METROLINX

Plumbing Fixtures and Trim Specification

Specification 22 42 00

Revision 03
Date: June 2022

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Amendment Record Sheet

Amendment in Clause No.	Date of Amendment	Description of Changes
Various	Sept. 2018	Revised to coordinate with corresponding specifications.
2.9.1	Dec. 2018	Revised eye/face wash stations information.
Various	June. 2022	Revised sentence structure to coordinate with Commercial Quality Assurance, added requirements for integral touchless sink faucet and hand dryer, warranty section modified to point to contract warranty

LIST OF CONTENT

1. GENERAL

1.1. SCOPE OF WORK

1.1.1. The Contractor shall provide plumbing fixtures and trim as required, scheduled, and specified herein.

1.2. DESIGN REQUIREMENTS

1.2.1. Plumbing fixtures shall be designed and constructed by the Contractor in a way that will allow them tooperate satisfactory with the water flows supplied by the trim.

1.2.2. Current benchmarks to be met by the Contractor are:

a) Toilets Flush Valves: 1.28 gallon/flush (OBC max. 1.32 gallon/flush);

b) Urinals Flush Valves: 0.5 gallon/flush (OBC max. 0.84 gallon/flush);

c) Public Lavatories: max. flow rate of 0.5 gpm when tested in accordance with ASME A112.18.1/CSA B125.1. (OBC max. 1.84 gpm);

d) Staff Washrooms: max. flow rate of 1.5 gpm when tested in accordance with ASME A112.18.1/CSA B125.1. (OBC max. 1.84 gpm);

e) Fixture operation and controls are not to be battery operated. Any power supply requirements to be hard wired to building circuits. Any batteries supplied are to be only for back-up power.

1.2.3. Selection of Plumbing Fixtures

a) The Contractor shall ensure the plumbing fixtures shall be manufactured of vitreous china; in any onebuilding, the fixtures shall be the product of a single manufacturer. Waterclosets and urinals shall be certified to CAN/CSA-B45.0, "General Requirements for Plumbing Fixtures".

b) The Contractor shall ensure fixtures and trim shall be new and free of all defects or blemishes. Finished surfaces shall be clean, smooth, and bright guaranteed not to craze, change colour or scale. Imperfections of any kind shall be sufficient reason for rejectionand the item shall be removed and an acceptable replacement installed at no additional cost.

c) In all public spaces, the Contractor shall ensure the plumbing fixtures shall be wall-hung, to facilitate floorcleaning. To this end, adequate allowances shall be made in terms of chases behind the supporting walls to allow for the installation of carriers, support arms and electronic components of the trim. Access to the chases shall be provided for periodic maintenance.

d) In staff washrooms, the Contractor shall ensure floor-mounted toilets are an acceptable alternate to wall-mounted units, upon specific consent from GO Transit/Metrolinx Project Management staff.

e) Where applicable, the Contractor shall ensure the plumbing fixtures shall be barrier-free; the architecturaldrawings will define the number and location of barrier-free equipment.

f) The Contractor shall ensure all plumbing fixtures shall be vented to the outdoors and sized/installed inaccordance with the OBC (Part 7) requirements.

1.2.4. Selection of Trim

a) In any one building, the Contractor shall ensure the trim shall be the product of a single manufacturer. Unless specified otherwise, all exposed valves, pipe, escutcheon, etc., shall bepolished chrome finish.

b) For all plumbing fixtures in public spaces, the Contractor shall ensure the trim shall be of the touch-lesselectronic type, hard wired. Trim of plumbing fixtures in staff and service rooms (not accessible to the general public) shall be manually operated.

c) The Contractor shall ensure adequate provisions shall be made for the power supply wiring transformers junction boxes and all other accessories necessary to make the equipment fullyfunctional.

d) In addition to the electronic trim, the Contractor shall ensure all the accessories required for the installation and operation of the plumbing fixtures shall be provided (toilet covers, angle stops, flexible connectors, escutcheons, P-traps, grid strainers, etc.). Other accessories such as soap dispensers, mirrors, grab bars, etc. shallbe defined by the Architectural discipline as per plumbing fixtures and trim guideline provided by Metrolinx.

e) The Contractor shall ensure the water supply pipes serving the plumbing trim shall be of adequate size to ensure that the minimum available pressure at each location is sufficient to allow the trim to operate as intended. Unless supporting calculations are submitted, no water supply piping to a toilet or urinal trim shall be less than ¾"diam. The minimum residual pressure at any trim shall not be less than 25 psi.

f) Where hot and cold domestic water are supplied, the Contractor shall ensure local tempering valves shall be used to prevent accidental scalding. Alternately, one main tempering valve can be used to serve the entire facility.

1.3. RELATED WORKS

1.3.1. Section 20 05 05 - Mechanical Work General Instructions.

1.3.2. Section 20 05 10 - Basic Mechanical Materials and Methods.

1.3.3. Section 20 05 40 – Mechanical Work Commissioning.

1.4. REFERENCE STANDARDS

1.4.1. Standards and codes to be latest editions adopted by and enforced by local governing authorities.

1.4.2. Americans with Disabilities Act (ADA).

1.4.3. ANSI A117.1 Standard for Accessible and Usable Buildings and Facilities.

1.4.4. ANSI Z124.6 Plastic Sinks.

1.4.5. ANSI Z358.1 Standard for Plumbed and Portable Eyewash Stations.

1.4.6. ASHRAE 189.1 Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings.

1.4.7. ASME A112.19.2. Ceramic Plumbing Fixtures.

1.4.8. ASSE 1001-2002 Performance Requirements for Atmospheric Type Vacuum Breakers.

1.4.9. CSA B45 Series General Requirements for Plumbing Fixtures.

1.4.10. CSA B64-01 Definitions, General Requirements, and Test Methods for Vacuum Breakers and Backflow Preventers.

1.4.11. CSA B125.3 Plumbing fitting and CSA B125.1 Plumbing Supply Fittings.

1.4.12. International Association of Plumbing and Mechanical Officials (IAPMO).

1.4.13. Ontario Building Code.

1.4.14. Uniform Plumbing Code.

1.5. TRAINING

1.5.1. The Contractor shall ensure training is to be a full review of all components including but not limited to a fulloperation and maintenance demonstration, with abnormal events.

1.5.2. The Contractor shall include for 3 training sessions of maximum 7 hours duration per session for8 Metrolinx people per session.

1.5.3. The Contractor shall refer to Section 20 05 05 for additional general requirements.

1.6. WARRANTY

1.6.1. Warranty shall be in line with Contractual Requirements.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. The Contractor shall handle and store products in accordance with manufacturer's instructions, in locations approved by Metrolinx. Include one copy of these instructions with productat time of shipment.

1.8. SUBMITTALS

1.8.1. The Contractor shall refer to submittal requirements in Section 20 05 05.

1.8.2. Product Data

a) The Contractor shall submit product data sheets for products specified in this Section indicating:

1) technical data, supplemented by bulletins, component illustrations, detailed views, technical descriptions of items, and parts lists;

2) performance criteria, compliance with appropriate reference standards, characteristics, limitations, and troubleshooting protocol;

3) product transportation, storage, handling, and installation requirements;

4) product identification in accordance with Metrolinx requirements.

1.8.3. Shop Drawings

a) The Contractor shall submit Shop Drawings for products specified in this Section indicating:

1) capacity and ratings;

2) construction and finishes;

3) mounting details to suit locations shown, indicating methods and hardware to be used.

1.8.4. Commissioning Package

a) The Contractor shall submit the following in accordance with Sections 20 05 05 and 20 05 40:

1) Commissioning Plan;

2) Commissioning Procedures;

3) Certificate of Readiness;

4) complete test sheets specified in Section 20 05 40 and attach them to the Certificate of Readiness;

5) Source Quality Control inspection and test results and attach to the Certificate of Readiness.

1.8.5. Commissioning Closeout Package

a) The Contractor shall submit the following in accordance with Section 20 05 05:

1) Deficiency Report;

2) Commissioning Closeout Report;

3) submit the following for each Product for incorporation into the Operation and Maintenance Manuals in accordance with Section 20 05 05:

i) Identification: manufacturer's name, type, year, serial number, number of units, capacity, and identification to related systems;

ii) functional description detailing operation and control of components;

iii) performance criteria and maintenance data;

iv) safety precautions;

v) operating instructions and precautions;

vi) component parts availability, including names and addresses of spare part suppliers;

vii) maintenance and troubleshooting guidelines/protocol;

viii) product storage, preparation, handling, and installation requirements;

ix) Commissioning Report.

1.9. QUALITY ASSURANCE

1.9.1. Manufacturers Qualifications

a) The Contractor shall ensure manufacturer shall be ISO 9000, 9001 or 9002 certified. Manufacturer of product shall have produced similar product for a minimum period of five years. When requested by Consultant, an acceptable list of installations withsimilar product shall be provided demonstrating compliance with this requirement.

b) The Contractor shall ensure where manufacturers provide after installation onsite inspection of product installations, include for manufacturer's authorized representative to performonsite inspection and certificate of approvals.

1.9.2. Installers Qualifications

a) The Contractor shall ensure installers for work to be performed by or work under licensed Mechanical /Plumbing Contractor.

b) The Contractor shall ensure installers of systems are to be fully qualified

and experienced installers ofrespective products and work in which they are installing.

c) The Contractor shall ensure where manufacturers provide training sessions to installers and certificates upon successful completion, installers to have obtained such certificates andsubmit copies with shop drawings.

1.9.3. Regulatory Requirements

a) The Contractor shall ensure products and work to comply with applicable local governing authorityregulations, bylaws, and directives.

b) The Contractor shall include for required inspections and certificate of approvals of installation workfrom local governing authorities.

2. PRODUCTS

2.1. TOILETS - STAFF WASHROOMS

2.1.1. Vitreous China, 1.28 gpf [4.8 lpf] or greater high efficiency, ADA, floor mounted bottom outlet toilet with siphon jet flushing action and elongated front rim with 1-1/2" top spud. This bowl is designed to perform to industry standards with as little as 1.28 gallons per flush, engineered to provide optimal performance and 20 % water savings over conventional 1.6 gpf toilets.

2.1.2. Fixture dimensions meet ANSI/ASME standard A112.19.2 and CAN/CSA B45 requirements. Meets the American Disabilities Guidelines and ANSI A117.1 requirements when installed according to the respective requirements.

2.1.3. Seat: Institutional/Industrial, extra heavy duty, chemical resistant, solid plastic, open front less cover for elongated bowls, integrally molded bumpers, concealed check hinge with stainless steel post. Seat shall be posture contoured body design. Color shall be white. When installed, top of seat shall be at min. 432 mm (17") from the finished floor.

2.1.4. Fittings and Accessories: Floor flange fittings-cast iron; Gasket-wax; bolts with chromium plated cap nuts and washers.

2.1.5. Manual Flush Valve: Exposed, quiet diaphragm-type, chrome plated, flushometer valve with a polished exterior. Complete with, dual seal diaphragm with a clog resistant, filtered by- pass. The valve shall be ADA compliant with a non-hold open and no leak handle feature, high back pressure vacuum breaker, one-piece hex coupling nut, adjustable tailpiece, spud coupling and flange for top spud connection. Control stop has internal siphon-guard protection, vandal resistant stop cap, sweat solder kit, and a cast wall flange with set screw. Internal seals are made ofchloramine resistant materials.

2.2. TOILETS - PUBLIC WASHROOMS

2.2.1. Wall-hung vitreous china toilet shall be 1-½" top spud with 2-1/8" fully glazed trapway with siphon jet action. Valve and toilet are an engineered system designed to provide optimal performance and 20% water savings over 6 lpf (1.6 gpf) conventional toilets. 254 x 305 mm (10" x 12") water surface area 100% factory flush tested.

2.2.2. Where applicable, install at the height suitable for barrier-free use. Fixture dimensions meet ANSI/ASME standard A112.19.2 and CAN/CSA B45 requirements. Meets the American Disabilities Guidelines and ANSI A117.1 requirements when installed according to the respective requirements.

2.2.3. Seat: Institutional/Industrial, extra heavy duty, chemical resistant, solid plastic, open front less cover for elongated bowls, integrally molded bumpers, concealed check hinge with stainless steel post. Seat shall be posture contoured body design. Color shall be white. When installed, top of seat shall be at min. 432 mm (17") from the finished floor.

2.2.4. Support Carrier - single toilet: Adjustable, with 4 or 5 Hub & Spigot connections. Complete with Dura-Coated cast iron right hand or left-hand main fitting, with 2" vent, adjustable gasketed face plate, 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.

2.2.5. Support Carrier - back-to-back toilets: Adjustable, with 4 no-hub connections. Complete with Dura-Coated cast iron fitting, with 2" (50 mm) vent, adjustable gasketed face plates, universal floor mounted foot supports, corrosion resistant adjustable ABS couplings with integral test cap, fixture bolts, trim, stud protectors and bonded "Neo-Seal" gaskets.

2.2.6. Touch-less hard-wired flush valve: exposed, quiet diaphragm-type, chrome plated, flushometer valve with a polished exterior, complete with 1.28 gallon/flush chloramines motorized actuator, an integral infrared convergence type proximity sensor, and a manual push-button override into an all metal, polished chrome plated housing. Sensor range automatically adjusts to its environment at power up and is powered by a 7.6 VDC power converter. Each power converter can accommodate up to eight flush valves. The valve is complete with high back pressure vacuum breaker, one-piece hex coupling nut, adjustable tailpiece, spud coupling and flange for top spud connection. Control stop has internal siphon-guard protection, vandal resistant stop cap, sweat solder kit, and a cast wall flange with set screw. Internal seals are made of chloramines resistant materials.

2.2.7. Hardwired Power Converter - Hardwired power converter to power up to eight sensor urinal/closet flush valves or up to eight hardwired sensor faucets. The converter is integrated within a 4-11/16" x 4-11/16" x 2-1/8" electrical and the low voltage connections are performed at the terminal block mounted externally on the box cover.

2.3. URINALS - ALL WASHROOMS

2.3.1. Urinal: Vitreous china, wall hung, 1/8 gallons per flush (0.5 Liters per flush), high efficiency washout flushing action, pressure compensating internal flow regulator, 3/4 " top spud, 2" outlet flange and rubber gasket, with integral trap, 14" extended rim for barrier-free compliance when installed at proper height. Assembled with vandal resistant outlet stainless steel strainer.

2.3.2. Fixture dimensions meet ANSI/ASME standards A112.19.2 and CAN/CSA B45 requirements. Meets the American Disabilities Guidelines and ANSI A117.1 requirements when urinal is installed 432 mm (17") from finished floor.

2.3.3. Touch-Less Flush Valve - public washrooms: sensor operated, hardwired exposed high efficiency flushometer valve. The valve is designed to perform to industry standards with as little as 1/8th gallon per flush. Valve is operated by an infrared convergence-type proximity sensor with smart technology, powered by a hardwired power converter. Furnished with vandal resistant chrome plated metal housing, chloramine resistant internal seals, and reversible cover. Valve features an internal flow regulator to maintain constant flow rates independent of line pressures and an in-line filter to protect the valve from debris within the water. Complete with high pressure vacuum breaker, one-piece hex coupling nut, adjustable tailpiece, spud coupling and flange for top spud connection. Control stop has internal siphon-guard protection, vandal resistant stop cap, sweat solder kit, and a cast wall flange with set screw.

2.3.4. Manual Flush Valve - staff washrooms: Exposed, quiet diaphragm-type, chrome plated flushometer valve with a polished exterior. Complete with dual seal diaphragm with a clog resistant, triple filtered by-pass. The valve is ADA compliant with a non-hold open and no leak handle feature, high back pressure vacuum breaker, one-piece hex coupling nut, adjustable tailpiece, spud coupling and flange for top spud connection. Control stop has internal siphon-guard protection, vandal resistant stop cap, sweat solder kit, and a cast wall flange with set screw. Internal seals are made of chloramine resistant materials.

2.3.5. Support Carrier: adjustable height, dura-coated steel stanchions with welded feet, adjustable support plates and mounting bolts and trim.

2.4. LAVATORY - STAFF WASHROOMS

2.4.1. 20" [508 mm] x 17" [432 mm] vitreous china counter-top lavatory, faucet holes for 8" centers. Self-rimming front overflow design. Waste: 1-1/4" O.D. Depth: 6-5/8". Fixture dimensions meet ANSI/ASME standard A112.19.2-2003 and CAN/CSA B45 requirements. Meets the American Disabilities Guidelines and ANSI A117.1 requirements when lavatory is installed 864 mm (34") from finished floor.

2.4.2. Complete with the following accessories: Grid Strainer, P-Trap with clean-out, basin supplies with offset flex, risers, stops and escutcheons, offset open grid strainer, cast brass, 32 mm(1¼"). Where applicable provide ADA trap, stop, and supply protectors, ADA grid strainer.

2.4.3. Manual Faucet: Polished chrome-plated widespread with adjustable centers from 152 mm [6"] to 508 mm [20"], with an 89 mm [3-1/2"] centerline rigid or swing gooseneck spout and quarter turn ceramic disc cartridges. Unit is furnished with a 8.3 L [2.2 GPM] pressure compensating aerator (complying with ANSI A112.18.1

Standard for flow), 102 mm [4"] vandal-resistant color-coded metal wrist blade handles, mounting hardware and 1/2" NPSM coupling nuts for standard lavatory risers. Widespread accommodates installations up to 29mm [1- 1/8"] thick.

2.5. LAVATORY – BARRIER-FREE, PUBLIC WASHROOMS

2.5.1. 20" x 23" vitreous china wall hung ADA lavatory with single faucet hole and half pedestal, front overflow. Provided with holes for concealed arm carrier systems. Fixture dimensions meet ANSI/ASME standard A112.19.2-2003 and CAN/CSA B45 requirements. Meets the American Disabilities Guidelines and ANSI A117.1 requirements when lavatory is installed 864 mm [34"] from finished floor

2.5.2. Accessories: 'P' trap 17gauge (1.5 mm) clean-out and escutcheon, basin supplies with offset flex, risers, stops and escutcheons, offset open grid strainer, cast brass, 32 mm [1¼"].

2.5.3. Touch-Less Faucet: Meets the American Disabilities Guidelines and ANSI A117.1. faucet is a hardwired 12VDC electronic sensor faucet for retrofit and new construction. Faucet incorporates an infrared convergence type proximity sensor into the cast brass chrome plated base of the gooseneck faucet. Faucet is furnished complete with sensor module, spout module, inline filter, a 1.5 gpm vandal resistant aerator, connecting wire to power converter, an inlet for a 13 mm [½"] ball riser and single supply hose. Sensor range is factory set for optimum performance. Thermostatic Mixing Valve for single faucets included.

2.5.4. Support carrier and concealed arms: A.R.C coated steel stanchions with welded feet, steel sleeves, cast iron headers and arms, alignment truss and mounting bolts and trim.

2.6. LAVATORY - PUBLIC WASHROOMS

2.6.1. Wall hung lavatory, 508 mm x 457 mm [20"x 18"] vitreous china wall, with rear overflow and single faucet hole. Provided with holes for concealed arm carrier systems. Waste: 32 mm [1-1/4"] O.D. Depth: 171 mm [6-3/4"] Shipping Weight: 16 kg [35 lbs]. Fixture dimensions meet ANSI/ASME standard A112.19.2-2003 and CAN/CSA B45 requirements.

2.6.2. Accessories: 'P' trap 17gauge (1.5 mm) clean-out and escutcheon, basin supplies with offset flex, risers, stops and escutcheons, offset open grid strainer, cast brass, 32 mm [1¼"].

2.6.3. Touch-Less Faucet: Hardwired sensor brass faucet with a polished chrome exterior. The faucet incorporates a 12 VDC solenoid valve, an adjustable range 150 mm to 900 mm (6" to 36") on-approach wall mounted sensor, and a deck mounted cast faucet with a 1.5gpm vandal resistant aerator. The faucet is furnished complete with 120 VAC/12 VDC hard wired power converter, solenoid valve, in-line filter, and electrical box cover plate with attachment screws. Thermostatic tempering valve included.

2.6.4. Support Carrier: adjustable height, dura-coated steel stanchions with welded feet, steel sleeves, chrome plated escutcheons, cast iron headers and arms, alignment truss and mounting bolts and trim.

2.7. SERVICE SINK - MAINTENANCE FACILITIES

2.7.1. Stainless steel construction, in 1371 mm or 900 mm (54" or 36" Diameter Semi-Circular or Circular Bowls, 175 mm (9") Deep Bowl, Designed for Heavy Duty Hand Washing.

2.7.2. Bowl: One-piece pressing of 14-gauge stainless steel with a #4 polished finish.

2.7.3. Pedestal: Constructed of die-formed legs, upper braces, scuff bases and panels: legs are zinc chromate plated 14-gauge steel; upper braces are 16-gauge galvanized steel; and scuff bases and pedestal panels are 300 series stainless steel with a #4 finish.

2.7.4. Valves and Fittings: spray head with stainless steel support tube and bowl gasket; spud with domed strainer; spray head supply line; manual mixing valve; volume control valve; and two stop, strainer and check valves.

2.7.5. Activation Controls: Foot Control - Each press of the foot rail mechanically actuates a hold- open valve, with slow closing upon release of foot pressure.

2.8. MOP SINK

2.8.1. One-piece, precast terrazzo made of black and white marble chips in gray Portland cement to produce a compressive strength not less than 20.6 MPa (3000 P.S.I.) seven days after casting.

2.8.2. Terrazzo surface shall be ground and polished with all air holes or pits grouted and excess removed.

2.8.3. Shoulders shall be not less than 300 mm (12") high outside and 250 mm (10") inside at lowest wall. Shoulder width not less than 50 mm (2") on all sides with a 6 mm (1/4") pitch towards the inside. Complete with stainless steel caps on all curbs Standard drain body is stainless steel cast and Wall Guards manufactured of heavy gauge stainless steel and help protect walls adjacent to the sink.

2.8.4. Standard drain body is stainless steel cast integrally and provides for a caulked lead connection not less than 25 mm (1") deep to a 75 mm (3") pipe. Includes stainless steel strainer

2.8.5. Terrazzo Mop Basins must be installed on a 13 mm (1/2") layer of mortar in order that the mop basin be level and to prevent cracking

2.8.6. Certifications: Meets ANSI Z124.6, CSA listed, and IAPMO listed under file # 3561.

2.8.7. Faucet: Polished chrome-plated cast brass 8" (203 mm) faucet with quarter turn ceramic disc cartridges, 10 mm (3/8") short swivel inlets providing adjustable centers from 184 mm (7-1/4") to 222 mm (8-3/4"), integral service stops, and a 152 mm (6") centerline cast brass spout with chemical resistant atmospheric vacuum breaker, ¾" hose threaded outlet, pail hook and adjustable wall brace. Unit is furnished with 64 mm (2½") vandal-resistant colour- coded brass lever handles. Vacuum breaker is certified to the Uniform Plumbing Code®, ASSE 1001-2002 and CSA B64-01.

2.9. EYE/FACE WASH STATIONS (AND EMERGENCY SHOWERS)

2.9.1. Eye/Face Wash Stations

a) An eye/facewash station is appropriate when the hazards include corrosive chemicals that could injure both the eyes and face.

b) Eyewash shall deliver 3.2 gpm (12.1 lpm) @ 30/70 psi (206.8/482.6 kPa) of flowing pressure. Eyewash shall provide a non- injurious stream of water for 15 minutes or longer. Unit shall be supplied with ½" chrome plated (CP) single motion activation stay open ball valve with CP ball. Eyewash shall include S/S actuator with actuation graphic, 7" X 11" (17.8cm X 27.9cm) sign, tailpiece and wall mounting bracket. Unit must be supplied with self- adjusting 3.2 gpm (12.1 lpm) regulator to assure a constant and even dual stream flow pattern under 30/70 psi (206.8/482.6 kPa) hydraulic conditions. Eyewash heads with float off covers to be manufactured of UV resistant ABS plastic mounted in a high visibility ABS plastic Yello-Bowl®. Float off covers is to be secured with stainless steel bead chains and provided to inhibit dust and/or contamination when not in use. Eyewash units that provide improper flow pattern or contain deteriorating screens/filters are not acceptable. Eyewash shall be Encon Safety Products Model 01030401 or approved equivalent. If optional strainer tee required, unit shall be Encon Safety Products Model 01030403 or approved equivalent. For S/S piping with S/S valve and ball unit shall be Model 01030407 or approved equivalent.

c) 13 mm diameter supply and 32 mm diameter waste connection, wall bracket to suit.

d) Ball valve in tempered water supply piping.

e) P-trap: Chrome plated brass 32 mm diameter adjustable with cleanout plug

f) Constructed so the heads are positioned 0.85m~1.15m from the floor.

g) Units activate in one second or less and will remain activated (hands free) until manually shut off

2.9.2. Eye/Face Wash Shower

a) Haws 8169 or approved equivalent, shower, flush with ceiling 267 mm.

b) (10-1/2") dia. flanged stainless steel head, min. flow of 76 LPM (20 GPM), 25 mm (1") stay open full flow ball valve with S.S. stem, S.S. pull rod with triangle handle and universal sign, 32 mm (1-1/4") CW supply. 25 mm (1") connection. ANSI STANDARD: Outlet heads mounted between 838 mm (33") and 1143mm (45") above floor, 153 mm (6") from wall or nearest obstruction.

c) Watts #FD-100-A or approved equivalent, floor drain, epoxy coated cast iron body, anchor flange, reversible clamping collar with primary and secondary weepholes, 125 mm (5") nickel bronze adjustable strainer. Provide floor drain at entrance to shower and built-up floor. Located under eyewash and shower with water proofing flange.

d) Provide 'p' Trap, same material as the connecting pipe drain. 32 mm (1-1/4")

CW supply 25 mm (1") connection. All exposed piping to be chrome plated. Drench shower requires min. 76 LPM (20 GPM) flow for 15 minutes.

2.10. COMBINATION WATER TAP AND ELECTRIC HAND DRYER UNIT

2.10.1. The combination water tap and electric hand dryer unit: Dyson Airblade Wash+Dry hand dryer (Model WD04 Short) or approved equivalent:

a) Mounting: Surface mounted on sink.

b) Tap Construction: 304 Grade stainless steel with brushed finish.

c) Under Counter Motor Assembly Construction: Main unit constructed of molded ABS, PC, and PP.

d) Exterior Screw Type: Torx T15.

e) Water Ingress Protection Rating: Conform to IP35

f) Filtration: 99.97 percent particulate efficiency HEPA filter with anti-microbial coating.

g) Operation: Touch-free infra-red activation

1) Hand Dry Time: 14 seconds.

2) Airspeed at nozzle: 533 km/h.

3) Operating Airflow: Up to 21 liters/second.

4) Rated Operating Noise Power: 80 db.

5) Motor: Dyson Digital Motor (DDM), V4 switched reluctance brushless DC type; 81,000 rpm motor speed.

6) Electrical Requirements: 110-127 V AC, 12 A, 1000 W.

7) Operating Temperature Range: 0º - 40º C.

8) Standby Power Consumption: Less than 0.5 W.

h) Water Operation:

1) Water Flow Rate: 1.9 liters/minute.

2) Tap Aerator: 1.9 liters/minute aerator outlet.

3) Tap Water Auto-Flush: Activates for 60 seconds after 24 hours of inactivity to flush standing water and help reduce bacteria growth.

4) Tap Power Supply: Mains supply.

5) Water Temperature Control: Thermostatic mixer not provided.

6) Water Pressure Required: 14.5 to 116 psi.

2.10.2. Warranty

a) Manufacturer's Standard Warranty: Manufacturer's standard form in which manufacturer agrees to repair, restore, or replace defective combination water tap and electric hand dryer units' components and labour within specified warranty period.

1) Warranty Period: Five (5) years limited for labour and five (5) years for parts.

2.10.3. Coordination

a) Coordinate locations of combination water tap and electric hand dryer units with other work to prevent interference with clearances required for access, and for proper installation, adjustment, operation, cleaning, and servicing of combination electric hand dryers and water taps.

b) Coordinate units with type of sinks to ensure compatibility. Verify that plugs are not installed in the sinks:

1) Sink Dimensions: Minimum 15 inches wide; minimum 13 inches front to back; minimum four inches and maximum eight inches deep.

2) Sink Materials: Verify that sinks do not have highly polished surfaces such as shiny, reflective chrome

3. EXECUTION

3.1. INSTALLATION OF PLUMBING FIXTURES AND FITTINGS

3.1.1. The Contractor shall provide required plumbing fixtures and fittings.

3.1.2. Where new fixtures and fittings are to be connected to existing piping, the Contractor shall include forrequired piping revisions.

3.1.3. The Contractor shall connect plumbing fixtures and fittings with piping sized in accordance with drawingschedule and as per manufacturer's published connection (rough-in) requirements.

3.1.4. The Contractor shall confirm exact location of plumbing fixtures and trim prior to roughing-in. Refer toarchitectural plan and elevation drawings.

3.1.5. For barrier-free fixtures, the Contractor shall comply with mounting height and other requirements ofgoverning Code(s).

3.1.6. The Contractor shall caulk around plumbing fixtures and fittings where they contact walls, floors, and anyother building surface.

3.1.7. The Contractor shall locate control panels for electronic faucets under lavatories and

recessed into wall. Coordinate panel installations with electrical trade who will provide 120-volt power wiring to panels. Install flexible conduit and extend cord from faucet through the flexible conduit to control box. Connect hot and cold-water piping to mixing valve ineach box, and tempered water piping from each mixing valve to faucet. Set mixing valve maximum temperature limit stops to 43 °C (110 °F) after domestic water systems (hot and cold) are complete. Ensure each programmable controller is properly programmed and water off after deactivation is set for 3 seconds or as directed by Metrolinx.

3.1.8. For electronic fixtures and controls, the Contractor shall locate low voltage transformer in ceiling spaceabove electronic units to be served. Coordinate locations with electrical trade whowill provide 120-volt line supply to transformers. Provide low voltage wiring from transformers to each electronic fixture/control terminal point. Electrical line supplyand low voltage wiring is to be concealed and access to transformer must be provided for servicing.

3.1.9. For emergency showers, the Contractor shall install so bottom of shower head is approximately 2 m (82")above floor, and approximately 400 mm (16") out from wall. Wall mount mixing valveapproximately 1.5 m (5') above floor and adjacent shower head. Set valve temperature limit stop to 35 °C (95 °F). Ensure valve is open, and exposed piping is chrome plated or stainless steel.

3.1.10. The Contractor shall install eye wash fixtures in accordance with manufacturer's instructions. Ensureexposed piping is painted.

3.1.11. The Contractor shall ensure that tepid water is supplied to eye wash stations and emergency shower inaccordance with ANSI Z358.1.

3.1.12. For combination water tap and electric hand dryer unit:

a) Examination

1) Examine roughing-in of water supply, sanitary drainage, and vent piping systems to verify actual locations of piping connections before unit installation.

2) Examine counters and walls for suitable conditions where units will be installed.

3) Verify availability and characteristics of electrical power. Drill minimum two (2) inch diameter holes for electrical service entrance through backplate.

4) Do not begin installation until substrates are complete and ready for installation of units.

b) Installation

1) Install units in accordance with manufacturer's written instructions, using fasteners appropriate to substrate indicated and recommended by manufacturer. Install units to be level, plumb, and firmly anchored in locations indicated

c) Cleaning and Protection

1) Adjust units for smooth operation. Replace damaged or defective components.

2) Remove protective coverings from finished surfaces.

3) Clean exposed surfaces using materials and methods recommended by manufacturer

3.1.13. When installation is complete, the Contractor shall check, and test operation of each fixture and fitting.Adjust or repair as required.

END OF SECTION