

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A 126 (Latest Edition), Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
 - .2 ASTM B 62 (Latest Edition), Standard Specification for Composition Bronze or Ounce Metal Castings.
- .2 American Water Works Association (AWWA)
 - .1 ANSI/AWWA C700 (Latest Edition), Standard for Cold Water Meters-Displacement Type, Bronze Main Case.
 - .2 ANSI/AWWA C701 (Latest Edition), Standard for Cold Water Meters-Turbine Type for Customer Service.
 - .3 ANSI/AWWA C702 (Latest Edition), Standard for Cold Water Meters-Compound Type.
- .3 CSA International
 - .1 CSA-B64 Series (Latest Edition), Backflow Preventers and Vacuum Breakers.
 - .2 CSA B79-08 (Latest Edition), Commercial and Residential Drains and Cleanouts.
 - .3 CAN/CSA-B356-10 (Latest Edition), Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .4 Efficiency Valuation Organization (EVO)
 - .1 International Performance Measurement and Verification Protocol (IPMVP).
 - .1 IPMVP (Latest Edition) Version.
- .5 National Research Council Canada (NRC)
 - .1 National Plumbing Code of Canada (Latest Edition) (NPC).
- .6 Plumbing and Drainage Institute (PDI)
 - .1 PDI-G101-(Latest Edition), Testing and Rating Procedure for Grease Interceptors with Appendix of Installation and Maintenance.
 - .2 PDI-WH201 (Latest Edition), Water Hammer Arresters Standard.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for plumbing products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS

- .3 Shop Drawings:
 - .1 Indicate on drawings to indicate materials, finishes, method of anchorage, number of anchors, dimensions construction and assembly details and accessories.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Instructions: submit manufacturer's installation instructions.
- .6 Manufacturers' Field Reports: manufacturers' field reports specified.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for plumbing specialties and accessories for incorporation into manual.
 - .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.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect plumbing materials from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

PART 2- PRODUCTS

2.1 FLOOR DRAINS

- .1 Floor Drains and Trench Drains: to CSA B79.
- .2 Type 1: general duty; cast iron body, round, adjustable head, sediment basket nickel bronze strainer, integral seepage pan, and clamping collar.

2.2 CLEANOUTS

- .1 Cleanout Plugs: heavy cast iron male ferrule with brass screws and threaded brass or bronze plug. Sealing-caulked lead seat or neoprene gasket.
- .2 Access Covers:
 - .1 Wall Access: face or wall type, polished nickel bronze square or round cover with flush head securing screws, bevelled edge frame complete with anchoring lugs.
 - .2 Floor Access: rectangular or round cast iron body and frame with adjustable secured nickel bronze top and:
 - .1 Plugs: bolted bronze with neoprene gasket.
 - .2 Cover for Unfinished Concrete Floors: cast iron or nickel bronze round, gasket, vandal-proof screws.
 - .3 Cover for Tile and Linoleum Floors: polished nickel bronze with recessed cover for linoleum or tile infill, complete with vandal-proof locking screws.
 - .4 Cover for Carpeted Floors: polished nickel bronze with deep flange cover for carpet infill, complete with carpet retainer vandal-proof locking screws.

2.3 WATER HAMMER ARRESTORS

- .1 Stainless steel or copper construction, bellows type: to PDI-WH201.

2.4 VACUUM BREAKERS

- .1 Breakers: to CSA-B64 Series, vacuum breaker atmospheric.

2.5 PRESSURE REGULATORS

- .1 Capacity: as indicated.
 - .2 Inlet pressure: 1034 kPa.
 - .3 Outlet pressure: 413 kPa.
- .2 Up to NPS 1-1/2 bronze bodies, screwed: to ASTM B 62.
- .3 NPS 2 and over, semi-steel bodies, Class 125, flanged: to ASTM A 126, Class B.
- .4 Semi-steel spring chambers with bronze trim.

2.6 BACKWATER VALVES

- .1 Coated extra heavy cast iron body with bronze seat, revolving bronze flapper and threaded cover.
- .2 Access:
 - .1 Surface access.
 - .2 Access pipe with cover: maximum 300 mm depth.
 - .3 Steel housing with gasketed steel cover.
 - .4 Concrete access pit with cover, as indicated.

2.7 BACK FLOW PREVENTER

- .1 To CSA-B64 Series.
- .2 Application: domestic service entrance and fire protection system service entrance.
 - .1 Domestic water:
 - .1 Reduced pressure principle type consisting of a pressure differential relief valve located between two independently operated spring-loaded centre guided check valves.
 - .2 Ductile iron construction with FDA approved fusion epoxy coat inside and out.
 - .3 Compound check.
 - .4 Single access cover.
 - .5 Maximum temperature range: 0.5°C to 60°C.
 - .6 Maximum pressure: 1205 kPa.
 - .7 CSA certified.
 - .2 Fire protection water:
 - .1 Same as above except without compound check and with FM and ULC approval for fire protection service.
- .3 Application: install on domestic cold water supply to electrode steam humidifier, emergency eyewash and drench shower.
 - .1 Bronze body construction.
 - .2 Internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs.
 - .3 Seats and discs replacement in both check modules and the relief valve.
 - .4 Assembly to include two resilient seated isolation valves, four resilient seated test cocks, protective wye strainer with 20 mesh screen, union end connections and an air gap drain fitting.
 - .5 Reduced pressure zone type backflow preventer.
- .4 Provide backflow preventer test kit as follows:
 - .1 Maximum working pressure: 1205 kPa.
 - .2 Maximum working temperature: 98.8°C.
 - .3 0-103 kPa and 0-15 psig dual scale pressure gauge with 114 mm diameter face, ±2% accuracy.
 - .4 Test valves: two (2) ball valves and one (1) needle valve.
 - .5 Hoses: three (3) one (1) meter test hoses with female threaded swivel coupling.
 - .6 Adapters:
 - .1 Three (3) NPS ¼ threaded coupling adapters.
 - .2 Three (3) NPS ½ x NPS ¼ bushings.
 - .3 Three (3) NPS ¾ x NPS ¼ bushings.
 - .7 400 mm long securing strap.
 - .8 Moisture resistant instruction guide.
 - .9 Light weight, shock resistant molded plastic case with foam inserts.

2.8 HOSE BIBBS AND SEDIMENT FAUCETS

- .1 Bronze construction complete with integral back flow preventer, hose thread spout, replaceable composition disc, and chrome plated in finished areas.

2.9 TRAP SEAL PRIMERS

- .1 Pressure drop actuated:
 - .1 Brass body construction with inlet opening of male NPS ½ and outlet opening of female NPS ½.
 - .2 Provide complete with four-hole view built-in air gap to prevent any backflow from trap being fed into the water supply.
 - .3 Provide removable inlet filter screen.
 - .4 Capacity to serve up to four (4) floor drains.
 - .5 Provide complete with trap seal primer distribution unit as follows:
 - .1 Brass body construction.
 - .2 NPS ½ inlet connection.
 - .3 Four (4) NPS ½ brass nipple outlet connections.
 - .4 Four (4) 6 mm diameter vent holes in lid to provide air gap and backflow protection.

2.10 STRAINERS

- .1 860 kPa, Y type with 20 mesh, monel, bronze or stainless steel removable screen.
- .2 NPS 2 and under, bronze body, screwed ends, with brass cap.
- .3 NPS 2 1/2 and over, cast iron body, flanged ends, with bolted cap.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for plumbing specialties and accessories installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 MANUFACTURER'S INSTRUCTIONS

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

3.3 INSTALLATION

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

3.4 CLEANOUTS

- .1 Install cleanouts at base of soil and waste stacks, and rainwater leaders, at locations required code, and as indicated.
- .2 Bring cleanouts to wall or finished floor unless serviceable from below floor.
- .3 Building drain cleanout and stack base cleanouts: line size to maximum NPS 4.

3.5 WATER HAMMER ARRESTORS

- .1 Install on branch supplies to fixtures or group of fixtures where indicated.

3.6 BACK FLOW PREVENTERS

- .1 Install in accordance with CSA-B64 Series, where indicated and elsewhere as required by code.
 - .1 Drains.
 - .2 Backwater Valves.
 - .3 Water Make-up Assembly.
 - .4 Grease Interceptors.
- .2 Pipe discharge to terminate over nearest drain or service sink.

3.7 BACKWATER VALVES

- .1 Install in main sewer lines where indicated.
- .2 Install in access pit as indicated.

3.8 HOSE BIBBS AND SEDIMENT FAUCETS

- .1 Install at bottom of risers, at low points to drain systems, and as indicated.

3.9 TRAP SEAL PRIMERS

- .1 Install for floor drains and elsewhere, as indicated.
- .2 Install on cold water supply to nearest frequently used plumbing fixture, in concealed space, to approval of Departmental Representative.
- .3 Install soft copper or plastic tubing to floor drain.

3.10 STRAINERS

- .1 Install with sufficient room to remove basket for maintenance.

3.11 START-UP

- .1 General:
 - .1 In accordance with Section 01 91 13 - General Commissioning Requirements: General Requirements, supplemented as specified herein.
- .2 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.
 - .4 Water treatment systems operational.
- .3 Provide continuous supervision during start-up.

3.12 TESTING AND ADJUSTING

- .1 General:
 - .2 Test and adjust plumbing specialties and accessories in accordance with Section 01 91 13 - General Commissioning Requirements: General Requirements, supplemented as specified.
- .2 Timing:
 - .1 After start-up deficiencies rectified.
 - .2 After certificate of completion has been issued by authority having jurisdiction.
- .3 Application tolerances:
 - .1 Pressure at fixtures: +/- 70 kPa.
 - .2 Flow rate at fixtures: +/- 20%.
- .4 Adjustments:
 - .1 Verify that flow rate and pressure meet design criteria.
 - .2 Make adjustments while flow rate or withdrawal is (1) maximum and (2) 25% of maximum and while pressure is (1) maximum and (2) minimum.

- .5 Vacuum breakers, backflow preventers, backwater valves:
 - .1 Test tightness, accessibility for O&M of cover and of valve.
 - .2 Simulate reverse flow and back-pressure conditions to test operation of vacuum breakers, backflow preventers.
 - .3 Verify visibility of discharge from open ports.
- .6 Access doors:
 - .1 Verify size and location relative to items to be accessed.
- .7 Cleanouts:
 - .1 Verify covers are gas-tight, secure, yet readily removable.
- .8 Water hammer arrestors:
 - .1 Verify proper installation of correct type of water hammer arrester.
- .9 Pressure regulators, PRV assemblies:
 - .1 Adjust settings to suit locations, flow rates, pressure conditions.
- .10 Strainers:
 - .1 Clean out repeatedly until clear.
 - .2 Verify accessibility of cleanout plug and basket.
 - .3 Verify that cleanout plug does not leak.
- .11 Hose bibbs, sediment faucets:
 - .1 Verify that flow and pressure meet design criteria.
 - .2 Check for leaks, replace compression washer if required.
- .12 Hydronic system water Make-up Assembly:
 - .1 Verify flow, pressure, and connection.

3.13 CLOSEOUT ACTIVITIES

- .1 Commissioning Reports: in accordance with Section 01 91 13 - General Commissioning Requirements: reports, supplemented as specified.
- .2 Training: provide training in accordance with Section 01 91 13 - General Commissioning Requirements: Training of O&M Personnel, supplemented as specified.

3.14 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.15 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by plumbing specialties and accessories installation.

END OF SECTION