SECTION 22 30 00

PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water heaters.

B. Expansion Tanks.

C. Pumps.
   1. Circulators.
   2. Sump / Sewage Pumps.
   3. Cooling Condensate Removal Pumps.

1.02 RELATED REQUIREMENTS

A. Section 26 27 17 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ANSI Z21.10.1 - Gas Water Heaters - Volume I - Storage Water Heaters with Input Ratings of 75,000 Btu per Hour or Less.

B. ANSI Z21.10.3 - Gas Water Heaters - Volume III - Storage Water Heaters with Input Ratings Above 75,000 Btu per Hour, Circulating and Instantaneous Water Heaters.

C. ASME (BPV VIII, 1) - Boiler and Pressure Vessel Code, Section VIII, Division 1 - Rules for Construction of Pressure Vessels; The American Society of Mechanical Engineers.

1.04 SUBMITTALS

A. Product Data:
   1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
   2. Indicate pump type, capacity, power requirements.
   3. Provide certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable.
   4. Provide electrical characteristics and connection requirements.

B. Shop Drawings:
   1. Indicate heat exchanger dimensions, size of tappings, and performance data.
   2. Indicate dimensions of tanks, tank lining methods, anchors, attachments, lifting points, tappings, and drains.

C. Manufacturer's Instructions.

D. Project Record Documents: Record actual locations of components.

E. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.

F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Red Clay Consolidated School District's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of experience.

B. Identification: Provide pumps with manufacturer's name, model number, and rating/capacity identified by permanently attached label.

C. Performance: Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, operate within 25 percent of midpoint of published maximum efficiency curve.

1.06 CERTIFICATIONS

A. Water Heaters: NSF approved.

B. Gas Water Heaters: Certified by CSA International to ANSI Z21.10.1 or ANSI Z21.10.3, as applicable, in addition to requirements specified elsewhere.

C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., or testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.08 WARRANTY

A. Provide five year manufacturer warranty for domestic water heaters and in-line circulator.

1.09 EXTRA MATERIALS

A. Provide two pump seals.

PART 2 PRODUCTS

2.01 COMMERCIAL GAS FIRED WATER HEATERS

A. Type: Automatic, tankless, stainless-steel natural gas-fired.

B. Manufacturers:
   1. Noritz
   2. Rinnai
   3. Substitutions: See Section 01 60 00 - Product Requirements.

C. Performance: See plans.

D. Accessories: Provide:
   1. Venting Kit.
   2. Isolation Valves

E. Certification: As water heater by ASME, rated for output temperatures of 100 to 180 degrees F..

F. Controls: Digital controls for output temperature management (default setting at 120 degrees), safety controls for flame failure, boiling protection, combustion fan failure, over-current, and gas valve failure..

2.02 DIAPHRAGM-TYPE COMPRESSION TANKS

A. Manufacturers:
   1. Amtrol Inc: www.amtrol.com.
   2. ITT Bell & Gossett: www.bellgossett.com.
   3. Taco, Inc: www.taco-hvac.com.

B. Construction: Welded steel, tested and stamped in accordance with ASME (BPV VIII, 1); supplied with National Board Form U-1, rated for working pressure of 125 psig, with flexible diaphragm sealed into tank, and steel legs or saddles.

C. Accessories: Pressure gage and air-charging fitting, tank drain; precharge to 55 psig.

2.03 IN-LINE CIRCULATOR PUMPS

A. Manufacturers:
   1. Armstrong Pumps Inc: www.armstrongpumps.com.
   2. ITT Bell & Gossett: www.bellgossett.com.
   3. SIHI Group: www.sterlingsihi.com.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Casing: Bronze, rated for 125 psig working pressure.

C. Impeller: Bronze.

D. Shaft: Alloy steel with integral thrust collar and two oil lubricated bronze sleeve bearings.

E. Seal: Carbon rotating against a stationary ceramic seat.

F. Drive: Flexible coupling.

2.04 COOLING CONDENSATE REMOVAL PUMPS

A. Construction: Commercial grade, nonferrous pump with stainless steel shaft, integral discharge check valve, integral float switch, safety switch, thermoplastic reservoir, motor assembly, and power cord with ground.

B. Safety: UL 778.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions of certification, if any.

B. Coordinate with plumbing piping and related gas venting and electrical work to achieve operating system.

C. Pumps:
   1. Provide air cock and drain connection on horizontal pump casings.
   2. Provide line sized isolating valve and strainer on suction and line sized soft seated check valve and balancing valve on discharge.
   3. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes 4 inches and over.
   4. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.
   5. Align and verify alignment of base mounted pumps prior to start-up.

END OF SECTION