



23 20 00 HVAC PIPING AND PUMPS

Revised January 2026

1. **CHILLED WATER PUMPS:**

- A. Pump Quantities: N+1 redundancy required for each Chiller or System.
 - i. Two 100% pumps, or Three 50% pumps.
- B. Pumps shall use variable frequency drives to maintain differential press depending on system design.
- C. Horizontal, pad-mounted pumps are required. Vertical in-line pumps may be used depending on application upon Project Manager's prior approval.
- D. Accepted Manufacture: Taco

2. **HEATING WATER PUMPS:**

- A. Pump Quantities: N+1 redundancy required for main/primary loop systems and individual boiler pumps on secondary loop.
 - i. Two 100% pumps or Three 50% pumps.
- B. Pumps shall use variable frequency drives.
- C. Horizontal pad-mounted pumps are where space permits. Vertical in-line pumps may be used depending on application upon Rice Project Manager approval.
- D. Accepted Manufacture: Taco

3. **PIPING:**

- A. Size piping for maximum pressure loss per 100 feet of 3-5 feet based on 30-year-old pipe using Cameron Hydraulic Data or equivalent sizing charts. Maximum velocity in pipe mains should be 8 feet per second.
 - a. Piping 1½" and below shall be threaded.
 - b. Piping 2" and larger shall be butt-welded or flanged joints.
 - c. Groove lock pipe fittings (Victaulic or similar) shall **NOT** be permitted.
 - d. ProPress (Viega or similar) shall not be permitted.
 - e. Black steel piping should be covered with insulated pipe covering or should be painted where insulation is not required or exposed to exterior.
 - f. Expansion compensation that depends on manufactured devices and requires periodic maintenance shall not be permitted. Pipe loops and anchors are preferred for expansion compensation.

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- g. Risers through floors should be curbed or sleeved to a minimum height of 2” in mechanical rooms to prevent water migration.
- h. Piping or valves supported from the floor shall be supported with either unistrut, steel pipe or steel angle mounted to a baseplate of the same material.
- i. Piping supported from above shall be secured to structural elements only. No supports hung from other piping.
- j. Balancing at pumps and at each coil is required. Design should use balancing valves with memory stops and employ pressure/temperature test plugs at each coil and in major zone branches. Accepted Manufacture: Victaulic TA Series.
- k. Install pipe markers on each system. Include arrows showing normal direction of flow.
 - i. Pipe labels and arrows are to be installed by Division 22, **not** insulators.
- l. Refrigerant piping must be Type "K" copper ACR tubing with Long Radius 90-degree elbows.
- m. Refrigerant pipe fittings must be wrought copper streamlined sweat fitting. Solder must be Sil-Fos 15%, except on valves use solder recommended by valve manufacturer.
- n. Piping to/from building pumps shall have flexible stainless-steel hose for vibration isolation.
- o. Piping to/from air handling coils in sound sensitive areas shall have flexible stainless-steel hose for vibration isolation.
 - i. Sound sensitive areas shall include:
 - 1. Architect to request list of sound sensitive areas during schematic design.

END OF SECTION 23 20 00