
Decommissioning, Demolition and Site Restoration SSB HQ
Southside Road, St. John's, NL
Project No. R.111146.001

2021/12/01

Section 22 11 18 – Domestic Water Piping – Copper

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PART 1 GENERAL

1.1 RELATED SECTIONS

- .1 Division 01.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME)
 - .1 ANSI/ASME B16.15, Cast Bronze Threaded Fittings, Classes 125 and 250.
 - .2 ANSI/ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
 - .3 ANSI/ASME B16.22, Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
 - .4 ANSI/ASME B16.24, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150 and 300.
- .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - .2 ASTM B88M, Specification for Seamless Copper Water Tube (Metric).
 - .3 ASTM F492, Specification for Propylene and Polypropylene (PP) Plastic-Lined Ferrous Metal Pipe and Fittings.
- .3 American Water Works Association (AWWA)
 - .1 ANSI/AWWA C111/A21.11, Rubber Gasket Joints for Ductile-Iron and Fittings.
- .4 Manufacturer's Standardization of the Valve and Fittings Industry (MSS)
 - .1 MSS-SP-67, Butterfly Valves.
 - .2 MSS-SP-70, Cast Iron Gate Valves, Flanged and Threaded Ends.
 - .3 MSS-SP-71, Cast Iron Swing Check Valves Flanged and Threaded Ends.
 - .4 MSS-SP-80, Bronze Gate, Globe, Angle and Check Valves.

1.3 PRODUCT DATA

- .1 Submit product data in accordance with Division 01.
- .2 Submit data for following: valves.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for incorporation into manual specified in Division 01.

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PART 2 PRODUCTS

2.1 PIPING

- .1 Domestic hot, cold and recirculation systems, within building. Domestic cold-water piping termination point will be 1.5 m outside building.
 - .1 Above ground: copper tube, hard drawn, type L to ASTM B88M.
 - .2 Buried or embedded: copper tube, soft annealed, type K to ASTM B88M, in long lengths and with no buried joints.

2.2 FITTINGS

- .1 Bronze pipe flanges and flanged fittings, Class 150 and 300: to ANSI/ASME B16.24.
- .2 Cast bronze threaded fittings, Class 125 and 250: to ANSI/ASME B16.15.
- .3 Cast copper, solder type: to ANSI/ASME B16.18.
- .4 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.
- .5 NPS 2 and larger: roll grooved to CSA B242.

2.3 JOINTS

- .1 Rubber gaskets, 1.6 mm thick to ANSI/AWWA C111/A21.11.
- .2 Solder: 95/5 tin copper alloy. 5% silver solder: Above 40 mm type Silfos 5.

2.4 UNIONS

- .1 Threaded 50 mm and under: All bronze unions Class 150, ground seat.

2.5 GATE VALVES

- .1 NPS2 and under, soldered:
 - .1 Rising stem: to MSS-SP-80, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc.
- .2 NPS2 and under, screwed:
 - .1 Rising stem: to MSS-SP-80, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc.

2.6 GLOBE VALVES

- .1 For domestic hot water service globe valves composition discs shall be rated at 150 °C.

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- .2 NPS2 and under, screwed:
 - .1 To MSS-SP-80, Class 150, 1 MPa, bronze body, screwed over bonnet, renewable composition disc.
 - .2 Lockshield handles: as indicated.

2.7 SWING CHECK VALVES

- .1 NPS 2 and under, screwed:
 - .1 To MSS-SP-80, Class 125, 860 kPa, bronze body, bronze swing disc, screw in cap, regrindable seat.

2.8 BALL VALVES

- .1 NPS2 and under, screwed:
 - .1 Class 150.
 - .2 Bronze body, chrome plated brass, stainless steel ball, PTFE Teflon adjustable packing, brass gland and PTFE Teflon seat, steel lever handle.

PART 3 EXECUTION

3.1 INSTALLATION

- .1 Install in accordance with Canadian Plumbing Code and local authority having jurisdiction.
- .2 Assemble piping using fittings manufactured to ANSI standards.
- .3 Install CWS piping below and away from HWS and other hot piping so as to maintain temperature of cold water as low as possible.
- .4 Connect to fixtures and equipment in accordance with manufacturer's written instructions unless otherwise indicated.
- .5 Buried tubing:
 - .1 Lay in well compacted washed sand in accordance with AWWA Class B bedding.
 - .2 Bend tubing without crimping or constriction. Minimize use of fittings.

3.2 PRESSURE TESTS

- .1 Conform to requirements of Mechanical Division.
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- .3 Test pressure: greater of 1 1/2 times maximum system operating pressure or 860 kPa.

3.3 FLUSHING AND CLEANING

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- .1 Flush entire system for 8 h. Ensure outlets flushed for 2 h. Let stand for 24 h, then draw one sample off longest run. Submit to testing laboratory to verify that system is clean. Let system flush for additional 2 h, then draw off another sample for testing.

3.4 PRE-START-UP INSPECTIONS

- .1 Systems to be complete, prior to flushing, testing and start-up.
- .2 Verify that system can be completely drained.
- .3 Ensure that air chambers, expansion compensators are installed properly.

3.5 DISINFECTION

- .1 Flush out, disinfect and rinse system to requirements of authority having jurisdiction.

3.6 PERFORMANCE VERIFICATION

- .1 Timing:
 - .1 After pressure and leakage tests and disinfection completed, and certificate of completion has been issued by authority having jurisdiction.
- .2 Procedures:
 - .1 Verify that flow rate and pressure meet Design Criteria.
 - .2 Sterilize HWS and HWC systems for Legionella control.
 - .3 Verify performance of temperature controls.
 - .4 Verify compliance with safety and health requirements.
 - .5 Check for proper operation of water hammer arrestors. Run one outlet for 10 seconds, then shut off water immediately. If water hammer occurs, replace water hammer arrestor or re-charge air chambers. Repeat for outlets and flush valves.
 - .6 Confirm water quality consistent with supply standards, verifying that no residuals remain as a result of flushing and/or cleaning.
- .3 Reports:
 - .1 In accordance with Facility Commissioning: Reports, using report forms as specified in Commissioning Section.
 - .2 Include certificate of water flow and pressure tests conducted on incoming water service, demonstrating adequacy of flow and pressure.

END OF SECTION