

**PART 1 - GENERAL**

- 1.1 RELATED REQUIREMENTS .1 Section 23 05 23.01 - Valves - Bronze.
- 1.2 REFERENCES .1 American National Standards Institute (ANSI)/American Welding Society (AWS)
- .1 ANSI/AWS A5.8/A5.8M-11, AMD1 Specification Filler Metals for Brazing and Braze Welding.
- .2 ASME
- .1 ASME B16.4-2011, Gray-Iron Threaded Fittings Classes 125 and 250.
- .2 ASME B16.15-2013, Cast Copper Alloy Threaded Fittings Classes 125 and 250.
- .3 ASME B16.18-2012, Cast Copper Alloy, Solder Joint Pressure Fittings.
- .4 ASME B16.22-2013, Wrought Copper and Copper-Alloy Solder Joint Pressure Fittings.
- .3 ASTM International
- .1 ASTM B32-08, Standard Specification for Solder Metal.
- .2 ASTM B88M-13, Standard Specification for Seamless Copper Water Tube Metric.

**PART 2 - PRODUCTS**

- 2.1 TUBING .1 Type L hard drawn copper tubing: to ASTM B88M.
- 2.2 FITTINGS .1 Cast bronze threaded fittings: to ASME B16.15.
- .2 Wrought copper and copper alloy solder joint pressure fittings: to ASME B16.22.
- .3 Cast iron threaded fittings: to ASME B16.4.
- .4 Cast copper alloy solder joint pressure fittings: to ASME B16.18.
- 2.3 FLANGES .1 Brass or bronze: threaded.
- .2 Cast iron: threaded.
- .3 Orifice flanges: slip-on, raised face, 2100 kPa.
- 2.4 JOINTS .1 Solder, tin-antimony, 95:5: to ASTM B32.
- .2 Silver solder BCUP: to ANSI/AWS A5.8.
- .3 Brazing: as indicated.

2.5 VALVES .1 Refer to Section 23 05 23.01 - Valves - Bronze.

### **PART 3 - EXECUTION**

3.1 PIPING INSTALLATION .1 Connect to equipment in accordance with manufacturer's instruction unless otherwise indicated.

.2 Install concealed pipes close to building structure to keep furring space to minimum. Install to conserve headroom and space. Run exposed piping parallel to walls. Group piping where ever practical.

.3 Slope piping in direction of drainage and for positive venting.

.4 Use eccentric reducers at pipe size change installed to provide positive drainage or positive venting.

.5 Provide clearance for installation of insulation and access for maintenance of equipment, valves and fittings.

.6 Assemble piping using fittings manufactured to ANSI standards.

3.2 VALVE INSTALLATION .1 Install ball or butterfly valves at branch take-offs and to isolate each piece of equipment, and as indicated.

3.3 FLUSHING AND CLEANING .1 Flush and clean in presence of Departmental Representative.

.2 Flush after pressure test for a minimum of 4 hours.

.3 Fill with solution of water and non-foaming, phosphate-free detergent 3% solution by weight. Circulate for minimum of 8 hours.

.4 Refill system with clean water. Circulate for at least 4 hours. Clean out strainer screens/baskets regularly. Then drain.

.5 Refill system with clean water. Circulate for at least 2 hours. Clean out strainer screens/baskets regularly. Then drain.

.6 Drainage to include drain valves, dirt pockets, strainers, low points in system.

.7 Re-install strainer screens/baskets only after obtaining Departmental Representative's approval.

3.4 FILLING OF SYSTEM .1 Refill system with clean water adding water treatment as specified or glycol as indicated.