

SECTION 15480

WATER HEATERS

PART 1 – DESIGN DIRECTIVES

1.1 DESIGN CRITERIA

- A. Refer to DC Standard 15010, BASIC MECHANICAL REQUIREMENTS, for direction of domestic hot water temperatures.
- B. Refer to DC Standard 15410, WATER DISTRIBUTION PIPING, for thermal expansion requirements.

1.2 QUALITY ASSURANCE

- A. Construct water heaters in accordance with the applicable UL standards.
- B. Provide steam water heaters and safety relief valves that comply with ASME Boiler and Pressure Vessel Code, and are stamped with appropriate code symbols. Submit appropriate Certificates of Shop Inspection and Data Report as required by provisions of ASME Boiler and Pressure Vessel Code.
- C. Provide water heaters with Performance Efficiencies not less than prescribed in ASHRAE 90A, "Energy Conservation in New Building Design".

1.3 PRODUCT WARRANTY

- A. Warranty period for propane, electric, and oil water heaters shall be 5 years on the tank and 2 years on parts from Date of Substantial Completion. Semi-instantaneous steam fired hot water heaters shall have a non-prorated ten-year warrantee covering the heat exchanger, tube sheet, and shell against failure.

PART 2 – PRODUCTS

2.1 LP GAS-FIRED WATER HEATERS

- A. Construct heater for working pressure of 150 psi; 3/4" tapping for relief valve; magnesium anode rod; glass lining on internal surfaces exposed to water.
- B. Equip with automatic gas shutoff device to shut off entire gas supply in event of excessive temperature in tank; pilot safety shutoff, gas pressure regulator; pilot gas regulator, adjustable thermostat, brass drain valve, relief valve, radiant floor shield, cold water dip tube and AGA certified draft hood.
- C. Insulate tank with 2" thick non-CFC foam insulation. Provide outer steel jacket with baked enamel finish.

- D. Manufacturers: Subject to compliance with requirements, provide residential gas-fired water heaters of one of the following:
  - 1. Bradford White Corp.
  - 2. Smith Corp. (A.O.); Consumer Products Div.
  - 3. State Industries, Inc.

**2.2 OIL-FIRED WATER HEATERS**

- A. Construct heater for working pressure of 150 PSI; tapping for relief valve; magnesium anode rod; and glass lining on internal surfaces exposed to water.
- B. Equip with automatic oil shutoff device to shut off entire oil supply in event of excessive temperature in tank, brass drain valve; 3/4" relief valve; radiant floor shield; cold water dip tube, and adjustable thermostat.
- C. Insulate tank with non-CFC foam insulation. Provide outer steel jacket with baked enamel finish.
- D. Manufacturers: Subject to compliance with requirements, provide residential oil-fired water heaters of one of the following:
  - 1. Bock Waters Heaters, Inc.
  - 2. Bradford White Corporation

**2.3 ELECTRIC WATER HEATERS**

- A. Construct for working pressure of 150 PSI, magnesium anode rod, glass lining on internal surfaces exposed to water.
- B. Screw-in style heating element with factory wired high temperature cutoff for each element
- C. Equip jacket with full size control compartments with front panel opening. Insulate tank with 2" of non-CFC foam insulation. Provide outer steel jacket with baked enamel finish. Provide brass drain valve; 3/4" relief valve; cold and water dip tube. Provide factory wired thermostat with manual reset to prevent overheating.
- D. Manufacturers: Subject to compliance with requirements, provide residential electric water heaters of one of the following:
  - 1. Bradford White Corp.
  - 2. Rheem Water Heater Div

**2.4 SEMI-INSTANTANEOUS STEAM FIRED WATER HEATERS**

- A. Design, manufacture, and stamp in accordance with section VIII, Div. I of the ASME code for 150 psig @ 210°F shell side and 150 psig @ 400°F tube side. Heater shall be externally insulated with 1 1/2" fiberglass (per ASHRAE 90) with a metal jacket. The shell wetted surfaces shall be constructed of 316L stainless steel, fittings of 304 stainless steel. Tubing shall be 0.049" wall cupro-nickel. Unit shall be condensing type.
- B. Unit shall be prepackaged with an equal percentage pneumatic control valve, steam inlet strainer, non-ferrous water circulation pump with isolation valves and flanges, double solenoid high temperature safety (hot water dump & steam shut off).

- C. Manufacturers: Subject to compliance with requirements, provide steam semi-instantaneous water heaters of one of the following:
  - 1. Ace Boiler Inc.
  - 2. Patterson Kelley

**PART 3 – EXECUTION**

**3.1 INSTALLATION OF WATER HEATERS**

- A. Place units on concrete pads, orient so controls and devices needing service and maintenance have adequate access. Connect hot and cold water piping to units with isolation valves and unions. Connect recirculating water line to unit with isolation valve, check valve, and union. Extend relief valve discharge to closest floor drain.
- B. Gas-Fired Water Heaters: Connect gas supply to gas line with drip leg, tee, gas cock, and union; full size of unit inlet connection. Locate piping so as not to interfere with service of unit. Connect flue to draft hood with gas-tight connection. Provide flue of minimum size as flue outlet on heater. Comply with gas utility requirements.
- C. Oil-Fired Water Heaters: Connect oil piping to oil burner with Firematic valve and union in supply, check valve and union in return. Where the piping is soft drawn copper and flare fittings, unions may be eliminated. Locate piping so as not to interfere with service of unit. Connect flue to water heater with gas-tight connection, provide draft regulator.
- D. Steam Instantaneous Hot Water Heaters: Provide a factory trained representative for start-up & owner training. Create an anti-feed back loop in the cold water supply line by piping the cold water in a 'U' shape to the floor, minimum depth 24", to prevent the hot water from migrating into the cold water supply.

END OF SECTION 15480