

PART 1 - GENERAL

- 1.1 SUMMARY .1 Section Includes:
.1 Materials and installation for plumbing pumps.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS .1 Shop Drawings.
.1 Submit shop drawings to indicate:
.1 Equipment, including connections, fittings, control assemblies and ancillaries. Identify whether factory or field assembled.
.2 Wiring and schematic diagrams.
.3 Dimensions and recommended installation.
.4 Pump performance and efficiency curves.
- .2 Closeout submittals: submit maintenance and engineering data for incorporation into manual.
.1 Manufacturers name, type, model year, capacity and serial number.
.2 Details of operation, servicing and maintenance.
.3 Recommended spare parts list with names and addresses.

PART 2 - PRODUCTS

- 2.1 SUMP PUMP SUBMERSIBLE .1 Capacity: As indicated on drawings.
- .2 Construction: simplex CSA approved, housing epoxy coated cast iron, stainless steel shaft, non-clog bronze impeller, mechanical shaft seal.
- .3 Motor: as indicated hermetically sealed, with automatic overload protection.
- .4 Control: buoyant float and switch.
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PART 3 - EXECUTION

3.1 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.

3.2 INSTALLATION

- .1 Make piping and electrical connections to pump and motor assembly and controls as indicated.
- .2 Ensure pump and motor assembly do not support piping.

3.3 START-UP

- .1 Site Tests/Inspection:
 - .1 Check power supply.
- .2 Start-up, check for proper and safe operation.
- .3 Check settings and operation of float control. Ensure minimum one minute run time.
- .4 Adjust flow at globe valve so that floor drain does not overflow.

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME)
 - .1 ANSI/ASME B16.15-2011, Cast Bronze Threaded Fittings, Classes 125 and 250.
 - .2 ANSI/ASME B16.18-2012, Cast Copper Alloy Solder Joint Pressure Fittings.
 - .3 ANSI/ASME B16.22-R2010, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - .2 ASTM International Inc.
 - .1 ASTM B 88M-2011, Standard Specification for Seamless Copper Water Tube (Metric).
 - .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .4 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
 - .1 MSS-SP-67-2011, Butterfly Valves.
 - .2 MSS-SP-70-2011, Gray Iron Gate Valves, Flanged and Threaded Ends.
 - .3 MSS-SP-71-2011, Gray Iron Swing Check Valves, Flanged and Threaded Ends.
 - .4 MSS-SP-80-2008, Bronze Gate, Globe, Angle and Check Valves.
 - .5 National Research Council (NRC)/Institute for Research in Construction
 - .1 NRCC 38728, National Plumbing Code of Canada (NPC) - 2010.

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 B 88M.
- 2.2 FITTINGS
- .1 Cast bronze threaded fittings, Class 125: to ANSI/ASME B16.15.
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- .2 Cast copper, solder type: to ANSI/ASME B16.18.
- .3 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.
- .4 NPS 1 ½ and smaller : wrought copper to ANSI/ASME B16.22 or cast copper to ANSI/ASME B16.18. Suitable for operating pressure to 1380 kPa.

2.3 JOINTS

- .1 Solder: 95/5 tin copper alloy.
- .2 Teflon tape: for threaded joints.
- .3 Dielectric connections between dissimilar metals: dielectric fitting, complete with thermoplastic liner.

2.4 BALL VALVES

- .1 NPS 2 and under, screwed or soldered:
 - .1 Class 150.
 - .2 Bronze body, chrome plated brass ball, PTFE adjustable packing, brass gland and PTFE seat, steel lever handle.
 - .3 Acceptable material: Crane F9202.
 - .4 Other acceptable manufacturers: Jenkins, Red White, Watts.

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 Provincial requirements.
 - .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.
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- .4 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.
- .5 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 FLUSHING AND CLEANING

- .1 Flush entire system for 8 h. Ensure outlets flushed for 2 hours.

3.5 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for reuse and recycling.

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 ASTM International Inc.
 - .1 ASTM B 32-08, Standard Specification for Solder Metal.
 - .2 ASTM B 306-13, Standard Specification for Copper Drainage Tube (DWV).
 - .2 Canadian Standards Association (CSA International).
 - .1 CSA B67-1972(R1996), 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.

PART 2 - PRODUCTS

- 2.1 COPPER TUBE AND FITTINGS
- .1 Above ground sanitary Type DWV to: ASTM B 306.
 - .1 Fittings.
 - .1 Cast brass: to CAN/CSA-B125.3.
 - .2 Wrought copper: to CAN/CSA-B125.3.
 - .2 Solder: tin-lead, 50:50, type 50A, to ASTM B 32.

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 Provincial Plumbing Code and local authority having jurisdiction.
- 3.3 TESTING
- .1 Pressure test buried systems before backfilling.
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- .2 Hydraulically test to verify grades and freedom from obstructions.

3.4 PERFORMANCE VERIFICATION

- .1 Affix applicable label (storm, sanitary, vent, pump discharge etc.) c/w directional arrows every floor or 4.5 m (whichever is less).

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 ASTM International Inc.
 - .1 ASTM D 2564-04(2011), Standard Specification for Solvent Cements for Poly(Vinyl-Chloride) (PVC) Plastic Piping Systems.
 - .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Series B1800-06, Thermoplastic Nonpressure Pipe Compendium - B1800 Series.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- 1.3 DELIVERY, STORAGE AND HANDLING
- .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
 - .2 Store at temperatures and conditions recommended by manufacturer.

PART 2 - PRODUCTS

- 2.1 PIPING AND FITTINGS
- .1 For buried and or above ground DWV piping to:
 - .1 CAN/CSA B1800.
- 2.2 JOINTS
- .1 Solvent weld for PVC: to ASTM D 2564.

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.
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- 3.2 INSTALLATION
- .1 In accordance with Section 23 05 05 - Installation of Pipework.
 - .2 Install in accordance with National Plumbing Code Provincial Plumbing Code and local authority having jurisdiction except .
- 3.3 TESTING
- .1 Pressure test buried systems before backfilling.
 - .2 Hydraulically test to verify grades and freedom from obstructions.
- 3.4 PERFORMANCE VERIFICATION
- .1 Cleanouts:
 - .1 Ensure accessible and that access doors are correctly located.
 - .2 Open, cover with linseed oil and re-seal.
 - .3 Verify cleanout rods can probe as far as the next cleanout, at least.
 - .2 Test to ensure traps are fully and permanently primed.
 - .3 Storm water drainage:
 - .1 Verify domes are secure.
 - .2 Ensure weirs are correctly sized and installed correctly.
 - .3 Verify provisions for movement of roof system.
 - .4 Ensure fixtures are properly anchored, connected to system and effectively vented.
 - .5 Affix applicable label (storm, sanitary, vent, pump discharge) c/w directional arrows every floor or 4.5 m (whichever is less).

PART 1 - GENERAL

- 1.1 SUMMARY .1 Section Includes:
.1 Materials and installation for plumbing specialities and accessories.
- 1.2 REFERENCES .1 American Society for Testing and Materials International (ASTM).
.1 ASTM A 126-04(2009), Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
.2 ASTM B 62-09, Specification for Composition Bronze or Ounce Metal Castings.
- .2 Canadian Standards Association (CSA International).
.1 CSA-B64 Series-11, Backflow Preventers and Vacuum Breakers.
.2 CSA-B79-08, commercial and residential drains and cleanouts.
.3 CSA-B356-10, Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
.1 Material Safety Data Sheets (MSDS).
- .4 Plumbing and Drainage Institute (PDI).
.1 PDI-WH201-2006, Water Hammer Arresters Standard.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS .1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet for fixtures and equipment.
.2 Indicate dimensions, construction details and materials for specified items.
.3 Submit WHMIS MSDS. Indicate VOC's for adhesive and solvents during application and curing.
- .2 Shop Drawings:
.1 Submit shop drawings to indicate materials, finishes, dimensions, construction and assembly details and accessories.
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PART 2 - PRODUCTS

- 2.1 FLOOR DRAINS
- .1 Open throat funnel floor drain, epoxy coated cast iron body with bottom outlet, adjustable nickel bronze round strainer with secured throat oval funnel.
 - .1 Acceptable Product: Zurn Z211-BF or approved equal.
 - .2 Other acceptable manufacturers: JR Smith, Watts.
 - .2 General Duty floor drain, cast iron body, round adjustable head, nickel bronze strainer, adjustable clamping collar.
 - .1 Acceptable Product: Zurn 2N415-BF-AR or approved equal.
 - .2 Other acceptable manufacturers: JR Smith, Watts.
- 2.2 CLEANOUTS
- .1 Access Covers:
 - .1 Floor Access: round cast iron body and frame with adjustable secured top and:
 - .1 Plugs: bolted bronze with neoprene gasket.
 - .2 Cover for Unfinished Concrete Floors: cast iron round, gasket, vandal-proof screws.
 - .1 Acceptable Product: Zurn Z1400.
 - .2 Other acceptable manufacturers: JR Smith, Watts.
- 2.3 PRESSURE REGULATORS
- .1 Condenser Water Makeup Water: Bronze construction, adjustable pressure output from 0 to 55 kPa, C/W integral strainer to ASTM B62/
 - .1 Acceptable Material: Watts 3/8" LF 215.
 - .2 Other acceptable manufacturers: Wilkens, Febco.
- 2.4 HOSE BIBBS AND SEDIMENT FAUCETS (INDOORS)
- .1 Bronze construction complete with integral back flow preventer, hose thread spout, replaceable composition disc.
 - .1 Acceptable Material: Zurn Z1341-BFP or approved equal.
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.2 Other acceptable manufacturers: JR Smith, Watts.

- 2.5 WATER METERS .1 Reference Section 23 25 00 HVAC WATER TREATMENT SYSTEMS.
- 2.6 STRAINERS .1 125 psi, Y type with 20 mesh, monel, bronze or stainless steel removable screen.
- .2 NPS2 and under, bronze body, screwed ends, with brass cap.
.1 Acceptable Material: Nibco T221.
.2 Other acceptable manufacturers: Crane, Armstrong, Febco.
- 2.7 BACK FLOW PREVENTERS .1 Preventers: to CSA-B64 Series, application, reduced pressure principle type back flow preventer with intermediate relief valve.
.1 Acceptable Material Domestic Building Service Entrance: Watts 50 mm 009-QTS with air gap fitting and strainer.
.2 Other acceptable manufacturers: Wilkens and Febco.

PART 3 - EXECUTION

- 3.1 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.
- 3.2 INSTALLATION .1 Install in accordance with National Plumbing Code of Canada.
- .2 Install in accordance with manufacturer's instructions and as specified.
- 3.3 CLEANOUTS .1 Install cleanouts at base of soil and waste stacks, and rainwater leaders, at locations required code, and as indicated.
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- .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 NPS4.

3.4 HOSE BIBBS AND
SEDIMENT FAUCETS

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

3.5 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.
 - .4 Water treatment systems operational.
- .2 Provide continuous supervision during start-up.

3.6 TESTING AND
ADJUSTING

- .1 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.
- .2 Floor drains:
 - .1 Verify operation of trap seal primer.
 - .2 Prime, using trap primer. Adjust flow rate to suit site conditions.
 - .3 Check security, accessibility, removeability of strainer.
 - .4 Clean out baskets.
- .3 Access doors:
 - .1 Verify size and location relative to items to be accessed.
- .4 Cleanouts:
 - .1 Verify covers are gas-tight, secure, yet readily removable.
- .5 Pressure regulators, PRV assemblies:
 - .1 Adjust settings to suit locations, flow rates, pressure conditions.

- .6 Strainers:
 - .1 Clean out repeatedly until clear.
 - .2 Verify accessibility of cleanout plug and basket.
 - .3 Verify that cleanout plug does not leak.