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.