Section 223000
Plumbing Equipment
DESIGN GUIDE

1 General

1.1 General

A. The campus does not universally soften water for buildings. When dictated by equipment or process, provide softening. Such conditions may include

1. Residential multi-unit housing
2. Commercial dishwashers
3. Laundry equipment.
4. Kitchen Equipment
5. Process make-up water for steam boilers, some types of humidifiers and pure water systems.
6. Domestic and non-potable heating water systems- only when required by the water heater manufacturer.

B. Water heaters

1. CWU generally prefers that water be stored and generated at the distribution temperature without master mixing valves. When two or more temperatures are required (such as kitchen at 140 degrees or laundry at 160 degrees F and general-purpose lavatories at 120 degrees F), consider dedicated water heaters for each application.
2. Redundancy: Facilities with large water heater loads such as athletics, housing and large dinging areas, shall consider providing two (or more) water heaters so that the facility has a minimum of 50% water available in the event that one water heater fails.

2 Materials

2.1 Water Heaters

A. Water Heater style shall be approved by the Campus Building Energy Engineer and the Mechanical Plumbing Manger.

B. Electric (preferred for smaller loads)

1. Electric immersion heater, tank style

2. Heat Pump. This is newer technology. Work with the Mechanical Plumbing manager on proposed technology when required by code or project sustainable goals.

C. Steam (preferred for larger loads when campus steam is available). Applications may include pool heating, student housing, large laundry, large kitchens, large laboratory facilitate.

1. Steam-Vertical flooded high-pressure steam-to-hot water heat exchanger with valves, controls, BACnet interface and stabilizer pumps. Skid mounted. Provide when facility is using HPS for building heating. Refer to Section 232200.

   a. Manufacturers

      1) Maxitherm

2. Steam-Instantaneous. Provide when facility has a pressure reducing station.

   a. Manufacturers: Aerco

3. If water heating is required in the summer months, provide gas or electric back up water heaters for summer operation. Discuss and obtain approval of style from the Mechanical Plumbing Manager.

D. Gas Fired (not preferred)

1. Not preferred due to difficulty in permitting with Washington State Department of Ecology. When utilized, consult with the Mechanical Plumbing Manager.

2.2 Point of Use Mixing Valves-Faucet

A. All bronze and stainless-steel components; Thermostatic action with bellows mounted out-of-water; Removable cartridge with strainers; Integral check stops; and outlet valve; All material rough chrome finish; Assembly to be furnished with wall bracket for exposed installation

2.3 Point of Use Mixing Valves-Safety Shower/eyewashes

A. Single stage thermostatic mixing valve to provide tempered water over a narrow range with outlet dial temperature and cold water bypass. Lockable shutoffs to prevent unauthorized or accidental closing. ASSE 1071 compliant.

2.4 Softeners

A. Provide mineral/resin tanks with automatic backwash and brine tank. Tanks shall be glass fiber reinforced plastic. Regeneration shall occur based upon usage.

2.5 Expansion Tanks

A. Steel tank with heavy duty butyl NSF fixed diaphragm stainless steel system connection, ASME, Schrader valve with EPDM seat.

2.6 Domestic Hot Water Recirculation Pumps

A. Lead-free bronze or stainless-steel construction, commercial grade.

3 Execution

3.1 Water Heaters

A. No water heaters are to be suspended in ceilings or attic spaces.

B. When required by code, provide a galvanized metal drain pan at each water heater. Each drain pan must also include a drain line.

C. Electric water heaters shall be set on insulated pad per the Energy Code.

3.2 Mixing Valves-Safety Shower and Eyewash

A. Provide for tempering water to safety showers and eyewashes.

B. It is preferred that mixing valve quantities be limited in the facility and service more than one device when practical.

C. Locate in serviceable room where practical such as mechanical room or custodial room.

D. Size mixing valve to service largest device with the assumption that only one device requires flow at any single time.

3.3 Water Filters and Softeners

A. Softening system shall consist of mineral/resin tanks and brine tanks sized for peak demand. Resin tank shall be equipped with controls for automatic backwash. For critical applications where backwash cannot be scheduled for unoccupied hours, provide duplex mineral/resin tank.

4 Appendix

4.1 Reserved for future.