

SECTION 22 40 00
PLUMBING FIXTURES

PART 1 - GENERAL

1.1 DESCRIPTION

Plumbing fixtures, associated trim and fittings necessary to make a complete installation from wall or floor connections to rough piping, and certain accessories.

1.2 RELATED WORK

- A. Sealing between fixtures and other finish surfaces: Section 07 92 00, JOINT SEALANTS.
- B. Flush panel access doors: Section 08 31 13, ACCESS DOORS AND FRAMES.
- C. Through bolts: Section 10 21 13, TOILET COMPARTMENTS.
- D. Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.
- E. SECTION 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS.

Requirements for commissioning, systems readiness checklist, and training.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submit plumbing fixture information in an assembled brochure, showing cuts and full detailed description of each fixture.

1.4 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American National Standard Institute (ANSI):
 - The American Society of Mechanical Engineers (ASME):
 - A112.6.1M-02(R2008).....Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use
 - A112.19.1M-08Enameled Cast Iron Plumbing Fixtures
 - A112.19.2M-03.....Vitreous China Plumbing Fixtures
 - A112.19.3-2001(R2008)...Stainless Steel Plumbing Fixtures (Designed for Residential Use)

- C. American Society for Testing and Materials (ASTM):
 - A276-2010Stainless and Heat-Resisting Steel Bars and Shapes
 - WW-P-541-E/GENPlumbing Fixtures with Amendment 1
- D. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM AMP 500-505
Metal Finishes Manual (1988)
- E. American Society of Sanitary Engineers (ASSE):
 - 1016-05.....Performance Requirements for Individual
Thermostatic, Pressure Balancing and Combination
Pressure Balancing and Thermostatic Control
Valves for Individual Fixture Fittings
- F. National Sanitation Foundation (NSF)/American National Standards Institute (ANSI):
 - 61-2009Drinking Water System Components-Health Effects
- G. American with Disabilities Act (A.D.A) Section 4-19.4 Exposed Pipes and Surfaces
- H. International Building Code, ICC IPBC 2009.
- I. Plumbing Code of New York Ste, 2010.

PART 2 - PRODUCTS

2.1 STAINLESS STEEL

- A. Corrosion-resistant Steel (CRS):
 - 1. Plate, Sheet and Strip: CRS flat products shall conform to chemical composition requirements of any 300 series steel specified in ASTM A276.
 - 2. Finish: Exposed surfaces shall have standard polish (ground and polished) equal to NAAMM finish Number 4.
- B. Die-cast zinc alloy products are prohibited.

2.2 STOPS

- A. Provide lock-shield loose key or screw driver pattern angle stops, straight stops or stops integral with faucet, with each compression type faucet whether specifically called for or not, including sinks in wood and metal casework, laboratory furniture and pharmacy furniture. Locate stops centrally above or below fixture in accessible location.
- B. Furnish keys for lock shield stops to Resident Engineer.

- C. Supply from stops not integral with faucet shall be chrome plated copper flexible tubing or flexible stainless steel with inner core of non-toxic polymer.
- D. Supply pipe from wall to valve stop shall be rigid threaded IPS copper alloy pipe, i.e. red brass pipe nipple, chrome plated where exposed.

2.3 ESCUTCHEONS

- A. Heavy type, chrome plated, with set screws. Provide for piping serving plumbing fixtures and at each wall, ceiling and floor penetrations in exposed finished locations and within cabinets and millwork.

2.4 LAMINAR FLOW CONTROL DEVICE

- A. Smooth, bright stainless steel or satin finish, chrome plated metal laminar flow device shall provide non-aeration, clear, coherent laminar flow that will not splash in basin. Device shall also have a flow control restrictor and have vandal resistant housing.
- B. Flow Control Restrictor:
 - 1. Capable of restricting flow from 95 ml/s to 110 ml/s (1.5 gpm to 1.7 gpm) for lavatories; 125 ml/s to 140 ml/s (2.0 gpm to 2.2 gpm) for sinks P-505 through P-520, P-524 and P-528; and 170 ml/s to 190 ml/s (2.75 gpm to 3.0 gpm) for dietary food preparation and rinse sinks or as specified.
 - 2. Compensates for pressure fluctuation maintaining flow rate specified above within 10 percent between 170 kPa and 550 kPa (25 psi and 80 psi).
 - 3. Operates by expansion and contraction, eliminates mineral/sediment build-up with self-cleaning action, and is capable of easy manual cleaning.

2.5 CARRIERS

- A. ASME/ANSI A112.6.1M, with adjustable gasket faceplate chair carriers for auxiliary anchor foot assembly, hanger rod support feet, and rear anchor tie down.
- B. ASME/ANSI A112.6.1M, lavatory, chair carrier for thin wall construction, steel plate as detailed on drawing. All lavatory chair carriers shall be capable of supporting the lavatory with a 250-pound vertical load applied at the front of the fixture.

- C. Where water closets, lavatories or sinks are installed back-to-back and carriers are specified, provide one carrier to serve both fixtures in lieu of individual carriers. The drainage fitting of the back to back carrier shall be so constructed that it prevents the discharge from one fixture from flowing into the opposite fixture.

2.6 WATER CLOSETS

- A. (P-101) Patient WATER CLOSET, (Floor Mounted, ANSI 112.19.2M, Figure 6). Office and industrial, elongated bowl, siphon jet 6 L (1.6 gallons) per flush, floor outlet. Top of rim shall be 435 mm to 438 mm (17 1/2 inches) above finished floor.
1. 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.
 2. Fittings and Accessories: Floor flange fittings-cast iron; Gasket-wax; bolts with chromium plated cap nuts and washers.
 3. Flush valve: Large chloramines resistant diaphragm, semi-red brass valve body, exposed chrome plated, non-hold-open ADA approved side oscillating handle, water saver design 6 L (1.6 gallons) per flush with maximum 10 percent variance, top spud connection, adjustable tailpiece, one-inch IPS screwdriver back check angle stop with vandal resistant cap, and sweat solder adapter with cover tube and cast set screw wall flange. Set centerline of inlet 292 mm (11 1/2 inches) above rim. Seat bumpers shall be integral part of flush valve. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM Alloy classification for semi-red brass.
- B. (P-107) Nurses WATER CLOSET, (Floor Mounted, ANSI 112.19.2M, Figure 6). Office and industrial, elongated bowl, siphon jet 6 L (1.6 gallons) per flush, floor outlet. Top of rim shall be 435 mm to 438 mm (17 1/2 inches) above finished floor.
1. 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.
 2. Fittings and Accessories: Floor flange fittings-cast iron; Gasket-wax; bolts with chromium plated cap nuts and washers.

3. Flush valve: Large chloramines resistant diaphragm, semi-red brass valve body, exposed chrome plated, battery powered active infra-red sensor for automatic operation with courtesy flush button for manual operation, water saver design 6 L (1.6 gallons) per flush with maximum 10 percent variance, top spud connection, adjustable tailpiece, one-inch IPS screwdriver back check angle stop with vandal resistant cap, and sweat solder adapter with cover tube and cast set screw wall flange. Set centerline of inlet 292 mm (11 1/2 inches) above rim. Seat bumpers shall be integral part of flush valve. Valve body, cover, tailpiece and control stop shall be in conformance with ASTM Alloy classification for semi-red brass.

2.7 LAVATORIES

- A. Dimensions for lavatories are specified, Length by width (distance from wall) and depth.
- B. Brass components in contact with water shall contain no more than 3 percent lead content by dry weight.
- C. (P-405) Patient Toilet and Patient Room LAVATORIES, (Wrist Control, ASME/ANSI A112.18.1, Figure 16). Bowl integral with solid surface provided by prime contractor. Coordinate drilling for faucet on 102 mm (4 inches) centers with contractor.
 1. Faucet: Deck-mounted, solid cast brass construction, vandal resistant, heavy-duty 4 inch wrist blade handles, 4 inch centers. Control shall be re-buildable compression cartridge type. Provide laminar flow control device, adjustable hot water limit stop, and vandal proof screws.
 2. Drain: Cast or wrought brass with flat grid strainer offset tailpiece, chrome plated. Provide cover per A.D.A 4-19.4.
 3. Stops: Angle type, see paragraph 2.2 Stops. Provide cover per A.D.A 4-19.4.
 4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap. Adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extensions to wall. Exposed metal trap surface and connection hardware shall be chrome plated with a smooth bright finish. Set trap parallel to wall. Provide cover per A.D.A 4-19.4.
- D. (P-409) Nurse Toilet Room LAVATORY (Sensor Control, deck mount, ASME/ANSI A112.18.1, Figure 16). Bowl integral with solid surface

provided by prime contractor. Coordinate drilling for faucet (single hole) with contractor.

1. Faucet: Solid cast brass construction with dual beam infrared sensor type, traditional type spout with outlet 102 mm to 127 mm (4 inches to 5 inches) above slab with sensor control. Provide laminar flow control device. Faucet, wall and floor escutcheons shall be either copper alloy or CRS. Exposed metal parts shall be chrome plated with a smooth bright finish.
2. Drain: cast or wrought brass with flat grid strainer, offset tailpiece, brass, chrome plated.
3. Stops: Angle type. See paragraph 2.2. Stops
4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap, adjustable with connected elbow and 1.4mm thick (17 gauge) tubing extension to wall. Exposed metal trap surface and connection hardware shall be chrome plated with a smooth bright finish. Set trap parallel to the wall.
5. Provide cover for drain, stops and trap per A.D.A 4-19.4.
6. Provide 12 volt AC transformer and mount below lav.
7. Provide and connect mechanical thermostatic mixing valve similar to model 122-NF.

E. (P-411) Soiled Utility Room LAVATORY (Wrist Control, ASME/ANSI A112.18.1, Figure 16). Wall hung, vitreous china, 21 inches by 18 inches, 4 inch centers, with wall hanger and ADA compliant.

1. Faucet: Solid cast brass construction with re-buildable compression cartridge type and centrally exposed rigid gooseneck spout with outlet 180 to 250 mm (7-8 inches) above rim. Provide laminar type flow control outlet. One hundred millimeters (4 inches) wrist blades on faucets shall be cast, formed or drop forged copper alloy. Faucet, wall and floor escutcheons shall be either copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall have a smooth bright finish.
2. Drain: Cast or wrought brass with flat grid strainer, offset tailpiece, brass, chrome plated.
3. Stops: Angle type. See paragraph 2.2. Stops
4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap. Adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extension to wall. Exposed metal trap surface and

- connection hardware shall be chrome plated with a smooth bright finish. Set trap parallel to the wall. Set trap parallel to wall.
5. Provide cover for drain, stops and trap per A.D.A 4-19.4.

2.8 SINKS AND LAUNDRY TUBS

- A. Dimensions for sinks are specified, length by width (distance from wall) and depth.
- B. (P-406) Nourishment SINK (Wrist Control, ASME/ANSI A112.18.1, Figure 16). Single compartment, 18 gauge stainless steel (CRS), undermount, 21 by 15 inch bowl size, 7 ½ inches deep. Coordinate size and opening in solid surface top with prime contractor.
1. Faucet: Solid cast brass construction with re-buildable compression cartridge type and centrally exposed rigid gooseneck spout with outlet 180 to 250 mm (7-8 inches) above rim. Provide laminar type flow control outlet. One hundred millimeters (4 inches) wrist blades on faucets shall be cast, formed or drop forged copper alloy. Faucet, wall and floor escutcheons shall be either copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall have a smooth bright finish.
 2. Drain: Cast or wrought brass with flat grid strainer and offset tailpiece, chrome plated finish.
 3. Stops: Angle type, See paragraph 2.2. Stops
 4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap. Adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extensions to wall. Exposed metal trap surfaces and connection hardware shall be chrome plated with a smooth bright finish. Set trap parallel to wall.
- C. (P-407) Nurse Work Room SINK (Single Lever Handle, ASME/ANSI A112.19.2M, Figure 16). Single compartment, 18 gauge stainless steel (CRS), undermount, 21 by 15 inch bowl size, 7 ½ inches deep. Coordinate size and opening in solid surface top with prime contractor.
1. Faucets: Solid cast brass construction, vandal resistant, heavy duty, single lever handle with side spray. Control shall be washerless ceramic disc mixing cartridge type. Provide laminar flow control device, adjustable hot water limit stop, and vandal proof screws.
 2. Drain: Cast or wrought brass with flat grid strainer and tailpiece, chrome plated finish.
 3. Stops: Angle type, See paragraph 2.2. Stops

4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches) P-trap. Adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extension nipple to wall. Exposed metal trap surface and connection hardware shall be chrome plated with a smooth bright finish.

D. (P-410) Med SINK (Wrist Control, ASME/ANSI A112.19.2M, Figure 16).

Single compartment, 18 gauge stainless steel (CRS), undermount, 18 by 14 inch bowl size, 7 7/8 inches deep. Coordinate size and opening in solid surface top with prime contractor. .

1. Faucet: Solid cast brass construction with re-buildable compression cartridge type and centrally exposed rigid gooseneck spout with outlet 180 mm to 250 mm (7 to 8 inches) above rim. Provide laminar flow control outlet. One hundred two millimeter (4-inch) wrist blade type, handles on faucets shall be cast, formed or drop forged copper alloy. Faucet, wall and floor escutcheons shall be either copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open position, shall be chrome plated with a smooth bright finish.
2. Drain: Cast or wrought brass with flat grid strainer, offset tailpiece, chrome plated.
3. Stops: Angle type. See paragraph 2.2.Stops
4. Trap: Cast copper alloy, 38 mm by 32 mm (1 1/2 inches by 1 1/4 inches)P-trap. Adjustable with connected elbow and 1.4 mm thick (17 gauge) tubing extension to wall. Exposed metal trap surface, and connection hardware shall be chrome plated with a smooth bright finish. Set trap parallel to the wall.
5. Provide cover for drain, stops and trap per A.D.A 4-19.4.

E. (P-502) Service Sink/MOP RECEPTOR (Corner, Floor Mounted, Molded stone, 24" x 24" x 10" high, Hose and hose bracket). Verify size and fit prior to ordering.

1. Faucet: Solid brass construction, combination faucet with replaceable cartridge unit containing all parts subject to wear, integral stops, mount on wall above sink. Spout shall have a pail hook, 19 mm (3/4 inch) hose coupling threads and vacuum breaker. Lever handles on faucets shall be cast, formed, or drop forged copper alloy. Escutcheons shall be either forged copper alloy or CRS. Exposed metal parts, including exposed part under valve handle when in open

- position, shall have a smooth bright finish. Provide 914 mm (36 inches) hose with wall hook. Centerline of rough in is 1219 mm (48 inches) above finished floor.
2. Drain: Seventy six millimeter (3 inches) cast brass drain with nickel bronze strainer.
 3. Trap: P-trap, drain through floor.
- F. (P-505) Clinic Service SINK (FLUSHING RIM) Wall-hung, vitreous china, approximately 508 mm by 635 mm (20 inches by 25 inches) by 203 mm (8 inches) deep. Support with ASME/ANSI A112. 6.1M chair carrier and secure with 10 mm (3/8 inch) bracket studs and nuts. Set sink with rim 762 mm (30 inches) above finished floor. Provide 762 mm (30 inches) CRS drain board where required, without corrugations and with heavy duty CRS brackets.
1. Faucet: Solid brass construction, wrist blade control, wall mounted, integral stops, single spout with 19 mm (3/4 inch) hose threaded outlet, pail hook, vacuum breaker and brace with circular opening (for flush valve) to wall. Outlet 356 mm to 381 mm (14 inches to 15 inches) from wall. Exposed metal parts shall be chromium plated with a smooth bright finish. Provide laminar flow control outlet.
 2. Flush valve: Large diaphragm, semi-red brass body, ADA metal non-hold handle operated, exposed chromium plated flush valve with screwdriver back check straight stop with cap, union outlet, elevated high pressure vacuum breaker, casing cover, 32 mm (1 1/4 inches) elbow flush connection from finished wall to 38 mm (1 1/2 inches) top spud. Spud coupling, wall and spud flanges. Low consumption 1.6 gpf.
 3. Bed Pan Washer: Mechanical pedal mixing valve, wall mounted, with double self-closing pedal valve with loose key stops, renewable seats and supply from valve to nozzle with wall hook hose connection; 53 inch white vinyl hose, with extended spray outlet elevated vacuum breaker, indexed lift up pedals having clearance of not more than 13 mm (1/2 inch) above the floor and not less than 356 mm (14 inches) from wall when in operation. Supply pipe from wall to valve stop shall be rigid, threaded, IPS copper alloy pipe. Exposed metal parts shall be chromium plated with a smooth bright finish. Provide valve plate for foot control. Provide inline laminar flow control device.

2.9 DISPENSER, DRINKING WATER

- A. Standard rating conditions: 10 degrees C (50 degrees F) water with 27 degrees C (80 degrees F) inlet water temperature and 32 degrees C (90 degrees F) ambient air temperature.
- B. (P-604) Electric Water Cooler (Mechanically Cooled). Wall Hung, self-contained, wheelchair, ADA compliant, bubbler style, 5 ml/s (5 gph) minimum capacity, lead free. Top shall be CRS anti-splash design. Cabinet, CRS, satin finish, approximately 457 mm by 457 mm by 635 mm (18 inches by 18 inches by 25 inches) high with mounting plate. Set bubbler 914 mm (36 inches) above finished floor. Unit shall be push bar operated with front and side bar and automatic stream regulator. All trim polished chrome plated.

2.10 SHOWER BATH FIXTURE

- A. (P-701) Shower Bath Fixture (Hand-held, Detachable, Wall Mounted, Concealed Supplies, Type T/P Combination Valve). Shower floor and walls provided by prime contractor. Coordinate drilling and installation of floor drain, control valve, shower outlet and slide rail with contractor.
 - 1. Shower Installation: Wall mounted detachable spray assembly, 723 mm (30 inch) wall bar, elevated vacuum breaker, supply elbow and flange and valve. All external trim, chrome plated metal.
 - 2. Shower Head Assembly: Plastic shower head with flow control to limit discharge to 160 ml/s (2.5 gpm), 69 inch length of chrome plated metal flexible hose and supply wall elbow. Design showerhead to fit in palm of hand. Provide 30" CRS or chrome plated metal wall bar with an adjustable swivelhanger for showerhead. Fasten wall bar securely to wall for hand support.
 - 3. Valves: Type T/P combination thermostatic and pressure balancing, cartridge design, with chrome plated metal lever type operating handle adjustable for rough-in variations and chrome plated metal or CRS face plate. Valve body shall be any suitable copper alloy. Internal parts shall be copper, nickel alloy, CRS or thermoplastic material. Valve inlet and outlet shall be 13 mm (1/2 inch) IPS. Provide external screwdriver check stops, vacuum breaker and temperature limit stops. Set stops for a maximum temperature of 40 degrees C (105 degrees F). All exposed fasteners shall be vandal

resistant. Valve shall provide a minimum of 160 ml/s at 310 kPa (2.5 gpm at 45 psi) pressure drop.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Fixture Setting: Opening between fixture and floor and wall finish shall be sealed as specified under Section 07 92 00, JOINT SEALANTS.
- B. Supports and Fastening: Secure all fixtures, equipment and trimmings to partitions, walls and related finish surfaces. Exposed heads of bolts and nuts in finished rooms shall be hexagonal, polished chrome plated brass with rounded tops.
- C. Through Bolts: For free standing marble and metal stud partitions refer to Section 10 21 13, TOILET COMPARTMENTS.
- D. Toggle Bolts: For hollow masonry units, finished or unfinished.
- E. Expansion Bolts: For brick or concrete or other solid masonry. Shall be 6 mm (1/4 inch) diameter bolts, and to extend at least 76 mm (3 inches) into masonry and be fitted with loose tubing or sleeves extending into masonry. Wood plugs, fiber plugs, lead or other soft metal shields are prohibited.
- F. Power Set Fasteners: May be used for concrete walls, shall be 6 mm (1/4 inch) threaded studs, and shall extend at least 32 mm (1 1/4 inches) into wall.
- G. Tightly cover and protect fixtures and equipment against dirt, water and chemical or mechanical injury.
- H. Where water closet waste pipe has to be offset due to beam interference, provide correct and additional piping necessary to eliminate relocation of water closet.
- I. Do not use aerators on lavatories and sinks.

3.2 CLEANING

At completion of all work, fixtures, exposed materials and equipment shall be thoroughly cleaned.

3.4 COMMISSIONING

- A. Provide commissioning documentation in accordance with the requirements of Section 22 08 00 - COMMISSIONING OF PLUMBING SYSTEMS for all

inspection, startup, and contractor testing required above and required by the System Readiness Checklist provided by the Commissioning Agent.

- B. Components provided under this section of the specification will be tested as part of a larger system. Refer to Section 22 08 00 - COMMISSIONING OF PLUMBING SYSTEMS and related sections for contractor responsibilities for system commissioning.

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