
223300 DOMESTIC WATER HEATERS

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and installation of domestic water heaters on Johns Hopkins University Homewood Campus. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

1.2 Submittals

N/A

1.3 Quality Assurance

A. All testing shall be performed by a factory-authorized service representative and witnessed by the Project Manager, unless directed otherwise.

B. Domestic hot water supply at the heater shall not exceed 140°F in any building.

1. In child care facilities, domestic hot water supply at the heater shall not exceed 120°F.

C. Domestic hot water supply to any kitchens and cafes must maintain a minimum of 100°F and shall be a dedicated independent source.

1.4 Delivery and storage

A. Material deliveries and storage areas to be approved by Owner.

B. Material storage to comply with manufacturer's recommendations.

Part 2 – PRODUCTS

2.1 Domestic Water Heaters

A. Tankless water heaters are the preferred system, where possible.

1. An exchanger that would separate a storage tank from the potable water loop will also be preferred over a standard storage tank system.

B. Water Heaters shall be provided with the following, at a minimum: external factory fabricated connections of materials compatible with tank for piping connections, relief valve, pressure gage, thermometer, drain, anode rods and controls as required.

1. Stands shall be water heater manufacturer's factory-fabricated, steel stand for floor mounting and capable of supporting a fully charged water heater. Include dimension that will support bottom of water heater a minimum of 18" above floor.

2. Drain pans, if required by code, shall be corrosion-resistant metal with raised edge. Include dimensions not less than base of water heater and include drain outlet not less than NPS 3/4".

a. May provide floor drain next to water heater in lieu of drain pan.

3. Piping manifold kits shall be water heater manufacturer's factory-fabricated inlet and outlet piping arrangement for multiple-unit installation. Include piping and valves for field assembly that is capable of isolating each water heater and will provide balanced flow through each water heater.

4. The interior finish shall be constructed of materials and thicknesses complying with NSF 61 barrier materials for potable-water tank linings and shall extend into and through tank fittings and outlets and the outer steel jacket housing (tank and insulation) shall have an enamel finish.

5. The expansion tank shall be commercial grade, factory-fabricated, ASME steel, pressure-rated tank constructed with welded joints, 150psig working-pressure rating and a factory-installed butyl-rubber diaphragm. Include air pre-charge to minimum system-operating pressure at tank. Interior finish shall be constructed of materials and thicknesses complying with NSF 61, barrier materials for potable-water tank linings and shall extend into and through tank fittings and outlets.

C. Electric heaters shall be provided with commercial grade heating elements, electric screw-in or bolt-on, immersion type not exceeding 18kw per step. The safety controls shall be automatic and include high-temperature-limit and low water cutoff devices.

D. Natural gas burners shall be atmospheric or powered-vent for natural-gas fuel. Automatic gas-ignition system and components shall comply with ANSI Z21.2. Include pressure rating, capacity and pressure differential required for water heater and gas supply. Automatic Valves shall be ANSI Z21.21, appliance, electrically operated, on-off automatic valve.

2.2 Point-of-Use Water Heaters

A. Instantaneous point-of-use water heaters are acceptable as a primary source only through written approval from the JHFRE Engineering and Energy Department. These are permitted for incidental use, sporadic equipment demands, or remote individual fixtures (e.g., lavatory, sink, shower, service sink) only. Point of use instantaneous water heaters are permitted for use at emergency fixtures to supply ANSI standard "tepid water" immediately at the emergency fixture or group of emergency fixtures.

Part 3 – EXECUTION

3.1 If available, utilize campus steam to provide domestic hot water.