

PART 1 GENERAL**1.1 DESCRIPTION**

- A. The requirements of this section apply to the plumbing equipment.
- B. Provide plumbing equipment specified and shown on the Drawings.
- C. Related Work: The requirements of Section 22 0500, Common Plumbing Materials and Methods, also apply to this section.

1.2 QUALITY ASSURANCE

- A. Code: Comply with requirements of the Oregon State Plumbing Specialty Code.
- B. All equipment and component parts shall conform to governing codes. Gas-fired equipment shall be design certified by AGA.
- C. Labeling: All equipment shall have permanent labels affixed by the manufacturer listing model number, capacity, efficiency, approvals, and similar characteristics of the product.

PART 2 PRODUCTS**2.1 PIPING**

- A. Piping, fittings, pumps, and related items are specified in Section 22 1000.

2.2 GAS STORAGE WATER HEATERS

- A. Commercial High Efficiency Gas-fired Storage Water Heater:
 - 1. AGA and serving utility approved commercial gas-fired condensing heater complying with the state energy code and ASHRAE 90.1-1999 requirements and of size and capacity shown on Drawings. Minimum water heater efficiency of 90%. Induced draft fan combustion system suitable for venting with plastic vent pipe. Glass-lined steel tank equipped with sacrificial anode. 1-1/2" minimum of non-organic insulation, cold rolled enameled steel jacket to encase sides, top, and combustion chamber. Electronic controller with diagnostics and LED fault display, hot surface igniter, main and pilot gas cocks, automatic gas pressure regulator, all brass hose bib drain, and hand hole cleanout. ASME code pressure-temperature relief valve.
 - 2. A.O. Smith, Bradford White, or approved substitute.

2.3 WATER HEATER ACCESSORIES

- A. Water Heater and Tank Seismic Restraints: For water heaters and tanks, Spacemaker, Holdrite "Quickstrap," or approved.
- B. Domestic Hot Water Expansion Tank: Plastic lined drawn steel tank for potable water with epoxy exterior finish, air charging valve and system piping connection. Butyl rubber diaphragm with steel retaining ring. Base mounting ring on sizes over 5 gallons. ASME construction on sizes over 10 gallons. Provide with relief valve where working pressure rating is less than 150 psi.

PART 3 EXECUTION**3.1 UTILITY SERVICE**

- A. Plumbing Utility Connections: Complete installation. Verify rough in dimensions of equipment prior to installing piping.

3.2 EQUIPMENT INSTALLATION AND CONNECTION

- A. All equipment shall be installed plumb and level unless otherwise recommended by the manufacturer.
- B. Arrange piping connections to equipment to allow removal and replacement of the equipment without disassembly of connecting piping. Provide valves, unions, flanges, etc. at connection points.
- C. Arrange equipment for adequate service access as recommended by the manufacturer and as required by code.
- D. Anchor equipment to resist displacement due to seismic events as detailed on the drawings, recommended by the manufacturer, and as required by code and as specified in other sections of these specifications. Provide seismic straps as specified above for tank type water heaters.
- E. Install drain pans under all water heaters as specified in Section 22 0500.

3.3 EQUIPMENT CLEANING

- A. Remove construction and shipping protection and thoroughly clean all plumbing equipment just prior to building acceptance.

3.4 SUPERVISION AND START-UP

- A. Do not place equipment onto operation until required work of other trades is complete, e.g. venting systems, combustion air ducts, etc.
- B. Follow manufacturer's instructions for start-up and adjustment of equipment.
- C. The installation, start-up, and adjustment of the water heater shall be performed by an authorized agent of the manufacturer. The manufacturer's agent shall check out and approve the installation and shall also approve and be responsible for adjusting the operating and control system and instructing the Owner's representatives on the system operation.

END OF SECTION