GIDEON WELLES SCHOOL

1029 NEIPSIC ROAD
GLASTONBURY, CONNECTICUT 06033

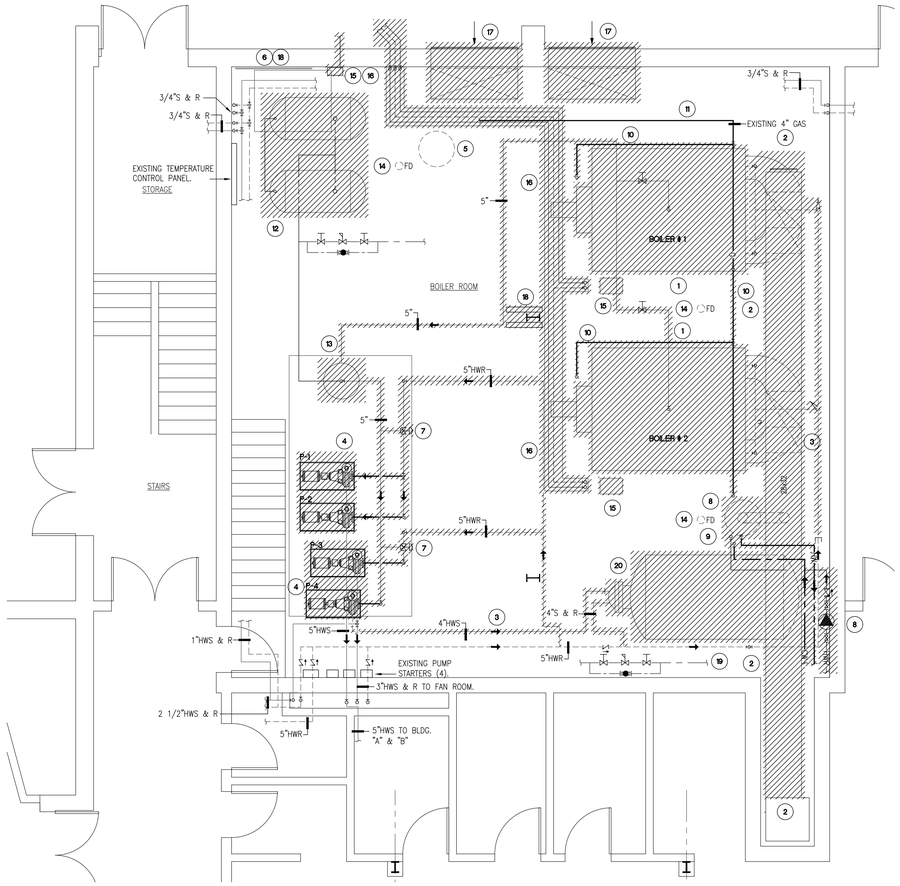
BOILERS AND CONTROLS REPLACEMENT

PROJECT # GL-2024-01

M/E/P ENGINEER
BEMIS ASSOCIATES LLC
185 MAIN STREET
FARMINGTON,CONNECTICUT
Phone: 860-667-3233
Fax: 860-321-7070

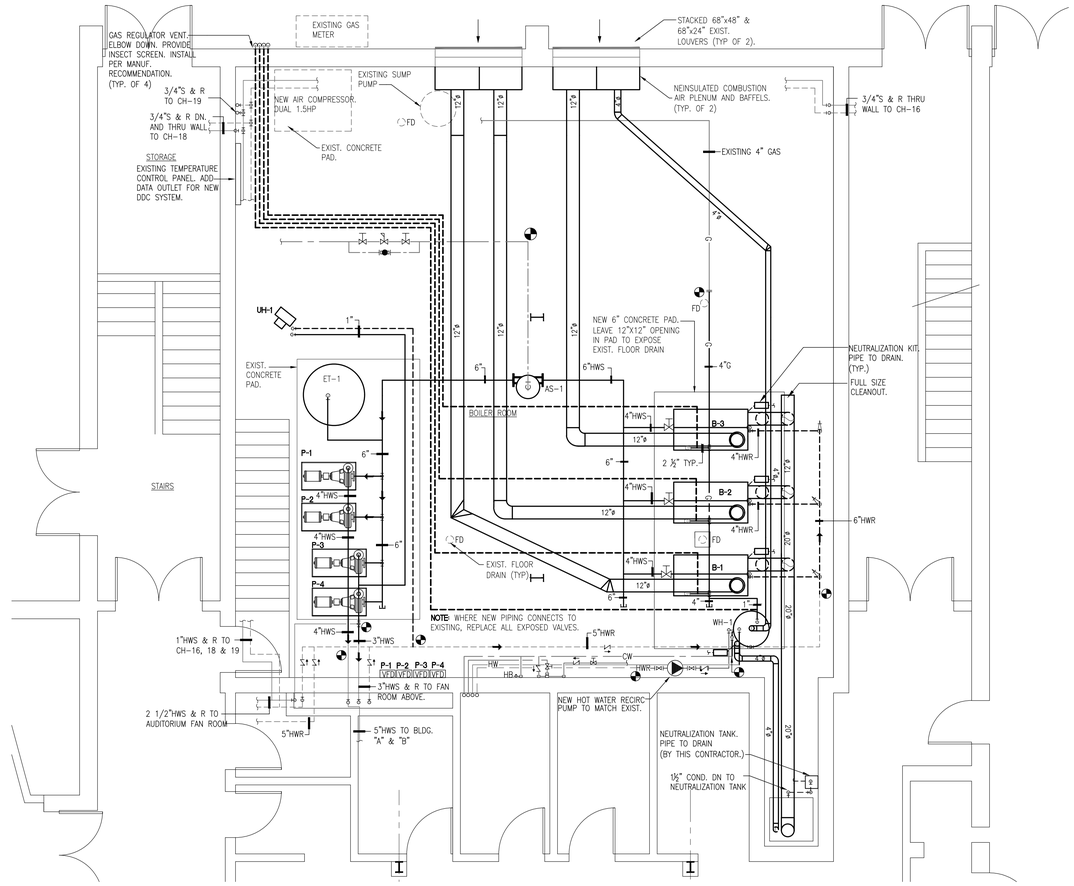
LIST OF DRAWINGS

02/06/2023



BOILER ROOM PART PLAN – MECHANICAL DEMOLITION

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



BOILER ROOM PART PLAN – MECHANICAL NEW WORK

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

BOILER ROOM GENERAL DEMOLITION NOTES :

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITY LINES INCLUDING ELECTRICAL, SEWER, WATER, GAS, TELEPHONE, ETC. THE DRAWINGS SHOW DIAGRAMMATICALLY THE APPROXIMATE LOCATION OF UTILITIES WHERE INFORMATION IS AVAILABLE, BUT THE DRAWINGS ARE NOT EXACT AS TO THE QUANTITY, EXTENT OR LOCATION. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING ALL PHASES OF THE WORK TO LOCATE, IDENTIFY, AND PROTECT EXISTING UTILITIES. THE CONTRACTOR SHALL RECORD LOCATION OF AND REPAIR DAMAGE TO EXISTING UTILITIES WHICH ARE ENCOUNTERED AS A RESULT OF WORK UNDER THIS CONTRACT.

ANY EQUIPMENT REMOVED DURING DEMOLITION WORK MAY BE RETAINED BY THE OWNER AT HIS OPTION. ANY SUCH MATERIAL SHALL BE STORED IN A LOCATION DESIGNATED BY THE OWNER. REMOVAL OF SUCH MATERIAL FROM THE JOB SITE SHALL BE THE OWNER'S RESPONSIBILITY.

REMOVE AND REPLACE ALL EXISTING PIPE INSULATION FOR ALL THE PIPES THAT WILL REMAIN IN THE BOILER ROOM. CONTRACTOR SHALL MEASURE AND RECORD WATER FLOW AND PRESSURE AND SUBMIT REPORT FOR ALL THE EXISTING PUMPS PRIOR TO ANY DEMOLITION.

BOILER ROOM DEMOLITION NOTES :

KEY NOTES DESCRIBE IN GENERAL THE SCOPE OF EQUIPMENT REMOVED. CONTRACTOR SHALL COORDINATE ALL DEMOLITION WORK WITH NEW WORK PLANS PRIOR TO REMOVING THE ITEM.

1. EXISTING HEATING BOILERS AND ASSOCIATED PIPES, VALVES & ACCESSORIES SHALL BE REMOVED AS INDICATED. WHERE EXISTING PIPING IS INDICATED TO REMAIN, CAP REMAINING GAS, HOT WATER SUPPLY, CW MAKE-UP & RETURN PIPING FOR FUTURE CONNECTION. EXISTING CONCRETE BOILER PADS SHALL BE REMOVED AND REMAINING FLOOR TO BE PATCHED TO MATCH EXISTING FLOOR.
2. EXISTING BOILER BREECHING SHALL BE REMOVED. PATCH AND SEAL CHIMNEY OPENING FOR FUTURE USE. CLEAN INSIDE OF CHIMNEY
3. EXISTING HOT WATER PIPING SHALL BE REMOVED AS INDICATED. CAP FOR FUTURE CONNECTION WHERE INDICATED.
4. EXISTING HOT WATER PUMPS SHALL BE REMOVED. CONCRETE PAD SHALL REMAIN. PATCH TO MATCH
5. EXISTING SUMP PUMP AND CONTROLS SHALL REMAIN.
6. EXISTING AIR COMPRESSOR SHALL BE REPLACED WITH LIKE KIND. CONTRACTOR SHALL FIELD VERIFY SIZE AND MODEL. RECONNECT TO EXISTING PNEUMATIC SYSTEM.
7. EXISTING 3-WAY VALVES AND PIPING SHALL BE REMOVED.
8. EXISTING DOMESTIC WATER HEATER AND ASSOCIATED PIPING AND ACCESSORIES SHALL BE REMOVED. WATER HEATER SHALL BE TURNED OVER TO THE OWNER.
9. EXISTING WATER HEATER FLUE SHALL BE REMOVED.
10. EXISTING GAS PIPE SHALL BE DISCONNECTED FROM BOILER BURNERS AND MADE READY FOR FUTURE USE.
11. EXISTING GAS PIPE SHALL REMAIN.
12. EXISTING EXPANSION TANKS SHALL BE REMOVED AND REPLACED.
13. EXISTING AIR SEPARATOR SHALL BE REMOVED AND REPLACED.
14. EXISTING FLOOR DRAIN SHALL REMAIN. PROVIDE NEW STRAINER.
15. EXISTING OIL PUMP AND ASSOCIATED ACCESSORIES SHALL BE REMOVED. CAP PIPING @ WALL PENETRATION.
16. EXISTING FUEL OIL PIPING SHALL BE REMOVED. DISPOSE OF REMAINING OIL ACCORDING TO FEDERAL, STATE AND LOCAL REGULATION. CAP REMAINING PIPES @ WALL. TRENCH SHALL BE FILLED-IN WITH CONCRETE TO MATCH EXISTING FLOOR. DRAIN IN TRENCH SHALL BE RAISED AND MADE FLUSH WITH BOILER ROOM FLOOR. NEW FLOOR DRAIN MODEL SHALL BE JAY R SMITH 2250-M, 4"ø OUTLET/STRAINER.
17. EXISTING LOUVERS SHALL REMAIN. INSULATED COMBUSTION AIR PLENUM SHALL BE REMOVED.
18. EXISTING CONTROLS AND ASSOCIATED ACCESSORIES SHALL BE UPGRADED.
19. EXISTING BACKFLOW PREVENTER AND PRESSURE REDUCING VALVE TO OLD LOCKER ROOMS SHALL REMAIN.
20. EXISTING DOMESTIC WATER STORAGE TANK AND ASSOCIATED PIPES SHALL BE REMOVED. CAP AND SEAL REMAINING

PUMP SCHEDULE

Pump No.	LOCATION	AREA SERVED	TYPE	MANUFACTURER	SERIES	MODEL	GPM	HEAD (FT)	RPM	HP	Pump Power BHP	VOLTS	PH	EFFICIENCY	SUCTION DIFFUSER			TRIPPLE DUTY VALVE	REMARKS
															MODEL	SYS. SIDE	SUCT. SIDE		
P-1	BOILER ROOM	BUILDING A & B	BASE MTD.	BELL & GOSSETT	e-1510	2.5BB	270	74	1750	10	6.72	208	3	76.56%	DD-3	3	3	3DS-4B	1,2,3,5
P-2	BOILER ROOM	BUILDING A & B (STAND-BY)	BASE MTD.	BELL & GOSSETT	e-1510	2.5BB	270	74	1750	10	6.72	208	3	76.56%	DD-3	3	3	3DS-4B	1,2,4,5
P-3	BOILER ROOM	FAN ROOM	BASE MTD.	BELL & GOSSETT	e-1510	2AD	120	40	1655	3	1.64	208	3	72.9%	CC-3X	2.5	2.5	3DS-2 ½ S	1,2,3,5
P-4	BOILER ROOM	FAN ROOM	BASE MTD.	BELL & GOSSETT	e-1510	2AD	120	40	1655	3	1.64	208	3	72.9%	CC-3X	2.5	2.5	3DS-2 ½ S	1,2,4,5

REMARKS:
1. UNIT SHALL BE SEISMICALLY SUPPORTED.
2. INSTALL ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
3. OPERATING.
4. STANDBY.
5. PROVIDE VARIABLE FREQUENCY DRIVE.

BOILER SCHEDULE (REQUIRED INLET GAS PRESSURE: 2 PSIG)

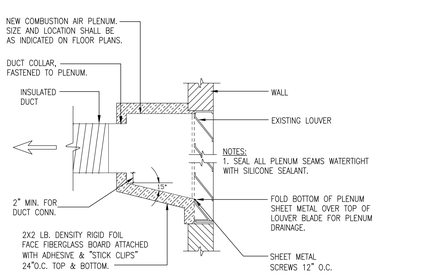
TAG	LOCATION	MANUF.	MODEL	TURN DOWN	FUEL	GAS			ELECTRICAL			VENT DIA (IN)	FLUE DIA (IN)	INLET GAS PRESS. (IN W.C.)	REMARKS
						INPUT (MBH)	OUTPUT (MBH)	THERMAL EFFICIENCY	VOLTAGE	PHASE	AMPS				
B-1	BOILER ROOM	PATTERSON-KELLEY	SONIC SC3000	5:1	GAS	3,000	2,880	96%	208/240	3	20.0	12	12	4"/14"	1,2,3,4,5
B-2	BOILER ROOM	PATTERSON-KELLEY	SONIC SC3000	5:1	GAS	3,000	2,880	96%	208/240	3	20.0	12	12	4"/14"	1,2,3,4,5
B-3	BOILER ROOM	PATTERSON-KELLEY	SONIC SC3000	5:1	GAS	3,000	2,880	96%	208/240	3	20.0	12	12	4"/14"	1,2,3,4,5

REMARKS:
1. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. POWER WIRING AND RACEWAY BY DIVISION 26.
3. DISCONNECT, MOTOR STARTERS AND CONTROLS BY DIVISION 23.
4. BOILER MANUFACTURER SHALL PROVIDE HI/LOW GAS PRESSURE SWITCH, GAS PRESSURE REGULATOR, LOW WATER CUT OFF-MANUAL RESET, HIGH LIMIT-MANUAL RESET, COMBUSTION BLOWER-VARIABLE SPEED, AIR SWITCH-DIFFERENTIAL PRESSURE TYPE, MAIN GAS TRAIN, HIGH EXHAUST PRESSURE SWITCH, OPERATING THERMOSTAT, INTEGRATED BOILER CONTROL-ENVI SERIES, MODULATING CONTROL WITH 5:1 TURN-DOWN, P-K CONTROL VALVES WITH FEEDBACK POTENTIOMETERS AND P-K CONDENSATE NEUTRALIZATION KIT.

UNIT HEATER SCHEDULE

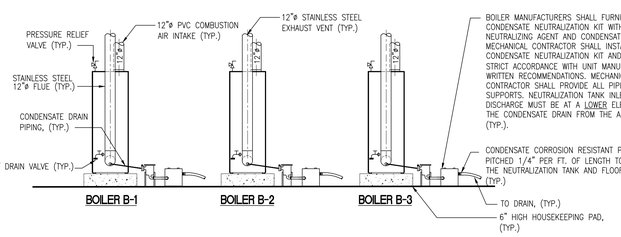
UNIT NO.	AREA SERVED	MANUF.	MODEL	CFM	MBH	GPM	EWT	WTD	WPD	EAT	LAT	HP	VOLTS	PH	REMARKS
UH-1	BOILER ROOM	STERLING	HS-48	630	31.3	3.5	200	20.0	0.12	60.0	111°F	1/20	115	1	1,2

REMARKS:
1. T.C.C. TO PROVIDE WALL MOUNTED THERMOSTAT.
2. SEISMICALLY SUPPORT EQUIPMENT AS REQUIRED.



COMBUSTION AIR INTAKE LOUVER CONNECTION DETAIL

NO SCALE



TYPICAL GAS FIRED BOILER VENTING AND CONDENSATE DETAIL

NO SCALE

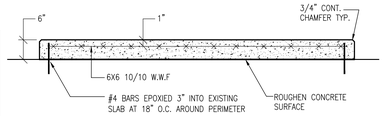
GAS FIRED, WATER HEATER SCHEDULE (NATURAL GAS PRESSURE 2 PSIG)

TAG	LOCATION	MANUF.	MODEL	TURN DOWN	FUEL	GAS		ELECTRICAL			NET OUTPUT (MBH)	VENT DIA (IN)	VENT DIA (OUT)	REMARKS
						INPUT (MBH)	PRESSURE (MIN/MAX)	THERMAL EFFICIENCY	VOLTAGE	PHASE	AMPS			
WH-1	BOILER ROOM	A. O. SMITH CYCLONE Mxi	BTH 199	–	GAS	199	4"WC MIN./ 14"WC MAX	97%	120	1	5	193	4"	4"	1,2,3,4,5

REMARKS:
1. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
2. POWER WIRING AND RACEWAY BY DIVISION 26.
3. DISCONNECT, MOTOR STARTERS AND CONTROLS BY DIVISION 23.
4. 235 GPH RECOVERY AT 100° TEMPERATURE RISE.
5. UNIT MANUFACTURER SHALL PROVIDE GAS PRESSURE REGULATOR. REGULATOR SHALL BE INDEPENDENTLY VENTED TO OUTSIDE.

VARIABLE FREQUENCY DRIVE SCHEDULE

UNIT	MOTOR HP	MANUFACTURER	MODEL	LOCATION
P-1	10	ABB	ACH 550	BOILER ROOM
P-2	10	ABB	ACH 550	BOILER ROOM
P-3	2	ABB	ACH 550	BOILER ROOM
P-4	2	ABB	ACH 550	BOILER ROOM



TYPICAL HOUSEKEEPING PAD DETAIL

NO SCALE

(COORDINATE NUMBER AND LOCATIONS WITH MEP DRAWINGS)
NOTE: COORDINATE PAD THICKNESS AT BOILERS w/ M.E.P.

ENGINEERING SPECIFICATION FOR: BELL & GOSSETT ROLAIRTROL AIR SEPARATOR

FURNISH AND INSTALL, AS SHOWN ON PLANS, A CENTRIFUGAL TYPE AIR SEPARATOR. THE UNIT SHALL HAVE 6" INLET AND OUTLET FLANGED CONNECTIONS TANGENTIAL TO THE VESSEL SHELL. THE UNIT SHALL HAVE AN INTERNAL TYPE 304 STAINLESS STEEL STRAINER AND AIR SEPARATOR WITH 3/16" PERFORATIONS AND 51 PERCENT OPEN AREA DESIGNED TO DIRECT ACCUMULATED AIR TO THE AIR VENT (AIR ELIMINATION SYSTEM) VIA AN NPT CENT CONNECTION AT TOP OF UNIT.

A BLOWDOWN CONNECTION SHALL BE PROVIDED TO FACILITATE ROUTINE CLEANING. PROVIDE B&G MODEL MBV-1 ROLAIRTROL ACCESSORY WITH APPROPRIATE FITTINGS FOR MANUAL BLOWDOWN.

VESSEL SHELL DIAMETER TO BE THREE TIMES THE NOMINAL INLET/OUTLET PIPE DIAMETER, WITH A MINIMUM VESSEL VOLUME FOR SUFFICIENT VELOCITY REDUCTION.

THE AIR SEPARATOR MUST BE DESIGNED, CONSTRUCTED AND STAMPED FOR 125 PSIG @ 375°F IN ACCORDANCE WITH SECTION VIII, DIVISION I OF THE ASME BOILER AND PRESSURE VESSEL CODE, AND REGISTERED WITH THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS. THE AIR SEPARATOR SHALL BE PAINTED WITH ONE SHOP COAT OF LIGHT GRAY AIR DRY ENAMEL.

AS-1 THE AIR SEPARATOR SHALL BE BELL & GOSSETT MODEL NO. R-6F ROLAIRTROL AIR SEPARATOR FOR 385 GPM, SHELL DIA. 16" AND MIN. VESSEL VOLUME 25 GAL.

ENGINEERING SPECIFICATION FOR: BELL & GOSSETT EXPANSION TANK

FURNISH AND INSTALL, AS SHOWN ON PLANS A 528 GALLON, 48" DIAMETER, 84" HIGH, PRE-CHARGED STEEL EXPANSION TANK WITH REPLACEABLE HEAVY DUTY BUTYL RUBBER BLADDER. THE TANK SHALL HAVE A 1" NPT SYSTEM CONNECTION, ¾" NPT DRAIN, AND A .302"-32 CHARGING VALVE CONNECTION (STANDARD TIRE VALVE) TO FACILITATE THE ON-SITE CHARGING OF THE TANK TO MEET SYSTEM REQUIREMENTS.

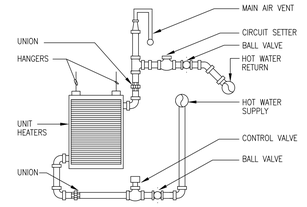
THE TANK SHALL BE FITTED WITH LIFTING RINGS AND A FLOOR MOUNTING SKIRT FOR VERTICAL INSTALLATION.

THE TANK MUST BE CONSTRUCTED IN ACCORDANCE WITH SECTION VIII OF THE ASME BOILER AND PRESSURE VESSEL CODE AND STAMPED 125 PSI WORKING PRESSURE.

ET-1 TANK SHALL BE BELL & GOSSETT MODEL NO. B-2000.

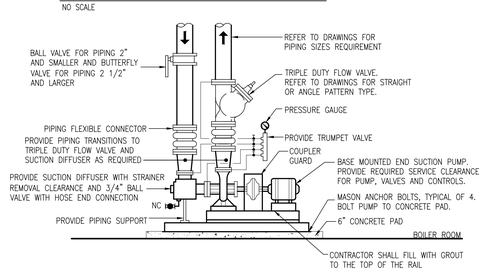
GENERAL NEW WORK NOTES :

1. DRAWINGS ARE DIAGRAMMATIC AND SHOW GENERAL INTENT OF WORK, ALL CONTRACTORS MUST COORDINATE WITH OTHER TRADES BEFORE PROCEEDING WITH ANY WORK.
2. THE CONTRACTOR SHALL COORDINATE THE ROUTING AND INSTALLATION OF ALL SYSTEMS TO AVOID CONFLICTS.
3. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS PRIOR TO SUBMITTING HIS BID.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE LOCATIONS AND SIZES.
5. INSTALL PIPES TO ALLOW EASY ACCESS TO VALVES.
6. INSULATE ALL HOT WATER HEATING SUPPLY AND RETURN PIPING.
7. BRANCH TAKE-OFFS FOR FLUE AND COMBUSTION AIR SHALL BE AT 45° ANGLES.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY TEMPORARY WORK REQUIRED TO KEEP THE BUILDING OCCUPIED DURING THE CONSTRUCTION.



TYPICAL UNIT HEATER ARRANGEMENT

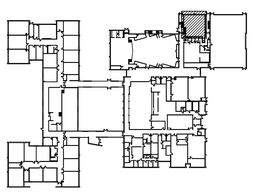
NO SCALE



TYPICAL PIPING DETAIL FOR BASE MOUNTED PUMPS

NO SCALE

NORTH



KEY PLAN

REVISIONS

GIDEON WELLES SCHOOL

BOILERS AND CONTROLS REPLACEMENT

GLASTONBURY, CONNECTICUT

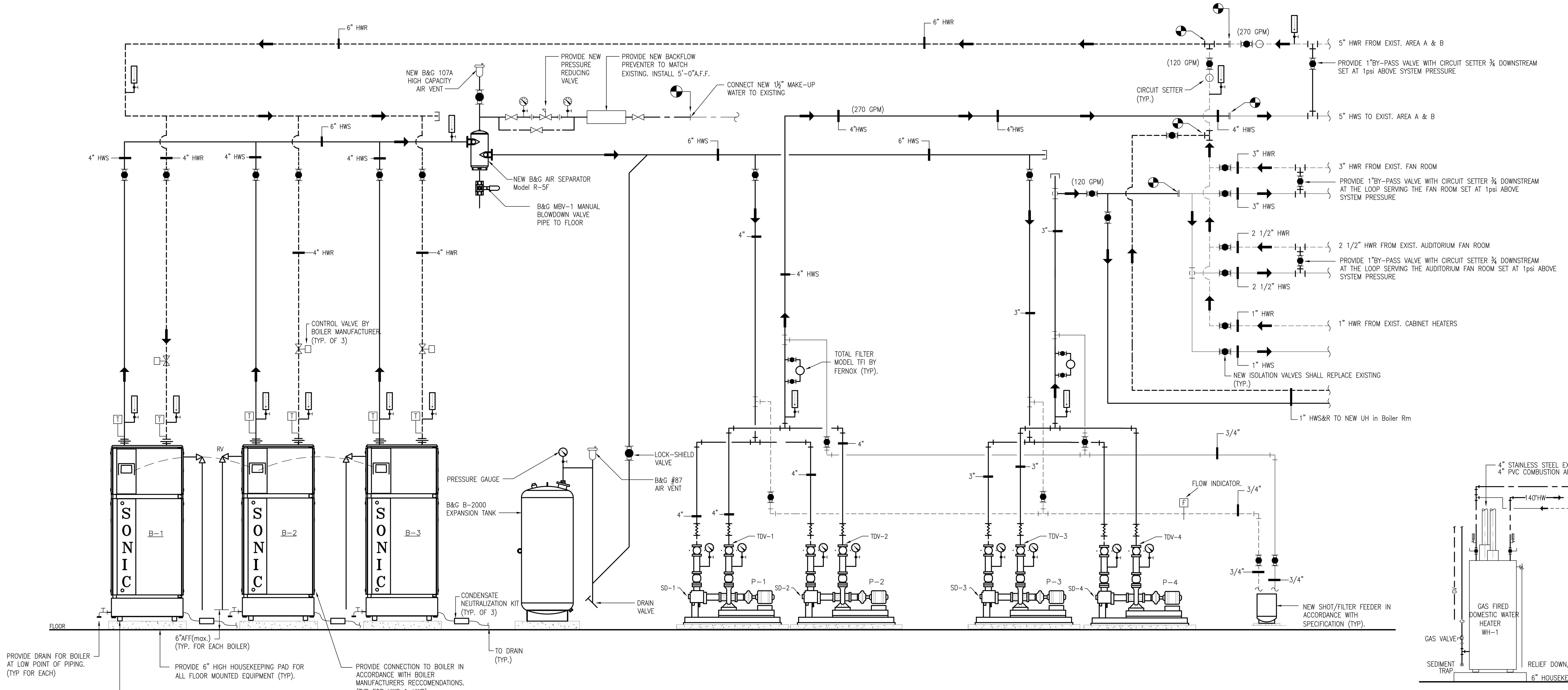
BEMIS ASSOCIATES, L.L.C.
Consulting Engineers
185 Main Street
Farmington, CT 06032
(860) 677-2702
Fax: (860) 321-7070
www.bemisassociates.com

TITLE
BOILER ROOM PART PLAN MECHANICAL DEMOLITION, NEW WORK AND SCHEDULES

DATE 02/06/2023

DWG. NO.
M-1

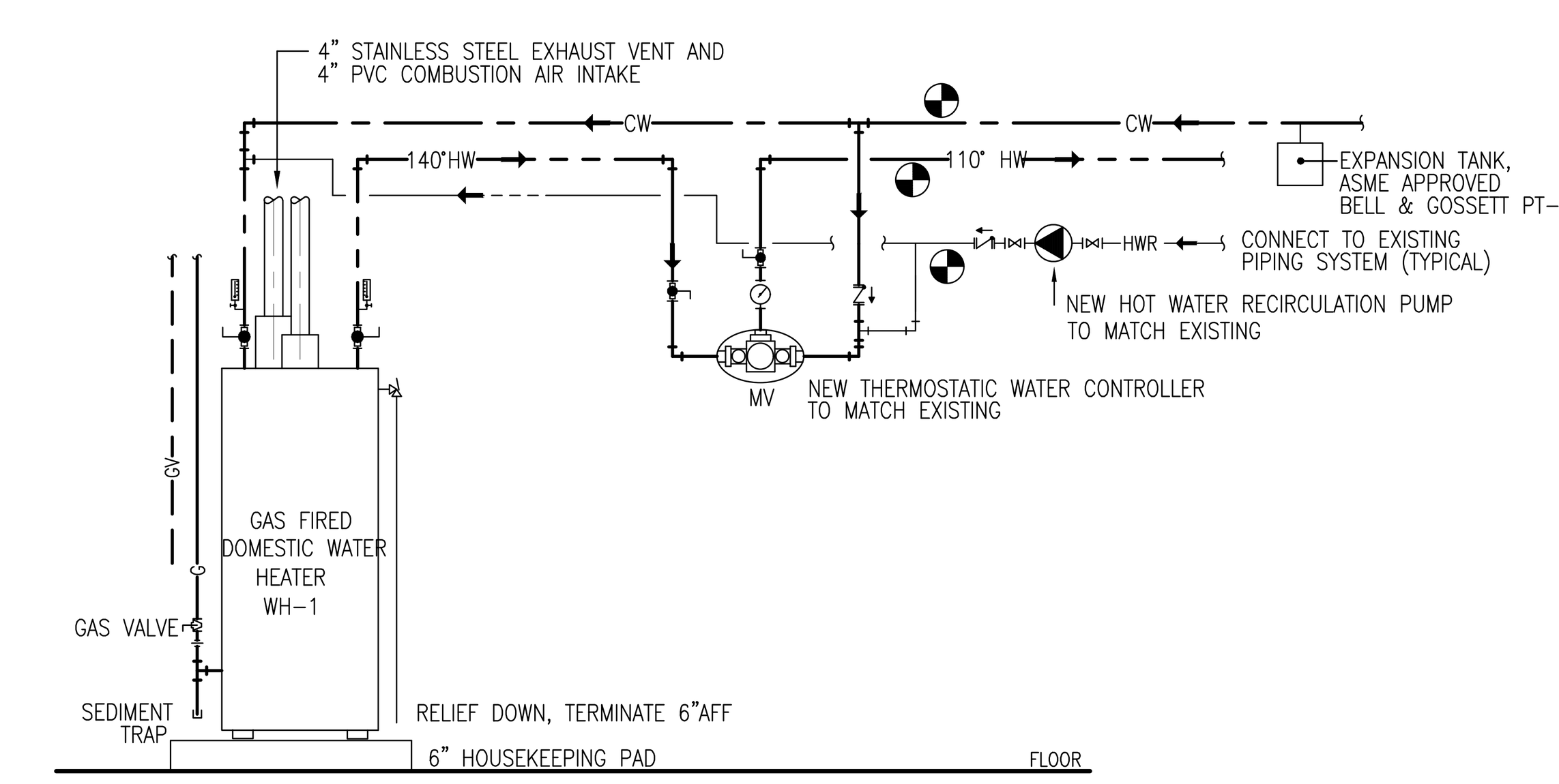
REVISIONS



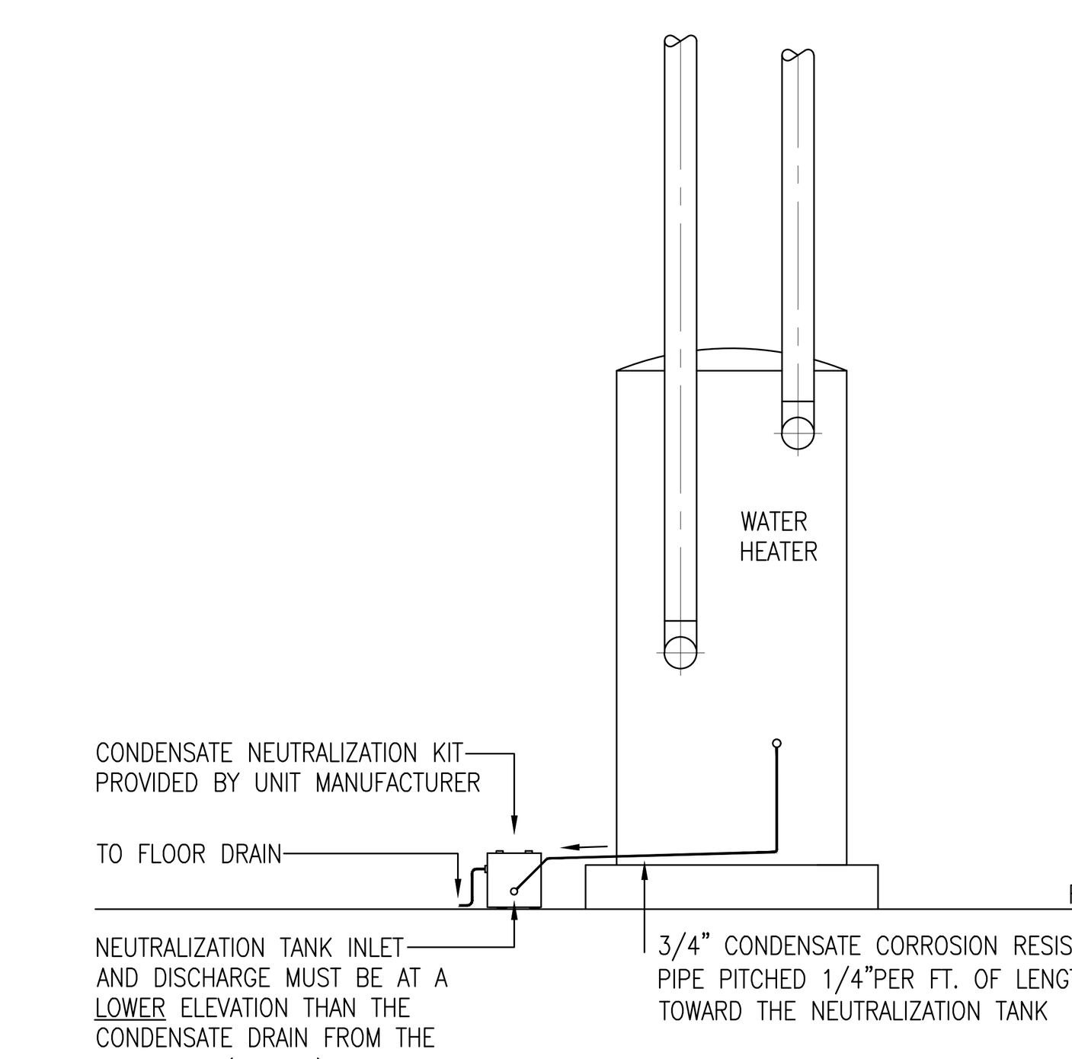
BOILER HOT WATER PIPING SCHEMATIC
NO SCALE

SYMBOL	ABBREV.	DESCRIPTION
HWS	HWS	EXISTING HOT WATER SUPPLY LINE
HWR	HWR	EXISTING HOT WATER RETURN LINE
G	G	EXISTING GAS LINE
FOS	FOS	EXISTING FUEL OIL SUPPLY LINE
FOR	FOR	EXISTING FUEL OIL RETURN LINE
HWS	HWS	NEW HOT WATER SUPPLY LINE
HWR	HWR	NEW HOT WATER RETURN LINE
G	G	NEW GAS LINE
FOS	FOS	NEW FUEL OIL SUPPLY LINE
FOR	FOR	NEW FUEL OIL RETURN LINE
C	C	NEW CONDENSATE LINE
	CV	CONTROL VALVE
	BV	BALL VALVE
		CHECK VALVE
	GV	GATE VALVE
	GLV	GLOBE VALVE
		THREE WAY VALVE
	TH	THERMOMETER
T	T	THERMOSTAT
T	T	TEMPERATURE SENSOR
UH	UH	UNIT HEATER

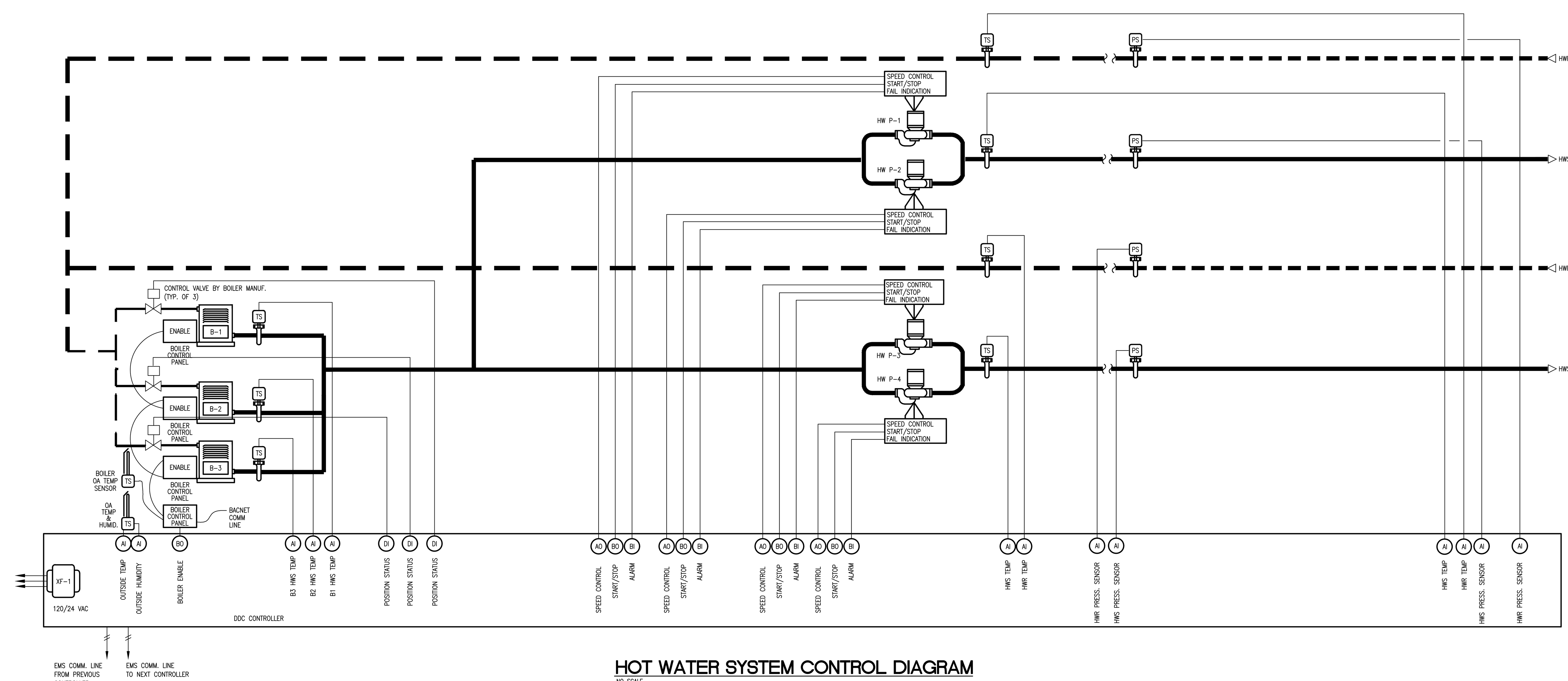
MECHANICAL SYMBOL LIST



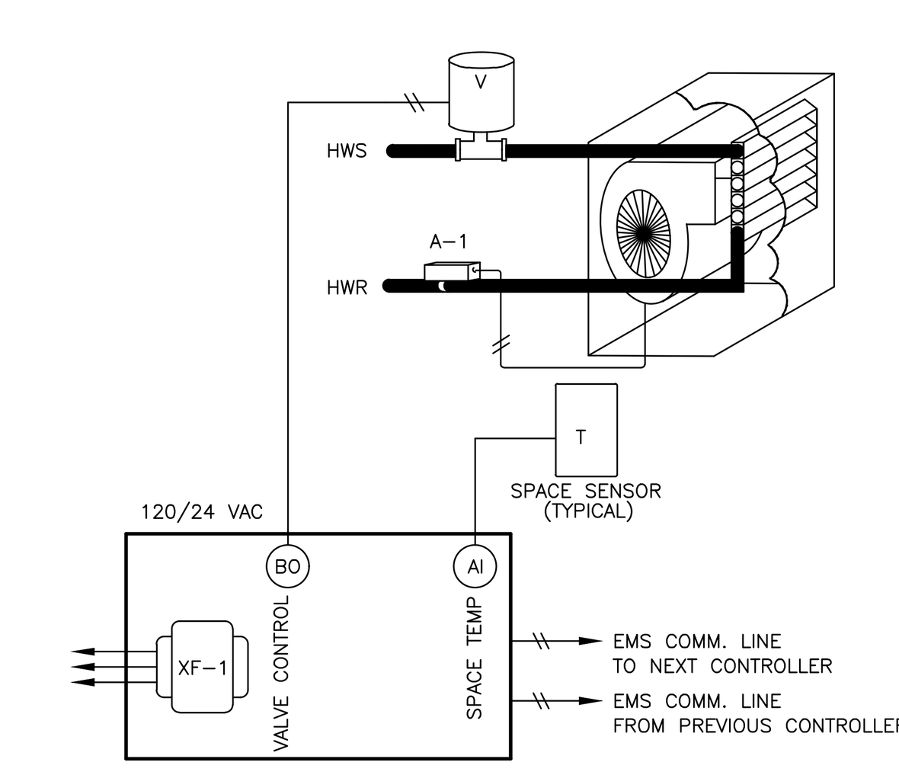
NEW HOT WATER HEATER PIPING DIAGRAM
NO SCALE



CONDENSATE PIPING INSTALLATION
NO SCALE



HOT WATER SYSTEM CONTROL DIAGRAM
NO SCALE



TYPICAL UNIT HEATER CONTROL

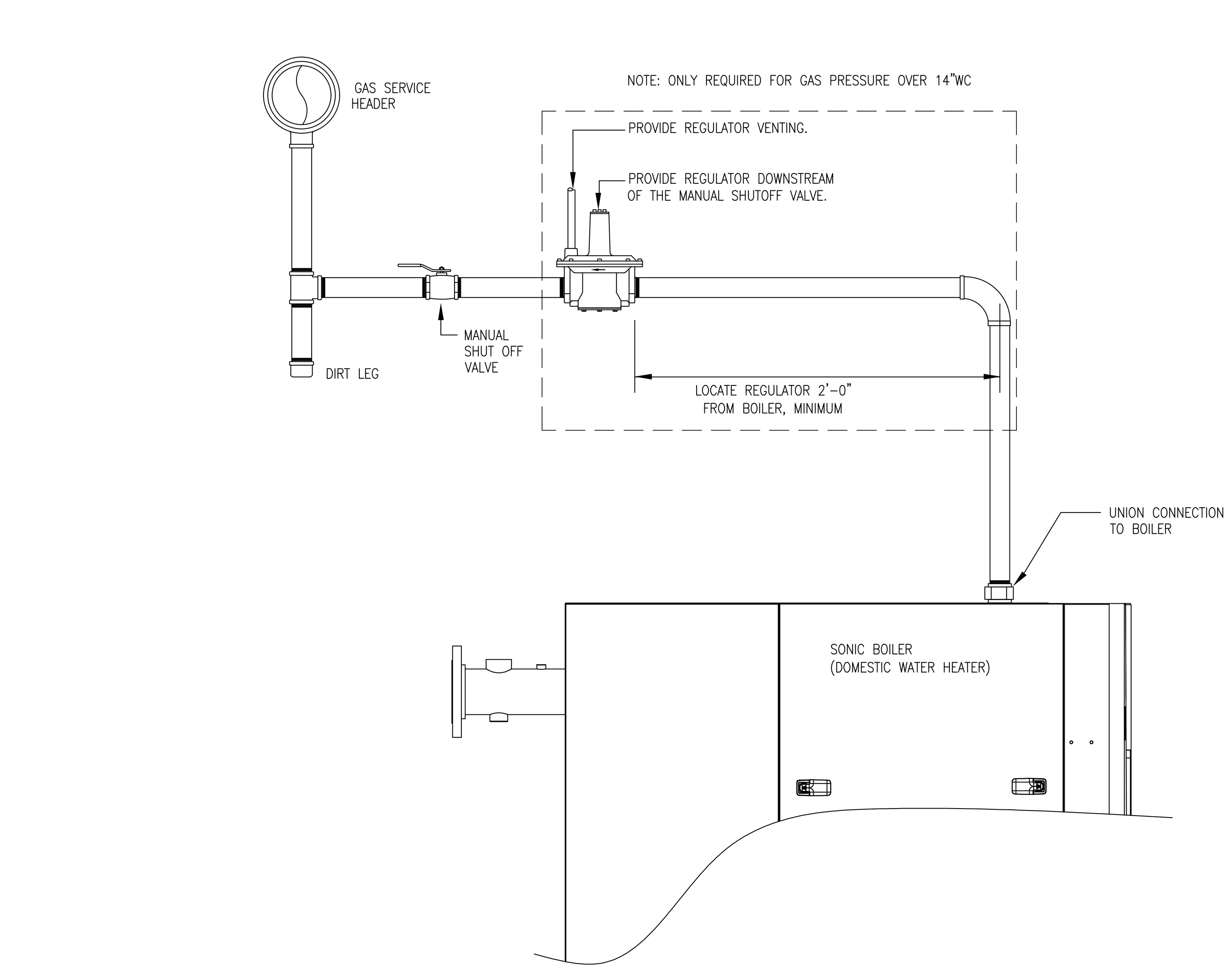
GIDEON WELLES SCHOOL
BOILERS AND CONTROLS REPLACEMENT
GLASTONBURY, CONNECTICUT

BEMIS ASSOCIATES, L.L.C.
Consulting Engineers
185 Main Street
Farmington, Ct 06032
(860) 667-3233
Fax: (860) 321-7070
www.bemisassociates.com

TITLE
MECHANICAL PIPING SCHEMATIC & CONTROLS

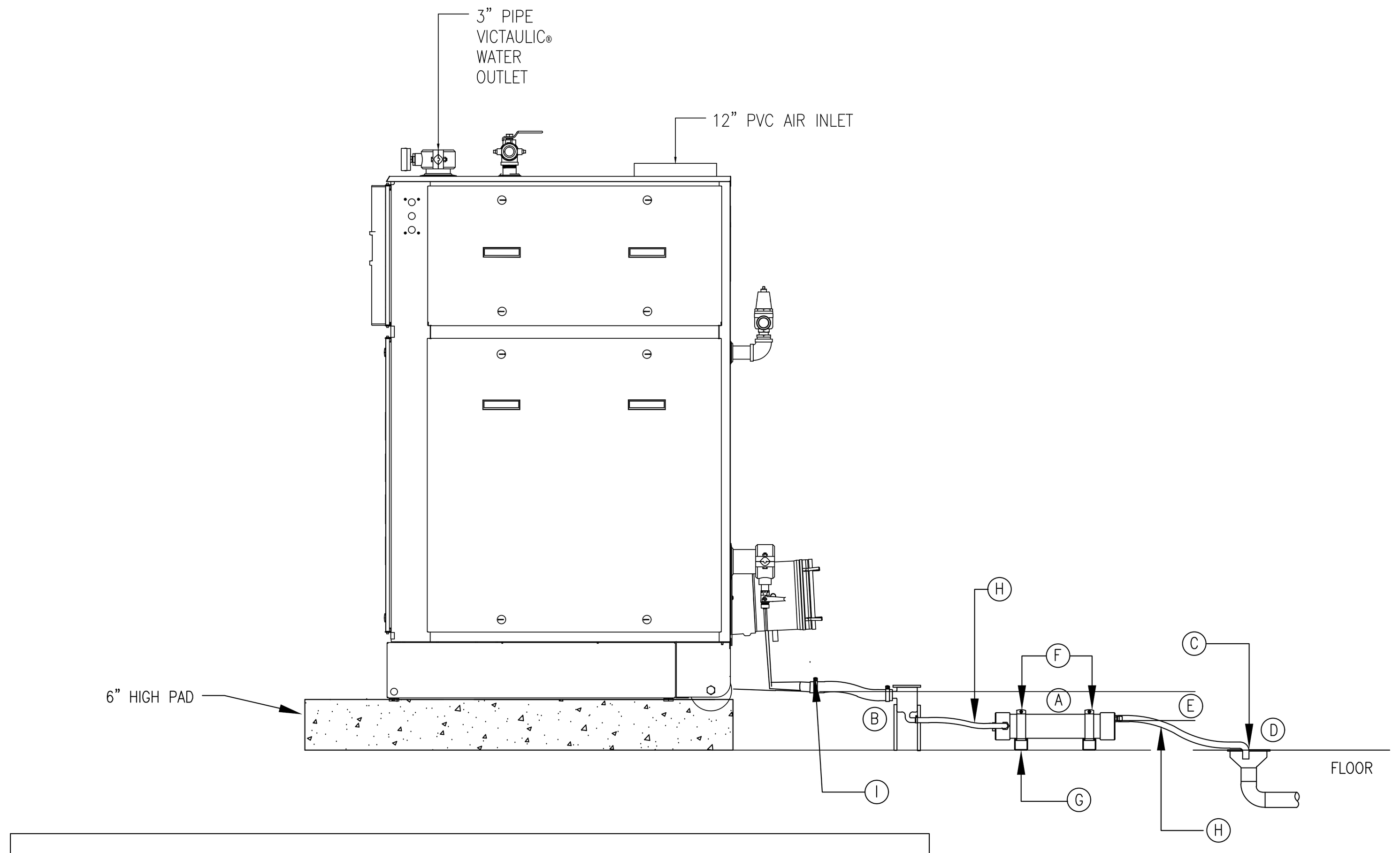
DATE 02/06/2023

DWG. NO.
M-2



TYPICAL GAS CONNECTION DETAIL

NO SCALE



A. JM CONDENSATE NEUTRALIZING TUBE

B. FACTORY SUPPLIED CONDENSATE TRAP. PROVIDE FIELD FABRICATED SUPPORTS AS REQUIRED.

C. CONDENSATE DRAIN TERMINATION AT FLOOR DRAIN INLET. SECURE IN PLACE AS REQUIRED.

D. FLOOR DRAIN.

E. BOTTOM OF BOILER CONDENSATE OUTLET MUST BE ABOVE THE THE BOTTOM OF THE CONDENSATE OUTLET.

F. UNISTRUT CLAMPS, SECURE TUBE IN POSITION AND SECURELY. CONDENSATE OUTLET MUST BE ORIENTED UP, WITH CONDENSATE INLET TO THE SIDE.

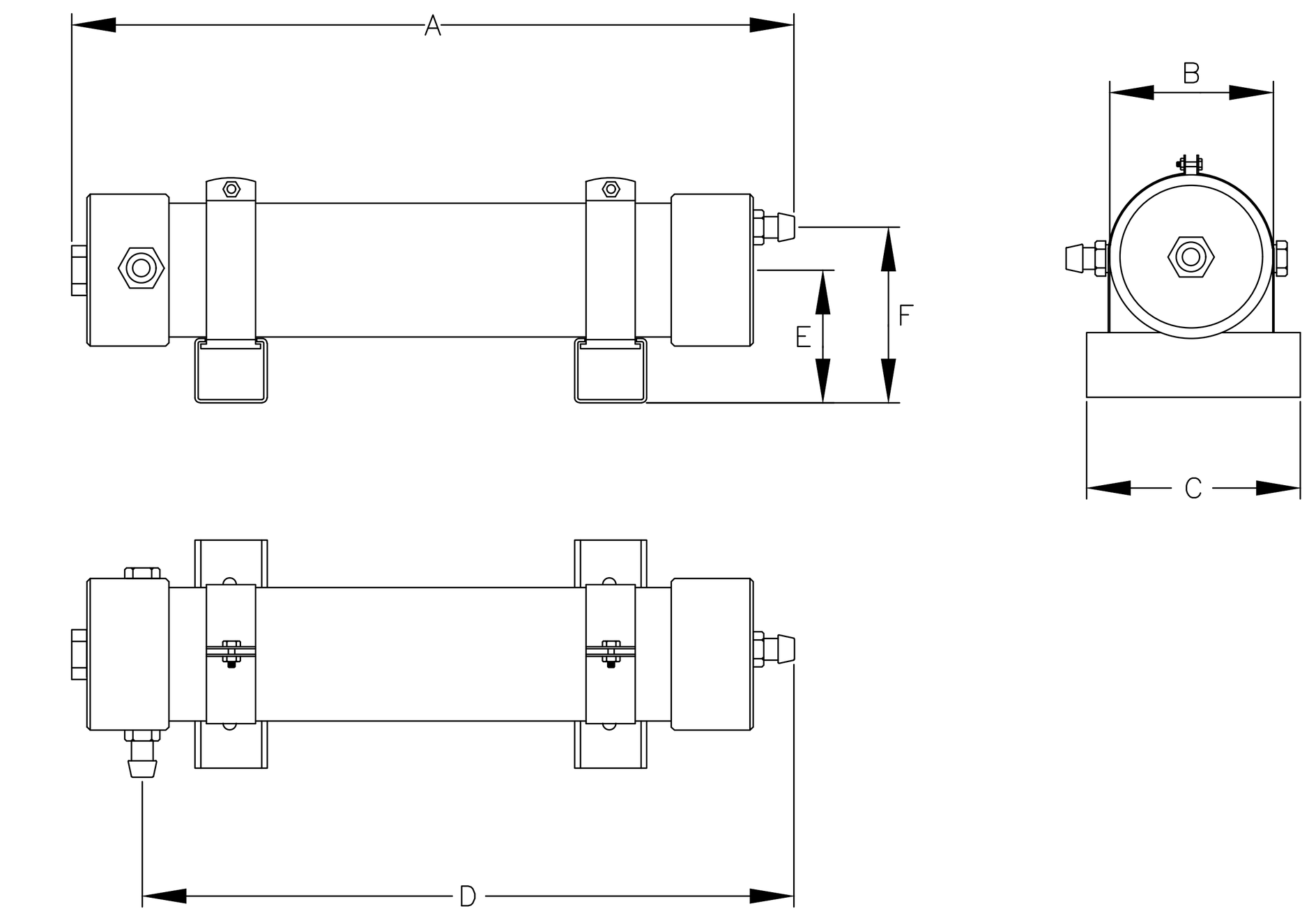
G. UNISTRUT BASE, BOLT TO FLOOR OR MOUNTING PAD.

H. PVC PIPE.

I. USE HOSE CLAMPS AT ALL CONNECTIONS WHEN USING FACTORY SUPPLIED RUBBER HOSE.

CONDENSATE TUBE INSTALLATION DETAIL

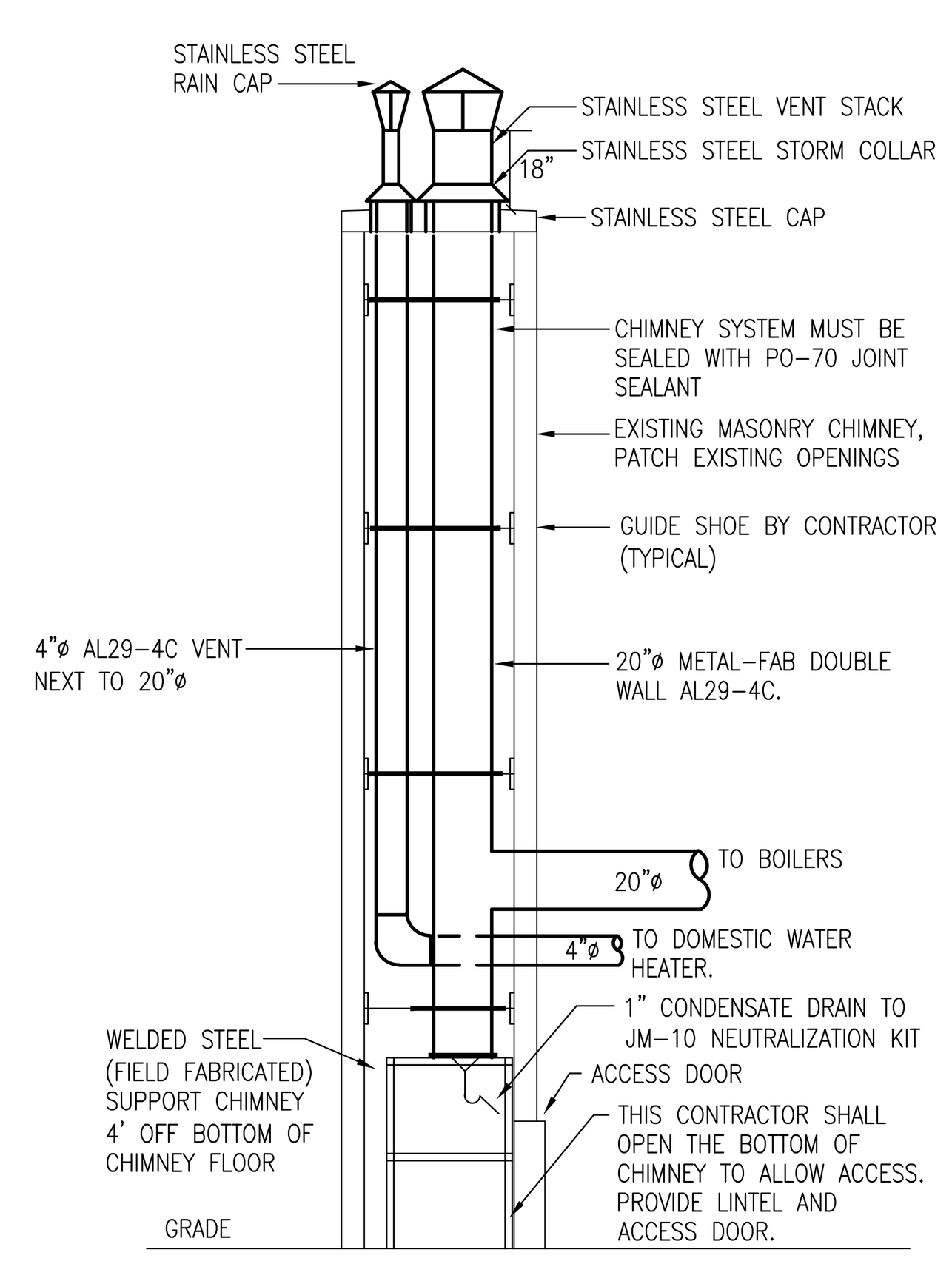
NO SCALE



SIZE	MBH	GPH	A	B	C	D	E	F
JM-30	3000	30	24 1/2	5	6	21	4 1/2	3 1/8

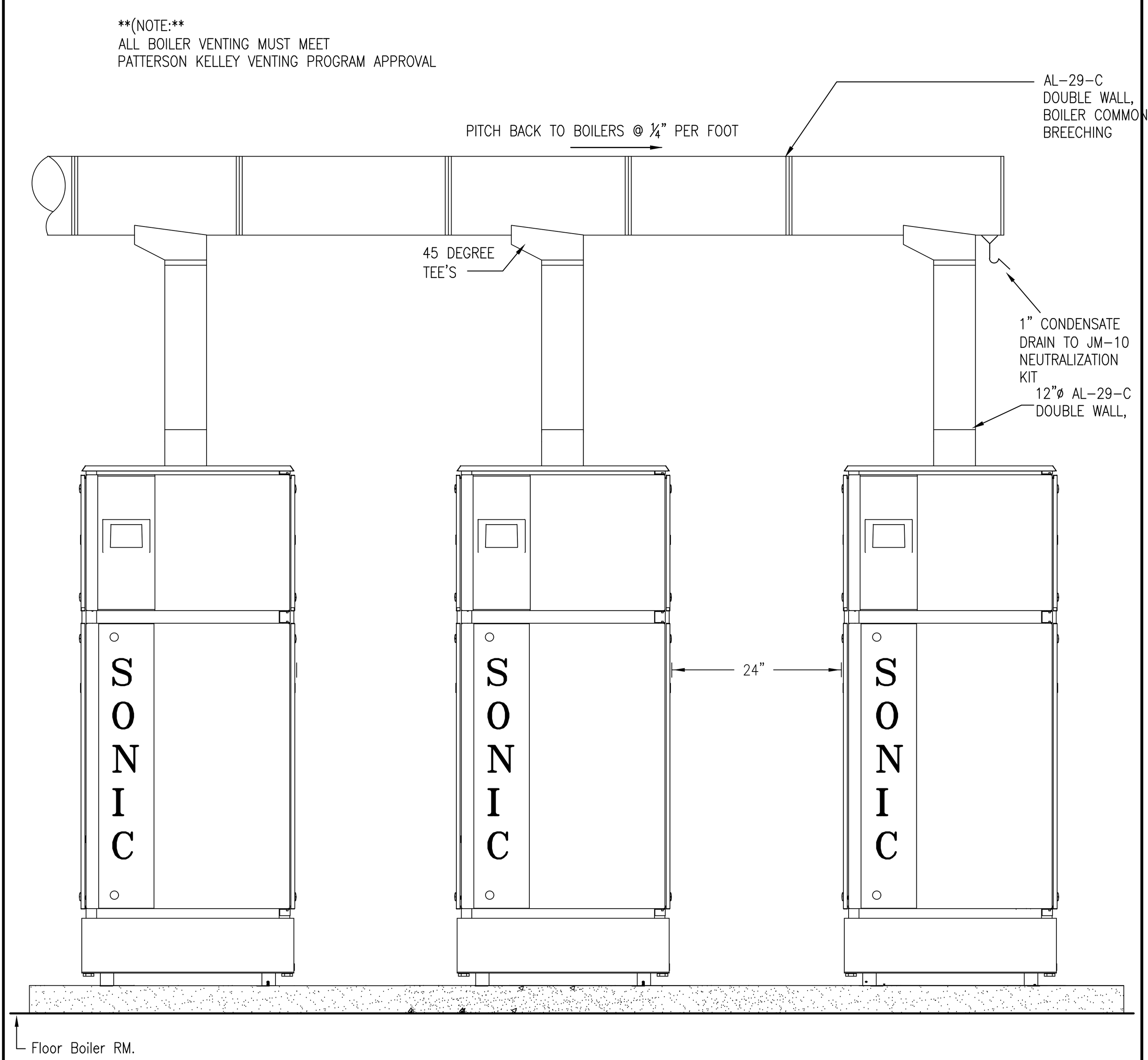
JM-30 CONDENSATE TUBE

NO SCALE



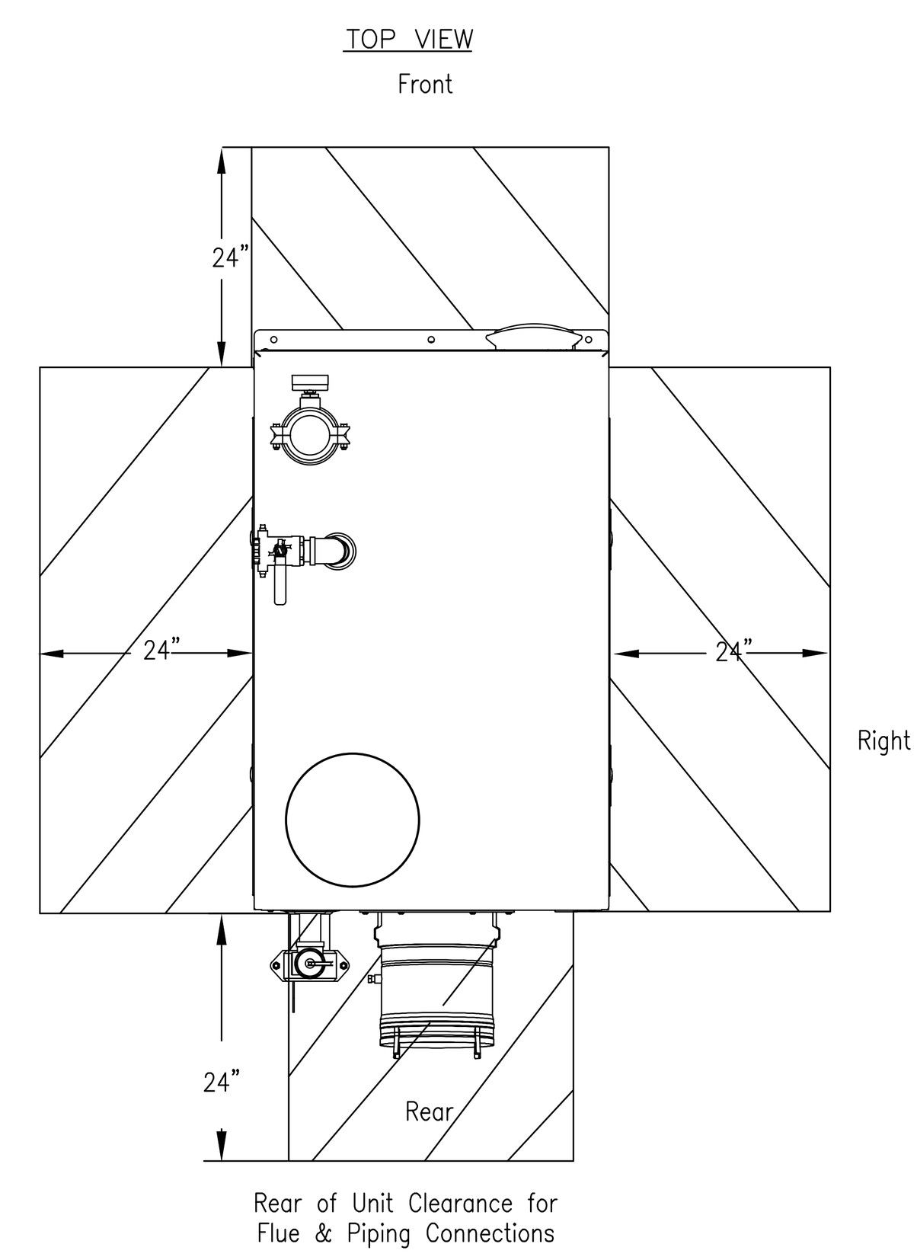
FLUE EXHAUST VENTING

NO SCALE



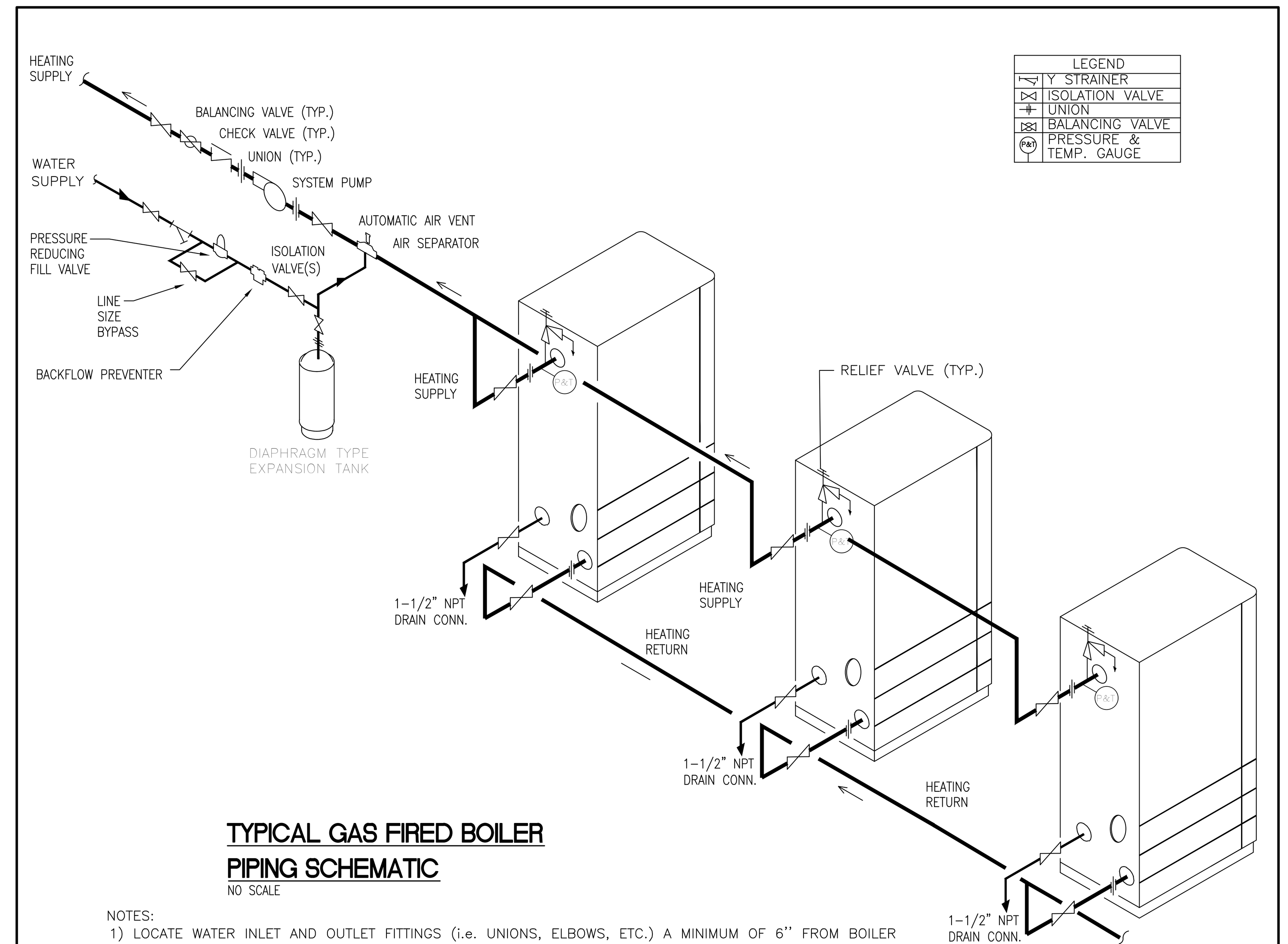
TYPICAL COMBINED FLUE VENTING DETAIL

NO SCALE



COMMON SERVICE SPACE REQUIRED FOR BOILER INSTALLATION

NO SCALE

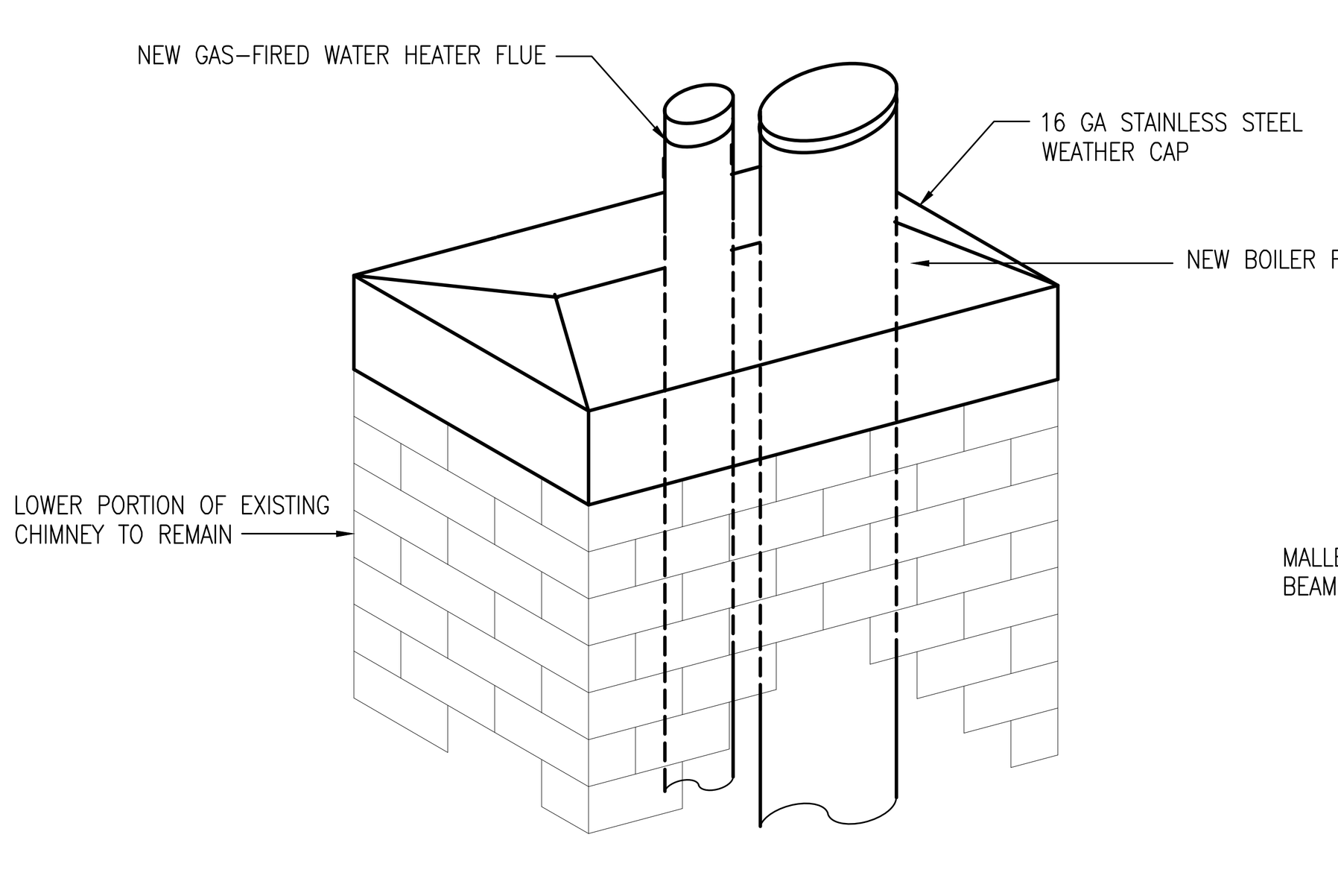


TYPICAL GAS FIRED BOILER PIPING SCHEMATIC

NO SCALE

NOTES:

1) LOCATE WATER INLET AND OUTLET FITTINGS (i.e. UNIONS, ELBOWS, ETC.) A MINIMUM OF 6" FROM BOILER FITTINGS TO PREVENT INTERFERENCE WITH REMOVAL OF BOILER PANELS AND COVERS. ALL PIPING AND ELECTRIC CONNECTIONS (SERVICE SWITCHES, CONDUIT BOXES) SHOULD LIKEWISE BE 6" AWAY FROM SIDE PANELS.



CHIMNEY MODIFICATION DETAIL

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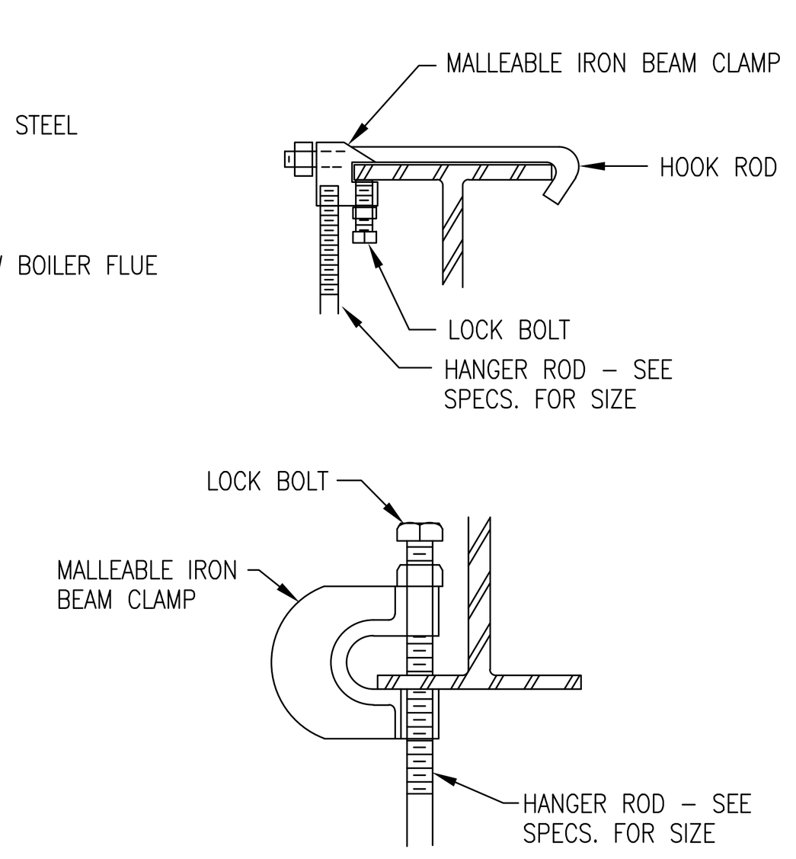
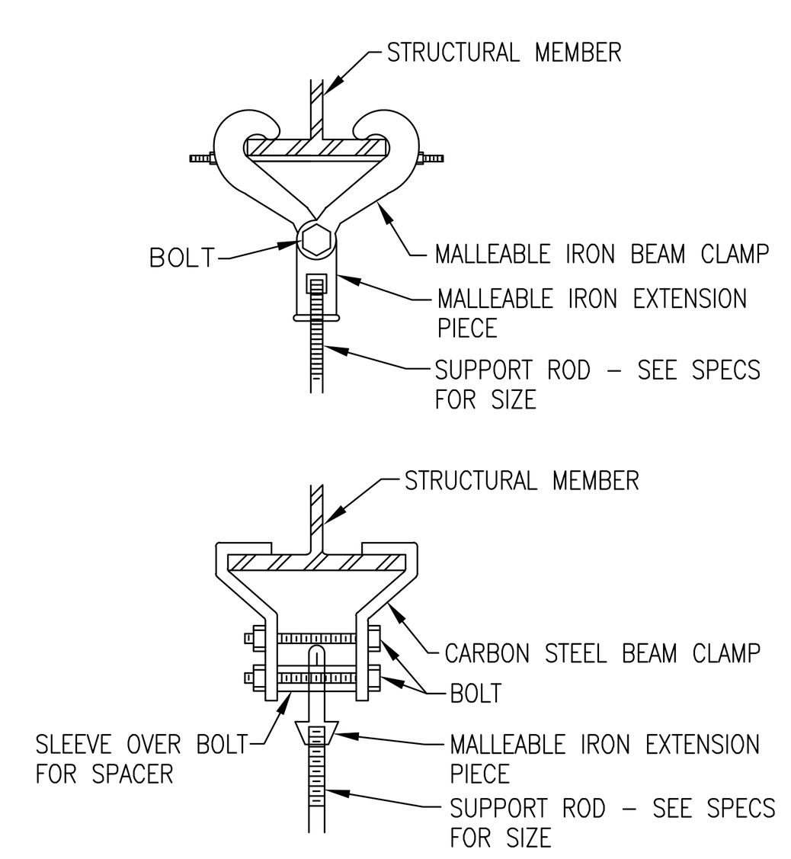


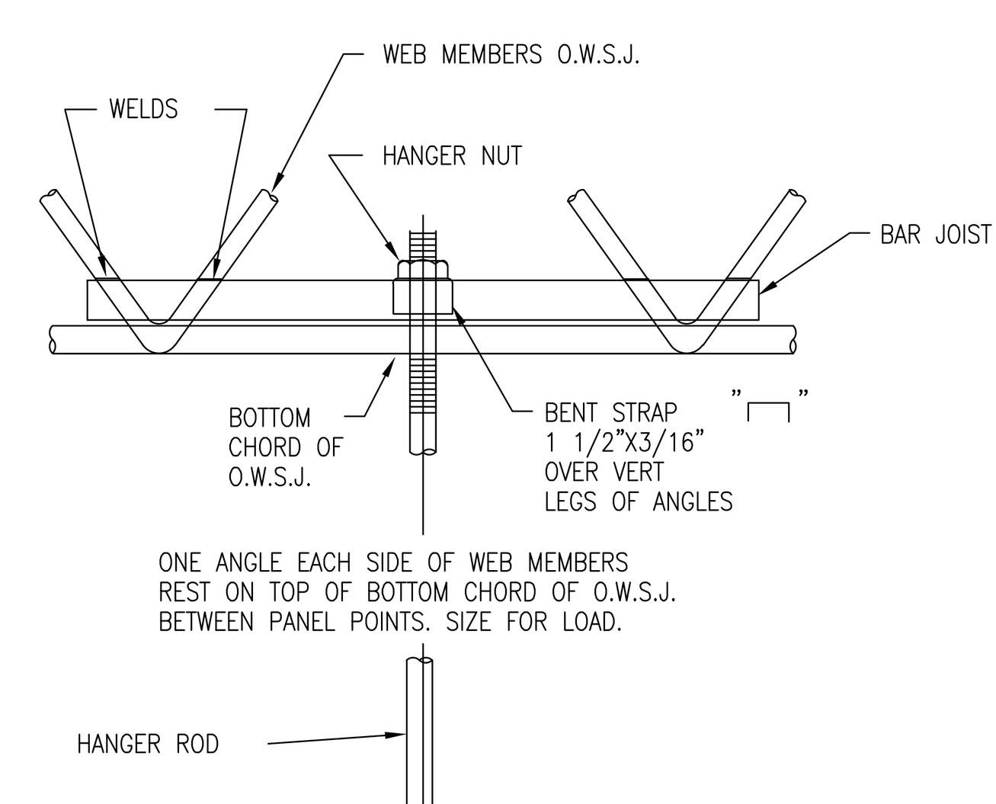
TYP. SIDE BEAM CLAMPS FOR EQUIPMENT OR PIPE SUPPORT

NO SCALE



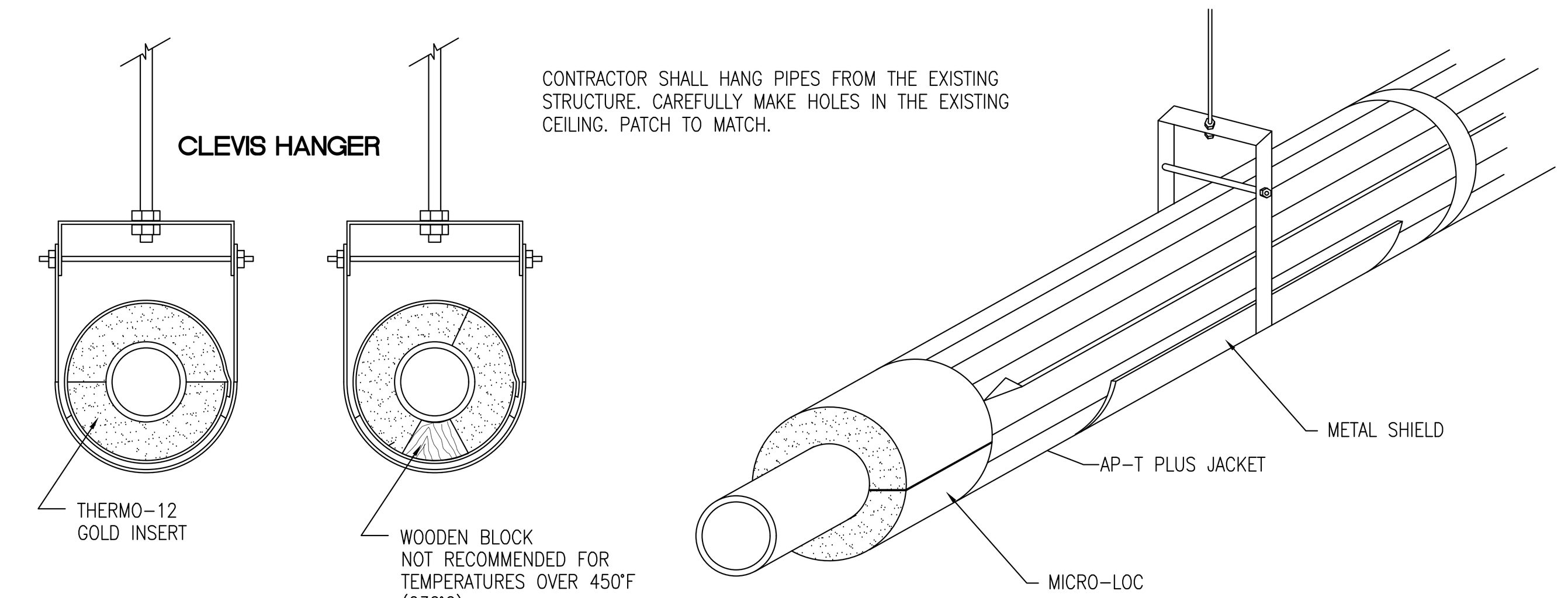
TYP. BEAM CLAMPS FOR PIPE OR EQUIPMENT SUPPORT

NO SCALE



TYP. STEEL BAR JOIST PIPE SUPPORT

NO SCALE



TYPICAL HOT WATER PIPING INSULATION

NO SCALE

REVISIONS

GIDEON WELLES SCHOOL

BOILERS AND CONTROLS REPLACEMENT

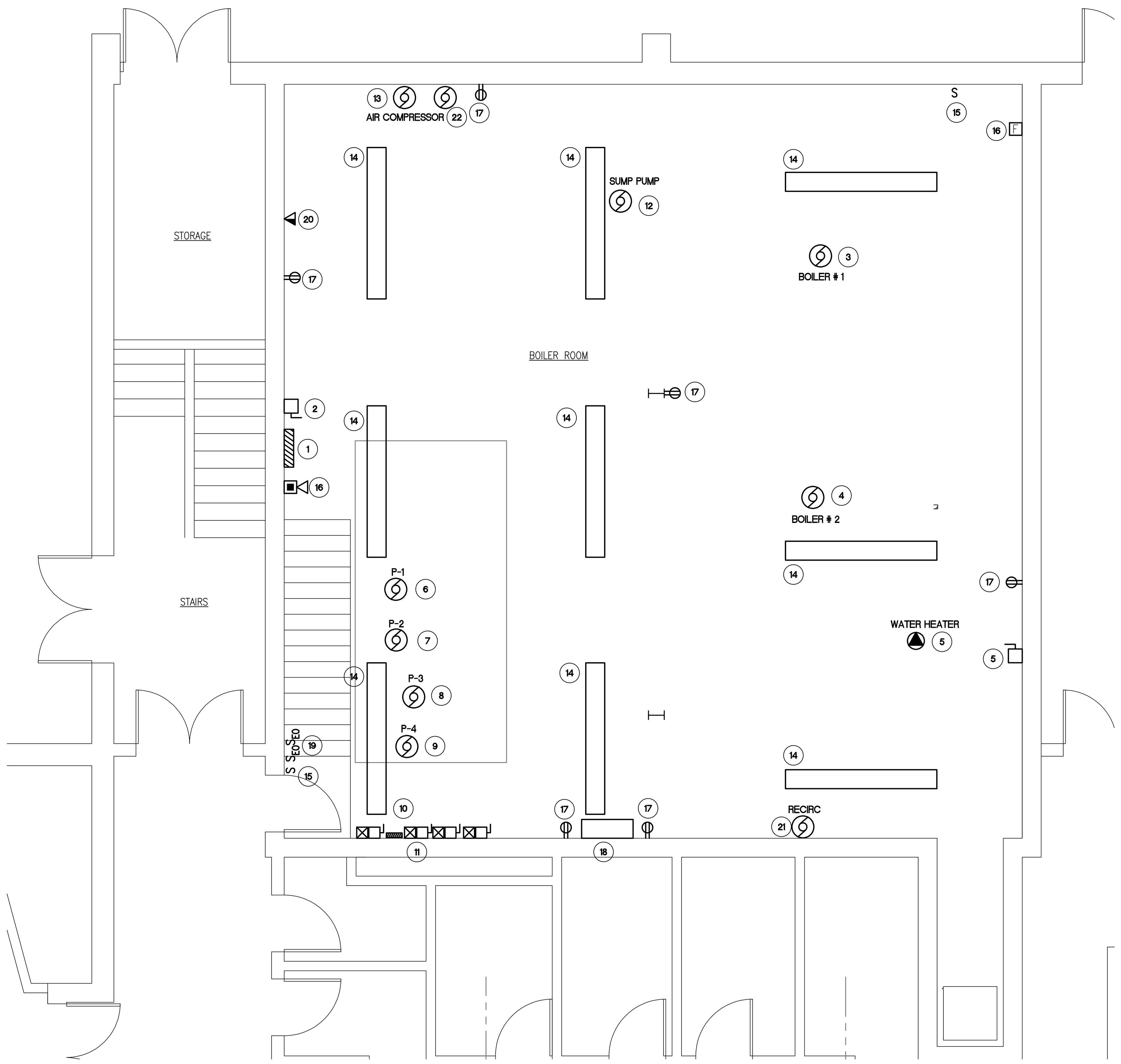
GLASTONBURY, CONNECTICUT

BEMIS ASSOCIATES, L.L.C.
Consulting Engineers
185 Main Street
Farmington, Ct 06032
(860) 667-3233
Fax: (860) 321-7070
w.w.w.bemisassociates.com

TITLE
MECHANICAL DETAILS

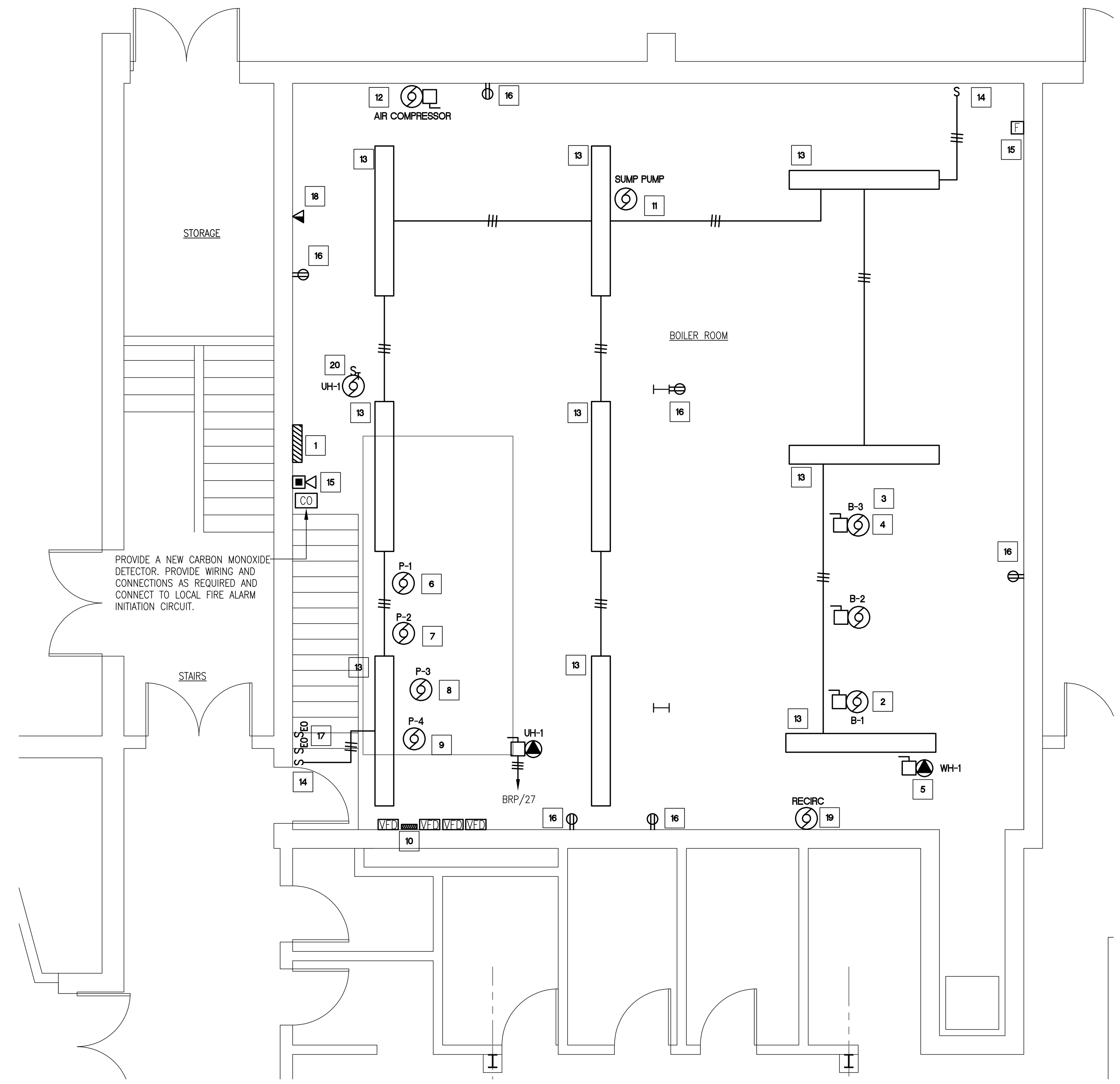
DATE 02/06/2023

DWG. NO.
M-3



BOILER ROOM PART PLAN – ELECTRICAL DEMOLITION

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



BOILER ROOM PART PLAN – ELECTRICAL NEW WORK

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

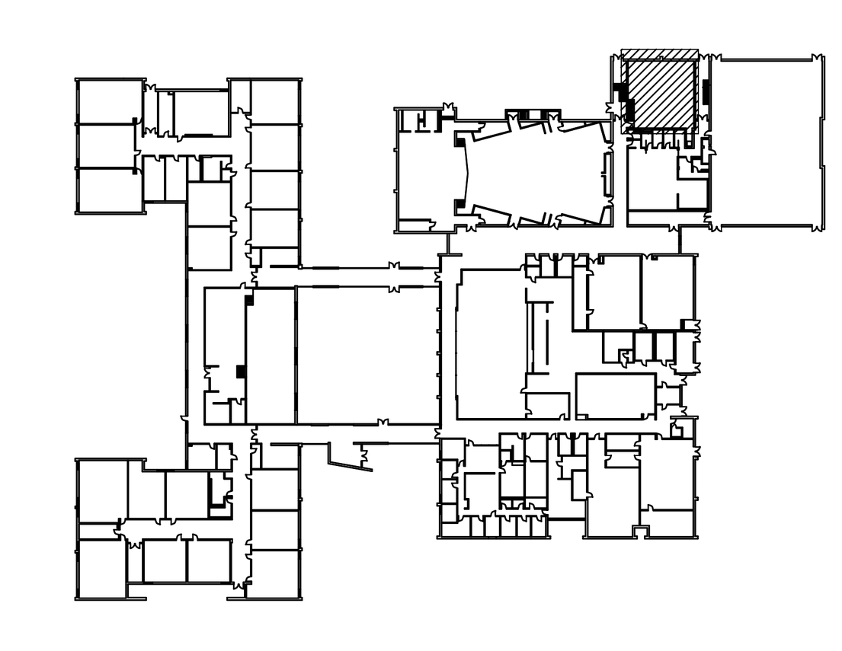
ELECTRICAL DEMOLITION NOTES :

1. EXISTING PANEL BRP TO BE REPLACED WITH NEW. EXISTING CIRCUITS REMAINING SHALL BE DISCONNECTED AND RECONNECTED TO NEW CIRCUIT BREAKERS IN NEW PANEL. EXTEND ALL WIRING CONDUIT, ETC. AS REQUIRED. EXISTING 200A FEEDER SERVING DISCONNECT SWITCH SHALL BE EXTENDED TO NEW PANEL.
2. EXISTING DOUBLE THROW DISCONNECT SWITCH TO BE REMOVED COMPLETELY, EXISTING 200A FEEDER SERVING DISCONNECT SWITCH FROM SOURCE PANEL CDP–1 SHALL BE EXTENDED TO EW PANEL BRP. EXTEND ALL WIRING CONDUIT, ETC. AS REQUIRED.
3. EXISTING BOILER #1 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONDUIT, CONTROLS, STARTERS, DISCONNECTS, ETC. BACK TO SOURCE PANEL.
4. EXISTING BOILER #2 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONDUIT, CONTROLS, STARTERS, DISCONNECTS, ETC. BACK TO SOURCE PANEL.
5. EXISTING WATER HEATER AND DISCONNECT SWITCH TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONDUIT, ETC. BACK TO SOURCE PANEL.
6. EXISTING PUMP P–1 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONTROLS, STARTERS, DISCONNECTS, ETC. BACK TO SOURCE PANEL. MAINTAIN EXISTING CONDUIT TO BE USED FOR FEEDER TO NEW PUMP P–1.
7. EXISTING PUMP P–2 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONTROLS, STARTERS, DISCONNECTS, ETC. BACK TO SOURCE PANEL. MAINTAIN EXISTING CONDUIT TO BE USED FOR FEEDER TO NEW PUMP P–2.
8. EXISTING PUMP P–3 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONTROLS, STARTERS, DISCONNECTS, ETC. BACK TO SOURCE PANEL. MAINTAIN EXISTING CONDUIT TO BE USED FOR FEEDER TO NEW PUMP P–3.
9. EXISTING PUMP P–4 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONTROLS, STARTERS, DISCONNECTS, ETC. BACK TO SOURCE PANEL. MAINTAIN EXISTING CONDUIT TO BE USED FOR FEEDER TO NEW PUMP P–4.
10. EXISTING PANEL SERVING PUMPS P–1 AND P–2 TO REMAIN.
11. STARTERS AND DISCONNECTS TO BE REMOVED, MAINTAIN EXISTING WIRING THROUGH.
12. EXISTING SUMP PUMP TO REMAIN.
13. EXISTING AIR COMPRESSOR TO BE REPLACED WITH NEW, DISCONNECT EXISTING CIRCUIT, MAKE SAFE AND RECONNECT TO NEW AIR COMPRESSOR.
14. EXISTING LIGHT FIXTURES TO BE REMOVED COMPLETELY INCLUDING WIRING, CONDUIT ETC. MAINTAIN EXISTING LIGHTING CIRCUIT SERVING AREA FOR NEW LIGHT FIXTURES AND WIRING. TURN EXISTING LIGHT FIXTURES AND LAMPS BEING REMOVED, OVER TO SCHOOL MAINTENANCE DEPARTMENT.
15. EXISTING LIGHT SWITCHES TO REMAIN
16. EXISTING FIRE ALARM DEVICES TO REMAIN.
17. EXISTING RECEPTACLES TO REMAIN.
18. EXISTING ABANDON EMERGENCY LIGHTING CABINET TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONDUIT, ETC. AS REQUIRED.
19. EXISTING EMERGENCY BOILER SHUT OFF SWITCHES TO REMAIN, REWIRE TO NEW BOILERS AS REQUIRED, EXTEND ALL WIRING, CONDUIT, ETC. AS REQUIRED.
20. EXISTING DATA OUTLET TO REMAIN.
21. EXISTING HOT WATER RECIRCULATION PUMP TO BE REPLACED WITH NEW, DISCONNECT EXISTING CIRCUIT, MAKE SAFE AND RECONNECT TO NEW PUMP.
22. EXISTING FUEL OIL PUMPS REMOVED COMPLETELY, INCLUDING ALL WIRING, CONDUIT, ETC. AS REQUIRED.

ELECTRICAL NEW WORK NOTES :

1. PROVIDE NEW PANEL BRP TO REPLACE EXISTING. EXISTING CIRCUITS REMAINING SHALL BE EXTENDED TO NEW CIRCUIT BREAKERS IN NEW PANEL. EXTEND ALL WIRING CONDUIT, ETC. AS REQUIRED. EXISTING 200A FEEDER SERVING DISCONNECT SWITCH SHALL BE EXTENDED TO NEW PANEL. REFER TO PANEL SCHEDULE ON DRAWING E–2.
2. NEW BOILER B–1, PROVIDE WIRING FROM NEW PANEL BRP. REFER TO PANEL SCHEDULE ON DRAWING E–2 FOR CIRCUIT BREAKER, CONDUIT AND WIRING SIZING.
3. NEW BOILER B–2, PROVIDE WIRING FROM NEW PANEL BRP. REFER TO PANEL SCHEDULE ON DRAWING E–2 FOR CIRCUIT BREAKER, CONDUIT AND WIRING SIZING.
4. NEW BOILER B–2, PROVIDE WIRING FROM NEW PANEL BRP. REFER TO PANEL SCHEDULE ON DRAWING E–2 FOR CIRCUIT BREAKER, CONDUIT AND WIRING SIZING.
5. NEW WATER HEATER WH–1, PROVIDE WIRING AND CONDUIT FROM NEW PANEL BRP. REFER TO PANEL SCHEDULE ON DRAWING E–2 FOR CIRCUIT BREAKER SIZE AND WIRING.
6. NEW PUMP P–1, PROVIDE WIRING FROM EXISTING PANEL, THROUGH NEW VFD WITHIN EXISTING CONDUIT PROVIDE ADDITIONAL CONDUIT AS REQUIRED. REPLACE EXISTING 50A–3P CIRCUIT BEAKER WITH NEW 60A–3P CIRCUIT BREAKER. PROVIDE 3 X #6 AWG AND 1 X #10 AWG GND. FROM PANEL THROUGH VFD TO MOTOR, UTILIZING EXISTING CONDUIT, PROVIDE ADDITIONAL CONDUIT AS REQUIRED.
7. NEW PUMP P–2, PROVIDE WIRING FROM EXISTING PANEL, THROUGH NEW VFD WITHIN EXISTING CONDUIT PROVIDE ADDITIONAL CONDUIT AS REQUIRED. REPLACE EXISTING 50A–3P CIRCUIT BEAKER WITH NEW 60A–3P CIRCUIT BREAKER. PROVIDE 3 X #6 AWG AND 1 X #10 AWG GND. FROM PANEL THROUGH VFD TO MOTOR, UTILIZING EXISTING CONDUIT, PROVIDE ADDITIONAL CONDUIT AS REQUIRED.
8. NEW PUMP P–3, PROVIDE WIRING FROM PANEL BRP, UTILIZING EXISTING CONDUIT FROM PANEL BPR TO WIRE WAY, WIRE THROUGH NEW VFD TO PUMP P–3 WITHIN EXISTING CONDUIT, PROVIDE ADDITIONAL CONDUIT AS REQUIRED. REFER TO PANEL SCHEDULE ON DRAWING E–2 FOR CIRCUIT BREAKER SIZE AND WIRING.
9. NEW PUMP P–4, PROVIDE WIRING FROM PANEL BRP, UTILIZING EXISTING CONDUIT FROM PANEL BPR TO WIRE WAY, WIRE THROUGH NEW VFD TO PUMP P–4 WITHIN EXISTING CONDUIT, PROVIDE ADDITIONAL CONDUIT AS REQUIRED. REFER TO PANEL SCHEDULE ON DRAWING E–2 FOR CIRCUIT BREAKER SIZE AND WIRING.
10. EXISTING PANEL SERVING PUMPS P–1 AND P–2 TO REMAIN.
11. EXISTING SUMP PUMP TO REMAIN.
12. NEW AIR COMPRESSOR, RECONNECT EXISTING CIRCUIT, PROVIDE ADDITIONAL WIRING, CONDUIT, ETC. AS REQUIRED.
13. PROVIDE NEW LIGHT FIXTURES, DAY–BRITE MODEL # LBX–80L835–UNV–FD OR APPROVED EQUAL. REWIRE WIRE AS INDICATED TO EXISTING LIGHTING CIRCUIT SERVING AREA.
14. EXISTING LIGHT SWITCHES TO REMAIN
15. EXISTING FIRE ALARM DEVICES TO REMAIN.
16. EXISTING RECEPTACLES TO REMAIN.
17. REWIRE EXISTING EMERGENCY BOILER SHUT OFF SWITCHES TO NEW BOILERS, EXTEND ALL WIRING, CONDUIT, ETC. AS REQUIRED.
18. EXISTING DATA OUTLET TO REMAIN.
19. NEW RECIRCULATION PUMP RECONNECT EXISTING CIRCUIT, PROVIDE ADDITIONAL WIRING, CONDUIT, ETC. AS REQUIRED.
20. NEW GAS FIRED UNIT HEATER, PROVIDE NEW SINGLE POLE THERMAL OVERLOAD SWITCH AND FIELD WIRING, EXTEND 2 X #12AWG AND 1 X #12AWG GND. IN 3/4" EMT CONDUIT TO NEW 1P–20A CIRCUIT BREAKER IN PANEL BRP AND CONNECT AS REQUIRED

NORTH



KEY PLAN

REVISIONS

GIDEON WELLES SCHOOL

BOILERS AND CONTROLS REPLACEMENT

GLASTONBURY, CONNECTICUT

BEMIS ASSOCIATES, L.L.C.
Consulting Engineers
185 Main Street
Farmington, Ct 06032
(860) 667–3233
Fax: (860) 321–7070
w.w.w.bemisassociates.com

TITLE

BOILER ROOM PART PLAN ELECTRICAL DEMOLITION AND NEW WORK

DATE 02/06/2023

DWG. NO.

E–1

REVISIONS

GIDEON WELLES SCHOOL

BOILERS AND CONTROLS REPLACEMENT

GLASTONBURY, CONNECTICUT

SCHEDULE OF BRANCH CIRCUIT CONDUCTOR SIZES

C/B SIZE	* CIRCUIT SIZE
20A–1P	** 2 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C.
20A–2P	2 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C.
20A–3P	3 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C.
25A–1P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
25A–2P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
25A–3P	3 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
30A–1P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
30A–2P	2 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
30A–3P	3 X #10 AWG AND 1 X #10 AWG GND. IN 3/4" C.
35A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
35A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
35A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
40A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
40A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
40A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
45A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
45A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
45A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
50A–1P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
50A–2P	2 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
50A–3P	3 X #8 AWG AND 1 X #10 AWG GND. IN 3/4" C.
60A–1P	2 X #6 AWG AND 1 X #10 AWG GND. IN 1" C.
60A–2P	2 X #6 AWG AND 1 X #10 AWG GND. IN 1" C.
60A–3P	3 X #6 AWG AND 1 X #10 AWG GND. IN 1" C.
70A–1P	2 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
70A–2P	2 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
70A–3P	3 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
80A–1P	2 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
80A–2P	2 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
80A–3P	3 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
90A–1P	2 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
90A–2P	2 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
90A–3P	3 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
100A–1P	2 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
100A–2P	2 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
100A–3P	3 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C.
110A–3P	3 X #2 AWG AND 1 X #6 AWG GND. IN 1 1/4" C.
125A–3P	3 X #1 AWG AND 1 X #6 AWG GND. IN 1 1/4" C.
150A–3P	3 X #1/0 AWG AND 1 X #6 AWG GND. IN 1 1/2" C.
175A–3P	3 X #2/0 AWG AND 1 X #6 AWG GND. IN 2" C.
200A–3P	3 X #3/0 AWG AND 1 X #6 AWG GND. IN 2" C.
300A–3P	3 X #350 kcmil AWG AND 1 X #4 AWG GND. IN 2 1/2" C.

* PROVIDE CIRCUIT SIZE AND NUMBER OF CONDUCTORS SCHEDULED UNLESS NOTED OR SHOWN DIFFERENTLY ON THE DRAWINGS. CROSS REFERENCE CIRCUIT DESIGNATIONS SHOWN ON DRAWINGS WITH RESPECTIVE PANEL SCHEDULES TO OBTAIN C/B SIZE.

** PROVIDE #10 AWG SIZE CONDUCTORS FOR BRANCH CIRCUIT RUNS EXCEEDING 75' IN CONDUCTOR LENGTH AND #8 AWG SIZE CONDUCTORS FOR BRANCH CIRCUIT RUNS EXCEEDING 150' IN CONDUCTOR LENGTH.

NEW PANEL #BRP: CUTLER–HAMMER TYPE PRL3a, SURFACE, 208Y/120V, 3 PHASE, 4 WIRE, 225 AMP MAIN LUGS, 42K A.I.C. MIN.

CKT	TRIP	POLE	REMARKS	CKT	TRIP	POLE	REMARKS
1	20	1	EXISTING LIGHTS	2	20	1	EXISTING
3	20	1	EXISTING RECEPTACLES	4	20	1	EXISTING RECEPTACLES
5	20	1	EXISTING RECEPTACLES	6	20	1	EXISTING
7	20	1	EXISTING	8	20	1	EXISTING
9	20	3	AIR COMPRESSOR 1	10	20	3	AIR COMPRESSOR 2
11	–	–	–	12	–	–	–
13	–	–	–	14	–	–	–
15	30	3	P–4	16	20	3	EXISTING
17	–	–	–	18	–	–	–
19	–	–	–	20	–	–	–
21	20	3	BOILER #2	22	20	3	BOILER #1
23	–	–	–	24	–	–	–
25	–	–	–	26	–	–	–
27	20	1	UH–1	28	30	3	P–3
29	20	1	SPARE	30	–	–	–
31	20	1	EXISTING	32	–	–	–
33	20	2	EXISTING	34	100	3	SUB PANEL
35	–	–	–	36	–	–	–
37	20	3	B–3	38	–	–	–
39	–	–	–	40	20	1	EXISTING
41	–	–	–	42	20	1	UNIT HEATER
43	20	1	SPARE	44	20	1	SPARE
45	20	1	SPARE	46	20	1	SPARE
47	20	1	SPARE	48	20	1	SPARE
49	20	1	SPARE	50	20	1	SPARE
51	–	–	BLANK SPACE	52	–	–	BLANK SPACE
53	–	–	BLANK SPACE	54	–	–	BLANK SPACE
55	–	–	BLANK SPACE	56	–	–	BLANK SPACE
57	–	–	BLANK SPACE	58	–	–	BLANK SPACE
59	–	–	BLANK SPACE	60	–	–	BLANK SPACE

NOTES:

1. PROVIDE WITH SILVER PLATED COPPER BUS BARS AND COPPER GROUND BAR.
2. PROVIDE WITH DOOR–IN–DOOR TRIM.
3. PROVIDE WITH BLACK FACE/WHITE CORE ENGRAVED NAMEPLATE FIXED TO PANEL WITH TWO SCREWS OR RIVETS.
4. PROVIDE WITH METAL FRAME, PLASTIC COVER CIRCUIT DIRECTORY FRAME.
5. PROVIDE WITH TYPE WRITTEN CIRCUIT DIRECTORY REPRESENTING CIRCUITS AS ACTUALLY CONNECTED TO PANEL.
6. CIRCUIT BREAKERS SHALL BE BOLT–ON TYPE.

GENERAL SPECIFICATION NOTES – POWER

1 – THE CONTRACTOR SHALL VERIFY AND OBTAIN ALL NECESSARY DIMENSIONS AT THE BUILDING.

2 – FINISHED WORK: THE INTENT OF THE SPECIFICATIONS AND DRAWINGS IS TO CALL FOR FINISHED WORK, COMPLETED, TESTED AND READY FOR OPERATION.

3 – GOOD PRACTICE: IT IS NOT INTENDED THAT THE DRAWINGS SHOW EVERY CONDUIT, JUNCTION BOX, FITTING OR MINOR DETAIL AND IT IS UNDERSTOOD THAT WHILE THE DRAWINGS MUST BE FOLLOWED AS CLOSELY AS CIRCUMSTANCES WILL PERMIT, THE SYSTEMS SHALL BE INSTALLED ACCORDING TO THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH GOOD PRACTICE.

4 – ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON DRAWINGS BUT MENTIONED IN SPECIFICATIONS OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

5 – CODES AND STANDARDS – COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES AND STANDARDS WHEREVER APPLICABLE INCLUDING THE FOLLOWING: 2018 CONNECTICUT STATE BUILDING CODE (CSBC), 2015 INTERNATIONAL BUILDING CODE (WITH CSBC AMENDMENTS), 2018 CONNECTICUT STATE FIRE CODE (CSFC), 2016 CONNECTICUT FIRE CODE (WITH CSFC AMENDMENTS), 2015 INTERNATIONAL ENERGY CONSERVATION CODE (WITH CSBC AMENDMENTS) 2017 NATIONAL ELECTRICAL CODE (WITH CSBC AMENDMENTS), ICC/ANSI A117.1–2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES (WITH CSBC AMENDMENTS), ADA, NFPA, UNDERWRITERS LABORATORIES, FACTORY MUTUAL INSURANCE COMPANY, NEMA STANDARDS.

6 – NOTE THAT THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL EQUIPMENT AND SYSTEMS, WITHOUT SHOWING EVERY DETAIL AND FITTING.

7 – RACEWAYS: PROVIDE EMT CONDUIT FOR ALL WIRING. EMT CONNECTORS AND COUPLINGS SHALL BE GALVANIZED STEEL SET–SCREW TYPE. PROVIDE GLAND COMPRESSION CONNECTORS AND COUPLINGS WHERE LOCATED IN DAMP AND WET LOCATIONS. PROVIDE FLEXIBLE STEEL CONDUIT FOR FINAL CONNECTIONS TO MOTOR DRIVEN EQUIPMENT. PROVIDE RIGID GALVANIZED STEEL CONDUIT WHERE LOCATED IN DAMP OR WET AREAS.

8 – BRANCH CIRCUIT CONDUCTORS SHALL BE COPPER, RATED 600 VOLTS, 90 DEG.C., COLOR CODED, TYPE XHHW–2.

9 – WIRE SIZE #8 AWG AND LARGER SHALL BE STRANDED. WIRE OF SIZE SMALLER THAN #8 AWG SHALL BE SOLID.

10 – MINIMUM SIZE CONDUCTORS FOR POWER AND LIGHTING SHALL BE #12 AWG. PROVIDE MINIMUM #10 AWG SIZE FOR RUNS EXCEEDING 75' IN CONDUCTOR LENGTH, AND #8 AWG SIZE FOR RUNS EXCEEDING 150' IN CONDUCTOR LENGTH. PROVIDE LARGER SIZE CONDUCTORS AS SCHEDULED OR AS NOTED ON THE DRAWINGS.

11 – THE NUMBER OF WIRES IN A CONDUIT RUN IS INDICATED ON THE DRAWINGS BY CROSS LINES ON THE CONDUIT RUNS. PROVIDE CODE–SIZED CONDUIT FOR THE NUMBER AND SIZE OF WIRES UNLESS A LARGER SIZE IS SHOWN ON THE DRAWINGS. MINIMUM CONDUIT SIZE SHALL BE 3/4".

12 – RACEWAYS SHALL BE CONCEALED WHEREVER POSSIBLE IN ALL FINISHED AREAS.

13 – RACEWAYS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALL LINES.

14 – RACEWAYS SHALL BE SUPPORTED FROM THE STRUCTURE BY STRAP HANGERS, ROD HANGERS, OR RACK MOUNTED, OR OTHER APPROVED ELECTRICAL MOUNTING.

15 – PROVIDE FIRE STOPPING AT ALL FIRE AND/OR SMOKE RATED WALL OR CEILING PENETRATIONS IN ORDER TO MAINTAIN ITS ORIGINAL INTEGRITY.

16 – OUTLET BOXES SHALL BE CODE GAUGE GALVANIZED STEEL AND SHALL BE OF SHAPES AND SIZES TO SUIT THEIR RESPECTIVE LOCATIONS AND INSTALLATIONS, AND SHALL BE PROVIDED WITH COVERS TO SUIT THEIR FUNCTION AND INSTALLATION. MINIMUM BOX SIZE SHALL BE 4" SQ. X 2 1/8" DEEP (2–GANG). PROVIDE CAST BOXES FOR OUTDOOR WORK.

17 – OUTLET BOXES SHALL BE EQUIPPED WITH FIXTURE STUD OR STRAPS WHERE REQUIRED.

18 – INSTALL BOXES IN ACCESSIBLE LOCATIONS AND AT UNIFORM HEIGHTS.

19 – SET BOXES AND COVERS SQUARE AND TRUE WITH BUILDING FINISH.

20 – BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS HAS BEEN DESIGNED FOR MAXIMUM ECONOMY CONSISTENT WITH ADEQUATE SIZING FOR VOLTAGE DROPS, CIRCUIT AMPACITIES, AND OTHER CONSIDERATIONS. INSTALL THE WIRING WITH CIRCUITS ARRANGED AS SHOWN ON THE DRAWINGS, EXCEPT AS APPROVED IN ADVANCE BY THE ARCHITECT AND ENGINEER. DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL.

21 – PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH 120V SINGLE PHASE CIRCUIT. DO NOT USE A COMMON NEUTRAL FOR GROUPS OF CIRCUITS. PROVIDE A SEPARATE GROUND WIRE FOR EACH CIRCUIT BACK TO THE RESPECTIVE PANEL GROUND. IF MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE INSTALLED IN ONE CONDUIT THEY SHALL BE DE–RATED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. DO NOT INSTALL MORE THAN THREE 30 AMP SINGLE PHASE OR FOUR 20 AMP SINGLE PHASE CIRCUITS IN THE SAME CONDUIT.

LEGEND

SYMBOL/ABBREVIATION	DESCRIPTION
	CONDUCTORS IN CONDUIT. CROSS LINES INDICATE NUMBER OF CONDUCTORS.
	BRANCH CIRCUIT HOMERUN IN CONDUIT. CROSS LINES INDICATE NUMBER OF CONDUCTORS.
	DISCONNECT SWITCH.
	SPECIAL EQUIPMENT POWER CONNECTION. EQUIPMENT AS DESIGNATED.
	PANELBOARD.
	MOTOR
	MOTOR STARTER
F	FIRE ALARM PULL STATION
	FIRE ALARM HORN/STROBE
	DATA OUTLET
	DUPLEX RECEPTACLE
	PENDENT MOUNTED LIGHT FIXTURE
S	LIGHT SWITCH
S_{EO}	EMERGENCY BOILER SHUT–OFF SWITCH
S_T	THERMAL OVERLOAD SWITCH
CO	CARBON MONOXIDE DETECTOR.
VFD	VARIABLE FREQUENCY DRIVE.
A	AMPS.
C	CONDUIT.
GND.	GROUND.
P	POLE.
W	WIRE.

BEMIS ASSOCIATES, L.L.C.
Consulting Engineers
185 Main Street
Farmington, Ct 06032
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Fax: (860) 321–7070
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TITLE
ELECTRICAL NOTES AND SCHEDULES

DATE 02/06/2023

DWG. NO.
E–2