

**Part 1      General**

**1.1      REFERENCES**

- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME)
  - .1 ANSI/ASME B16.15-13, Cast Bronze Threaded Fittings, Classes 125 and 250.
  - .2 ANSI/ASME B16.18-12, Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3 ANSI/ASME B16.22-13, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
  - .4 ANSI/ASME B16.24-11, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 400, 600, 900, 1500 and 2500.
- .2 ASTM International Inc.
  - .1 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .2 ASTM A536-2014, Standard Specification for Ductile Iron Castings.
  - .3 ASTM B88M-14, Standard Specification for Seamless Copper Water Tube (Metric).
- .3 American National Standards Institute/American Water Works Association (ANSI)/(AWWA)
  - .1 ANSI/AWWA C111/A21.11-07, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- .4 Canadian Standards Association (CSA International)
  - .1 CSA B242-2016, Groove and Shoulder Type Mechanical Pipe Couplings.
- .5 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).
- .6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

- .7 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
  - .1 MSS-SP-67-02a, Butterfly Valves.
  - .2 MSS-SP-70-06, Gray Iron Gate Valves, Flanged and Threaded Ends.
  - .3 MSS-SP-71-05, Gray Iron Swing Check Valves, Flanged and Threaded Ends.
  - .4 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.
- .8 National Research Council (NRC)/Institute for Research in Construction
  - .1 NRCC 38728, National Plumbing Code of Canada (NPC) - 1995.
- .9 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDGA).

**1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS**

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- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .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 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**1.3 DELIVERY,  
STORAGE AND  
HANDLING**

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- .1 Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Handle and dispose of hazardous materials in accordance with CEPA , TDGA , Regional and Municipal regulations.

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**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 B88M.
  - .2 Buried or embedded: copper tube, soft annealed, type L: to ASTM B88M, in long lengths and with no buried joints.

**2.2      FITTINGS**

- .1 Bronze pipe flanges and flanged fittings, Class 150: to ANSI/ASME B16.24.
- .2 Cast bronze threaded fittings, Class 125: to ANSI/ASME B16.15.
- .3 Cast copper, solder type: to ANSI/ASME B16.18.
- .4 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.
- .5 NPS 2 and larger: ANSI/ASME B16.18 or ANSI/ASME B16.22 roll grooved to CSA B242.
- .6 NPS 1 and smaller: wrought copper to ANSI/ASME B16.22; with 301 stainless steel internal components and EPDM seals. Suitable for operating pressure to 1380 kPa.

**2.3      JOINTS**

- .1 Rubber gaskets, latex-free 1.6 mm thick: to AWWA C111.
- .2 Bolts, nuts, hex head and washers: to ASTM A307, heavy series.
- .3 Solder: 95/5 tin copper alloy.
- .4 Teflon tape: for threaded joints.
- .5 Grooved couplings: designed with angle bolt pads to provide rigid joint, complete with EPDM gasket.
- .6 Dielectric connections between dissimilar metals: dielectric fitting, complete with thermoplastic liner.

**2.4      GLOBE VALVES**

- .1 NPS2 and under, soldered:
  - .1 To MSS-SP-80, Class 125, 860 kPa, bronze body, renewable composition disc,

screwed over bonnet as specified Section  
23 05 23.01 - Valves - Bronze.

.2 Lockshield handles: for balancing  
applications.

.2 NPS 2 and under, screwed:

.1 To MSS-SP-80, Class 150, 1 MPa, bronze  
body, screwed over bonnet, renewable  
composition disc as specified Section  
23 05 23.01 - Valves - Bronze.

.2 Lockshield handles: for balancing  
applications.

## **2.5 SWING CHECK VALVES**

.1 NPS 2 and under, soldered:

.1 To MSS-SP-80, Class 125, 860 kPa, bronze  
body, bronze swing disc, screw in cap,  
regrindable seat as specified Section  
23 05 23.01 - Valves - Bronze.

.2 NPS 2 and under, screwed:

.1 To MSS-SP-80, Class 125, 860 kPa, bronze  
body, bronze swing disc, screw in cap,  
regrindable seat as specified Section  
23 05 23.01 - Valves - Bronze.

## **2.6 BALL VALVES**

.1 NPS 2 and under, screwed:

.1 Class 150.

.2 Bronze body, stainless steel ball, PTFE  
adjustable packing, brass gland and PTFE  
seat, steel lever handle as specified  
Section 23 05 23.01 - Valves - Bronze.

.2 NPS 2 and under, soldered:

.1 To ANSI/ASME B16.18, Class 150.

.2 Bronze body, stainless steel ball, PTFE  
adjustable packing, brass gland and PTFE  
seat, steel lever handle, with NPT to  
copper adaptors as specified Section  
23 05 23.01 - Valves - Bronze.

## **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 the National Plumbing Code.
- .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 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.
- .6 Buried tubing:
  - .1 Lay in well compacted washed sand in accordance with AWWA Class B bedding.
  - .2 Bend tubing without crimping or constriction. Minimize use of fittings.

### **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 on completion.

### **3.4 PRESSURE TESTS**

- .1 Conform to requirements of Section 21 05 01 - Common Work Results for Mechanical.
- .2 Test pressure: greater of 1 times maximum system operating pressure or 860 kPa.

### **3.5 FLUSHING AND CLEANING**

- .1 Flush entire system for 8 h. 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 Federal potable water guidelines. Let system flush for additional 2 hours, then draw off another sample for testing.

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**3.6 PRE-START-UP  
INSPECTIONS**

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- .1 Systems to be complete, prior to flushing, testing and start-up.
- .2 Verify that system can be completely drained.
- .3 Ensure that pressure booster systems are operating properly.
- .4 Ensure that air chambers, expansion compensators are installed properly.

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**3.7 DISINFECTION**

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

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**3.8 START-UP**

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- .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.
  - .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.
  - .3 Bring HWS storage tank up to design temperature slowly.
  - .4 Monitor piping HWS and HWC piping systems for freedom of movement, pipe expansion as designed.
  - .5 Check control, limit, safety devices for normal and safe operation.
- .4 Rectify start-up deficiencies.

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**3.9 PERFORMANCE  
VERIFICATION**

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- .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 Criteria.
- .2 TAB HWC in accordance with Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.
- .3 Adjust pressure regulating valves while withdrawal is maximum and inlet pressure is minimum.
- .4 Sterilize HWS and HWC systems for Legionella control.
- .5 Verify performance of temperature controls.
- .6 Verify compliance with safety and health requirements.
- .7 Check for proper operation of water hammer arrestors. Run one outlet for 10 seconds, then shut of water immediately. If water hammer occurs, replace water hammer arrestor or re-charge air chambers. Repeat for outlets and flush valves.
- .8 Confirm water quality consistent with supply standards, and ensure no residuals remain as result of flushing or cleaning.

.3 Reports:

- .1 In accordance with Section 01 91 13 - General Commissioning (Cx) Requirements: Reports, using report forms as specified in Section 01 91 13 - General Commissioning (Cx) Requirements: Report Forms and Schematics.
- .2 Include certificate of water flow and pressure tests conducted on incoming water service, demonstrating adequacy of flow and pressure.

**3.10 OPERATION  
REQUIREMENTS**

- .1 Co-ordinate operation and maintenance requirements including, cleaning and maintenance of specified materials and products with Section 23 05 05 - Installation of Pipework.

**3.11 CLEANING**

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- .1 Clean in accordance with Section 01 74 11 -  
Cleaning.
- .2 Waste Management: separate waste materials  
for recycling in accordance with Section  
01 74 21 - Construction/Demolition Waste  
Management and Disposal.

**END OF SECTION**



**Part 1      General**

**1.1    REFERENCES**

- .1    ASTM International Inc.
  - .1    ASTM B32-14, Standard Specification for Solder Metal.
  - .2    ASTM B306-13, Standard Specification for Copper Drainage Tube (DWV).
  - .3    ASTM C564-14, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- .2    Canadian Standards Association (CSA International).
  - .1    CAN/CSA-B70-13, Cast Iron Soil Pipe, Fittings and Means of Joining.
  - .2    CAN/CSA-B125.3-12, Plumbing Fittings.
- .3    Green Seal Environmental Standards (GSES)
  - .1    Standard GS-36-13, Commercial Adhesives.
- .4    South Coast Air Quality Management District (SCAQMD), California State
  - .1    SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications.

**1.2    ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .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.

**1.3    DELIVERY, STORAGE AND HANDLING**

- .1    Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .2    Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.



freedom from obstructions.

### **3.4 PERFORMANCE VERIFICATION**

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- .1 Cleanouts:
  - .1 Ensure accessible and that access doors are correctly located.
  - .2 Open, cover with linseed oil and re-seal.
  - .3 Verify that 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**

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- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**

**Part 1      General**

**1.1      REFERENCES**

- .1    ASTM International Inc.
  - .1    ASTM D2235-2011, Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
  - .2    ASTM D2564-2012, 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.
- .4    Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1    Material Safety Data Sheets (MSDS).
- .5    South Coast Air Quality Management District (SCAQMD), California State
  - .1    SCAQMD Rule 1168-A2005, Adhesive and Sealant Applications.

**1.2      ACTION AND  
INFORMATIONAL  
SUBMITTALS**

- .1    Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:
  - .1    Provide manufacturer's printed product literature and datasheets for piping and adhesives, and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2    Provide two copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29.06 - Health and Safety Requirements.

**1.3      DELIVERY,**

- .1    Deliver, store and handle in accordance with

**STORAGE AND HANDLING**

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- manufacturer's written instructions.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Store at temperatures and conditions recommended by manufacturer.
- .4 Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 MATERIAL**

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- .1 Adhesives and Sealants: in accordance with Section 07 92 00 - Joint Sealants.
  - .1 Maximum VOC limit 250 g/L to SCAQMD Rule 1168 and GSES GS-36.

**2.2 PIPING AND FITTINGS**

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- .1 For buried piping and piping not to be installed in return air plenums. DWV piping to:
  - .1 CAN/CSA B1800.

**2.3 JOINTS**

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- .1 Solvent weld for PVC: to ASTM D2564.
- .2 Solvent weld for ABS: to ASTM D2235.

**Part 3 Execution**

**3.1 APPLICATION**

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- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

**3.2 INSTALLATION**

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- .1 In accordance with Section 23 05 05 - Installation of Pipework.
- .2 Install in accordance with National Plumbing Code and requirements of 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 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).

### **3.5 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA B51-2013, Boiler, Pressure Vessel, and Pressure Piping Code.
  - .2 CAN/CSA-C309-2014, Performance Requirements for Glass-Lined Storage Tanks for Household Hot Water Service.
  - .3 CAN/CSA C22.2 No.110-2015, Construction and Test of Electric Storage Tank Water Heaters.
  - .4 CAN/CSA-C191-2013, Performance of Electric Storage Tank Water Heaters for Household Service.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature and datasheets for domestic water heater, and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Provide shop drawings in pdf format.
  - .2 Indicate:
    - .1 Equipment, including connections, fittings, control assemblies and ancillaries, identifying factory and field assembled.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

**1.4 DELIVERY, STORAGE AND HANDLING**

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

- .3 Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

#### **1.5 WARRANTY**

- .1 For the Work of this Section, 12 months warranty period prescribed in subsection GC 32.1 of General Conditions "C" is extended to number of years specified for each product.
- .2 Contractor hereby warrants domestic water heaters in accordance with CCDC2, but for number of years specified for each product.

### **Part 2 Products**

#### **2.1 ELECTRIC WATER HEATER**

- .1 To CAN/CSA C22.2 No.110, CAN/CSA-C191 and CAN/CSA-C309 for glass-lined storage tanks, with 2 immersion type elements, 2500 W each, and surface mounted or immersion type adjustable thermostats.
- .2 Tank: 151 L, glass lined steel, 521 mm diameter x 1146 mm high, 50 mm mineral wool or fibreglass insulation, enamelled steel jacket, 3 year warranty certificate.

#### **2.2 TRIM AND INSTRUMENTATION**

- .1 Drain valve: NPS 1 with hose end.
- .2 Thermometer: 100 mm dial type with red pointer and thermowell filled with conductive paste.
- .3 Pressure gauge: 75 mm dial type with red pointer, syphon, and shut-off cock.
- .4 Thermowell filled with conductive paste for control valve temperature sensor.
- .5 ASME rated temperature and pressure relief valve sized for full capacity of water and heater having discharge terminating over floor drain and visible to operators.

### **Part 3 Execution**



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- 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 on a level, 100mm concrete housekeeping pad, in accordance with manufacturer's recommendations and authority having jurisdiction.
- 3.3 FIELD QUALITY CONTROL**
- .1 Manufacturer's factory trained, certified Technician to start up and commission DHW heaters.
- 3.4 CLEANING**
- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**END OF SECTION**

**Part 1      General**

**1.1      REFERENCES**

- .1    ASTM International
  - .1    ASTM A126-04(2014), Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
  - .2    ASTM B62-15, Standard Specification for Composition Bronze or Ounce Metal Castings.
- .2    CSA International
  - .1    CSA B79-2013, Commercial and Residential Drains and Cleanouts.
  - .2    CAN/CSA-B356-2015, Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .3    Plumbing and Drainage Institute (PDI)
  - .1    PDI-G101-2015, Testing and Rating Procedure for Grease Interceptors with Appendix of Installation and Maintenance.
  - .2    PDI-WH201-R2010, Water Hammer Arresters Standard.

**1.2      ADMINISTRATIVE REQUIREMENTS**

- .1    Pre-installation Meetings:
  - .1    Convene pre-installation meeting 1 week prior to beginning work of this Section, with contractor's representative and Departmental Representative to:
    - .1    Verify project requirements.
    - .2    Review installation and substrate conditions.
    - .3    Co-ordinate with other building construction subtrades.
    - .4    Review manufacturer's written installation instructions and warranty requirements.

**1.3      ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:

- .1 Submit in pdf format 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 in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
  - .1 Submit shop drawings in pdf format.
  - .2 Indicate on drawings to indicate materials, finishes, method of anchorage, dimensions construction and assembly details accessories for following: soap dispensers, trap primers, floor drains, water hammer arrestors, cleanouts.
- .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.

**1.4 CLOSEOUT  
SUBMITTALS**

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- .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.

**1.5 DELIVERY,  
STORAGE AND  
HANDLING**

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- .1 Deliver, store and handle materials in accordance 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 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.
- .4 Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## Part 2 Products

### 2.1 FLOOR DRAINS

- .1 Floor 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.
- .3 Type 2: combination funnel floor drain; cast iron body with integral seepage pan, clamping collar, nickel-bronze adjustable head strainer with integral funnel.

### 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 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

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		Floors: nickel bronze round square, 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.
<b>2.3 WATER HAMMER ARRESTORS</b>	.1	Copper construction, piston type: to PDI-WH201.
<b>2.4 VACUUM BREAKERS</b>	.1	Breakers: to CSA-B64 Series, vacuum breaker atmospheric.
<b>2.5 PRESSURE REGULATORS</b>	.1	Capacity: .1 Inlet pressure: 670 kPa. .2 Outlet pressure: 413 kPa.
	.2	Up to NPS 1-1/2 bronze bodies, screwed: to ASTM B62.
	.3	NPS 2 and over, semi-steel bodies, Class 125, flanged: to ASTM A126, Class B.
	.4	Semi-steel spring chambers with bronze trim.
<b>2.6 NON-FREEZE WALL HYDRANT</b>	.1	Bronze construction complete with integral vacuum breaker, hose thread spout, replaceable composition disc, and chrome plated in finished areas.
<b>2.7 TRAP SEAL PRIMERS</b>	.1	Brass, with integral vacuum breaker, NPS 1/2 solder ends, NPS 1/2 drip line connection.
<b>2.8 STRAINERS</b>	.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.
- .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

- .1 Install on branch supplies to fixtures or

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**ARRESTORS**

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group of fixtures where indicated.

**3.6 TRAP SEAL  
PRIMERS**

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- .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 tubing to floor drain, trap.

**3.7 STRAINERS**

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

**3.8 START-UP**

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- .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.

**3.9 TESTING AND  
ADJUSTING**

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- .1 Timing:
  - .1 After start-up deficiencies rectified.
  - .2 After certificate of completion has been issued by authority having jurisdiction.
- .2 Application tolerances:
  - .1 Pressure at fixtures: +/- 70 kPa.
  - .2 Flow rate at fixtures: +/- 20%.
- .3 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.
- .4 Floor drains:
  - .1 Verify operation of trap seal primer.

- .2 Prime, using trap primer. Adjust flow rate to suit site conditions.
- .3 Check operations of flushing features.
- .4 Check security, accessibility, removability of strainer.
- .5 Clean out baskets.
- .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 Wall, ground hydrants:
  - .1 Verify complete drainage, freeze protection.
  - .2 Verify operation of vacuum breakers.
- .10 Pressure regulators, PRV assemblies:
  - .1 Adjust settings to suit locations, flow rates, pressure conditions.
- .11 Strainers:
  - .1 Clean out repeatedly until clear.
  - .2 Verify accessibility of cleanout plug and basket.
  - .3 Verify that cleanout plug does not leak.
- .12 Hydronic system water Make-up Assembly:
  - .1 Verify flow, pressure, and connection.



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**3.10 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 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

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**3.11 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**

**Part 1 General**

**1.1 REFERENCES**

- .1 CSA Group
  - .1 CAN/CSA-B45 Series-02(R2013), Plumbing Fixtures, (Consists of B45.0, B45.1, B45.2, B45.3, B45.4, B45.5, B45.6, B45.7, B45.8 and B45.9).
  - .2 CSA B125.3-12, Plumbing Fittings.
  - .3 CSA B651-15, Accessible Design for the Built Environment.

- .2 Green Seal (GS)
  - .1 GS-36-2013, Adhesives for Commercial Use.
- .3 South Coast Air Quality Management District (SCAQMD)
  - .1 SCAQMD Rule 1168-A2011, Adhesive and Sealant Applications.

**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 washroom fixtures and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Indicate fixtures and trim:
    - .1 Dimensions, construction details, roughing-in dimensions.
    - .2 Factory-set water consumption per flush at recommended pressure.
    - .3 For water closets: minimum pressure required for flushing.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Include:
  - .1 Description of fixtures and trim, giving manufacturer's name, type, model, year, capacity.
  - .2 Details of operation, servicing,

maintenance.

.3 List of recommended spare parts.

**1.4 DELIVERY,  
STORAGE AND  
HANDLING**

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- .1 Deliver, store and handle materials in accordance 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 indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect specified materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 2 Products**

**2.1 SUSTAINABLE  
MATERIAL**

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- .1 Adhesives and sealants: maximum VOC limit 70 g/L to SCAQMD Rule 1168.

**2.2 MANUFACTURED  
UNITS**

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- .1 Fixtures: manufacture in accordance with CAN/CSA-B45 series.
- .2 Trim, fittings: manufacture in accordance with CSA B125.3.
- .3 Exposed plumbing brass to be chrome plated.
- .4 Number, locations: as indicated.
- .5 Fixtures in any one location to be product of one manufacturer and of same type.
- .6 Trim in any one location to be product of one manufacturer and of same type.
- .7 Water closet WC-1:

- .1 Fixture: American Standard Cadet Pro Right Height Elongated #215AA.174.020 Toilet, 419 mm high, white vitreous china with EverClean antimicrobial surface which inhibits the growth of stain and odor causing bacteria mold and mildew, Floor Mounted, cadet flushing system with PowerWash rim siphon flushing system which scrubs bowl with every flush, 4.8 L (1.28 US Gal) per flush, raised sanitary bar and four (4) points tank stabilization, 229 mm x 203 mm (9" x 8") water surface, two (2) piece, 'Speed Connect' tank assembly, lined tank, bolted tank cover, oversized 76 mm (3") flush valve with flapper, Metal shank fill valve, 305 mm (12") rough-in, elongated bowl, 54 mm (2-1/8") fully glazed internal trapway, floor outlet, bolt caps.
- .2 Accessories: Centoco #AM820STS.001 Toilet Seat, extra heavy duty, for elongated bowl, open front, white solid plastic with antimicrobial surface, with cover, stainless steel check hinges, metal flat washers stainless steel posts and nuts. McGuire #LFH166N3, Toilet Supply, chrome plated finish polished brass, heavy duty angle stops, 13 mm (1/2") I.P.S. Inlet x 76 mm (3") long rigid horizontal nipples, wheel handles, escutcheon and flexible copper risers. Provide Floor Flange, (same material as the connecting pipe drain), with all brass bolts and with rubber gasket.
- .3 Acceptable Alternate Manufacturer: Zurn, Kohler

### 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 washroom fixtures 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 INSTALLATION**

- .1 Mounting heights:
  - .1 Standard: to manufacturer's recommendations as measured from finished floor.
  - .2 Wall-hung fixtures: as indicated, measured from finished floor.
  - .3 Barrier-free: to most stringent CSA B651 or NBC.
- .2 Flush valve and faucet valve transformers:
  - .1 Provide one (1) transformer per washroom.
  - .2 Transformer as specified with water closet WC-1

### **3.3 ADJUSTING**

- .1 Conform to water conservation requirements specified this section.
- .2 Adjustments:
  - .1 Adjust water flow rate to design flow rates.
- .3 Checks:
  - .1 Water closets: flushing action.
  - .2 Aerators: operation, cleanliness.
  - .3 Vacuum breakers, backflow preventers: operation under all conditions.
- .4 Thermostatic controls:
  - .1 Verify temperature settings, operation of control, limit and safety controls.

### **3.4 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 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

**Part 1 General**

**1.1 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-B45 Series-02 (R2013), Plumbing Fixtures.
  - .2 CAN/CSA-B125.3-12, Plumbing Fittings.
  - .3 CAN/CSA-B651-2015, Accessible Design for the Built Environment.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature and datasheets for fixtures, and include product characteristics, performance criteria, physical size, finish and limitations.

**1.3 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Include:
  - .1 Description of fixtures and trim, giving manufacturer's name, type, model, year, capacity.
  - .2 Details of operation, servicing, maintenance.
  - .3 List of recommended spare parts.

**1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle in accordance with manufacturer's instructions.
- .2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.
- .3 Packaging Waste Management: remove for recycling all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**Part 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 Number, locations: architectural drawings to govern.
- .5 Fixtures to be product of one manufacturer.
- .6 Trim to be product of one manufacturer.
- .7 Washroom Lavatory LAV-1:
  - .1 Fixture: American Standard Murro with Everclean #0955.001EC/0059.020EC basin, center hole only, 540 mm x 520 mm x 165 mm (21-1/4" x 20-1/2" x 6-1/2") high, vitreous china, for carrier with concealed arms, rear overflow, recessed self-draining faucet ledge, semi-pedestal P-trap cover.
  - .2 Trim: Chicago Faucets #2200-E2805-ABCP Single Handle Faucet, chrome plated, center hole only, ECAST construction lead free (equal or less than 0.25%) solid brass construction, ceramic volume control cartridge, vandal resistant 1.9 LPM (0.5 GPM) pressure compensating Econo-Flo non-aerating spray outlet, 121 mm (4-3/4") projection cast brass spout, single metal lever handle, integral hot water limit stop.
  - .3 Accessories: McGuire #155A Open Grid Drain, cast brass one piece top, 17 GA. (1.5 mm) tubular 32 mm (1-1/4") tailpiece. McGuire #LFH165LKN3RB, Faucet Supplies, chrome plated finish polished brass, heavy duty angle stops, 10 mm (3/8") I.P.S. Inlet x 76 mm (3") long rigid horizontal nipples, V.P. Loose keys, escutcheon and stainless steel braided flexible risers. McGuire #8872C P-Trap, heavy cast brass adjustable body, with slip nut, 32 mm (1-1/4") size, shallow wall flange and seamless tubular wall bend. Jay R. Smith #0700-



- Z/0700-CAN-1, Fixture Carrier, mounted on concrete floor, concealed arms, heavy duty one piece construction steel pipe legs welded to narrow block base feet support. For one unit: 102 mm (4") for two to six units in a row: 152 mm (6") finished metal stud wall to back of pipe space Service/Mop Sink SS-1:
- .4 Acceptable Alternate Manufacturer: Zurn, Kohler
  - .8 Stainless steel counter-top sink SK-1.
    - .1 Fixture: Franke Commercial #ALBD4406P-1/1 Double Bowl Countertop Mount Sink, 1 hole, 794 mm (31-1/4") wide x 478 mm (18-13/16") long x 152 mm (6") high deep, spillway, counter mounted, backledge, grade 18-10 18 GA. (1.2 mm) type 304 stainless steel, self-rimming, satin finish rim and bowls, mounting kit provided, fully undercoated to reduce condensation and resonance, factory applied rim seal, 3-1/2" (89 mm) crumb cup waste assembly with 1-1/2" (38 mm) tailpiece.
    - .2 Trim: Chicago Faucets #430-E2805-ABCP Single Handle Faucet, chrome plated, center hole only, ECAST construction lead free (equal or less than 0.25%) ECAST brass construction, volume control and Hot Water Limit Stop cartridge, vandal resistant 1.9 LPM (0.5 GPM) pressure compensating Econo-Flo non-aerating spray outlet, 241 mm (9-1/2") projection rigid cast brass spout, single metal lever handle.
    - .3 Accessories: McGuire #LFH165LKN3, Faucet Supplies, chrome plated finish polished brass, heavy duty angle stops, 10 mm (3/8") I.P.S. Inlet x 76 mm (3") long rigid horizontal nipples, V.P. Loose keys, escutcheon and flexible copper risers. McGuire #8903C P-Trap, heavy cast brass adjustable body, with slip nut, 38 mm (1-1/2") inlet / 51 mm (2") outlet, shallow wall flange and seamless tubular wall bend. McGuire PROWRAP #PW2000 Sanitary Covering vandal-resistant, flexible seamless moulded closed-cell PVC resin, formulated with

anti-microbial additive to limit the growth of fungus and bacteria, to exposed piping (to protect against heat/contusions) as per local codes. Acceptable Alternate Manufacturer: Kindred, Kohler

- .9 Fixture piping:
  - .1 Hot and cold water supplies to each fixture:
    - .1 Chrome plated rigid supply pipes each with screwdriver stop, reducers, escutcheon.
  - .2 Waste:
    - .1 Brass P trap with clean out on each fixture not having integral trap.
    - .2 Chrome plated in all exposed places.
- .10 Chair carriers:
  - .1 Factory manufactured floor-mounted carrier systems for all wall-mounted fixtures.

### 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 Mounting heights:
  - .1 Standard: to comply with manufacturer's recommendations unless otherwise indicated or specified.
  - .2 Wall-hung fixtures: as indicated, measured from finished floor.
  - .3 Physically handicapped: to comply with most stringent of either NBCC or CAN/CSA-B651.
- 3.3 ADJUSTING .1 Conform to water conservation requirements specified this section.

- .2 Adjustments:
  - .1 Adjust water flow rate to design flow rates.
  - .2 Adjust pressure to fixtures to ensure no splashing at maximum pressures.
- .3 Checks:
  - .1 Aerators: operation, cleanliness.
  - .2 Vacuum breakers, backflow preventers: operation under all conditions.
  - .3 Wash fountains: operation of flow-actuating devices.
- .4 Thermostatic controls:
  - .1 Verify temperature settings, operation of control, limit and safety controls.
- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**3.4 CLEANING**

**END OF SECTION**

**Part 1      General**

**1.1    REFERENCES**

- .1    Air-Conditioning and Refrigeration Institute (ARI)
  - .1    ARI 1010-02, Self-Contained, Mechanically Refrigerated Drinking-Water Coolers.
- .2    Canadian Standards Association (CSA International)
  - .1    CAN/CSA-B45 Series-2013, CSA Standards on Plumbing Fixtures.
  - .2    CAN/CSA-B125.3-12, Plumbing Fittings.
  - .3    CAN/CSA-B651-2015, Accessible Design for the Built Environment.

**1.2    ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:
  - .1    Provide manufacturer's printed product literature and datasheets for fountains and coolers, and include product characteristics, performance criteria, physical size, finish and limitations.
- .3    Shop Drawings:
  - .1    Provide shop drawings in pdf format.
  - .2    Indicate, for all fixtures:
    - .1    Dimensions, construction details, roughing-in dimensions, electrical requirements.

**1.3    CLOSEOUT SUBMITTALS**

- .1    Provide operation and maintenance data including monitoring requirements for incorporation into manuals specified in Section 01 78 00 - Closeout Submittals.
- .2    Include:
  - .1    Description of fixtures and trim, giving manufacturer's name, type, model, year, capacity.
  - .2    Details of operation, servicing, maintenance.

.3 List of recommended spare parts.

- |   |    |  |
|---|----|--|
| <b>1.4 DELIVERY,<br/>STORAGE AND<br/>HANDLING</b> <hr/> | .1 | Deliver, store and handle in accordance with manufacturer's instructions.  |
|   | .2 | Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.   |
|   | .3 | Packaging Waste Management: remove for recycling, all packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal. |

**Part 2 Products**

- |   |    |  |
|---|----|--|
| <b>2.1 MANUFACTURED<br/>UNITS</b> <hr/> | .1 | Fixtures: manufacture in accordance with CAN/CSA-B45 series.   |
|   | .2 | Trim, fittings: manufacture in accordance with CAN/CSA-B125.3.   |
|   | .3 | Exposed plumbing brass to be chrome plated.  |
|   | .4 | Number, locations: architectural drawings to govern.   |
|   | .5 | Drinking fountain DF-1:  |
|   | .1 | Fixture: Elkay No Lead Drinking Fountain Soft Sides #EDFP210C wall hung drinking fountain, single, satin finish, 18 GA. (1.2 mm) type 304 stainless steel, lead-free design, vandal-proof push button control, Flexi-Guard safety bubbler utilizes an infused anti-microbial pliable polyester elastomer to prevent mouth injuries, stainless steel bottom cover plate, in-wall carrier mounting plate #MPW101, drain assembly, trap assembly. Valve with built-in flow regulator to provide constant stream from 20 to 60 psi water pressure. |
|   | .2 | Accessories: McGuire #LFHST11LK, Drinking Fountain Supply, chrome plated finish polished brass, straight stops, 10 mm (3/8") I.P.S. Inlet, V.P. Loose key. McGuire #8872C P-Trap, heavy cast brass adjustable body, with slip nut, 32 mm (1-1/4") size, shallow wall flange  |

and seamless tubular wall bend. Jay R. Smith #0637, single, Urinal Carrier, mounted on concrete floor, steel hanger plates, heavy duty one piece construction steel pipe legs welded to block base feet support. For one to three unit(s) - 152 mm (6") for four or more units - 203 mm (8") finished metal stud wall to back of pipe space.

.3 Acceptable Alternate Manufacturer:  
Halsey Taylor, Franke

.6 Waste:

- .1 Brass P trap with cleanout on each fixture not having integral trap.
- .2 Chrome plated in all exposed places.

.7 Chair carriers:

- .1 Factory manufactured floor-mounted carrier systems for all wall-mounted fixtures.

### **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 Mounting heights:

- .1 Standard: to comply with manufacturer's recommendations unless otherwise indicated or specified.
- .2 Wall-hung fixtures: as indicated, measured from finished floor.
- .3 Physically handicapped: to comply with most stringent of either NBCC or CAN/CSA B651.

.2 Drinking fountains and water coolers:

- .1 In accordance with ARI 1010.

**3.3 ADJUSTING** .1 Conform to water conservation requirements specified this Section.

- .2 Adjustments:
  - .1 Adjust water flow rate to design flow rates.
  - .2 Adjust water cooler, drinking fountain flow stream to ensure no spillage.
- .3 Checks:
  - .1 Refrigerated water coolers: operation, temperature settings.
- .4 Thermostatic controls:
  - .1 Verify temperature settings, operation of control, limit and safety controls.
- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

**3.4 CLEANING**

**END OF SECTION**