

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 21 05 01 – Common Work Results - Mechanical.
- .2 Section 23 05 05 – Installation of Pipework.

### **1.2 REFERENCES**

- .1 ASME
  - .1 ANSI/ASME B16.15-06, Cast Bronze Threaded Fittings, Classes 125 and 250.
  - .2 ANSI/ASME B16.18-01, Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3 ANSI/ASME B16.22-01, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- .2 ASTM International Inc.
  - .1 ASTM B88M-05, Standard Specification for Seamless Copper Water Tube (Metric).
- .3 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
  - .1 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.
- .4 National Plumbing Code of Canada (NPC) - 2010.

### **1.3 SUBMITTALS**

- .1 Provide Shop Drawing and Maintenance Manual submittals in accordance with Section 01 33 00 - Submittal Procedures and section 21 05 01 – Common Work Results - Mechanical

## **2 Products**

### **2.1 PIPING**

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

### **2.2 FITTINGS**

- .1 Cast bronze threaded fittings, Class 125 and 250: to ANSI/ASME B16.15.
- .2 Cast copper, solder type: to ANSI/ASME B16.18.
- .3 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.

## **2.3 JOINTS**

- .1 Solder: Lead-free.
- .2 Teflon tape: for threaded joints.

## **3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- 1. Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and data sheets.

### **3.2 INSTALLATION**

- 1. Install in accordance with NPC National Plumbing Code of Canada 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 CWS piping below and away from HWS and other hot piping so as to maintain temperature of cold water as low as possible.
- 5. Connect to fixtures in accordance with manufacturer's written instructions unless otherwise indicated.

**END OF SECTION**

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 21 05 01 – Common Work Results – Mechanical.
- .2 Section 23 05 05 - Installation of Pipework.
- .3 Section 23 05 53 – Mechanical Identification.

### **1.2 REFERENCES**

- .1 ASTM International Inc.
  - .1 ASTM B32-08, Standard Specification for Solder Metal.
  - .2 ASTM B306-02, Standard Specification for Copper Drainage Tube (DWV).
  - .3 ASTM C564-03a, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- 2. Canadian Standards Association (CSA International).
  - .1 CSA B67, Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories.
  - .2 CAN/CSA-B70-06, Cast Iron Soil Pipe, Fittings and Means of Joining.
  - .3 CAN/CSA-B125.3-05, Plumbing Fittings.

### **1.3 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures and section 21 05 01 – Common Work Results – Mechanical.

## **2 Products**

### **2.1 COPPER TUBE AND FITTINGS**

- .1 Above ground sanitary and vent Type DWV to: ASTM B306.
  - .1 Fittings.
    - .1 Cast brass: to CAN/CSA-B125.3.
    - .2 Wrought copper: to CAN/CSA-B125.3.
  - .2 Solder: lead free - 95:5.

### **2.2 CAST IRON PIPING AND FITTINGS**

- .1 Above ground sanitary and vent Type (OVER 50mm): to CAN/CSA-B70
  - .1 Joints.
    - .1 Hub and spigot:
      - .1 Cold caulking compounds
    - .2 Mechanical joints:
      - .1 Neoprene or butyl rubber compression gaskets with stainless steel clamps.

### **3 Execution**

#### **3.1 MANUFACTURER’S INSTRUCTIONS**

- .1 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 of Canada and local authority having jurisdiction.
- .2 Arrange and pay for all inspections required by municipal Authorities. Provide copy of reports resulting from these visits to the Departmental Representative.
- .3 Install piping parallel and close to walls to conserve headroom and space.
- .4 Install buried pipe on 150 mm bed of clean washed sand, shaped to accommodate fittings to line and grade (slope) as required. Backfill with minimum 150 mm of clean washed sand and upper 150 mm of rock free soil backfill.
- .5 Provide pipe firestop barriers and/or collars on the underside of fire-rated floors and both sides of fire-rated partitions that are penetrated.

#### **3.3 TESTING**

- .1 Hydraulically test to verify grades and freedom from obstructions.
- .2 Pressure test buried systems before backfilling.

#### **3.4 PERFORMANCE VERIFICATION**

- .1 Test to ensure traps are fully and permanently primed.
- .2 Ensure that fixtures are properly anchored, connected to system and effectively vented.
- .3 Affix applicable label sanitary, vent, etc. complete with directional arrows every 4.57 m.

#### **3.5 RECORD DRAWINGS**

- .1 Note changes from sizes and routing of piping on contract documents as per section 21 05 01 – Common Work Results, Mechanical.

**END OF SECTION**

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**1 General**

**1.1 RELATED SECTIONS**

- .1 Section 21 05 01 – Common Work Results - Mechanical.

**1.2 REFERENCES**

- .1 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-B45 Series, Plumbing Fixtures.
  - .2 CAN/CSA-B125, Plumbing Fittings.
  - .3 CAN/CSA-B651, Barrier-Free Design.

**1.3 SUBMITTALS**

- .1 Provide Shop Drawing and Maintenance Manual submittals in accordance with Section 01 33 00 - Submittal Procedures and section 21 05 01 – Common Work Results - Mechanical.

**2 Products**

**2.1 MANUFACTURED UNITS**

- .1 Fixtures: manufacture in accordance with CAN/CSA-B45 series.
- .2 Trim, fittings: manufacture in accordance with CAN/CSA-B125.
- .3 Exposed plumbing brass to be chrome plated.
- .4 Stainless steel counter-top sinks.
  - .1 As specified on the drawings.
- .5 Refer to the Plumbing fixture schedule on the drawing.

**2.2 ACCEPTABLE MATERIALS**

- .1 Trim, Drainage, Supplies, Stops - Chicago Faucets, Delta, Teck, T & S, Sloan, Symmons, McQuire, Zurn.
- .2 Materials:
  - .1 Stainless steel fixtures to C.S.A. B45.494 Class II, Type 302 in accordance with C.S.A. G110.61978 unless otherwise stated.
  - .2 Exposed plumbing brass and metal work shall be heavy triple chromium plated.

**3 Execution**

**3.1 INSTALLATION**

- .1 Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage, and installation instructions, and datasheets.

**3.2 ADJUSTING**

- .1 Checks:
  - .1 Aerators: operation, cleanliness.

**END OF SECTION**

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**PART 1 GENERAL**

**1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 19 - Construction / Demolition Waste Management and Disposal.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM A 126-95(2001), Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
  - .2 ASTM B 62-93, Specification for Composition Bronze or Ounce Metal Castings.
- .2 Canadian Standards Association (CSA):
  - .1 CSA-B64 Series-01, Backflow Preventers and Vacuum Breakers.
  - .2 CSA-B79-94(R2000), Floor, Area and Shower Drains, and Cleanouts for Residential Construction.
  - .3 CSA-B356-00, Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .3 Plumbing and Drainage Institute (PDI):
  - .1 PDI-G101-96, Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data.
  - .2 PDI-WH201-92, Water Hammer Arresters Standard.

**1.3 SUBMITTALS**

- .1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.

**1.4 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Data to include:
  - .1 Description of plumbing specialties and accessories, giving manufacturers name, type, model, year and capacity.
  - .2 Details of operation, servicing and maintenance.
  - .3 Recommended spare parts list.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Refer to specification Section 01 74 19 - Construction / Demolition Waste Management and Disposal.

## **PART 2 PRODUCTS**

### **2.1 BACKFLOW PREVENTERS**

- .1 To CSA-B64 Series.
- .2 Application: as indicated.
- .3 Reduced pressure principle type complete with strainer, full port, 1/4 turn shut-off ball valves, air gap fitting piped to FFD.
  - .1 Acceptable Materials: Watts 909-S-QT, Honeywell, Braukmann, Febco, Wilkins.

### **2.2 VACUUM BREAKERS**

- .1 To CSA-B64 Series.
- .2 Atmospheric vacuum breaker:
  - .1 Acceptable Materials: Watts NLF9, Braukmann, Wilkins.
- .3 Hose connection vacuum breaker:
  - .1 Acceptable Materials: Watts Series 8, Braukmann, Wilkins.
- .4 Pressure vacuum breaker:
  - .1 Acceptable Materials: Watts N36, Febco, Wilkins, complete with shut-off ball valves.

### **2.3 THERMOSTATIC MIXING VALVE**

- .1 Thermostatic controller with swivel action check stops, removable cartridge with strainer, stainless steel piston, and liquid fill thermal motor with bellows element mounted out of water.
- .2 Valve complete with safety to shut down flow when there is DHW or DCW supply, or thermal motor failure.
- .3 30°C to 49°C field setting range.
- .4 Acceptable Materials: Symmons 5-700, Watts, Lawler.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- .1 Install in accordance with the National Plumbing Code of Canada, provincial codes, and local authority having jurisdiction.
- .2 Install in accordance with manufacturer's instructions and as specified.



### **3.2 BACKFLOW PREVENTORS**

- .1 Install in accordance with CSA-B64 Series, where indicated and elsewhere as required by code.
- .2 Pipe discharge to terminate over nearest funnel floor drain.

### **3.3 VACUUM BREAKERS**

- .1 Install where indicated on domestic water systems.

### **3.4 START-UP**

- .1 Timing: Start-up only after:
  - .1 Pressure tests have been completed.
  - .2 Disinfection procedures have been completed.
  - .3 Certificate of static completion has been issued.

**END OF SECTION**