

MECHANICAL SPECIFICATIONS

1. VISIT THE SITE AND BECOME THOROUGHLY AQUAINTED WITH ALL EXISTING CONDITIONS.
2. THE DRAWINGS ARE DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSE AS POSSIBLE. THE DRAWINGS ARE NOT INTENDED TO SHOW EVERY DETAIL. SYSTEMS SHALL BE ASSEMBLED COMPLETE TO PERFORM THE INTENT OF THE DRAWINGS IN COMPLIANCE WITH ALL CODES.
3. SUBMIT AND PAY ALL FEES FOR ALL BUILDING PERMITS REQUIRED BY THE CITY OF READING AND THE PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY BOILER DIVISION. COORDINATE FINAL BOILER INSPECTION AND PROVIDE ANY REQUIRED REVISIONS.
4. SUBMIT UGI GAS SERVICE UPGRADE REQUEST FORM. SCHEDULE AND COORDINATE GAS SERVICE UPGRADE WITH UGI.
5. GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE CITY OF READING.
6. TEST AND BALANCE BOILER, PIPING, EQUIPMENT AND CONTROLS. DRAIN AND FLUSH ALL EXISTING PIPING. TEST BOILER AND PIPING SYSTEM AT 40 PSI FOR A PERIOD OF ONE HOUR. REPAIR ANY LEAKS AND RETEST. BALANCE ALL CIRCUIT SETTERS WITH EXISTING BUILDING CONTROL VALVES INDEXED OPEN. BALANCE PUMP TO SCHEDULED GPM. SUBMIT WRITTEN BALANCE REPORT. BALANCING AGENT SHALL BE CERTIFIED BY EITHER AABC OR NEBB.
7. SUBMIT, FOR REVIEW BY THE ENGINEER, SHOP DRAWING DATA FOR EACH PIECE OF EQUIPMENT OR MATERIAL PROPOSED. SUBMIT CONTROL SHOP DRAWINGS.
8. AT THE COMPLETION OF THE PROJECT PROVIDE THE OWNER WITH AN 8 HOUR INSTRUCTIONAL SESSION FOR ALL EQUIPMENT AND CONTROLS. PROVIDE OPERATION AND MAINTENANCE MANUALS FOR ALL EQUIPMENT AND CONTROLS. SUBMIT "AS BUILT DRAWINGS".
9. PROVIDE ALL CUTTING AND PATCHING OF EXISTING BOILER ROOM CEILING AS REQUIRED FOR DEMOLITION AND NEW WORK INSTALLATION. PATCH ALL OPENINGS WITH 5/8" PURPLE MOISTURE RESISTANT DRYWALL WITH 1/8" SKIM COAT PLASTER. PROVIDE BACKING SUPPORT TO ATTACH DRYWALL PATCHES. SAND ALL AREAS SMOOTH AND PAINT ENTIRE CEILING WITH TWO COATS MOLD RESISTANT PAINT, BEHR ULTRA WHITE CEILING FLAT INTERIOR PAINT OR APPROVED EQUAL.
10. PRESSURE GAGES AND THERMOMETERS SHALL BE MANUFACTURED BY TRERICE, DRESSER OR WEISS. THERMOMETERS SHALL BE 9 INCH WITH CAST ALUMINUM CASING. PRESSURE GAGES SHALL BE 4-1/2" DIAMETER WITH ALUMINUM CASING. PROVIDE 1/4" NEEDLE VALVES FOR ALL THERMOMETERS AND PRESSURE GAGES.
11. BALL VALVES SHALL BE TWO PIECE, BRASS OR BRONZE BODY WITH FULL PORT CHROME PLATED BRONZE BALL, TFE SEAT, 600 PSIG, MANUFACTURED BY CONBRACO, WATTS OR MILWAUKEE.
12. PIPE HANGERS SHALL BE ADJUSTABLE STEEL CLEVIS HANGERS (MSS TYPE 1) MANUFACTURED BY PHD, ANVIL OR B-LINE. HANGERS SHALL BE GALVANIZED OR PAINTED. PROVIDE HANGERS AT ALL CHANGES IN DIRECTION AND ON BOTH SIDES OF ALL EQUIPMENT.
13. PROVIDE 1-1/4" LETTER HEIGHT STENCIL IDENTIFICATION FOR ALL PIPING. PROVIDE BRASS TAGS FOR ALL VALVES.
14. INSULATE ALL HOT WATER SUPPLY, HOT WATER RETURN AND DOMESTIC COLD WATER PIPING WITH PREFORMED, GLASS FIBER INSULATION WITH THERMOSETTING RESIN, ASTM C547, TYPE 1 WITH FACTORY APPLIED ALL PURPOSE VAPOR-RETARDER JACKET. INSULATION SHALL BE MANUFACTURED BY OWENS-CORNING, KNAUF OR CERTAIN TEED. PROVIDE INSULATION WRAP AND 20 MIL PVC COVERS FOR ALL ELBOWS AND FITTINGS. INSULATION SHALL BE 1" THICK FOR PIPING 1-1/4" AND SMALLER AND 1-1/2" FOR PIPING 1-1/2" AND LARGER.
15. PROVIDE A COMPLETE STAND ALONE DDC CONTROL SYSTEM AS SHOWN ON THE SCHEMATIC CONTROL WIRING DIAGRAMS. STAND ALONE NETWORK CONTROLLER SHALL BE MANUFACTURED BY SCHNEIDER ELECTRIC AND INSTALLED BY NRG CONTROLS INC., TRI-M GROUP LLC OR CM3 BUILDING SOLUTIONS, INC. THE CONTROL SUB-CONTRACTOR SHALL FURNISH ALL EQUIPMENT, MATERIALS, LABOR AND SUPERVISION FOR A COMPLETE ELECTRONIC AUTOMATIC CONTROL SYSTEM. COORDINATE WITH BOILER EQUIPMENT AND ELECTRICAL CONTRACTOR. ALL WIRING SHALL BE IN ELECTRICAL METALLIC TUBING (EMT). SUBMIT CONTROL SHOP DRAWINGS. INSTALL CONTROLLER IN 12 GAGE CABINET WITH BAKED ENAMEL FINISH. ALL WIRING IN THE PANEL SHALL BE THHN/THWN INSULATED CONDUCTORS COLOR CODED. FOLLOW ELECTRICAL SPECIFICATION FOR ALL CONDUIT AND CONDUCTORS INSTALLED BY THE ATC SUB-CONTRACTOR. PROVIDE ALL SENSORS AND PIPE WELLS. COMMISSION SYSTEM AND PROVIDE OPERATING AND MAINTENANCE MANUALS.
16. ALL HOT WATER SUPPLY, HOT WATER RETURN, VENT AND ABOVE GROUND GAS PIPING SHALL BE ASTM A53 SCHEDULE 40 BLACK STEEL. PIPING 2" AND SMALLER SHALL HAVE MALLEABLE IRON THREADED FITTINGS. PIPING AND FITTINGS 2-1/2" AND LARGER SHALL BE BUTT WELDED WITH FLANGES AT CONNECTION TO EQUIPMENT. CONNECTION TO EXISTING PIPING SHALL BE MADE WITH SOCKET WELDED FITTINGS. DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER WITH WROUGHT COPPER SOLDER JOINT FITTINGS.
17. PUMPS SHALL BE BELL & GOSSETT SERIES 60 FLEXIBLE COUPLED IN-LINE CENTRIFUGAL, BRONZE FITTED.
18. FLUE PIPE SHALL BE DOUBLE WALL POSITIVE PRESSURE SYSTEM MODEL PS AS MANUFACTURED BY SELKIRK. INNER CASING SHALL BE 0.035 INCH THICK TYPE 304 STAINLESS STEEL AND OUTER CASING SHALL BE 0.025 INCH THICK ALUMINIZED STEEL WITH 1 INCH INSULATION BETWEEN CASINGS. PIPE JOINTS SHALL BE MADE USING FACTORY SUPPLIED "V" BANDS WITH SEALANT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
19. UNIT HEATER SHALL BE LOW PROFILE HOT WATER TYPE MODEL HHD30 AS MANUFACTURED BY MODINE. UNIT HEATER SHALL HAVE 18 GAGE PAINTED STEEL CABINET WITH SIDE PIPING CONNECTIONS. INSTALL WITH BOTTOM 6'-8" ABOVE FINISHED FLOOR.
20. BOILER:
  - A. FURNISH AND FIELD ASSEMBLE IN PLACE LOW PRESSURE, WET BASE, CAST IRON SECTIONAL BOILER WITH GAS FIRED POWER BURNER THAT PRESSURIZES THE FIRE BOX AND OPERATES UNDER FORCED DRAFT.
  - B. BOILER SHALL BE WEIL MCLAIN SERIES 80 WITH NATURAL GAS BURNER CAPABLE OF BURNING GAS AT 4 IN. TO 14 IN. WATER COLUMN. BOILER SHALL BE RATED FOR 50 PSI WATER.
  - C. SUBMIT BOILER AND BURNER SHOP DRAWINGS FOR APPROVAL BY THE ENGINEER.
  - D. CAST IRON SECTIONS SHALL BE ASSEMBLED WITH INDIVIDUAL DRAW RODS AND SHALL HAVE SEALING GROOVES WITH HIGH TEMPERATURE SEALING ROPE.
  - E. BOILER TO HAVE REAR FLUE OUTLET, INSULATED BURNER MOUNTING PLATE, OBSERVATION PORTS, STEEL FLUE DAMPER, FLEXIBLE REFRACTORY BLANKETS AND INSULATED HEAVY GAGE STEEL JACKET WITH ENAMEL FINISH.
  - F. FURNISH BOILER WITH HIGH TEMPERATURE LIMIT, LOW TEMPERATURE LIMIT, COMBINATION PRESSURE-TEMPERATURE GAGE WITH DIAL, ASME CERTIFIED PRESSURE RELIEF VALVE SET AT 50 PSIG AND MCDONNELL MILLER 63M LOW WATER CUTOFF.
  - G. PROVIDE BOILER WITH GAS POWER BURNER WITH MODULATING CONTROL, POWER FLAME, WEBSTER, OR APPROVED EQUAL. BURNER SHALL BE 1/2 HORSE POWER, 120 VOLT, SINGLE PHASE. BOILER CONTROL PANEL SHALL BE PROVIDED WITH FIREYE E110 FLAME-MONITOR AND ED&10 DISPLAY MODULE. CONTROL DEVICES AND MODULATING CONTROL SEQUENCE SHALL COMPLY WITH ALL REQUIREMENTS OF ASME, CSD-1 AND UL. SYSTEM SHALL BE IN ACCORDANCE WITH ALL REQUIREMENTS FOR AN IRI MODULATING SYSTEM. PROVIDE ALL VALVES AND VENT PIPING TO THE EXTERIOR IN STRICT ACCORDANCE WITH IRI. BOILER PANEL SHALL INCLUDE THE FOLLOWING INDICATOR DISPLAY: CALL FOR HEAT, IGNITION ON, PILOT FAILURE, LOW WATER, FLAME FAILURE, ALARM, SILENCING SWITCH, CONTROL FUSE AND POST-PURGE-TIMER. BURNER OPERATING CONTROLS SHALL BE FULLY MODULATING WITH A 2 TO 1 TURNDOWN, PRE-PURGE AND POST-PURGE PROGRAMMING.
  - H. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A FACTORY AUTHORIZED AGENT TO PROVIDE LIGHT OFF AND ADJUSTMENT. THE START-UP AGENT SHALL PROVIDE A BURNER LIGHT-OFF REPORT INDICATING THAT THE BURNER WAS ADJUSTED TO OPTIMUM PERFORMANCE. THE AUTHORIZED AGENT SHALL PROVIDE A ONE YEAR SERVICE WARRANTY AFTER START UP.

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SPECIFICATIONS