

## 22 30 00 Plumbing Equipment

Revision 01/04/2019

### **Purpose:**

The Architect and/or Engineer shall incorporate the Rice specific requirements indicated in this standard's section into their design. The Architect and/or Engineer shall further produce project specifications in line with industry standards that are updated to reflect these Rice specific requirements.

### 1. **Domestic water pumps**

- a. Pump Quantities: N+1 Redundancy
  - i. Two 100% pumps or
  - ii. Three 50% pumps.
- b. Pumps shall use Variable frequency drives (refer to Rice Standards 26 29 23)
- c. A full size bypass line with a shut off valve shall be provided.

### 2. **Whole Building Domestic Water Heaters**

- a. Buildings served by central plant steam
  - i. Dorm buildings: Use domestic water storage tank with insertion steam heating coil.
  - ii. Non-dorm buildings: Use shell and tube heat exchangers designed and configured to operate as instantaneous heaters.
- b. Buildings not served by central plant steam
  - i. Use two 100% natural gas instantaneous heaters.
  - ii. If natural gas is not available then an electric water heater may be used.
- c. Masters Houses
  - i. Use standard natural gas tank water heater
  - ii. Use instantaneous gas water heater
  - iii. If natural gas is not available then an electric water heater may be used.
  - iv. Tank water heaters shall be 50 gallon units.

### 3. **Small Area or "Point of Use" Domestic Water Heaters**

- a. This type of installation is generally not preferred; however some specific installations make a centralized system impractical. Approval from the Project Manager is required prior to the start of design.

### 4. **Acid Dilution Basins**

- a. Design with sampling well similar to Enfield.
- b. Control panel shall have a general alarm output to the Building Automation System
- c. Rice EH&S approval required for design of acid neutralization systems prior to Construction Document issue.

### 5. **Grease Traps**

- a. Provided for all commercial kitchen applications.

**6. Sump Pumps and Sewer Ejector Pumps:**

- a. Control panel shall have a general alarm output to the Building Automation System
- b. Include high-high alarm point with both local audio/visual alarm and alarm to the building automation system.

**7. Domestic Water Storage/Break Tanks**

- a. Make code determination on need for break tank and get Project Manager Approval prior to start of building design and system design.
- b. If tank is required:
  - i. Include High and high-high alarm point with both local audio/visual alarm and alarms to the building automation system.
- c. Domestic Break tanks shall be painted blue. If a combined firewater/domestic water tank is used, then the fire water side shall be painted red and the domestic water side blue.
- d. Domestic Water Break Tank shall drain to the exterior of the building, not to interior floor drain/floor sink.

**8. Water Hammer Arrestors**

- a. Water hammer arrestors on campus to be screw-on type only. Welded/soldered “maintenance free” arrestors will not be permitted.
- b. Whether in walls or ceilings, all water hammer arrestors shall be clearly indicated on the drawings and fully accessible once installed.

**9. Backflow Preventers**

- a. Backflow preventers shall be installed with a bypass and isolation valves such that the backflow preventer can be isolated for testing without shutting down water to building downstream.