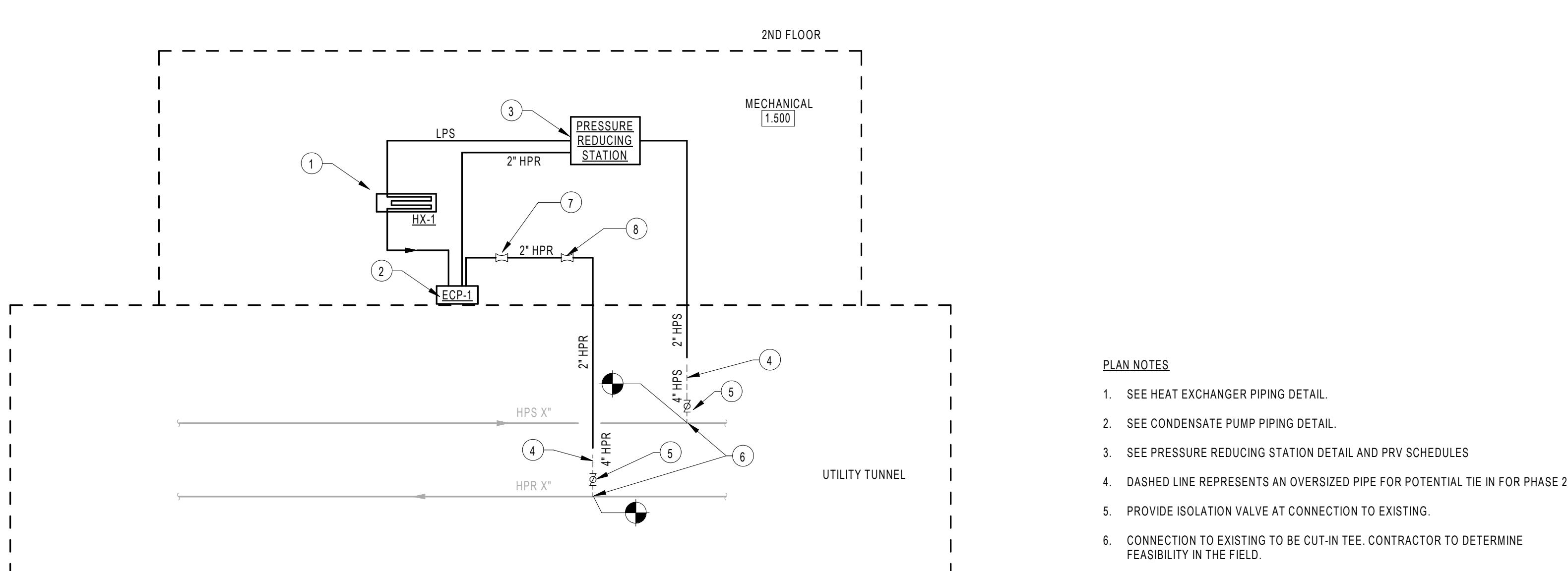
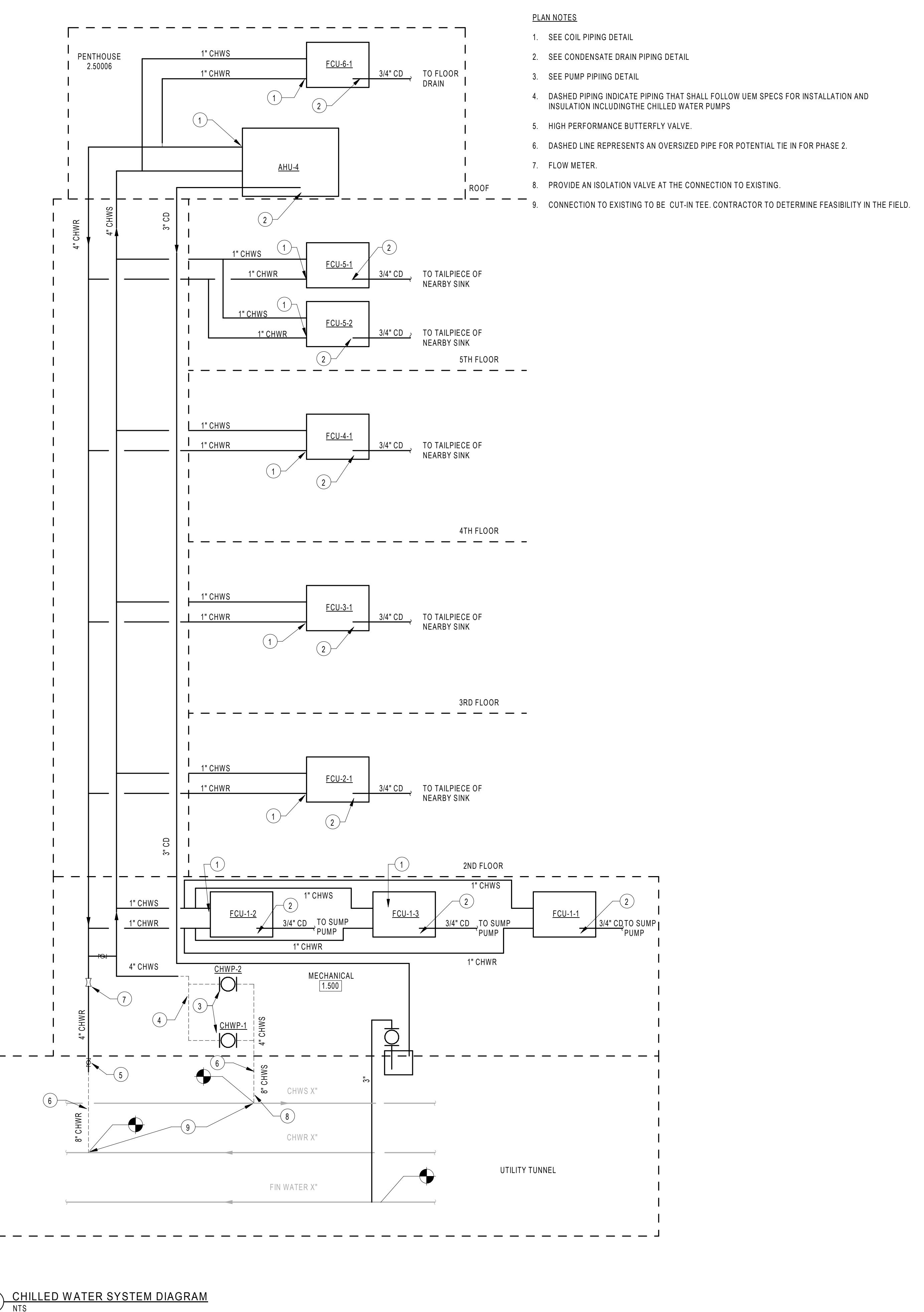
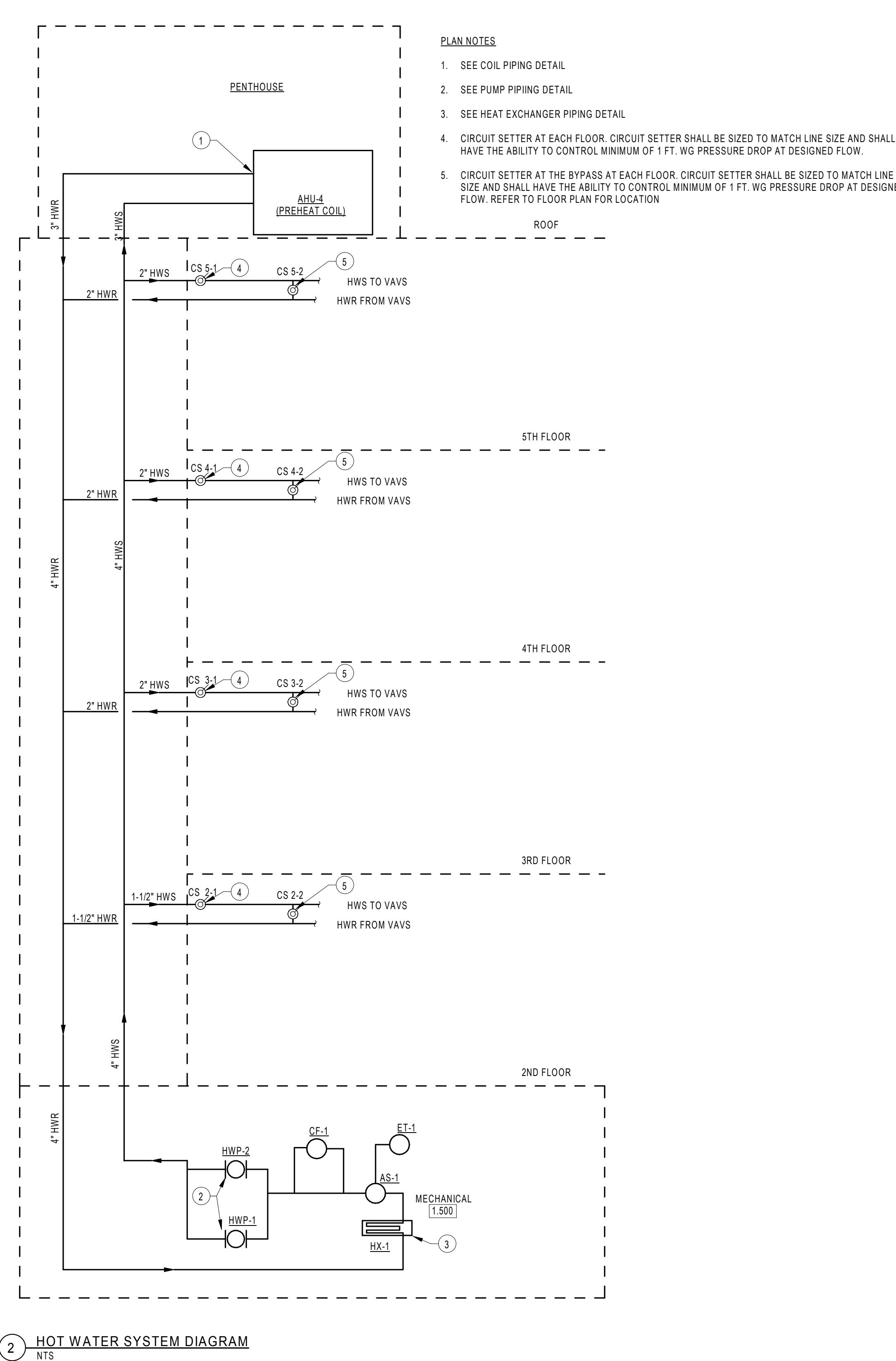
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10.31.2019  
PRISCILLA A. SAGER  
122817  
BSA  
STATE OF TEXAS  
PRACTICING ENGINEER  
LIC# 122817  
EXPIRES 10/31/2020  
Signature

## MECHANICAL SCHEDULES

DATE	OCT 31, 2019
BSALS PROJECT NO.	15830011

M502



## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS

MARK	DATE	DESCRIPTION
	10.31.2019	



## HVAC FLOW DIAGRAM

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

M600

## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS

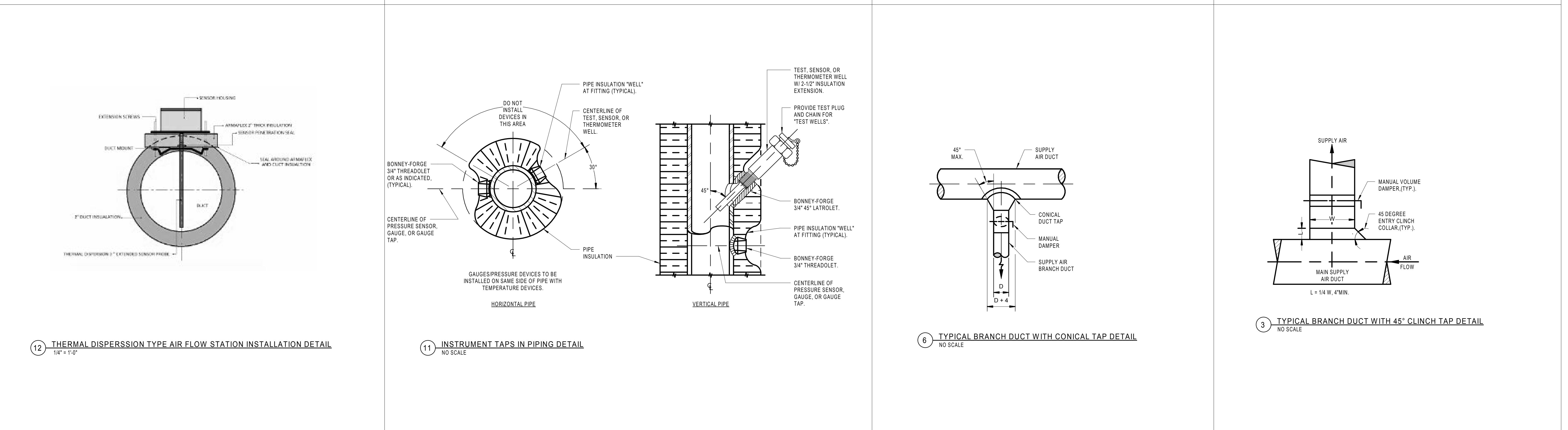
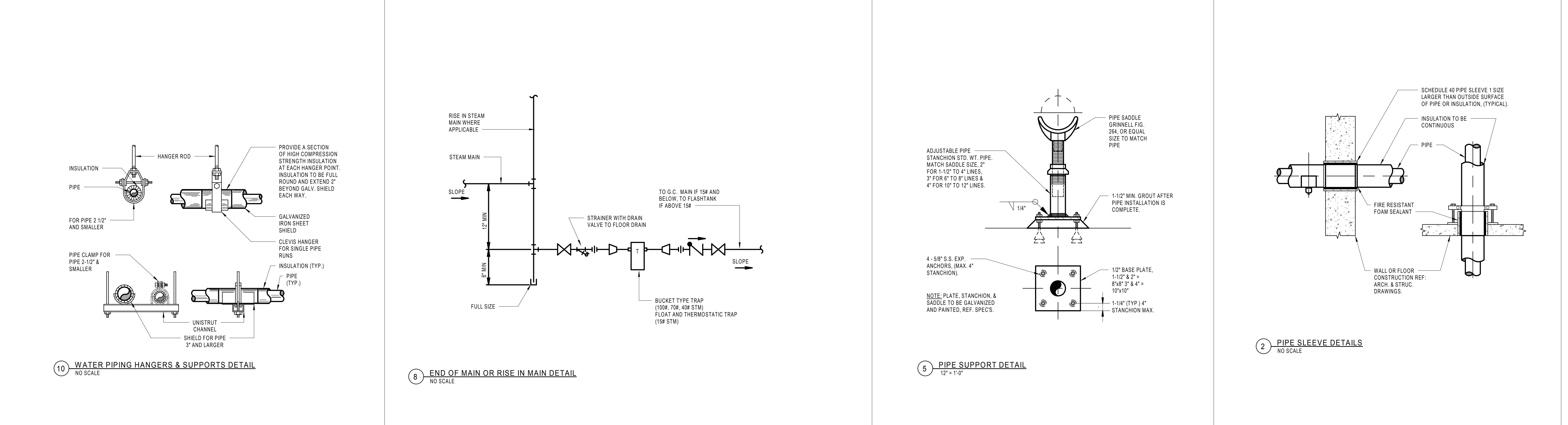
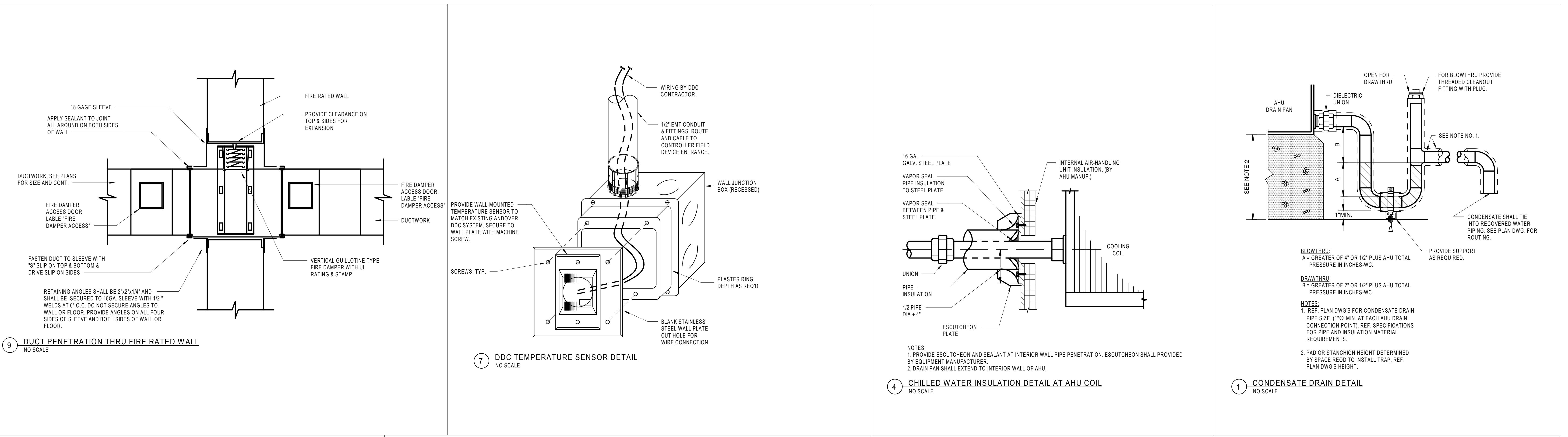
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## HVAC DETAILS

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

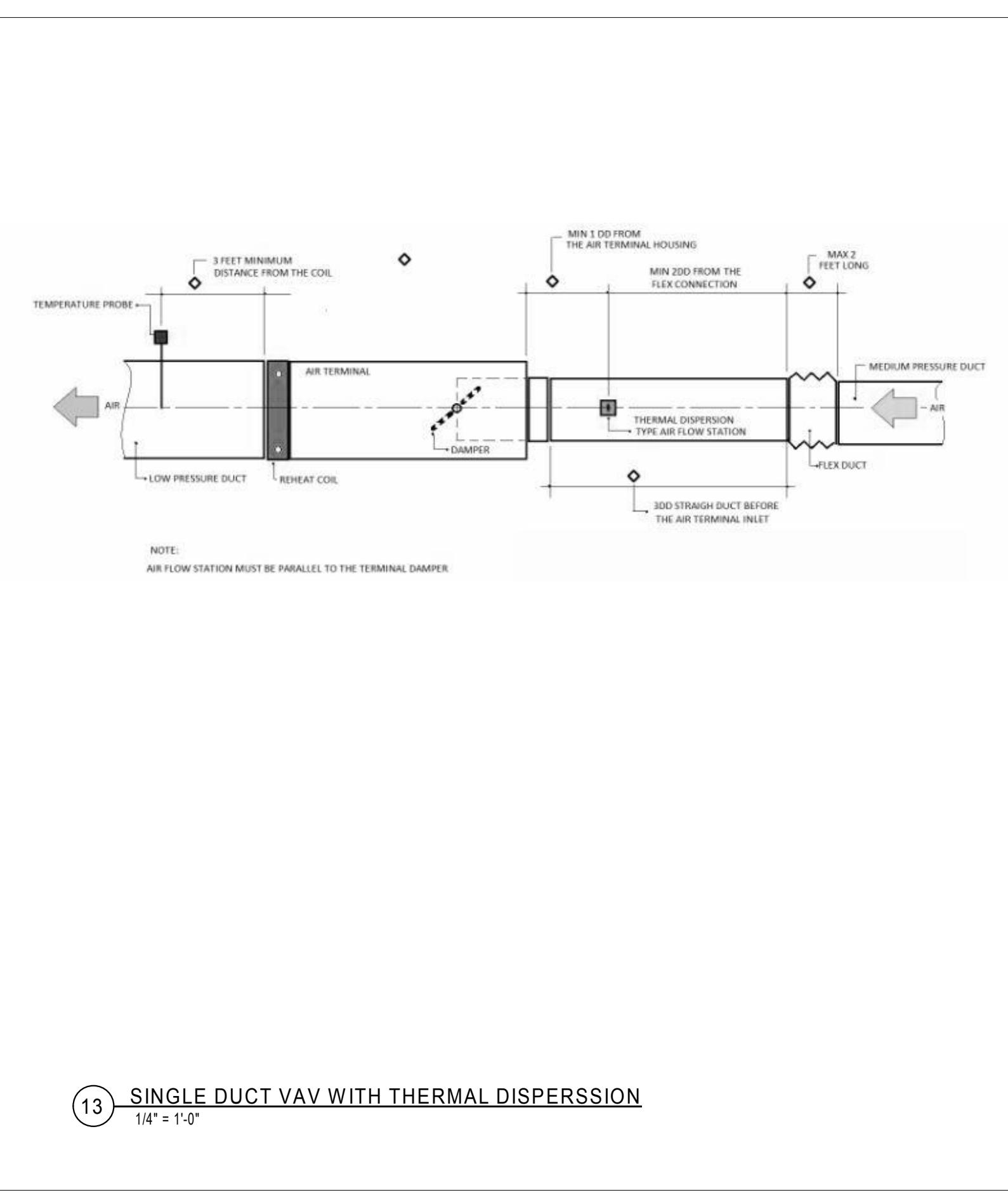
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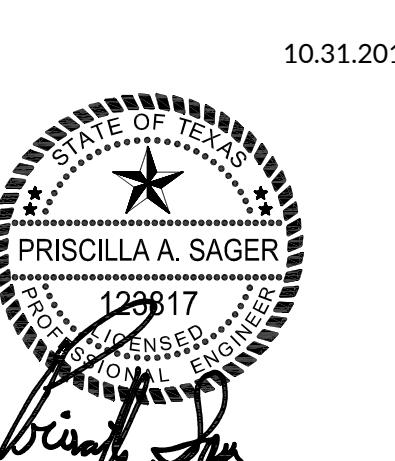
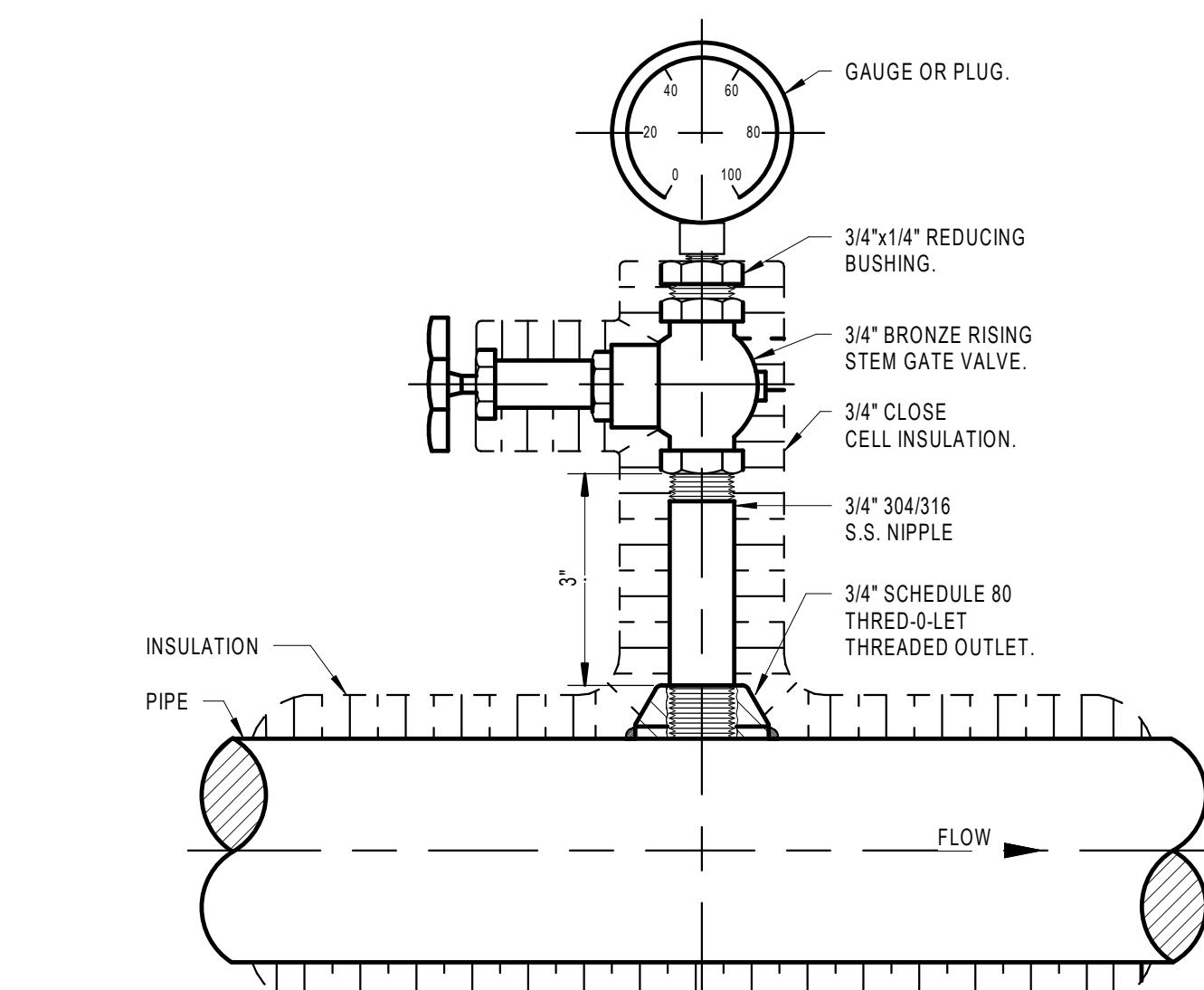
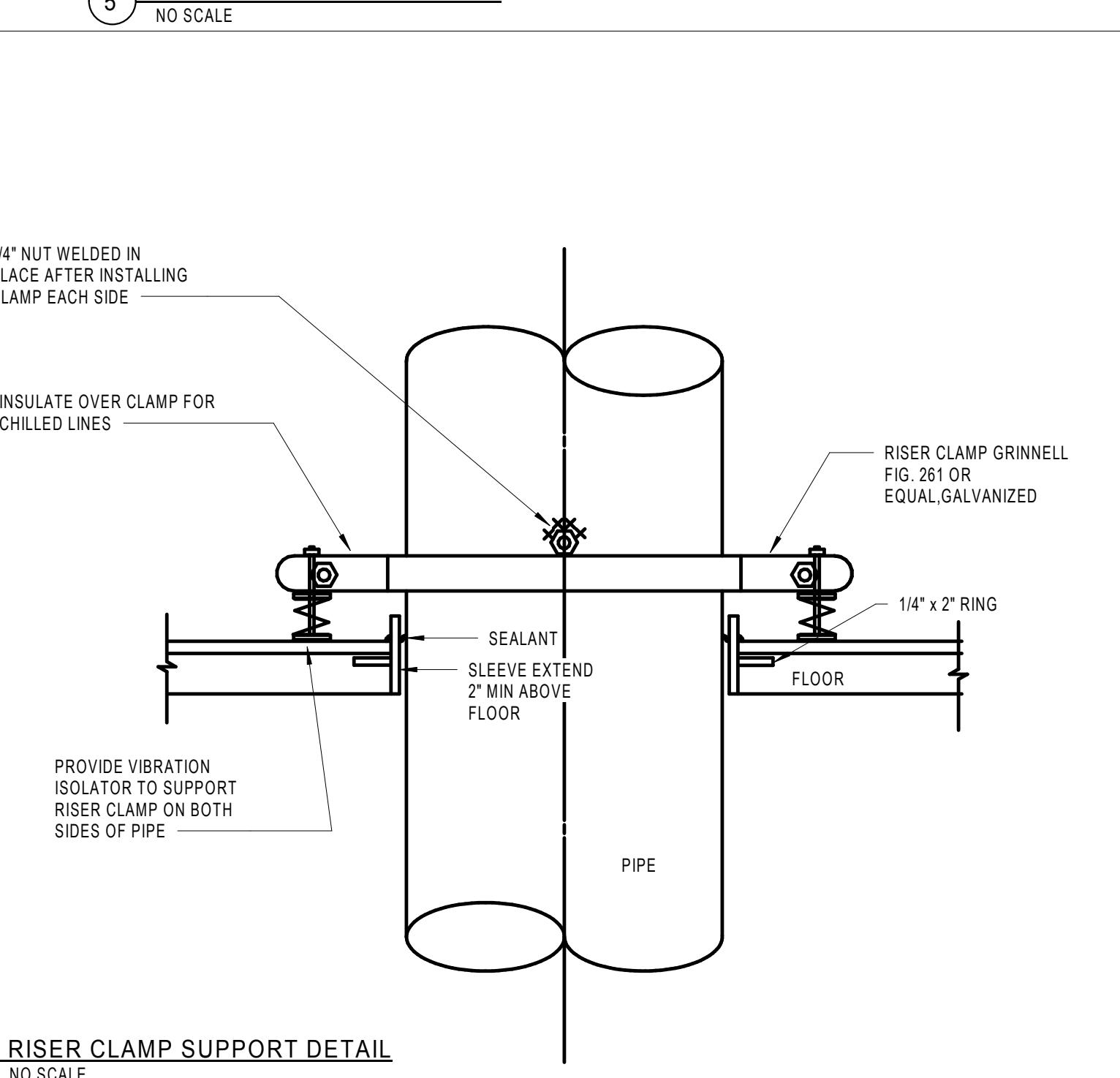
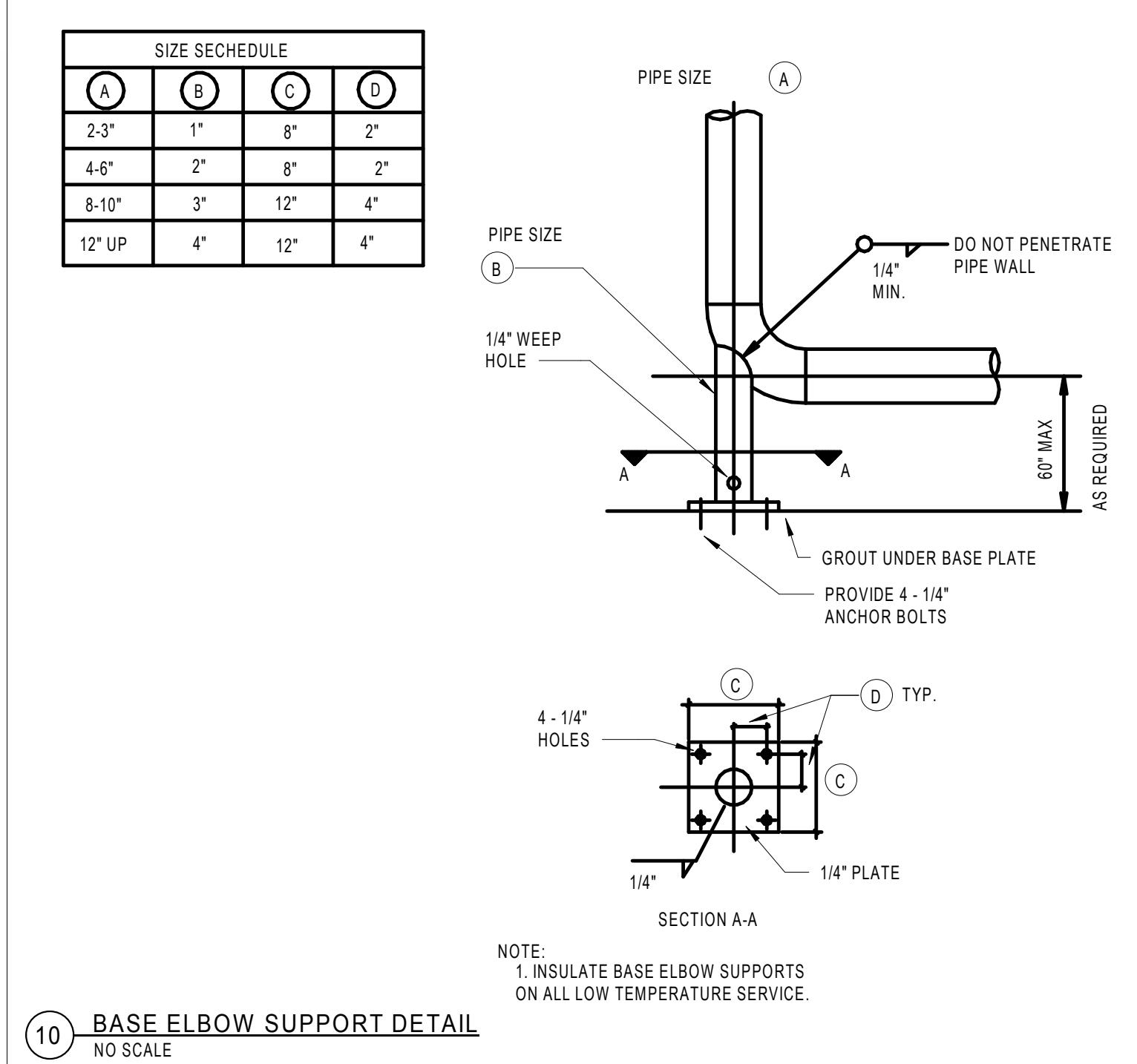
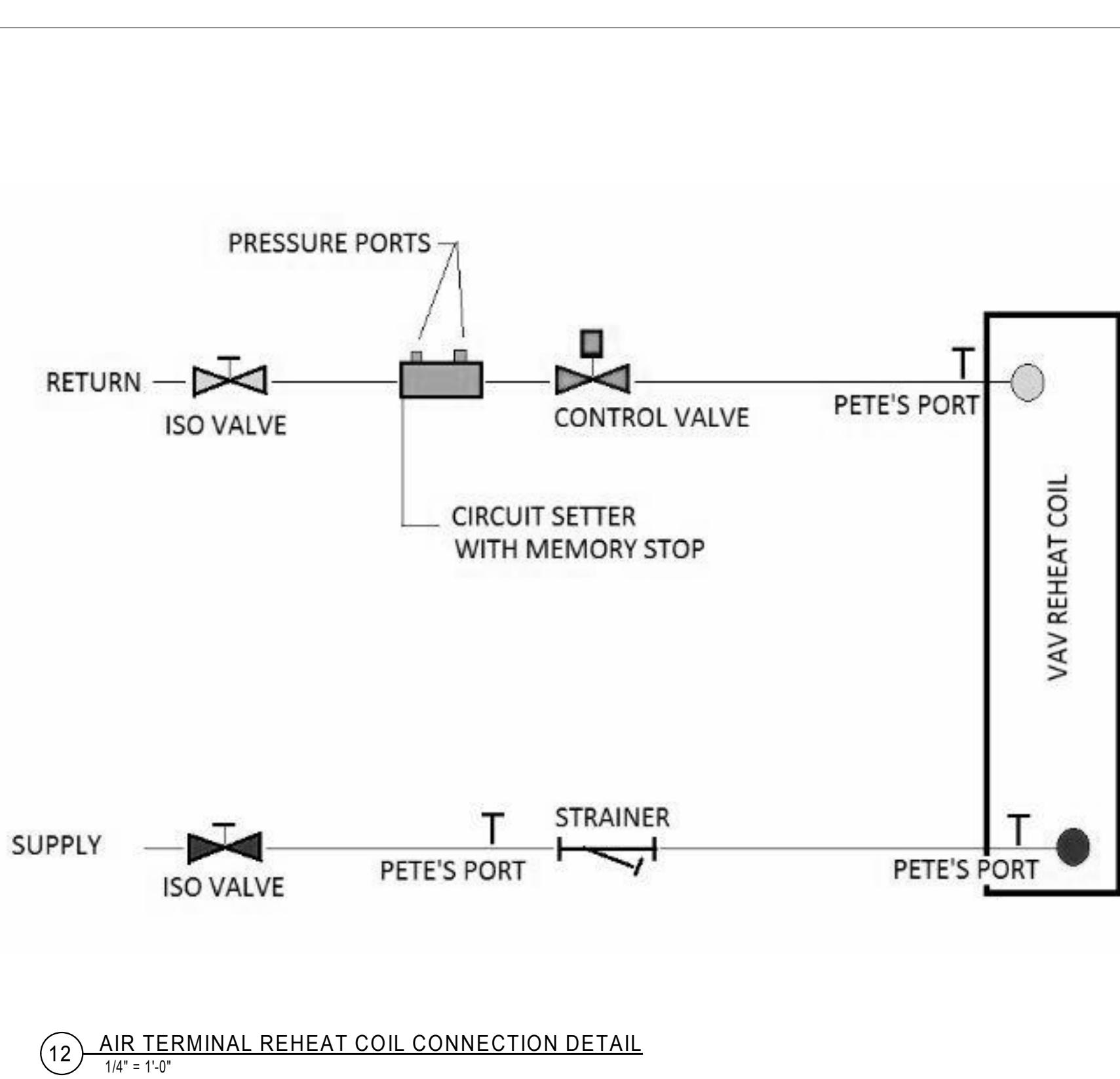
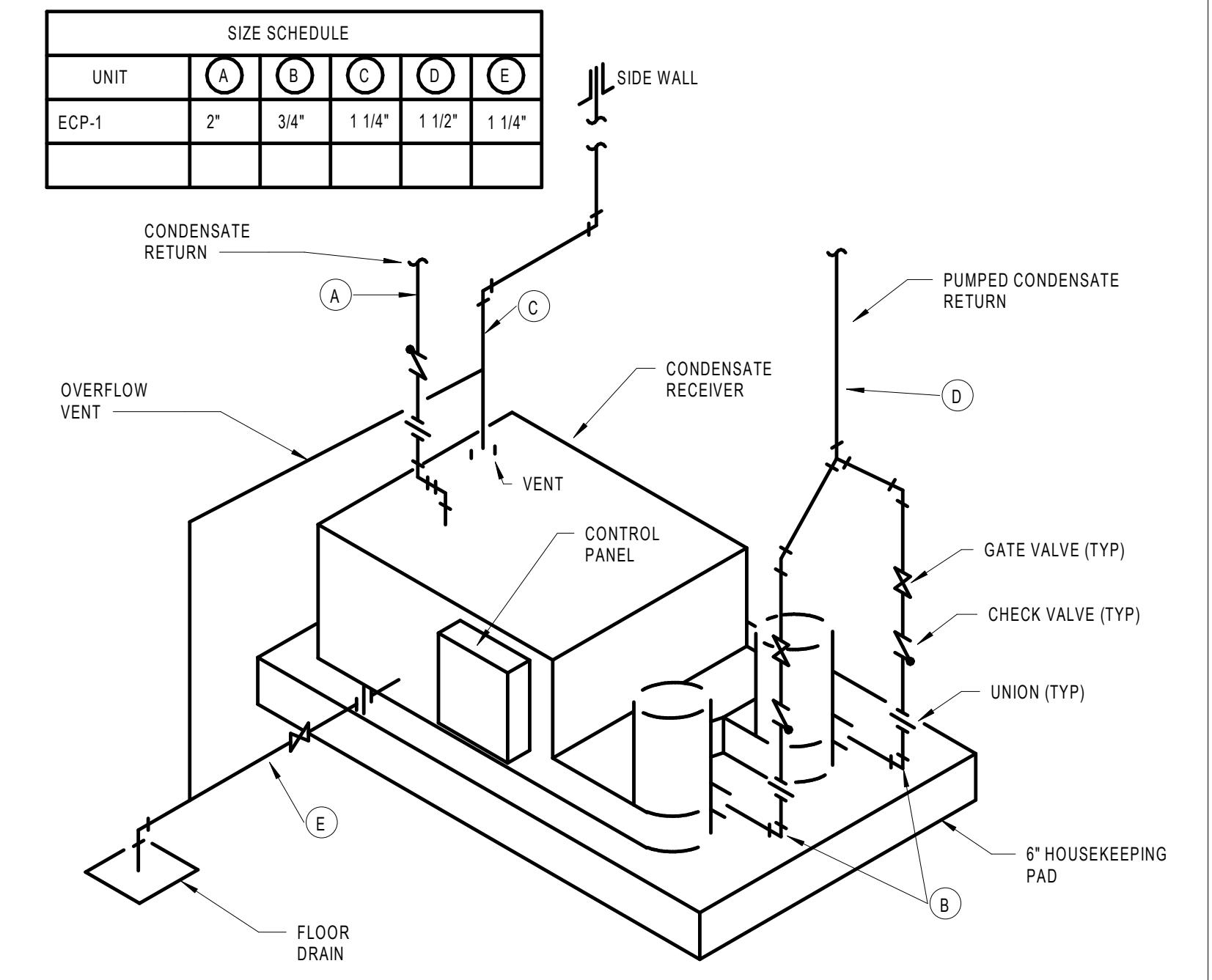
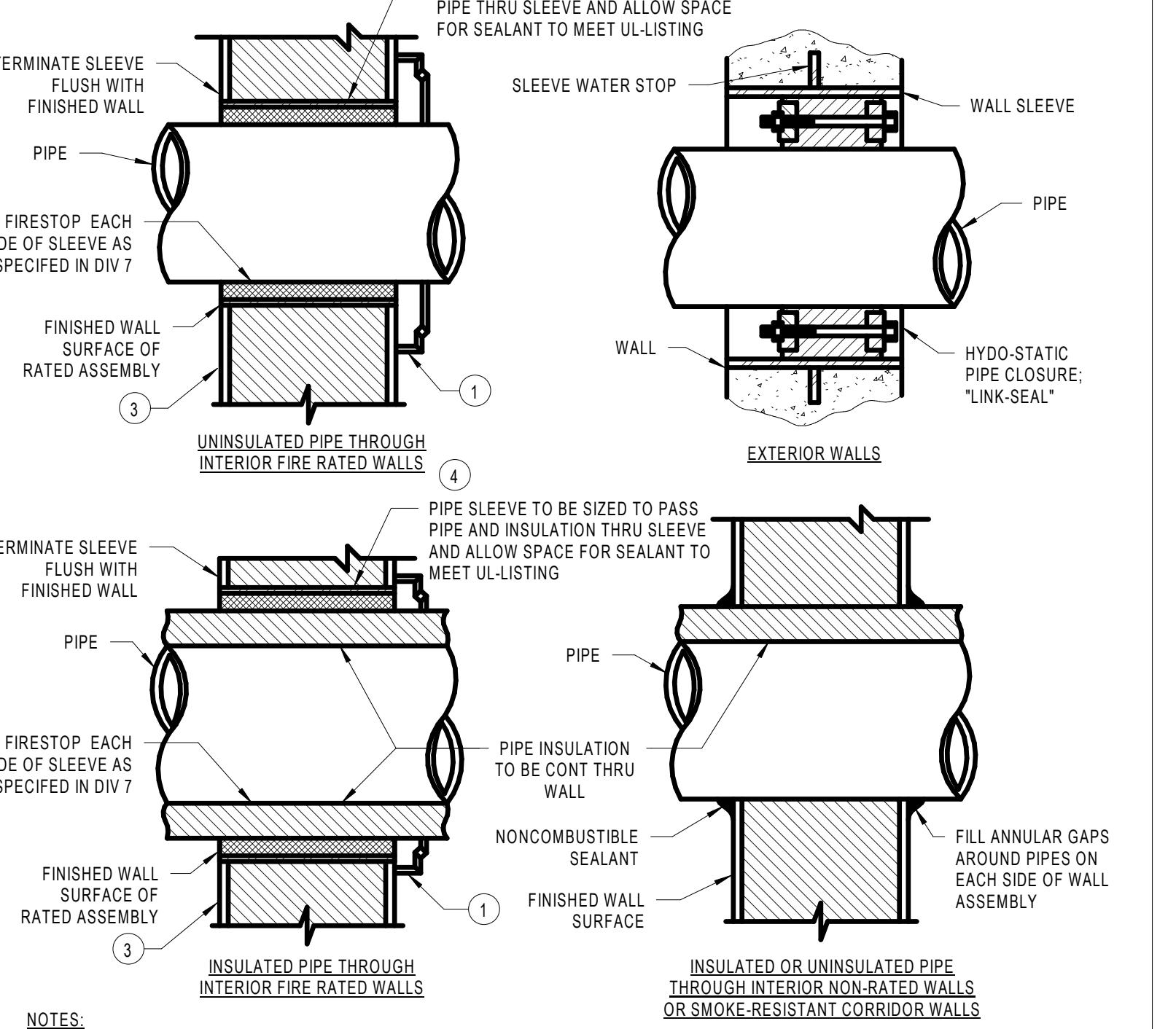
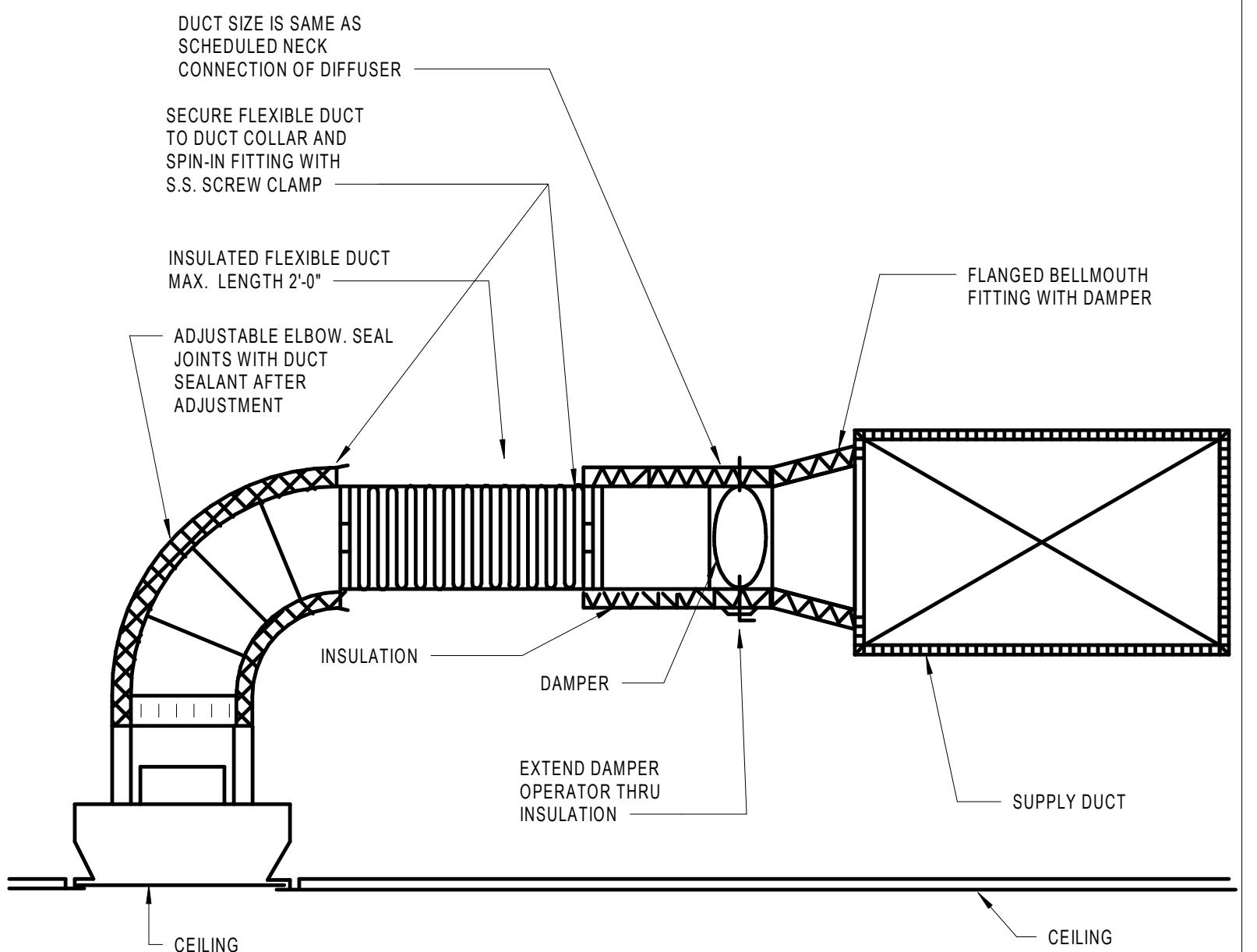
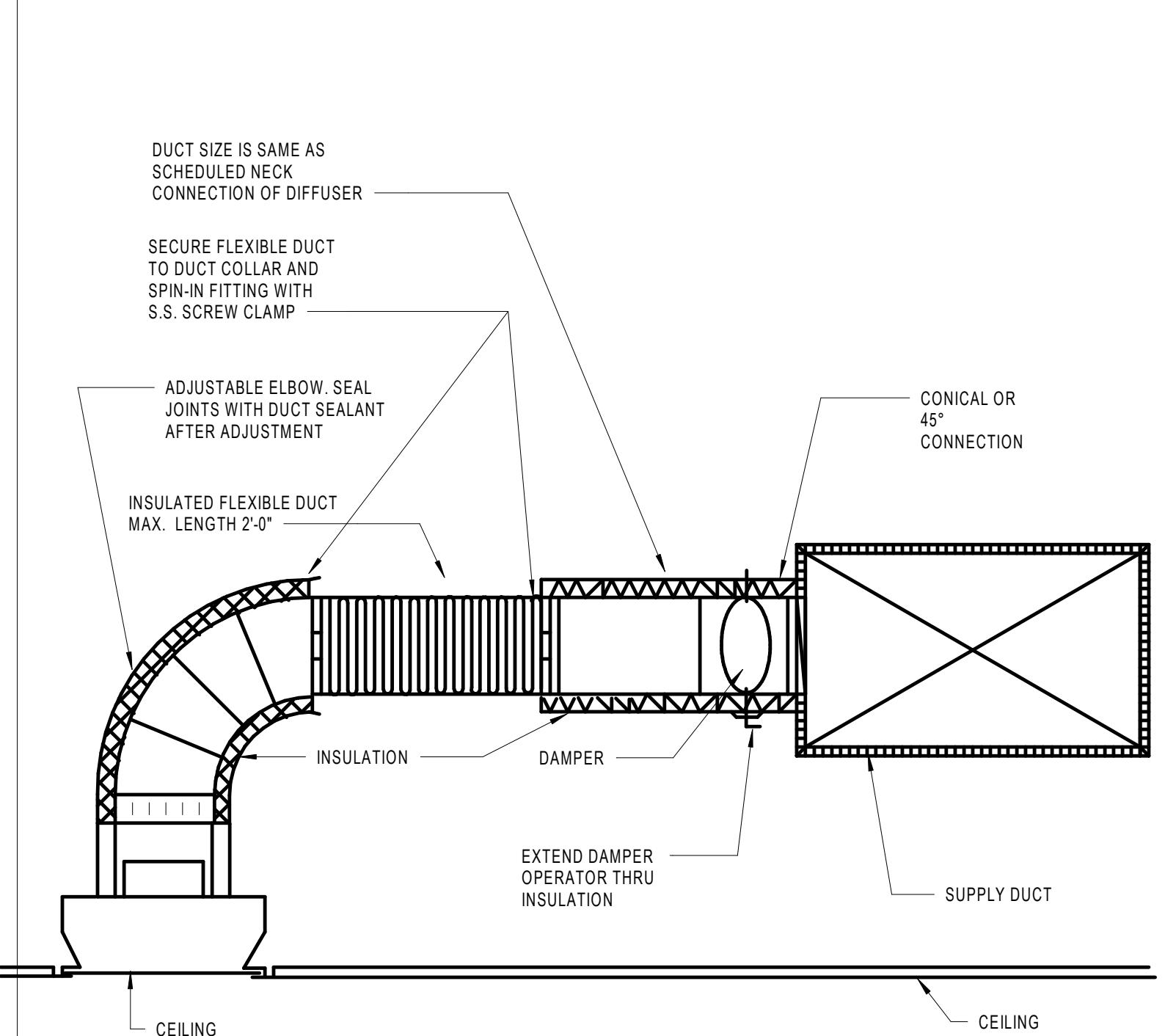
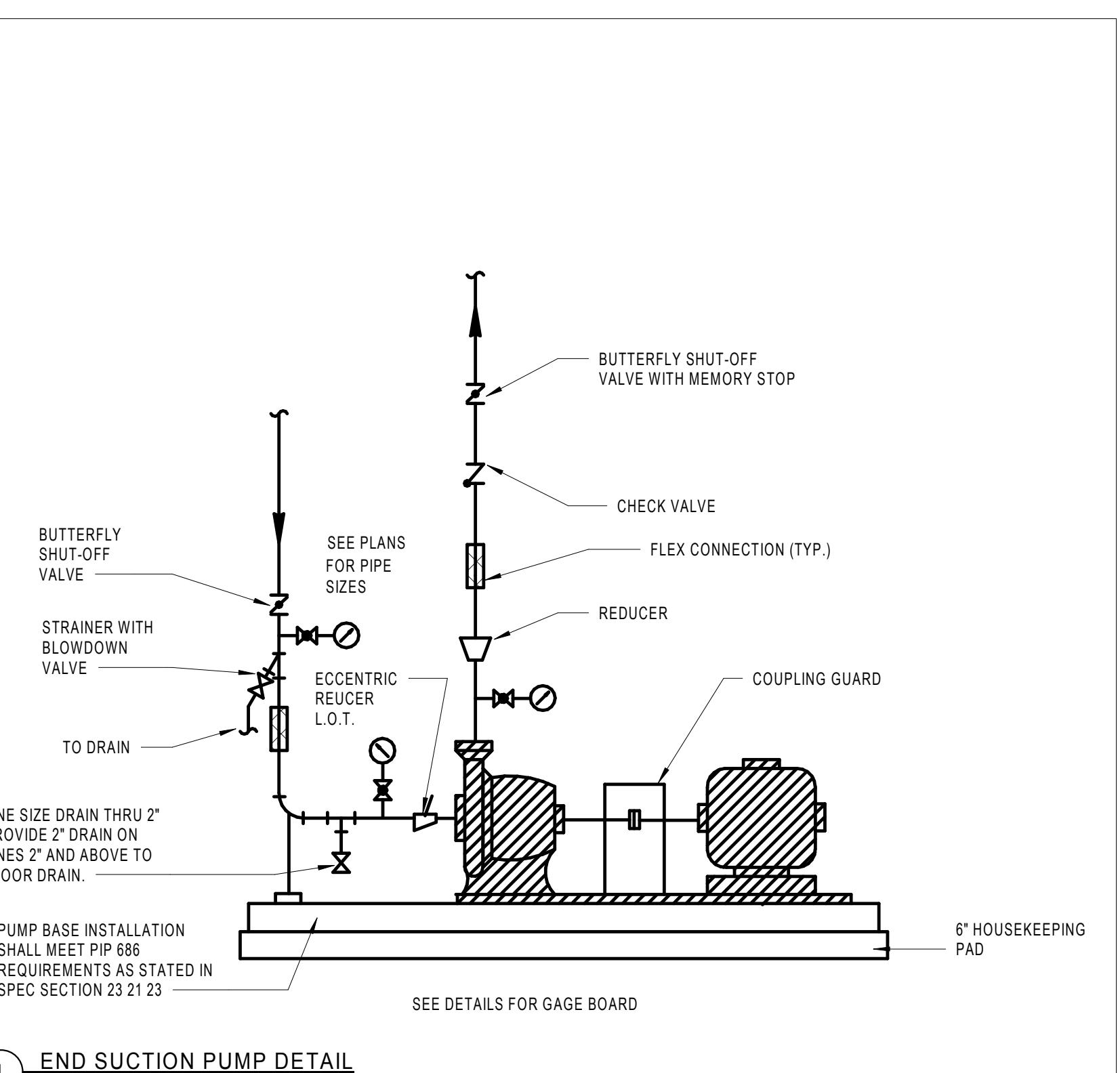
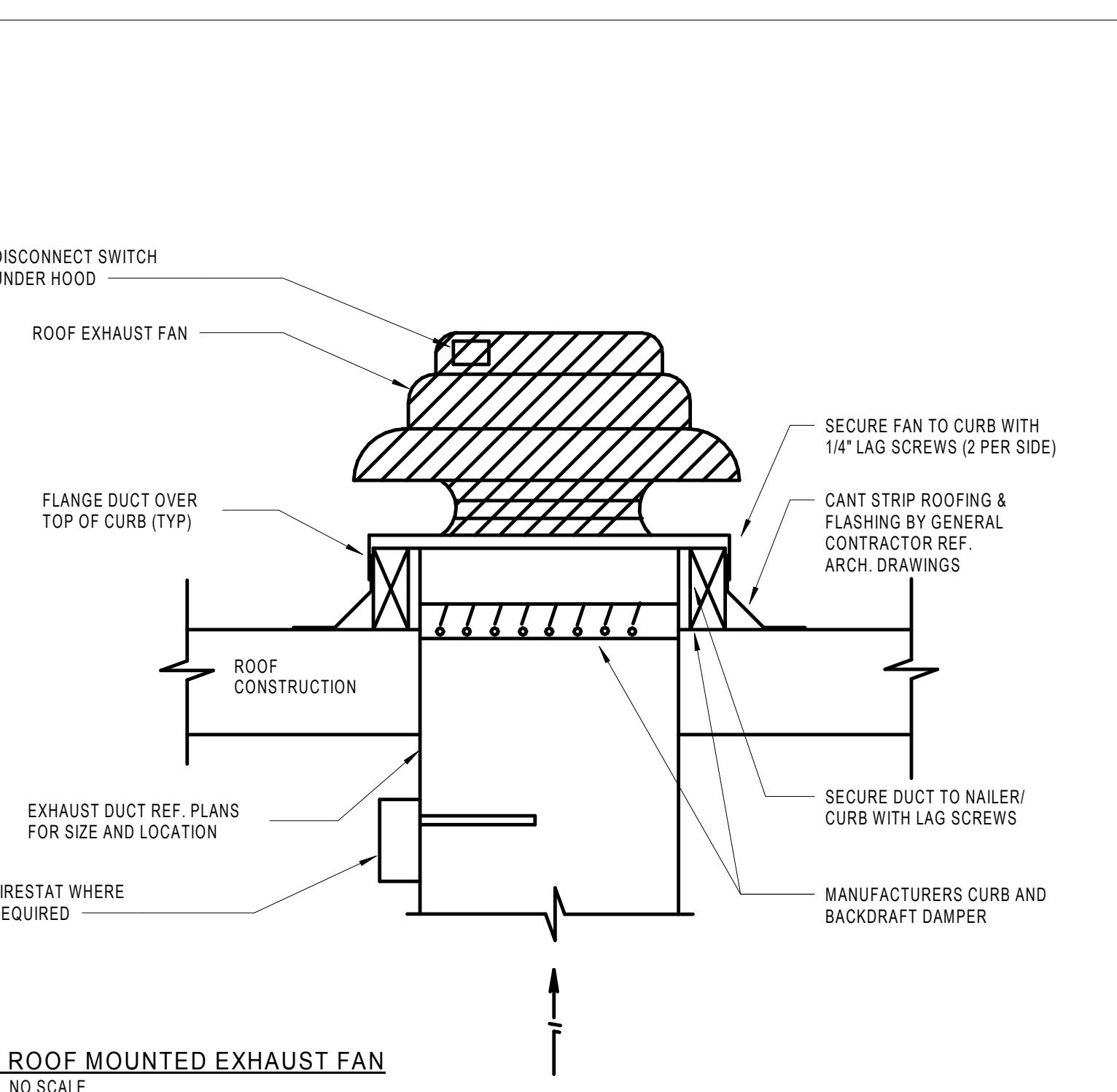
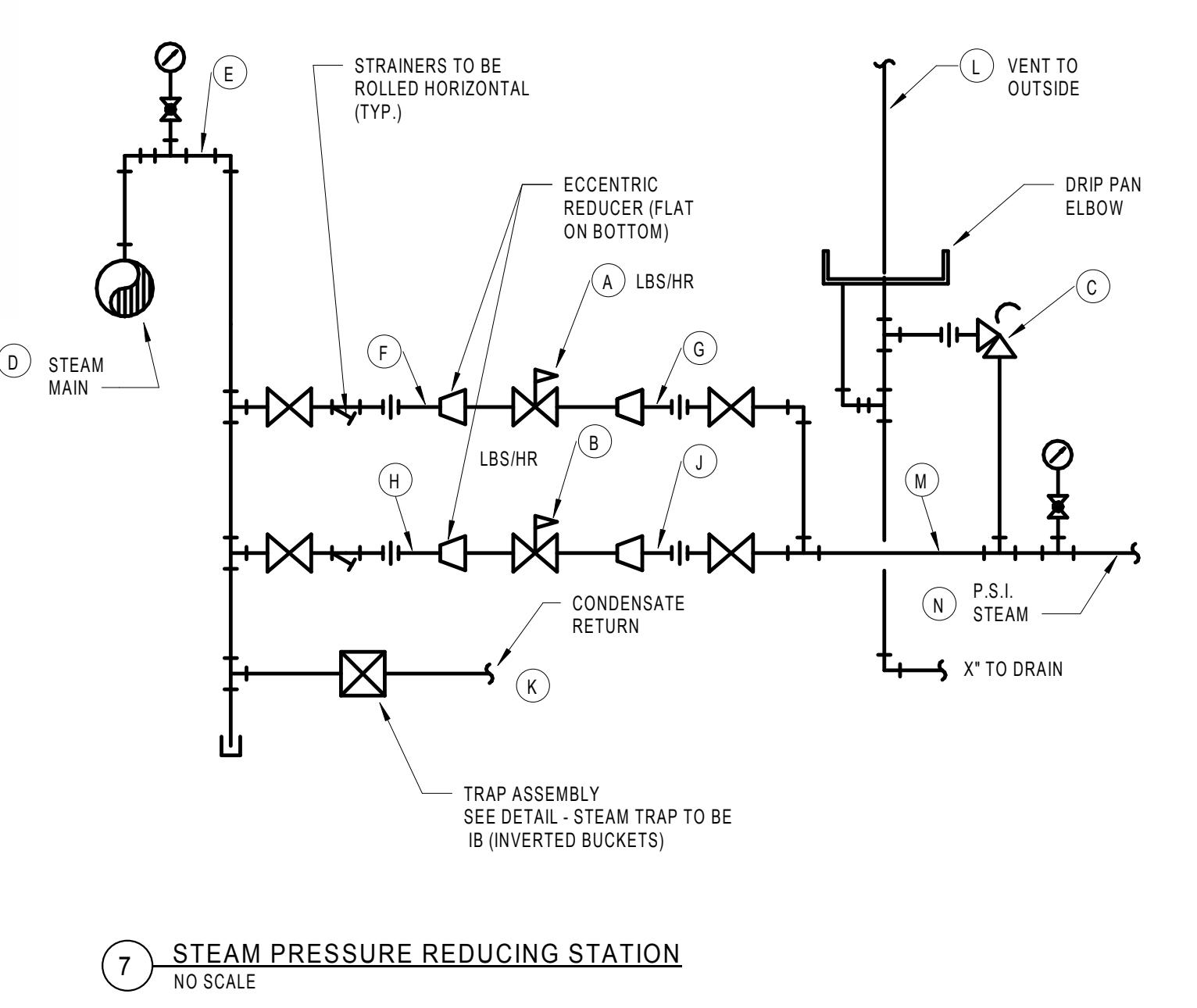
## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS



STATION	A	B	C	D	E	F	G	H	J	K	L	M	N
PRV-1	2200	2200	2	165 #	2"	2"	2"	2"	2"	1-1/2"	2"	2"	2



## HVAC DETAILS

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

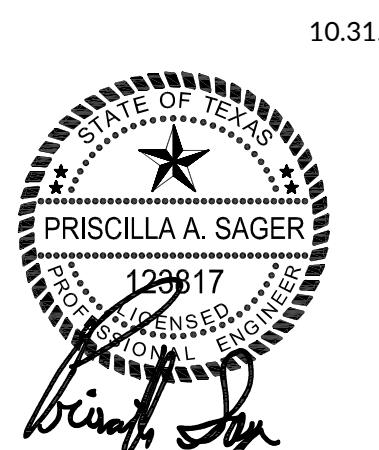
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## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

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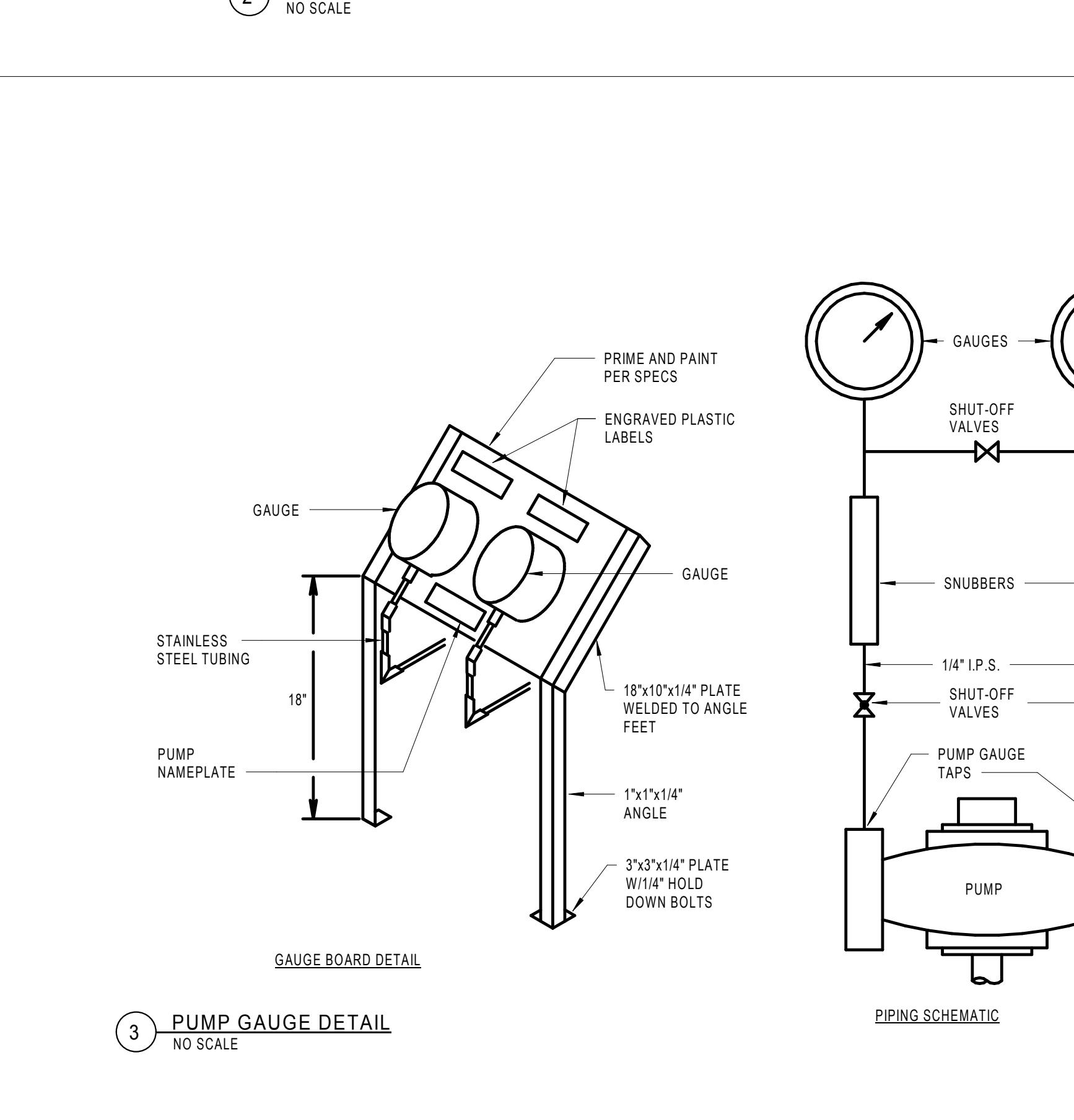
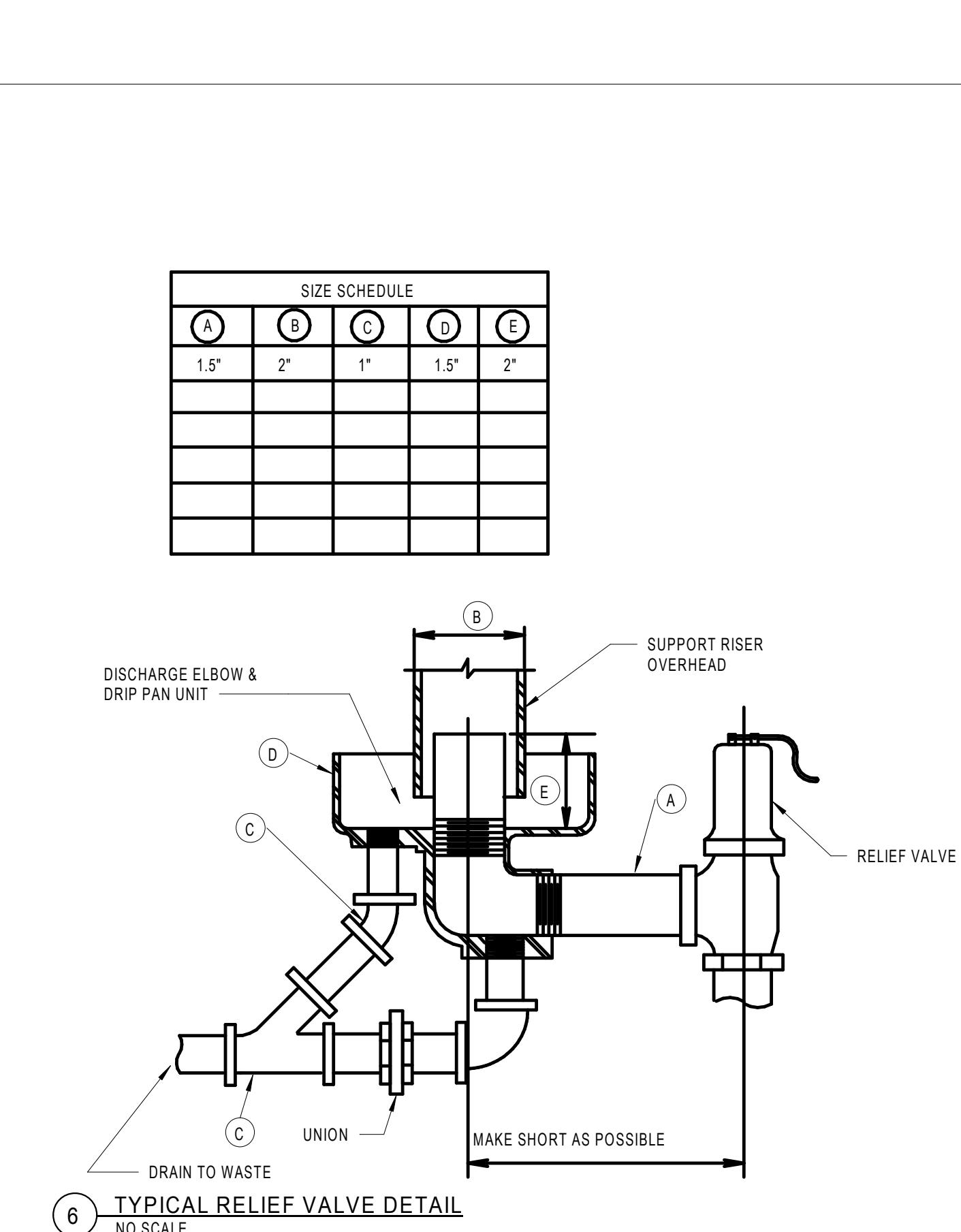
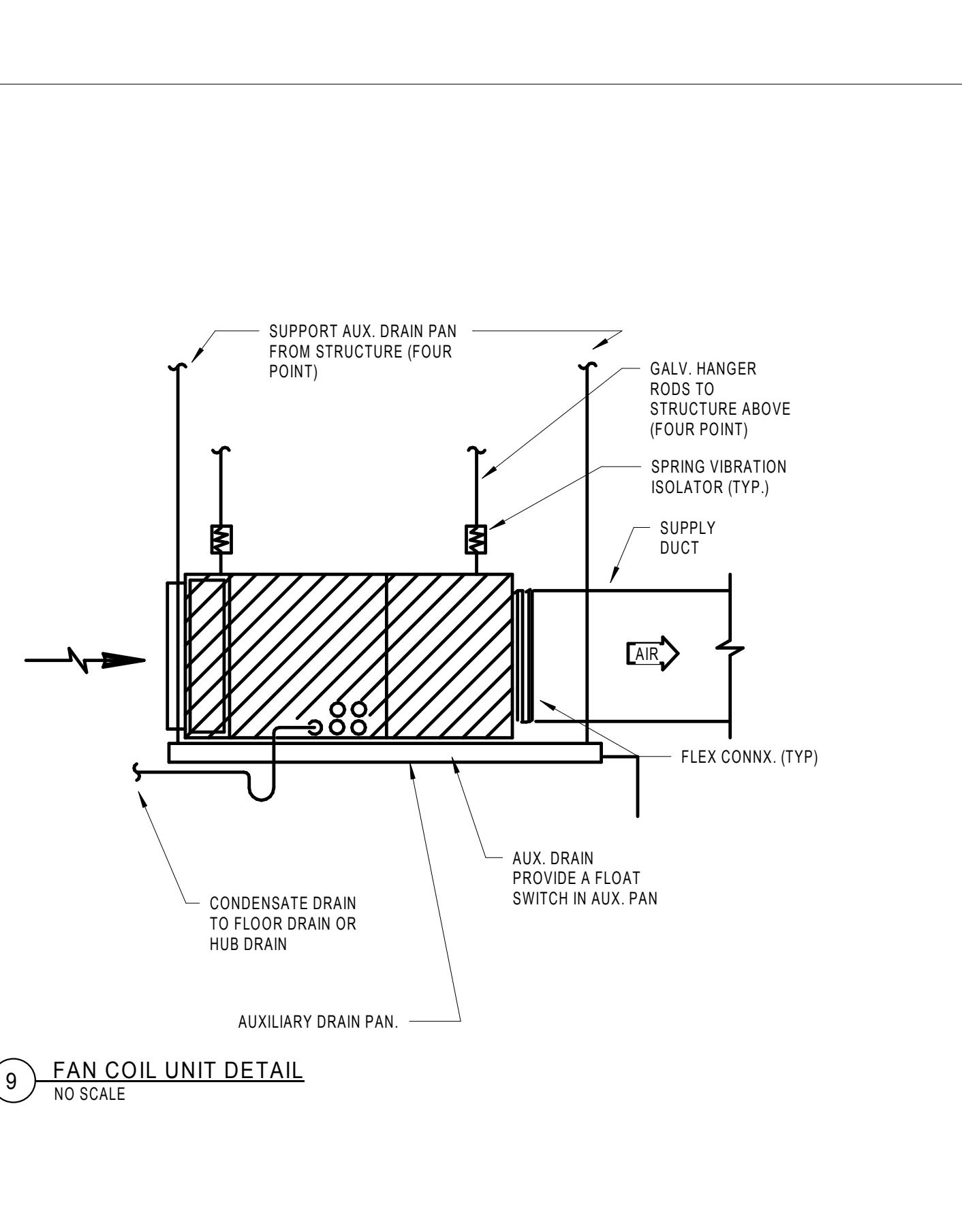
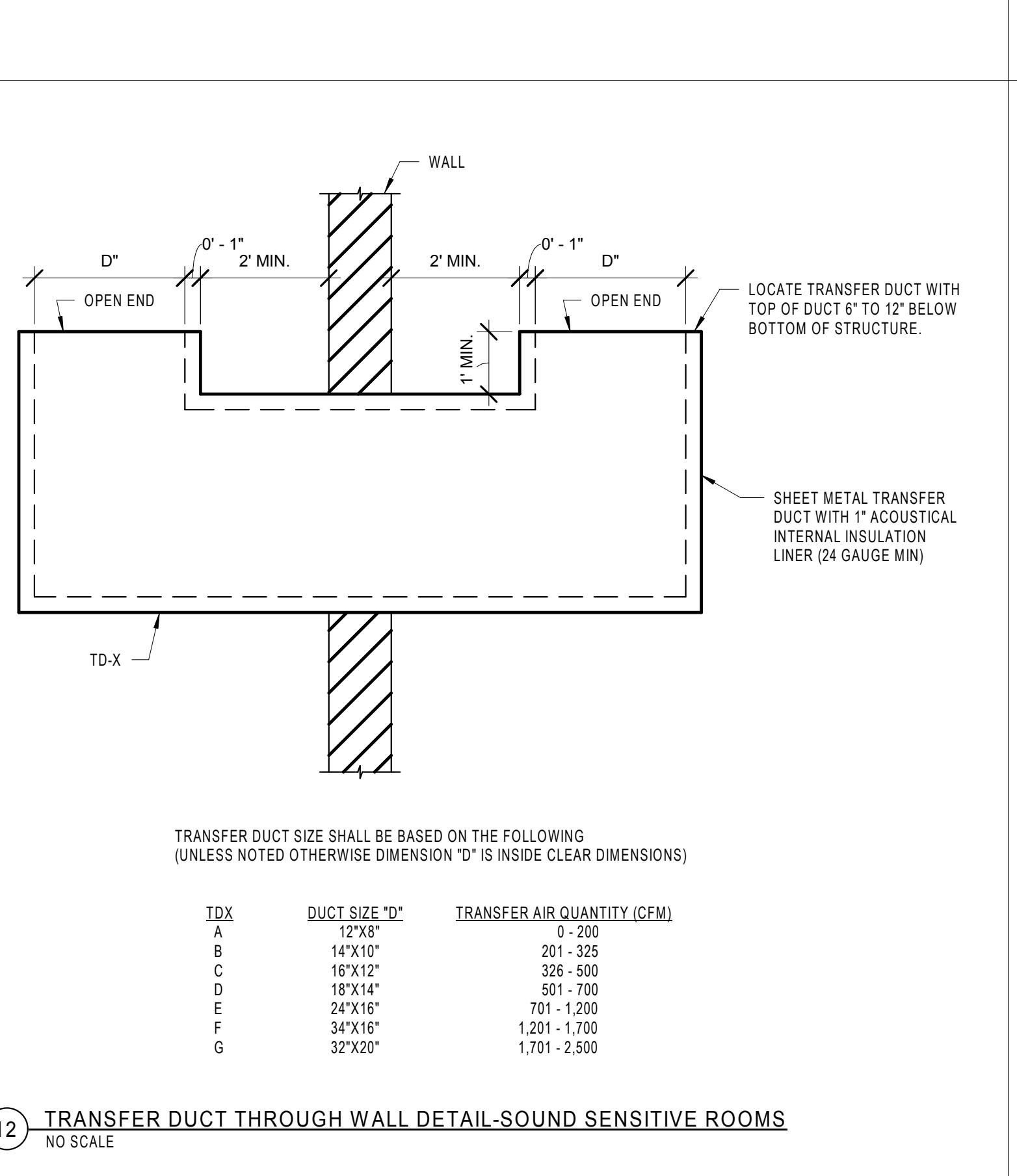
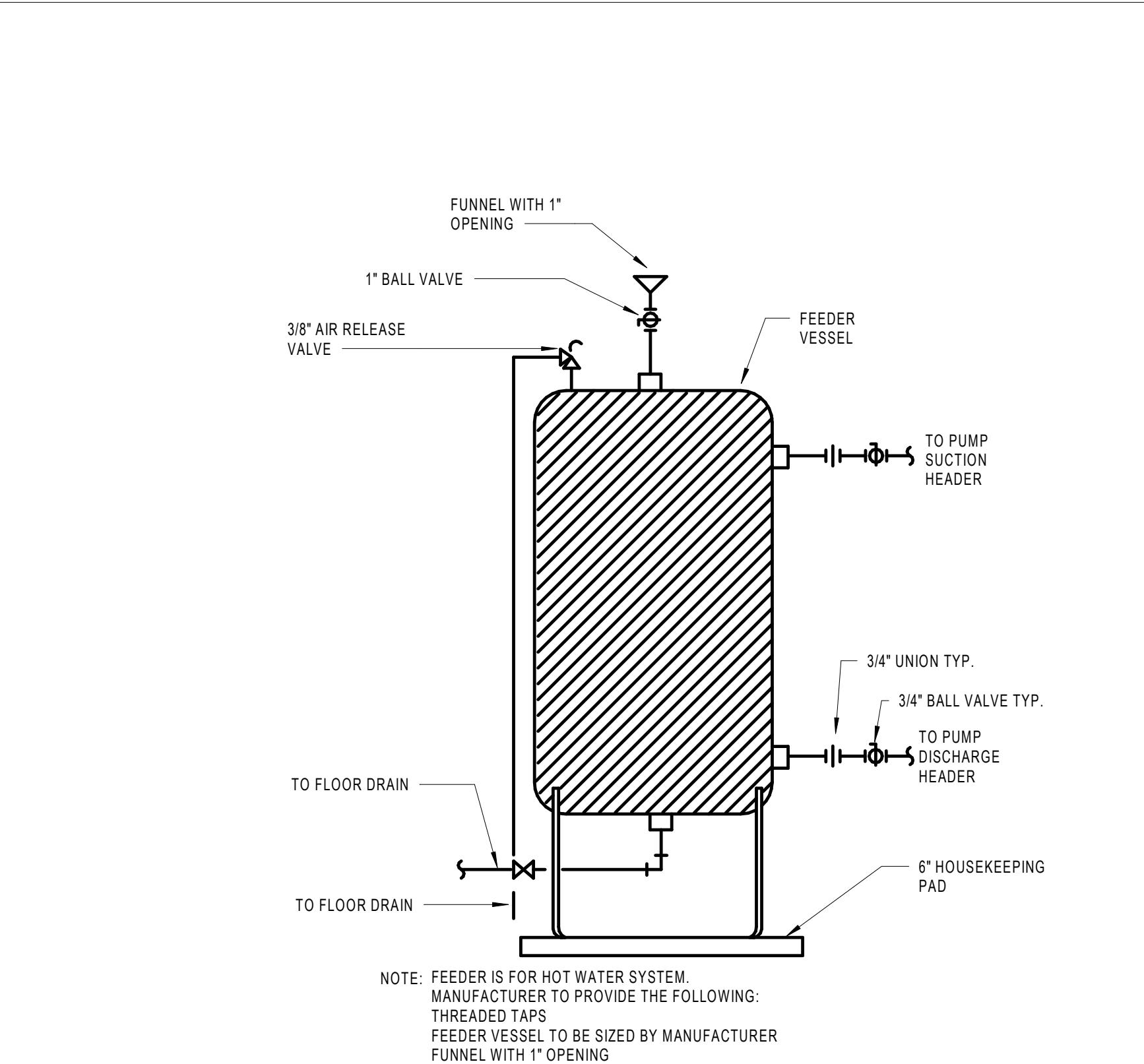
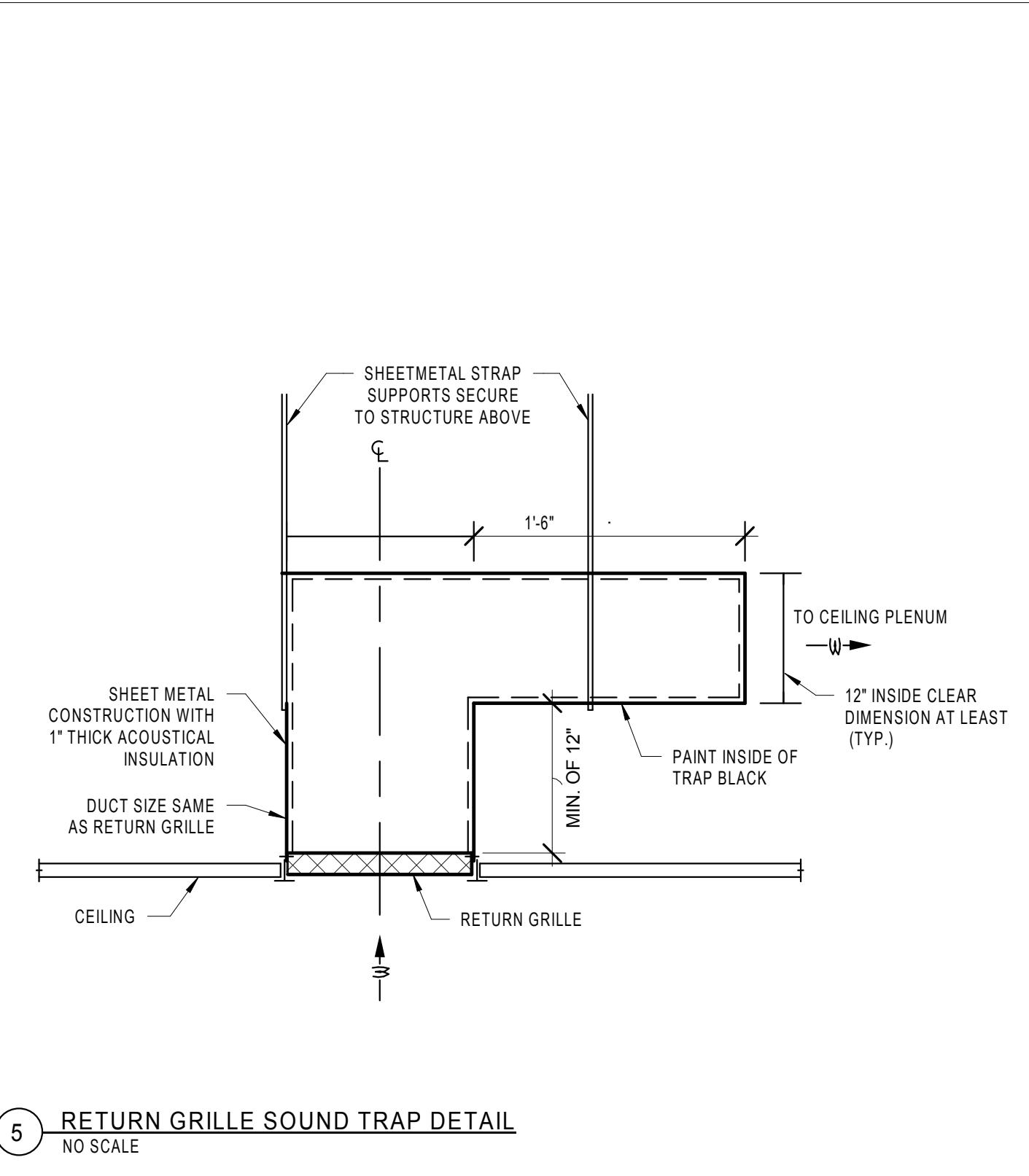
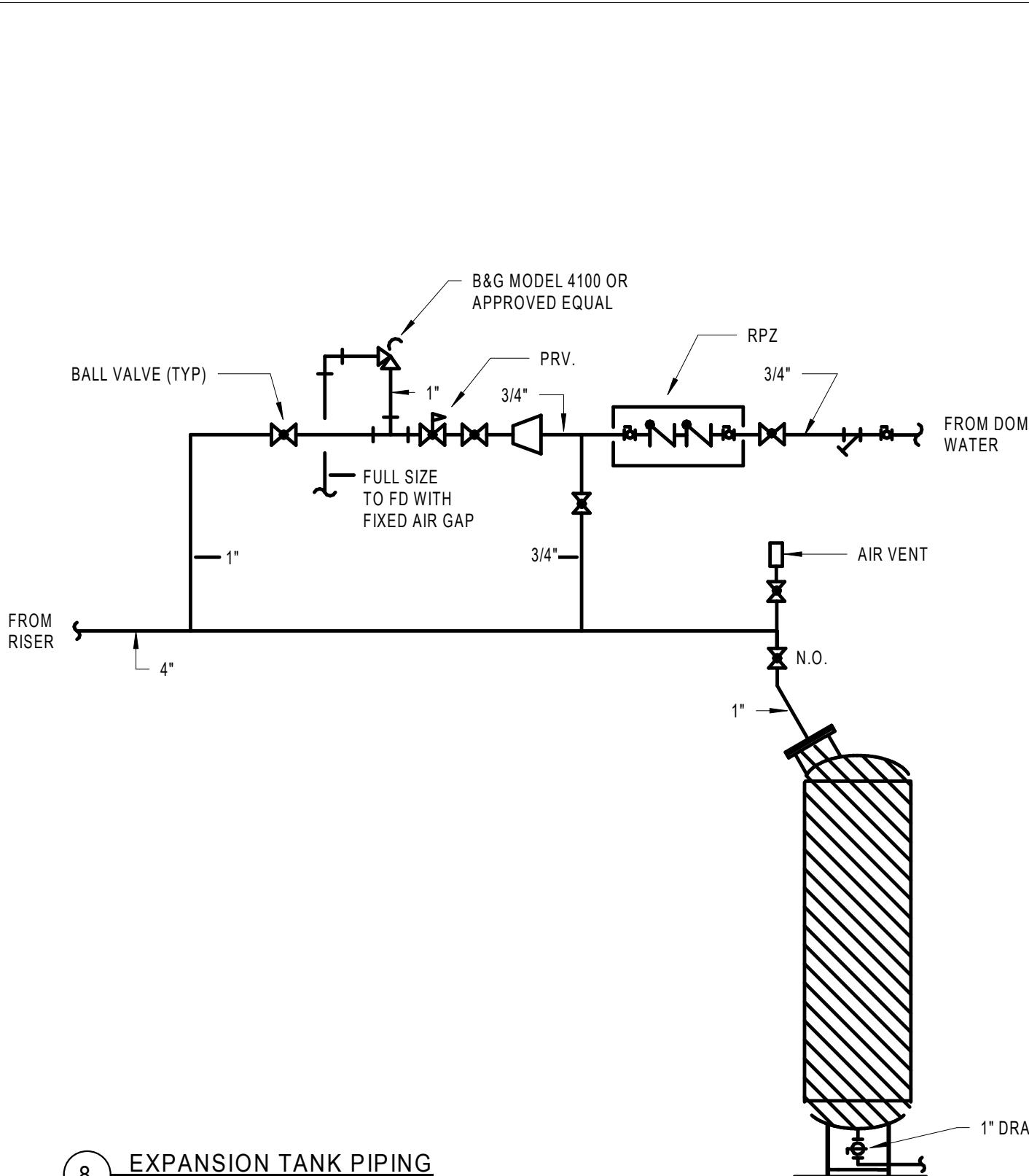
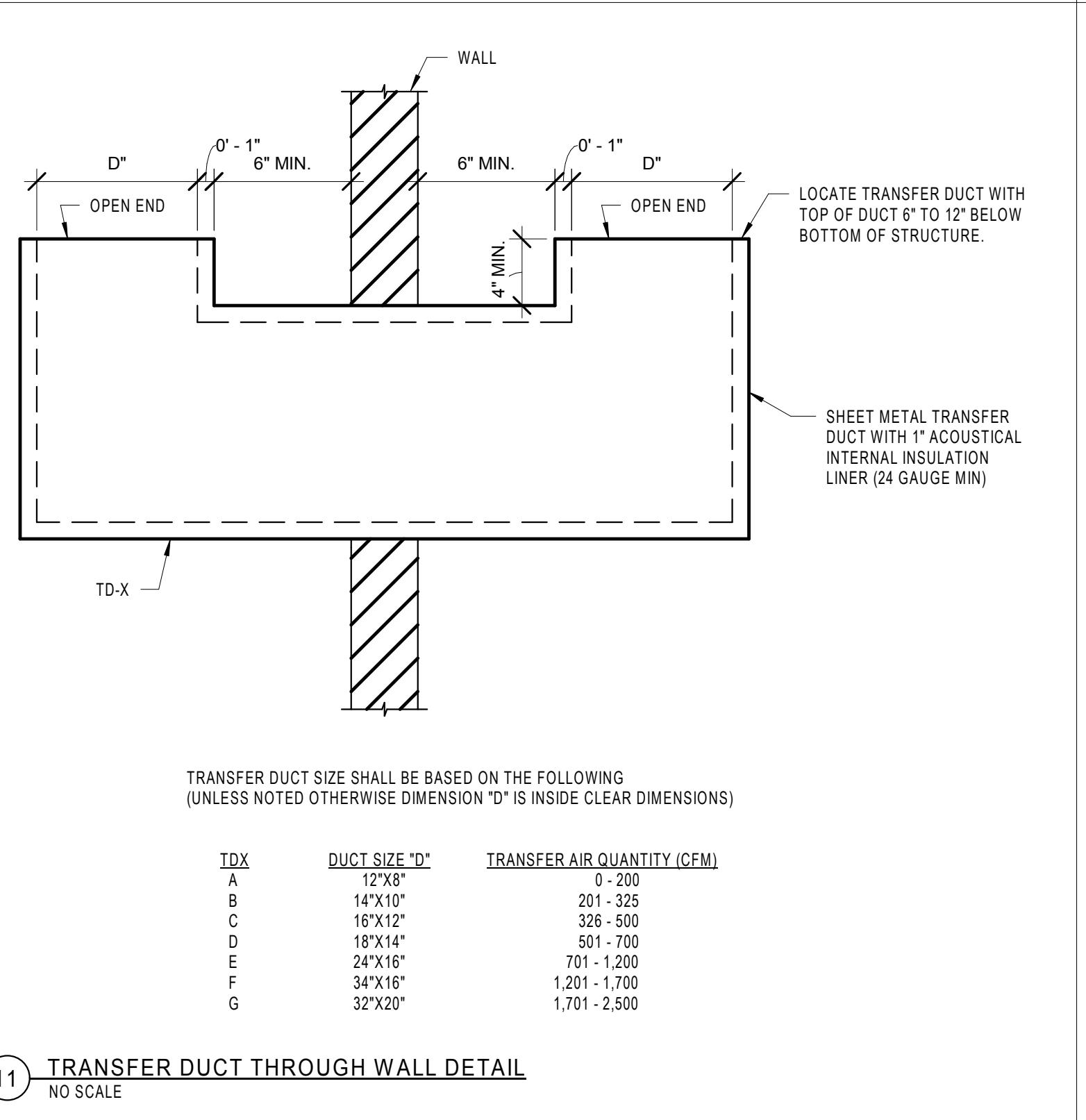
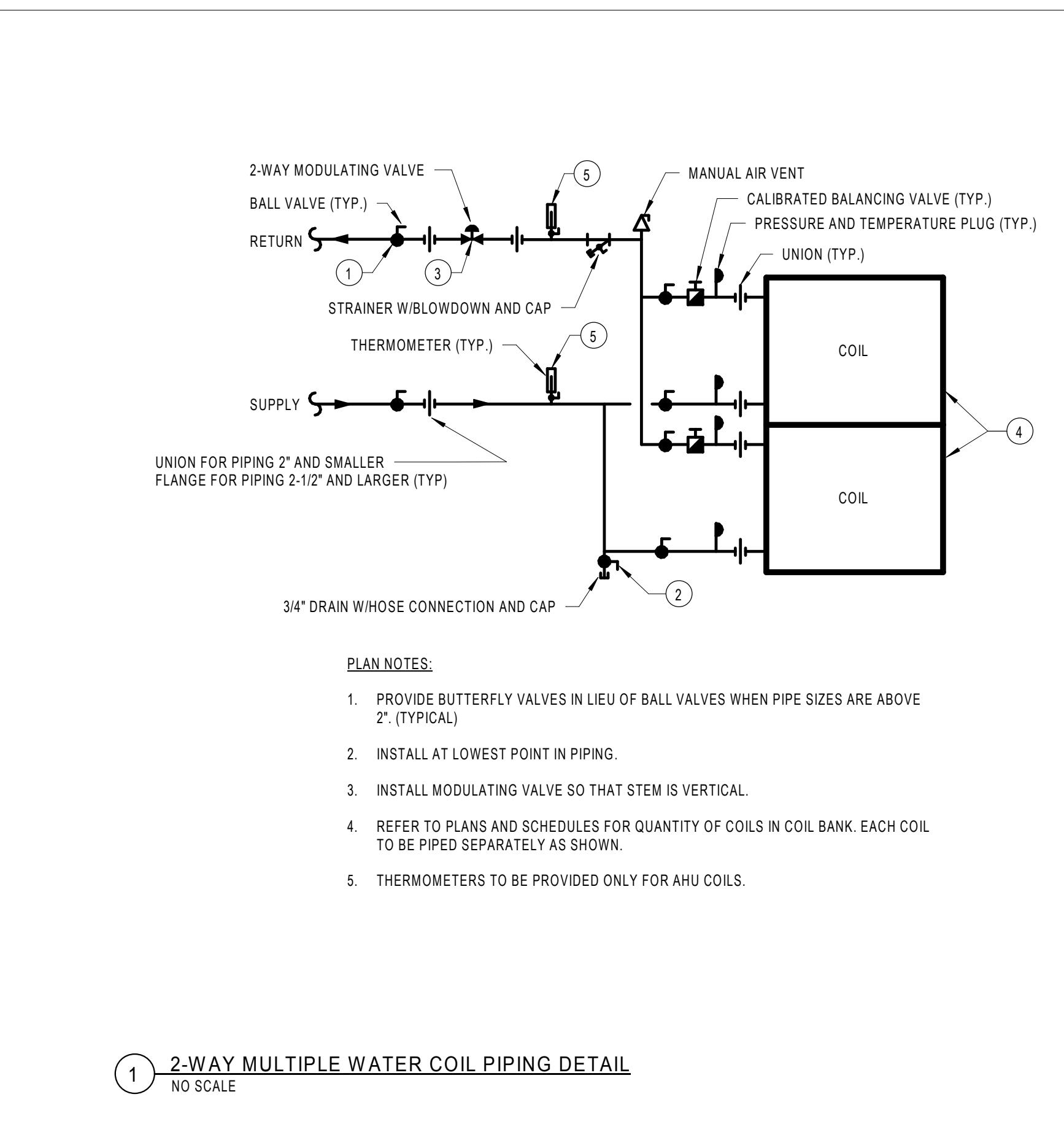
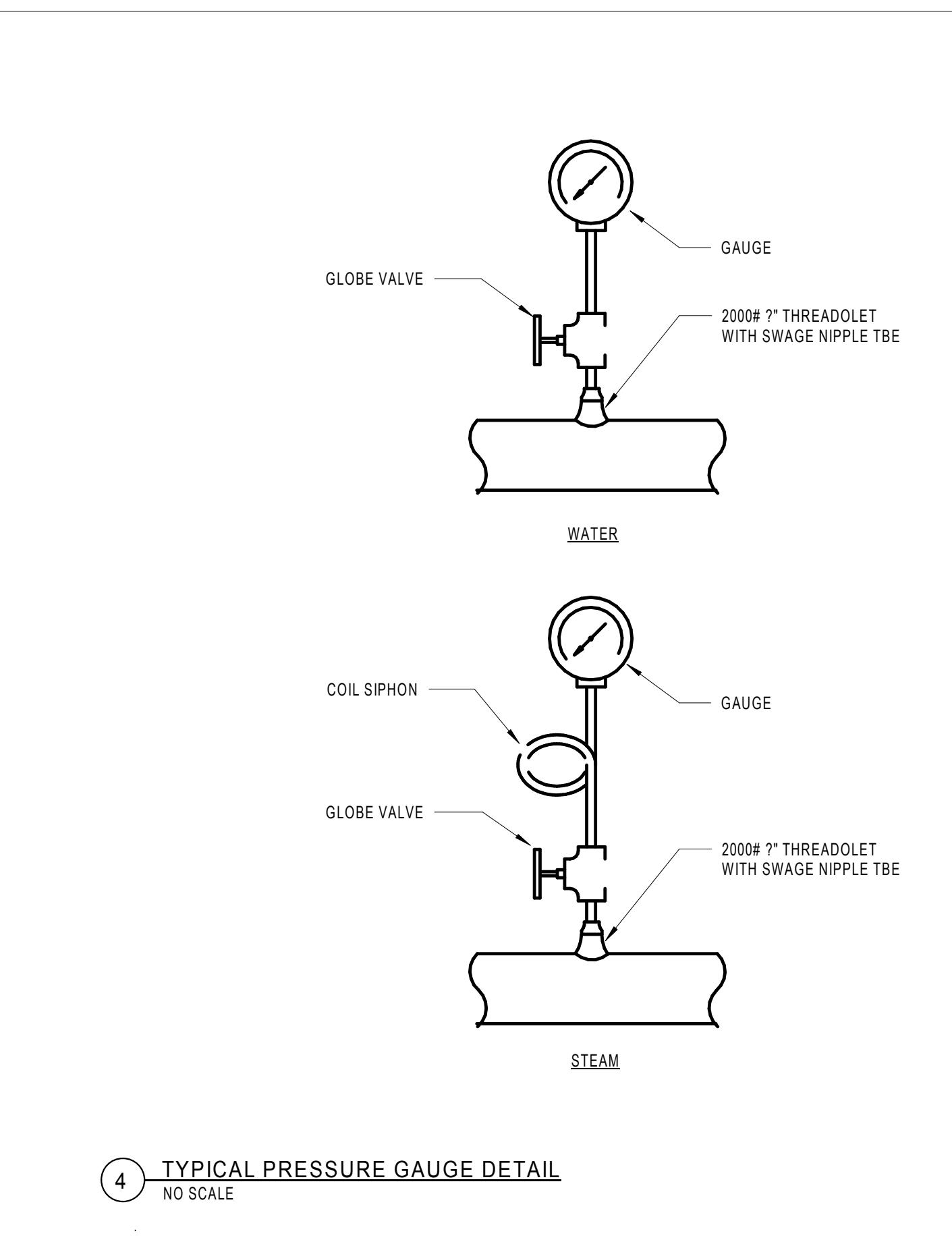
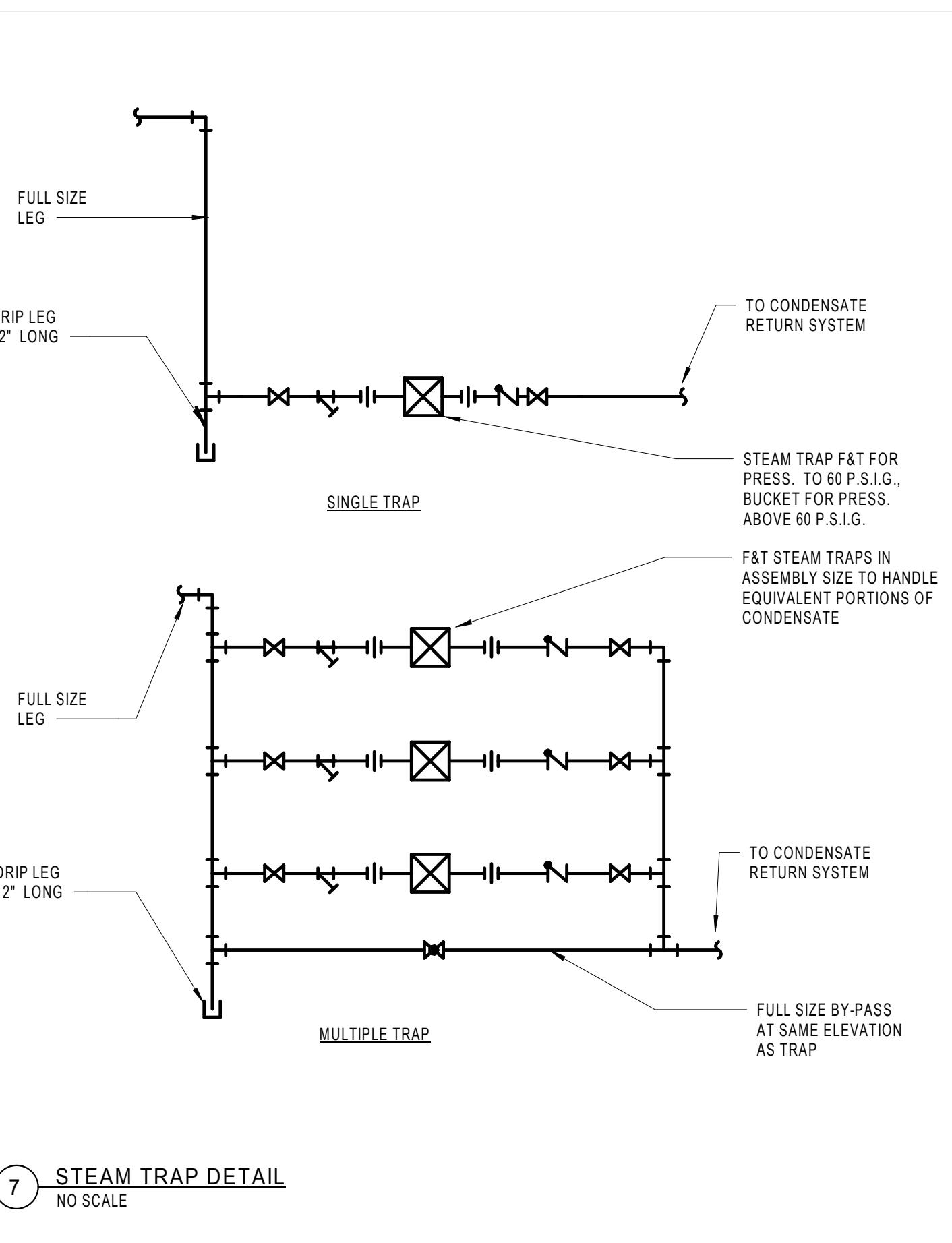
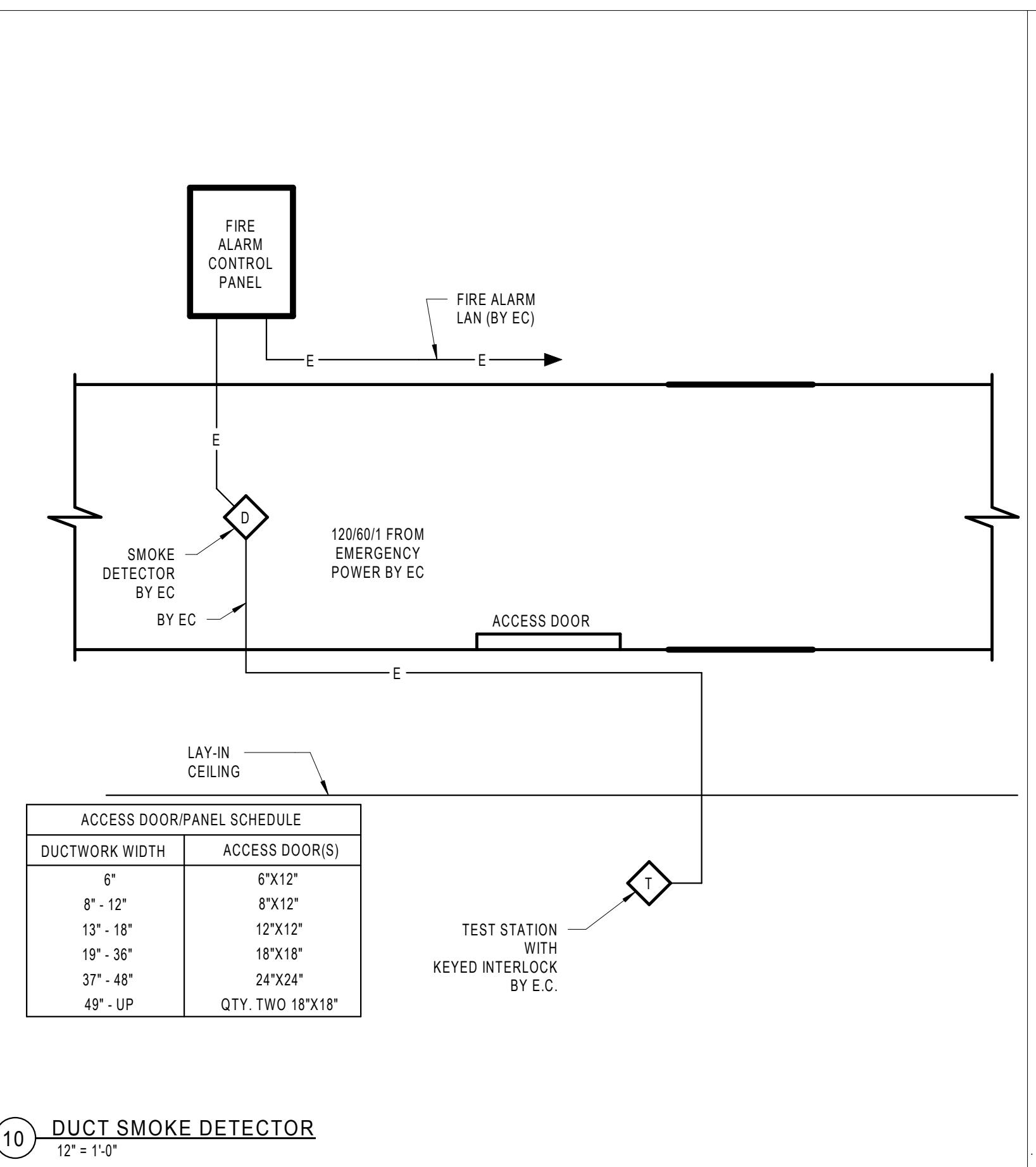
MARK DATE DESCRIPTION



## HVAC DETAILS

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011

M702





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221 W. 6th St., Suite 800 | Austin, TX 78701  
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STRUCTURAL | MARTINEZ MOORE  
M  
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LANDSCAPE ARCH. | COLEMAN & ASSOCIATES  
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ph. 512.331.8577

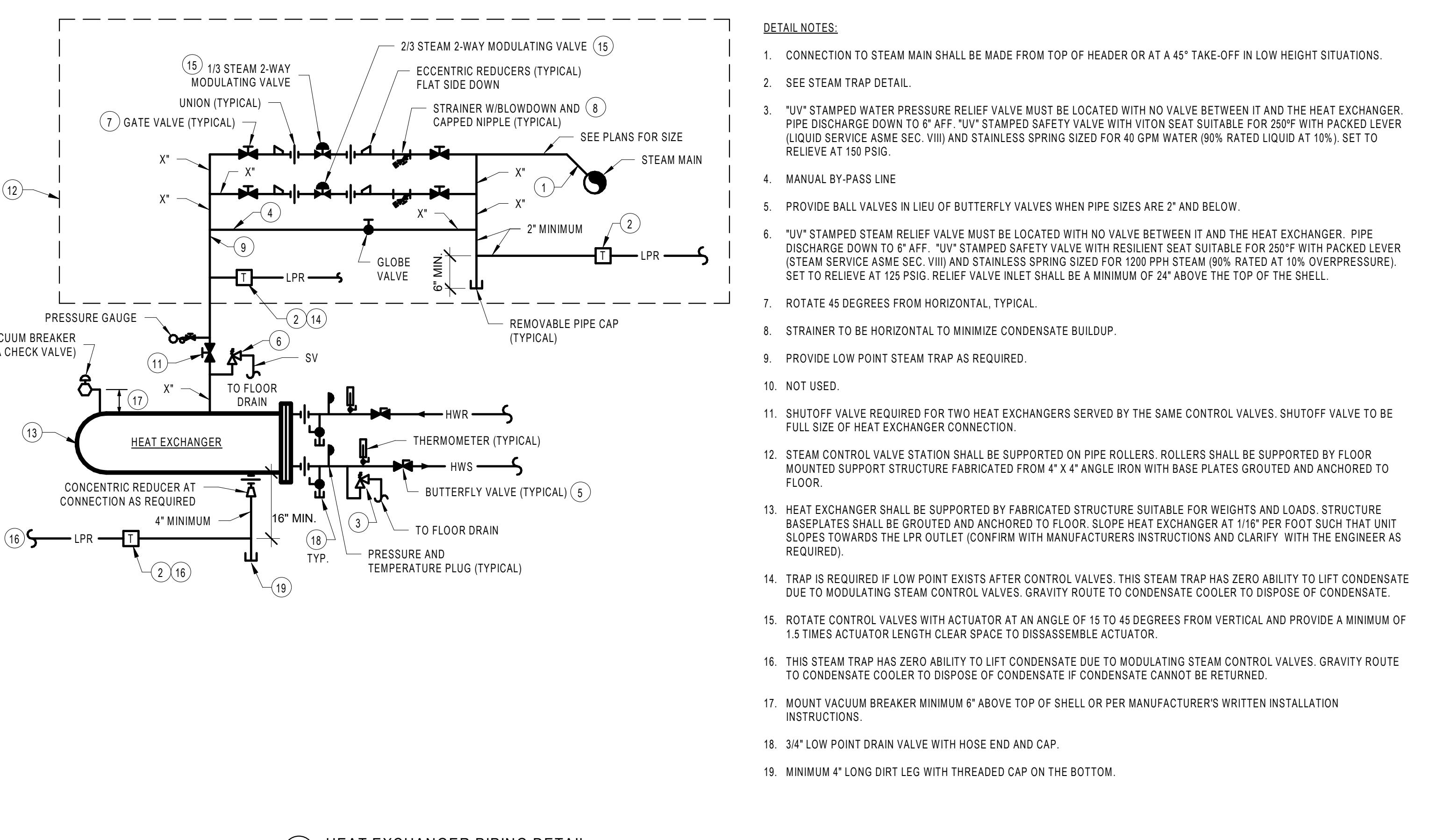
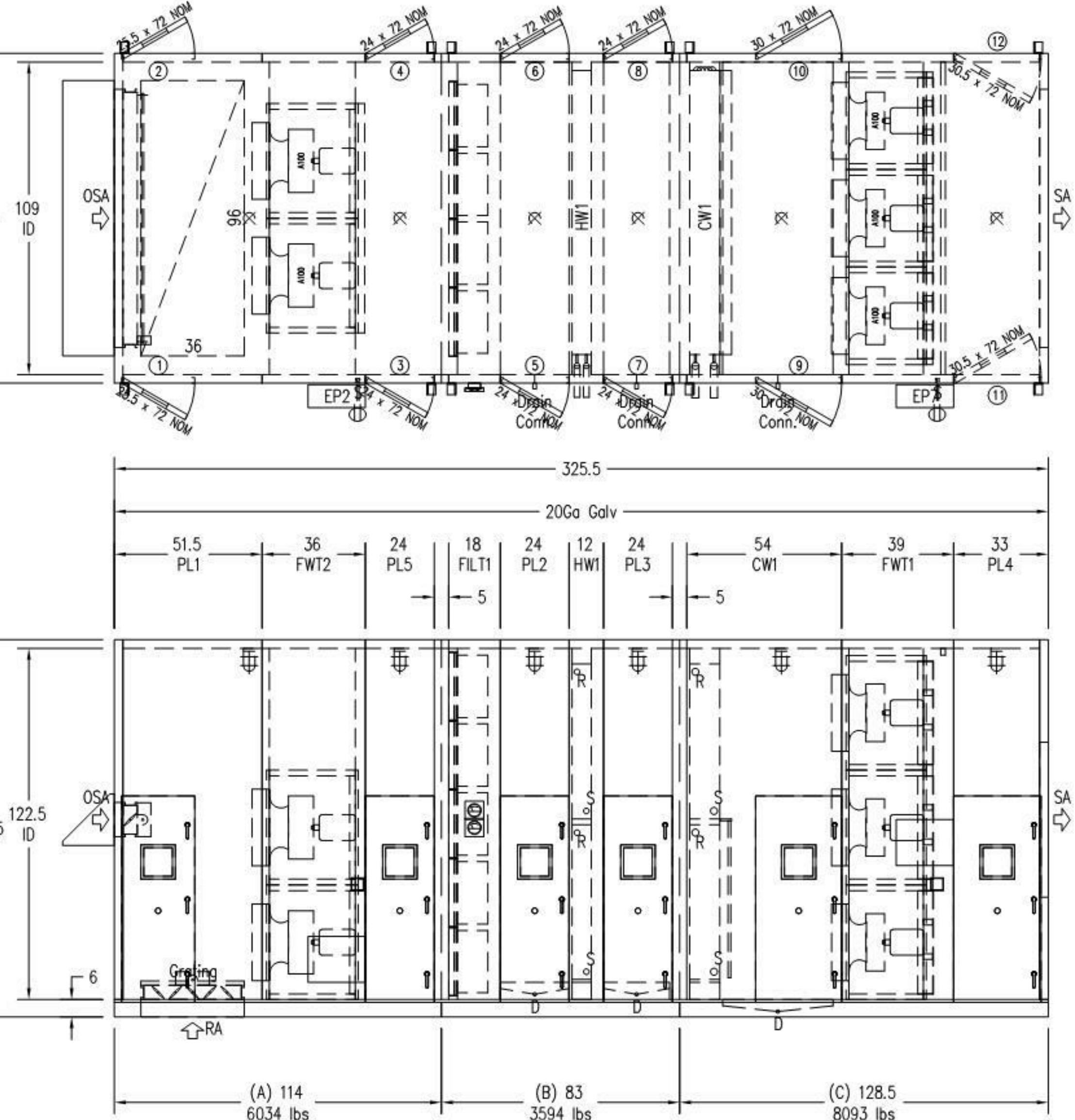
## SEAY BUILDING ADDITION

CLIENT PROJECT NO. - CPC 102-1219

## CONSTRUCTION DOCUMENTS

① AHU DIMENSIONS

$\frac{1}{4''} \times 1'-0''$

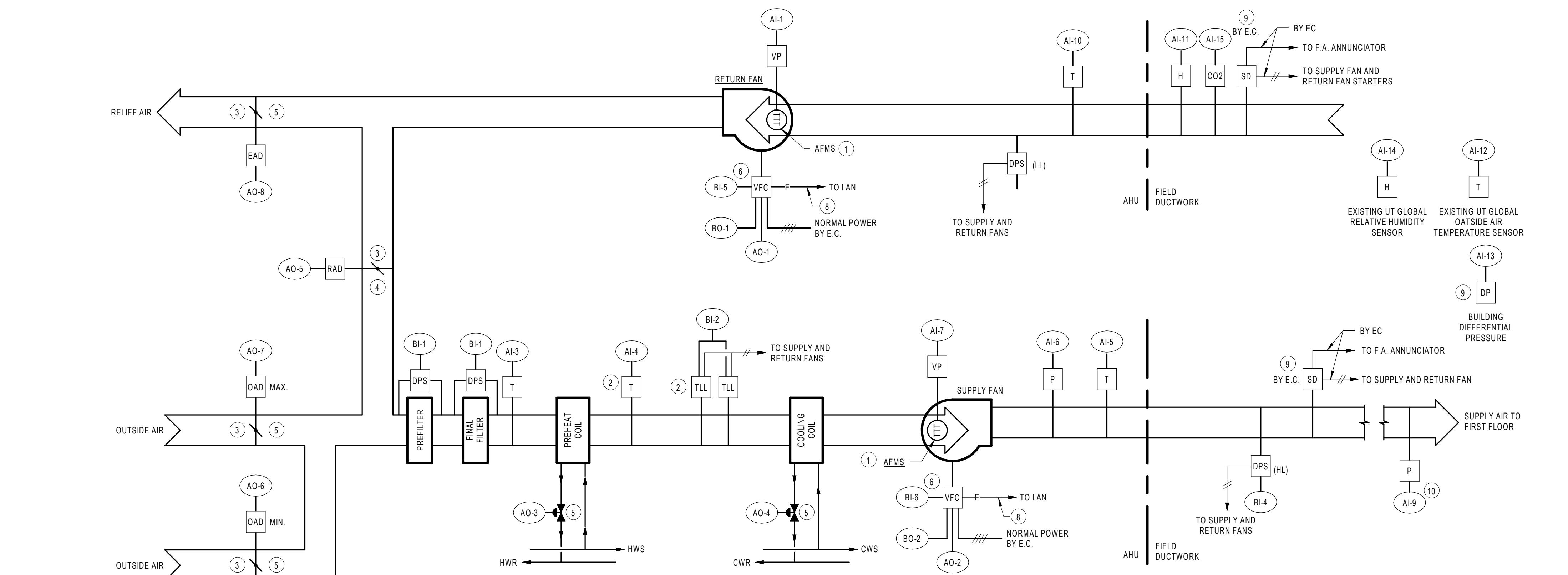


② HEAT EXCHANGER PIPING DETAIL

## HVAC DETAILS

DATE OCT 31, 2019  
BSALS PROJECT NO. 15830011  
15830011

M703



SEQUENCE OF OPERATION:

1. ALL SETPOINTS TO BE ADJUSTABLE. SETPOINTS TO BE EXPOSED ON GRAPHIC DISPLAY OR HIDDEN BASED ON OWNER REQUEST.

2. ENABLE AIR HANDLER IS STARTED FROM DDC PANEL OR FROM COMMAND OF FACILITY MANAGEMENT SYSTEM. AIR HANDLER TO RUN BASED ON SCHEDULED OCCUPIED MODE START TIME AND UNIT SHALL BE IN UNOCCUPIED SHUTDOWN MODE BASED ON SCHEDULED UNOCCUPIED TIME (SCHEDULE TO BE CONFIRMED WITH UNIVERSITY OF TEXAS FACILITY GROUP).

NORMAL MODE, START, SHUTDOWN AND OFF MODE:

1. UPON STARTUP COMMAND, SUPPLY AND RETURN FANS START. SUPPLY FAN SPEED CONTROL AND SUPPLY AIR TEMPERATURE CONTROL LOOPS ARE ACTIVE. RETURN AIR DAMPER AND OUTSIDE AIR DAMPERS ARE FULLY OPEN. RELIEF DAMPERS FULLY CLOSED. FAN ISOLATION DAMPERS ARE FULLY OPEN.
2. SUPPLY AND RETURN AIR FAN AT MINIMUM SPEED OF 15HZ (ADJ) UNTIL THERE IS A READ OUT OF AIRFLOW BY THE AIRFLOW STATION AT THE SUPPLY AND RETURN FANS (ISOLATION DAMPERS ARE FULLY OPEN AT THIS TIME).
3. IF ANY OF THE FAN VELVET AIRFLOW STATIONS ARE READING NEGATIVE AIRFLOW, CLOSE THE ISOLATION DAMPERS, SHUT DOWN THE ASSOCIATED FAN AND GENERATE AN ALARM FOR FAN FAILURE.
4. IF ALL FANS INLET AIRFLOW STATIONS ARE READING POSITIVE AIRFLOW, THE UNIT WILL RUN IN NORMAL MODE (WORK ON/WORK OFF).
5. IF AIR HANDLING SYSTEM IS HUTDOWN, THE SUPPLY AND RETURN AIR FANS VFD SPEED SHALL GO TO ZERO AND THE DRIVES ARE STOPPED AND ISOLATION DAMPERS SHALL BE COMMANDED TO TEN CLOSURE POSITION.
6. WHEN SYSTEM IS SHUTDOWN, ISOLATION AND RELIEF AIR DAMPERS SHALL BE CLOSED COMPLETELY AND TEH RETURN DAMPER SHALL BE FULLY OPEN.

NORMAL MODE, OPERATING OUTAGE MODE:

1. IN NORMAL MODE, THE SUPPLY AND RETURN AIR DAMPERS SHALL BE FULLY OPEN. THE RELIEF DAMPER SHALL BE CLOSED.
2. SUPPLY AIR FANS VFD WILL RAMP UP FROM MINIMUM SPEED OF 15HZ TO MAX SPEED OF 60HZ TO MAINTAIN A CONSTANT DUCT STATIC PRESSURE SYSTEM SETPOINT. FINAL SETPOINT SHALL BE DETERMINED DURING TAB PHASE AS SENSED BY THE DUCT MOUNTED STATIC PRESSURE SENSOR LOCATED TWO-THIRDS DOWNSTREAM OF THE SUPPLY FAN.
3. THE COOLING COIL VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE TEMPERATURE OF 55 DEGREES.
4. DISCHARGE AIR SET POINTS SHALL BE RESET BASED ON THE OUTSIDE AIR TEMPERATURE AND OUTSIDE AIR RELATIVE HUMIDITY.
- a. WHEN OA IS 55 DEGREES OR GREATER, OUTSIDE AIR RELATIVE HUMIDITY LESS THAN 55%, DISCHARGE AIR SET POINT SHALL BE 55 DEGREES.
- b. WHEN OA IS 50 DEGREES OR GREATER, OUTSIDE AIR RELATIVE HUMIDITY LESS THAN 55%, DISCHARGE AIR SET POINT SHALL BE 60 DEGREES.
5. THE AIR TERMINAL BOX DAMPER POSITIONS SHALL BE SAMPLED. THE DUCT STATIC PRESSURE SETPOINT SHALL BE RESET DOWN FOR 0.1" (ADJ) EVERY 15 MINUTES, UNTIL AT LEAST ONE TERMINAL AIR BOX POSITION IS AT 100% POSITION. THE REVERSE SHALL OCCUR IF ANY OF THE TERMINAL AIR BOX DAMPER POSITION IS ABOVE 90%.
6. THE SUPPLY FAN VFD MODULATES TO MAINTAIN THE DIFFERENTIAL AIRFLOW SETPOINT AS SUCH:
  - L FOR WORK OFF MODE: RETURN AIRFLOW = RETURN AIRFLOW + READABLE SUPPLY AIRFLOW MINUS CONSTANT OFSET AIRFLOW. THE CONSTANT OFSET AIRFLOW SHALL BE ESTABLISHED DURING TAB AND BY THE TAB CONTRACTOR AND SHALL BE THE ACTUAL EXHAUST AIRFLOW PLUS BUILDING PRESSURE (BASED ON 0.05 BUILDING PRESSURE).
  - II FOR WORK ON MODE: RETURN AIRFLOW = READABLE SUPPLY AIRFLOW MINUS CONSTANT OFFSET AIRFLOW. THE CONSTANT OFSET AIRFLOW SHALL BE ESTABLISHED DURING TAB AND BY THE TAB CONTRACTOR AND SHALL BE THE ACTUAL EXHAUST AIRFLOW PLUS BUILDING PRESSURE (BASED ON 0.05 BUILDING PRESSURE) PLUS THE REQUIRED VENTILATION FOR OCCUPANTS.
7. IF RETURN AIR FAN VFD IS AT MINIMUM SPEED AND BUILDING DIFFERENTIAL AIRFLOW IS LESS THAN SET POINT, RETURN AIR DAMPER SHALL MODULATE CLOSE IN 10% INCREMENTS EVERY MINUTE INTERVAL (ADJ) UNTIL BUILDING DIFFERENTIAL SETPOINT IS MET. THE REVERSE SHALL OCCUR ONCE SETPOINT IS MET.

CO2 MODE:

1. CO2 MODE SUPERCEDES NORMAL MODE.
2. CO2 LEVELS SHALL BE MONITORED AT 750 PPM AS SENSED BY THE RETURN AIR CO2 SENSOR.
3. IF CO2 LEVELS RISE ABOVE SET POINT FOR 10 MINUTES, THE RETURN AND RELIEF DAMPERS SHALL MODULATE IN OPPOSED SEQUENCE FROM THEIR MIN TO MAX POSITION IN INCREMENTS OF 10% EVERY 10 MINUTES UNTIL CO2 LEVEL IS BELOW SETPOINT 9 MAINTAINING DISCHARGE AIR TEMPERATURE BETWEEN 52 AND 58 DEGREES.
4. THE REVERSE SHALL OCCUR ONCE THE SETPOINT IS REACHED.
5. THE CO2 MODE WILL BE SUPERCEDED BY TEH ECONOMIZER MODE.

ECONOMIZER MODE:

1. ECONOMIZER MODE SHOULD BE ON WHEN TEH OUTSIDE AIR TEMPERATURE IS BETWEEN 75 DEGREES 9ADJ AND 25 DEGREES (ADJ) AND THE RETURN AIR HUMIDITY IS LESS THAN 60% 9ADJ.
2. WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 75 DEGREES AND 55 DEGREES:
  - a. THE OUTSIDE AIR DAMPER SHALL BE 100% FULLY OPEN.
  - b. THE RELIEF AIR DAMPER SHALL BE 100% FULLY OPEN.
  - c. CHILLED WATER VALVE WILL MODULATE TO MAINTAIN A 55 DEGREES DISCHARGE AIR TEMPERATURE (DAT) SETPOINT OF 55 OR 60 DEGREES.
  - d. CHILLED WATER VALVE WILL MODULATE TO MAINTAIN A 55 DEGREES DISCHARGE AIR TEMPERATURE SETPOINT AND MIXED AIR TEMPERATURE IS USED FOR MONITORING.
3. WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 55 DEGREES AND 20 DEGREES:
  - a. THE OUTSIDE AIR DAMPER SHALL BE 100% FULLY OPEN.
  - b. THE RELIEF AIR DAMPER SHALL MODULATE IN OPPOSITE DIRECTIONS TO MAINTAIN A DISCHARGE AIR TEMPERATURE (DAT) SETPOINT OF 55 OR 60 DEGREES.
  - c. IF MIXED AIR TEMPERATURE IS LOWER THAN 52 DEGREES, THE BAS WILL REVERT TO NORMAL MODE OPERATION.
  - d. IF RETURN AIR HUMIDITY IS ABOVE 60% (ADJ), THE BAS WILL REVERT THE UNIT TO NORMAL OR DEHUMIDIFICATION MODE.
  - e. THE CHILLED WATER VALVE SHALL BE 100% CLOSED.

DEHUMIDIFICATION MODE:

1. IF RETURN AIR HUMIDITY IS GREATER THAN 60% (ADJ), THE BAS WILL RESET THE UNIT DAT FROM 55 DEGREES TO 50 DEGREES.
2. IF RETURN AIR HUMIDITY REMAINS HIGHER THAN 60% (ADJ) FOR MORE THAN 15 MINUTES (ADJ), RESET THE UNIT DAT TO 55 DEGREES AND BAS SHALL GENERATE A VAV TERMINAL UNIT REHEAT ALARM.

EMERGENCY MODE:

1. WHEN ANY OF SUPPLY AND RETURN AIR FANS ARE NOT FUNCTIONING, THE OTHER WORKING FANS SHALL RAMP UP AND CAN EXCEED THE 60 HZ SPEED BUT NOT THE FAN RPM TO MAINTAIN ALL SYSTEM SETPOINTS.

SAFETIES:

1. IF DAT IS NOT MET, BAS SHALL GENERATE AN ALARM.
2. IF MIXED AIR TEMPERATURE (MAT) IS LOWER THAN 35 DEGREES, BAS SHALL GENERATE A FREEZE ALARM.
3. IF OUTSIDE AIR TEMPERATURE IS LOWER THAN 35 DEGREES, BAS SHALL GO TO THEIR SHUTDOWN MODE POSITION AFTER FANS ARE DE-ENERGIZED.
4. IF RA HUMIDITY IS GREATER THAN 60% (ADJ), BAS SHALL GENERATE A HUMIDITY ALARM.
5. IF HIGH STATIC DISCHARGE CUTOUTS: SMOKE DETECTORS IN THE SUPPLY AND RETURN AIR STREAMS, AND SUPPLY AND RETURN FAN VFD ALARMS HAVE BEEN GENERATED; THE SUPPLY AND RETURN FANS SHALL BE DEENERGIZED.
6. A FILTER DIFFERENTIAL PRESSURE SENSOR SHALL MONITOR THE STATIC PRESSURE ACROSS THE PRE- AND FINAL FILTERS AND SHALL GENERATE A FILTER ALARM IF THE PRESSURE DIFFERENCE EXCEEDS 0.5" WC (ADJ) FOR THE PRE FILTER AND 1.0" WC (ADJ) FOR THE FINAL FILTER.
7. IF THE CHILLED WATER VALVE SHALL BE 100% CLOSED.

PLAN NOTES:

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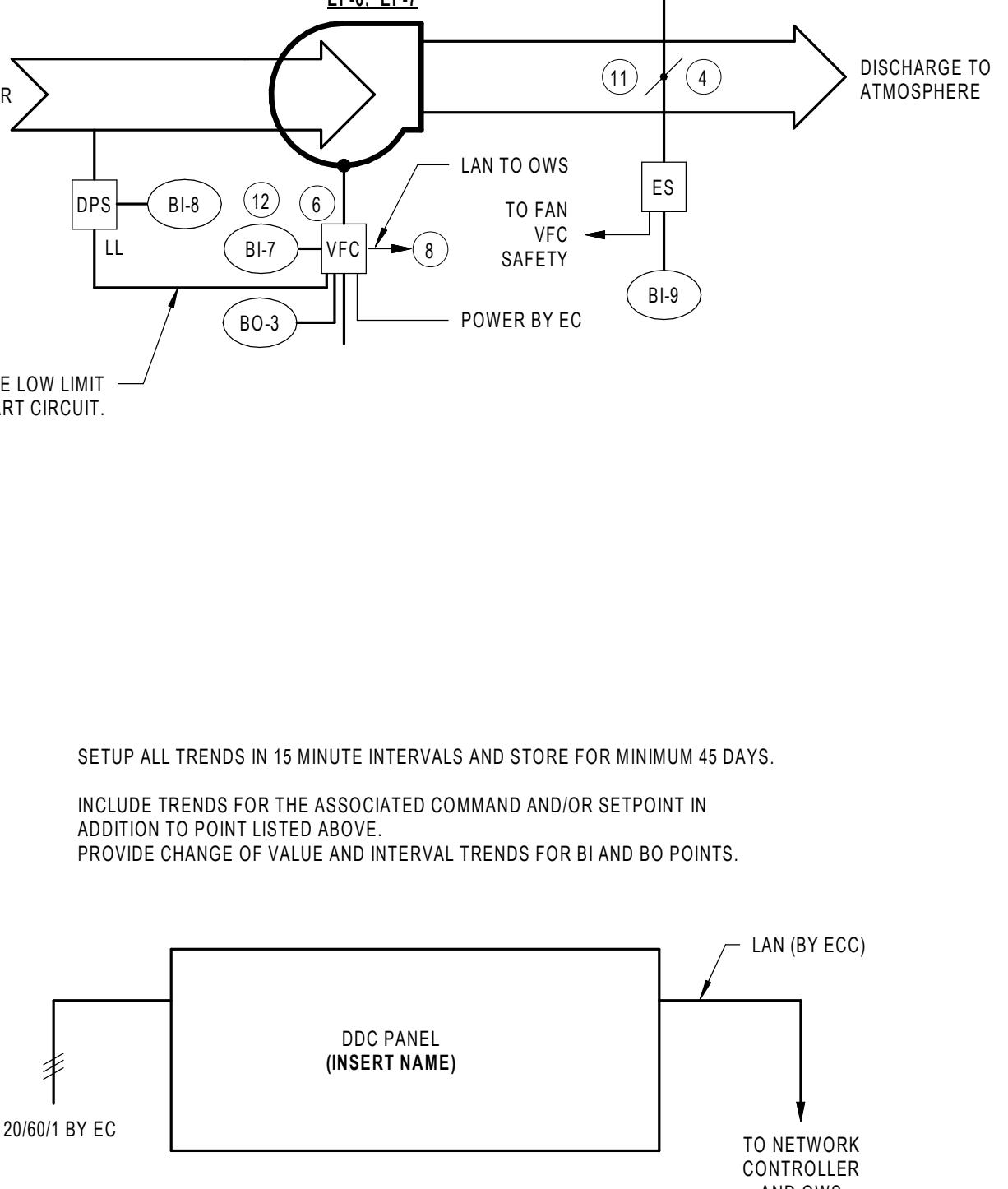
EXHAUST FAN SEQUENCE OF OPERATION:

1. ALL SETPOINTS TO BE ADJUSTABLE. SETPOINTS TO BE EXPOSED ON GRAPHIC DISPLAY OR HIDDEN BASED ON OWNER REQUEST.
2. NORMAL OPERATION MODE:
  - a. EXHAUST FAN IS STARTED FROM DDC PANEL OR FROM COMMAND OF FACILITY MANAGEMENT SYSTEM. EXHAUST FAN SHALL BE INTERLOCKED AND RUN ON THE SAME SCHEDULE AS THE AIR HANDLING UNIT.
- b. STARTUP: ON AIR HANDLING UNIT STARTUP, THE ASSOCIATED EXHAUST FAN IS ENABLED WHEN REACHING A PERCENTAGE OF THE AIRFLOW TRACKING DIFFERENTIAL SETPOINT (SEE AIR CONTROL SCHEMATIC). ENGAGE VFC AND SIMULTANEOUSLY BEGIN TO OPEN FAN ISOLATION DAMPER. IF ISOLATION DAMPER IS NOT FULLY OPEN WITHIN 30 SECONDS THEN DISABLE FAN AND SIGNAL AN ALARM.
- c. EXHAUST FAN SPEED: ANALOG VFC CONTROL INPUT TO MODULATE EXHAUST FAN SPEED TO ACHIEVE SCHEDULED FAN SPEED (FINAL SETPOINT BY TAB). THIS IS AN ANALOG SIGNAL WITH THE VFC OPERATING IN "AUTO", NOT "HAND" OPERATION WITH SPEED ENTERED DIRECTLY INTO THE VFC.

3. SAFETIES:

- a. FURNISH SAFETY LIMIT HARD WIRED TO FAN TO DISABLE FAN IF LOW LIMIT EXCEEDS 3.0" W.G. FURNISH A BINARY ALARM INPUT TO THE BAS.

SCHEDULE OF DDC POINTS				
ID	DESCRIPTION	TREND	ALARM	GRAPHIC
AI-1	RETURN FAN VOLUME	X	X	X
AI-3	MIXED AIR TEMPERATURE	X	X	X
AI-4	OUTSIDE AIR COOL/DISCHARGE TEMPERATURE	X	X	X
AI-5	SUPPLY AIR TEMPERATURE	X	X	X
AI-6	SUPPLY AIR STATIC PRESSURE (AT UNIT)	X	X	X
AI-7	SUPPLY FAN VOLUME	X	X	X
AI-9	STATIC PRESSURE 90% THRU SYSTEM	X	X	X
AI-10	RETURN AIR TEMPERATURE	X	X	X
AI-11	RETURN AIR HUMIDITY	X	X	X
AI-12	EXISTING UT GLOBAL OUTDOOR AIR RELATIVE HUMIDITY	X	X	X
AI-13	BUILDING DIFFERENTIAL PRESSURE	X	X	X
AI-15	RETURN AIR CO2	X	X	X
AQ-1	RETURN AIR VFC	X	X	X
AQ-2	SUPPLY FAN VFC	X	X	X
AQ-3	PREEHAT COIL VALVE	X	X	X
AQ-4	COOLING COIL VALVE	X	X	X
AQ-5	RETURN AIR DAMPER	X	X	X
AQ-6	MIN OUTDOOR AIR DAMPER	X	X	X
AQ-7	MAX OUTDOOR AIR DAMPER	X	X	X
AQ-8	RELIEF DAMPER	X	X	X
BI-1	FINAL FILTER ALARM	X	X	X
BI-2	SAFETY LOW LIMIT STAT ALARM	X	X	X
BI-3	SUPPLY AIR HIGH STATIC ALARM	X	X	X
BI-4	SUPPLY FAN STATUS	X	X	X
BI-5	EXHAUST FAN STATUS	X	X	X
BI-6	EXHAUST FAN VFC	X	X	X
BI-7	EXHAUST FAN DIFFERENTIAL PRESSURE SWITCH	X	X	X
BI-8	EXHAUST FAN DAMPER END SWITCH	X	X	X
BO-1	RETURN FAN START-STOP	X	X	X
BO-2	SUPPLY FAN START-STOP	X	X	X
BO-3	EXHAUST FAN START-STOP	X	X	X
BO-4	EXHAUST FAN ISOLATION DAMPER	X	X	X



1. AIRFLOW PIROMETER INTEGRAL TO FAN (ELECTRA-FLOM THERMAL AIRFLOW STATION BY AIR MONITOR), PROVIDED BY FAN MANUFACTURER. TRANSDUCER BY EC.
2. LOCATE 3" FROM COOLING COIL INLET.
3. DAMPERS TO BE INTEGRAL WITH AHU, ACTUATORS BY EC.
4. SPRING RETURN OPEN UPON LOSS OF POWER.
5. SPRING RETURN CLOSED UPON LOSS OF POWER.
6. VARIABLE AIRFLOW CONTROLLER FURNISHED, INSTALLED, WIRED, AND COMMISSIONED BY EC.
7. NOT USED.
8. LAN TO OWS. THRU THE LAN, VFC TO TRANSMIT TO BAS STATUS AND ALARMS OF ALL DATA AVAILABLE. SUPPLIER TO FURNISH INTEGRAL COMMUNICATION CARD. ECC TO MAP ALL OWNER REQUESTED INFORMATION POINTS. NOTE THAT START/STOP SIGNAL AND SPEED CONTROL ARE HARD WIRED TO DDC TO ENSURE OPERATION ON FAN LOSS.
9. REFER TO PLANS FOR LOCATIONS.
10. HARD WIRE DUCT STATIC SENSOR TO THE SAME DDC CONTROLLER WHICH CONTROLS THE FAN.
11. CONTROL DAMPERS TO BE DUCT MOUNTED, DAMPERS AND ACTUATORS BY EC.
12. ECC TO PROVIDE CURRENT SENSING AND CONTROL LOGIC FOR FAN FAULT DETERMINATION.

3 AIR HANDLING UNIT WITH RETURN FAN CONTROL SCHEMATIC  
NOSCALE

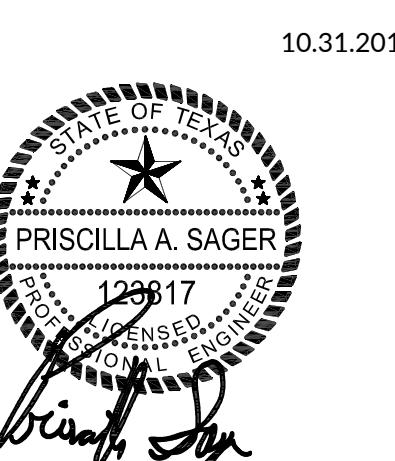
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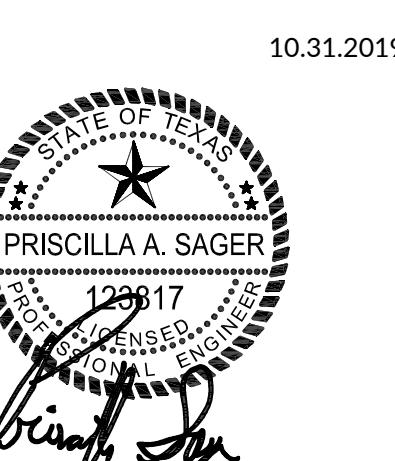
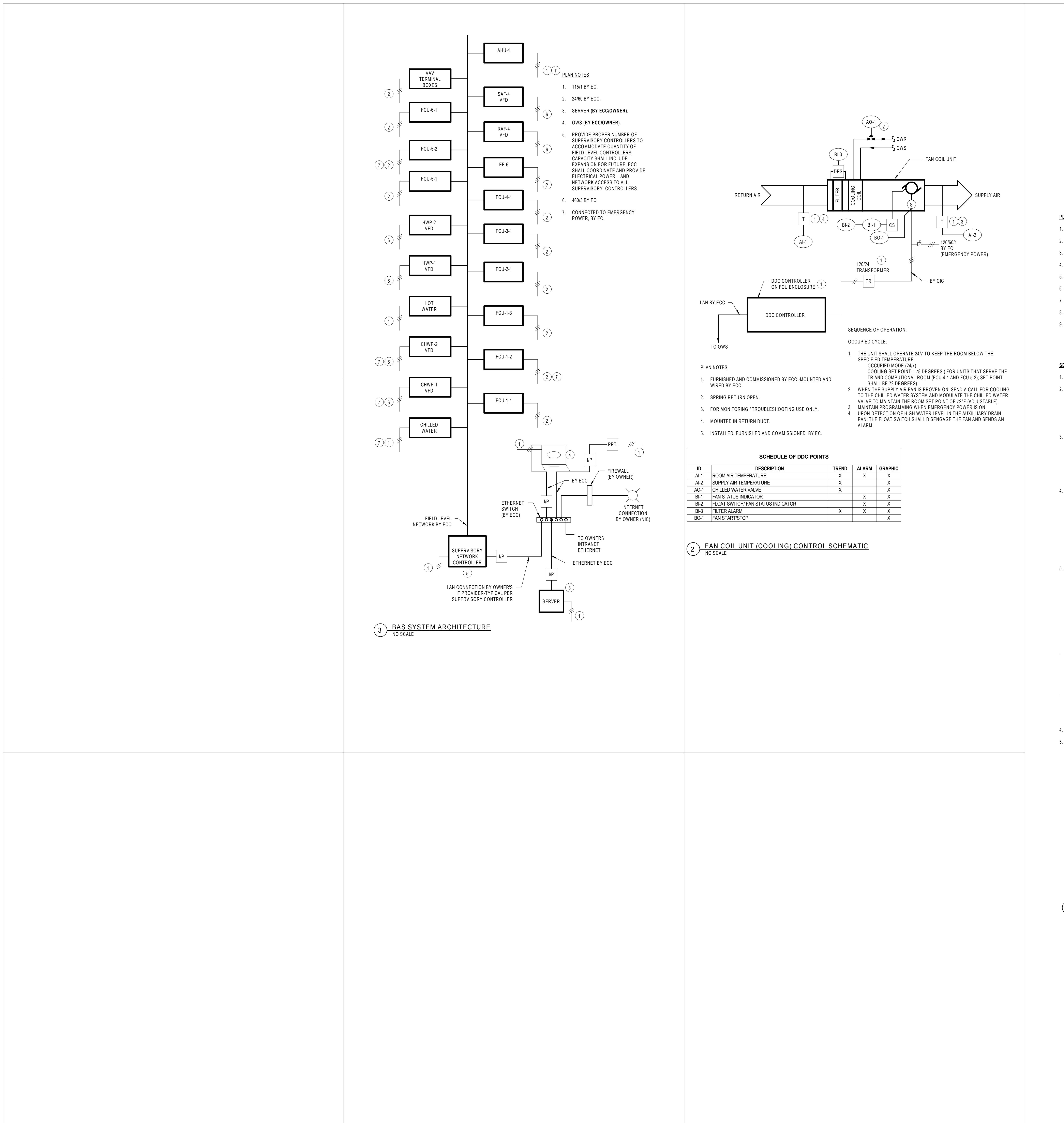


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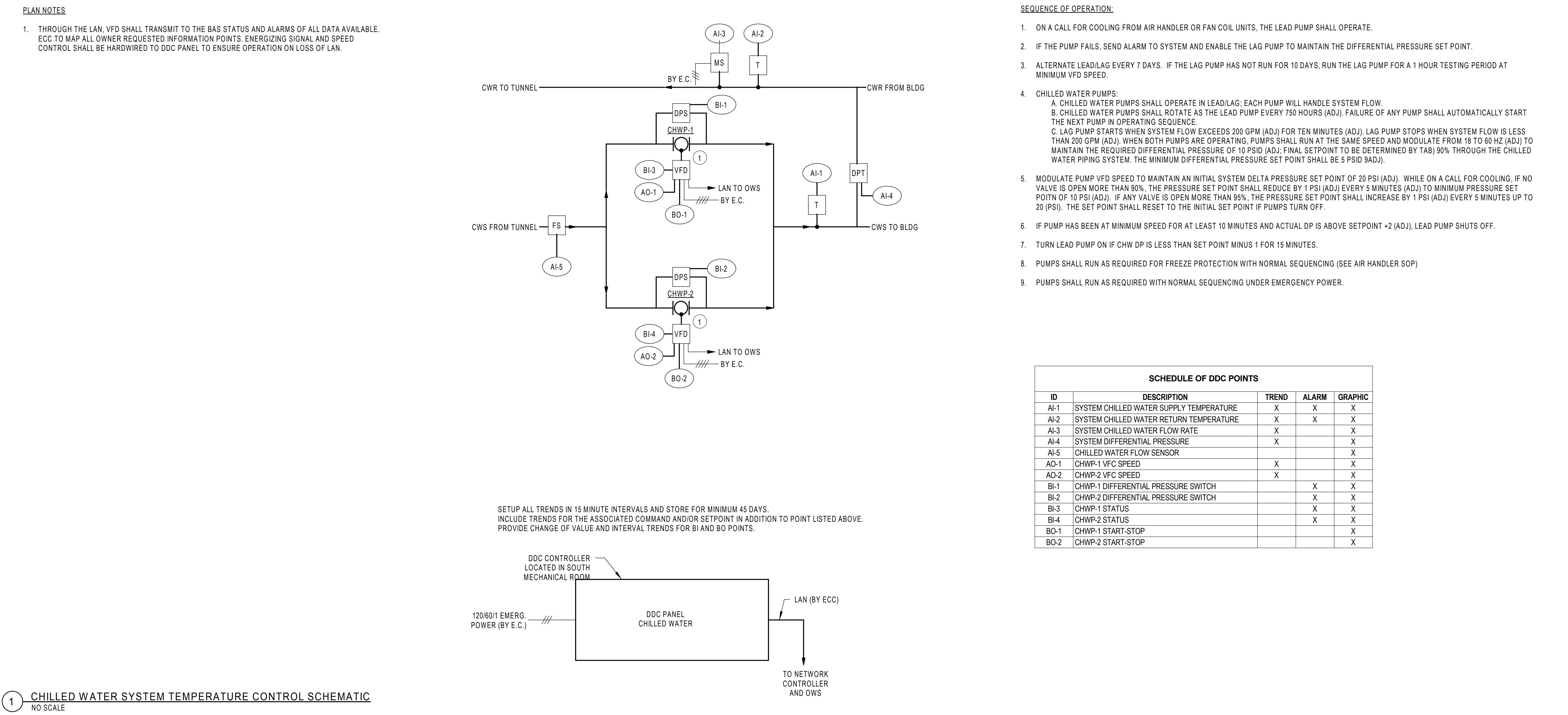
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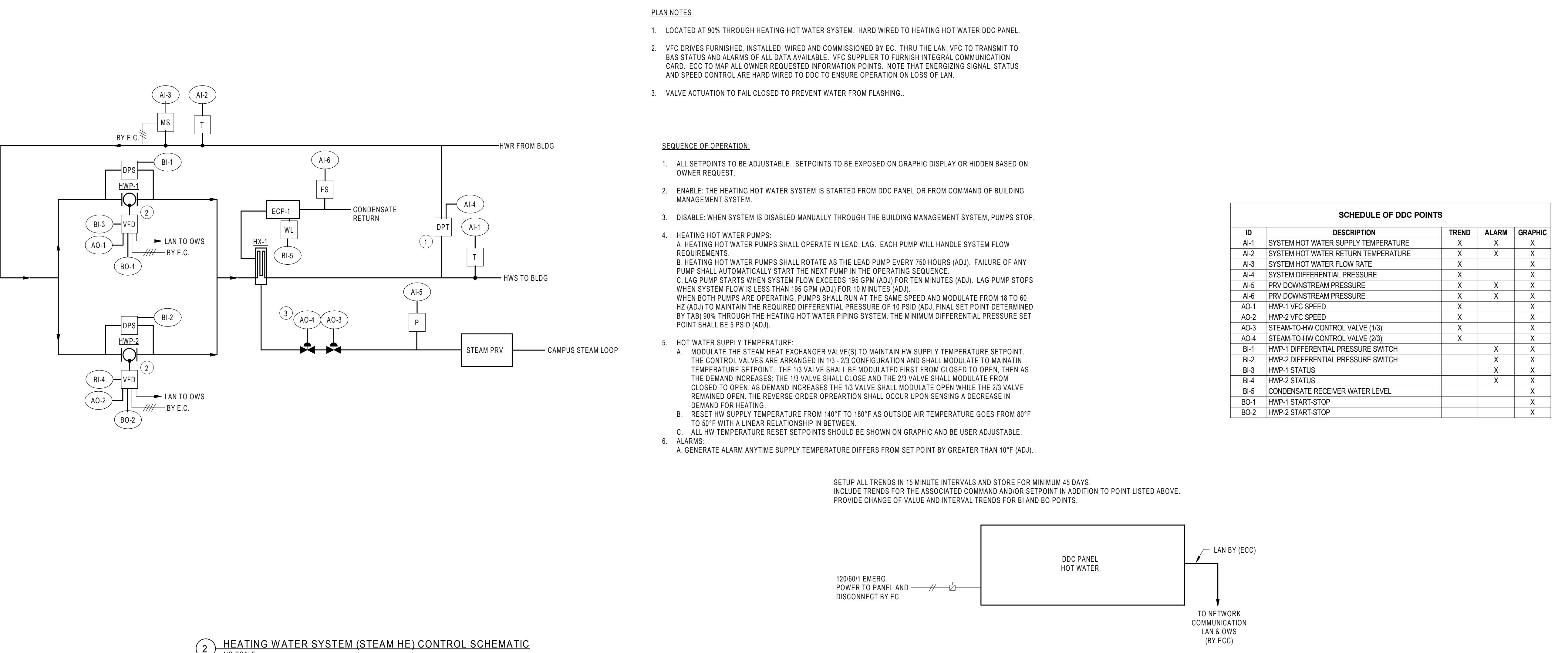
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