

1 General

1.1 RELATED REQUIREMENTS

- .1 Materials and installation for domestic water service used in the following:
 - .1 Incoming domestic water service, up to NPS 2 1/2.
 - .2 Hard domestic hot and cold water services inside building.
 - .3 Soft tubing inside building.
 - .4 Soft buried tubing outside building, as in between potable water source and meter inside building.
- .2 Sustainable requirements for construction, verification and operation.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME)
 - .1 ANSI/ASME B16.15-06, Cast Bronze Threaded Fittings, Classes 125 and 250.
 - .2 ANSI/ASME B16.18-01, Cast Copper Alloy Solder Joint Pressure Fittings.
 - .3 ANSI/ASME B16.22-01, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - .4 ANSI/ASME B16.24-01, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 400, 600, 900, 1500 and 2500.
- .2 ASTM International Inc.
 - .1 ASTM A307-07b, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .2 ASTM A536-84(2004)e1, Standard Specification for Ductile Iron Castings.
 - .3 ASTM B88M-05, 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 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
 - .2 Rating System Addenda for New Construction and Major Renovations LEED Canada-NC Version 1.0-Addendum 2007.
 - .3 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .5 Canadian Standards Association (CSA International)
 - .1 CSA B242-05, Groove and Shoulder Type Mechanical Pipe Couplings.
- .6 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).

- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .8 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.
- .9 National Research Council (NRC)/Institute for Research in Construction
 - .1 NRCC 38728, National Plumbing Code of Canada (NPC) - 1995.
- .10 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDGA).

1.3 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 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.

2 Products

2.1 PIPING

- .1 Domestic hot, cold and recirculation systems, within building.
 - .1 Above ground: copper tube, hard drawn, type K: to ASTM B88M.
 - .2 Buried or embedded: copper tube, soft annealed, type K: 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 1/2 and smaller : wrought copper to ANSI/ASME B16.22; with 301stainless steel internal components and EPDM seals. Suitable for operating pressure to 1380 kPa.

2.3 JOINTS

- .1 Rubber gaskets, latex-free mm thick: to AWWA C111.
- .2 Bolts, nuts, hex head and washers: to ASTM A307, heavy series.
- .3 Solder: 95/5.
- .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 GATE VALVES

- .1 NPS 2 and under, soldered:
 - .1 Rising stem: to MSS-SP-80, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc as specified Section 23 05 23.01 - Valves - Bronze.
- .2 NPS 2 and under, screwed:
 - .1 Rising stem: to MSS-SP-80, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc as specified Section 23 05 23.01 - Valves - Bronze.
- .3 NPS 2 1/2 and over, in mechanical rooms, flanged:
 - .1 Rising stem: to MSS-SP-70, Class 125, 860 kPa, flat flange faces, cast-iron body, OS&Y bronze trim specified Section 23 05 23.02 - Valves - Cast Iron.
- .4 NPS 2 1/2 and over, other than mechanical rooms, flanged:
 - .1 Non-rising stem: to MSS-SP-70, Class 125, 860 kPa, flat flange faces, cast-iron body, bronze trim, bolted bonnet specified Section 23 05 23.02 - Valves - Cast Iron: Gate, Globe, Check.

2.5 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: as indicated.
- .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: as indicated.

2.6 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.
- .3 NPS 2 1/2 and over, flanged:
 - .1 To MSS-SP-71, Class 125, 860 kPa, cast iron body, flat flange faces, regrind seat, bronze disc, bolted cap specified Section 23 05 23.02 - Valves - Cast Iron: Gate, Globe, Check.

2.7 BALL VALVES

- .1 NPS 2 and under, screwed:
 - .1 Class 150.
 - .2 Bronze body, chrome plated brass 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, chrome plated brass 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.

2.8 BUTTERFLY VALVES

- .1 NPS 2-1/2 and over, wafer:
 - .1 To MSS-SP-67, Class 200.
 - .2 Cast iron body, ductile iron chrome plated disc, stainless steel stem, EPT liner.
 - .3 Lever operated, NPS8 and over, gear operated.
- .2 NPS 2-1/2 and over, grooved ends:
 - .1 Class 300 psig CWP, bubble tight shut-off, bronze body EPDM coated ductile iron disc with integrally cast stem.
 - .2 Operator:
 - .1 NPS 4 and under: lever handle.
 - .2 NPS 6 and over: gear operated.

3 Execution

3.1 APPLICATION

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

3.2 INSTALLATION

- .1 Install in accordance with NPC.
- .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.

3.3 ROUTES AND GRADES

- .1 Route piping in orderly manner and maintain proper grades. Install to conserve headroom and interfere as little as possible with use of space. Run exposed piping parallel to walls. Group piping wherever practical at common elevations. Install concealed pipes close to the building structure to keep furrings to a minimum.
- .2 Slope water piping 25 mm in 12 m (1" in 40') and arrange to drain at low points.
- .3 On closed systems, equip low points with 20 mm (3/4") drain valves and hose nipples. Provide, at high points, collecting chambers and high capacity float operated automatic air vents.
- .4 Make reductions in water pipes with eccentric reducing fittings installed to provide drainage and venting.
- .5 Grade horizontal drainage and vent piping 22 mm per meter (1/4" per foot) minimum unless otherwise indicated on drawings.

3.4 VALVES

- .1 Isolate equipment, fixtures and branches with gate valves.
- .2 Balance recirculation system using lockshield globe valves. Mark settings and record on as-built drawings on completion.
- .3 Install valves with stems upright or horizontal, not inverted.
- .4 Install gate, ball and butterfly valves for isolating service, to isolate equipment, part of systems or vertical risers.
- .5 Install globe, ball or angle valves for throttling service and control device or meter bypass.
- .6 Use plug cocks in water systems for throttling service. Use non-lubricated plug cocks only when shut-off or isolation valves are also provided.
- .7 Provide drain valves at main shut-off valves, low points of piping and apparatus.

3.5 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.

3.6 FLUSHING AND CLEANING

- .1 Disinfect and rinse entire system to requirements of authority having jurisdiction and RCMP site standards.
- .2 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. Let system flush for additional 2 hours, then draw off another sample for testing.
- .3 Upon completion, provide laboratory test reports on water quality for Departmental Representative approval. Include one copy of approved test reports in Operation and Maintenance Manual

3.7 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 pressure booster systems are operating properly.
- .4 Ensure that air chambers, expansion compensators are installed properly.

3.8 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.
 - .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 Monitor piping HWS and HWC piping systems for freedom of movement, pipe expansion as designed.
 - .4 Check control, limit, safety devices for normal and safe operation.
- .4 Rectify start-up deficiencies.

3.9 PERFORMANCE VERIFICATION

- .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 Verify performance of temperature controls.
 - .3 Verify compliance with safety and health requirements.

- .4 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.
- .5 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.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 The installation of drainage waste and vent piping.
- .2 Sustainable requirements for construction and verification.

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 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

Part 2 Products

2.1 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: 95:5, type TA, to ASTM B32.

2.2 CAST IRON PIPING AND FITTINGS

- .1 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 05 - Installation of Pipework.
- .2 Install in accordance with 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.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 The installation of drainage waste and venting piping - plastic.
- .2 Sustainable requirements for construction and verification.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM D2564-02, Specification for Solvent Cements for Poly(Vinyl-Chloride) (PVC) Plastic Piping Systems.
- .2 Canadian Standards Association (CSA International).
 - .1 CSA-Series B1800-02, Plastic Nonpressure Pipe Compendium.
 - .2 CSA-B181.2-02, PVC Drain, Waste and Vent Pipe and Pipe Fittings.
 - .3 CSA-B182.1-02, Plastic Drain and Sewer Pipe and Pipe Fittings.

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.

2.2 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 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 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.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Materials and installation for plumbing specialties and accessories.
 - .2 Sustainable requirements for construction and verification.

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 B62-02, Specification for Composition Bronze or Ounce Metal Castings.
- .2 Canadian Standards Association (CSA International).
 - .1 CSA-B64 Series-01, Backflow Preventers and Vacuum Breakers.
 - .2 CSA-B79-94(R2000), Floor, Area and Shower Drains, and Cleanouts for Residential Construction.
 - .3 CSA-B356-00, Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .4 Plumbing and Drainage Institute (PDI).
 - .1 PDI-G101-96, Testing and Rating Procedure for Grease Interceptors with Appendix of Sizing and Installation Data.
 - .2 PDI-WH201-92, Water Hammer Arresters Standard.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 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.
- .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 QUALITY ASSURANCE

- .1 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .2 Provide materials, equipment and labour to install plumbing as required by Provincial and Local Codes and as specified herein.
- .3 Provide water and drainage connections to equipment furnished in other sections of this specification and by the Departmental Representative.
- .4 Fittings of same type shall be product of one manufacturer.

Part 2 Products

2.1 FLOOR DRAINS

- .1 Floor Drains: to CSA B79.
- .2 Provide trap primer tapping on all floor drains where trap primers are required by Code and authority having jurisdiction.
- .3 Type 1 (General Duty): Epoxy coated cast iron body with double drainage flange, reversible clamping collar with primary and secondary weep holes, combined two piece body and adjustable nickel-bronze strainer. Shower and washroom floor drains shall have a removable perforated sediment bucket.
- .4 Type 2 (Heavy Duty): Epoxy coated cast iron body with double drainage flange, reversible clamping collar with primary and secondary weep holes, combined two piece body and adjustable heavy duty nickel-bronze strainer.
- .5 Type 3 (Combination Funnel Floor Drain): Epoxy coated cast iron body with double drainage flange, reversible clamping collar with primary and secondary weep holes, combined two piece body and adjustable nickel-bronze strainer with integral 102 mm x 229 mm oval nickel bronze funnel.

2.2 CLEANOUTS

- .1 Cleanout: Adjustable floor cleanout with lacquered cast iron body and anchor flange, secondary O ring test seal, 4" diameter cleanout opening and combined scoriated satin finished nickel bronze cover and plug top assembly with stainless steel vandal-proof allen key screws and primary gasket seal. Provide membrane clamp for all membrane floors. Specification based on Mifab Model C1100.
- .2 Access Covers:
 - .1 Wall Access: face or wall type, polished nickel bronze with chrome plated cap, round cover with flush head securing screws, bevelled edge frame complete with anchoring lugs.

- .2 Floor Access: round cast iron body and frame with adjustable secured nickel bronze top and:
 - .1 Plugs: bolted bronze with neoprene gasket.
 - .2 Cover for Unfinished Concrete Floors: round, nickel bronze, gasket, vandal-proof screws.
 - .3 Cover for Terrazzo Finish: Polished nickel bronze with recessed cover for filling with terrazzo, vandal-proof locking screws.
 - .4 Cover for Tile and Linoleum Floors: polished nickel bronze with recessed cover for linoleum or tile infill, complete with vandal-proof locking screws.
 - .5 Cover for Carpeted Floors; polished nickel bronze with deep flange cover for carpet infill, complete with carpet retainer vandal-proof locking screws.
- .3 Provide bolted cover plates on all vertical rainwater leaders.

2.3 WATER HAMMER ARRESTORS

- .1 Stainless steel bellow type or copper piston type to PDIWH201.
- .2 Air chamber same size as supply line or 19 mm minimum, and minimum 450 mm long.

2.4 HOSE BIBBS AND SEDIMENT FAUCETS

- .1 Cast brass anti-contamination faucet; exposed type, mild climate, anti-contamination wall faucet with 19 mm male hose connection and anti-siphon vacuum breaker. Exterior finish to be polished chrome plated, operating handle to be cast iron wheel handle, and inlet connection to be 19 mm F.P.T. unless specifically noted as 12 mm on drawings. Vacuum breaker to be certified to the ASSE Standard 1011 and listed by IAPMO. Specification based on Mifab Model MHY-90.

2.5 TRAP SEAL PRIMERS

- .1 Trap Seal Primer: Pressure drop activated brass trap seal primer, with inlet opening of 12 mm male NPT and outlet opening of female 12 mm NPT. Complete with four view holes and removable filter screen. Size to serve number of floor drains connected to primer. Primer shall require no adjustments and no air pre-charge. Specification based on Mifab Model M.500.
- .2 Air Gap Fitting: Copper air gap fitting complete with a 12 mm male NPT fitting at the inlet supply incorporating a stream directing nozzle, a 12 mm NPT female outlet, and a ANSI/ASME A112.1.2 air gap in plumbing systems standard. Specification based on Mifab Model MI-GAP.
- .3 Distribution Unit: Trap seal primer distribution unit with four brass compression outlet connections 12 mm, ABS body and HDPE lid with top 12 mm MIP connection, four 6 mm diameter vent holes in the flange and three 3 mm diameter Phillips head screws to secure the lid to the body. Unit complete with four wall internal body design that aligns with the slots in the underside of the lid to distribute water evenly and to only the desired number of ports.

2.6 VACUUM BREAKERS

- .1 Breakers: To CSA-B64 Series.

2.7 STRAINERS

- .1 Size 50 mm and under: Screwed brass, Y pattern with 0.7 mm stainless steel perforated screen.
- .2 Size 63 mm to 100 mm: Flanged iron body with bolted cap, Y pattern with 1.2 mm stainless steel perforated screen.
- .3 Size 127 mm and larger: Flanged iron body, basket pattern with 3 mm stainless steel perforated screen.
- .4 Screen free area shall be minimum three times area of inlet pipe. Provide valved drain and hose connection off strainer bottom.

2.8 LAUNDRY SERVICE BOX

- .1 double outlet washing machine outlet box complete with 1/4 turn brass ball valves with copper seat connections and 50 mm drain opening.
- .2 Design based on Oatey Model 38673

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 Provincial Codes, 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 by 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.

- .4 Lubricate cleanout plugs with mixture of graphite and linseed oil. Prior to building turnover remove cleanout plugs, relubricate and reinstall using only enough force to ensure permanent leak proof joint.

3.4 WATER HAMMER ARRESTORS

- .1 Install on branch supplies to fixtures or group of fixtures as required to eliminate water hammer.

3.5 HOSE BIBBS AND SEDIMENT FAUCETS

- .1 Install at bottom of risers, at low points to drain systems, and as indicated.
- .2 Install complete with isolation valve upstream of hose bibbs.

3.6 TRAP SEAL PRIMERS

- .1 Install for floor drains and elsewhere, as required by Code and/or where indicated on drawings.
- .2 Install on cold water supply to nearest frequently used plumbing fixture, in concealed space, to approval of Departmental Representative.
- .3 Install plastic PEX tubing to floor drain.

3.7 STRAINERS

- .1 Install with sufficient room to remove basket.

3.8 VACUUM BREAKERS

- .1 Install vacuum breakers on plumbing lines where contamination of domestic water may occur; generally make-up lines, hose bibbs, and flush valves.

3.9 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.

3.10 TESTING AND ADJUSTING

- .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: within tolerance allowable by manufacturer.
 - .2 Flow rate at fixtures: +/- 10%.

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

- .10 Hose bibbs, sediment faucets:
 - .1 Verify operation of vacuum breakers.

- .11 Training:
 - .1 In accordance with Section 21 05 01 Common Work Results - Mechanical, Training of Operation and Maintenance Personnel, supplemented as specified.
 - .2 Demonstrate full compliance with Design Criteria.

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.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-B45 Series-02, Plumbing Fixtures.
 - .2 CAN/CSA-B125-01, Plumbing Fittings.
 - .3 CAN/CSA-B651-95(R2001), Barrier-Free Design.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Closeout Submittals:
 - .1 Submit 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, material, water consumption and details of all items noted under specification..
 - .2 Details of operation, servicing, maintenance.
 - .3 List of recommended spare parts.

1.4 GENERAL REQUIREMENTS

- .1 Provide new fixtures, CSA approved, free from flaws and blemishes with finished surfaces clear, smooth and bright.
- .2 Provide CSA approved plumbing fittings. Visible parts of fixture brass and accessories shall be heavily chrome plated.
- .3 Fixtures shall be product of one manufacturer. Fittings of same type shall be product of one manufacturer.
- .4 Protect fixtures against use and damage during construction.

1.5 JOB CONDITIONS

- .1 Check millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

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.

2.2 WATER CLOSET WC-1 (Maximum Security Comby)

- .1 Provide and install 350 mm (15") wide Standard Lav/Toilet Comby. Contractor to confirm angled left or angled right units based on plans. Fixture shall be fabricated from 14 gauge, type 304 stainless steel. Construction shall be seamless welded exposed surfaces shall have a satin finish. Provide D shaped lavatory bowl.
- .2 Provide BPH hemispherical penal bubbler and hemispherical penal pushbuttons. Provide toilet bowl housing to prohibit the attachment of objects. Toilet shall be concealed blowout jet type with an elongated bowl, self-draining flushing rim, and an integral contoured seat with a sanitary high polish finish.
- .3 Fixture shall withstand loading of 1360 kg without permanent damage. Fixture shall be furnished with necessary fasteners for proper installation.
- .4 Fixture shall be furnished with necessary fasteners for proper installation. The following options shall be provided with the units: wall sleeve (Contractor to confirm wall depth) and 75 mm (3") waste outlet.
- .5 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services, cap and seal all outlets in service space.
- .6 The specification is based on Acorn Penal-Ware 1415.

2.3 WATER CLOSET WC-2 (Medium Security Water Closet)

- .1 Floor mount rear outlet elongated flushometer toilet with angle back and base and integral seat.
- .2 Bowl: Vitreous china, elongated rim, siphon-jet action, fully glazed trapway, approximate 17" rim height. Unit to have integral seat.
- .3 Trim: Fixture will not be operational, no trim is required

- .4 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services, cap and seal all outlets in service space.
- .5 The specification is based on American Standard Huron Back Spud 1.6 GPF Bowl.

2.4 WATER CLOSET WC-3 (Simulated Living Environment Water Closet)

- .1 Close coupled floor mounted 300 mm rough-in, tank type with 1.6 GPF (6 LPF) siphon jet flushing action.
- .2 Bowl: Vitreous china, elongated rim, siphon-jet action, fully glazed trapway. 16-1/2" rim height.
- .3 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services.

2.5 WATER CLOSET WC-4 (Accessible Wall Hung Water Closet)

- .1 Handicapped close coupled wall mounted 300 mm rough-in, flush valve type with 4.8 LPF siphon jet flushing action. Water closet to be capable of flushing 1000 grams of waste under bulk waste removal protocols conducted by a CSA certified laboratory. Water closet to be complete with 5 year limited warranty.
- .2 Bowl: Vitreous china, elongated rim, siphon-jet action, fully glazed trapway. Large water surface area 300 mm x 2504 mm (12" x 10"), 413 mm (16-1/2") rim height.
- .3 Flush Valve: 4.8 litre exposed chrome plated automatic battery operated diaphragm style flush valve with 4 AA batteries, low battery flashing LED, infrared sensor range adjustment screw, courtesy flush override buttons, dual filtered bypass, high back pressure vacuum breaker, adjustable tailpiece, 25 mm bak-chek angle stop with vandal resistant cap and cast wall flange with setscrew. Flush valve riser to be high enough to ensure sensor is above the top edge of open water closet seat.
- .4 Carrier: Adjustable, vertical siphon jet water closet "Rigid System" with No-Hub connections and side inlets. Complete with Dura-Coated cast iron main fitting, with 2" (51 mm) vent, adjustable gasketed faceplate, universal floor mounted foot supports, corrosion resistant adjustable ABS coupling with integral test cap, fixture bolts, trim, and stud protectors. Rear anchor tie down and bonded "Neo-Seal" gasket. Carrier to match requirements of bowl.
- .5 White, elongated, open front, moulded plastic seat with cover, self-sustaining stainless steel hinges and stainless steel insert post.
- .6 Design based on the following: Bowl - American Standard AFWALL Flowise, Flush Valve - Sloan Optima G2 Plus Model 8115, Seat - Bemis 1950SS, Supplies Delta 47T1316SD, Carrier.
- .7 Note that this fixture is to be 100% functional.

2.6 WATER CLOSET WC-5 (Existing Water Closet to be Relocated)

- .1 Existing wall hung fixture, trim and accessories shall be removed from current location and safely stored and protected until installation.
- .2 Contractor shall test fixture before removing to ensure it is in good working order.
- .3 Fixture shall be reinstalled in location indicated on drawings and connected to all required services.
- .4 The fixture will be fully commissioned once installed.

2.7 URINAL U-1 (Existing Urinal to be Relocated)

- .1 Existing wall hung urinal, trim and accessories shall be removed from current location and safely stored and protected until installation.
- .2 Contractor shall test fixture before removing to ensure it is in good working order.
- .3 Fixture shall be reinstalled in location indicated on drawings and connected to all required services.
- .4 The fixture will be fully commissioned once installed.

2.8 LAVATORY L-1 (Medium Security Lavatory)

- .1 Wall hung vitreous china lavatory with integral spout and drinking fountain, 356 mm x 324 mm.
- .2 Trim: To be integral self closing hot and cold fitting for wall thickness noted on architectural.
- .3 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services.
- .4 Design based on the following: Bowl and Trim - American Standard Prison Lavatory

2.9 LAVATORY L-2 (Simulated Living Environment Lavatory)

- .1 Bowl: ADA compliant wall hung lavatory drilled for concealed arm carrier, 557 mm x 502 mm, vitreous china, single hole supply, no overflow, white.
- .2 Trim: Cast brass single control faucet, 102 mm centerset, ceramic cartridge with rotational stop, metal hold down package and chrome finish. Outlet to be complete with vandal resistant 5.7 LPM (1.5 GPM) flow control. Handle to be vandal resistant 89mm ADA compliant lever, colour indexed.
- .3 Carrier: Floor mounted lavatory support system with concealed arms for wall mounted lavatories. Unit to be complete with rectangular steel uprights with welded feet, cast iron adjustable headers, concealed arms, steel sleeves, alignment truss, and mounting fasteners. Metal to be complete with protective coating.

- .4 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services.
- .5 Design based on the following: Bowl - Kohler Brenham Model K-1997, Trim: Delta - 22C101, Carrier: Zurn - Z1231.

2.10 LAVATORY L-3 (Accessible Wall hung Lavatory)

- .1 Bowl: ADA compliant wall hung lavatory drilled for concealed arm carrier, 527 mm x 464 mm, vitreous china, single hole supply, with overflow, white.
- .2 Trim: lavatory electronic trim, barrier free electronic faucet:
 - .1 Sensor activated, electronic, chrome plated constructed metal, hand washing faucet with the following features: sensor activated gooseneck spout, anti-scald thermal mixing chamber, sensors with automatic setting feature, electrical components separated from spout assembly and contained in sealed compartments, self generating hydro power turbine to recharge batteries automatically, water supply connection with flexible high-pressure hose and strainer, appropriate mounting hardware, 1 GPM laminar flow nozzle.
 - .2 Activated by infrared sensor responding to the presence of person's hands in lavatory.
 - .3 Sensor: waterproof, incorporated in body of unit, with impact-resistant plastic lens with anti-scratch coating, sensitivity automatically adjusts basin depth.
 - .4 Water conservation: 60 second maximum runtime
 - .5 Anti-scald temperature mixing controls: pressure independent thermostatic mixing valve complete with integral check valves, service isolation valves, and vandal resistant temperature setting adjustments.
 - .6 Configuration of spout and basin shall ensure that the spout does not discharge directly into the open grid strainer.
- .3 Supplies and Riser Tubes: chrome plated angle supplies with lockshield stem, screwdriver stop, 9.5 mm O.D. x 305 mm long flexible braided stainless steel riser and stainless steel escutcheon plate.
- .4 Tailpiece and Trap: offset grid drain assembly with open grid stainless steel strainer. Chrome plated cast brass adjustable P-trap complete with cleanout, plug with chain and escutcheon.
- .5 Insulate trap and supplies with Truebro Lavguard accessibility approved pipe insulation assembly complete with PVC jackets for supplies tailpiece and trap assembly, white.
- .6 Carrier: Floor mounted lavatory support system with concealed arms for wall mounted lavatories. Unit to be complete with rectangular steel uprights with welded feet, cast iron adjustable headers, concealed arms, steel sleeves, alignment truss, and mounting fasteners. Metal to be complete with protective coating.
- .7 Design is based on the following: Bowl - Kohler Greenwich Model K-2031, Trim: Toto - TEL3GG60#CP with TH559EDV432 nozzle, Carrier: Zurn - Z1231, Supplies - Delta 47T2312SD, Tailpiece - Delta 33T290-1, Trap - Delta 33T311.

2.11 SHOWER SH-1 (Maximum Security Shower)

- .1 Shower: By Architect
- .2 Trim: Universal institutional shower head with mounting bracket and fasteners.

- .3 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services.
- .4 Design is based on the following: Trim: Symmons 4-151

2.12 SHOWER SH-2 (Simulated Living Environment Tub/Shower)

- .1 Shower: One piece fiberglass shower/tub, 1511 x 813 x 1943 mm (59.5" x 32" x 76.5") tall without roof cap
- .2 Trim: Tub and shower system with shower head, shower head mounting arm and flange, pressure balancing mixing valve, secondary integral diverter / volume control handle and tub spout. Chrome Finish.
- .3 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted to correction standards. The fixture will not be connected to any services.
- .4 Design is based on the following: Shower - MAAX Banff 60 (1-piece), Trim: Symmons - Allura S-4702.

Part 3 Execution

3.1 INSTALLATION

- .1 Install each fixture that is to be operational with its own trap, easily removable for servicing and cleaning. At completion thoroughly clean plumbing fixtures and equipment.
- .2 Provide chrome plated rigid or stainless steel flexible supplies to fixtures that are to be operational complete with screwdriver stops, reducers and escutcheons.
- .3 Install wall mounted lavatories, urinals and water closets with approved wall carriers, model to suit installation.
- .4 Mount fixtures the following heights above finished floor; unless noted otherwise on Architectural drawings:

Water Closet:	All	410 mm (16.5") to top of bowl rim
Lavatory:	Standard	813 mm (32") to top of basin rim
	Handicapped	to comply with most stringent of either NBCC or CAN/CSA B651.
Urinal:	Standard	558 mm (22") to top of bowl rim
	Handicapped	430 mm (17") to top of bowl rim
- .5 Install hose and faucets and hose connections with vacuum breakers.

3.2 PLUMBING FIXTURE ROUGH-IN SCHEDULE

- .1 Rough-in fixture piping connections in accordance with the following table of minimum sizes or as required for particular fixtures:

	<u>Hot Water</u>	<u>Cold Water</u>	<u>Waste</u>	<u>Vent</u>
Lavatories	12 mm (1/2")	12 mm (1/2")	38 mm (1-1/2")	32 mm (1-1/4")
Water Closet (flush valve)	-----	32 mm (1-1/4")	75 mm (3")	51 mm (2")
Water Closet (tank)	-----	12 mm (1/2")	75 mm (3")	51 mm (2")
Urinals (flush valve)	-----	19 mm (3/4")	51 mm (2")	38 mm (1-1/2")
Hose Bibbs	19 mm (3/4")	19 mm (3/4")	-----	-----

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 or Laminar Flow Control: 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

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.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International).
 - .1 CAN/CSA-B45 Series-02, Plumbing Fixtures.
 - .2 CAN/CSA-B125-01, Plumbing Fittings.
 - .3 CAN/CSA-B651-95(R2001), Barrier-Free Design.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Closeout Submittals:
 - .1 Submit 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, material, water consumption and details of all items noted under specification..
 - .2 Details of operation, servicing, maintenance.
 - .3 List of recommended spare parts.

1.4 GENERAL REQUIREMENTS

- .1 Provide new fixtures, CSA approved, free from flaws and blemishes with finished surfaces clear, smooth and bright.
- .2 Provide CSA approved plumbing fittings. Visible parts of fixture brass and accessories shall be heavily chrome plated.
- .3 Fixtures shall be product of one manufacturer. Fittings of same type shall be product of one manufacturer.
- .4 Protect fixtures against use and damage during construction.

1.5 JOB CONDITIONS

- .1 Check millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

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.

2.2 SINK SK-1 (Staff Single Compartment Sink - ADA Compliant)

- .1 Bowl: single compartment sink with faucet ledge, type 304, 18-10 stainless steel, 18 gauge, self-rimming sink 480 mm x 560 mm x 150 mm with 360mm x 510 mm x 150mm compartment, complete with 89 mm removable drain assembly and 89 mm crumb cup strainer. Underside to be insulated to meet requirements of accessible sink.
- .2 Trim: two handle manual deck mount faucet, 203mm (8") on center, solid brass body with polished chrome finish, 150 mm (6") gooseneck limited swing spout with 5.7 LPM (1.5 GPM) antimicrobial aerator. 102mm (4") ADA compliant blade handles, colour indexed and complete with vandal resistant screws.
- .3 Supplies and Riser Tubes: chrome plated angle supplies with lockshield stem, screwdriver stop, 9.5 mm O.D. x 305 mm long flexible braided stainless steel riser and stainless steel escutcheon plate.
- .4 Tailpiece and Trap: offset grid drain assembly with open grid stainless steel strainer. Chrome plated cast brass adjustable P-trap complete with cleanout, plug with chain and escutcheon.
- .5 Insulate trap and supplies with Truebro Lavguard accessibility approved pipe insulation assembly complete with PVC jackets for supplies tailpiece and trap assembly, white.
- .6 Design is based on the following: Bowl - Kindred Commercial - ALBS4006P-1, Trim: Delta - 26C3944-LS, Supplies - Delta 47T2312SD, Tailpiece - Delta 33T290-1, Trap - Delta 33T311.

2.3 SINK SK-2 (SLE Single Compartment Sink)

- .1 Bowl: wheel chair accessible single compartment sink with faucet ledge, type 304, 18-10 stainless steel, 18 gauge, self-rimming sink 480 mm x 560 mm x 150 mm with 360mm x 510 mm x 150mm compartment, complete with 89 mm removable drain assembly and 89 mm crumb cup strainer.
- .2 Trim: two handle manual deck mount faucet, 203mm (8") on center, solid brass body with polished chrome finish, 150 mm (6") gooseneck limited swing spout with 5.7 LPM (1.5 GPM) antimicrobial aerator. 102mm (4") ADA compliant blade handles, colour indexed and complete with vandal resistant screws.

- .3 Supplies and Riser Tubes, Tailpiece and Trap: Fixture will not be operational, therefore these components are not required
- .4 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted CSA standards. The fixture will not be connected to any services, cap and seal all outlets on trim and basin.
- .5 Design is based on the following: Bowl - Kindred Commercial - ALBS4006P-1, Trim: Delta - 26C3944-LS.

2.4 SINK SK-3 (Medium Security Single Compartment)

- .1 Bowl: single compartment sink with faucet ledge, type 304, 18-10 stainless steel, 18 gauge, self-rimming sink 560 mm x 640 mm x 200 mm with 430mm x 580 mm x 2000mm compartment, complete with 89 mm removable drain assembly and 89 mm crumb cup strainer. Underside to be insulated to meet requirements of accessible sink.
- .2 Trim: two handle manual deck mount faucet, 203mm (8") on center, solid brass body with polished chrome finish, 150 mm (6") gooseneck limited swing spout with 5.7 LPM (1.5 GPM) antimicrobial aerator. 102mm (4") ADA compliant blade handles, colour indexed and complete with vandal resistant screws.
- .3 Supplies, Riser Tubes, Tailpiece and Trap: Fixture will not be operational, therefore these components are not required
- .4 Note that this fixture is for training correctional employees and will not be utilized as a plumbing fixture. The fixture shall be properly mounted CSA standards. The fixture will not be connected to any services, cap and seal all outlets on trim and basin.
- .5 Design is based on the following: Bowl - Kindred Commercial - LBS7308P-1, Trim: Delta - 26C3944-LS,

2.5 MOP SINK MS-1 (Floor Mount Mop Sink)

- .1 Bowl: 610 mm x 610 mm x 254 mm deep white moulded stone, floor mounted sink with 24 mm wide shoulders, SS strainer, complete with 76 mm brass drain assembly.
- .2 Trim: Exposed wall type supply with cross handles, spout adjustable wall brace, vacuum breaker, pail hook and 3/4" hose thread on spout. Unit to be complete with hose and hose bracket, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges. Provide 760 mm of 12 mm diameter plain end reinforced hose, hose clamp and mop hanger. Provide stainless steel bumper guards..
- .3 Provide and install check valves on hot and cold supply risers.
- .4 Design is based on the following: Bowl - Fiat MSB2424, Spout: Fiat 830-AA, Hose and Bracket - Fiat 832AA, Mop Hangar - Fiat 889-CC, Bumper Guards - Fiat E-88-AA.

Part 3 Execution

3.1 INSTALLATION

- .1 Install each fixture that is to be operational with its own trap, easily removable for servicing and cleaning. At completion thoroughly clean plumbing fixtures and equipment.

- .2 Provide chrome plated rigid or stainless steel flexible supplies to fixtures that are to be operational complete with screwdriver stops, reducers and escutcheons.
- .3 Install wall mounted lavatories, urinals and water closets with approved wall carriers, model to suit installation.
- .4 Mount fixtures above finished floor as noted on Architectural drawings.
- .5 Install hose and faucets and hose connections with vacuum breakers.

3.2 PLUMBING FIXTURE ROUGH-IN SCHEDULE

- .1 Rough-in fixture piping connections in accordance with the following table of minimum sizes or as required for particular fixtures:

	<u>Hot Water</u>	<u>Cold Water</u>	<u>Waste</u>	<u>Vent</u>
Sink	12 mm (1/2")	12 mm (1/2")	38 mm (1-1/2")	32 mm (1-1/4")
Hose Bibbs	19 mm (3/4")	19 mm (3/4")	-----	-----

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 or laminar flow control: 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