

**PART 1 - GENERAL****1.1 RELATED REQUIREMENTS**

- .1 Section 23 05 23.01 - Valves - Bronze.

**1.2 REFERENCES**

- .1 American Society of Mechanical Engineers International (ASME)
- .1 ASME B16.15-2013, Cast Bronze Threaded Fittings, Classes 125 and 250.
  - .2 ASME B16.18-2012, Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3 ASME B16.22-2013, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
  - .4 ASME B16.24-2011, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 400, 600, 900, 1500 and 2500.
- .2 ASTM International Inc.
- .1 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .2 ASTM B88M-13, Standard Specification for Seamless Copper Water Tube (Metric).
- .3 American Water Works Association (AWWA)
- .1 AWWA C111/A21.11-12, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- .4 National Research Council (NRC)/Institute for Research in Construction
- .1 NRCC 38728, National Plumbing Code of Canada (NPC) - 1995.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

**PART 2 - PRODUCTS****2.1 PIPING**

- .1 Domestic hot, cold and recirculation systems, within building.
- .1 Above ground: copper tube, hard drawn, type L: to ASTM B88M.

**2.2 FITTINGS**

- .1 Bronze pipe flanges and flanged fittings, Class 150: to ASME B16.24.
- .2 Cast bronze threaded fittings, Class 125: to ASME B16.15.
- .3 Cast copper, solder type: to ASME B16.18.
- .4 Wrought copper and copper alloy, solder type: to ASME B16.22.

2.3 JOINTS

- .1 Rubber gaskets, latex-free 1.6 mm thick: to AWWA C111.
- .2 Bolts, nuts, hex head and washers: to ASTM A307, heavy series.
- .3 Solder: 95/5 lead free solder.
- .4 Teflon tape: for threaded joints.
- .5 Dielectric connections between dissimilar metals: dielectric fitting, complete with thermoplastic liner.

2.4 BALL VALVES

- .1 As specified Section 23 05 23.01 - Valves - Bronze.

**PART 3 - EXECUTION**3.1 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install in accordance with NPC and local authority having jurisdiction.
- .2 Assemble piping using fittings manufactured to ASME standards.
- .3 Install CWS piping below and away from HWS and HWC 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.

3.3 VALVES

- .1 Isolate equipment, fixtures and branches with ball valves.

3.4 DISINFECTION

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

END OF SECTION

**PART 1 - GENERAL****1.1 REFERENCES**

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM D2564-12, Specification for Solvent Cements for Poly(Vinyl-Chloride) (PVC) Plastic Piping Systems.
- .2 Canadian Standards Association (CSA)
  - .1 CSA B1800-15, Thermoplastic Nonpressure Piping Compendium.
- .3 National Research Council Canada (NRCC)
  - .1 NRCC NBCC-2010, National Building Code of Canada 2010.
- .4 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC S102.2-10, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.
  - .2 CAN/ULC S115-11, Standard Method of Fire Tests of Firestop Systems.

**1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

**PART 2 - PRODUCTS****2.1 PIPING AND  
FITTINGS**

- .1 Fire & smoke resistant coated DWV PVC (Polyvinyl Chloride) piping & fittings:
  - .1 Application: Above grade sanitary, vent piping & fittings where combustible piping is permitted including High-rise applications and within ceiling plenums.
  - .2 Pipe and Fittings: Drain, waste and vent pipe and fittings shall be certified to CSA B181.2 and when used in noncombustible construction, high-rise buildings and air plenums, they shall be tested and listed in accordance with CAN/ULC S102.2 and clearly marked with the certification logo indicating a flame-spread rating not exceeding 25 and a smoke-developed classification not exceeding 50.
- .2 Firestopping Devices:
  - .1 All combustible pipe penetrations shall comply with the requirements described in the NBC and provide a firestop system that has been Tested and Listed to the test Standard CAN/ULC S115 with a pressure differential of 50 Pa. In addition, the manufacturer shall provide a documentation confirming compliance with the Listed system.
- .3 Solvent Welding:
  - .1 Solvent cements shall be CSA certified and meet the requirements of ASTM D2564. One-step cement may be used for sizes from NPS 40 to 150. Two-step cement must be used in conjunction with primer on larger pipe sizes. Proper solvent cementing procedures must be followed at all times.
  - .2 The manufacturer, shall be consulted prior to installation for proper solvent welding procedures and proper solvent cement requirements.

2.1 PIPING AND  
FITTINGS  
(Cont'd)

- .4 Expansion/Contraction:
  - .1 Compensation shall be made to accommodate expansion/contraction on the drainage system. It is recommended that there be compensation on every second floor for the vertical piping system. Consult pipe system manufacturer for specific details regarding approved compensation methods.
- .5 Compatibility:
  - .1 To ensure compatibility, performance and material quality, all pipe and fitting drainage system shall be produced by the same manufacturer.
- .6 Quality Control:
  - .1 The manufacturer of the pipe and fitting system shall be contacted prior to the installation to obtain precise installation instructions. Site meetings shall be arranged and include, the Contractor, Manufacturer and Building Inspector.

**PART 3 - EXECUTION**3.1 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install in accordance with National Plumbing Code and local authority having jurisdiction.

3.3 TESTING

- .2 Hydraulically test to verify grades and freedom from obstructions.

END OF SECTION

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American Society of Mechanical Engineers (ASME)
    - .1 ASME B16.5-2013, Pipe Flanges and Flanged Fittings.
    - .2 ASME B16.11-2011, Forged Fittings, Socket-Welding and Threaded.
  - .2 American Society for Testing and Materials International (ASTM)
    - .1 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
    - .2 ASTM A181/A181M-14, Standard Specification for Carbon Steel Forgings for General Purpose Piping.

- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

PART 2 - PRODUCTS

- 2.1 PIPING
- .1 Piping: to ASTM A53/A53M, schedule 80 seamless black steel.
  - .2 Fittings:
    - .1 NPS 2 and smaller: to ASME B16.11, schedule 80 steel, socket welded.
  - .3 Couplings: to ASME B16.11, socket welded or threaded half coupling type.
  - .4 Unions: 1000 kPa malleable iron with brass-to-iron ground seat.
  - .5 Dissimilar metal junctions: use dielectric unions.
  - .6 Flanges:
    - .1 NPS 2 and smaller: to ASME B16.5, forged steel, raised face and socket welded.
  - .7 Joints:
    - .1 NPS 2 and smaller: socket welded.
- 2.2 BALL VALVES
- .1 Three piece design or top entry for ease of in-line maintenance.
    - .1 To ASTM A181/A181M, Class 70, carbon steel body socket welded or screwed ends, carbon steel ball and associated trim suitable for compressed air application.
    - .2 To withstand 1034 kPa maximum pressure.

2.3 COUPLERS/  
CONNECTORS

- .1 Industrial interchange series, full-bore.
- .2 Maximum inlet pressure: 1700 kPa.
- .3 Valve seat: moulded nylon.
- .4 Body: zinc plated steel.
- .5 Threads: NPT.

PART 3 - EXECUTION3.1 MANUFACTURER'S  
INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 COMPRESSED AIR  
PIPING CONNECTIONS  
AND INSTALLATION

- .1 Install shut-off valves at outlets, major branch lines and in locations as indicated.
- .2 Install unions to permit removal or replacement of equipment.
- .3 Install tees in lieu of elbows at changes in direction of piping. Install plug in open ends of tees.
- .4 Grade piping at 1% slope minimum.
- .5 Make branch connections from top of main.

END OF SECTION