

SECTION 15510

HYDRONIC PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Pipe and pipefittings for:
 - 1. Chilled water piping system.
 - 2. Equipment drains and overflows.

1.2 REFERENCES

- A. ASME B16.18: Cast Copper Alloy Solder Joint Pressure Fittings.
- B. ASME B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- C. ASME B31.9: Building Services Piping.
- D. ASTM A53: Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
- E. ASTM A234: Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures.
- F. ASTM B32: Solder Metal.
- G. ASTM B88: Seamless Copper Water Tube.

1.3 SYSTEM DESCRIPTION

- A. Where more than one piping system material is specified, ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.
- B. Use grooved mechanical couplings and fasteners in accessible locations.
- C. Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.
- D. Use non-conducting dielectric connections wherever jointing dissimilar metals in open systems.
- E. Provide pipe hangers and supports in accordance with ASTM B31.0 unless indicated otherwise.
- F. Use gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

- G. Use globe valves for throttling, bypass, or manual flow control services.
- H. Use spring loaded check valves on discharge of pumps.
- I. Use plug cocks for throttling service. Use non-lubricated plug cocks only when shut-off or isolating valves are also provided.

1.4 SUBMITTALS

- A. Submit under provisions.
- B. Product Data: Include data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.
- C. Manufacturer's Installation Instructions; Indicate hanging and support methods, joining procedures.

1.5 REGULATORY REQUIREMENTS

- A. Conform to ASME B31.0 code for installation of piping system.
- B. Welding Materials and Procedures: Conform to ASME SEC.
- C. Provide certificate of compliance from authority having jurisdiction indicating approval of welders.

PART 2 - PRODUCTS

2.1 CHILLED WATER PIPING, ABOVE GRADE

- A. Steel Pipe: ASTM A53 or A120, Schedule 40, .375 inch wall for sizes 12 inch and over black.
 - 1. Fittings: ASTM B16.3, malleable iron or ASTM A234, forged steel welding type.
 - 2. Joints: Threaded or AWS D1.1 welded.
- B. Copper Tubing: ASTM B33, Type L hard drawn.
 - 1. Fittings: ASME B16.18 cast brass or ANSI/ASME B16.22 solder wrought copper.
 - 2. Tee Connections: Mechanically extracted collars with notched and dimpled branch tube.
 - 3. Joints: Solder, lead free, ASTM B32, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F.
 - 4. Joints: Braze, AWS A5.8 BCuP silver/phosphorus/copper alloy with melting range 1190-1480 degrees F.

2.2 EQUIPMENT DRAINS AND OVERFLOWS

- A. Steel Pipe: ASTM A53, Schedule 40 galvanized.
 - 1. Fittings: Galvanized cast iron, or ASTM B16.3 malleable iron.
 - 2. Joints: Threaded, or grooved mechanical couplings.
- B. Copper Tubing: ASTM B88, Type L hard drawn.
 - 1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
 - 2. Joints: Solder, lead free, ASTM B32, 95-5 tin-antimony, or tin and silver, with melting range 430 to 535 degrees F (220 to 280 degrees C).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare piping connections to equipment with flanges or unions.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.
- E. After completion, fill, clean, and treat systems.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Route piping in orderly manner, parallel to building structure, and maintain gradient.
- C. Install piping to conserve building space, and not interfere with use of space.
- D. Group piping whenever practical at common elevations.
- E. Sleeve pipe passing through partitions, walls and floors.
- F. Slope piping and arrange to drain at low points.
- G. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

END OF SECTION