

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 23 05 05 - Installation of Pipework.
- .2 Section 23 05 17 - Pipe Welding.
- .3 Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.

1.2 REFERENCES

- .1 Unless otherwise indicated, all the works must be done in accordance with the in force edition of the "Code de construction du Québec", including Chapter 3 - Plumbing.
- .2 Furthermore, the works will be done in accordance with any other code or standard having jurisdiction, as per the latest edition, notably including, but not limited to:
 - .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME).
 - .1 ANSI/ASME B16.15 2006, Cast Bronze Threaded Fittings, Classes 125 and 250.
 - .2 ANSI/ASME B16.18 2001, Cast Copper Alloy Solder Joint Pressure Fittings.
 - .3 ANSI/ASME B16.22 2001, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - .4 ANSI/ASME B16.24 2001, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Classes 150, 300, 400, 600, 900, 1500, and 2500.
 - .2 American National Standards Institute/American Water Works Association (ANSI/AWWA).
 - .1 ANSI/AWWA C111-07, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - .3 American Society for Testing and Materials International (ASTM).
 - .1 ASTM B88M, Standard Specification for Seamless Copper Water Tube (Metric).

- .4 Department of Justice (DOJ).
 - .1 Canadian Environmental Protection, 1999, c.33 (CEPA).
- .5 Health Canada / Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .6 Transport Canada (TC).
 - .1 Transport of Dangerous Goods, 1992, c. 34 (TDG).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit all required documents and samples.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and datasheets for insulation and adhesives, and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Closeout Submittals:
 - .1 Submit all documents and items to the completion of the work required and attach them to the "Operating and Maintenance Manual".

PART 2 - PRODUCTS

2.1 PIPING

- .1 Domestic hot, cold, and recirculation systems, within building.
 - .1 Above ground: Copper tube, hard drawn, "L" Type, according to ASTM B88M and NSF/ANSI-61 Standards.

2.2 FITTINGS

- .1 Copper Pipe:
 - .1 Bronze pipe flanges and flanged fittings, Classes 150 and 300 according to ANSI/ASME B16.24 Standard.
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- .2 Cast bronze threaded fittings, Classes 125 and 250, according to ANSI/ASME B16.15 Standard.

2.3 JOINTS

- .1 Copper pipe:
 - .1 Teflon Tape for threaded joints.

2.4 BALL VALVES

- .1 NPS 2½ and under, screwed:
 - .1 Class 150.
 - .2 Body in forged brass B283 or bronze, chromed brass full spherical shutter (solid), adjustable Teflon PTFE gasket, brass gland or double O-ring Viton, Teflon PTFE seat, and steel lever handle.
 - .3 Acceptable products : Crane No. F9202; Anvil No. F 171 N; Milwaukee No. BA-100; Toyo-R/W No. 5044 A; Kitz No. 58; Victaulic, 722 (600 lb/po²); Apollo, 70-100.

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 PIPE INSTALLATION

- .1 Install in accordance with Quebec Building Code - Chapter 3, Plumbing and local authority having jurisdiction.
 - .2 Install pipe work in accordance with Section 23 05 05 - Installation of Pipework, supplemented as specified herein.
 - .3 Assemble piping using fittings manufactured to ANSI Standards.
 - .4 Install piping close to walls and ceilings to reduce overcrowding of space. Group piping and install parallel to walls.
 - .5 Connect to fixtures and equipment in accordance with manufacturer's written instructions, unless otherwise indicated.
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3.3 VALVES

- .1 Isolate equipment, fixtures, and branches with ball valves.
- .2 Balance recirculation system using lockshield globe valves. Mark settings and record on as-built drawings upon completion.

3.4 PRESSURE TESTS

- .1 Conform to requirements of Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .2 Test Pressure: Greater than one time maximum system operating pressure or 860 kPa during 2 hours.

3.5 PRE-START-UP INSPECTIONS

- .1 Systems to be complete, prior to flushing, testing, and start-up.
- .2 Verify that system can be completely drained.

3.6 FLUSHING AND CLEANING

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

3.7 DISINFECTION

- .1 Flush out, disinfect, and rinse system to requirements of authority having jurisdiction approval of Departmental Representative.
- .2 Upon completion, provide laboratory test reports on water quality for Departmental Representative.

3.8 START-UP

- .1 Timing: start up after:
 - .1 Pressure tests have been completed.
 - .2 Disinfection procedures have been completed.
 - .3 Certificate of static completion has been issued.
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- .4 Water treatment systems operational.
- .2 Provide continuous supervision during start-up.
- .3 Start-up Procedures:
 - .1 Establish circulation and ensure that air is eliminated.
 - .2 Check pressurization to ensure proper operation and to prevent water hammer, flashing and/or cavitation.
- .4 Rectify start-up deficiencies.

3.9 PERFORMANCE VERIFICATION

- .1 Scheduling:
 - .1 Verify system performance after pressure and leakage tests and disinfection are completed, and Certificate of Completion has been issued by authority having jurisdiction.
- .2 Procedures:
 - .1 Verify that flow rate and pressure meet design criterion.
 - .2 TAB hvac in accordance with Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
 - .3 Verify compliance with safety and health requirements.
 - .4 Confirm water quality consistent with supply standards, and ensure no residuals remain as result of flushing or cleaning.
- .3 Reports:
 - .1 Include certificate of water flow and pressure tests conducted on incoming water service, demonstrating adequacy of flow and pressure.

3.10 CLEANING

- .1 Perform cleaning after Work.

END OF SECTION
