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HEC Project Number: 03-0073.00

Revisions

- ISSUED FOR BIDS
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- VALUE ENGINEERING AND
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- OBSERVATORY FRAMING
MARCH 14, 2005

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ML

PIPING SYSTEMS

— A (XXX) —	COMPRESSED AIR
— BF —	BOILER FEED
— BBD —	BOILER BLOW DOWN
— CPD —	CONDENSATE PUMP DISCHARGE
----- CR -----	CONDENSER WATER RETURN
— CS —	CONDENSER WATER SUPPLY
— CSS —	CLEAN STEAM
----- CSC -----	CLEAN STEAM CONDENSATE
— CW —	COLD WATER
— SW —	COLD SOFT WATER
----- CWR -----	CHILLED WATER RETURN
— CWS —	CHILLED WATER SUPPLY
— D —	DRAIN
— FOG —	FUEL OIL FILL
— FOG —	FUEL OIL GAUGE
----- FOR -----	FUEL OIL RETURN
— FOS —	FUEL OIL SUPPLY
— FOV —	FUEL OIL VENT
— G —	GAS
----- GR -----	GLYCOL RETURN
— GS —	GLYCOL SUPPLY
— HPG(XXX) —	HIGH PRESSURE GAS
----- HCR -----	HOT/CHILLED WATER RETURN
— HCS —	HOT/CHILLED WATER SUPPLY
----- HPC -----	HIGH PRESSURE CONDENSATE
— HPS(XXX) —	HIGH PRESSURE STEAM
----- HPWR -----	HEAT PUMP WATER RETURN
— HPWS —	HEAT PUMP WATER SUPPLY
----- HRR -----	HEAT RECOVERY RETURN
— HRS —	HEAT RECOVERY SUPPLY
----- HWR -----	HOT WATER RETURN
— HWS —	HOT WATER SUPPLY
----- LPC -----	LOW PRESSURE CONDENSATE
— LPS —	LOW PRESSURE STEAM
----- NPCW -----	NON-POTABLE COLD WATER
----- NPSW -----	NON-POTABLE SOFT WATER
— MU —	MAKEUP WATER
----- PC -----	PUMPED CONDENSATE
----- PCWR -----	PROCESS CHILLED WATER RETURN
— PCWS —	PROCESS CHILLED WATER SUPPLY
— RHG —	REFRIGERANT HOT GAS
— RL —	REFRIGERANT LIQUID LINE
— RS —	REFRIGERANT SUCTION LINE
— RODI —	REVERSE OSMOSIS/ DEIONIZED WATER
----- RRR -----	REMOTE RADIATOR RETURN
— RRS —	REMOTE RADIATOR SUPPLY
— V —	VENT
— VAC —	VACUUM (AIR)

PIPING SYMBOLS

—○—	TEE OUTLET UP
—○—	TEE OUTLET DOWN
—○—	ELBOW UP
—○—	ELBOW DOWN
— — —	UNION
— — —	FLANGED JOINT
— — —	CAP OR BLIND FLANGE
— — —	CONCENTRIC REDUCER
— — —	ECCENTRIC REDUCER
— — —	DROP (D) OR RISE (R)

VALVES

	PILOT OPERATED PRESSURE REDUCING VALVE
	BACK PRESSURE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	MOTORIZED BUTTERFLY VALVE
	GAUGE VALVE
	DRAIN VALVE
	CHECK SWING GATE VALVE
	SPRING LOADED CHECK VALVE
	BALANCING VALVE
	PRESSURE REDUCING VALVE
	SELF CONTAINED PRESSURE REDUCING VALVE
	THERMAL EXPANSION VALVE
	QUICK OPENING VALVE
	GATE ANGLE VALVE
	RELIEF VALVE / SAFETY VALVE
	GLOBE ANGLE VALVE
	SOLENOID VALVE
	THREE WAY CONTROL VALVE
	THREE WAY VALVE
	TRIPLE DUTY VALVE
	BACKFLOW PREVENTOR
	DIAPHRAM VALVE
	TWO-WAY CONTROL VALVE
	GLOBE VALVE
	GATE VALVE
	PLUG VALVE
	GAS SHUT-OFF VALVE

DUCTWORK

	SUPPLY DUCT (UP OR SECTION)
	OUTDOOR AIR DUCT (UP OR SECTION)
	SUPPLY OR OUTSIDE AIR DUCT (DOWN\OR AWAY)
	EXHAUST DUCT (UP OR SECTION)
	RETURN DUCT (UP OR SECTION)
	EXHAUST OR RETURN DUCT (DOWN\OR AWAY)
	ROUND DUCTWORK UP
	ROUND DUCTWORK DOWN
	ACOUSTICALLY LINED DUCT
	FLEXIBLE CANVAS CONNECTION
	SECURITY BARS
	DROP (D) OR RISE (R)

EQUIPMENT

	ROOF VENTILATOR, INTAKE (ROOF PLAN)
	ROOF VENTILATOR, EXHAUST (ROOF PLAN)
	ROOF VENTILATOR, INTAKE (PLAN VIEW)
	ROOF VENTILATOR, EXHAUST (PLAN VIEW)
	ROOF VENTILATOR, LOUVERED
	VARIABLE AIR VOLUME BOX
	VARIABLE AIR VOLUME BOX WITH REHEAT COIL
	UNIT HEATER
	REHEAT COIL
	HUMIDIFIER
	PUMP
	SUCTION DIFFUSER
	REDUCER
	REDUCED
	SQUARE TO ROUND TRANSITION

PIPING SPECIALTIES

	THERMOMETER
	PRESSURE GAUGE AND GAUGE VALVE
	FLEXIBLE CONNECTOR
	BALANCING VALVE
	GAS SHUT-OFF VALVE
	DIAL THERMOMETER
	PRESSURE/ TEMPERATURE PLUG (PETE'S PLUG)
	DRAIN VALVE W/ CAPPED HOSE CONNECTION
	FLOW SENSING DEVICE (PITOT TYPE)
	FLOW SENSING DEVICE (INLINE STYLE)
	PIPE SLEEVE
	COIL SYPHON
	SNUBBER
	AIR VENT MANUAL
	THERMOSTATIC AIR VENT
	VACUUM BREAKER
	THERMOSTATIC TRAP
	FLOAT & THERMOSTATIC TRAP
	INVERTED BUCKET TRAP
	STRAINER
	STRAINER W/ BLOWDOWN
	STRAINER W/ BLOWDOWN
	NOISE SUPPRESSER
	FLOW SWITCH
	FLOW SENSOR
	FLOW METER
	EXPANSION JOINT
	DUPLEX BASKET STRAINER
	DRIP PAN ELBOW
	DIFFERENTIAL PRESSURE TRANSMITTER
	BASKET STRAINER
	AUTOMATIC AIR VENT
	BALL JOINT

GRILLES & DIFFUSERS

	CEILING DIFFUSER WITH FLEX DUCTWORK
	CEILING DIFFUSER WITH HARD DUCTWORK
	CEILING DIFFUSER WITH HARD DUCTWORK
	CEILING RETURN, EXHAUST OR TRANSFER GRILLE WITH FLEX DUCTWORK
	CEILING RETURN, EXHAUST OR TRANSFER GRILLE WITH HARD DUCTWORK
	SLOT DIFFUSER WITH FLEXIBLE CONNECTION
	SIDEWALL GRILLE

DAMPERS

	MANUAL VOLUME DAMPER
	AUTOMATIC DAMPER
	BACKDRAFT DAMPER
	SMOKE DAMPER
	FIRE DAMPER (HORIZONTAL)
	FIRE DAMPER (VERTICAL)
	COMBINATION FIRE/SMOKE DAMPER
	COMBINATION FIRE/SMOKE DAMPER
	OPPOSED BLADE DAMPER
	PARALLEL BLADE DAMPER

FIELD MOUNTED CONTROLS

⊕	THERMOSTAT
⊕	DUCT MOUNTED THERMOSTAT
⊕	ROOM NIGHT SETBACK THERMOSTAT
⊕	ROOM ASPIRATING THERMOSTAT
⊕	ROOM HUMIDISTAT
⊕	PRESSURE SENSOR
⊕	ROOM SENSOR
⊕	SWITCH
⊕	DUCT SMOKE DETECTOR

ACTUATORS

⊕	GENERAL
⊕	ELECTRIC
⊕	PNEUMATIC
⊕	SOLENOID
⊕	MANUAL

EQUIPMENT ABBREVIATIONS

AC	AFTER COOLER
AC	AIR COMPRESSOR
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
AD	AUTOMATIC DAMPER
AHU	AIR HANDLING UNIT
AMD	AIR MIXING DEVICE
AS	AIR SEPARATOR
B	BOILER
BB	BASEBOARD
BBS	BOILER BLOWDOWN SEPARATOR
BCC	BOOSTER COOLING COIL
BFS	BOILER FEED SYSTEM
BH	BOOSTER HUMIDIFIER
C	CONVECTOR
CC	COOLING COIL
CHILL	CHILLER
COWP	CONDENSER WATER PUMP
CP	CONDENSATE PUMP
CRU	COMPUTER ROOM UNIT
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	CONVERTOR
D	CHILLED WATER PUMP
DA	DEARATOR
DC	DRY COOLER
DH	DEHUMIDIFIER
DSF	DESTRATIFICATION FAN
E	EXHAUST GRILLE - EXHAUST REGISTER
EBB	ELECTRIC BASEBOARD
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EH	EXHAUST HOOD
EJ	EXPANSION JOINT
EL	EXPANSION LOOP
ERC	ELECTRIC REHEAT COIL
ET	ENERGY RECOVERY UNIT
EJ	EXPANSION TANK
ERV	EXPANSION JOINT
EUH	ELECTRIC UNIT HEATER
EV	EXHAUST VARIABLE AIR VOLUME BOX
EW	ELECTRIC WALL HEATER
F	FILTER
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FEV	FUME HOOD EXHAUST VARIABLE AIR VOLUME BOX
FDP	FUEL OIL PUMP
FOT	FUEL OIL TANK
FR	FINNED TUBE RADIATION
F SD	COMBINATION FIRE & SMOKE DAMPER
FT	FLASH TANK
FUR	FURNACE
GP	GLYCOL PUMP
HC	HEATING COIL
HP	HEAT PUMP
HRC	HEAT RECOVERY COIL
HRP	HEAT RECOVERY PUMP
HU	HUMIDIFIER
HUH	HOT WATER UNIT HEATER
HWP	HOT WATER PUMP
HX	HEAT EXCHANGER
IH	INTAKE HOOD
L	LOUVER
L	LABORATORY SUPPLY VARIABLE AIR VOLUME BOX
MUA	MAKE-UP AIR UNIT
P	PUMP
PCWP	PROCESS CHILLED WATER PUMP
PRV	POWER ROOF VENTILATOR
PRV	PRESSURE REDUCING VALVE
R	RETURN GRILLE - RETURN REGISTER
RAV	RETURN VARIABLE AIR VOLUME BOX
RC	REHEAT COIL
RCP	RADIANT CEILING PANEL
RF	RETURN FAN
RH	RELIEF HOOD
RHP	REMOTE RADIATOR PUMP
RTU	ROOFTOP UNIT
S	SUPPLY GRILLE - SUPPLY REGISTER
SD	SMOKE DAMPER
SD	SUCTION DIFFUSER
SF	SUPPLY FAN
SFM	STEAM FLOW METER
SIL	DUCT SILENCER
ST	STEAM TRAP
SUH	STEAM UNIT HEATER
T	TRANSFER GRILLE
TCP	TEMPERATURE CONTROL PANEL
UH	UNIT HEATER
UV	UNIT VENTILATOR
V	VARIABLE AIR VOLUME BOX
V	VALVE
VD	VOLUME DAMPER
VF	VENTILATION FAN
VFD	VARIABLE FREQUENCY DRIVE
WF	WATER FILTER
WFM	WATER FLOW METER

GENERAL ABBREVIATIONS

A	ARCHITECT
A/E	ARCHITECT-ENGINEER
AF	ABOVE FINISHED FLOOR
ALD	ACOUSTICALLY LINED DUCTWORK
ALT	ALTERNATE
AP	ACCESS PANEL
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
CA	COMBUSTION AIR
CAV	CONSTANT AIR VOLUME
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
CLG	CEILING
CM	CONSTRUCTION MANAGER
COND	CONDENSATE
COP	CENTER OF PIPE
DAT	DISCHARGE AIR TEMPERATURE
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DG	DOOR GRILLE
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EDR	EQUIVALENT DIRECT RADIATION
EL	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EW	ENTERING WATER TEMPERATURE
FC	FAIL CLOSED
FD	FLOOR DRAIN
FLA	FULL LOAD AMPS
FO	FAIL OPEN
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FT	FEET
GA	GAUGE
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
H	HEATING CONTRACTOR
HD	HUB DRAIN
IE	INVERT ELEVATION
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSANDS OF BTU PER HOUR
MC	MECHANICAL CONTRACTOR
NA	NOT APPLICABLE
NO	NORMALLY CLOSED
NO	NORMALLY OPEN
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OC	ON CENTER
OED	OPEN END DUCT
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFDI	OWNER FURNISHED, OWNER INSTALLED
OV	OUTLET VELOCITY
PC	PLUMBING CONTRACTOR
PCF	POUNDS PER CUBIC FOOT
PD	PRESSURE DROP
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
SOG	SLAB ON GRADE
SP	STATIC PRESSURE

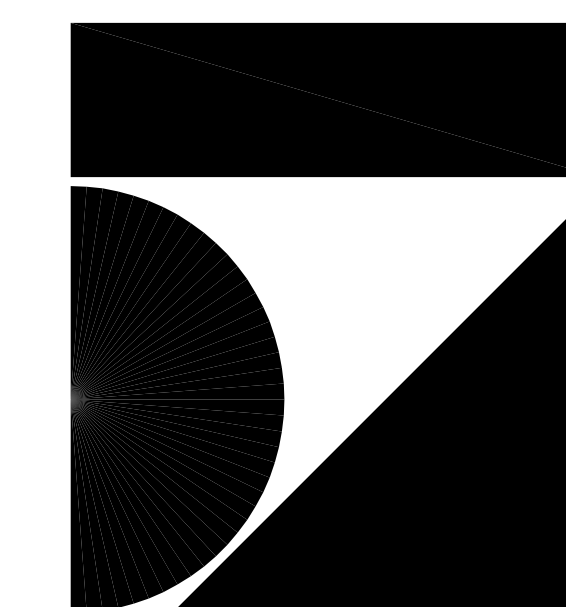
SPECIAL DESIGNATION

	EQUIPMENT NOTATION
	KEYED NOTE
	PLAN CONTINUATION REFERENCE
	DETAIL REFERENCE
	PLAN / DETAIL
	REVISION REFERENCE
	CONNECT TO EXISTING
	PITCH
	FLOW
	LINE INDICATES DEMOLITION

INSTRUMENTATION DEVICES

	TEMPERATURE INDICATOR (THERMOMETER) WITH THERMOWELL
	TEMPERATURE INDICATOR (THERMOMETER) WITHOUT WELL (DIRECT INSERTION)
	THERMOWELL
	TEMPERATURE ELEMENT (RTD, THERMOCOUPLE, THERMISTOR, ETC. REFER TO SPECIFICATION)
	STRAP ON PIPE TEMPERATURE INSTRUMENT (AQUASTAT)
	TEMPERATURE ELEMENT WITH TRANSMITTER AND THERMOWELL
	PRESSURE INDICATOR (PRESSURE GAUGE) WITH GAUGE VALVE
	PRESSURE ELEMENT WITH TRANSMITTER
	LEVEL SENSOR WITH TRANSMITTER
	FLOW ELEMENT (FLOW SENSOR)
	FLOW ELEMENT WITH TRANSMITTER
	FLOW INDICATOR (FLOW METER)
	FLOW SWITCH
	CONDUCTIVITY SENSOR WITH TRANSMITTER

NOTE:
ABBREVIATIONS AND SYMBOLS INDICATED HERE AND NOT USED IN THE CONTRACT DOCUMENTS DO NOT APPLY TO THIS PROJECT. ADDITIONAL SYMBOLS MAY BE INDICATED IN THE CONTRACT DOCUMENTS.



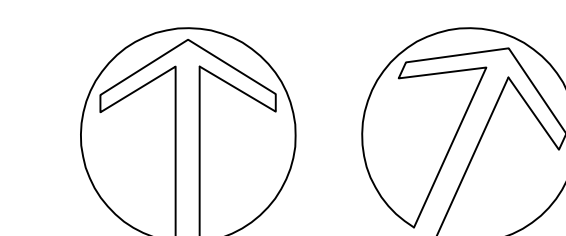
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PLAN NORTH ACTUAL NORTH
SCALE: 1/8" = 1'-0"

Sheet

LOWER LEVEL FLOOR
PLAN - DUCTWORK

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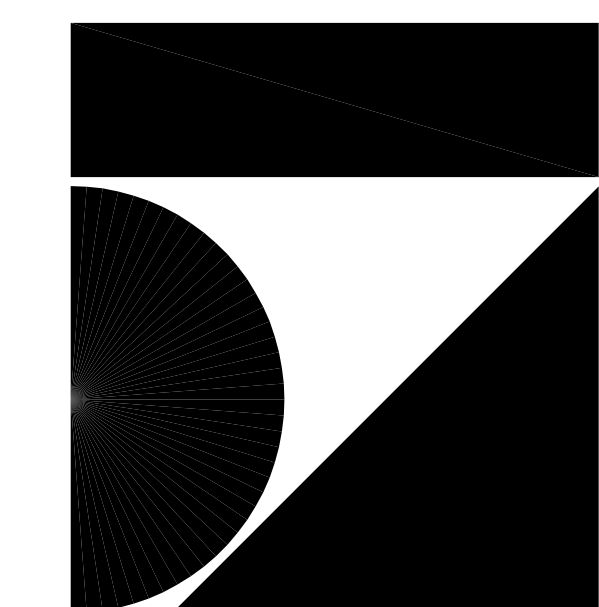
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M1.0



1 LOWER LEVEL FLOOR PLAN - DUCTWORK
SCALE: 1/8" = 1'-0"



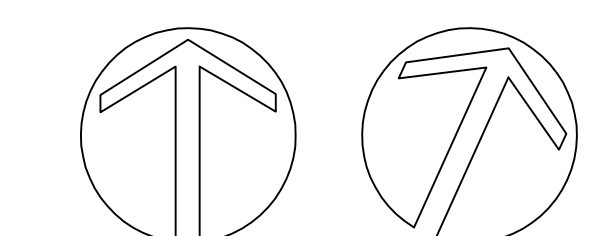
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UPPER LEVEL FLOOR PLAN - DUCTWORK

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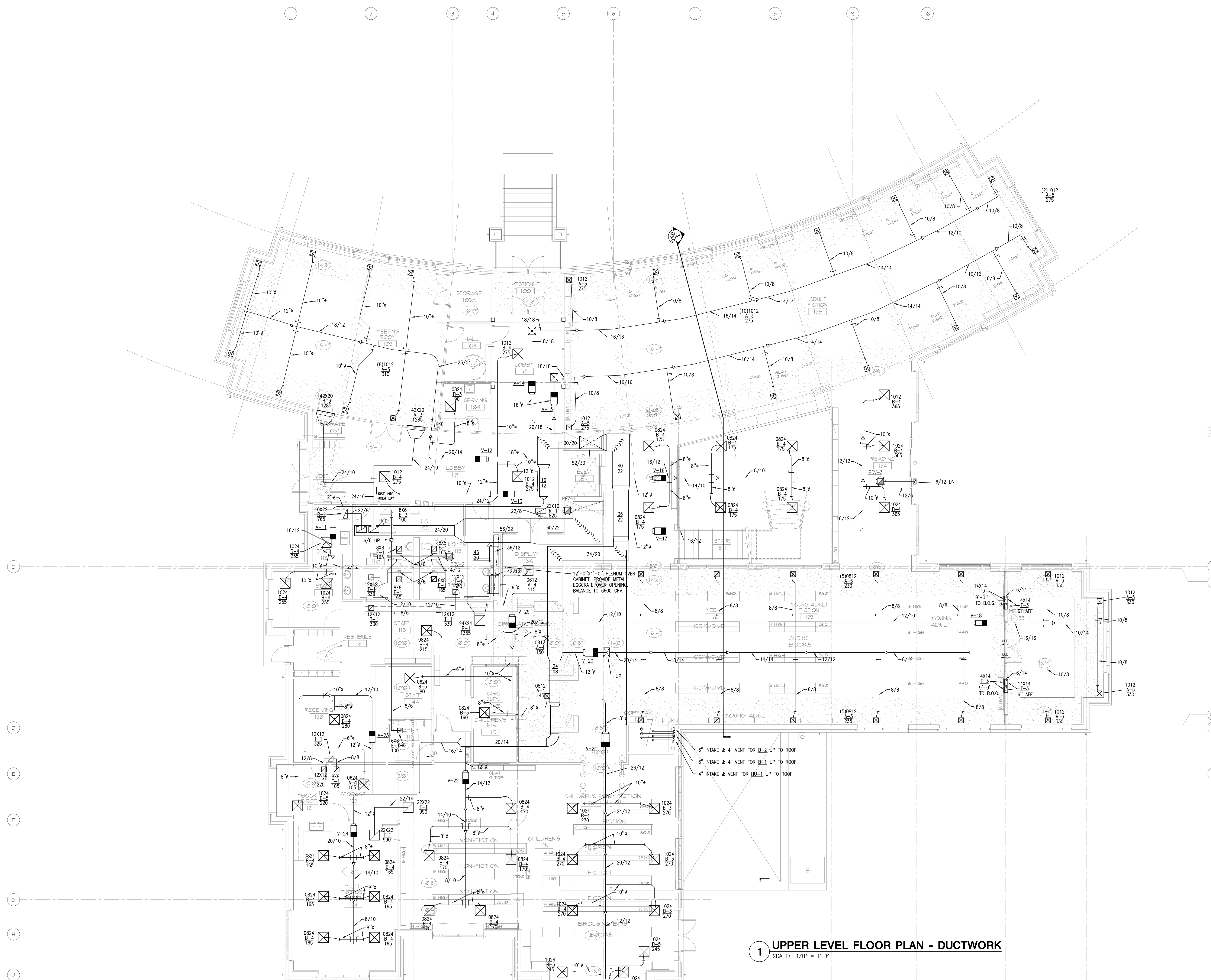
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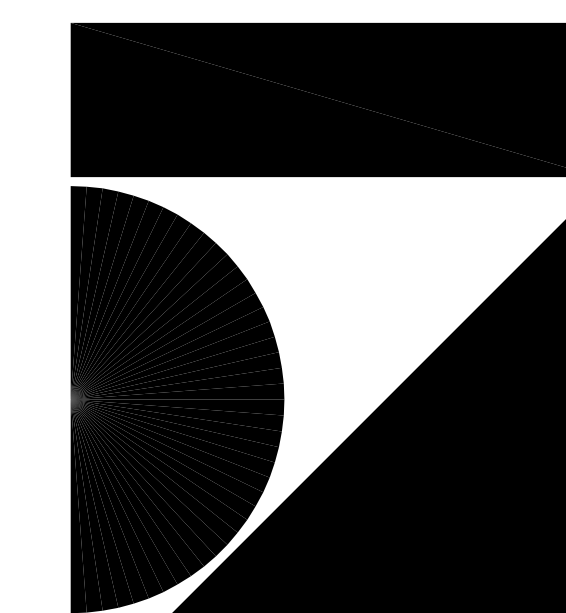
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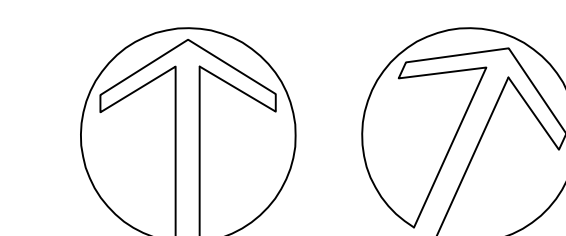


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ROOF PLAN - HVAC

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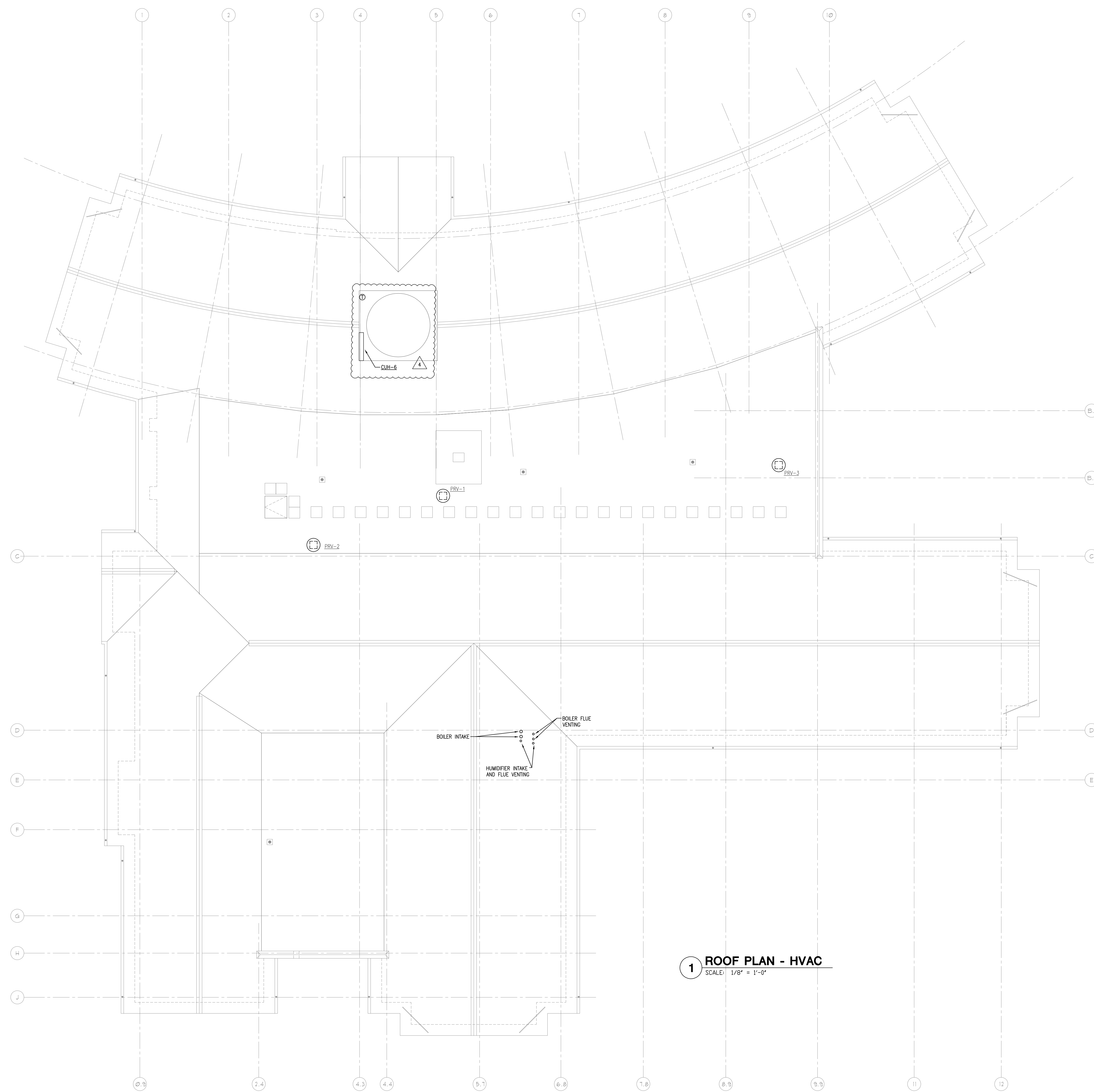
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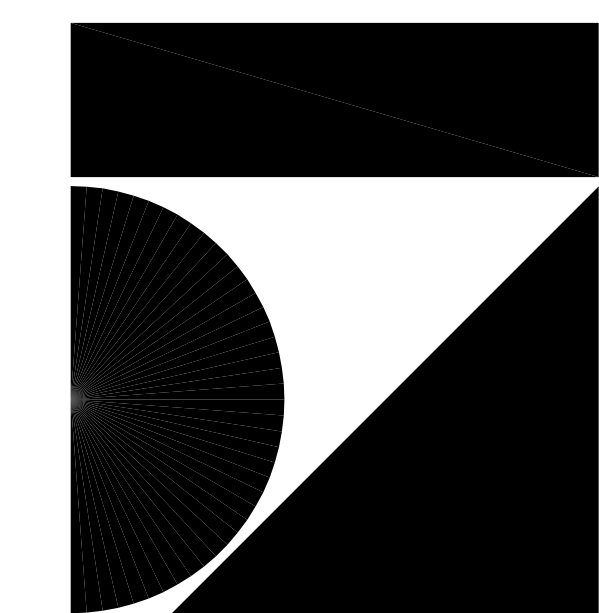
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M1.2



1 ROOF PLAN - HVAC
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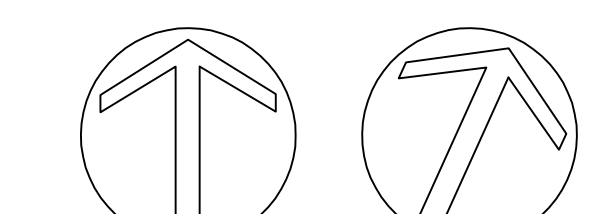


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**LOWER LEVEL FLOOR
PLAN - PIPING**

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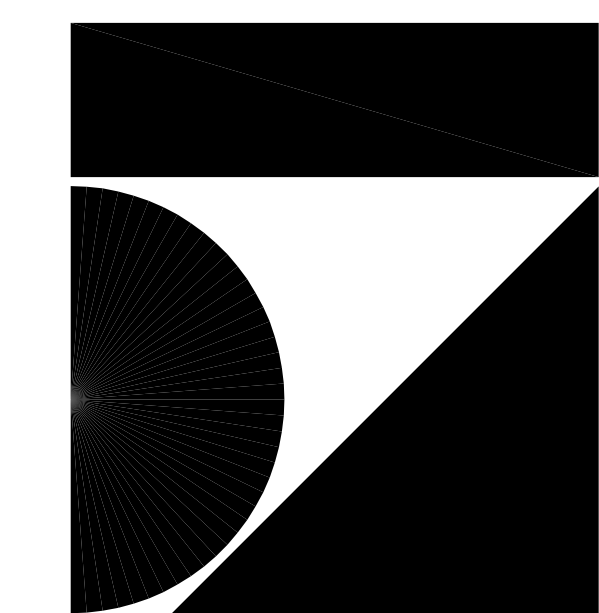
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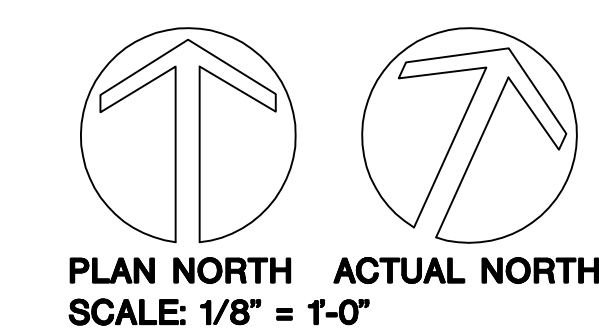


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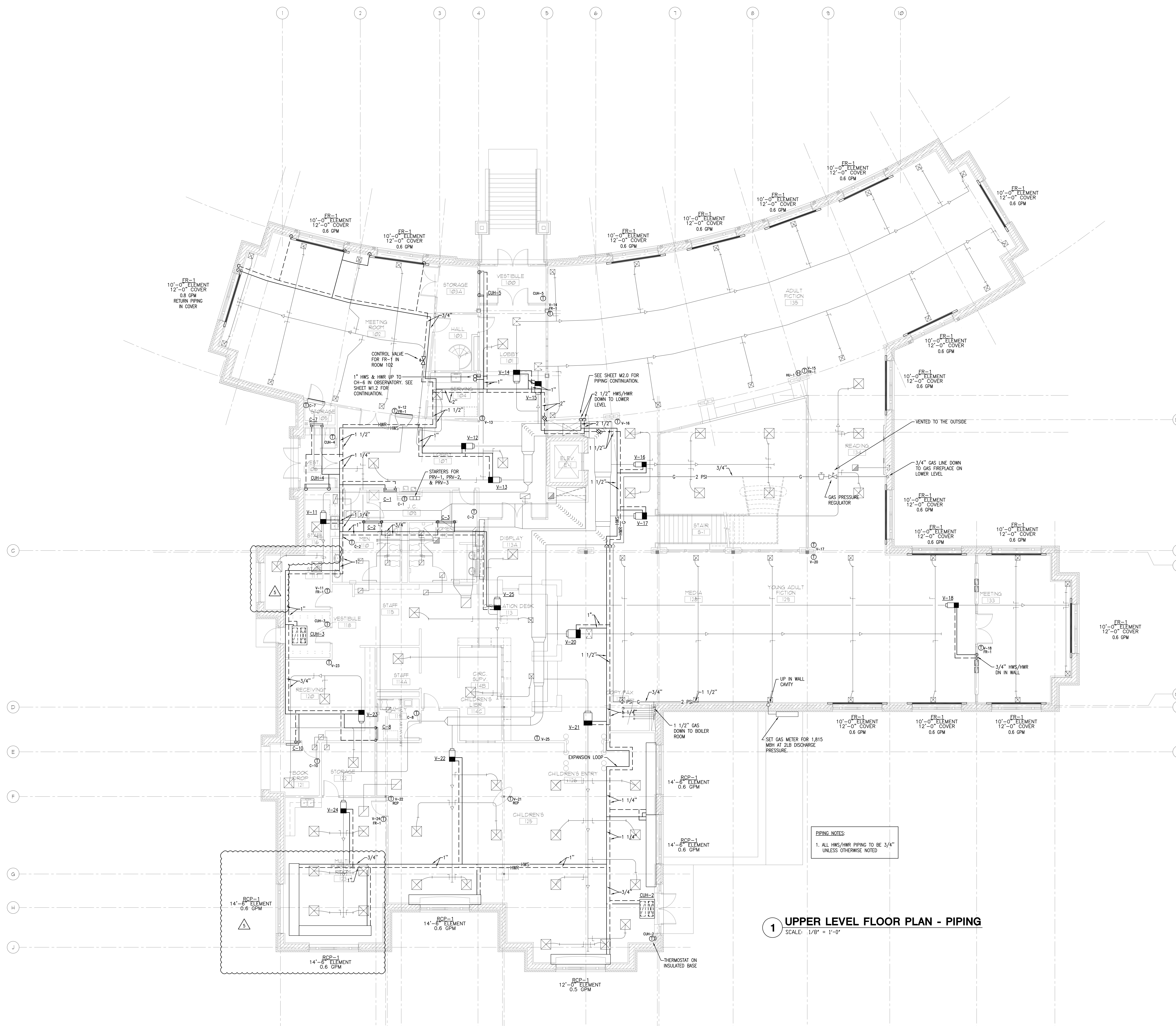
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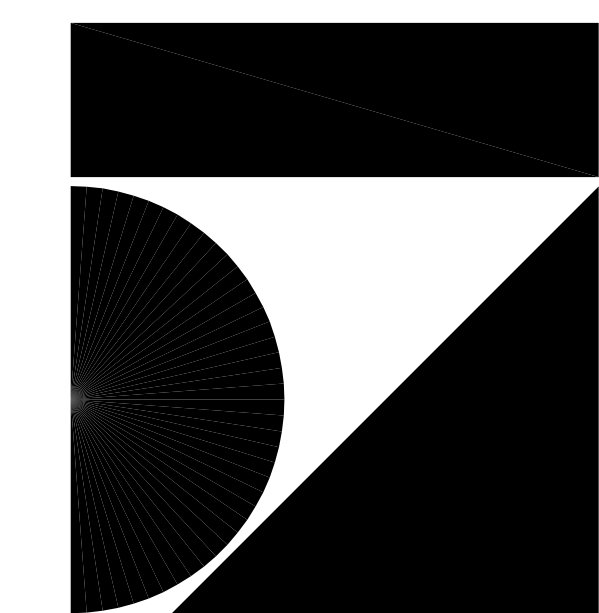
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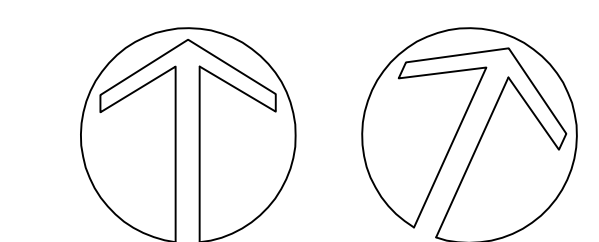


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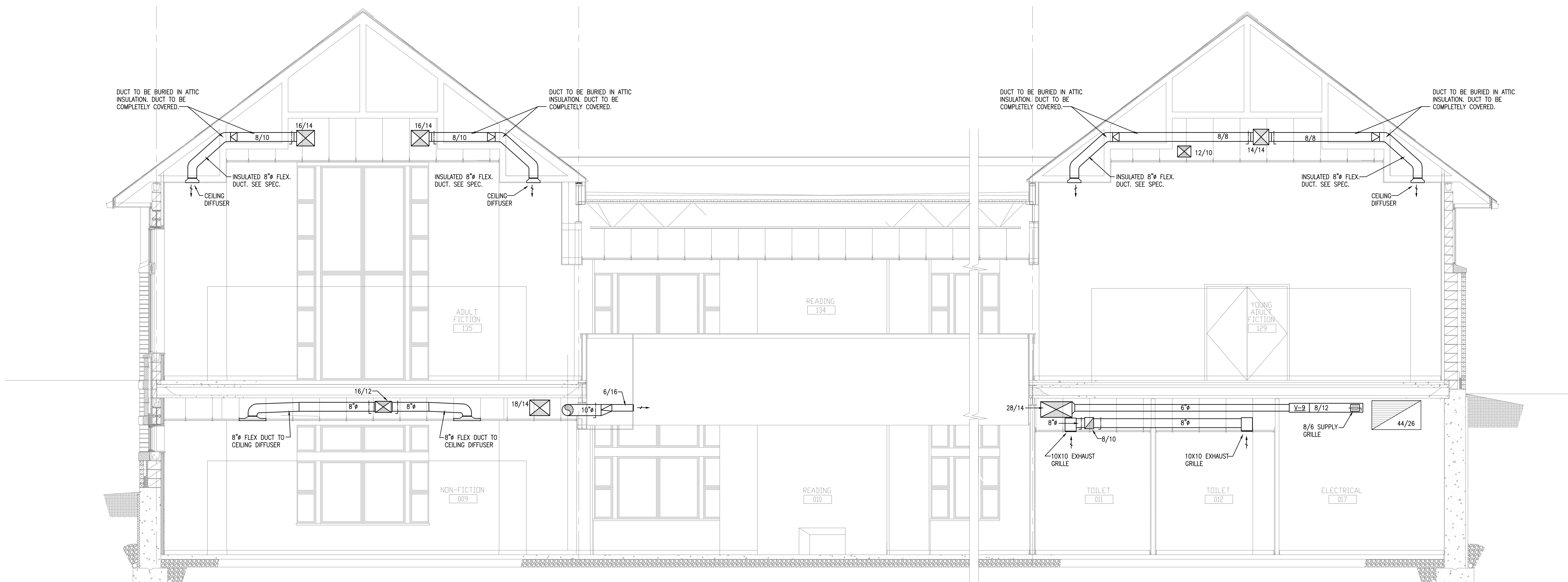
VILLAGE OF PEWAUKEE, WISCONSIN

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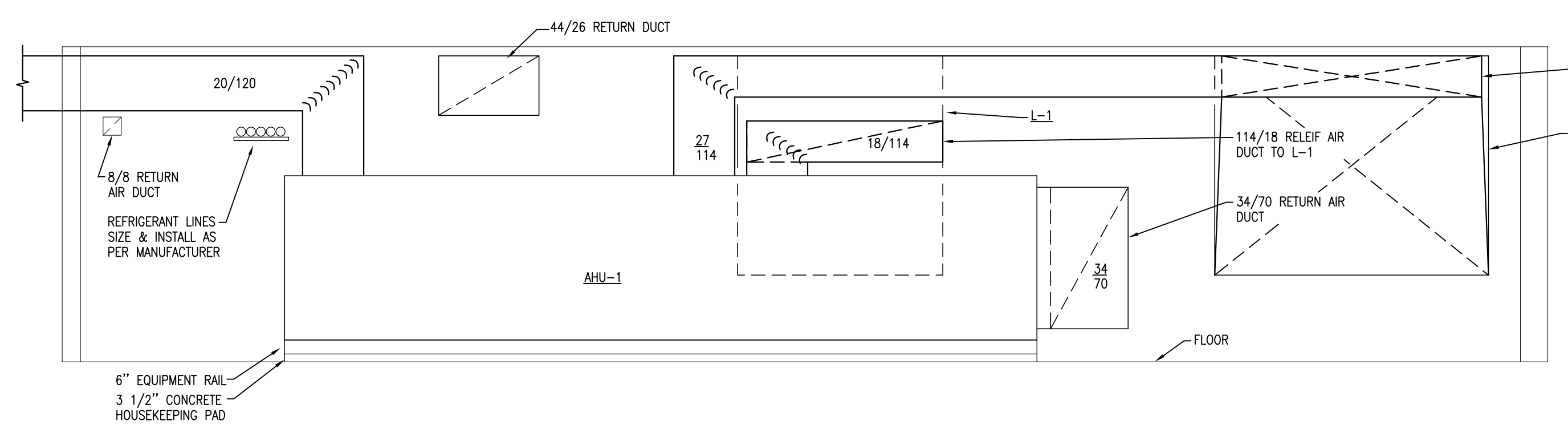
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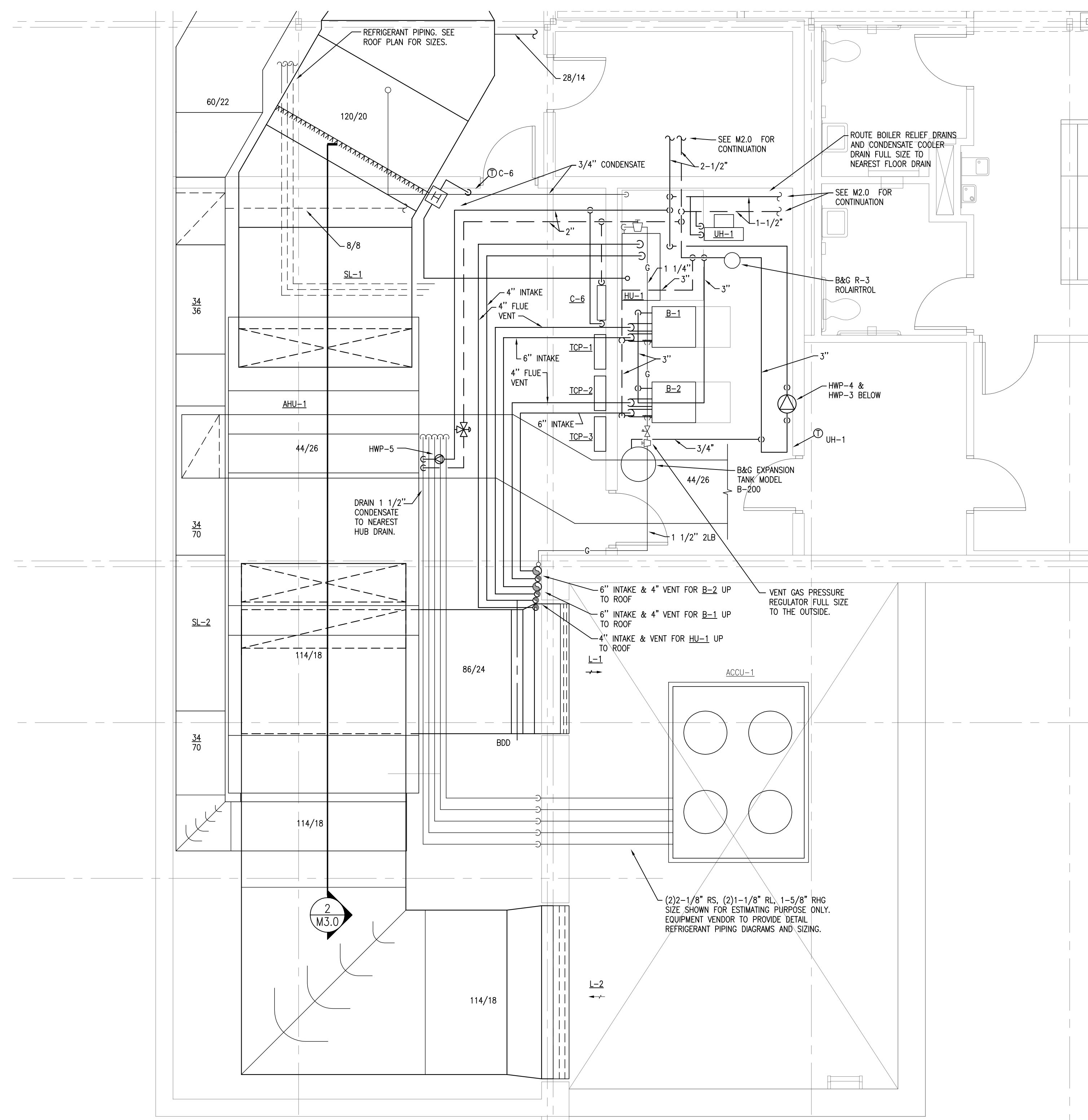
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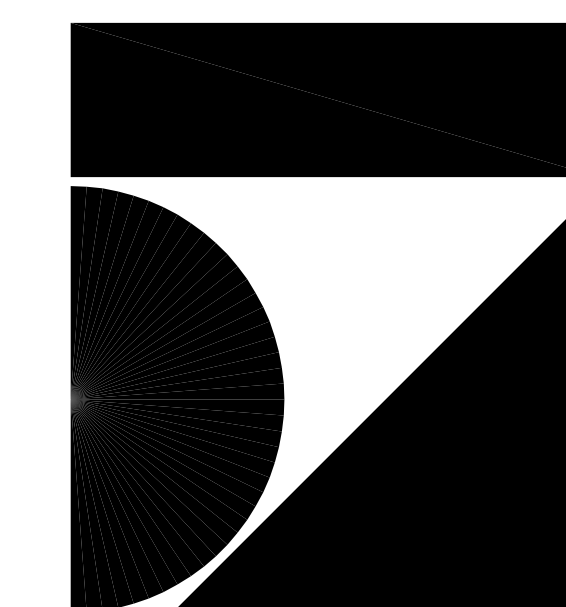
3 BUILDING DUCT SECTION - ADULT FICTION
SCALE: 1/4" = 1'-0"



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



1 ENLARGED MECHANICAL ROOM PLAN
SCALE: 1/4" = 1'-0"



Revisions

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4. ISSUED FOR PERMIT REVIEW
JANUARY 17, 2005
5. VALUE ENGINEERING AND LIGHTING REVISIONS
MARCH 1, 2005
6. OBSERVATORY FRAMING
MARCH 14, 2005

NO SCALE

Sheet

HOT WATER FLOW DIAGRAM

ISSUED FOR PERMIT REVIEW
NOT FOR CONSTRUCTION
DATE: JANUARY 17, 2005

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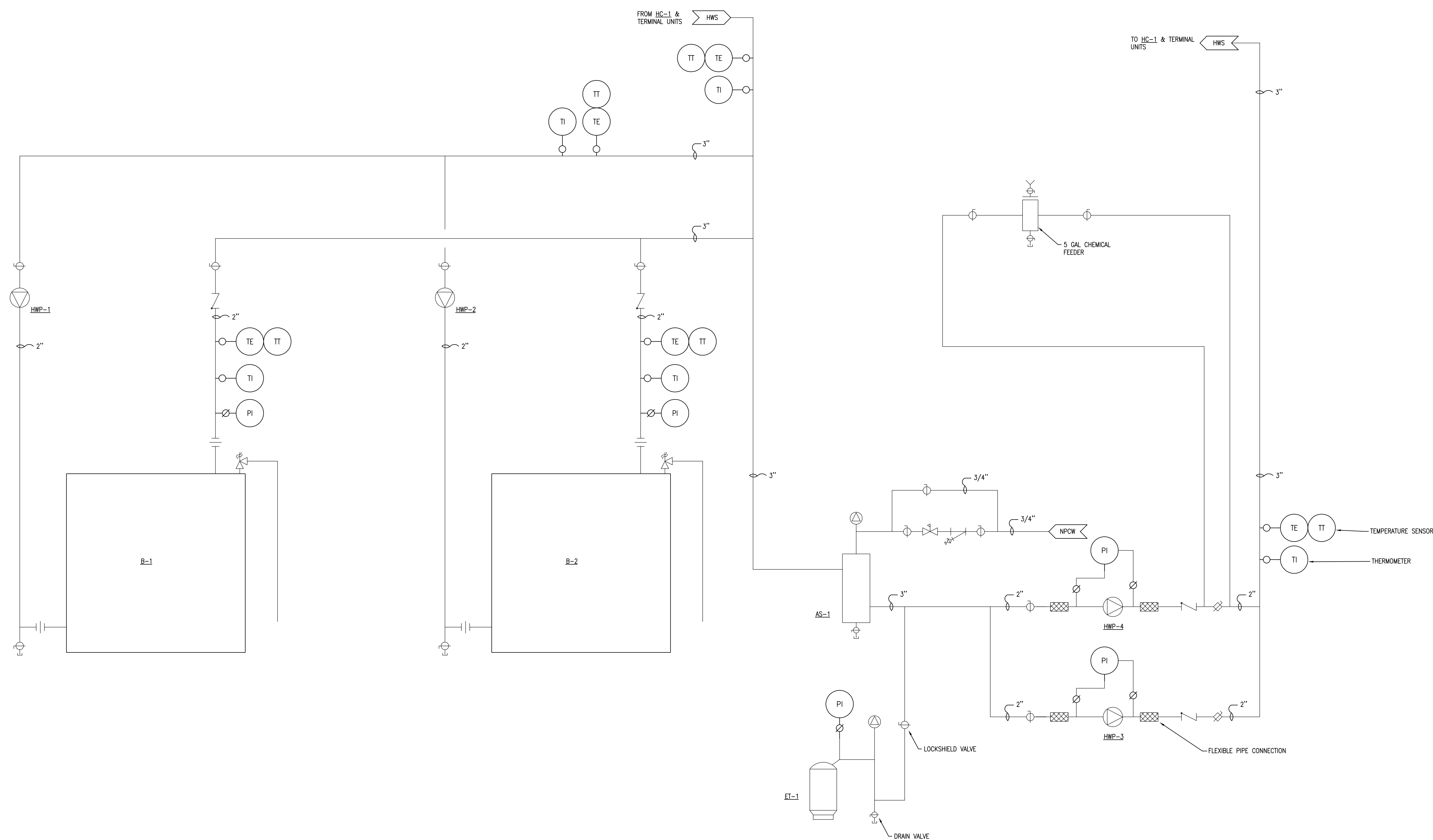
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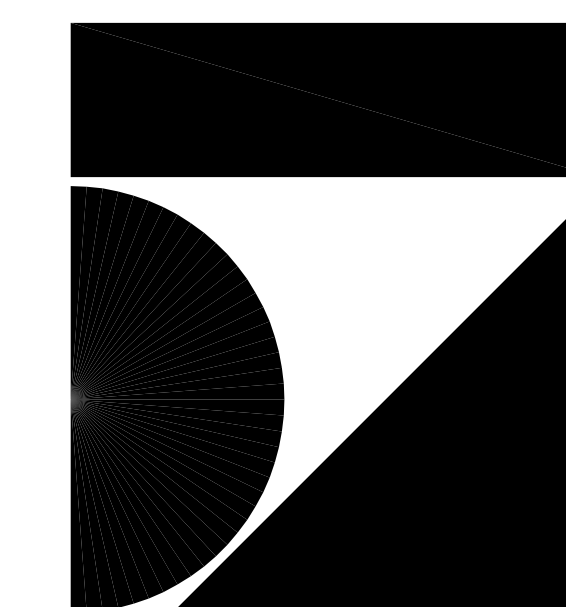
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M4.1



1 HOT WATER FLOW DIAGRAM
NO SCALE



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HARWOOD
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7420 West State Street Milwaukee Wisconsin 53213
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HEC Project Number: 03-0073.00

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AIR HANDLING UNIT
FLOW DIAGRAM

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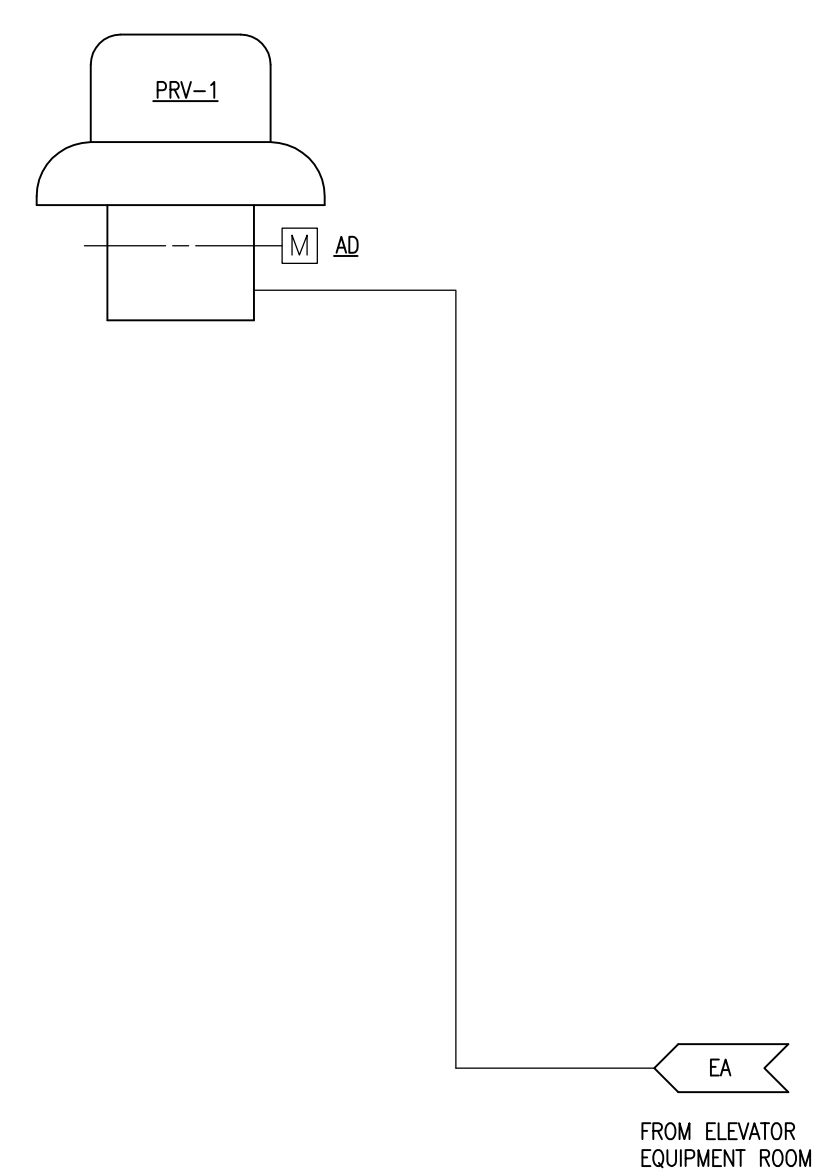
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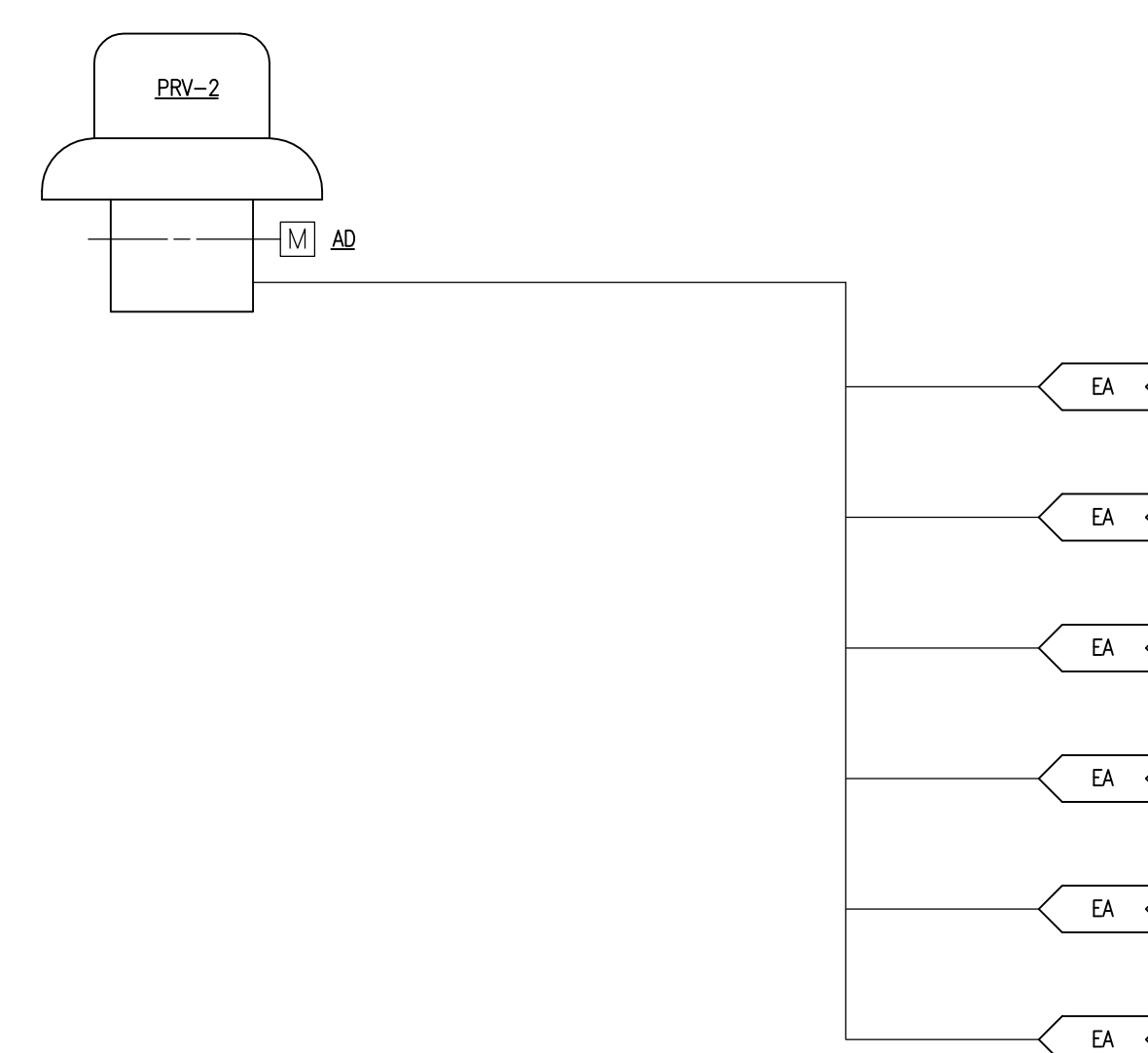
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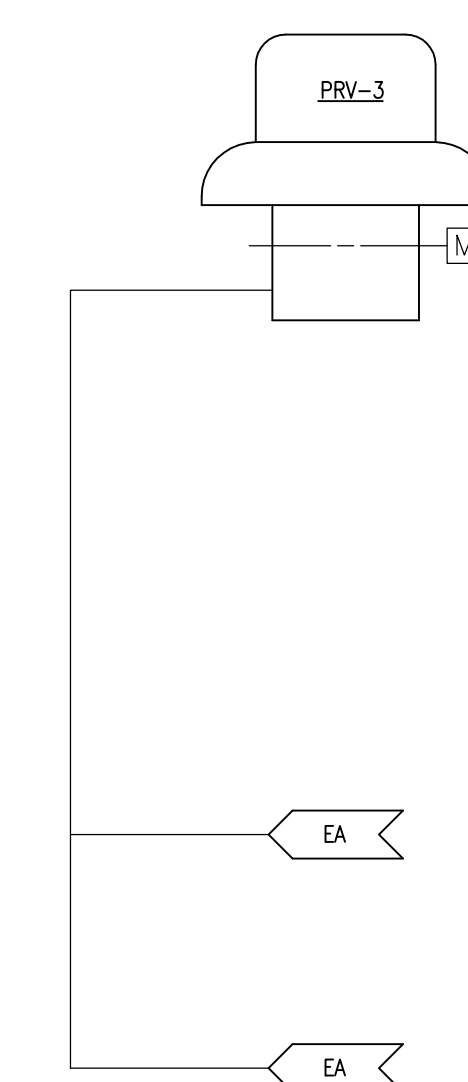
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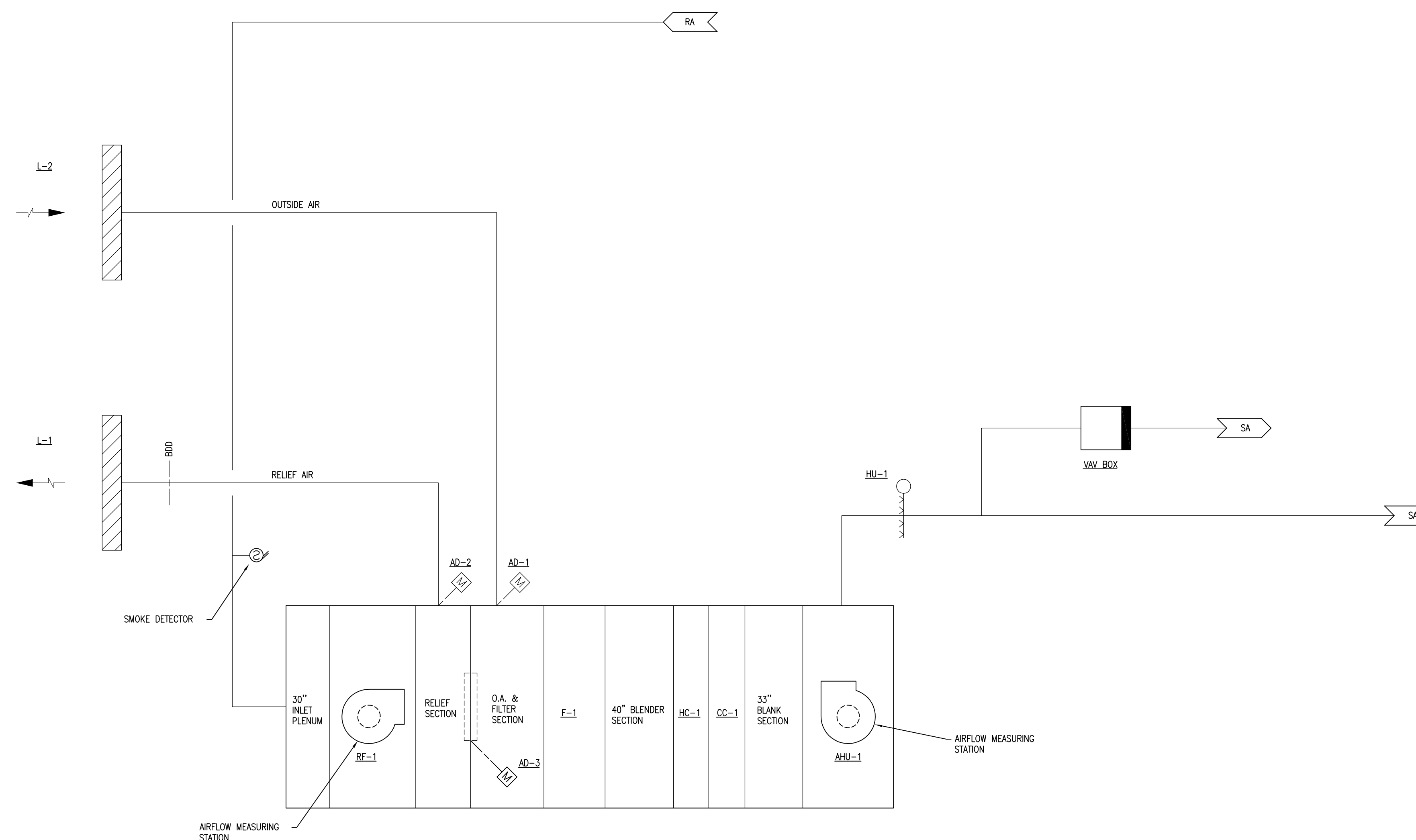
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SCALE: NONE



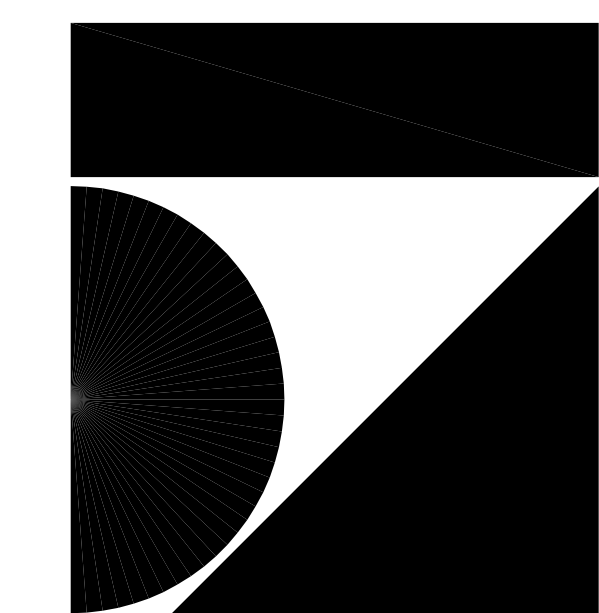
3 EXHAUST FAN PRV-2 FLOW DIAGRAM
SCALE: NONE



2 EXHAUST FAN PRV-3 FLOW DIAGRAM
SCALE: NONE



1 AIR HANDLING UNIT
NO SCALE



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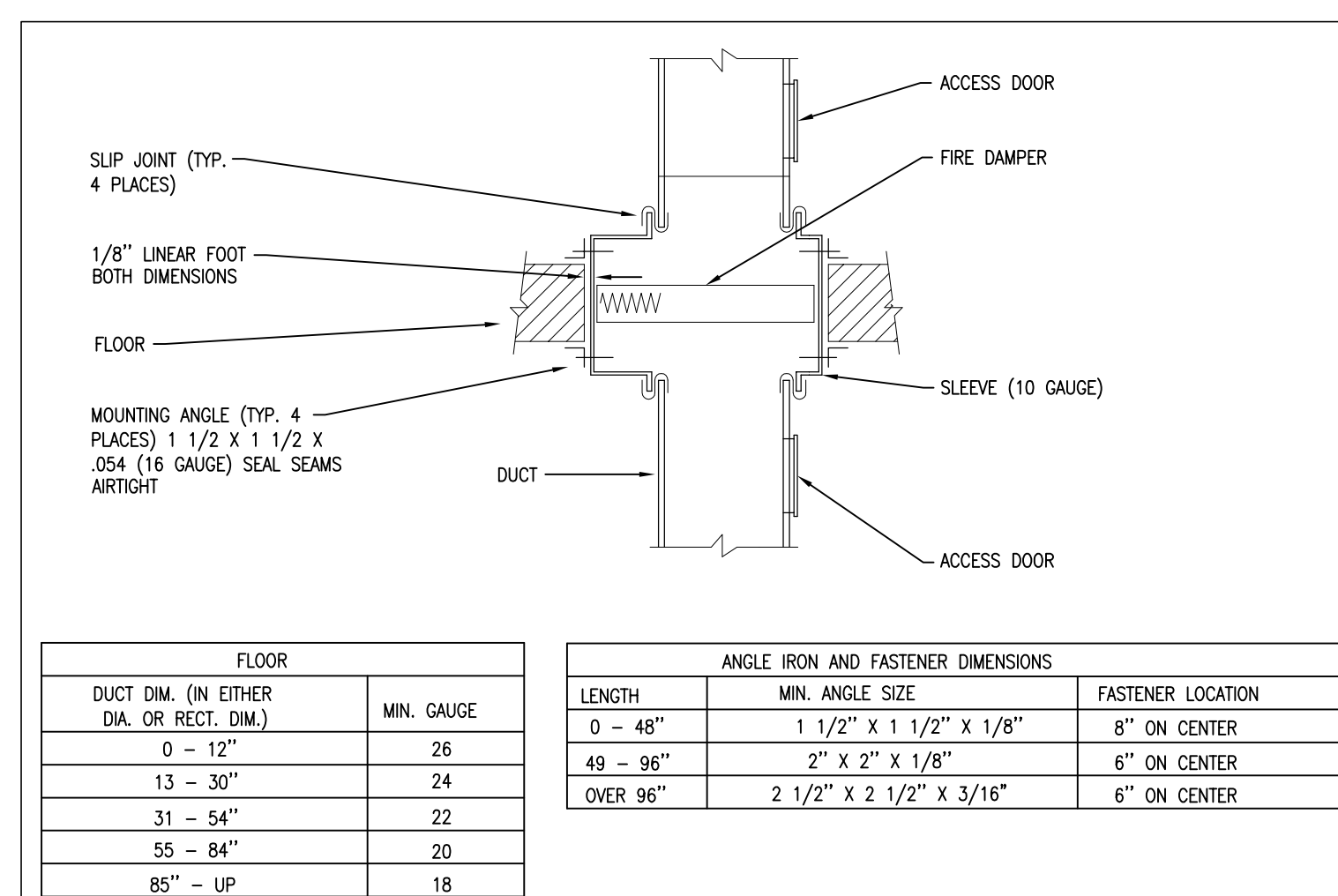
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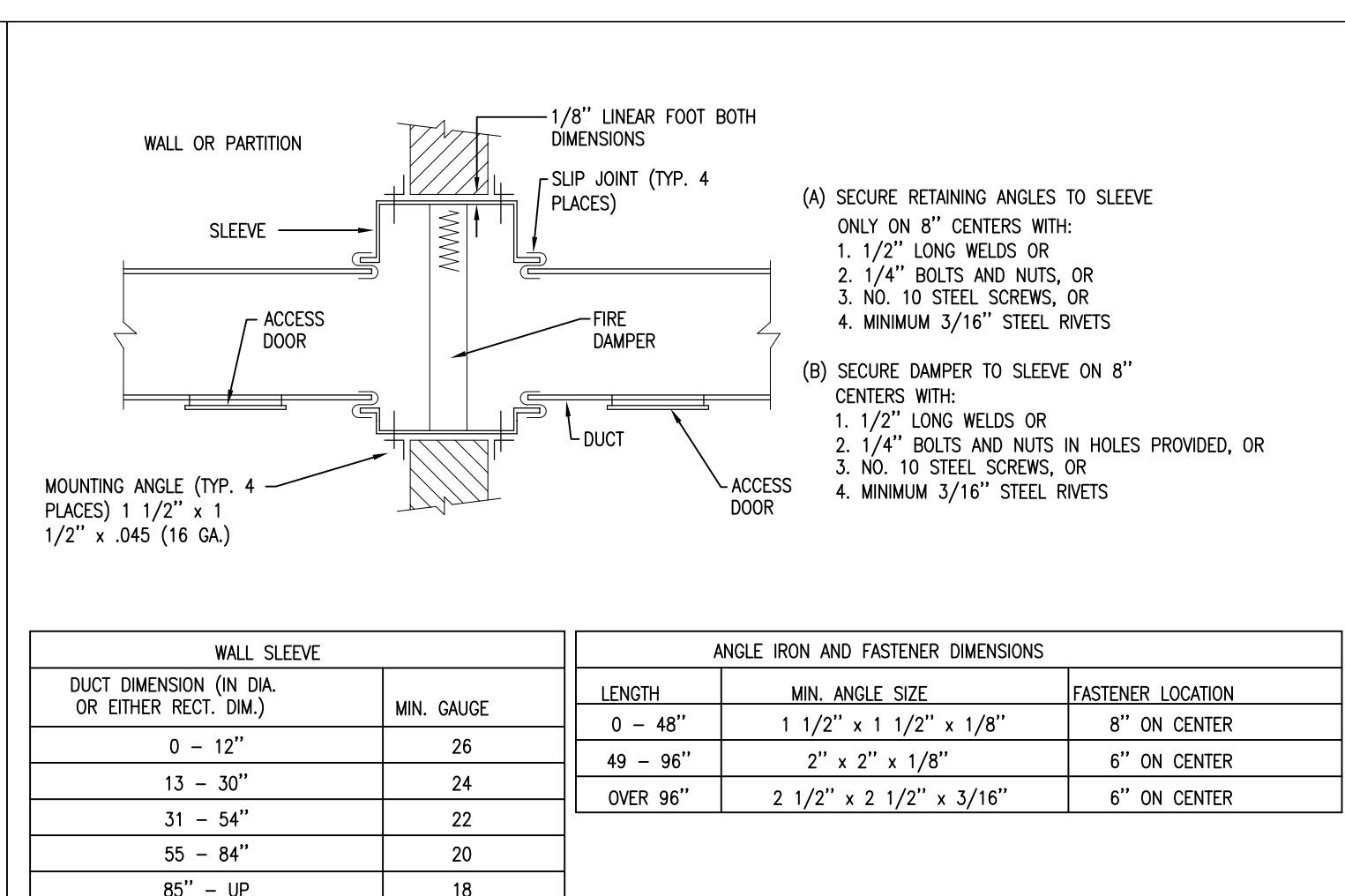
M5.1



FLOOR	
DUCT DIM. (IN EITHER DIA. OR RECT. DIM.)	MIN. GAUGE
0 - 12"	26
13 - 30"	24
31 - 54"	22
55 - 84"	20
85" - UP	18

ANGLE IRON AND FASTENER DIMENSIONS		
LENGTH	MIN. ANGLE SIZE	FASTENER LOCATION
0 - 48"	1 1/2" X 1 1/2" X 1/8"	8" ON CENTER
49 - 96"	2" X 2" X 1/8"	6" ON CENTER
OVER 96"	2 1/2" X 2 1/2" X 3/16"	6" ON CENTER

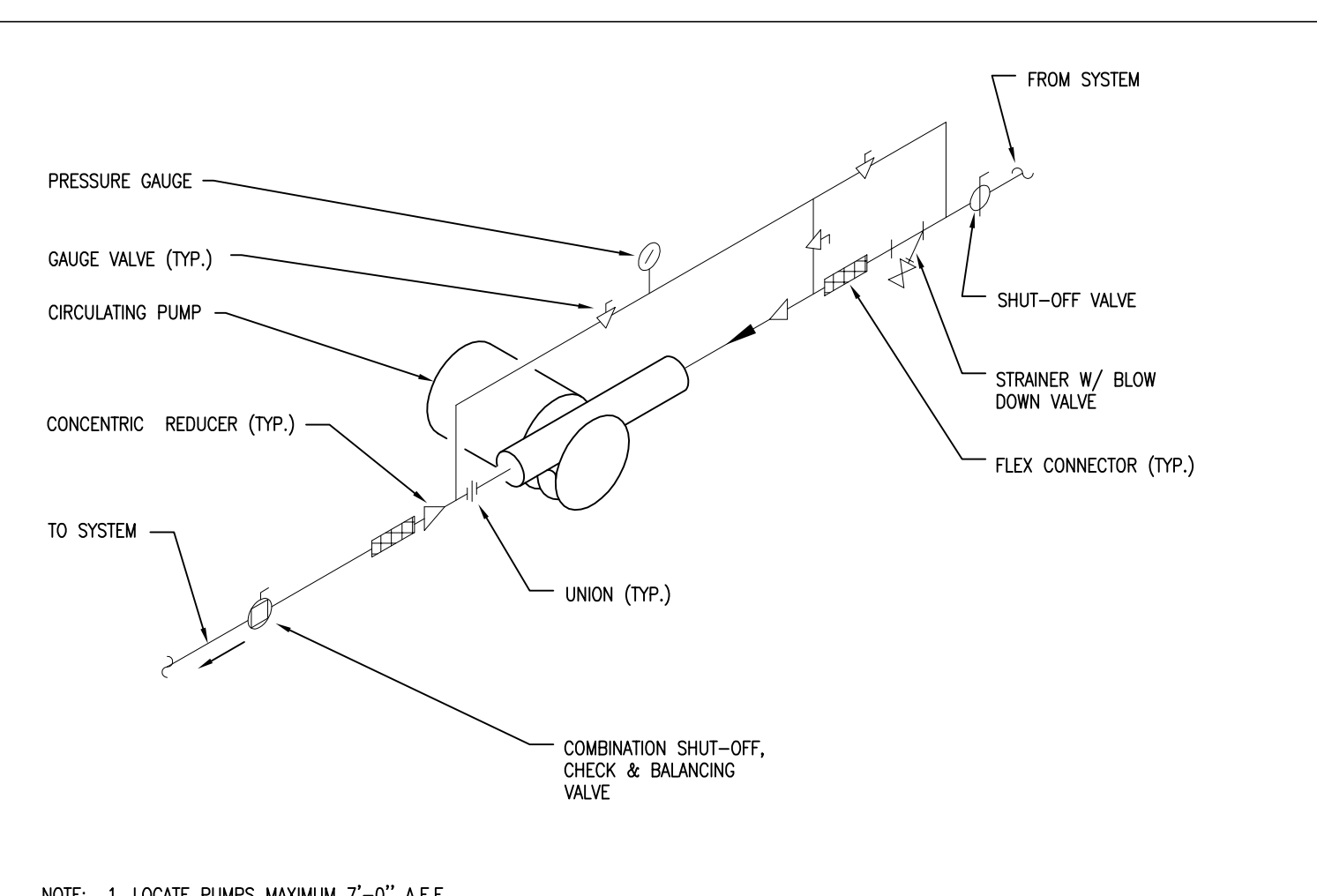
16 HORIZONTAL FIRE DAMPER (IN FLOOR)
NO SCALE



WALL SLEEVE	
DUCT DIMENSION (IN DIA. OR EITHER RECT. DIM.)	MIN. GAUGE
0 - 12"	26
13 - 30"	24
31 - 54"	22
55 - 84"	20
85" - UP	18

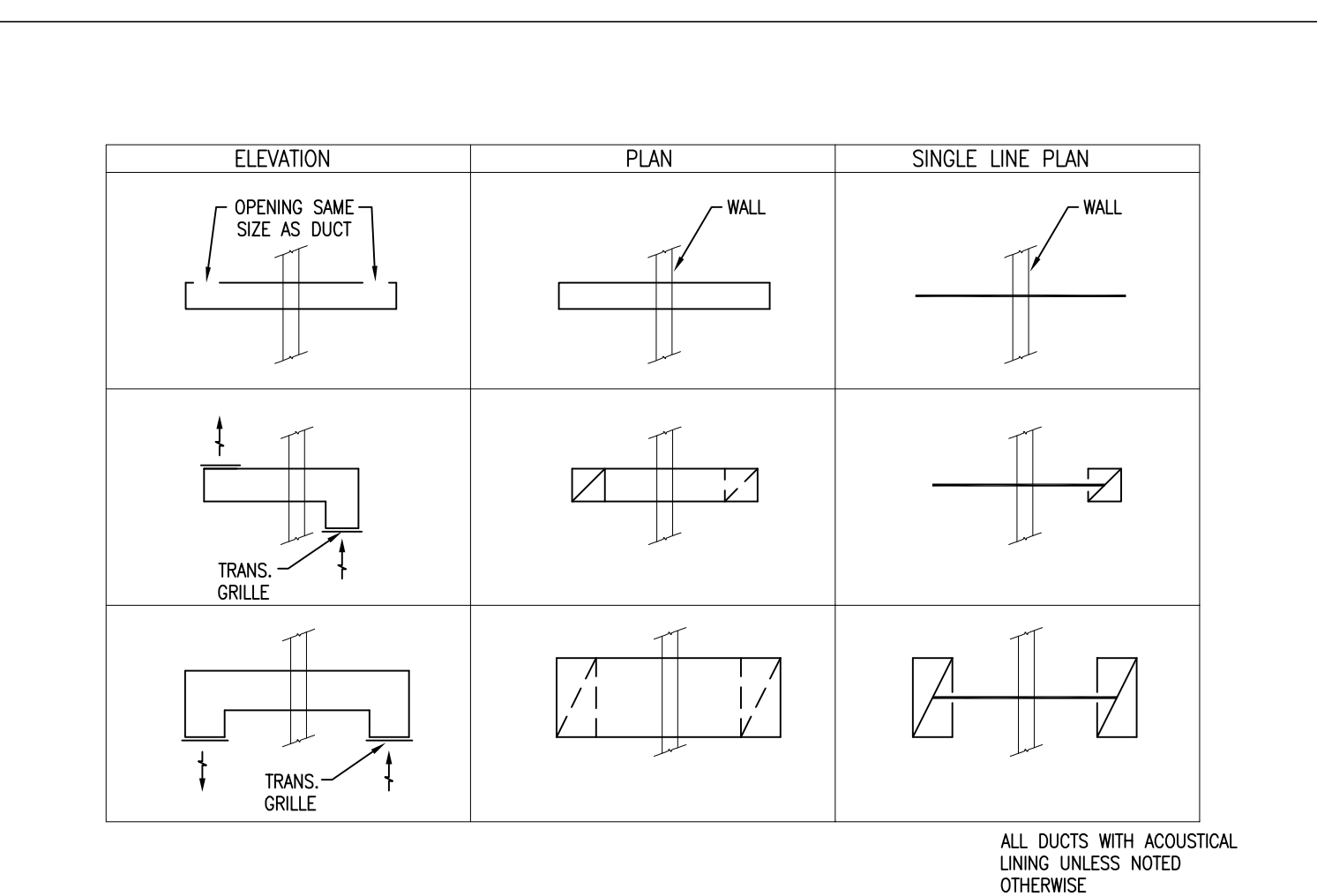
ANGLE IRON AND FASTENER DIMENSIONS		
LENGTH	MIN. ANGLE SIZE	FASTENER LOCATION
0 - 48"	1 1/2" X 1 1/2" X 1/8"	8" ON CENTER
49 - 96"	2" X 2" X 1/8"	6" ON CENTER
OVER 96"	2 1/2" X 2 1/2" X 3/16"	6" ON CENTER

12 VERTICAL FIRE DAMPER
NO SCALE

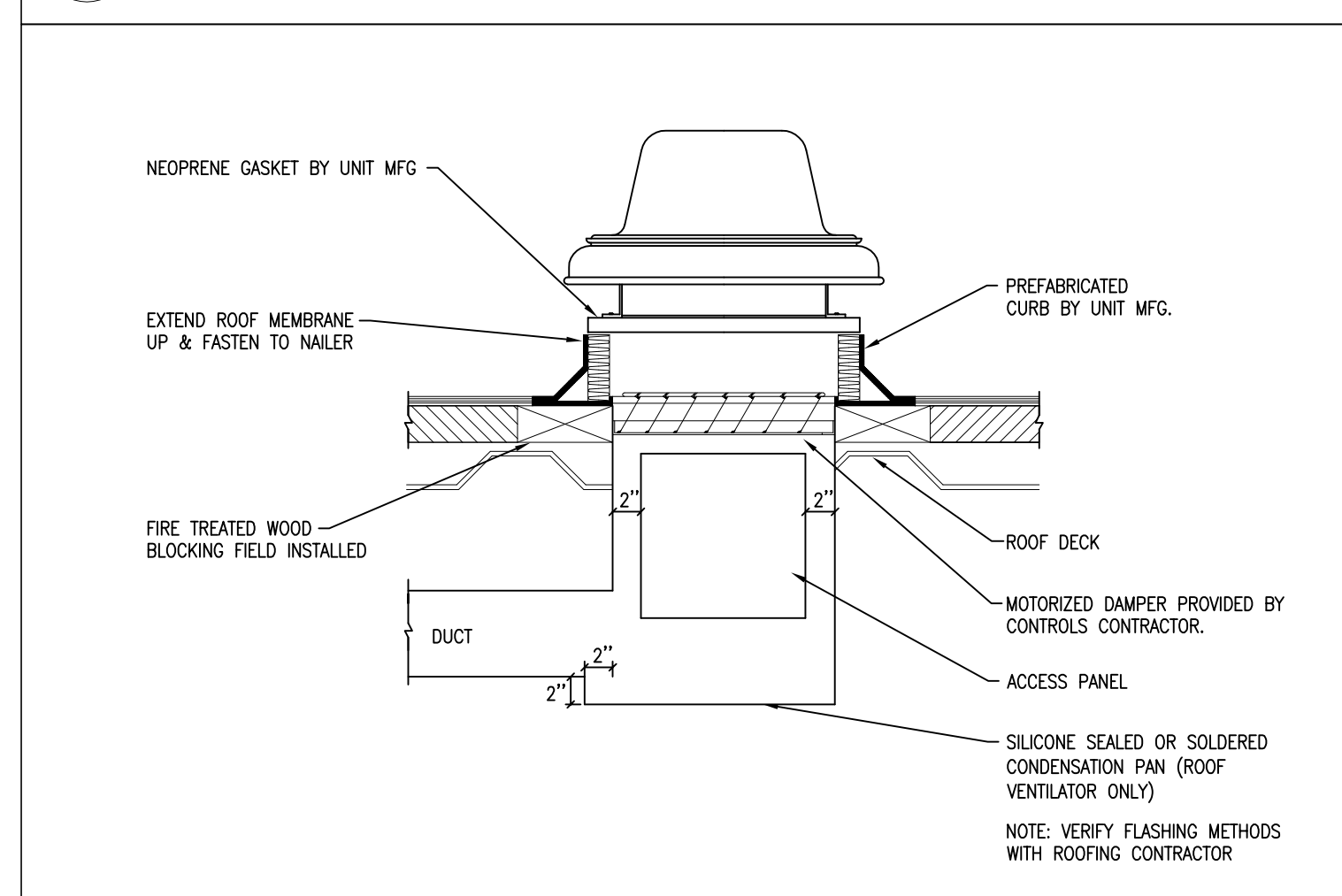


NOTE: 1. LOCATE PUMPS MAXIMUM 7'-0" A.F.F.

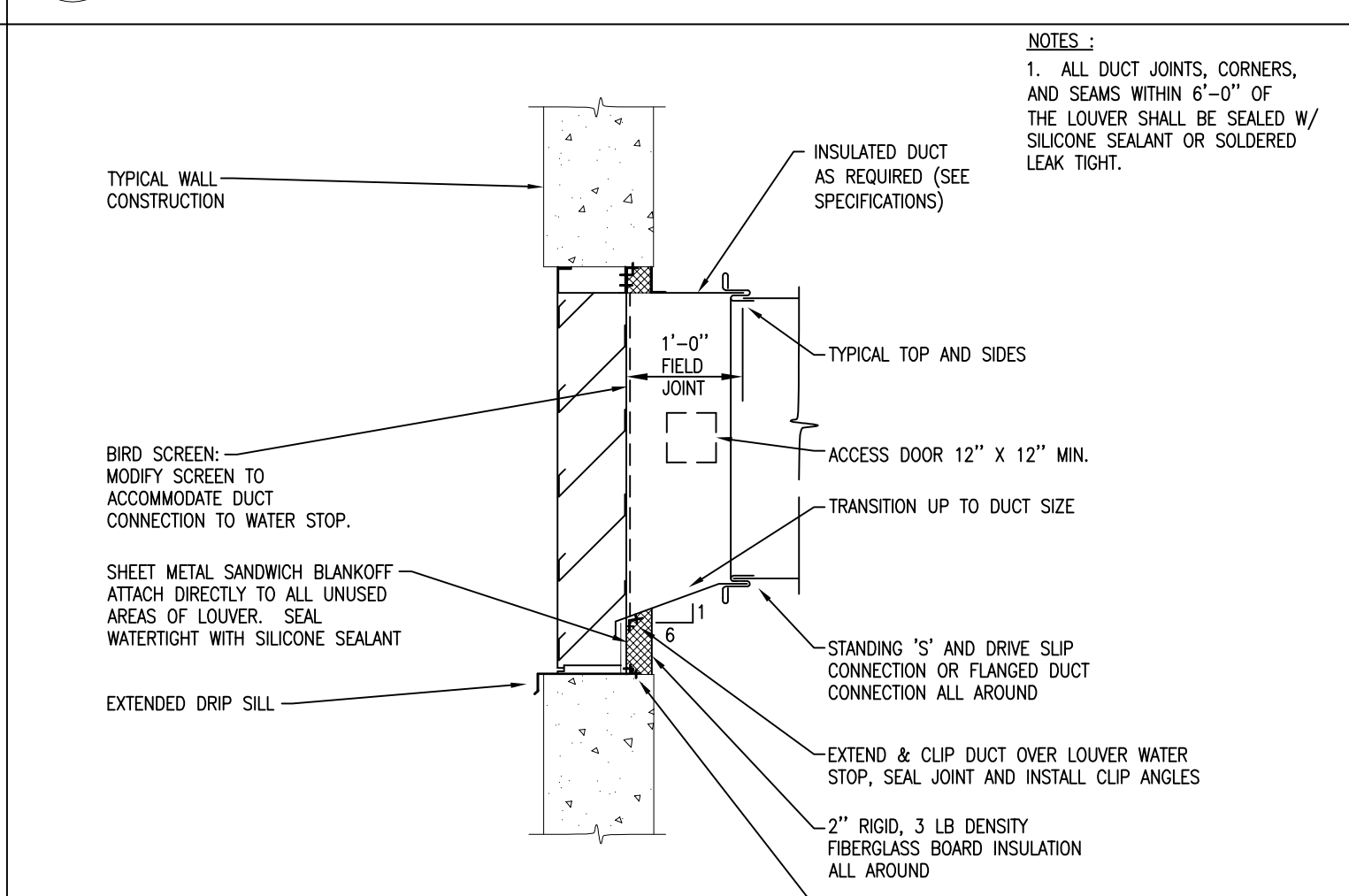
8 TYPICAL INLINE PUMP DIAGRAM
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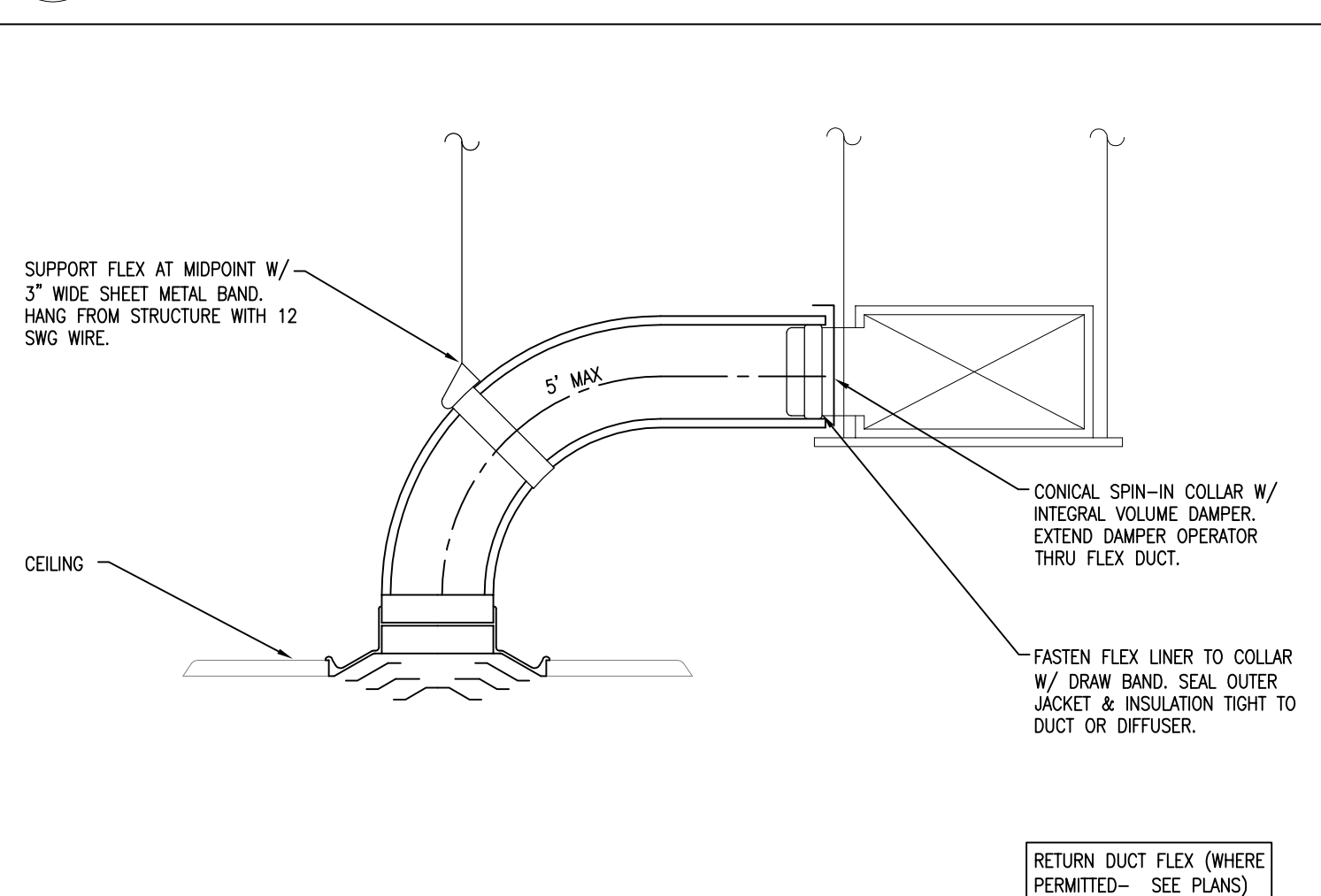
4 ROOM TRANSFER DUCT DETAIL
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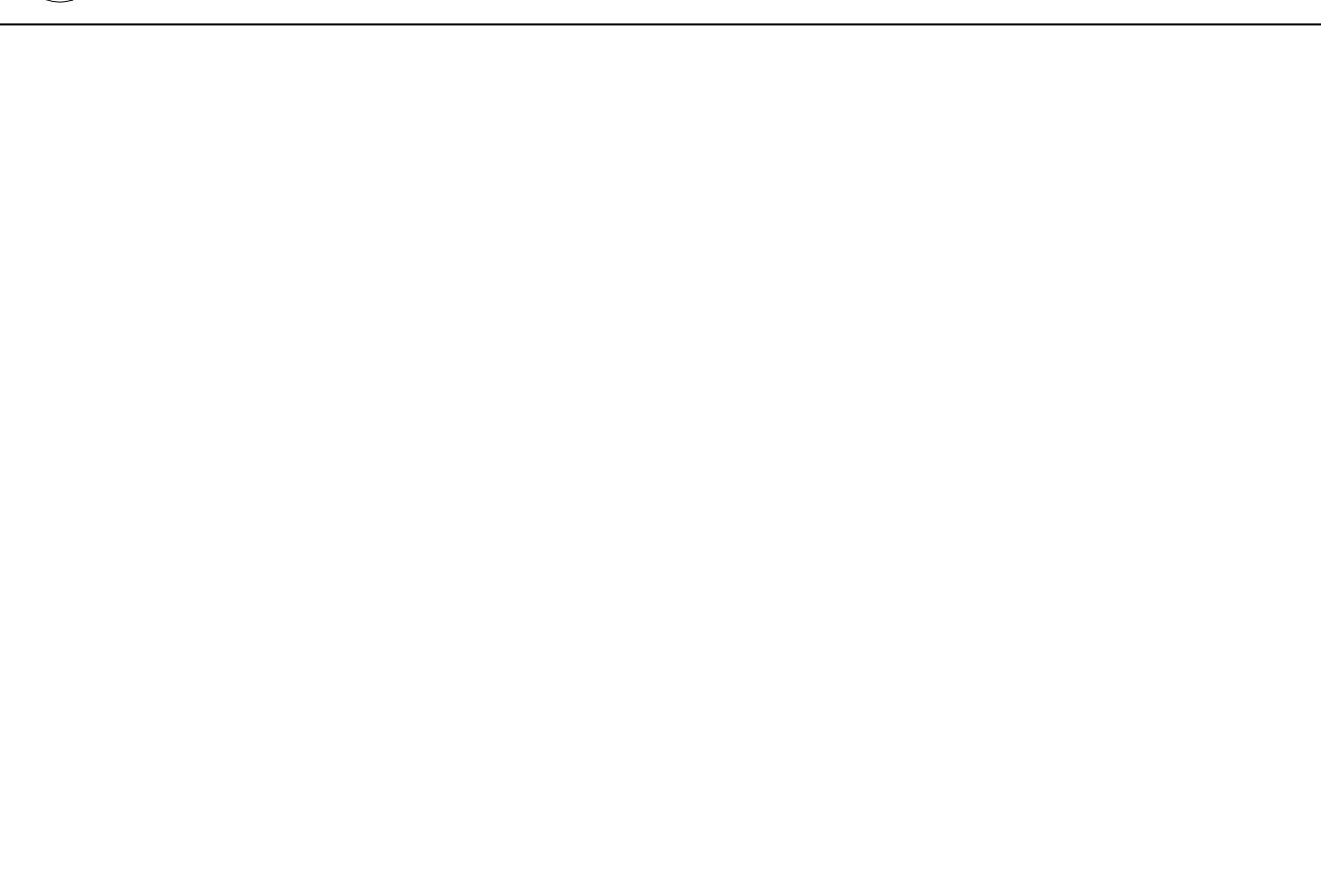
15 POWER ROOF VENTILATOR DETAIL
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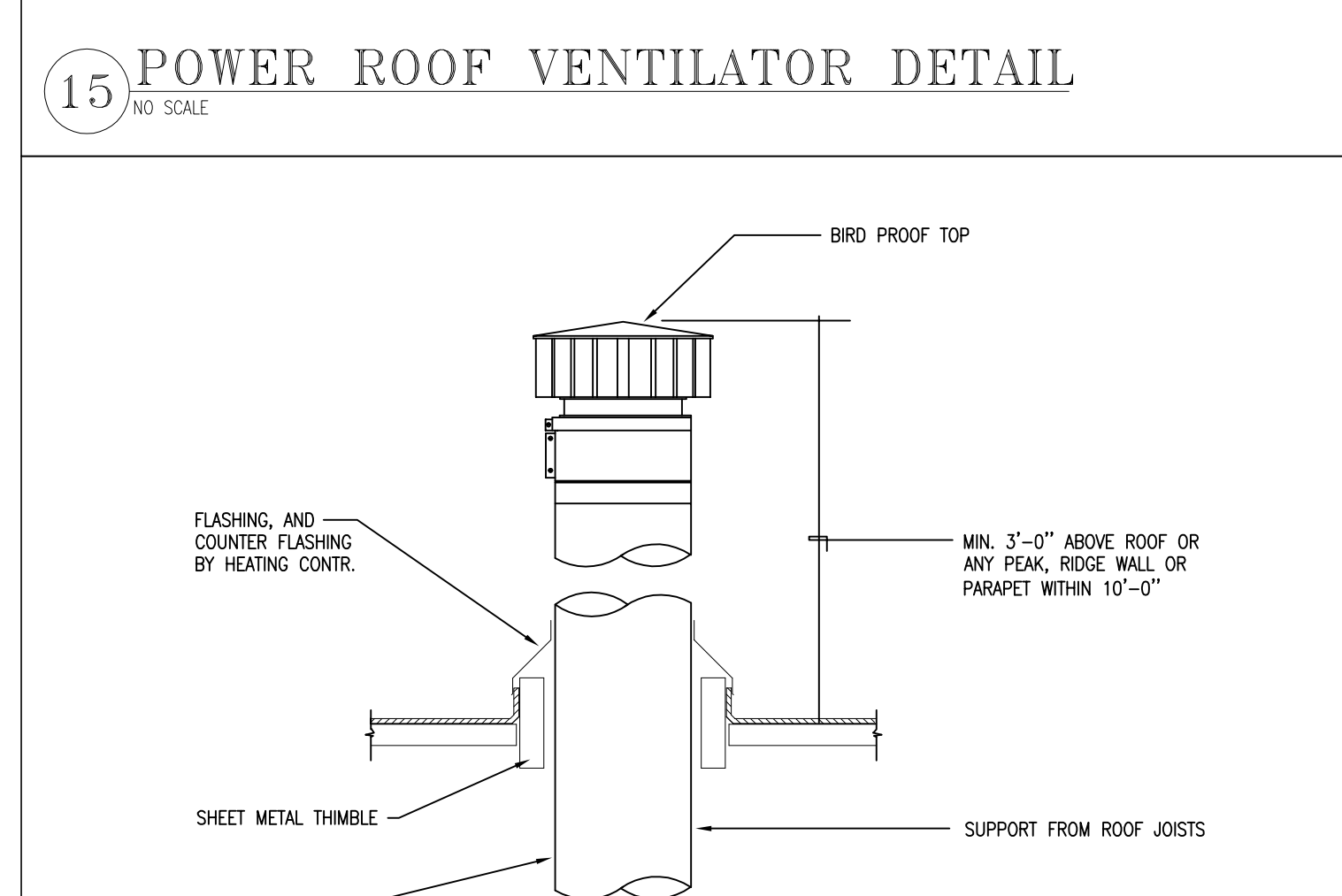
11 LOUVER INSTALLATION DETAIL
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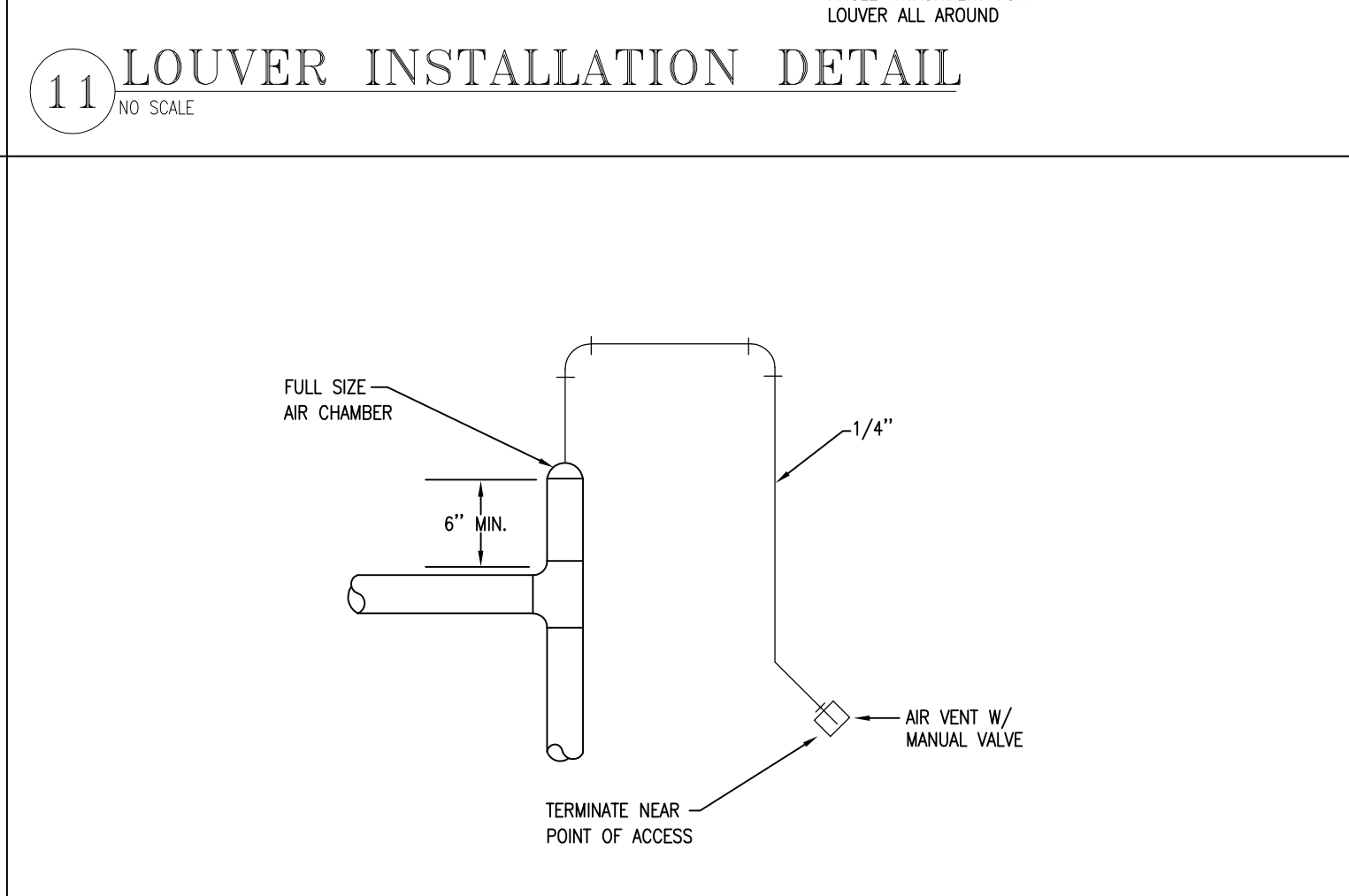
7 CEILING DIFFUSER TO DUCT CONNECTION
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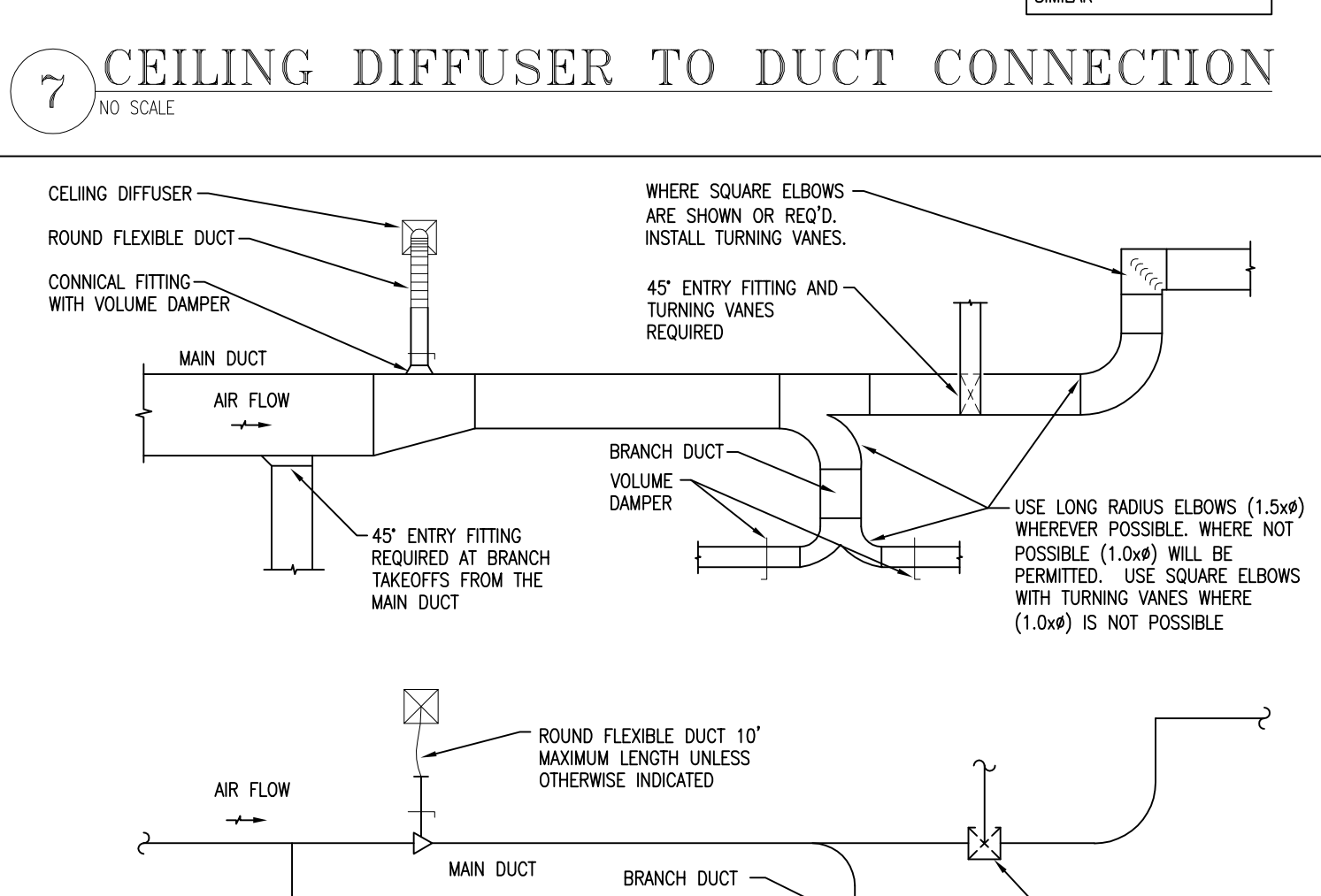
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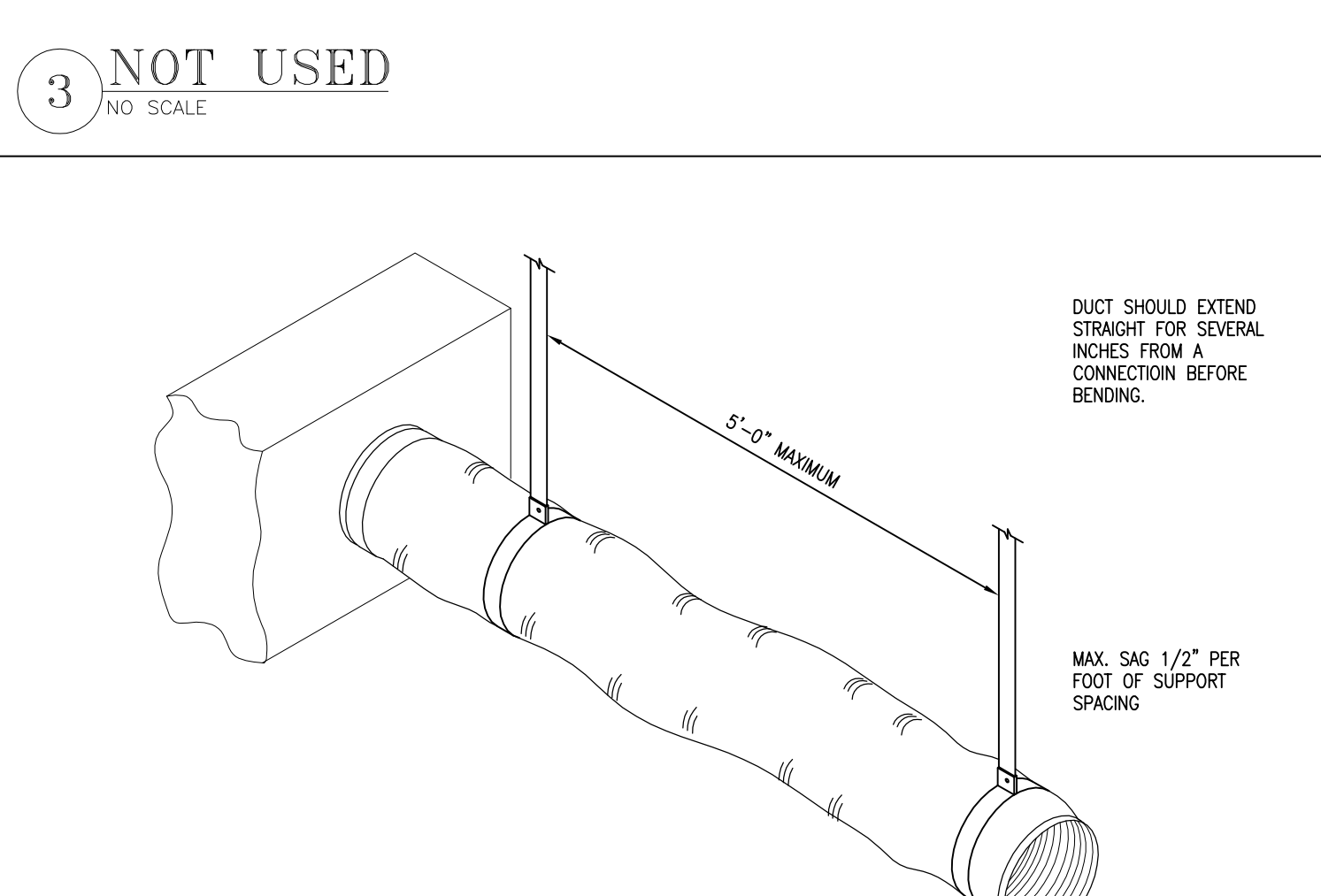
14 TYPICAL PRESSURE STACK THROUGH ROOF DETAIL
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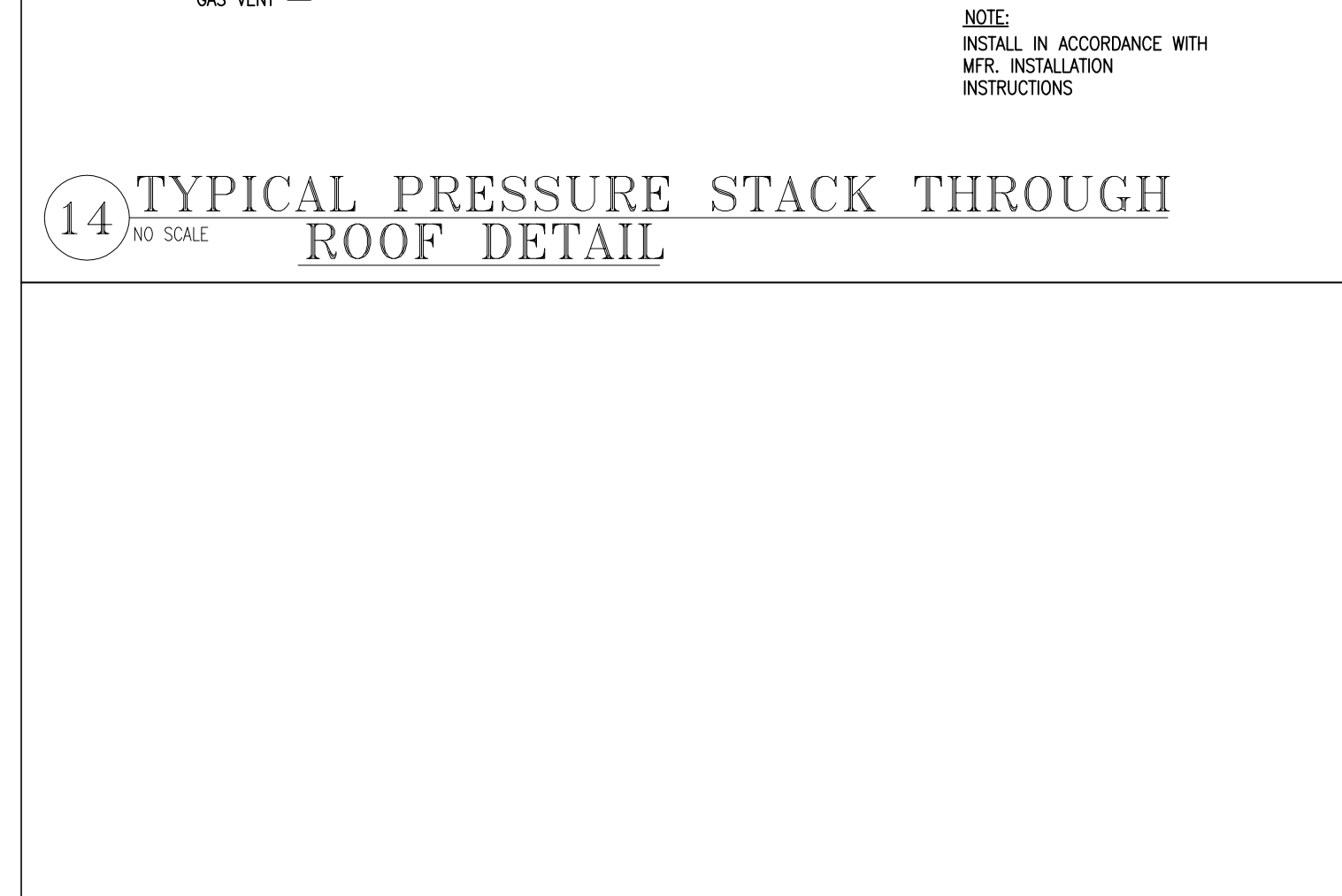
10 TOP OF RISER VENT
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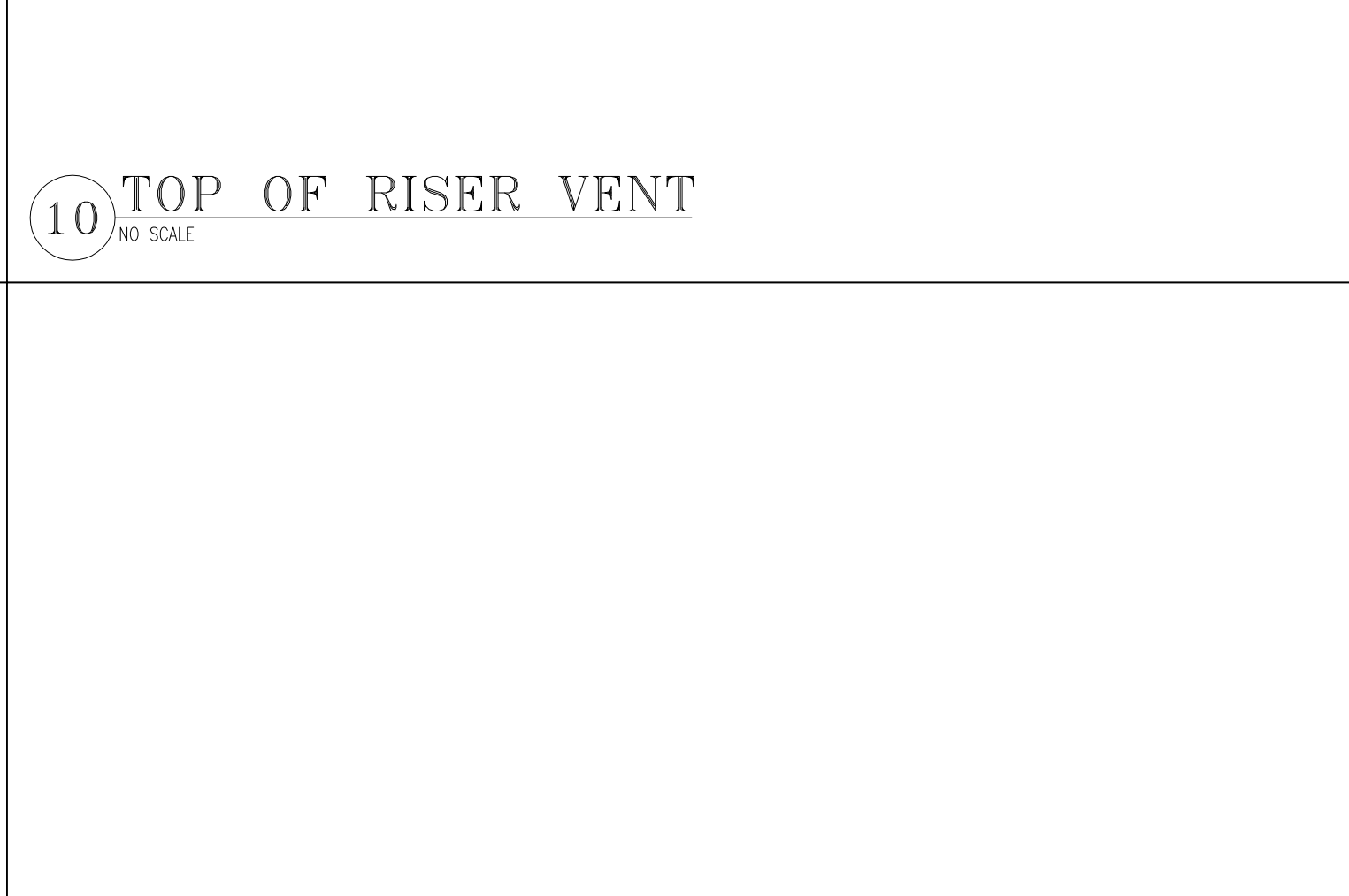
6 TYPICAL SINGLE AND DOUBLE LINE DUCT DETAIL
NO SCALE



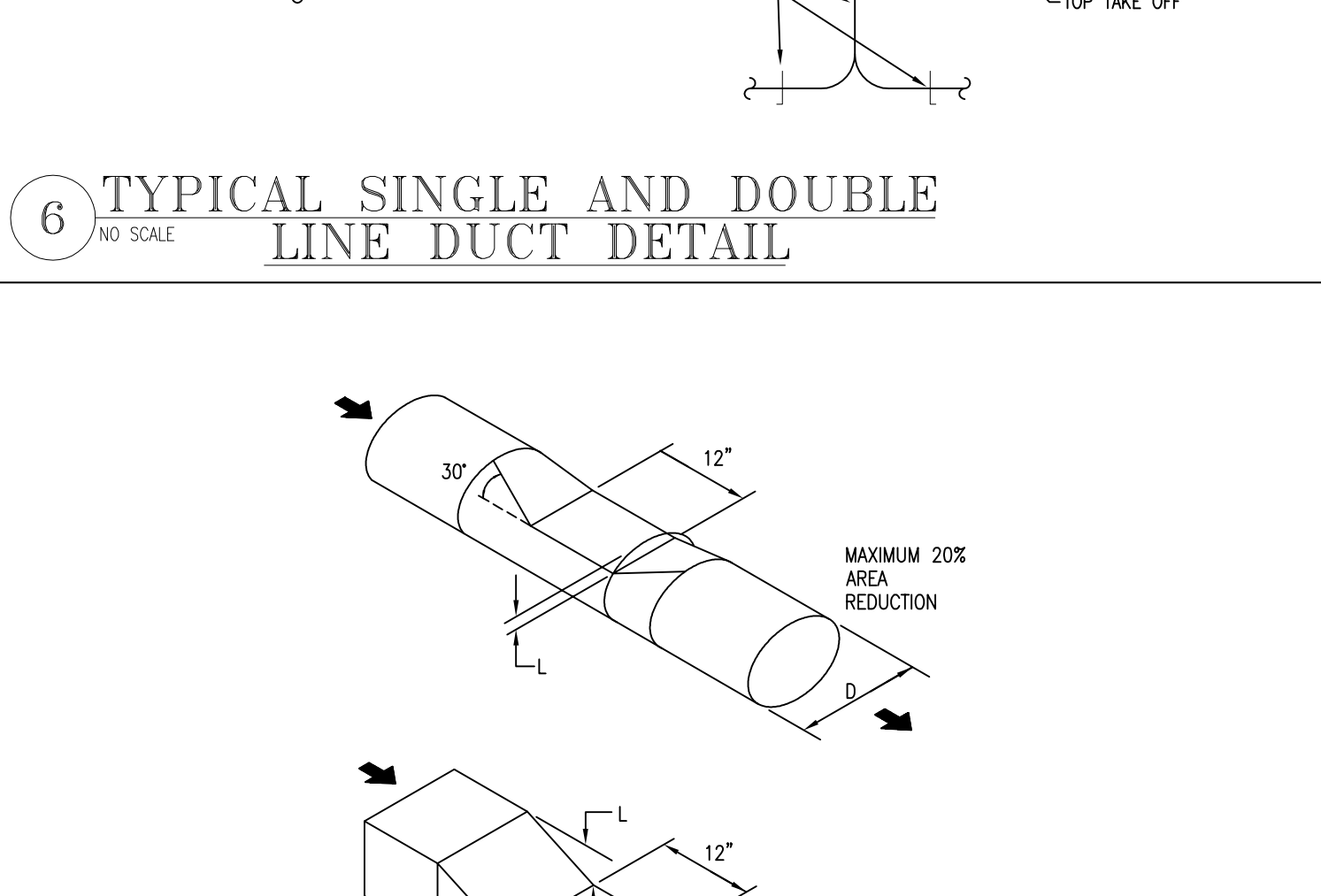
2 FLEXIBLE DUCT SUPPORT DETAIL
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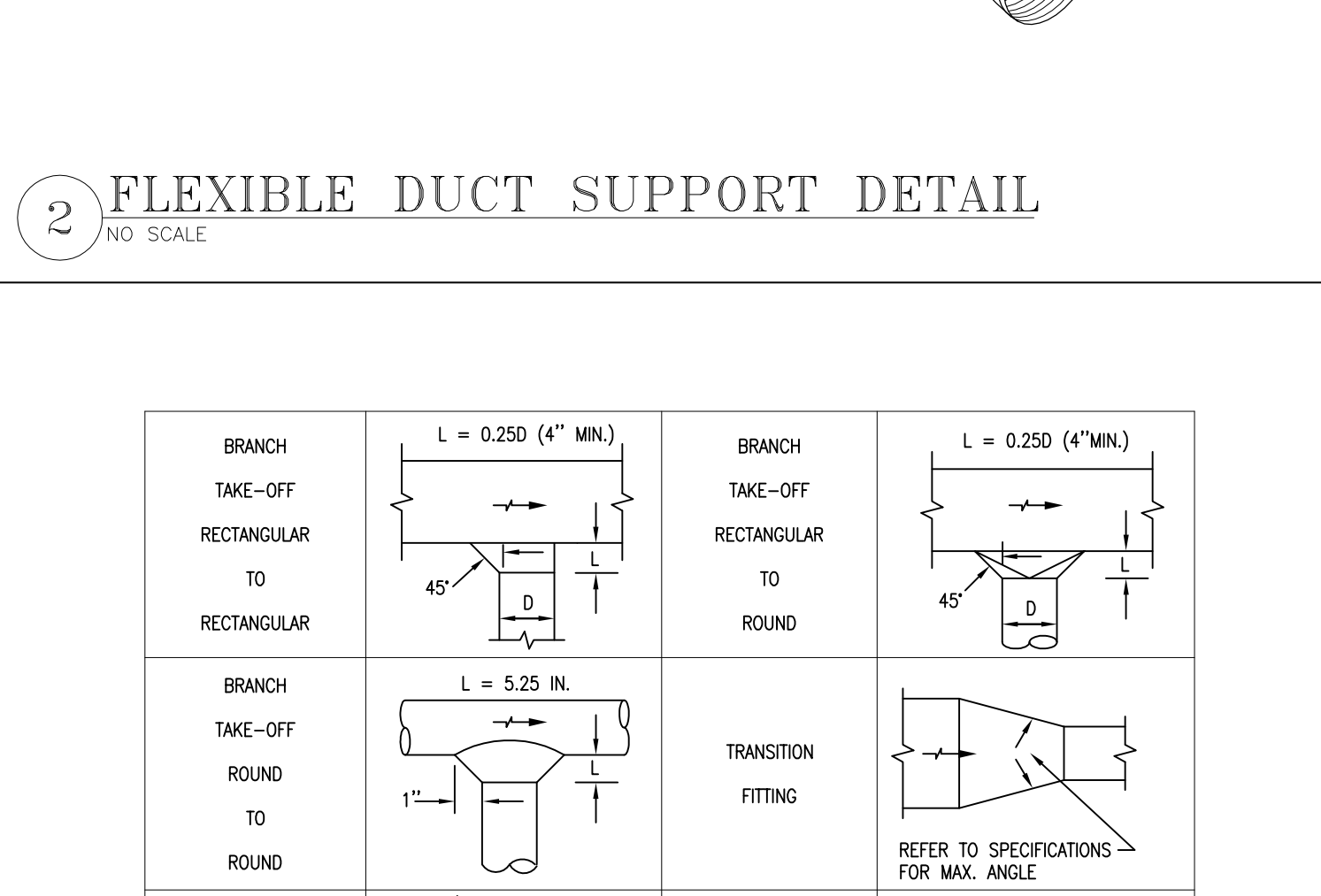
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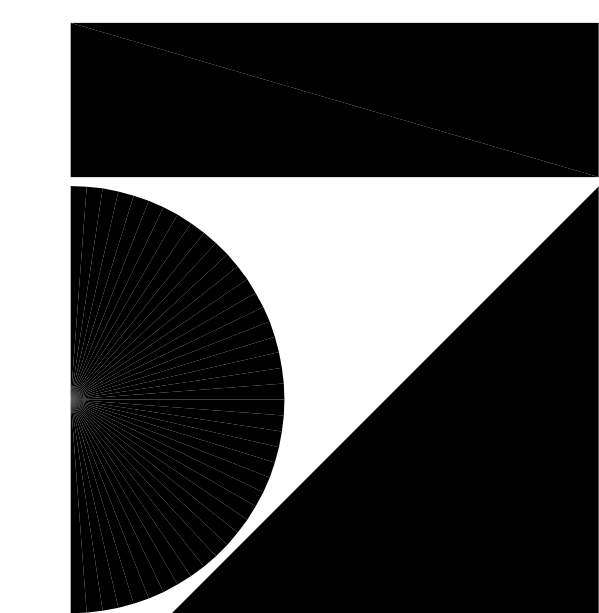
9 NOT USED
NO SCALE



5 DUCT DEPRESSED TO MISS OBSTRUCTION DETAIL
NO SCALE



1 TYPICAL DUCT TAKE-OFF DETAIL
NO SCALE



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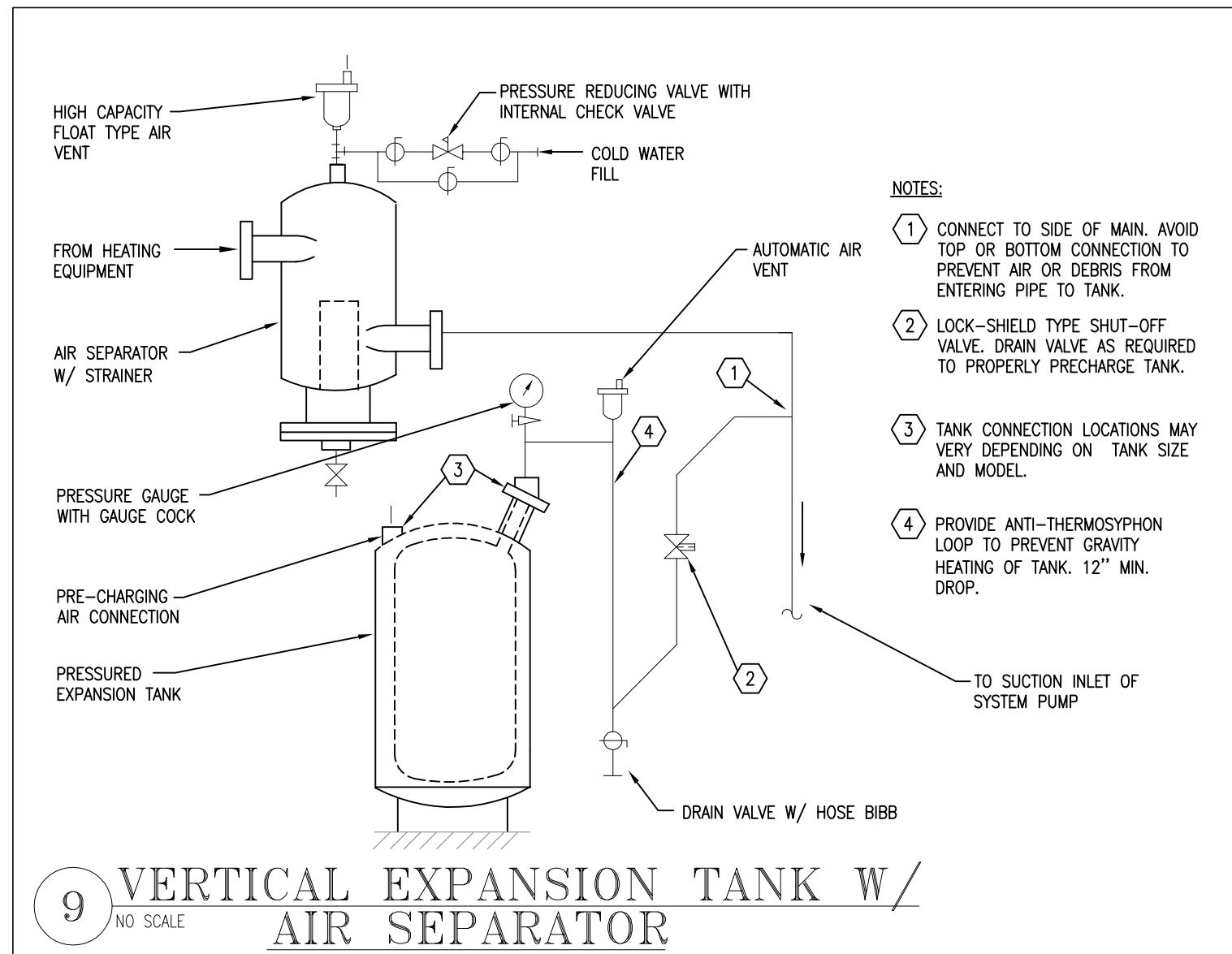
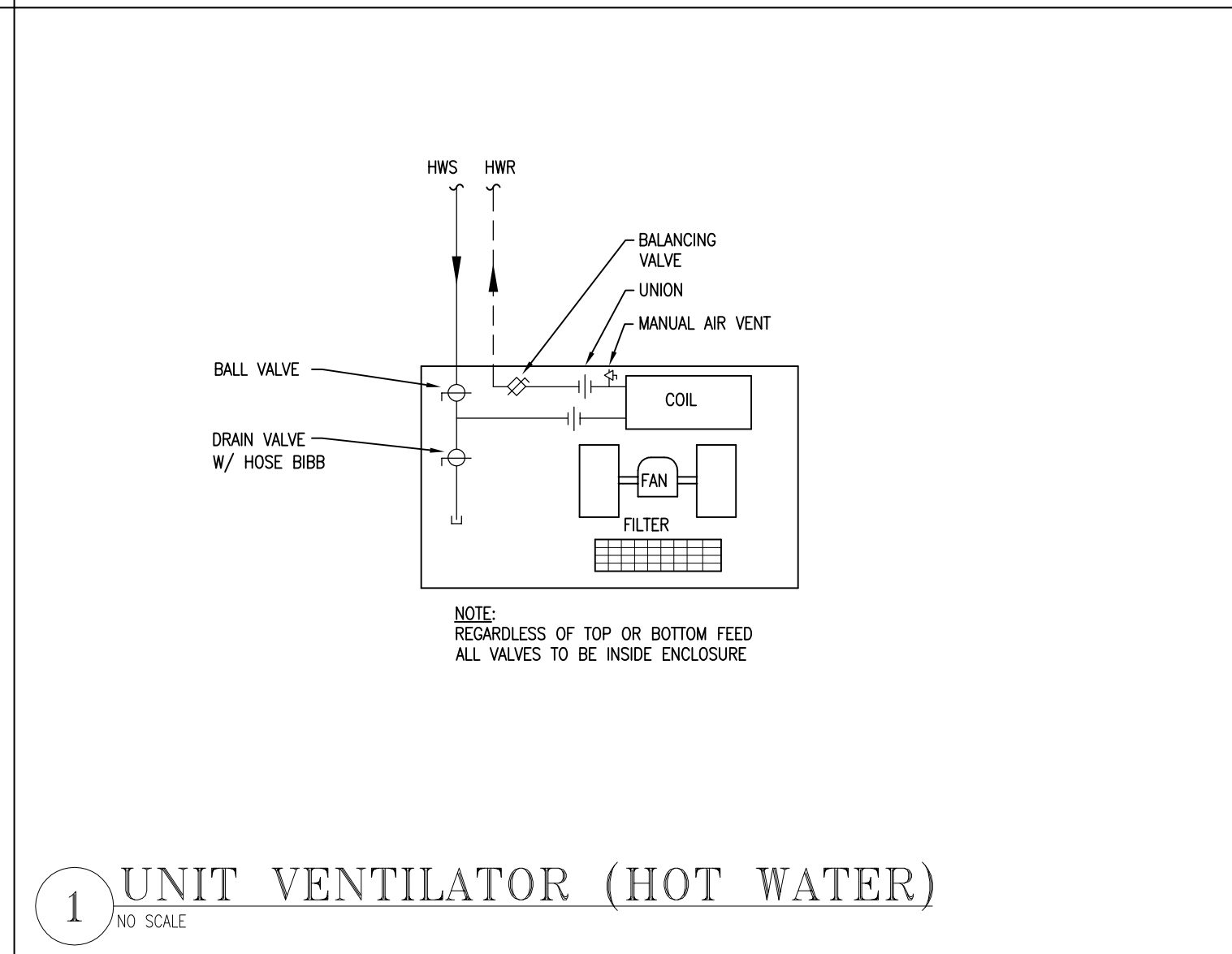
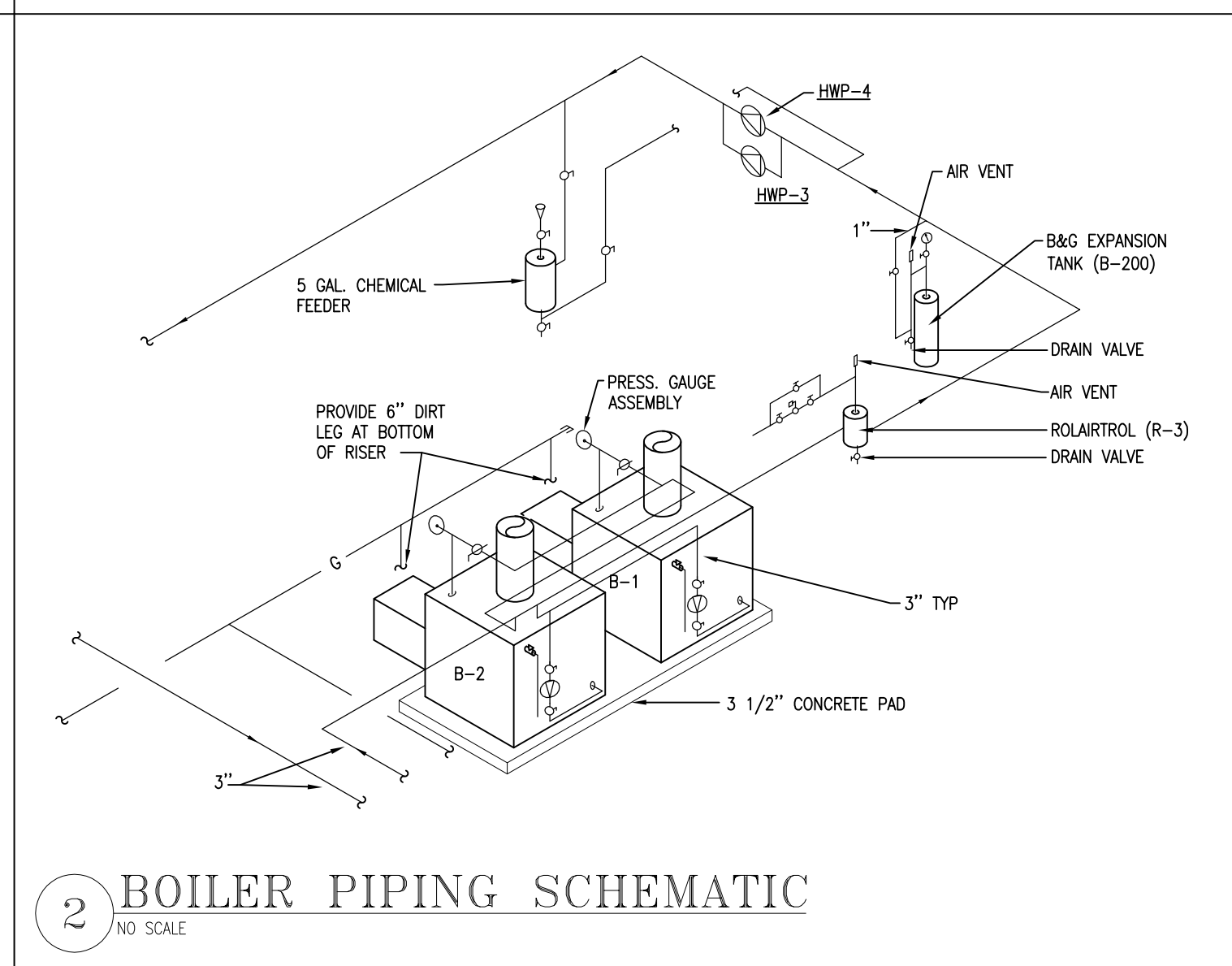
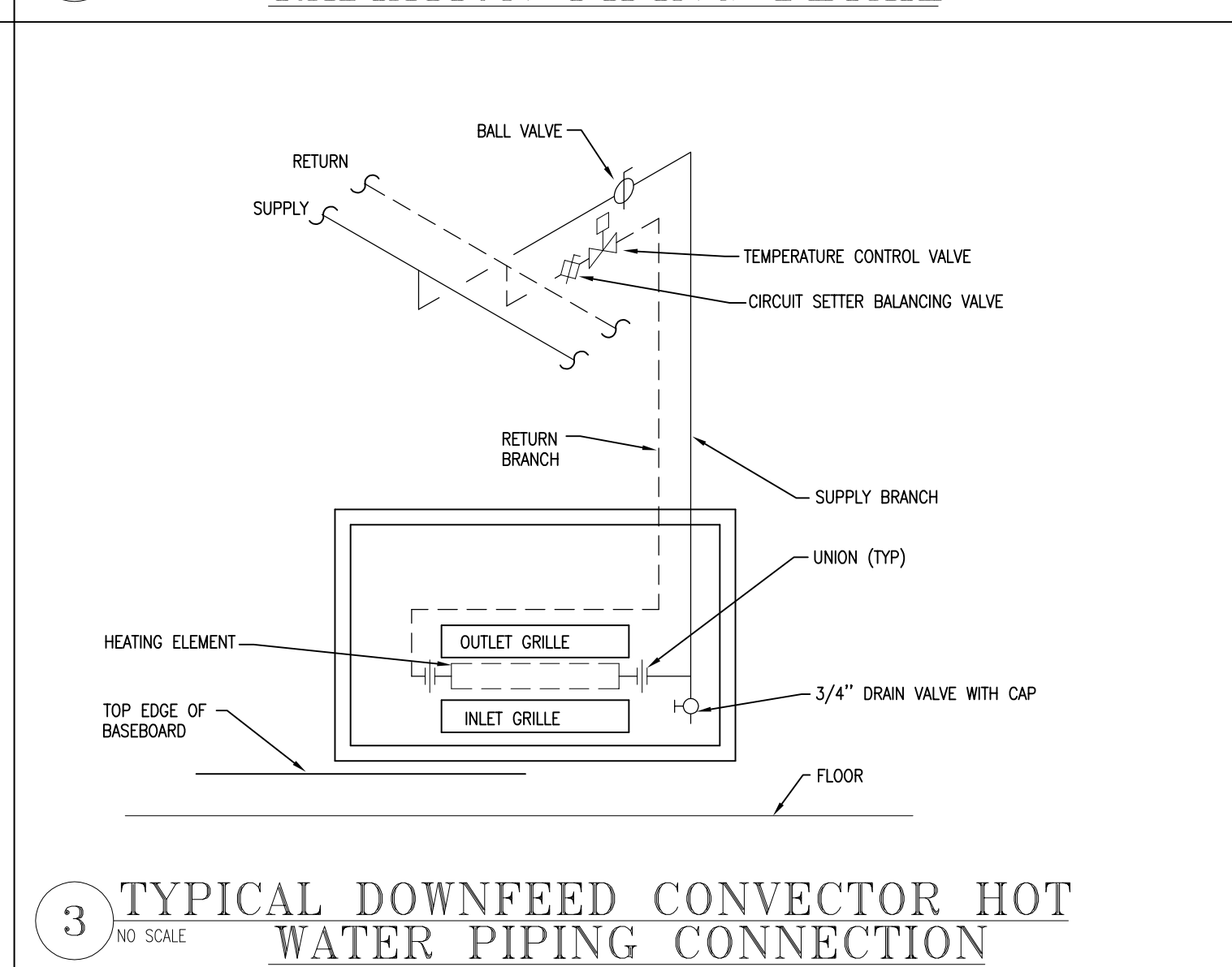
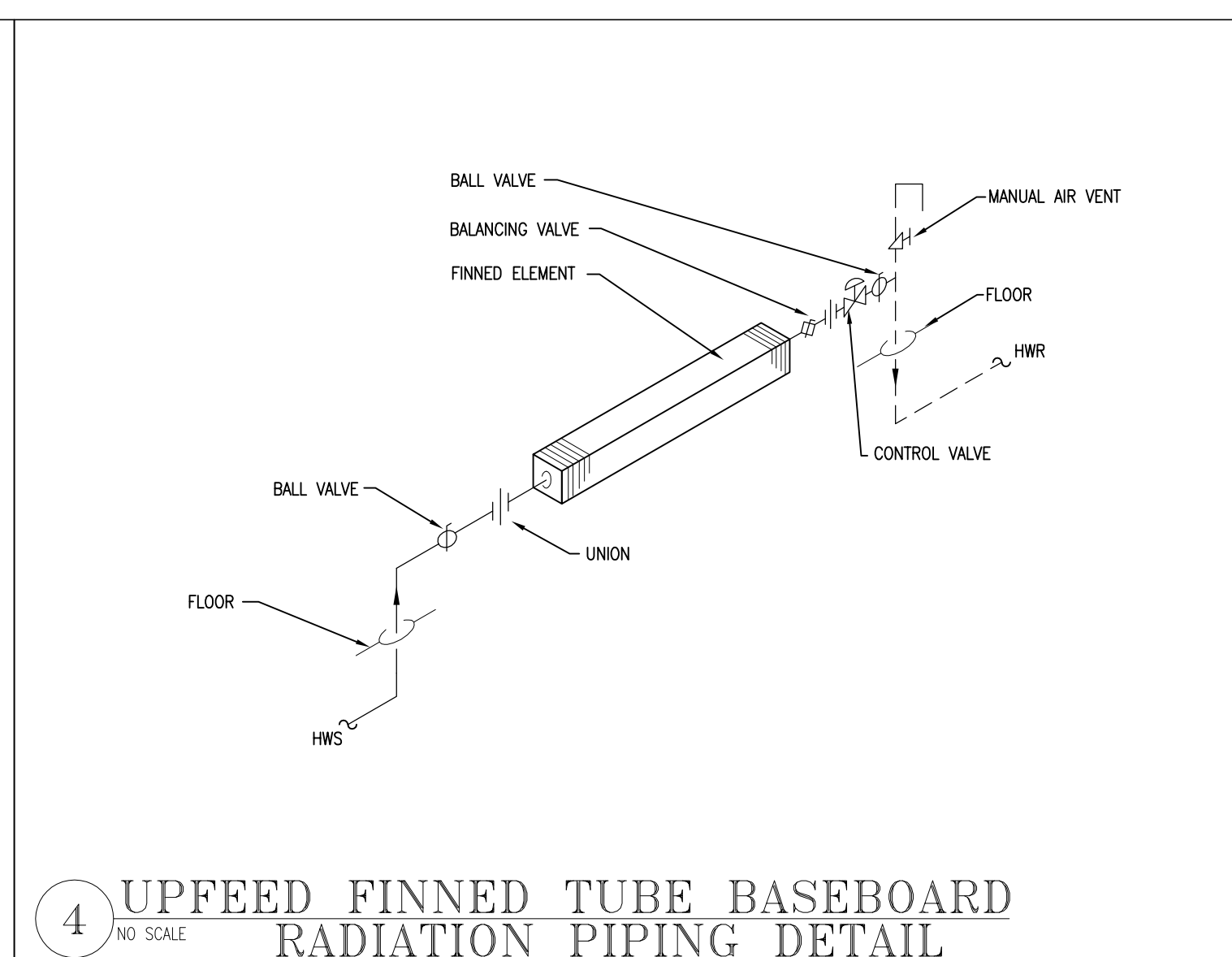
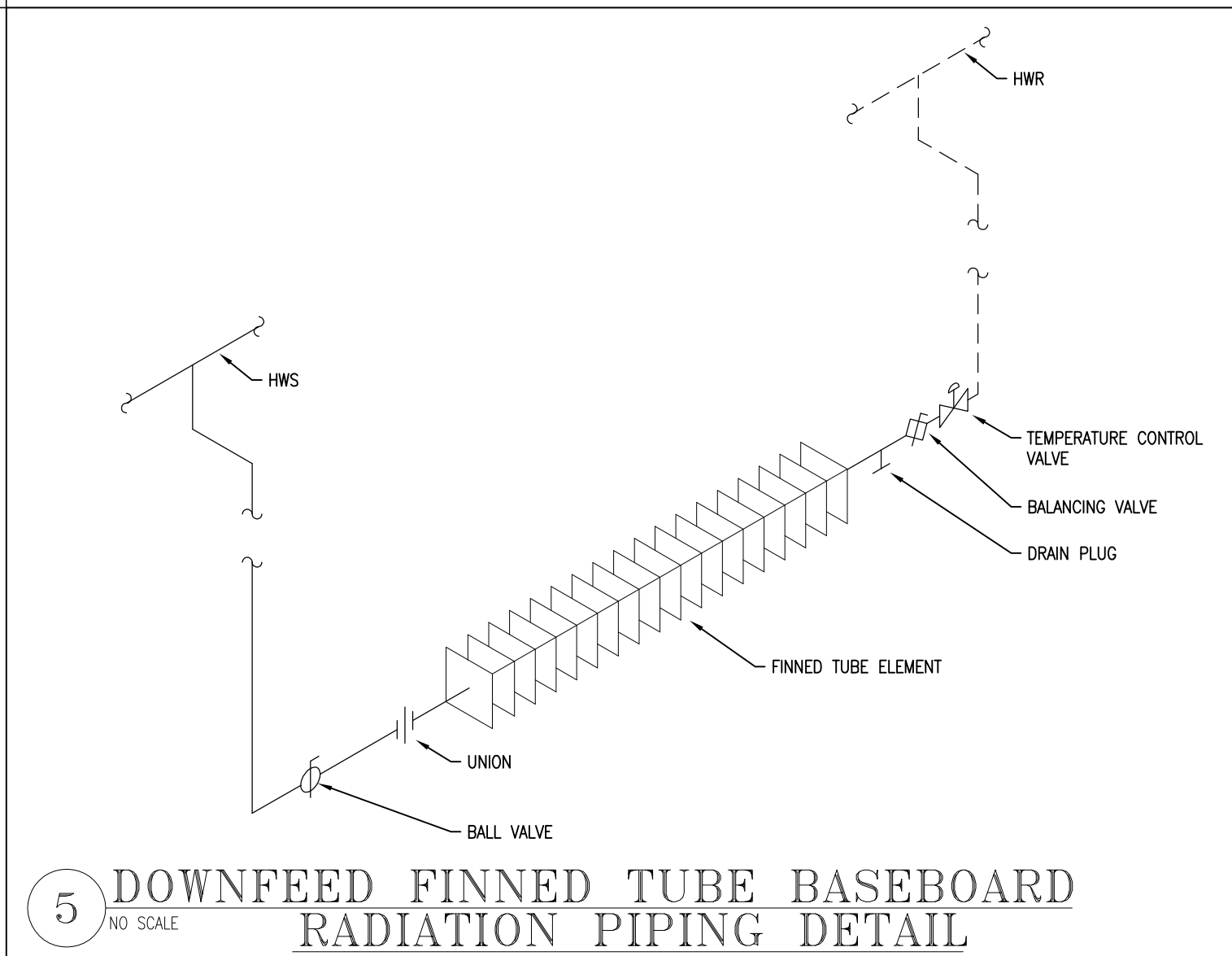
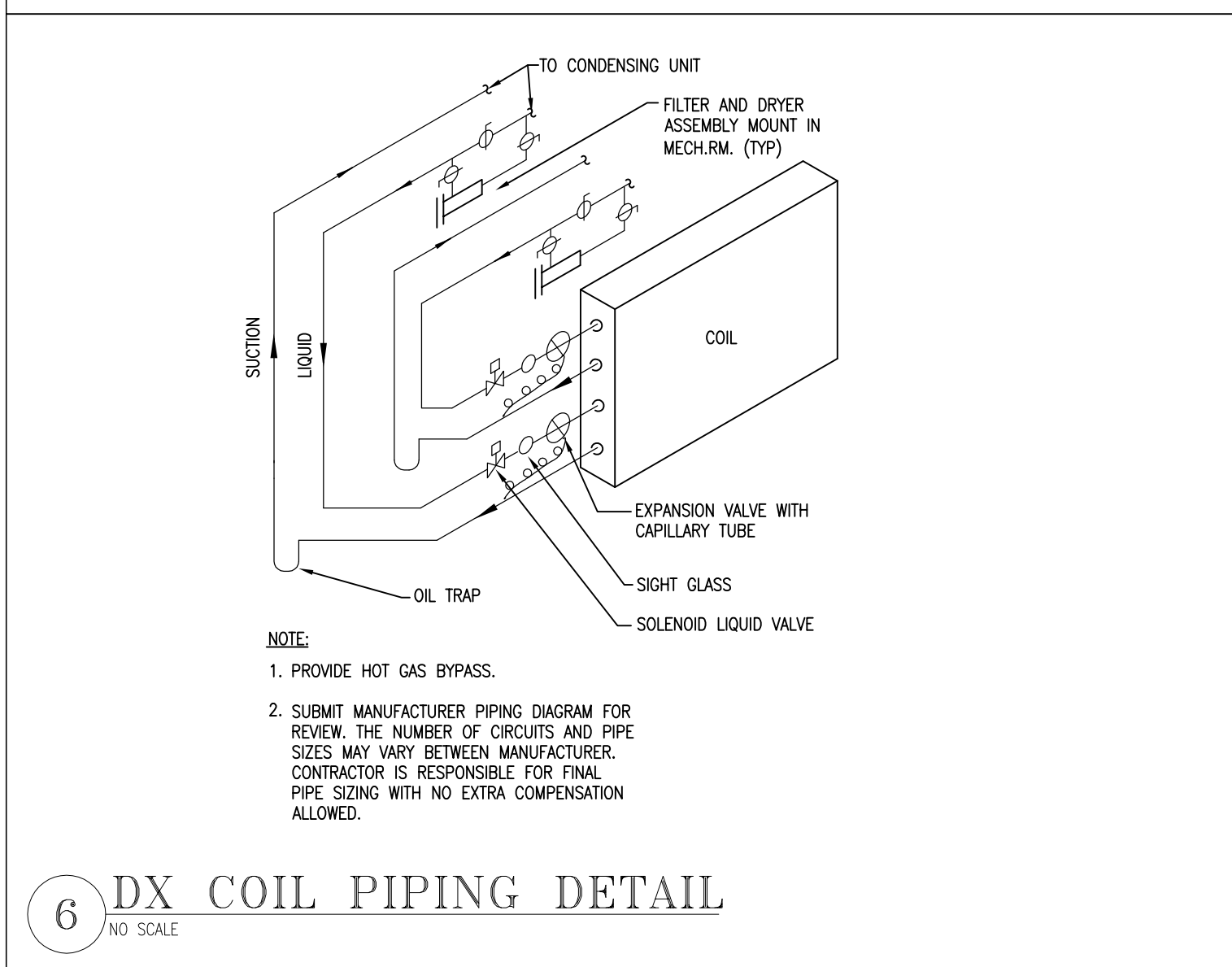
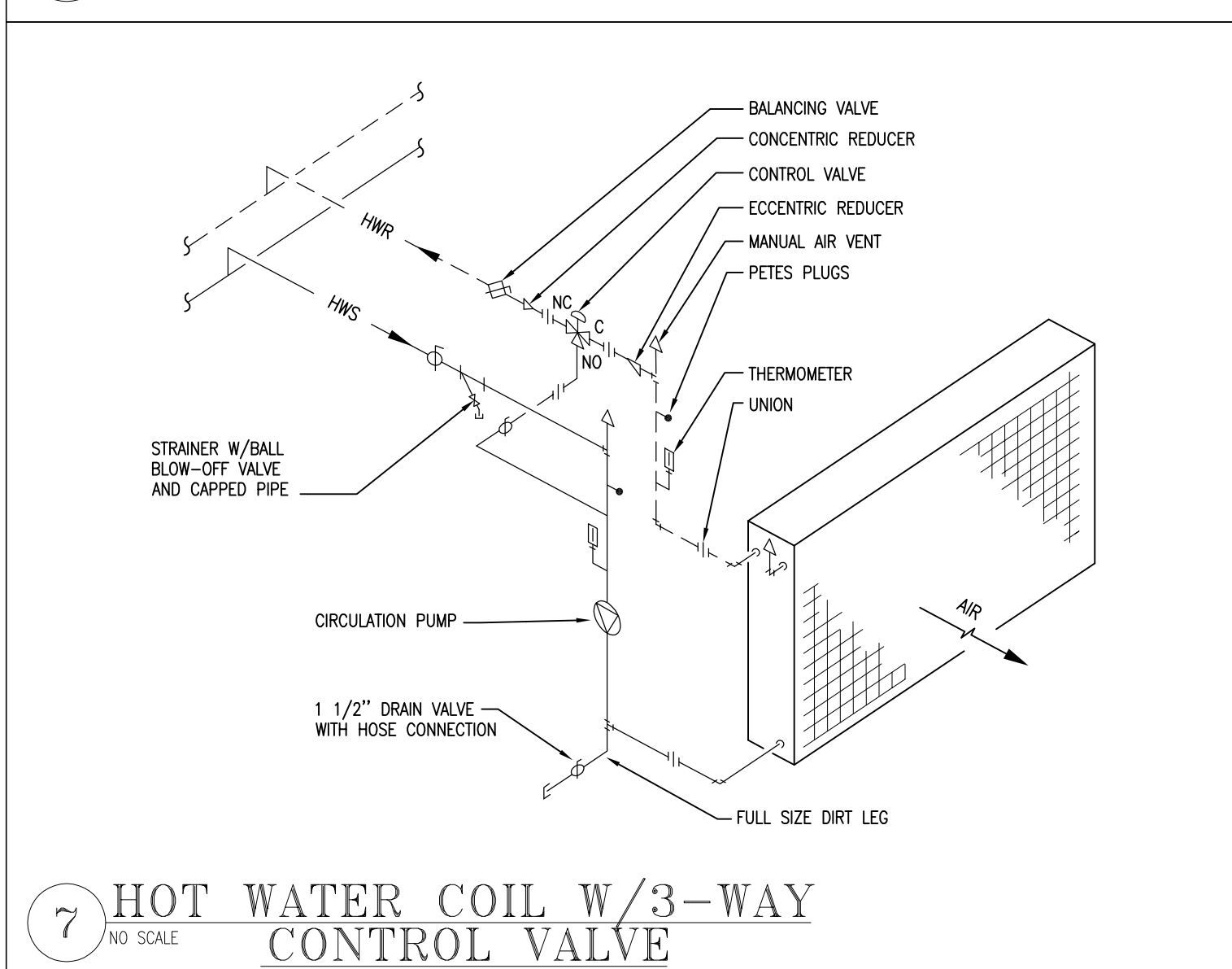
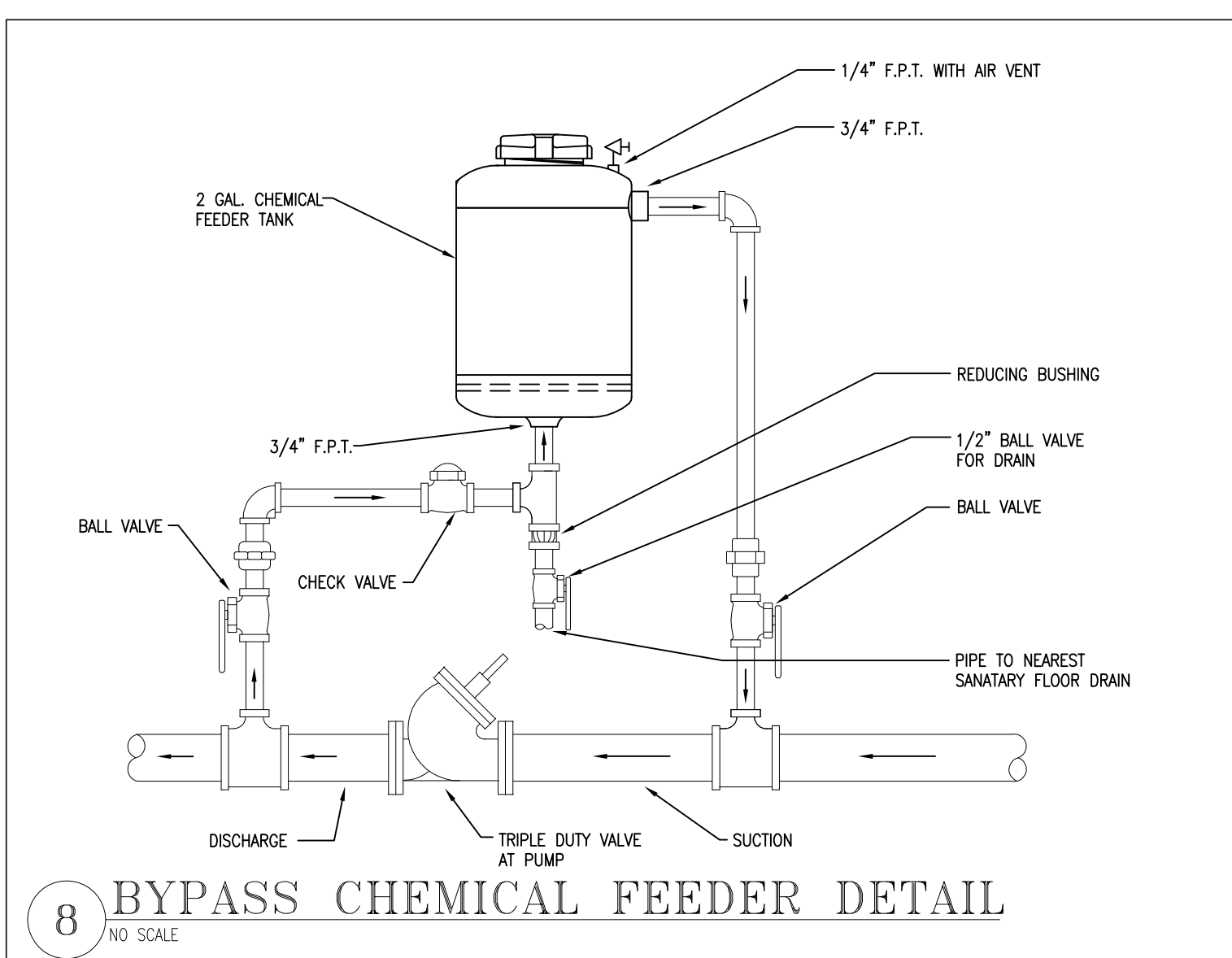
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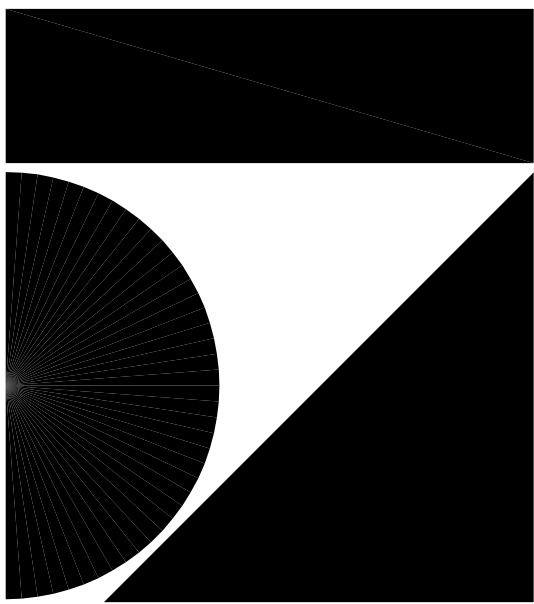
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M5.2



9 VERTICAL EXPANSION TANK W/ AIR SEPARATOR



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M6.1

AIR HANDLING UNIT SCHEDULE

PLAN MARK	LOCATION	SERVES	SUPPLY FAN								RETURN/EXHAUST FAN						COILS			VOLTS/ PHASE	FACE AND BYPASS	FILTERS	ECONOMIZER	MANUFACTURER	MODEL NO.	REMARKS	
			TOTAL CFM	OA CFM (MIN)	FAN TYPE	ESP (IN WG)	TSP (IN WG)	RPM	BHP	MOTOR HP	TOTAL CFM	FAN TYPE	ESP (IN WG)	TSP (IN WG)	RPM	BHP	MOTOR HP	PREHEAT COIL	COOLING COIL								HEATING COIL
AHU-1	MECH. RM.	BUILDING	24,440	3520	BI PL	2.75	4.25	1051	22.64	25	24,440	BI PL	1.41	1.74	854	10.69	15	-	CC-1	HC-1	208/3	NO	2" T.A.	YES	YORK	SOLUTION-YC172X32	1

1. PROVIDE UNIT WITH VARIABLE FREQUENCY DRIVES ON THE SUPPLY AND RETURN FANS, PROVIDE INLET AND OUTLET AIRFLOW MONITORING STATIONS.
2. UNIT TO MEET THE FOLLOWING SOUND CRITERIA: INLET 90 98 91 85 83 81 74 70, AND DISCHARGE 98 97 90 85 82 77 74 68 FOR OCTAVE BANDS 63, 125, 250, 500, 1000, 2000, 4000, & 8000 RESPECTIVELY

DIRECT EXPANSION COOLING COIL SCHEDULE

PLAN MARK	SERVING	CFM	MAX. FACE VELOCITY (FPM)	AIR DATA				PRESS. DROP (IN. WG.) WET	LOAD (MBH)		REFRIGERANT			ROWS	FPI	MANUFACTURER	MODEL NO.	REMARKS
				E.A.T. °F	L.A.T. °F	SENS.	TOTAL		REFRIG. TYPE	SUCTION PRESS. (°F)	CIRCUIT TYPE							
				DB	WB	DB	WB											
CC-1	AHU-1	24,400	489	77.7	62	51.1	50.8	0.44	713	769	R-22	46	INTERTWIND	8	8	YORK	BOX	--

HOT WATER HEATING COIL SCHEDULE

PLAN MARK	SERVING	CFM	MAX. FACE VELOCITY (FPM)	AIR DATA			HEATING LOAD (MBH)	WATER			CONTROL		MANUFACTURER	MODEL NO.	REMARKS			
				E.A.T. °F	L.A.T. °F	PRESS. DROP (IN. WG.) WET		GPM	PRESS. DROP (FT. HD)	E.W.T. (°F)	L.W.T. (°F)	ROWS				FPI	2-WAY VALVE	3-WAY VALVE
				DB	WB	WET												
HC-1	AHU-1	24,400	489	45.6	63.9	0.06	486	20	0.7	180	130.4	1	8	-	X	YORK	BDW	--

* INCLUDES COMPRESSORS, CONDENSER FANS, AND CONTROLS

AIR COOLED CONDENSING UNIT SCHEDULE

PLAN MARK	SERVES	REFRIG.	WEIGHT (LBS.)	CAPACITY			REFRIG. TYPE	UNIT KW	COMPRESSOR DATA			CONDENSER FAN DATA		HOT GAS BYPASS		VOLTS/ PHASE	UNIT MCA*	MOCP	EER	MANUFACTURER	MODEL NO.	REMARKS		
				NOMINAL TONS	LIQUID TEMP. (°F)	SUCTION TEMP. (°F)			AMBIENT TEMP. (°F)	NUMBER	TYPE	UNLOADING	NUMBER	HP	FLA (3A)								CONTROL VOLTAGE	SIZE
ACCU-1	AHU-1	R-22	4842	68.9	110	45	95	R-22	71.9	6	SCROLL	100,83,67,50,33,17	4	2.0	-	-	1 5/8	208/3	306	350	10.5	YORK	4CUL0076EC17	1, 2

1. PROVIDE UNIT WITH ROOF RAILS, LOW SOUND CONDENSER FANS, COMPRESSOR SOUND BLANKET, AND FUSED DISCONNECT.
2. UNIT TO MEET THE FOLLOWING SOUND CRITERIA: 94 93 90 87 91 84 78 74 92 FOR OCTAVE BANDS 63, 125, 250, 500, 1000, 2000, 4000, & 8000 RESPECTIVELY

HUMIDIFIER SCHEDULE

PLAN MARK	SERVES	CFM	INLET STEAM (PSIG)	CAPACITY LBS./HR	TYPE	DUCT SIZE W" X H"	MAX. ABSOR. DISTANCE	EAT DB/WB (°F)	LAT DB/WB (°F)	SP (IN WG)	MANUFACTURER	MODEL NO.	COMMENTS
H-1	AHU-1	24,400	ATMOS.	193.84	GAS	98 X 24	11"	54/46	54/51	-	NORTEC	GSTC 200	1.

1. PROVIDE WITH DUCTED INLET AIR, DRAIN COOLER, AND DDC INTERFACE.

BOILER SCHEDULE

PLAN MARK	SERVES	LOCATION	CAPACITY (MBH)		GAS PRESS. PSI	PRESS. RELIEF VALVE	GAS TRAN	BLOWER HP	VOLTS/ PHASE	MANUFACTURER	MODEL NO.	COMMENTS
			INPUT	GROSS OUTPUT								
B-1	BUILDING	MECH. ROOM	750	660	1/2	30	NAT	1 1/2	208/1	THERMAL SOLUTIONS	EVAM 750	--
B-2	BUILDING	MECH. ROOM	750	660	1/2	30	NAT	1 1/2	208/3	THERMAL SOLUTIONS	EVAM 750	--

HOT WATER RADIANT CEILING PANEL SCHEDULE

PLAN MARK	SERVES	PANEL WIDTH	LENGTH (FT.)	CAPACITY (BTU/LF)	TUBES PER PANEL	TUBE SIZE (IN.)	E.W.T. (°F)	L.W.T. (°F)	MEAN WATER TEMPERATURE	MANUFACTURER	MODEL NO.	COMMENTS
RCP-1	SEE PLAN	24"	SEE PLAN	414	4	5/8"	180	160	170	RITTLING	-	1.

1. OR ENGINEER APPROVED EQUAL

CONVECTOR SCHEDULE

PLAN MARK	SERVES	MOUNTING	L"	D"	H"	RECESS DEPTH	CAPACITY MBH	GPM	BRANCH PIPE SIZE	MANUFACTURER	MODEL NO.	COMMENTS
C-1	109	SURFACE	20	4	14	4	1.3	0.5	3/4"	RITTLING	WL-14	--
C-2	110	FULL-RECESS	20	4	18	4	1.1	0.5	3/4"	RITTLING	PL-18	--
C-3	112	FULL-RECESS	20	4	18	4	1.1	0.5	3/4"	RITTLING	PL-18	--
C-4	OMIT	--	--	--	--	--	--	--	--	--	--	--
C-5	007	SURFACE	24	4	14	--	1.6	0.5	3/4"	RITTLING	WL-14	--
C-6	019	SURFACE	32	6	20	--	4.0	0.5	3/4"	RITTLING	WL-20	--
C-7	105	FULL-RECESS	20	4	14	4	1.3	0.5	3/4"	RITTLING	PL-14	--
C-8	OMIT	--	--	--	--	--	--	--	--	--	--	--
C-9	124	FULL-RECESS	20	4	18	4	1.1	0.5	3/4"	RITTLING	PL-18	--
C-10	121	SURFACE	24	4	14	--	1.6	0.5	3/4"	RITTLING	WL-14	--

PUMP SCHEDULE

PLAN MARK	SERVES	LOCATION	GPM	HEAD (FT)	BHP	HP	VOLTS/ PHASE	RPM	DESCRIPTION	IMPELLER SIZE (IN)	SUCTION SIZE (IN)	DISCH. SIZE (IN)	MANUFACTURER	MODEL NO.	COMMENTS
HWP-1	B-1	BOILER RM	66	10	0.39	0.5	208/3	1750	IN-LINE	4 3/4	1 1/4	1 1/4	B&G	SERIES 60 1 1/4 X 5 1/4	--
HWP-2	B-2	BOILER RM	66	10	0.39	0.5	208/3	1750	IN-LINE	4 3/4	1 1/4	1 1/4	B&G	SERIES 60 1 1/4 X 5 1/4	--
HWP-3	BUILDING	MECH. ROOM	102.2	50	1.91	3	208/3	1750	IN-LINE	7	2	2	B&G	SERIES 60 2 X 7	--
HWP-4	BUILDING	MECH. ROOM	102.2	50	1.91	3	208/3	1750	IN-LINE	7	2	2	B&G	SERIES 60 2 X 7	--
HWP-5	AHU-1 H.C.	MECH. ROOM	20	9.44	0.13	.25	120/1	1750	IN-LINE	3 3/8	1	1	B&G	SERIES 60 1 X 5 1/4	--

HOT WATER BASEBOARD RADIATION SCHEDULE

PLAN MARK	SERVES	CAPACITY (BTU/LF)	ELEMENT LENGTH (FT.)	FIN SIZE (IN.)	TUBE SIZE (IN.)	FIN SERIES /FOOT	ROWS	TUBE/FIN MATERIAL	ENCLOSURE (H" X D")	E.W.T. (°F)	L.W.T. (°F)	WATER LINE SIZE	MANUFACTURER	MODEL NO.	COMMENTS
FR-1	SEE PLAN	590	SEE PLAN	3.25 x 3.25	1 1/4	32	1	CA/ALUM	4 X 14	180	160	3/4	RITTLING	1B63	--

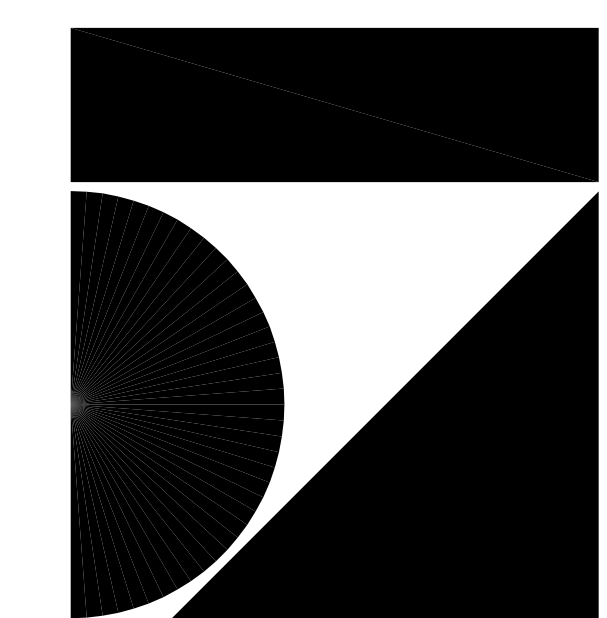
CABINET UNIT HEATER SCHEDULE

PLAN MARK	SERVICE	CFM	MOUNTING	RECESS (IN.)	HEATING COIL			FAN MOTOR		MANUFACTURER	MODEL NO.	COMMENTS	
					CAPACITY MBH	GPM	MAX. WPD (FT.)	BRANCH PIPE SIZE	HP				VOLTS/ PHASE
CUH-1	009	430	CEILING RECESSED MOUNTED	--	24.0	2.5	3.9	3/4"	1/10	120/1	RITTLING	RFRC-420-04	--
CUH-2	125	630	CEILING RECESSED MOUNTED	--	31.3	2.0	0.2	3/4"	1/10	120/1	RITTLING	RFRC-420-02	--
CUH-3	118	430	CEILING RECESSED MOUNTED	--	24.0	2.5	3.9	3/4"	1/10	120/1	RITTLING	RFRC-420-04	--
CUH-4	106	860	INVERTED SURFACE MOUNTED	--	40.3	3.0	0.2	3/4"	1/10 & 1/15	120/1	RITTLING	RFI-250-08	--
CUH-5	100	860	INVERTED SURFACE MOUNTED	--	40.3	3.0	0.2	3/4"	1/10 & 1/15	120/1	RITTLING	RFI-250-08	--
CUH-6	103	845	CEILING RECESSED MOUNTED	--	58.3	4.0	5.8	1"	1/10 & 1/15	120/1	RITTLING	RFRC-410-08	--

HOT WATER UNIT HEATER SCHEDULE

PLAN MARK	SERVES	CFM	TYPE	CAPACITY (MBH)	GPM	E.W.T. (°F)	L.W.T. (°F)	PIPE SIZE	HP	VOLTS/ PHASE	MOUNT HEIGHT (FT)	MANUFACTURER	MODEL NO.	COMMENTS
UH-1	018	630	HORIZ.	21.0	2.5	180	160	3/4"	1/15	120/1	9'-6"	RITTLING	RH 33	--

PROVIDE UNIT WITH 3 WAY VALVE



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Revisions

- ISSUED FOR BIDS
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- VALUE ENGINEERING AND
LIGHTING REVISIONS
MARCH 1, 2005
- OBSERVATORY FRAMING
MARCH 14, 2005

VARIABLE AIR VOLUME BOX SCHEDULE

PLAN MARK	SERVES	LOCATION	INLET DIA (IN)	RUNOUT DUCT SIZE (IN)	MIN. S.P. @ INLET (N.W.G.)	E.S.P. (N.W.G.)	CFM										HEATING COIL			CONTROL			WATER BRANCH FIRING SIZE	MANUFACTURER	MODEL NO.	COMMENTS
							CLG.	HTG.	MBH	E.A.T. (°F)	L.A.T. (°F)	A.P.D. (F.W.G.)	CFM	E.W.T. (°F)	L.W.T. (°F)	W.P.D. (F.T.W.G.)	FINS PER FOOT	# OF ROWS	2-WAY VALVE	3-WAY VALVE						
V-1	NON FICTION 009	SEE PLANS	14	17 1/2 X 20	0.42	0.20	1500	450	41.5	55	98.8	0.04	4.2	180	160	1.95	10	2	X	3/4	TITUS	DESV-14	1. 5			
V-2	REFERENCE 008	SEE PLANS	10	12 1/2 X 14	0.38	0.35	990	645	15.1	55	76.5	0.10	1.5	180	160	0.68	10	2	X	3/4	TITUS	DESV-10				
V-3	TUTOR 006, 005, 004	SEE PLANS	4	8X12	0.05	0.21	145	115	3.3	55	81.2	0.01	0.5	180	160	0.5	10	1	X	3/4	TITUS	DESV-04				
V-4	EQUIPMENT 016	SEE PLANS	9	12 1/2 X 14	0.38	0.32	760	230	8.4	55	87.8	0.04	0.8	180	160	0.65	10	2	X	3/4	TITUS	DESV-09				
V-5	STAFF 015	SEE PLANS	12	15X16	0.36	0.20	1125	370	37.1	55	92.1	0.06	3.8	180	160	0.84	10	2	X	3/4	TITUS	DESV-12	2. 5			
V-6	OFFICE 014	SEE PLANS	5	8X12	0.08	0.18	190	60	6.8	55	101.3	0.01	0.7	180	160	0.5	10	1	X	3/4	TITUS	DESV-05				
V-7	READING 010	SEE PLANS	12	15X16	0.36	0.21	1340	430	10.3	55	76.9	0.06	1.0	180	160	0.84	10	2	X	3/4	TITUS	DESV-12				
V-8	REFERENCE DESK 001	SEE PLANS	12	15X16	0.24	0.32	1100	705	15.3	55	75	0.06	1.6	180	160	0.88	10	1	X	3/4	TITUS	DESV-12				
V-9	ELECTRIC 017	SEE PLANS	6	8X12	0.10	0.23	320	0	55	55	55	55	55	180	160	0.5	10	1	X	3/4	TITUS	DESV-06				
V-10	ELEV EQUIP 021	SEE PLANS	7	10X12	0.09	0.21	380	0	55	55	55	55	55	180	160	0.5	10	1	X	3/4	TITUS	DESV-07				
V-11	STAFF 116	SEE PLANS	9	12 1/2 X 14	0.27	0.32	765	230	18.5	55	97.6	0.01	1.9	180	160	0.68	10	1	X	3/4	TITUS	DESV-09	4. 5			
V-12	MEETING RM 102	SEE PLANS	16	18X24	0.46	0.40	2580	775	29.4	55	89.9	0.04	3.0	180	160	0.98	10	1	X	3/4	TITUS	DESV-16				
V-13	LOBBY 102	SEE PLANS	10	12 1/2 X 14	0.32	0.19	825	435	14.5	55	88.7	0.07	1.5	180	160	0.65	10	2	X	3/4	TITUS	DESV-10				
V-14	ADULT FICTION 135	SEE PLANS	14	17 1/2 X 20	0.32	0.32	1925	580	15.2	55	79.1	0.03	1.5	180	160	0.45	10	1	X	3/4	TITUS	DESV-14				
V-15	ADULT FICTION 135	SEE PLANS	14	17 1/2 X 20	0.49	0.32	1925	580	27.0	55	97.9	0.05	2.8	180	160	1.94	10	2	X	3/4	TITUS	DESV-14				
V-16	STAIRS S-1	SEE PLANS	10	12 1/2 X 14	0.60	0.35	1050	390	13.1	55	85.9	0.07	1.3	180	160	0.65	10	2	X	3/4	TITUS	DESV-10				
V-17	READING 134	SEE PLANS	12	15X16	0.36	0.11	1095	330	8.9	55	79.8	0.06	0.9	180	160	0.84	10	2	X	3/4	TITUS	DESV-12				
V-18	MEETING 133	SEE PLANS	12	15X16	0.30	0.32	1320	400	15.1	55	89.7	0.03	1.5	180	160	0.88	10	1	X	3/4	TITUS	DESV-12				
V-19	TUTOR 130, 131, 132	SEE PLANS	9	12 1/2 X 14	0.27	0.32	765	230	6.0	55	79.1	0.10	0.6	180	160	0.68	10	1	X	3/4	TITUS	DESV-09				
V-20	MEDIA 128	SEE PLANS	16	18X24	0.32	0.32	2320	1025	33.7	55	85.3	0.03	3.4	180	160	0.95	10	1	X	3/4	TITUS	DESV-16				
V-21	CHILDREN 125	SEE PLANS	16	18X24	0.45	0.40	2355	710	31.2	55	95.4	0.03	3.2	180	160	0.50	10	2	X	3/4	TITUS	DESV-16				
V-22	CHILDREN 125	SEE PLANS	10	12 1/2 X 14	0.40	0.19	850	310	10.5	55	86.3	0.04	1.1	180	160	0.65	10	2	X	3/4	TITUS	DESV-10				
V-23	RECEIVING 120	SEE PLANS	8	12X10	0.36	0.11	605	225	12.4	55	105.6	0.04	1.3	180	160	0.33	10	2	X	3/4	TITUS	DESV-08				
V-24	MULTI PURPOSE 123	SEE PLANS	12	15X16	0.36	0.11	910	300	30.4	55	101.3	0.02	3.1	180	160	0.84	10	2	X	3/4	TITUS	DESV-12	5. 5			
V-25	CIRCULATION 113	SEE PLANS	10	12 1/2 X 14	0.40	0.19	865	480	16.0	55	85.8	0.23	1.8	180	160	0.68	10	1	X	3/4	TITUS	DESV-10				

- RESET MIN. SUPPLY AIR IN HEATING MODE TO 875 CFM.
- RESET MIN. SUPPLY AIR IN HEATING MODE TO 920 CFM.
- RESET MIN. SUPPLY AIR IN HEATING MODE TO 135 CFM.
- RESET MIN. SUPPLY AIR IN HEATING MODE TO 400 CFM.
- RESET MIN. SUPPLY AIR IN HEATING MODE TO 605 CFM.

EXHAUST FAN SCHEDULE

PLAN MARK	SERVES	LOCATION	TYPE	CFM	S.P. IN. W.G.	BHP	HP	RPM (MAX)	VOLTS/PHASE	MANUFACTURER	MODEL NO.	COMMENTS
PRV-1	TOILET ROOMS	ROOF	PRV	860	0.28	0.09	.25	1725	120/1	GREENHECK	G-101A	1
PRV-2	ELEVATOR EQUIP.	ROOF	PRV	380	0.53	0.07	.07	1550	120/1	GREENHECK	G-090-D	1
PRV-3	TOILET ROOMS	ROOF	PRV	215	0.46	0.05	.05	1550	120/1	GREENHECK	G-085-D	1

1. PROVIDE CURB, MOTORIZED DAMPER, DISCONNECT, & SPEED CONTROL

HVAC MOTOR STARTER SCHEDULE

PLAN MARK	EQUIPMENT	DESCRIPTION	VOLTS/PHASE	HP	ELECTRICAL DATA					STARTER DESCRIPTION					HARDWARE INTERLOCK WITH PLAN MARK NO.	CONTROLLED BY	DISCONNECT SWITCH		COMMENTS				
					AMPS					FURNISH BY	INSTALL BY	LOCATION	TYPE	COVER MODIFICATION						(FURNISH BY)	(INSTALL BY)		
					FLA	RLA	LRA	MCA	MOCB					KW			COMB.	BLANK				S/S P.B.	H.O.A.
AHU-1	AIR HANDLING UNIT		208/3	25	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	VFD					TCC	M.C.	E.C.	-		
RF-1	RETURN FAN		208/3	15	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	VFD					TCC	M.C.	E.C.	-		
ACCU-1	AIR COOLED CONDENSING UNIT		208/3	-	-	-	-	306	350	-	MANUF.	MANUF.	IN UNIT	MAG				TCC	M.C.	E.C.	-		
B-1	BOILER		208/3	1 1/2	5.6	-	-	-	-	MANUF.	MANUF.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
B-2	BOILER		208/3	1 1/2	5.6	-	-	-	-	MANUF.	MANUF.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
HWP-1	PUMP		208/3	1/2	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	COMB.	X		X	X	B-1	TCC	M.C.	E.C.	-	
HWP-2	PUMP		208/3	1/2	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	COMB.	X		X	X	B-2	TCC	M.C.	E.C.	-	
HWP-3	PUMP		208/3	3	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	COMB.	X		X	X	-	TCC	M.C.	E.C.	-	
HWP-4	PUMP		208/3	3	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	COMB.	X		X	X	-	TCC	M.C.	E.C.	-	
HWP-5	PUMP		120/1	1/4	-	-	-	-	-	M.C.	E.C.	NEAR UNIT	COMB.	X		X	X	HC-1	TCC	M.C.	E.C.	-	
UH-1	UNIT HEATER		120/1	1/15	0.72	-	-	-	-	M.C.	E.C.	NEAR UNIT	MAN					TCC	M.C.	E.C.	-		
PRV-1	EXHAUST FAN		120/1	1/15	-	-	-	-	-	M.C.	E.C.	ROOM 109	COMB.	X		X	X	AHU-1	TCC	M.C.	E.C.	-	
PRV-2	EXHAUST FAN		120/1	1/4	-	-	-	-	-	M.C.	E.C.	ROOM 109	MAN					AHU-1	TCC	M.C.	E.C.	-	
PRV-3	EXHAUST FAN		120/1	1/20	-	-	-	-	-	M.C.	E.C.	ROOM 109	COMB.	X		X	X	AHU-1	TCC	M.C.	E.C.	-	
CUH-1	CABINET UNIT HEATER		120/1	1/10	1.4	-	-	-	-	M.C.	E.C.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
CUH-2	CABINET UNIT HEATER		120/1	1/10	1.4	-	-	-	-	M.C.	E.C.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
CUH-3	CABINET UNIT HEATER		120/1	1/10	1.4	-	-	-	-	M.C.	E.C.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
CUH-4	CABINET UNIT HEATER		120/1	1/10&1/15	4.2	-	-	-	-	M.C.	E.C.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
CUH-5	CABINET UNIT HEATER		120/1	1/10&1/15	4.2	-	-	-	-	M.C.	E.C.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
CUH-6	CABINET UNIT HEATER		120/1	1/10&1/15	4.2	-	-	-	-	M.C.	E.C.	IN UNIT	MAN					TCC	M.C.	E.C.	-		
TCP-1	CONTROL PANEL		120/1	-	20	-	-	-	-	-	-	-	-					-	-	-	J-BOX		
TCP-2	CONTROL PANEL		120/1	-	20	-	-	-	-	-	-	-	-					-	-	-	J-BOX		
TCP-3	CONTROL PANEL		120/1	-	20	-	-	-	-	-	-	-	-					-	-	-	J-BOX		
H-1	HUMIDIFIER		208/1	-	3.0	-	-	-	-	-	-	-	-					AHU-1	TCC	M.C.	E.C.	-	

DUCT SILENCER SCHEDULE

PLAN MARK	LOCATION	SYSTEM	AIRFLOW (CFM)	A.P.D. (N. W.G.)	DIMENSIONS			DYNAMIC INSERTION LOSS (dB)								SELF-NOISE POWER LEVEL (dB)								MANUFACTURER	MODEL NO.	COMMENTS
					H (IN.)	W (IN.)	L (IN.)	OCTAVE BAND CENTER FREQUENCY (Hz)								OCTAVE BAND CENTER FREQUENCY (Hz)										
					63	125	250	500	1000	2000	4000	8000	63	125	250	500	1000	2000	4000	8000						
SL-1	SUPPLY	AHU-1	24400	0.43	120	20	31/9																			