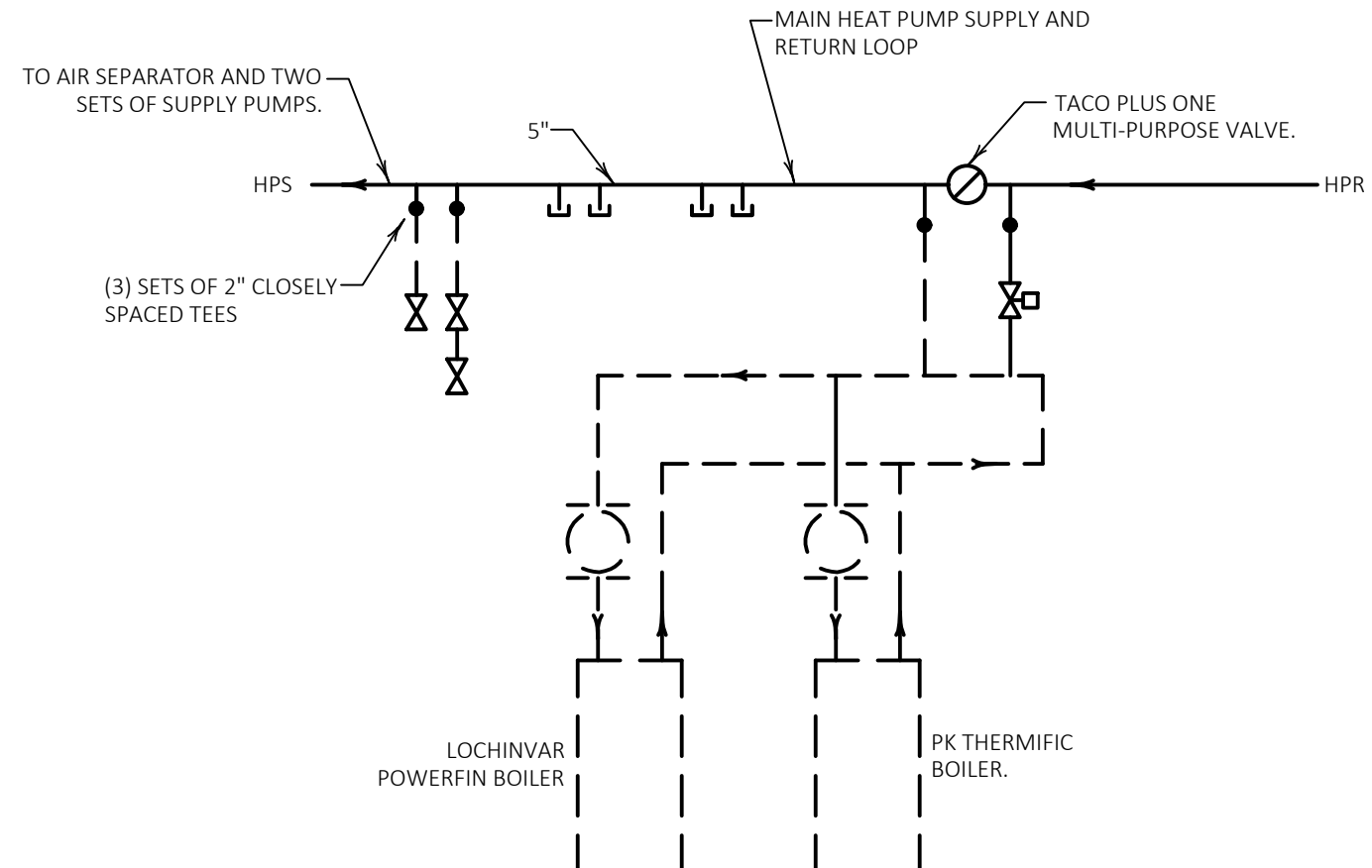




1
MD-1

HEATING SYSTEM SCHEMATIC DEMO
NO SCALE

- GENERAL NOTES
1.

THIS DRAWING SCHEMATIC ONLY AND SHOWS A LIMITED PORTION OF ONE OF THE HEAT PUMP LOOPS IN THE BUILDING. COORDINATE WITH OWNER FOR A SITE VISIT AND OBSERVATIONS OF THE EXISTING INSTALLATION.
2.

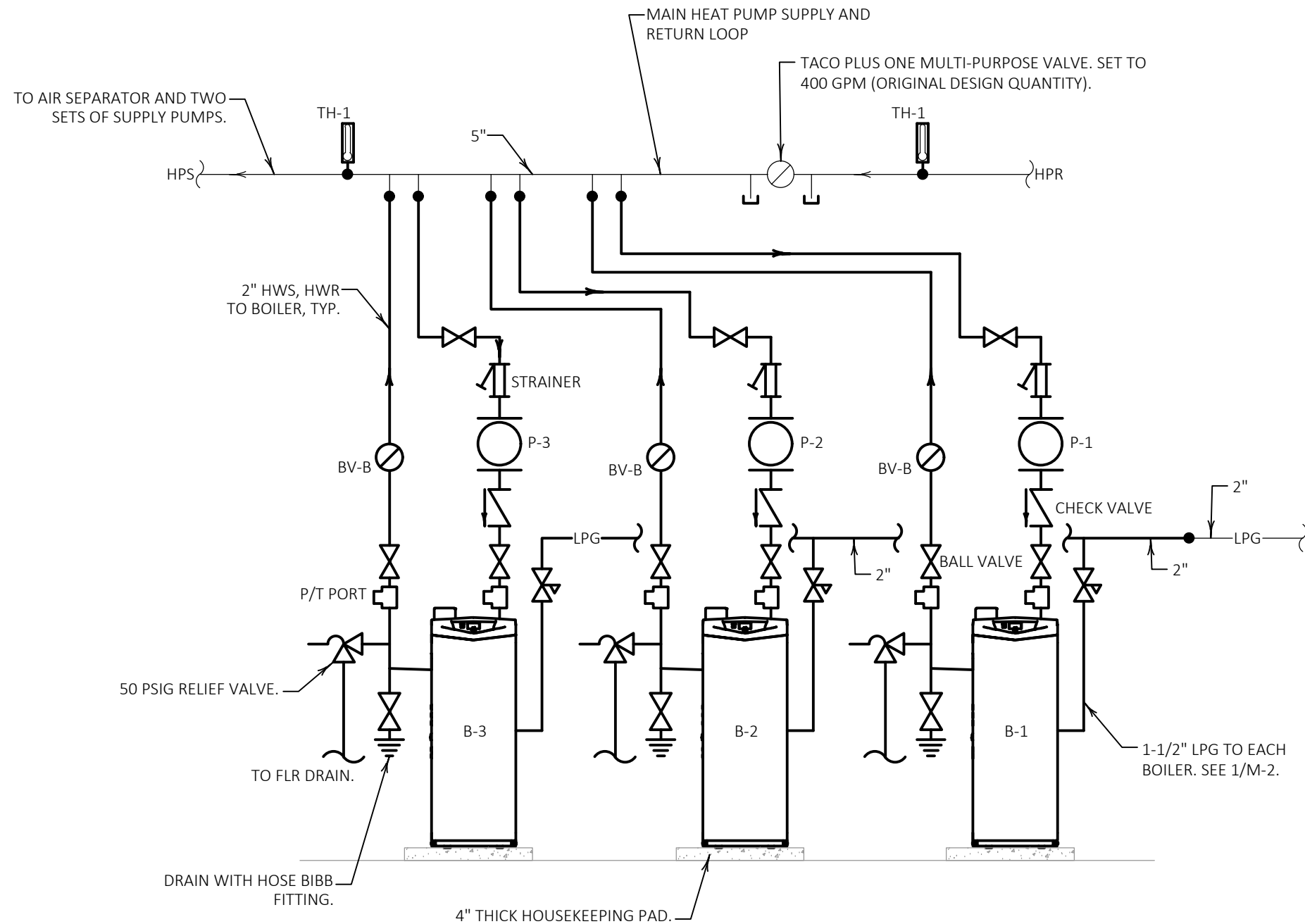
REMOVE EXISTING BOILERS, PUMPS, ASSOCIATED SPECIALTIES, AND PIPING AS INDICATED.
3.

REMOVE BOILER VENTING THROUGH ROOF.
4.

REMOVE PROPANE PIPING (NOT SHOWN ON SCHEMATIC) AND REGULATOR BACK TO MAIN PIPE ABOVE THERMIFIC BOILER BEFORE PIPING BRANCHES TO EACH BOILER.

DRAWING: HEAT PUMP LOOP BOILER SCHEMATIC DEMO

PROJECT: FRENCHTOWN HIGH SCHOOL BOILERS
FRENCHTOWN, MONTANA



1
M-1

HEATING SYSTEM SCHEMATIC NEW

NO SCALE

GENERAL NOTES

1. THIS DRAWING SCHEMATIC ONLY AND SHOWS A LIMITED PORTION OF ONE OF THE HEAT PUMP LOOPS IN THE BUILDING.
2. INSTALL NEW BOILERS, PUMPS, PIPING, AND ACCSESORIES AS INDICATED.
3. RUN BOILER VENT AND INTAKE PIPING THROUGH ROOF. MATERIALS AND INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. RUN BOILER CONDENSATE DRAINS TO FLOOR SINK NEAR BOILERS.

HYDRONIC EQUIPMENT AND SPECIALTIES

BOILERS B-1, B-2, B-3: LOCHINVAR FTX725L OR EQUIVALENT. BOILER SHALL HAVE MINIMUM OF 7:1 TURNDOWN AND BE SINGLE-CORE STYLE. PROVIDE WITH SMART SYSTEM CONTROLS AND THE FOLLOWING OPTIONS: CONDENSATE NEUTRALIZATION KIT, FLOW SWITCH, HIGH AND LOW GAS PRESSURE SWITCHES, AND BACNET MSTP COMMUNICATIONS KIT.

P-1, P-2, P-3: TACO 1911ecm, 35 GPM (MAX) @ 10'.

BV-B (BOILER BALANCE VALVE): TACO ACCU-FLO, 1-1/2" SIZE. SET TO 35 GPM.

TH-1: TRERICE AX-9 SERIES THERMOMETER, 30-180° F SCALE.

CONTROLS/SEQUENCE OF OPERATION

BOILERS' ON-BOARD CONTROLS SHALL STAGE AND MODULATE BOILERS AND BOILER PUMPS TO HOLD A SUPPLY WATER TEMPERATURE TO THE HEAT PUMP LOOP CIRCULATING PUMPS. INITIAL SET POINT TO BE 80 F, BUT VERIFY WITH OWNER AND EXISTING CONTROLS.

BOILERS SHALL BE CAPABLE OF ALTERNATE LEADER. ALL SENSORS MUST BE DUPLICATED TO THE ALTERNATE BOILER AND AN ENABLE MUST BE RUN TO THE ALTERNATE BOILER.

ADDITIONAL WORK NOT SHOWN ON SCHEMATIC

INSTALL SKIDMORE X-POT COMPACT, OR EQUIVALENT, AT EITHER SET OF BASE-MOUNTED PUMPS SERVING THE SAME PORTION OF THE HEAT PUMP SYSTEM AS THE NEW BOILERS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

PROVIDE WITH THREE 50 MICRON FILTERS. INSTALL ONE DURING THIS WORK AND LEAVE TWO SPARES WITH THE OWNER.

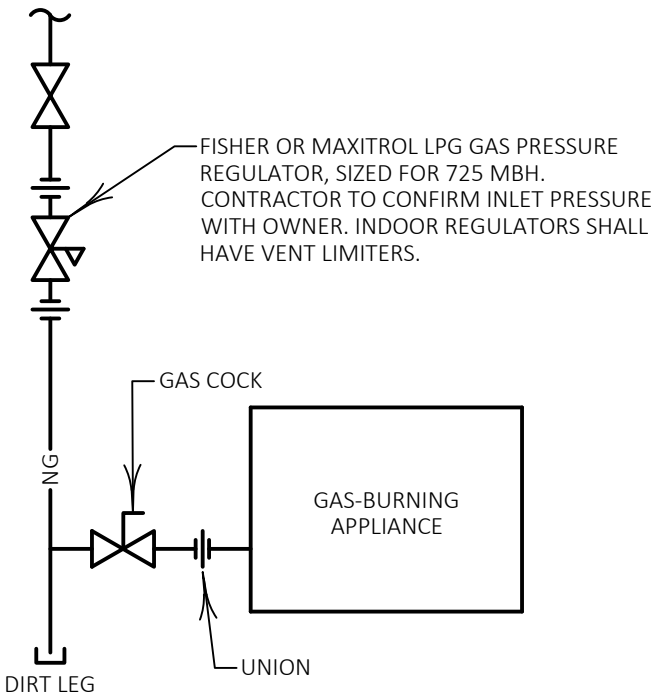
ISSUE DATE: 1-30-25

M-1

DRAWING: HEAT PUMP BOILER SYSTEM SCHEMATIC NEW
PROJECT: FRENCHTOWN HIGH SCHOOL BOILERS
FRENCHTOWN, MONTANA

GENERAL SPECIFICATIONS

- 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE GOVERNING CODES. COMPLY WITH THE REQUIREMENTS OF THE LOCAL JURISDICTION AND ALL SUPPLYING UTILITIES. COMPLY WITH EPA SAFE WATER DRINKING ACT, INCLUDING ALL LEAD-FREE REQUIREMENTS.
- 2. THE INTENT OF THE DRAWINGS IS TO DEPICT FULLY FUNCTIONING NEW/REVISED HEATING SYSTEM. ALL INCIDENTAL AND NECESSARY ITEMS THAT ARE NORMALLY REQUIRED FOR THE TYPE OF WORK SHOWN ON THE PLANS, BUT THAT ARE NOT EXPLICITLY SHOWN ON THE PLANS, SHALL BE INCLUDED IN THE WORK.
- 3. ALL WORK SHALL BE PERFORMED IN A NEAT AND PROFESSIONAL MANNER. THE APPEARANCE OF THE FINISHED WORK IS IMPORTANT TO THE OWNER. ALL PIPING SHALL BE RUN PARALLEL TO BUILDING STRUCTURE. ALL PENETRATIONS SHALL BE NEAT.
- 4. ALL MATERIALS SHALL BE NEW AND IN GOOD CONDITION.
- 5. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS.
- 6. CONTRACTOR SHALL RECOGNIZE THAT PLANS ARE DIAGRAMMATIC IN NATURE. COORDINATE DUCT AND PIPING CONSTRUCTION AND INSTALLATION WITH FIELD CONDITIONS. PROVIDE ALTERNATE ROUTING OR ADDITIONAL FITTINGS AND OFFSETS AS REQUIRED, AT NO EXTRA CHARGE, BASED ON THOSE FIELD CONDITIONS.
- 7. TESTING AND BALANCING: BALANCE P-1, P-2, P-3, AND EXISTING MULTI-PURPOSE VALVE TO THE QUANTITIES INDICATED ON THE DRAWINGS, WITH VARIANCES FROM DESIGN AS ALLOWED BY THE CURRENT NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) STANDARDS. PROVIDE OWNER WITH ONE COPY OF FINAL REPORT ON NEBB OR SMACNA FORMS.
- 8. AT CONCLUSION OF PROJECT AND BEFORE FINAL PAYMENT, PROVIDE ONE COPY OF OPERATION AND MAINTENANCE INFORMATION FOR ALL EQUIPMENT.



1
M-2

LPG DIRT LEG DETAIL

N.T.S.

HYDRONIC SPECIFICATIONS

PIPING

- 1. NEW HEATING WATER SUPPLY AND RETURN PIPING SHALL BE TYPE L COPPER WITH EITHER WROUGHT COPPER FITTINGS AND LEAD-FREE SOLDER JOINTS OR MECHANICAL JOINTS.
- 2. BOILER CONDENSATE DRAIN SHALL BE PVC OR CPVC PIPING, WITH APPROVED JOINTS.
- 3. PROPANE PIPING SHALL BE SCHEDULE 40 BLACK STEEL WITH THREADED FITTINGS.

PIPE INSULATION

- 1. PIPE INSULATION SHALL BE FIBERGLASS WITH WHITE ASJ. INSULATION JACKET SHALL FLAME SPREAD/SMOKE DEVELOPED RATINGS LESS THAN 25/50. INSULATION SHALL BE CONTINUOUS THROUGH WALLS AND FLOORS.
- 2. PIPE INSULATION THICKNESS AND/OR R-VALUES SHALL BE AS FOLLOWS:

PIPE INSULATION SCHEDULE	
TYPE OF PIPE	REQUIREMENT
HEATING WATER SUPPLY AND RETURN PIPING, 2" DIAMETER.	1-1/2" THICKNESS

PIPING SPECIALTIES

- 1. PROVIDE DIELECTRIC UNIONS AT CONNECTIONS BETWEEN DISSIMILAR PIPING MATERIALS.
- 2. PROVIDE FULL-PORTED, 90 DEGREE, BRONZE BALL VALVES.
- 3. CHECK VALVES SHALL BE BRONZE BODY, SWING CHECK STYLE.
- 4. STRAINERS SHALL BE BRONZE BODY, Y-TYPE.

INSTALLATION

- 1. NEW HEATING PIPING SHALL BE FLUSHED AND CLEANED IN ACCORDANCE WITH THE BOILER MANUFACTURER'S INSTRUCTIONS.
- 2. PROVIDE FACTORY-CERTIFIED START-UP TECHNICIAN FOR BOILERS. COMPLETED BOILER START-UP CHECKLIST SHALL BE SUBMITTED TO OWNER.

GOVERNING CODES

2021 INTERNATIONAL BUILDING CODE
2021 UNIFORM PLUMBING CODE
2021 INTERNATIONAL MECHANICAL CODE
2021 INTERNATIONAL FIRE CODE
2021 INTERNATIONAL ENERGY CONSERVATION CODE
2020 NATIONAL ELECTRIC CODE