

PART 1 GENERAL

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 21 05 01.
- .2 Shop drawings to show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
 - .3 Shop drawings and product data accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.
 - .3 Points of operation on performance curves.
 - .4 Manufacturer to certify current model production.
 - .5 Certification of compliance to applicable codes.
- .3 Closeout Submittals:
 - .1 Provide operation and maintenance data for incorporation into manual specified in Section 21 05 01 - General Provisions - Mechanical.

1.2 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 21 05 01.

PART 2 PRODUCTS

2.1 MATERIAL

- .1 Fire stopping: in accordance with ULC assembly standards consistent with the penetration application.

PART 3 EXECUTION

3.1 PAINTING REPAIRS AND RESTORATION

- .1 Prime and touch up marred finished paintwork to match original.
- .2 Restore to new condition, finishes which have been damaged.

3.2 CLEANING

- .1 Clean interior and exterior of all systems including strainers.

3.3 FIELD QUALITY CONTROL

- .1 Site Tests: conduct following tests in accordance with Section 21 05 01 - General Provisions - Mechanical and submit report as described in PART 1 - SUBMITTALS.

- .2 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.4 DEMONSTRATION

- .1 Contract Administrator will use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
- .2 Trial usage to apply to following equipment and systems:
 - .1 Plumbing Fixtures.
- .3 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .4 Use operation and maintenance manual, as-built drawings, and audio-visual aids as part of instruction materials.
- .5 Instruction duration time requirements as specified in appropriate sections.
- .6 Contract Administrator may record these demonstrations on video tape for future reference.

3.5 PROTECTION

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

Part 1 PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 22 05 00.

1.2 REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM D 2564-04e1, 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.
 - .3 Green Seal Environmental Standards (GSES)
 - .1 Standard GS-36-00, Commercial Adhesives.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 21 05 01 – General Provisions - Mechanical.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and datasheets for adhesives, and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle in accordance with Section 21 05 01.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

Part 2 PRODUCTS

2.1 PIPING AND FITTINGS

- .1 For buried DWV piping to:
 - .1 CAN/CSA B1800.
- .2 For non-buried DWV piping to:
 - .1 Certified to CSA B181.2; tested and listed in accordance with CAN/UL S102.2

- .2 Flame spread rating shall be not more than 25 and a smoke developed classification not exceeding 50.
- .3 Approved Product: IPEX System XFR

2.2 JOINTS

- .1 Solvent weld for PVC: to ASTM D 2564.
- .2 Solvent weld for ABS: to ASTM D 2235.

2.1 CEMENT

- .1 To be from the approved manufacturer.
- .2 To be compatible with piping material.

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

- .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 that fixtures are properly anchored, connected to system and effectively vented.
- .5 Affix applicable label (storm, sanitary, vent, pump discharge etc.) c/w directional arrows every floor or 4.5 m (whichever is less).

3.5 CLEANING

- .1 Clean in accordance with Section 21 05 01 – General Provisions - Mechanical.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

- .1 Related Sections:
 - .1 Section 21 05 01 – General Provisions - Mechanical.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM).
 - .1 ASTM A 126-95(2001), Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
 - .2 ASTM B 62-02, Specification for Composition Bronze or Ounce Metal Castings.
- .2 American Water Works Association (AWWA).
 - .1 AWWA C700-02, Cold Water Meters-Displacement Type, Bronze Main Case.
 - .2 AWWA C701-02, Cold Water Meters-Turbine Type for Customer Service.
 - .3 AWWA C702-1-01, Cold Water Meters-Compound Type.
- .3 Canadian Standards Association (CSA International).
 - .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.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
 - .2 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 Submittals in accordance with Section 21 05 01 – General Provisions - Mechanical.
- .2 Co-ordinate submittal requirements and provide submittals required by Section 21 05 01 – General Provisions - Mechanical.
- .3 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 in accordance with Section 21 05 01. Indicate VOC's for adhesive and solvents during application and curing.
- .4 Shop Drawings:

- .1 Submit shop drawings to indicate materials, finishes, method of anchorage, number of anchors, dimensions construction and assembly details.
- .5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Instructions: submit manufacturer's installation instructions.
- .7 Manufacturers' Field Reports: manufacturers' field reports specified.
- .8 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 21 05 01 – General Provisions - Mechanical, 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.

1.4 QUALITY ASSURANCE

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations in accordance with Section 21 05 01 – General Provisions - Mechanical.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building sub-trades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
 - .2 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 21 05 01 – General Provisions - Mechanical.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Store and manage hazardous materials in accordance with Section 21 05 01 – General Provisions - Mechanical.

Part 2 PRODUCTS

2.1 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, stainless steel and round cover with flush head securing screws, bevelled edge frame complete with anchoring lugs.
 - .2 Floor Access: 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: nickel bronze round or square, gasket, vandal-proof screws.
- .3 Cover for Terrazzo Finish: polished nickel bronze with recessed cover for filling with terrazzo, vandal-proof locking screws.
- .4 Cover for Tile and Linoleum Floors: polished nickel bronze with recessed cover for linoleum or tile infill, complete with vandal-proof locking screws.
- .5 Cover for Carpeted Floors: polished nickel bronze with deep flange cover for carpet infill, complete with carpet retainer vandal-proof locking screws.

2.2 ROOF DRAINS - STANDARD

- .1 Floor drains: to CSA B79.
- .2 Epoxy coated cast iron roof drain with deep sump, wide serrated flashing flange, flashing clamp device with integral gravel stop and self-locking polyethylene dome strainer.
- .3 Size: 3" diameter.
- .4 Acceptable Product: Watts model RD-100.

2.3 ROOF DRAINS – RETROFIT

- .1 One-piece seamless body, 3mm spun aluminum with 12" drain stem length and an extra large 17.5" diameter flange that allows positive attachment of roof flashing membrane.
- .2 Strainer dome to be 7" tall cast aluminum with screw down lid
- .3 Heavy duty cast aluminum clamping ring ensure a uniform compression seal of the membrane for strength and durability.
- .4 Mechanical seal provides a watertight connection to PVC and cast iron pipes.
- .5 Acceptable Product: Johns Manville Hercules Retrodrain. Size to suit existing roof drains.

2.4 PLUMBING VENT TERMINATIONS

- .1 In architectural specifications; by roofing contractor.

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 and local authority having jurisdiction.
- .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.
- .2 **All fixture clean-outs installed above the flood rim of fixture.**
- .3 Bring cleanouts to wall or finished floor unless serviceable from below floor.
- .4 Building drain cleanout and stack base cleanouts: line size to maximum DN 100(NPS 4).

3.4 WATER HAMMER ARRESTORS

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

3.5 START-UP

- .1 General:
 - .1 In accordance with Section 21 05 01 – General Provisions - Mechanical, 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.

3.6 TESTING AND ADJUSTING

- .1 General:
 - .1 In accordance with Section 21 05 01 – General Provisions - Mechanical, 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: +/- 70kPa.
 - .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 Access doors:
 - .1 Verify size and location relative to items to be accessed.
- .6 Cleanouts:
 - .1 Verify covers are gas-tight, secure, yet readily removable.
- .7 Training:
 - .1 In accordance with Section 21 05 01 – General Provisions - Mechanical: Training of O&M Personnel, supplemented as specified.
 - .2 Demonstrate full compliance with Design Criteria.

END OF SECTION