

SECTION 23 83 15
HYDRONIC FLOOR HEATING AND COOLING SYSTEM
Design Standard

PART 1 GENERAL

1.1 PURPOSE

- A. Hydronic floor heating and cooling systems are an essential element of the mechanical cooling and heating systems. This design standard has the purpose of creating a consistent application of hydronic floor heating and cooling requirements throughout the San Mateo County Community College District therefore achieving a standard of quality for maintenance, energy efficiency, and reliability throughout all renovation and new building projects.

PART 2 PRODUCTS

- 2.1 Design and specify work to include materials, installation and testing of hydronic floor heating and cooling systems for a complete and operating system
 - A. Design system to assure there will not be any condensation during cooling mode (if cooling is used).
 - B. Tubing: Flexible single pipe energy transfer hose which is oil resistant and is not degradable by continuous exposure to sunlight. System/tubing shall have an oxygen diffusion barrier. System capable of withstanding temperatures of minus 50F and plus 200F, and provide a commercial warranty of 20 years. Tubing capable of 180 degree change of direction without cracking or collapsing. Burst pressure not less than 800 PSI at 70F installation to meet requirements of manufacturer. Tubing installation and layout as directed and required by manufacturer. Lay out system with separate zones and controls.
 - C. Supply and return manifold piping to energy transfer tubing to be Type "K" copper with brass fittings for transition to tubing
 - D. During the installation, cap tubing on each end to prevent foreign materials from entering the tubing. Check tubing for abrasions prior to installation. Install tubing embedded in the floor without joints or splices, the cold bending radius of the tubing in accordance with Paragraph X2.3.6 of ASTM F877. Install tubing in such a manner as to effectively address the heat loss of the space. Do not place tubing near heat sensitive materials. The manifold and fittings accessible for maintenance. After the system is filled with water/glycol mix, vent air vented from the system. After the system is allowed to stabilize at the operating temperature of the heating fluid, vent the system again. Properly pressure test PEX system in accordance with the tubing manufacturer's guidelines, prior to burial below grade or in concrete. The tubing shall maintain a pressure test of 100 psi for a period of 24 hours prior to such covering. Keep tubing under constant pressure during installation of covering or backfill
 - E. Concrete Slab Construction: Fasten tubing to a flat mesh or reinforcing bar (or other manufacturer-approved device) in accordance with the tubing manufacturers design recommendations.
 - F. Apply test pressure of 125 PSI and maintain for one hour with no visible leaks and no appreciable drop after the test pump has been disconnected

2.2 APPROVED MANUFACTURERS:

- A. Heatway
- B. Uponor HE PEX

PART 3 EXECUTION

3.1 SUBSTITUTES ALLOWED?

Yes, if performance and quality equivalency can be evidenced.

3.2 ASSOCIATED DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS:

- 23 05 29 - Hangers and Supports for HVAC Piping and Equipment
- 23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment
- 23 05 53 - Identification for HVAC Piping and Equipment
- 23 05 93 - Testing, Adjusting and Balancing
- 25 55 00 – Building Management and Control System (BMS)

END OF SECTION