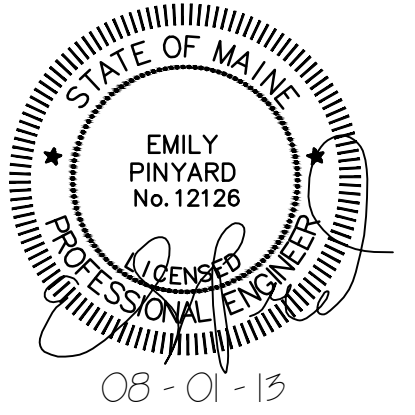


ABBREVIATIONS			MECHANICAL SYMBOLS			PIPING SYMBOLS		
<p>⊙ AT A AMP, COMPRESSED AIR ABV ABOVE AC AIR-CONDITIONING ACH AIR CHANGES PER HOUR AD ACCESS DOOR ADA AMERICANS WITH DISABILITIES ACT AF AIR FILTER, AIR FLOW AFF ABOVE FINISHED FLOOR AFM AIR FLOW MEASURING STATION AHU AIR-HANDLING UNIT AL ACOUSTICAL LINER AMB AMBIENT AP ACCESS PANEL APD AIR PRESSURE DROP APPROX APPROXIMATELY AS AIR SEPARATOR ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS ATC AUTOMATIC TEMPERATURE CONTROL ATT ACOUSTICAL ATTENUATOR AV AUTOMATIC VENT B BOILER BA BREATHING AIR BDD BACKDRAFT DAMPER BHP BRAKE HORSEPOWER BLDG BUILDING BOT BOTTOM BTUH BTU PER HOUR C CENTERLINE, CONVECTOR, CELSIUS CA COMPRESSED AIR CAP CAPACITY CD CONDENSATE DRAIN CF CIRCULATING FAN CFM CUBIC FEET PER MINUTE CH CHILLER CHWP CHILLED WATER PUMP CHWR CHILLED WATER RETURN CHWS CHILLED WATER SUPPLY CLG CEILING CO CLEAN OUT/CARBON MONOXIDE COL COLUMN CONC CONCRETE COND CONDENSATE CONN CONNECTION CONT CONTINUATION CONV CONVECTOR CP CONTROL PANEL, CONDENSATE PUMP CR CONDENSATE RETURN CU CONDENSING UNIT CUH CABINET UNIT HEATER CW COLD WATER CWR COLD WATER RETURN CWS COLD WATER SUPPLY CV CONTROL VALVE D DRAIN dB DECIBELS DB DRY BULB DCW DOMESTIC COLD WATER DDC DIRECT DIGITAL CONTROL DEG DEGREE Ø DIA DIAMETER DIFF DIFFERENTIAL DHW DOMESTIC HOT WATER DHWP DOMESTIC HOT WATER PUMP DISCH DISCHARGE DN DOWN DM DOMESTIC DP,DPS DIFFERENTIAL-PRESSURE SENSOR DTWR DUAL TEMPERATURE WATER RETURN DTWS DUAL TEMPERATURE WATER SUPPLY DWG DRAWING DWP DOMESTIC WATER BOOSTER PUMP EA EACH, EXHAUST AIR EAT ENTERING AIR TEMPERATURE EC ELECTRICAL CONTRACTOR EDR EQUIVALENT DIRECT RADIATION EF EXHAUST FAN EFF EFFICIENCY EGT ENTERING GLYCOL TEMPERATURE ELEC ELECTRIC ELEV ELEVATION ENT ENTERING EPDM ETHYLENE PROPYLENE DIENE MEMBRANE EQUIP EQUIPMENT ERV ENERGY RECOVERY VENTILATOR ESP EXTERNAL STATIC PRESSURE ET EXPANSION TANK EVAP EVAPORATOR EWT ENTERING WATER TEMPERATURE EXH, E EXHAUST EXIST EXISTING EXP EXPANSION</p>	<p>EXT EXPANSION TANK F FAN, DEGREES FAHRENHEIT FA FRESH AIR FAI FRESH AIR INTAKE FC FLEX CONNECTOR, FORWARD CURVED FCO FLOOR CLEANOUT FCU FAN COIL UNIT FD FIRE DAMPER, FLOOR DRAIN FF FINISH FLOOR FIX FIXTURE FLA FULL LOAD AMPS FLR FLOOR FOB FLAT ON BOTTOM FOR FUEL OIL RETURN FOS FUEL OIL SUPPLY FOT FLAT ON TOP FS FLOW SWITCH FSD FIRE/SMOKE DAMPER FTR,FR FIN TUBE RADIATION GA GAUGE GAL GALLONS GALV GALVANIZED GMU GLYCOL MAKE-UP UNIT GC GENERAL CONTRACTOR GP GLYCOL PUMP GPH GALLONS PER HOUR GPM GALLONS PER MINUTE GR GLYCOL RETURN GRH GRAVITY RELIEF HOOD GS GLYCOL SUPPLY GSM GALVANIZED SHEET METAL GYP GYPSUM WALLBOARD HC HEATING COIL HG MERCURY HHWR HEATING HOT WATER RETURN HHWS HEATING HOT WATER SUPPLY HP HORSEPOWER, HIGH PRESSURE HR HOUR HT HEIGHT HV HEATING AND VENTILATING UNIT HVAC HEATING, VENTILATING AND AIR CONDITIONING (UNIT) HW HOT WATER HWC HOT WATER COIL HWR HOT WATER RETURN HWS HOT WATER SUPPLY HX HEAT EXCHANGER HZ HERTZ IBR HYDRONICS INSTITUTE ICU INTENSIVE CARE UNIT ID INSIDE DIAMETER IN INCHES INDIR INDIRECT WASTE IU INDOOR UNIT KW KILOWATT L LENGTH, LOUVER LAT LEAVING AIR TEMPERATURE LB POUND LD LINEAR DIFFUSER LDB LEAVING DRY BULB LF LINEAR FEET LG LONG LGT LEAVING GLYCOL TEMPERATURE LOC LOCATION/ LOCATED LPS LOW PRESSURE STEAM LRA LOCKED ROTOR AMPS L/S LITERS PER SECOND LVG LEAVING LWB LEAVING WET BULB LWT LEAVING WATER TEMPERATURE MANUF MANUFACTURER MAX MAXIMUM MAX PD MAXIMUM PRESSURE DROP MBH 1000 BTU PER HOUR MBU 1000 BTU MC MECHANICAL CONTRACTOR MCA MAXIMUM CIRCUIT AMPS MCC MOTOR CONTROL CENTER MD MOTORIZED DAMPER MECH MECHANICAL MEZZ MEZZANINE MFG MANUFACTURER MIN MINIMUM, MINUTES m METER m² METER SQUARED mm MILLIMETER MNTD MOUNTED MUA MAKE-UP-AIR MUW MAKE-UP-WATER</p>	<p>N/A NOT APPLICABLE NC NORMALLY CLOSED, NOISE CRITERIA NFPA NATIONAL FIRE PROTECTION ASSOCIATION NIC NOT IN CONTRACT NIS NOT IN SCOPE NO NORMALLY OPEN, NUMBER NO2 NITROGEN DIOXIDE NTS NOT TO SCALE OA OUTSIDE AIR OAI OUTSIDE AIR INTAKE OAT OUTSIDE AIR TEMPERATURE OBD OPPOSED BLADE DAMPER OC ON CENTER OD OUTSIDE DIAMETER OED OPEN ENDED DUCT OSV OIL SAFETY VALVE OUT OUTSIDE AIR TEMPERATURE P PUMP, PITCH PA PASCAL PC PLUMBING CONTRACTOR PD PRESSURE DROP PH PHASE PLMB PLUMBING PRESS PRESSURE PRV PRESSURE REDUCING VALVE PSI POUNDS PER SQUARE INCH PSIG POUNDS PER SQUARE INCH GAUGE PT PRESSURE TREATED PTS COMBINATION PRECIPITATION OA TEMPERATURE SENSOR PVC POLY VINYL CHLORIDE QTY QUANTITY R RADIUS, RETURN RA RETURN AIR RAD RADIATOR RAF, RF RETURN AIR FAN RAT, R RETURN AIR TEMPERATURE REL RELIEF REQ'D REQUIRED RET, R RETURN RH RELATIVE HUMIDITY RL REFRIGERANT LIQUID RM ROOM RPM REVOLUTIONS PER MINUTE RS REFRIGERANT SUCTION RTU ROOFTOP UNIT SA SUPPLY DIFFUSER SUPPLY AIR SCR SCREEN SD SMOKE DAMPER SF SQUARE FOOT SIM SIMILAR SMACNA SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION SOV SHUT OFF VALVE SP STATIC PRESSURE SPH STATIC PRESSURE HIGH LIMIT SPL STATIC PRESSURE LOW LIMIT SPS STATIC PRESSURE SENSOR SQ SQUARE SRV SAFETY RELIEF VALVE SS STAINLESS STEEL STL STEEL STM STEAM SUP, S SUPPLY T TEMPERATURE SENSOR, THERMOSTAT TC TOTAL COOLING TEMP TEMPERATURE TG TRANSFER GRILLE TSP TOTAL STATIC PRESSURE TYP TYPICAL UH UNIT HEATER UL UNDERWRITERS LABORATORY V VENT VAV VARIABLE AIR VOLUME VD VOLUME DAMPER VEL VELOCITY VFD VARIABLE FREQUENCY DRIVE VIF VERIFY IN FIELD VTR VENT THRU ROOF W WIDTH, WATT W WITH WB WET-BULB WC WATER COLUMN WCO WALL CLEAN OUT WF WALL FAN WG WATER GAUGE WH WATER HEATER WMS WIRE MESH SCREEN WO WASTE OIL WPD WATER PRESSURE DROP WT WEIGHT</p>	<p>SECTION NUMBER DRAWING WHERE SECTION IS REFERENCED DRAWING WHERE SECTION IS DRAWN DETAIL NUMBER DRAWING WHERE DETAIL IS REFERENCED DRAWING WHERE DETAIL IS DRAWN SYMBOL PER ABBREVIATION LIST EQUIPMENT SEQUENCE NUMBER DIFFUSER, REGISTER OR GRILLE SEQUENCE NUMBER CFM GPM SETTING FOR BALANCING VALVE DEMOLITION KEYED NOTE (NUMBER) KEYED NOTE (NUMBER) REVISION (LETTER OR NUMBER) RETURN OR EXHAUST GRILLE, REGISTER SUPPLY DIFFUSER, REGISTER, GRILLE ACCESS DOOR UNIT HEATER PROPELLER FAN CIRCULATING FAN ROOFTOP EXHAUST FAN DIRECTION OF AIR FLOW DIRECTION OF AIR FLOW EXHAUST DOOR LOUVER VOLUME DAMPER FIRE DAMPER MOTORIZED DAMPER, PARALLEL BLADE MOTORIZED DAMPER, OPPOSED BLADE FIRE DAMPER SMOKE DAMPER THERMOSTAT HUMIDITY SENSOR CO & NO2 GAS SENSOR FAN OVERRIDE SWITCH SQUARE ELBOW WITH TURNING VANES FLEXIBLE DUCT FLEXIBLE CONNECTOR DISCONNECT STARTER/DISCONNECT PUMP DIFFERENTIAL PRESSURE CONTROLLER PRESSURE SENSOR TEMPERATURE SENSOR CEILING SUPPLY DIFFUSER W/ DIRECTION SHOWN BY ARROWS DUCT TRANSITION FROM RECTANGULAR TO ROUND CONNECT TO EXISTING INLINE CENTRIFUGAL FAN</p>	<p>BALANCING VALVE COMBINATION FLOW MEASURING/ BALANCING VALVE (CIRCUIT SETTER) BUTTERFLY VALVE GATE VALVE LUBRICATED PLUG VALVE BALL VALVE BALL VALVE IN VERTICAL PLUG VALVE CHECK VALVE PRESSURE REDUCING VALVE TWO-WAY AUTOMATIC CONTROL VALVE SAFETY RELIEF VALVE THREE-WAY AUTOMATIC CONTROL VALVE STRAINER W/BALL DRAIN VALVE, HOSE BIB AND CAP UNION OR FLANGE AS DICTATED BY PIPE SIZE PIPE TEE FROM TOP PIPE TEE FROM BOTTOM PIPE RISE PIPE DROP END CAP PRESSURE GAUGE W/BALL VALVE (GATE VALVE AND SIPHON FOR STEAM) THERMOMETER TEMPERATURE/PRESSURE WELL "PETE'S PLUG" AUTOMATIC AIR VENT WITH ISOLATION VALVE MANUAL AIR VENT REDUCER (ECCENTRIC-FOB OR FOT) REDUCER (CONCENTRIC) FLEXIBLE PIPE CONNECTION VIBRATION ISOLATOR DIRT LEG DIRECTION OF FLOW OF PIPE PIPE PITCH UP IN DIRECTION OF FLOW PIPE PITCH DOWN IN DIRECTION OF FLOW FUSOMATIC VALVE FLOW MEASURING STATION</p>				

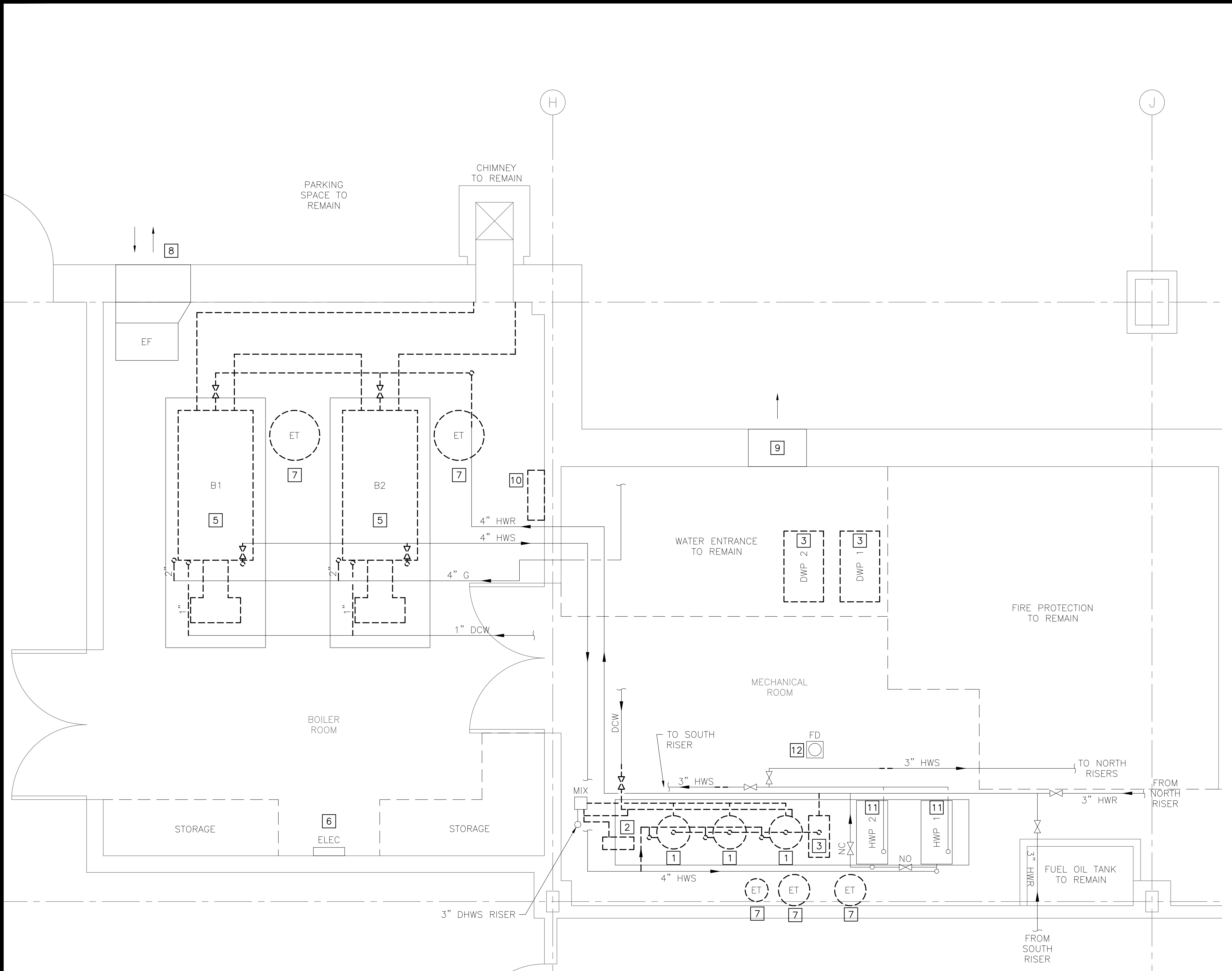
DUCTWORK SYMBOLS		MECHANICAL LINETYPE LEGEND	
	BULLHEAD TEE		EXISTING ITEMS TO REMAIN
	TAKE-OFF		ITEMS TO BE PROVIDED
	SUPPLY		ITEMS TO BE REMOVED
	EXHAUST/RETURN		HIDDEN ITEMS
	BULLHEAD SPLIT		CONTROL WIRING
	SPLIT TAKE-OFF W/ BRANCH DAMPERS SUPPLY		FUTURE TO BE INSTALLED UNDER SEPARATE CONTRACT
	RADIUS ELBOW		RETURN/EXHAUST DUCT UP
	SQUARE ELBOW W/TURNING VANES		RETURN/EXHAUST DUCT DOWN
	OFFSET		RISE(R) OR DROP(D)
	CEILING DIFFUSER OR GRILLE W/ FLEXIBLE DUCT		SUPPLY DUCT UP
			SUPPLY DUCT DOWN

NOTE:
GENERAL NOTES, ABBREVIATIONS AND SYMBOLS APPLY TO MECHANICAL DRAWINGS MARKED M#. HOWEVER, ALL ABBREVIATIONS AND SYMBOLS MAY NOT BE APPLICABLE TO THIS PARTICULAR PROJECT. THEY ARE PROVIDED FOR GENERAL REFERENCE ONLY.



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100 STATE STREET BOILER REPLACEMENT PORTLAND, ME			
MECHANICAL SYMBOLS, ABBREVIATIONS, AND LEGEND			
0	ISSUED FOR CONSTRUCTION	CSS	AMS
REV.	DESCRIPTION	DR. CKD.	APP. BY
		DATE	DATE
SCALE: AS NOTED		PROJECT NO.	DRAWING NO.
DATE: 8-1-13		218.002.001	M-001
DES BY: ERP		SHEET	OF
DWN BY: CSS		1	5
CHK BY: AMS			

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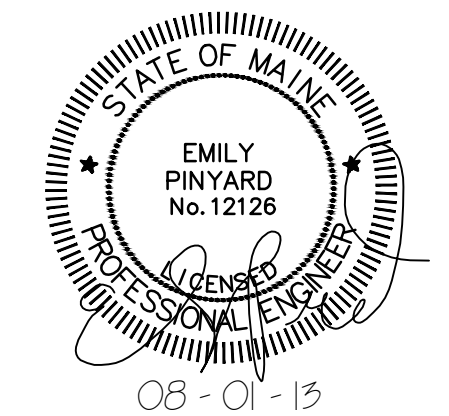
MECHANICAL DEMOLITION PLAN
SCALE: 1/2" = 1'-0"

NOTES:

1. REFER TO M-001 FOR SYMBOLS, NOTES, AND ABBREVIATIONS.
2. REPLACE DOMESTIC HOT WATER EXPANSION TANK WITH ASME-RATED TANK.
3. ALL WORK SHALL BE COMPLETED WITHOUT INTERRUPTING THE BUILDING POTABLE WATER, GAS, AND ELECTRICITY SUPPLIES. IF IT IS NECESSARY FOR BOTH BOILERS TO BE OUT OF SERVICE AT ANY POINT IN THE PROJECT, THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 14 DAYS IN ADVANCE. IF THE OUTAGE WILL REQUIRE THE DOMESTIC WATER HEATING PLANT TO BE OFFLINE FOR MORE THAN 24-HOURS, THE CONTRACTOR SHALL PROVIDE A TEMPORARY HEATING PLANT.
4. CONTRACTOR SHALL INCLUDE SEPARATE BID PRICING FOR ADD ALTERNATE 1 AND ADD ALTERNATE 2.
 - 4.1. ADD ALTERNATE 1: REMOVE EXISTING 15 HP DCW BOOSTER PUMPS AND REPLACE WITH NEW VARIABLE-SPEED PUMPS.
 - 4.2. ADD ALTERNATE 2: PROVIDE TWO 5 HP VFDs AT EXISTING HW PUMPS (HWPs). VFDs SHALL BE PRESSURE DEPENDENT. PROVIDE TWO NEW FLOW CONTROL VALVES TO VARY FLOW TO THE NORTH AND SOUTH HWS MAINS. CONTROL VALVES SHALL MODULATE TO MAINTAIN AT LEAST A 20 DEG F DIFFERENTIAL TEMPERATURE BETWEEN THE NORTH SUPPLY & RETURN HEATING MAINS AND THE SOUTH SUPPLY & RETURN HEATING MAINS.
5. CONTRACTOR SHALL SALVAGE EXISTING CIRCUITING TO THE MAXIMUM EXTENT POSSIBLE, INCLUDING CIRCUIT BREAKERS, WIRING, CONDUIT, AND DISCONNECTING MEANS.

DEMOLITION KEYED NOTES:

- 1 REMOVE DOMESTIC WATER HEATER AND ASSOCIATED PIPE CONNECTIONS.
- 2 RELOCATE 120V DHW RECIRC PUMP TO FACILITATE INSTALLATION OF NEW WATER HEATER.
- 3 REMOVE 15 HP DOMESTIC WATER BOOSTER PUMP (ADD ALTERNATE 1).
- 4 REMOVE 1/3 HP DOMESTIC WATER HEATING PUMP.
- 5 REMOVE 1,800 MBH BOILER AND ASSOCIATED BREECHING, GAS TRAIN, AND HOT WATER SUPPLY AND RETURN BRANCH PIPING.
- 6 ELECTRICAL PANEL TO REMAIN.
- 7 REMOVE EXPANSION TANK AND REPLACE WITH ASME-RATED TANK OF AN EQUIVALENT SIZE (TYPICAL FOR 5).
- 8 EXISTING COMBUSTION AIR INTAKE AND EXHAUST FAN TO REMAIN.
- 9 EXISTING EXHAUST FAN TO REMAIN.
- 10 REMOVE EXISTING CONTROL PANEL.
- 11 EXISTING 5 HP BUILDING HEATING PUMP TO REMAIN. REMOVE MOTOR STARTER (ADD ALTERNATE 2).
- 12 FLOOR DRAIN TO REMAIN.



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				MECHANICAL DEMOLITION PLAN	
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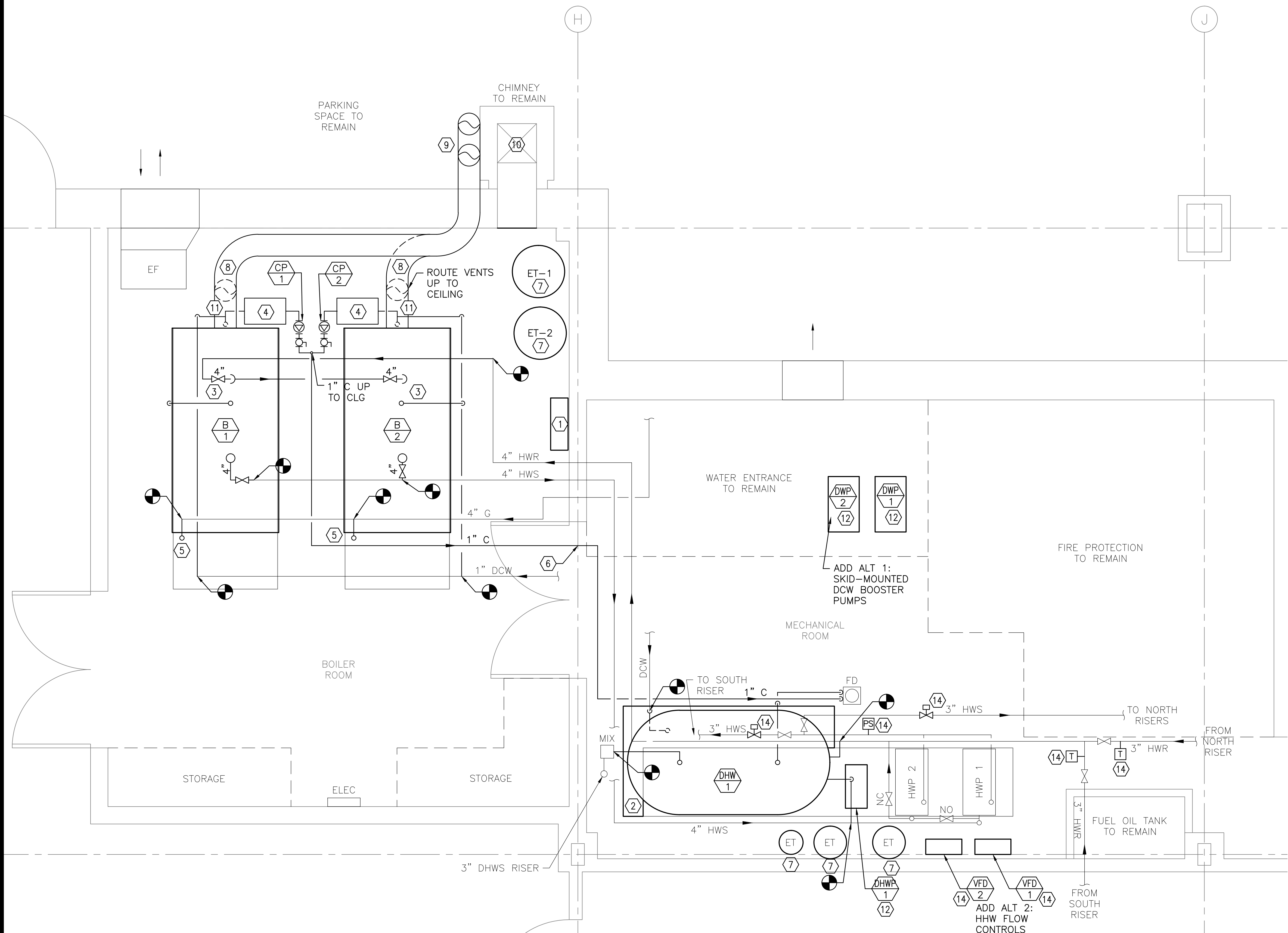
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NOTES:

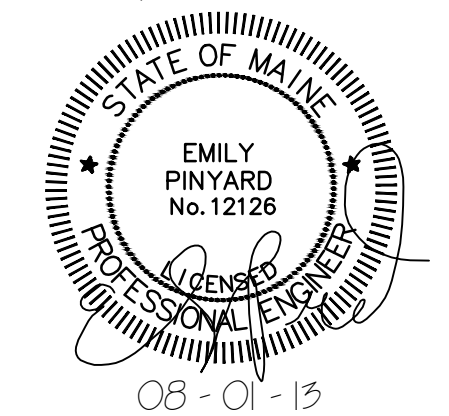
1. REFER TO M-001 FOR SYMBOLS, NOTES, AND ABBREVIATIONS.
2. DO NOT OBSTRUCT OR IMPEDE THE FUNCTION OF SPRINKLER HEADS OR ANY OTHER SYSTEMS AND EQUIPMENT TO REMAIN.
3. CONTRACTOR'S BID SHALL SPECIFY WHETHER A COMMON VENT WILL BE UTILIZED FOR THE BOILERS, WHICH VENT MATERIAL WILL BE UTILIZED (STAINLESS OR POLYPROPYLENE) AND WHETHER THE VENTS SHALL BE ROUTED OUTSIDE OF THE EXISTING CHIMNEY OR INSIDE THE CHIMNEY.
4. INSTALL BOILER MANUFACTURER'S HOT WATER MIXING VALVE (VALVE NOT CURRENTLY SHOWN ON PLAN, SEE M-501).
5. CONTRACTOR SHALL UTILIZE CIRCUITING SALVAGED FROM DEMOLITION. CONNECT EQUIPMENT IN ACCORDANCE WITH NATIONAL ELECTRIC CODE AND MANUFACTURER'S RECOMMENDATIONS. EXTEND WIRING AND CONDUIT AS NECESSARY.
6. RETAIN A TAB CONTRACTOR TO MEASURE THE FOLLOWING EXISTING CONDITIONS AND TO PERFORM BALANCING TO ENSURE THAT THE FLOWS AND PRESSURES ARE MAINTAINED POST-CONSTRUCTION:
 - 6.1. MAXIMUM HEATING HOT WATER FLOW AND PRESSURE TO NORTH AND SOUTH RISERS.
 - 6.2. MAXIMUM DOMESTIC HOT WATER FLOW AND PRESSURE FLOW FROM DOMESTIC HOT WATER TANKS.
 - 6.3. MAXIMUM DOMESTIC COLD WATER PRESSURE AND FLOW AT BOOSTER PUMPS (ADD ALTERNATE 1)

KEYED NOTES:

- ① NEW MASTER CONTROL PANEL.
- ② EXTEND EXISTING CONCRETE PAD TO ACCOMMODATE DWH.
- ③ 75 PSI SAFETY RELIEF VALVE (BY BOILER MANUFACTURER) WITH PIPING TO FLOOR LEVEL PER MANUFACTURER'S INSTRUCTIONS.
- ④ INSTALL MANUFACTURER'S CONDENSATE NEUTRALIZER. PROVIDE P-TRAP UPSTREAM OF THE NEUTRALIZER. MOUNT NEUTRALIZER A MINIMUM OF 4-INCHES ABOVE FINISHED FLOOR TO ALLOW GRAVITY DRAIN INTO CONDENSATE PUMP.
- ⑤ PROVIDE CODE-COMPLIANT GAS TRAIN. ADHERE TO BOILER MANUFACTURER REQUIREMENTS.
- ⑥ NEW PENETRATION ABOVE DOOR, PROVIDE FIRESTOPPING.
- ⑦ NEW ASME-RATED DIAPHRAGM EXPANSION TANK, MATCH EXISTING CAPACITY. BELL & GOSSETT SERIES D OR APPROVED EQUAL.
- ⑧ 10-INCH VENT. PROVIDE POLYPROPYLENE IF ALLOWED BY THE BOILER MANUFACTURER, OTHERWISE PROVIDE STAINLESS STEEL. FLUE DIAMETER MAY NEED TO BE LARGER DEPENDING ON ACTUAL VENTING LENGTH AND CONFIGURATION, CONFIRM WITH MANUFACTURER. BOILERS CAN BE VENTED INTO A COMMON FLUE IF APPROVED BY THE BOILER MANUFACTURER.
- ⑨ ROUTE VENTS ALONG THE OUTSIDE OF THE CHIMNEY. BOTTOM OF VENTS SHALL BE LOCATED AT LEAST 7 FEET ABOVE GRADE TO AVOID INTERFERING WITH EXISTING COMPACT VEHICLE PARKING SPACE. PROVIDE A RISER SUPPORT AT THE BASE AND ADDITIONAL RISER CLAMPS AS RECOMMENDED BY THE VENT MANUFACTURER. TERMINATE VENTS ABOVE THE ROOF.
- ⑩ IF ALLOWABLE BY CODE AND BOILER MANUFACTURER, A COMMON VENT FOR THE BOILERS MAY BE ROUTED INSIDE THE EXISTING CHIMNEY. PROVIDE APPROVED CHIMNEY LINER.
- ⑪ PROVIDE DRAIN VALVE WITH HOSE BIB CONNECTION. PROVIDE MAKE-UP WATER CONNECTION WITH PRESSURE REGULATOR AND AUTOMATIC FILL (TYP FOR 2 BOILERS).
- ⑫ MATCH EXISTING PUMP CAPACITY. INSTALL ISOLATION VALVES, CHECK VALVE, AND PRESSURE GAUGES AT PUMP.
- ⑬ TEMPERATURE/PRESSURE RELIEF VALVE PIPED TO FLOOR DRAIN.
- ⑭ CONTROL DEVICE REQUIRED FOR ADD ALTERNATE 2 ONLY.



MECHANICAL PLAN
SCALE: 1/2" = 1'-0"



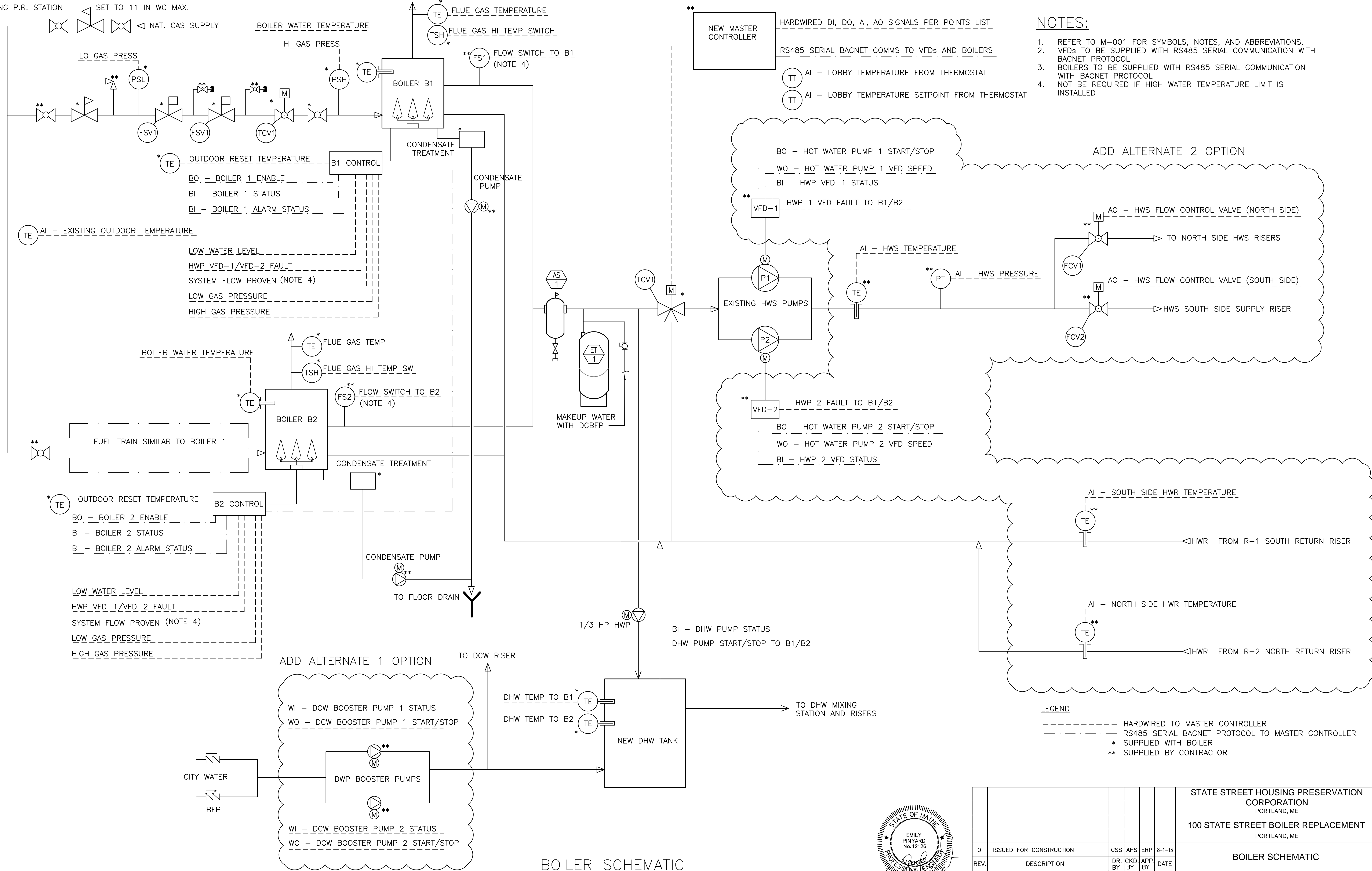
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		SCALE: AS NOTED	PROJECT NO.	DRAWING NO.	
		DATE: 8-1-13	218.002.001	M-101	
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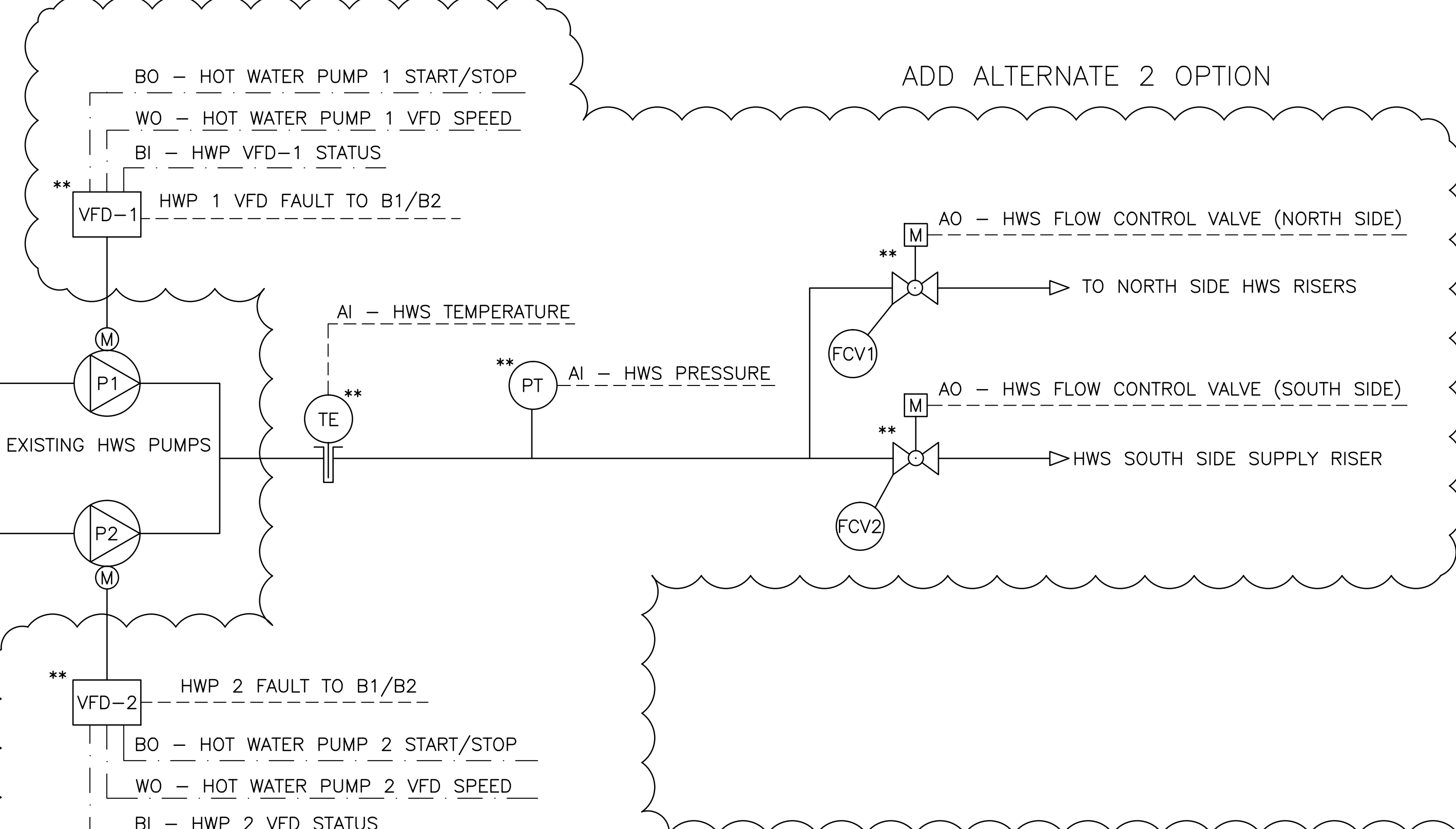
NOTES:

1. REFER TO M-001 FOR SYMBOLS, NOTES, AND ABBREVIATIONS.
2. VFDs TO BE SUPPLIED WITH RS485 SERIAL COMMUNICATION WITH BACNET PROTOCOL.
3. BOILERS TO BE SUPPLIED WITH RS485 SERIAL COMMUNICATION WITH BACNET PROTOCOL.
4. NOT BE REQUIRED IF HIGH WATER TEMPERATURE LIMIT IS INSTALLED.

NEW MASTER CONTROLLER
 HARDWIRED DI, DO, AI, AO SIGNALS PER POINTS LIST
 RS485 SERIAL BACNET COMMS TO VFDs AND BOILERS

- TT AI - LOBBY TEMPERATURE FROM THERMOSTAT
- TT AI - LOBBY TEMPERATURE SETPOINT FROM THERMOSTAT

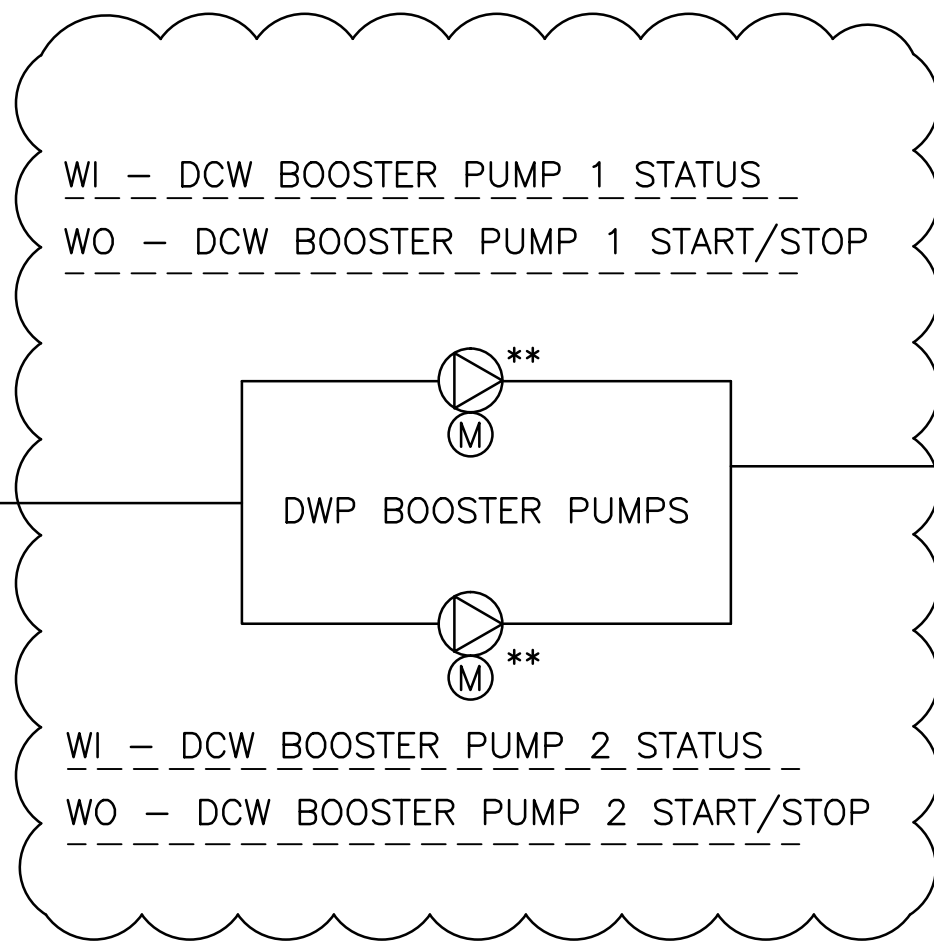
ADD ALTERNATE 2 OPTION



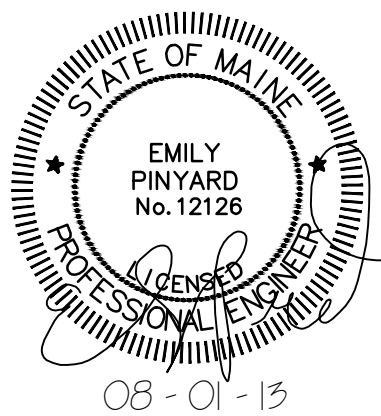
LEGEND

- HARDWIRED TO MASTER CONTROLLER
- - - RS485 SERIAL BACNET PROTOCOL TO MASTER CONTROLLER
- * SUPPLIED WITH BOILER
- ** SUPPLIED BY CONTRACTOR

ADD ALTERNATE 1 OPTION

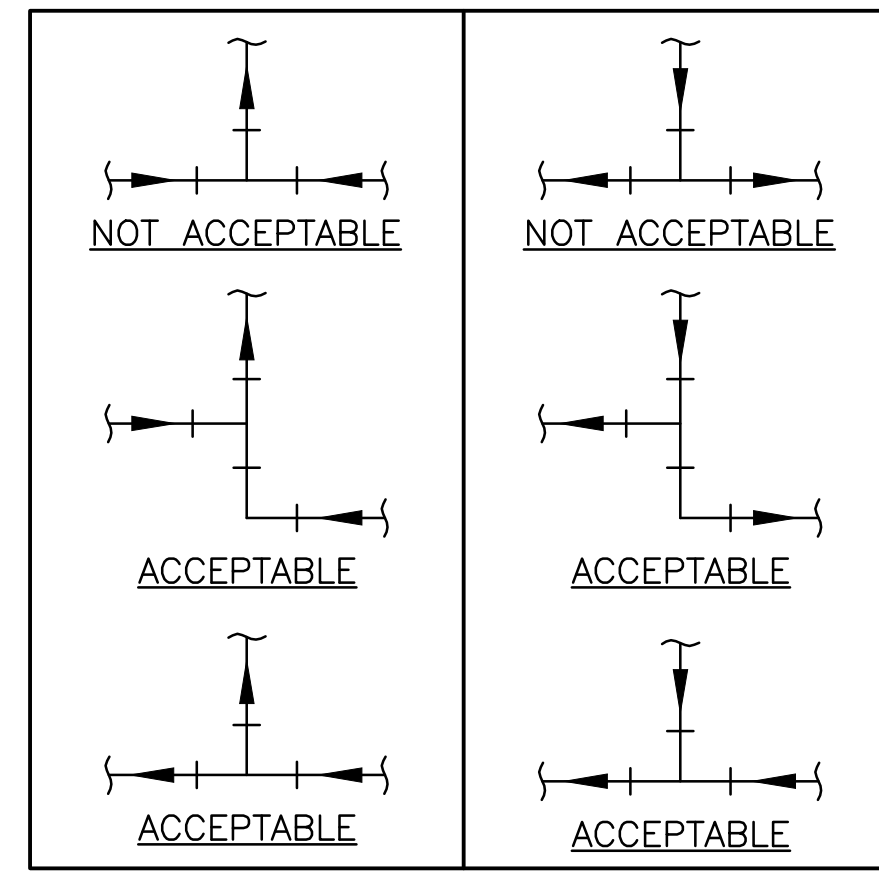


BOILER SCHEMATIC
SCALE: NTS

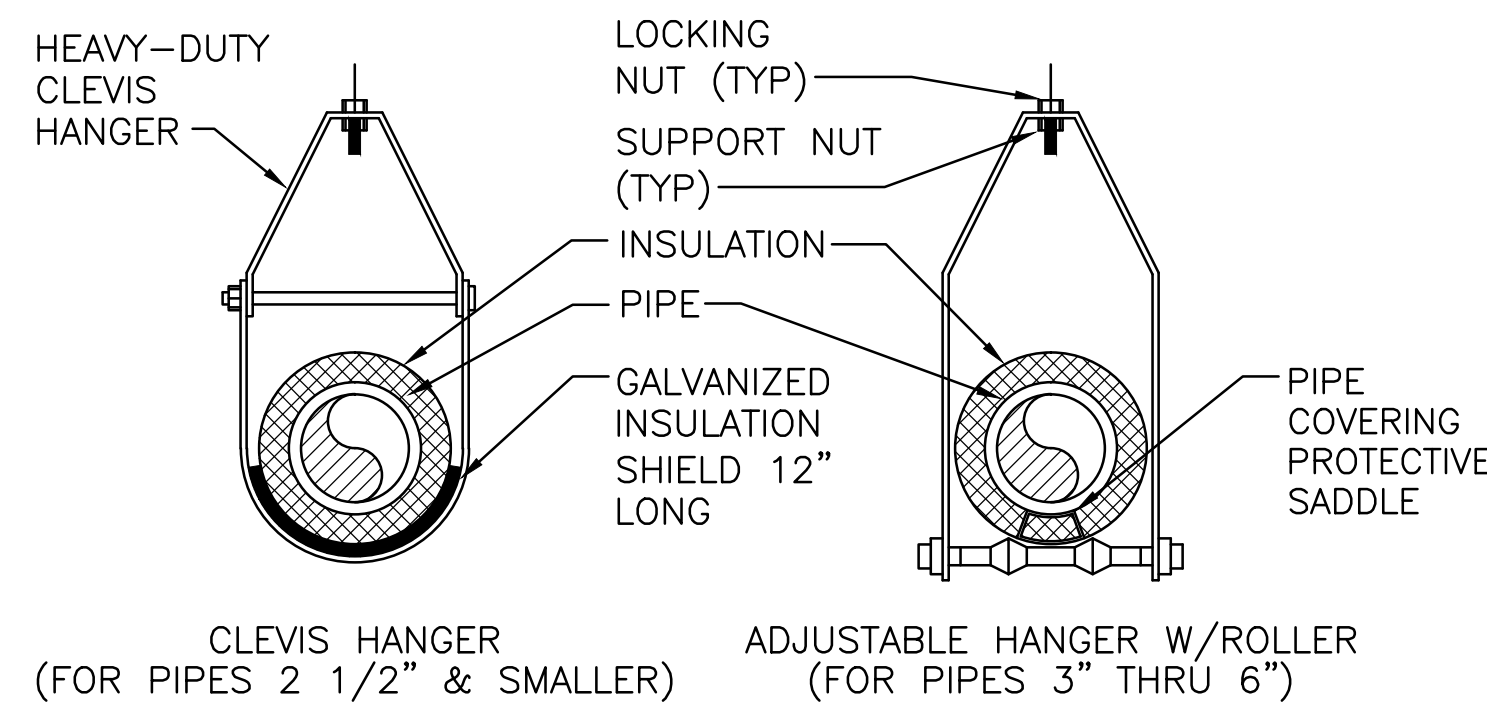


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BOILER SCHEMATIC			
0 ISSUED FOR CONSTRUCTION	CSS AHS ERP 8-1-13	PROJECT NO. 218.002.001	DRAWING NO. M-501
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Colby Company 47A York Street, Portland, Maine 04101 207.553.7733 www.colbycoengineering.com		Structural Engineering Mechanical Engineering Electrical Engineering Civil Engineering	SCALE: AS NOTED DATE: 8-1-13 DES BY: ERP DWN BY: CSS CHK BY: AMS

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BULL HEAD TEE DETAIL
SCALE: NTS



PIPE HANGER ATTACHMENTS DETAIL
SCALE: NTS

CONDENSING BOILER SCHEDULE													
UNIT NO	LOCATION	TYPE	FLUID	FUEL	INPUT (MBH)	OUTPUT (MBH)	EWT (°F)	LWT (°F)	COMBUSTION EFFICIENCY	VENT CONN (IN)	WATER CONTENT (GAL)	MANUFACTURER AND MODEL (1)	NOTES
B-1	BOILER ROOM	CONDENSING	WATER	NAT GAS	1,800	1,694	140	180	94.4%	10	112	VISSMANN CM2-500	1-4
B-2	BOILER ROOM	CONDENSING	WATER	NAT GAS	1,800	1,694	140	180	94.4%	10	112	VISSMANN CM2-500	1-4

NOTES:
 1. BOILER TO OPERATE ON OUTDOOR AIR RESET SCHEDULE WITH DOMESTIC HOT WATER PRIORITY SETPOINT OF 175°F.
 2. MINIMUM GAS PRESSURE 4" WC, MAXIMUM 14" WC. MINIMUM GAS INPUT 358 MBH.
 3. PROVIDE MANUFACTURER'S CONDENSATE NEUTRALIZER AND MIXING VALVE.
 4. MAXIMUM 5" WC WATER PRESSURE DROP THROUGH HEAT EXCHANGER.

INDIRECT-FIRED DOMESTIC WATER HEATER SCHEDULE													
UNIT NO	LOCATION	TYPE	TOTAL STORAGE (GAL)	2ND HR RECOVERY (GPH)	BOILER WATER FLOW RATE (GPM)	BOILER FLUID	BOILER EWT (°F)	HEAT EX PD (PSI)	STORAGE TEMP (°F)	MANUFACTURER AND MODEL (1)	NOTES		
DWH-1	MECHANICAL ROOM	INDIRECT 1-COIL	700	1,250	94	WATER	170	2	140	A.O. SMITH TJH48-700-DW-12-72	1,2		

NOTES:
 1. DOUBLE-WALL HEAT EXCHANGER.
 2. PROVIDE MINIMUM 2" HIGH DENSITY POLYURETHANE FOAM INSULATION ON TANK.

PUMP SCHEDULE													
UNIT NO	LOCATION	SERVICE	FLUID TEMP (°F)	GPM	HEAD (FT)	MAX RPM	IMPELLER SIZE (IN)	HP	V/PH/HZ	MANUFACTURER AND MODEL (1)	NOTES		
DWP-1	MECHANICAL ROOM	DCW BOOSTER	50	170	70	3500	-	5	208/3/60	TOWLE WHITNEY TW2000H-340W-30 DUPLEX SKID	1,2		
DWP-1	MECHANICAL ROOM	DCW BOOSTER	50	170	70	3500	-	5	208/3/60	TOWLE WHITNEY TW2000H-340W-30 DUPLEX SKID	1,2		
CP-1	BOILER ROOM	CONDENSATE	170	0.5	14	-	-	1/50	120/1/60	BELL & GOSSETT #6098B000	3,4		
CP-2	BOILER ROOM	CONDENSATE	170	0.5	14	-	-	1/50	120/1/60	BELL & GOSSETT #6098B000	3,4		
DHWP-1	MECHANICAL ROOM	DHW	210	94	20	3300	1.25	1	208/1/60	WILO STRATOS 3.0x3-30	4		

NOTES:
 1. ADD ALTERNATE 1.
 2. PROVIDE PUMP VFD.
 3. PUMP PACKAGE SHALL INCLUDE SUMP AND FLOAT SWITCH. PUMP SHALL HAVE INTEGRAL CHECK VALVE.
 4. PROVIDE ECM DRIVE.

PIPE MATERIAL SCHEDULE				
SERVICE	PIPE MATERIAL	JOINTS	INSULATION THICKNESS	NOTES
HWS&R (4" AND LARGER)	ASTM A53 GRADE B STEEL	ASTM B16 MI THREADED	1"	1
HWS&R (2" AND SMALLER)	ASTM A53 GRADE B STEEL	ASTM B16 MI THREADED	1"	
CONDENSATE	SCHEDULE 40 PVC	SOLVENT CEMENT	-	
DCW & DHW (1 1/2" AND SMALLER)	TYPE L HARD COPPER TUBE	ASTM B16 SOLDERED	1 1/2"	
DCW & DHW (2" AND LARGER)	TYPE L HARD COPPER TUBE	ASTM B16 SOLDERED	2"	
NATURAL GAS	SCHEDULE 40 STEEL	MALLEABLE IRON THREADED	-	

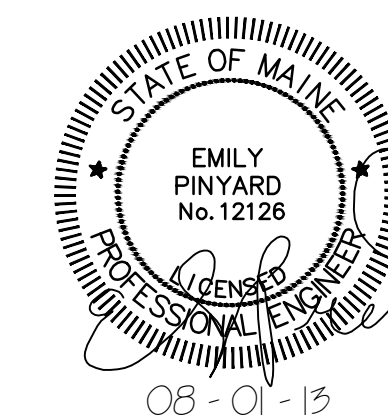
NOTES:
 1. MINIMUM INSULATION THICKNESS SHALL MEET 2007 ASHRAE 90.1 REQUIREMENTS.

INSULATION SCHEDULE				
SERVICE	PIPE SIZE		INSULATION TYPE	NOTES
	≤ 1 1/2"	> 1 1/2"		
DCW	1 1/2"	1 1/2"	CELLULAR GLASS ASTM C552	
DHW & HHW	1"	1"	MINERAL FIBER W/ VAPOR BARRIER	
CONDENSATE	3/4"	-	FLEXIBLE CELLULAR INSULATION	

NOTES:
 1.

KEYED NOTES:

(1) MANUFACTURERS NAME AND MODEL NUMBER ARE USED FOR DESCRIPTIVE PURPOSES ONLY AND ARE INTENDED TO INDICATE THE STANDARD OF MATERIAL OR ARTICLES REQUIRED. DESIGN IS PREDICATED AROUND LISTED MANUFACTURERS AS NOTED ON SCHEDULES AND IS NOT INTENDED TO LIMIT THE CONTRACTOR TO ONE MANUFACTURER.



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STATE STREET HOUSING PRESERVATION CORPORATION PORTLAND, ME			
100 STATE STREET BOILER REPLACEMENT PORTLAND, ME			
MECHANICAL DETAILS AND SCHEDULES			
0 ISSUED FOR CONSTRUCTION	CSS AHS ERP 8-1-13	PROJECT NO. 218.002.001	DRAWING NO. M-601
REV. DESCRIPTION	DR. CKD. APP. BY DATE	SHEET 5	OF 5
Colby Company 47A York Street, Portland, Maine 04101 207.553.7733 www.colbycoengineering.com		Structural Engineering Mechanical Engineering Electrical Engineering Civil Engineering	
SCALE: AS NOTED DATE: 8-1-13 DES BY: ERP DWN BY: CSS CHK BY: AMS			