

**Part 1            General**

**1.1                SUMMARY**

- .1    Section Includes:
  - .1        Materials and installation for plumbing pumps.
- .2    Related Sections:
  - .1        Section 01 33 00 - Submittal Procedures.
  - .2        Section 01 45 00 - Quality Control.
  - .3        Section 01 74 00 - Cleaning.
  - .4        Section 01 78 10 - Closeout Submittals.

**1.2                SUBMITTALS**

- .1    Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    Product Data:
  - .1        Submit manufacturer's printed product literature, specifications and data sheet for fixtures and equipment.
- .3    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.
- .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    Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 10 - Closeout Submittals, include:
  - .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.

**1.3                DELIVERY, STORAGE AND HANDLING**

- .1    Waste Management and Disposal:
  - .1        In accordance with Section 01 74 00 - Cleaning.

**Part 2 Products**

**2.1 DOMESTIC HOT WATER CIRCULATING PUMPS**

- .1 Construction: closed-coupled, in-line centrifugal, all bronze construction, bronze shaft sleeve, two oil lubricated bronze sleeves or ball bearings. Design for 862 kPa and 107 degrees C continuous service.
- .2 Motor: drip-proof, with thermal overload protection.
- .3 Supports: provide as recommended by manufacturer.
- .4 Refer to Plumbing Pump Schedule.

**2.2 SEWAGE PUMPS**

- .1 Pioneer Duplex Self Priming Centrifugal Sewage Pump Package, each Consisting of:
  - .1 Grey Iron Construction
  - .2 Oil Lubricated Bearing Frame
  - .3 Oil Lubricated Silicon Carbide vs. Silicon Carbide Mechanical Seal
  - .4 Stainless Steel Shaft
  - .5 Removable Cover Plate for Access to Pump Impeller
  - .6 50mm NPT Suction and Discharge
  - .7 Direct Drive Base Plate, Coupling and Guard
  - .8 TEFC High Efficiency Severe Duty Motor, Refer to Division 16 for Electrical Characteristics
  - .9 1 only Nothart Dual Power Supply Custom Control Panel, Model #NES-DPS-0V/2x3/0/60, complete with:
    - .1 2 only Main Disconnect Switches, c/w Door Interlocked Handle
    - .2 Automatic Switch Over Mechanism Between 2 Power Sources (Contractor Type ATS)
    - .3 2 only Thermomagnetic Motor Protectors (Overload & Short Circuit Protection)
    - .4 2 only Across The Line Contractors
    - .5 Control Transformer with Secondary Fuse
    - .6 'Power On' and 'Run' and 'High Level Alarm' Pilot Lights
    - .7 2 only Hand-Off-Auto Selector Switches
    - .8 Automatic Transfer to Non Operating Pump in Case of Motor Overload or Short Circuit
    - .9 Electric Alternating Relay
    - .10 High Level Alarm c/w Silencer
    - .11 High Level Alarm Relay
    - .12 Nema 4 Enclosure
    - .13 4 only 3 Wire Float Switches 9M Cable

- .10 Pumps shall be mounted on concrete base beside the sewage pit with Type 'L' hard copper suction piping, gate and check valve in the discharge of each pump, and common Type 'L' hard copper discharge line to sanitary drain as shown.
- .11 Refer to Plumbing Pump Schedule 22 06 10.13.

### **2.3 DUPLEX SUMP PUMP (WEEPING TILE)**

- .1 Monarch Duplex Self Priming Centrifugal Sump Pump Package, each consisting of:
  - .1 Monarch 'BE' Series Self Priming Centrifugal Sump Pumps
    - .1 Cast Iron Construction
    - .2 Built In Check Valve
    - .3 Carbon/Ceramic Mechanical Seal
    - .4 TEFC Enclosure Motor – Refer to Division 16 for Electrical Characteristics
    - .5 Northart Dual Power Supply Custom Control Panel, Model # NES-DPS-0V/2x0.75/0/60, Complete with:
      - .1 2 only Main Disconnect Switches, c/w Door Interlocked Handle
      - .2 Automatic Switch Over Mechanism Between 2 Power Sources (Contractor Type ATS)
      - .3 2 only Thermomagnetic Motor Protectors (Overload & Short Circuit Protection)
      - .4 2 only Across The Line Contractors
      - .5 Control Transformer with Secondary Fuse
      - .6 'Power On' and 'Run' and 'High Level Alarm' Pilot Lights
      - .7 2 only Hand-Off-Auto Selector Switches
      - .8 Automatic Transfer to Non Operating Pump in Case of Motor Overload or Short Circuit
      - .9 Electric Alternating Relay
      - .10 High Level Alarm c/w Silencer
      - .11 High Level Alarm Relay
      - .12 Nema 4 Enclosure
      - .13 4 only 3 Wire Float Switches c/w 9M Cable
  - .2 Pumps shall be mounted on concrete base beside the sewage pit with Type 'L' hard copper suction piping, isolation and check valve in the discharge of each pump, and common Type 'L' hard copper discharge line to drain as shown.
  - .3 Refer to Plumbing Pump Schedule 22 06 10.13.

## **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 Align vertical pit mounted pump assembly after mounting and securing cover plate.

### **3.3 FIELD QUALITY CONTROL**

- .1 Site Tests/Inspection:
  - .1 Check power supply.
  - .2 Check starter protective devices.
- .2 Start-up, check for proper and safe operation.
- .3 Check settings and operation of hand-off-auto selector switch, operating, safety and limit controls, audible and visual alarms, over-temperature and other protective devices.
- .4 Adjust impeller shaft stuffing boxes, packing glands.

### **3.4 START-UP**

- .1 General:
  - .1 Procedures:
    - .1 Check power supply.
    - .2 Check starter O/L heater sizes.
    - .3 Start pumps, check impeller rotation.
    - .4 Check for safe and proper operation.
    - .5 Check settings, operation of operating, limit, safety controls, over-temperature, audible/visual alarms, other protective devices.
    - .6 Test operation of hands-on-auto switch.
    - .7 Test operation of alternator.
    - .8 Check base for free-floating, no obstructions under base.
    - .9 Check installation, operation of mechanical seals, packing gland type seals. Adjust as necessary.
    - .10 Adjust alignment of piping and conduit to ensure full flexibility.

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Materials and installation for copper domestic water service used in the following:
  - .1            Hard drawn copper domestic hot and cold water services inside building.

**1.2                RELATED SECTIONS**

- .1        Section 01 33 00 - Submittal Procedures.
- .2        Section 01 74 00 - Cleaning.
- .3        Section 01 78 10 - Closeout Submittals.
- .4        Section 21 05 01 - Common Work Results - Mechanical.
- .5        Section 23 05 05 - Installation of Pipework.
- .6        Section 23 05 22 - Valves - Bronze.
- .7        Section 23 05 23 Valves - Cast Iron: Gate, Globe, Check.

**1.3                REFERENCES**

- .1        American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME).
  - .1            ANSI/ASME B16.15-85(R1994), Cast Bronze Threaded Fittings, Classes 125 and 250.
  - .2            ANSI/ASME B16.18-84(R1994), Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3            ANSI/ASME B16.22-95, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- .2        Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
  - .1            MSS-SP-67-97, Butterfly Valves.

**1.4                SUBMITTALS**

- .1        Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Provide maintenance data for incorporation into manual specified in Section 01 78 10 - Closeout Submittals.

**1.5                WASTE MANAGEMENT AND DISPOSAL**

- .1        In accordance with Section 01 74 00 - Cleaning.

**Part 2 Products**

**2.1 PIPING**

- .1 Domestic hot, cold, tempered and recirculation systems, within building.
  - .1 Above ground: copper tube, hard drawn, type L: to ASTM B88M, third party certified.
  - .2 Buried or embedded: copper tube, soft annealed, type K: to ASTM B88M, third party certified in long lengths and with no buried joints.

**2.2 FITTINGS**

- .1 Cast bronze threaded fittings, Class 125 and 250: to ANSI/ASME B16.15.
- .2 Cast copper, solder type: to ANSI/ASME B16.18.
- .3 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.
- .4 NPS 2 and larger: roll grooved to CSA B242.

**2.3 JOINTS**

- .1 Solder: 95/5 or silver bearing lead free.
- .2 Teflon tape: for threaded joints.
- .3 Grooved couplings: designed with angle bolt pads to provide rigid joint, complete with EPDM flush seal gasket.
- .4 Dielectric connections between dissimilar metals: dielectric fitting to ASTM F492, complete with thermoplastic liner.

**2.4 BALL VALVES**

- .1 NPS 2 and under:
  - .1 Class 150.
  - .2 Bronze body, stainless steel trim, PTFE Teflon seat, steel lever handle.
  - .3 Acceptable Material: Toyo Fig. 5044A, Kitz 59, Crane 9322, Nibco S-585-70..

**2.5 BUTTERFLY VALVES**

- .1 NPS 2-1/2 and over, lug:
  - .1 To MSS-SP-67, Class 200.
  - .2 Enamelled cast iron body, stainless steel disc, stainless steel stem, EPT liner.
  - .3 Lever operated.
  - .4 Acceptable Materials: Kitz 3162, Bray 31

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Install in accordance with NPC, and local authority having jurisdiction.
- .2 Install pipe work in accordance with Section 23 05 05 - Installation of Pipework, supplemented as specified herein.
- .3 Assemble piping using fittings manufactured to ANSI standards.
- .4 Install CWS piping below and away from HWS and 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.

**3.2 VALVES**

- .1 Isolate equipment, fixtures and branches with butterfly or ball valves.
- .2 Balance recirculation system using lockshield ball valves.

**3.3 PRESSURE TESTS**

- .1 Conform to requirements of Section 23 05 01 - Common Work for Mechanical.
- .2 Test pressure: greater of 1 times maximum system operating pressure or 690 kPa. Maintain pressure without loss for 4 hours.

**3.4 FLUSHING AND CLEANING**

- .1 Flush entire system before installation of equipment, fixtures, etc. in order to remove any foreign material in piping.

**3.5 PRE-START-UP INSPECTIONS**

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

**3.6 DISINFECTION**

- .1 Flush out, disinfect and rinse system to requirements of authority having jurisdiction.

- .2 Coordinate with Section 33 11 17 - Site Water Utility Distribution Piping and Section 33 11 16 - Incoming Site Water Utility Distribution Piping.
- .3 Upon completion, provide laboratory test reports on water quality for Contract Administrator approval.

### **3.7 START-UP**

- .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.
- .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.

### **3.8 PERFORMANCE VERIFICATION**

- .1 Timing:
  - .1 After pressure and leakage tests and disinfection 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 Adjust pressure regulating valves while withdrawal is maximum and inlet pressure is minimum.
  - .3 Verify performance of temperature controls.
  - .4 Verify compliance with safety and health requirements.
  - .5 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.
  - .6 Confirm water quality consistent with supply standards, verifying that no residuals remain as a result of flushing and/or cleaning.
- .3 Reports:
  - .1 Include certificate of water flow and pressure tests conducted on incoming water service, demonstrating adequacy of flow and pressure.

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Winnipeg Police Service  
East District Police Station  
1750 Dugald Road

Section 22 11 18  
DOMESTIC WATER PIPING COPPER

Page 5 of 5

**END OF SECTION**

**Part 1           General**

**1.1               SUMMARY**

- .1   Section Includes:
  - .1    The installation of drainage waste and vent piping.

- .2   Related Sections:
  - .1    Section 01 74 00 - Cleaning.

**1.2               REFERENCES**

- .1   American Society for Testing and Materials International, (ASTM).
  - .1    ASTM B32-03, Specification for Solder Metal.
  - .2    ASTM B306-02, Specification for Copper Drainage Tube (DWV).
  - .3    ASTM C564-03a, Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- .2   Canadian Standards Association (CSA International).
  - .1    CSA B67-1972(R1996), Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories.
  - .2    CAN/CSA-B70-02, Cast Iron Soil Pipe, Fittings and Means of Joining.
  - .3    CAN/CSA-B125-01, Plumbing Fittings.

**1.3               QUALITY ASSURANCE**

- .1   Refer to 01 45 00 Quality Control

**1.4               DELIVERY STORAGE AND DISPOSAL**

- .1   Waste Management and Disposal:
  - .1    Separate and recycle waste materials in accordance with Section 01 74 00 - Cleaning.

**Part 2           Products**

**2.1               MATERIAL**

- .1   Not used

**2.2               COPPER TUBE AND FITTINGS**

- .1   Above ground sanitary storm and vent Type DWV to: ASTM B306.
  - .1    Fittings.
    - .1      Cast brass: to CAN/CSA-B125.
    - .2      Wrought copper: to CAN/CSA-B125.

- .2 Solder: tin-lead, 50:50, type 50A lead free, tin-95:5, type TA, to ASTM B32.

### **2.3 CAST IRON PIPING AND FITTINGS**

- .1 Buried sanitary storm and vent minimum NPS 3, to: CAN/CSA-B70, with one layer of protective coating.
  - .1 Joints.
    - .1 Mechanical joints.
      - .1 Neoprene or butyl rubber compression gaskets: to ASTM C564 or CAN/CSA-B70.
      - .2 Stainless steel clamps.
    - .2 Hub and spigot.
      - .1 Caulking lead: to CSA B67.
      - .2 Cold caulking compounds.
  - .2 Above ground sanitary storm and vent: to CAN/CSA-B70.
    - .1 Joints.
      - .1 Hub and spigot.
        - .1 Caulking lead: to CSA B67.
      - .2 Mechanical joints.
        - .1 Neoprene or butyl rubber compression gaskets with stainless steel clamps.

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 In accordance with Section 23 05 01 - Installation of Pipework.
- .2 Install in accordance with Canadian Plumbing Code, Provincial Plumbing Code and local authority having jurisdiction.

### **3.2 TESTING**

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

### **3.3 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 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).

**END OF SECTION**

**Part 1           General**

**1.1               SUMMARY**

- .1   Section Includes:
  - .1     The installation of drainage waste and venting piping - plastic.
- .2   Related Sections:
  - .1     Section 01 74 00 - Cleaning.
  - .2     Section 23 05 05 - Installation of Pipework.

**1.2               REFERENCES**

- .1   American Society for Testing and Materials International, (ASTM).
  - .1     ASTM D2564-96a, Specification for Solvent Cements for PolyVinyl-Chloride (PVC) Plastic Piping Systems.
- .2   Canadian Standards Association (CSA International).
  - .1     CSA-B181.2-M1996, PVC Drain, Waste and Vent Pipe and Pipe Fittings.

**1.3               DELIVERY STORAGE AND DISPOSAL**

- .1   Waste Management and Disposal:
  - .1     Separate and recycle waste materials in accordance with Section 01 74 00 - Cleaning.

**Part 2           Products**

**2.1               PIPING AND FITTINGS**

- .1   For buried and or above ground DWV piping to:
  - .1     CSA-B181.1.
  - .2     CSA-B181.2.
  - .3     CSA-B182.1.
- .2   All piping and fittings installed within return air plenum and ceilings shall be IPEX XFR fire rated DWV piping system.

**2.2               JOINTS**

- .1   Solvent weld for PVC: to ASTM D2564.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 In accordance with Section 23 05 05 - Installation of Pipework.
- .2 Install in accordance with Canadian Plumbing Code and local authority having jurisdiction.

**3.2 TESTING**

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

**3.3 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 etc.) c/w directional arrows every floor or 4.5 m (whichever is less).

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Section 01 33 00 - Submittal Procedures.
- .2        Section 01 74 00 - Cleaning.
- .3        Section 01 78 10 - Closeout Submittals.

**1.2                REFERENCES**

- .1        Canadian Standards Association (CSA International)
  - .1        CSA B51-03, Boiler, Pressure Vessel, and Pressure Piping Code.

**1.3                SHOP DRAWINGS**

- .1        Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Indicate:
  - .1        Equipment, including connections, fittings, control assemblies and ancillaries, identifying factory and field assembled.

**1.4                CLOSEOUT SUBMITTALS**

- .1        Provide maintenance and engineering data for incorporation into manual specified in Section 01 78 10 - Closeout Submittals.

**1.5                WASTE MANAGEMENT AND DISPOSAL**

- .1        Separate and recycle waste materials in accordance with Section 01 74 00 - Cleaning.
- .2        Remove from site and dispose of packaging materials at appropriate recycling facilities.

**1.6                WARRANTY**

- .1        Each pressure vessel shall carry a 10-year warranty against leakage due to defects in materials or workmanship or corrosion. The heat exchanger tubes assembly shall be warranted against failure due to thermal stress failure or condensate corrosion for a prorated five-year period. A Warranty Certificate must be issued to the City from the manufacturer and a copy of the warranty is submitted for Contract Administrator's approval.

## **Part 2 Products**

### **2.1 INDIRECT WATER HEATER**

- .1 The water heater shall be a Turbomax model 65 as manufactured by Thermo 2000 Inc. The water heater shall be equipped with copper piping in the form of parallel helicoidal lines with a maximum operating pressure of 150 psi. All copper components will adhere to the NSF 61 standard from the NSF International Standard Drinking Water Systems Components Health Effects document. All copper components shall be welded with lead-free silver Silfoss solder compound. The water heater shall be equipped with a patented steel injector, located on top of the tank, to act as a boiler water outlet. The tank shall be made of high-carbon steel. All joints shall be arc-welded using the MIG/argon process. The tank shall have a maximum operating pressure of 150 psi and shall undergo a 300 psi hydrostatic test. The boiler shall be wrapped in a glass fiber insulating jacket limiting thermal loss to ½°F per hour. The outer shell shall be epoxy coated. The water-heater shall be equipped with a thermostat (aquastat) that closes the circuit at 9°F below the set point and opens it at the set point. The tank shall be equipped with a brass drain cock with a maximum operating pressure of 150 psi. Three adjustable supports shall allow the leveling of the unit. The boiler shall be shipped from the plant equipped with a safety relief valve as per the ASME code, adjusted to a 30 psi setting, a themomanometer and an automatic air bleeder. The water heater is protected by a 10-year warranty, refer to manufacturer's documentation.

### **2.2 STORAGE TANK**

- .1 Supply and install one Turbomax vertical ASME hot water storage tanks rated at 862 kPa (125 psi) working pressure, complete with (11" x 15") side manhole, lifting lugs, all necessary screwed tappings, approximate capacity 290 US Gallons.

### **2.3 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 heater, having discharge terminating over floor drain and visible to operators.

## **Part 3 Execution**

### **3.1 INSTALLATION**

- .1 Install in accordance with manufacturer's recommendations.
- .2 Provide insulation between tanks and supports.

**3.2 FIELD QUALITY CONTROL**

- .1 Manufacturer's factory trained, certified Engineer to start up and commission DHW heaters.

**END OF SECTION**

**Part 1            General**

**1.1                SUMMARY**

- .1    Section Includes:
  - .1        Materials and installation for plumbing specialties and accessories.
- .2    Related Sections:
  - .1        Section 01 33 00 - Submittal Procedures.
  - .2        Section 01 45 00 - Quality Control.
  - .3        Section 01 74 00 - Cleaning.
  - .4        Section 01 78 10 - Closeout Submittals.

**1.2                REFERENCES**

- .1    American Society for Testing and Materials International (ASTM).
  - .1        ASTM A126-95(2001), Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
  - .2        ASTM B62-93, Specification for Composition Bronze or Ounce Metal Castings.
- .2    Canadian Standards Association (CSA International).
  - .1        CSA-B64 Series-01, Backflow Preventers and Vacuum Breakers.
- .3    Plumbing and Drainage Institute (PDI).
  - .1        PDI-WH201-92, Water Hammer Arresters Standard.

**1.3                SUBMITTALS**

- .1    Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    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    Shop Drawings:
  - .1        Submit shop drawings to indicate materials, finishes, method of anchorage, number of anchors, dimensions, construction and assembly details and accessories for products in this section.
- .4    Instructions: submit manufacturer's installation instructions.
- .5    Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 10 - Closeout Submittals, 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.

## **Part 2 Products**

### **2.1 FLOOR DRAINS**

- .1 Floor Drains and Trench Drains: to CSA B79.
- .2 FD #1:
  - .1 Zurn ZZN-415-A cast iron floor drain with 6" (150mm) diam. adjustable 1/2" (13mm) thick nickel bronze strainer.
  - .2 Acceptable Material: Zurn, Mifab
- .3 FD #2:
  - .1 Zurn Z-415-R cast iron, adjustable nickel bronze strainer, cast iron collar, floor level clamping ring, vandalproof screws. Rough-in to adjacent flooring material as per manf. installation recommendations.
  - .2 Use in areas where sheet vinyl, sheet rubber, or sheet metal flooring material is used.
  - .3 Acceptable Material: Zurn, Mifab.
- .4 FFD #1:
  - .1 Zurn Z-415-F cast iron floor drain, 3" x 9" (75mm x 225mm) polished nickel bronze strainer with one piece oval funnel with full port opening.
  - .2 Acceptable Material: Zurn, Mifab.
- .5 FFD #2:
  - .1 Zurn Z-415-R cast iron body, floor clamping ring with grate and 3" x 9" (75mm x 225mm) bronze oval funnel strainer, one piece full port opening funnel grate.
  - .2 Rough-in to adjacent flooring material as per manf. installation recommendations.
  - .3 Use in areas where sheet vinyl and sheet rubber flooring material is used.
  - .4 Acceptable Material: Zurn, Mifab.

### **2.2 ROOF DRAINS**

- .1 Zurn ZA-705-CERA with cast iron body, aluminum dome strainer, deck clamp, waterproofing flange, roof sump receiver, extension frame, 6" (150mm) high parabolic weirs as required.
- .2 Acceptable Materials: Zurn, Mifab.

### **2.3 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 square cover with flush head tamperproof securing screws, bevelled edge frame complete with anchoring lugs.
  - .2 Floor Access: round cast iron body and frame with adjustable secured nickel bronze top cast box with anchor lugs and:
    - .1 Plugs: bolted bronze with neoprene gasket.
    - .2 Cover for Unfinished Concrete Floors: cast iron round or 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.
  - .3 Acceptable Material: Zurn, Mifab.

#### **2.4 NON-FREEZE WALL HYDRANTS**

- .1 Recessed with integral vacuum breaker, NPS 3/4 hose outlet, removable operating key. Polished bronze finish.
- .2 Zurn, Mifab

#### **2.5 WATER HAMMER ARRESTORS**

- .1 Copper construction, bellows type: to PDI-WH201.

#### **2.6 BACK FLOW PREVENTERS**

- .1 Up to and including 50mm: Watts 909 HW, union bronze body construction, s.s. replaceable check, relief seats, shafts and bolts, rubber check valve and relief valve assemblies, resilient seated bronze body ball valves, bronze test cocks, strainers.
- .2 64mm and larger:
  - .1 Watts 909, FDA approved epoxy coated cast iron check valve bodies with bronze seats, FDA approved epoxy coated cast iron relief valve with stainless steel trim, quarter turn full port resilient seated ball shut-off valves.
  - .2 Watts Series 757054, double check valve assembly; stainless steel housing, replaceable rubber disc, test cocks.
- .3 Dual Check Valve: Watts #7 continuous pressure type.
- .4 Hose Bibb: Watts 19mm #8 hose bibb vacuum breaker. Chrome plated where exposed in finished areas.

#### **2.7 STRAINERS**

- .1 860 kPa, Y type with 20 mesh, monel, bronze or stainless steel removable screen.
- .2 NPS2 and under, bronze body, screwed ends, with brass cap.

- .3 NPS2 1/2 and over, cast iron body, flanged ends, with bolted cap.

## **2.8 SOLIDS INTERCEPTORS**

- .1 Zurn Z-1200 interceptor, epoxy coated steel body, scoriated aluminum cover with gasket, stainless steel perforated basket. Provide with 100mm (4") inlet and outlet. Extension to suit floor thickness for hanging through floor slabs.
- .2 Acceptable Materials: Zurn, Mifab

## **2.9 WATER SOFTENER**

- .1 Culligan – 0.8 gpm supply of soft water.

## **2.10 WATER FILTERS**

- .1 USF Filter Housing - blue head c/w pressure relief button, clear sump, 1/2" inlet/outlet connections, 9-3/4" cartridge, filter housing part #158214, model #10 slim line. 3/4" housing inlet and outlet connections part #150071.
- .2 Water filter cartridge drinking water application, part #55593-01, Model #CFS-117-S, CUNO 5 micron filter cartridge, taste/odour chlorine removal, activated carbon.
- .3 Water filter cartridge ice machine application, Part #55594-01, Model #CFS-117, CUNO 5 micron filter cartridge, taste/odour chlorine removal, activated carbon, added scale inhibitor.

## **2.11 EXPANSION TANKS**

- .1 Provide A.S.M.E. rated vertical diaphragm type expansion tank for potable hot water systems c/w air charge valve, connection, painted with shop rust resistant primer.
- .2 One (1) tank shall be Model # BFA-80V for 60 deg C temp. water.
- .3 One (1) tank shall be Model # BFA-100V for 71 deg C temp. water.
- .4 Acceptable Material: H&G, Amtrol

## **2.12 DOMESTIC/FIRE WATER SERVICE ENTRY PIPE**

- .1 Water service entry pipe shall be Schedule 40 carbon steel continuous weld or electric resistance welded pipe conforming to ASTM A53 Grade c/w Anvil forged carbon slip on welding flanges conforming to ASTM A181. All exposed surfaces shall be protected with CSI Coating System Inc. fusion bonded epoxy coating system 431 suitable for domestic water conforming to ANSI/AWWA C213 Standard.
- .2 Steel entry pipe shall have shop or field attached white AWG# 10/7 strand copper electrical cable with TWU -40°C insulation. Wire cables shall be attached to pipe by Thermite Weld (CAD weld, or equal) in accordance with the requirements of the Thermite Weld manufacturer to ensure positive low resistance electrical connection to pipe. All coating damaged to pipe or fittings shall be repaired in accordance with the

requirements for field touch-ups as outlined in AWWA Standard C213 and coating company recommendations.

## **2.13 EMERGENCY EYEWASH**

- .1 Eyewash-1
  - .1 Bradley wall mounted eyewash barrier free model S19-220BBF. Standard spray assembly c/w valve, 1-1/4" drain fitting, tail piece and trap.
  - .2 Leonard TA300 emergency mixing valve for tepid water, c/w stainless steel recessed cabinet.
- .2 Eyewash-2
  - .1 Bradley Model S19-270B, swing eyewash fixture, right/left hand as required, standard spray head assembly, c.p. brass stay-open ball valve.
- .3 Acceptable Materials: Bradley, Haws

## **2.14 MIXING VALVES**

- .1 MV-1 Mixing Valve (Patient Room Tempered Water Loop)
  - .1 Provide two (2) Symmons Model \_\_\_\_\_ thermostatic controller with swivel action check stops, removable cartridge with strainer, volume control shut-off valve, polished chrome finish, bimetal thermometer 3" face range 20-240 °F, vacuum breaker, contractor to provide spare cartridge for each unit.
- .2 MV-2 Mixing Valve (Patient Kitchen/Laundry)
  - .1 Provide two (2) Symmons Model \_\_\_\_\_ thermostatic controller with swivel action check stops, removable cartridge with strainer, volume control shut-off valve, polished chrome finish, bimetal thermometer 3" face range 20-240 °F, vacuum breaker, contractor to provide spare cartridge for each unit.
- .3 MV-3 Mixing Valve (Single Fixture)
  - .1 Provide two (2) Symmons Model \_\_\_\_\_ thermostatic controller with swivel action check stops, removable cartridge with strainer, volume control shut-off valve, polished chrome finish, bimetal thermometer 3" face range 20-240 °F, vacuum breaker, contractor to provide spare cartridge for each unit.
- .4 Acceptable Materials: Symmons, Powers.

## **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 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 NON-FREEZE WALL HYDRANTS**

- .1 Install 600 mm above finished grade unless otherwise indicated.

### **3.5 WATER HAMMER ARRESTORS**

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

### **3.6 BACK FLOW PREVENTORS**

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

### **3.7 HOSE BIBBS**

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

### **3.8 STRAINERS**

- .1 Install with sufficient room to remove basket.

### **3.9 SOLIDS INTERCEPTORS**

- .1 Install with sufficient space, as indicated, for ease of maintenance.

### **3.10 WATER MAKE-UP ASSEMBLY**

- .1 Install on valved bypass.
- .2 Pipe discharge from relief valve to nearest floor drain.

### **3.11 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.

### **3.12 TESTING AND ADJUSTING**

- .1 Timing:
  - .1 After start-up deficiencies rectified.
  - .2 After certificate of completion has been issued by authority having jurisdiction.
- .2 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.
- .3 Floor drains:
  - .1 Check operations of flushing features.
  - .2 Check security, accessibility, removeability of strainer.
  - .3 Clean out baskets.
- .4 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.
- .5 Roof drains:
  - .1 Check location at low points in roof.
  - .2 Check security, removeability of dome.
  - .3 Adjust weirs to suit actual roof slopes, meet requirements of design.
  - .4 Clean out sumps.
  - .5 Verify provisions for movement of roof systems.
- .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 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 Grease interceptors:
  - .1 Activate, using manufacturer's recommended procedures and materials.

**END OF SECTION**

**Part 1            General**

**1.1                SUMMARY**

- .1    Section Includes:
  - .1        The supply and installation of Plumbing Fixtures and Trim.
- .2    Products Installed but not Supplied Under this Section:
  - .1        Install rough-in for equipment supplied by others, complete with valves on hot and cold water supplies, waste and vent.
  - .2        Equipment installed by others.
    - .1            Connect with unions.
  - .3        Equipment not installed.
    - .1            Capped for future connection by others.
- .3    Related Sections:
  - .1        Section 01 33 00 - Submittal Procedures.
  - .2        Section 01 74 00 - Cleaning.
  - .3        Section 01 78 10 - Closeout Submittals.

**1.2                REFERENCES**

- .1    Canadian Standards Association (CSA International).
  - .1        CAN/CSA-B45 Series-99, Plumbing Fixtures.
  - .2        CAN/CSA-B125-98, Plumbing Fittings.
  - .3        CAN/CSA-B651-95, Barrier-Free Design.

**1.3                SUBMITTALS**

- .1    Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
  - .1        Indicate, for all fixtures and trim:
    - .1            Dimensions, construction details, roughing-in dimensions.
- .2    Closeout Submittals:
  - .1        Submit maintenance data in accordance with Section 01 78 10 - 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 DISPOSAL**

- .1 Waste Management and Disposal:
  - .1 Separate waste materials for recycling in accordance with Section 01 74 00 - Cleaning.

## **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 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 and Trim
  - .1 WC-1 Water Closet Patient Barrier Free
    - .1 American Standard Madera 2305 100, vitreous china siphon jet, floor mount, flush valve, elongated rim bowl 16-1/8" (410mm) high self-draining jet, bolt caps, 1-1/2" top spud C.S.A. certified.
    - .2 Delta Commercial 81T201-5, exposed chrome plated flush valve with spring loaded anti-siphon device oscillating handle with cover bumper, vacuum breaker and escutcheon.
    - .3 # 44SSTL-AM Olsonite extra heavy solid plastic elongated seat open front with cover, s.s. self-sustaining check hinges, nuts and bolts - white. Antimicrobial compound molded-in.
  - .2 WC-2 Water Closet Staff
    - .1 American Standard Madera 2234 015, vitreous china siphon jet, close-coupled combination, elongated rim bowl 14-1/8" (359mm) high self-draining jet, bolt caps, 1-1/2" top spud C.S.A. certified.
    - .2 Delta Commercial 81T201-5, exposed chrome plated flush valve with spring loaded anti-siphon device oscillating handle with cover bumper, vacuum breaker and escutcheon.
    - .3 10CC Olsonite extra heavy solid plastic elongated seat open front less cover, s.s. self-sustaining check hinges, nuts and bolts - white. Antimicrobial compound molded-in.
  - .3 Acceptable Materials
    - .1 Water Closet: American Standard, Crane, Kohler
    - .2 Flush Valve: Delta, Crane, Sloan, Zurn
    - .3 Seats: Olsonite, Moldex, Centoco

- .8 Basins and Fittings
  - .1 L-1 Counter Basin Patient
    - .1 American Standard Cadet Universal Access countertop basin, vitreous china, self-rimming counter top lavatory with oval basin with overflow, 4" centres supply openings.
    - .2 Powers Crane # P1030 c.p. Centreset lavatory deck faucet with 4" centres, Dial-ese cartridges, colour indexed 3" blade handles with v.r. aerator.
    - .3 Powers Crane # 3906 1-1/4" c. p. offset waste assembly with open grid strainer.
    - .4 Crane # C1168 1-1/4" cast brass chrome plated adjustable "P" trap with deep flange and escutcheon.
    - .5 3/8 x 12 chrome plated flexible supplies with screwdriver stops and escutcheon.
    - .6 Truebro undersink pipe protectors on drain and water supplies.
  - .2 L-2 Wall Hung Basin
    - .1 American Standard Declyn 0321 026 wall hung basin, vitreous china rectangular basin, 4" supply openings, overflow, soap depressions and drilled to accommodate concealed arm carriers.
    - .2 Powers P44-BPL1LF4C00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
    - .3 Powers Crane # 3906 1-1/4" c. p. waste assembly with open grid strainer.
    - .4 Crane #C1168 1-1/4" cast brass chrome plated adjustable "P" trap with deep flange and escutcheon.
    - .5 3/8 x 12 chrome plated flexible supplies with screwdriver stops and escutcheon.
    - .6 Zurn Model ZX-1231 Carrier with concealed arms.
  - .3 L-3 Counter Basin
    - .1 Crane # 129V Serena semi-pedestal wheelchair access lavatory, with 132 contact guard wheelchair access, semi-pedestal, 4" centre punching, vitreous china, overflow.
    - .2 Powers P44-BPL1LF4C00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
    - .3 Powers Crane # 3906 1-1/4" c. p. waste assembly with open grid strainer.
    - .4 Crane #C1168 1-1/4" cast brass chrome plated adjustable "P" trap with deep flange and escutcheon.
    - .5 3/8 x 12 chrome plated flexible supplies with screwdriver stops and escutcheon.
    - .6 Zurn Model ZX-1231 Carrier with concealed arms.
  - .4 L-4 Counter Basin
    - .1 American Standard Cadet Universal Access countertop basin, vitreous china, self-rimming counter top lavatory with oval basin with overflow, 4" centres supply openings.

- .2 Powers P44-BPL1LF4C00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
- .3 Powers Crane # 3906 1-1/4" c. p. offset waste assembly with open grid strainer.
- .4 Crane # C1168 1-1/4" cast brass chrome plated adjustable "P" trap with deep flange and escutcheon.
- .5 3/8 x 12 chrome plated flexible supplies with screwdriver stops and escutcheon.
- .6 Truebro undersink pipe protectors on drain and water supplies.
- .5 L-5 Counter Basin
  - .1 Aristaline OV1719 stainless steel vanity basin, 3 hole punching, 4" centreset, 18 ga. stainless steel undercoated.
  - .2 Powers P44-BPL1LF4C00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
  - .3 Powers Crane # 3906 1-1/4" c. p. offset waste assembly with open grid strainer.
  - .4 Crane # C1168 1-1/4" cast brass chrome plated adjustable "P" trap with deep flange and escutcheon.
  - .5 3/8 x 12 chrome plated flexible supplies with screwdriver stops and escutcheon.
  - .6 Truebro undersink pipe protectors on drain and water supplies.
- .6 L-6 Counter Basin
  - .1 American Standard Declyn 0321 026 wall hung basin, vitreous china rectangular basin, 4" supply openings, overflow, soap depressions and drilled to accommodate concealed arm carriers.
  - .2 Powers Crane # P1030 c.p. Centreset lavatory deck faucet with 4" centres, Dial-ese cartridges, colour indexed 3" blade handles with v.r. aerator.
  - .3 Powers Crane # 3906 1-1/4" c. p. waste assembly with open grid strainer.
  - .4 Crane # C1168 1-1/4" cast brass chrome plated adjustable "P" trap with deep flange and escutcheon.
  - .5 3/8 x 12 chrome plated flexible supplies with screwdriver stops and escutcheon.
  - .6 Zurn Model ZX-1231 Carrier with concealed arms.
- .9 Sinks and Fittings
  - .1 S-1 Sink (Medication)
    - .1 Aristaline Model # LBS6808 single compartment self-rimming stainless steel sink with ledge size 52 x 51 x 20 cm, c/w basket strainer, undercoated, 3-hole drilling.
    - .2 Power P2730, c. p. deckmount faucet with rigid / swivel gooseneck spout, 8" centres, vandal resistant aerator, and colour indexed 3" blade handles.
    - .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.

- .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .2 S-2 Sink (Kitchen & ADL Suite)
  - .1 Aristaline Model # LBD6407 double compartment self-rimming stainless steel sink with ledge size 52 x 79 x 18 cm, c/w basket strainer, undercoated, 3-hole drilling.
  - .2 Power P2730, c. p. deckmount faucet with rigid / swivel gooseneck spout, 8" centres, vandal resistant aerator, and colour indexed 3" blade handles.
  - .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.
  - .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .3 S-3 Sink (Kitchen Handwash)
  - .1 Aristaline Model # LBS9407-1 single compartment self-rimming stainless steel sink with ledge size 36 x 42 x 18 cm, c/w basket strainer, undercoated, 3-hole drilling at 2" centres - special drilling.
  - .2 Powers P44-BPL1LF4C00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
  - .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.
  - .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .4 S-4 Sink (Soiled Utility)
  - .1 Aristaline Model # LBS6810 single compartment self-rimming stainless steel sink with ledge size 52 x 51 x 25 cm, c/w basket strainer, undercoated, 3-hole drilling.
  - .2 Power P2730, c. p. deckmount faucet with rigid / swivel gooseneck spout, 8" centres, vandal resistant aerator, and colour indexed 3" blade handles.
  - .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.
  - .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .5 S-5 Mop Sink
  - .1 Fiat TSB3000 pre-cast terrazzo mop service sink size 24" x 24" x 12" deep with 6" drop front c/w stainless steel caps on all curbs and threshold and strainer.
  - .2 Crane #P2430-VB sink supply fitting complete with pail hook and brace, aerator, 3" metal blade handles integral stops, adjustable screw flanges and hose end spout.
  - .3 Cambridge Brass #28T910 Wallmount Mop Hanger, stainless steel mop hanger with three spring loaded rubber grip holders.
  - .4 Cambridge Brass #28T912 Hose and Hanger Bracket, heavy-duty 31" (787mm) long reinforced hose with chrome brass coupling and Type 304 stainless steel hanger bracket with rubber grip.
- .6 S-6 Laundry Sink
  - .1 Aristaline Model # LBS6808 single compartment self-rimming stainless steel sink with ledge size 52 x 51 x 20 cm, c/w basket strainer, undercoated, 3-hole drilling.
  - .2 Powers P2730, c. p. deckmount faucet with rigid / swivel spout, 8" centres, vandal resistant aerator, and colour indexed 3" blade handles.

- .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.
- .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .7 S-7 Hairdressing Basin
  - .1 Belvedere # 3100 Cameo cast acrylic / ABS shampoo bowl size 22" x 19" x 10" front to back. Colour to be selected by Architect.
  - .2 # 5001717 mounting bracket.
  - .3 # 622T-228C swing spout shampoo fixture with tailpiece. Deck mount Flo-Temp. clear single handle control with diverter. # 5090028B 42" Whiz Spray with connector.
  - .4 # 0039 Flo-Trol Water Pressure Equalizer.
  - .5 # 403 Vacuum breaker.
  - .6 # 403C Vacuum breaker complete.
  - .7 # 1-1/2" c. p. "P" trap with cleanout and escutcheon
  - .8 Zurn Model # Z-1175-CP Chrome plated hair interceptor with slip joint inlet, perforated stainless steel removable basket and gasketed slotted cleanout cover.
  - .9 # 3/8 x 12 c. p. flexible supplies with screwdriver stops and escutcheon.
- .8 S-8 Therapy Sink
  - .1 Aristaline Model # LBS6410-1 single compartment self-rimming stainless steel sink with ledge size 52 x 41 x 25 cm, c/w basket strainer, undercoated, 3-hole drilling at 2" centres - special drilling.
  - .2 Powers P44-BPL1LF4C00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
  - .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.
  - .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .9 S-9 Staff Lounge
  - .1 Aristaline Model # LBS6807-1 single compartment self-rimming stainless steel sink with ledge size 52 x 41 x 25 cm, c/w basket strainer, undercoated, 3-hole drilling at 2" centres - special drilling.
  - .2 Powers P44-BPG1LF4M00 Esp II Electronic Lavatory Supply, v.r. aerator, battery operated by 4 C size batteries, solenoid in enclosure c/w braided supply hoses.
  - .3 1-1/2" cast brass adjustable "P" trap with clean out and escutcheon.
  - .4 3/8 x 12 c. p. flexible supplies with wheel handle stops and escutcheon.
- .10 S-10 Laundry Stainless Steel Counter
  - .1 Stainless steel counter c/w sink by Architectural.
  - .2 Power P2730, c. p. deckmount faucet with rigid / swivel gooseneck spout, 8" centres, vandal resistant aerator, and colour indexed 3" blade handles.
- .11 Acceptable Materials
  - .1 Stainless steel sinks: Aristaline, American Standard, K.I.L., Kindred Ind., Architectural Metals Ind., Briggs & Wessan.
  - .2 Supply fitting: Powers, Crane, Cambridge
  - .3 Carriers: Zurn, Mifab, Smith, Watts

- .10 HR-1 Hose Reel
  - .1 T & S brass # B-2117 equipment washer comprising of Heavy Duty mixing faucet 8" centres, flanged inlets, regulator valve, on / off soap valve 12'-0" flexible stainless steel wash hose to a # B-1070C pre-rinse spray valve, hanger hook for hose and spray, faucet c/w vacuum breaker and built in ball checks.
- .11 Showers and Fittings
  - .1 SH-1 Shower
    - .1 Shower floor, walls and waterproofing membrane by the General Contractor.
    - .2 Powers HydroGuard T/P Series e700, Model No. e71000060V balancing mixing valve with single blade lever handle, integral volume control, adjustable stop screw to limit handle turn, wall / hand shower with metal hose, in-line vacuum breaker, wall connection and flange, 24" c. p. slide bar for deluxe hand shower.
    - .3 Zurn ZZN-415-6VP cast iron floor drain with CIL clamping ring 6" diam. Adjustable ½' nickel bronze strainer with vandal proof screws.
  - .2 SH-2 Shower
    - .1 Hytec Torrero shower Model AC36, acrylic 1041 x 915 x 2133 mm high. One piece easy clean moulded-in floor pattern, right or left hand as required.
    - .2 Powers HydroGuard T/P Series e700, Model No. e710M10000 mixing valve with single blade lever handle, integral volume control, adjustable stop screw to limit handle turn, wall connection and flange, c.p. adjustable shower head.
  - .3 SH-3 Shower
    - .1 Hytec Model # H6836LT special needs one-piece shower assembly size 1588 x 974 x 1989 mm high, c/w reinforcement in walls for additional stainless steel grab bars, integral soap depressions, shower rod by Architectural and hooks, slip resistant floor. 2" self-caulking brass drain with s. s. strainer. Colour to be selected by Architect.
    - .2 Powers HydroGuard T/P Series e700, Model No. e71000060V balancing mixing valve with single blade lever handle, integral volume control, adjustable stop screw to limit handle turn, wall / hand shower with metal hose, in-line vacuum breaker, wall connection and flange, 24" c. p. slide bar for deluxe hand shower.
- .12 BT-1 Bathtub
  - .1 Hytec special needs tub Model H90/91, acrylic bath shower module size 1549 x 850 x 2133 mm ht. With left or right hand drain, integral soap ledge, stainless steel grab bars, ADA compliant, slip resistant floor. Colour to be selected by Architect.
  - .2 Powers HydroGuard T/P Series e700, Model No. e170K2T6ZV balancing mixing valve with single blade lever handle, integral volume control, adjustable stop screw to limit handle turn, wall / hand shower with metal hose, in-line vacuum breaker, wall connection and flange, 24" c. p. slide bar for metal hose, standard shower head, elevated vacuum breaker, diverter valve.

- .3 1-1/2" c. p. mechanical waste and overflow assembly
- .4 1-1/2" cast brass "P" trap c/w cleanout.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 Mounting heights:
  - .1 Standard: to comply with manufacturer's recommendations unless otherwise indicated or specified.
  - .2 Physically handicapped: to comply with most stringent of either NBCC or CAN/CSA B651.

**3.2 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.
- .4 Thermostatic controls:
  - .1 Verify temperature settings, operation of control, limit and safety controls.

**END OF SECTION**