

SECTION 224200 PLUMBING FIXTURES

PART 1 - GENERAL

1.01 Section Includes:

- A. Mop service sink
- B. Lavatory
- C. Supports and supporting devices for wall-mounted lavatories, sinks, and equipment
- D. Countertop sink
- E. Vitreous china water closets
- F. Water closet carrier
- G. Vitreous china urinals
- H. Urinal carrier
- I. Flush valves

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Sealants: Section 079200.

1.03 SUBMITTALS

- A. Product Data: Catalog sheets, specifications, roughing dimensions, and installation instructions for each item specified except fasteners.
 - 1. Deliver cut out data for countertop fixtures to the Director's Representative.
- B. Samples:
 - 1. Water Closet Seat: One seat if other than product specified. Sample will be returned and if approved, may be installed on the Project.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Comply with applicable requirements of FS WW-P-541, and the following standards:
 - a. ANSI/ASME A112.6.1M - Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
 - b. ANSI/ASME A112.18.1M - Plumbing Fixture Fittings.
 - c. ANSI/ASME A112.19.1M - Enameled Cast Iron Plumbing Fixtures.
 - d. ANSI/ASME A112.19.2M - Vitreous China Plumbing Fixtures.
 - e. ANSI/ASME A112.19.6 - Hydraulic Requirements for Water Closets and Urinals.
 - 2. Materials and installations designated as handicapped accessible shall conform with the following:
 - a. ANSI A117.1 - Buildings and Facilities - Providing Accessibility and Usability for Physically Handicapped People.
 - b. The Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG), (Appendix A to 28 CFR Part 36).
 - c. The Uniform Federal Accessibility Standards (UFAS), (Appendix A to 41 CFR Part 101-19.6).
 - 3. Each fixture carrier support shall be listed by model number in the fixture support manufacturer's Fixture Support Selection Guide as being recommended for support of the appropriate fixture.

- B. Plainly and permanently mark each fixture and fitting with the manufacturer's name or trade mark.
- C. Acid resistant surfaces shall be plainly and permanently marked with the manufacturer's label or symbol indicating acid resistance.

1.05 MAINTENANCE

- A. Special Tools: Deliver to the Director's Representative.
 - 1. Furnish the following tools labeled with names and locations where used.
 - a. Keys for stops (furnished with stops).
 - b. Tools for Vandal Resistant Fasteners: Two for each type and size.

PART 2 - PRODUCTS

2.01 MATERIALS - GENERAL

- A. Vitreous China: First quality, smooth, uniform color and texture, with fused on glaze covering surfaces exposed to view.
 - 1. Surfaces shall be free of chips, craze, warpage, cracks and discolorations. Surfaces in contact with walls or floors shall be flat, with warpage not to exceed 1/16 inch per foot.
 - 2. Color: White.
- B. Porcelain Enameled Cast Iron: Smooth, uniform color and texture, having fused on glaze covering surfaces exposed to view.
 - 1. Material shall show no cracks, chips, craze or discolorations.
 - 2. Enameled surfaces shall be acid resistant unless otherwise specified.
 - 3. Color: White.
- C. Fixture Trim: Brass, bronze, or stainless steel construction; consisting of supply and waste fittings, faucets, traps, stop valves, escutcheons, sink strainers, nipples, supplies, and metal trim.
 - 1. Brass piping: Ips standard weight, with standard weight, 125 lb cast brass fittings.
 - 2. Brass tubing: 18 B & S gage.
 - 3. Stainless steel: 18-8 Type 302 or 304 unless otherwise specified.
- D. Fixture Trim Finishes:
 - 1. Brass or Bronze: Polished or satin finished chrome plating, 0.02 mil chromium over 0.2 mil nickel plating.
 - 2. Stainless Steel: Invisible welds and seams, and unless otherwise specified, polished to No. 4 commercial finish.
- E. Fixture Hold-down Bolts: Steel, plated for corrosion resistance.
 - 1. Cap nuts: Metal, polished and chrome plated.
- F. Combination Faucets: Faucets shall turn counter to each other for the on and off positions.
- G. For Vandal Resistant Fixtures - Fasteners: Torx head with center pin.

2.02 MOP SERVICE SINK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Fiat Products, LLC.
 - b. Zurn Industries, LLC.
 - c. E.L. Mustee & Sons, Inc.
 - d. Or approved equal
- B. Drain Fitting: Cast iron or cast brass body integral or attached to the receptor, ready for connection. Strainer grate shall be polished brass or stainless steel, removable for cleaning.
- C. Service Fitting: Combination faucet with 3/4 inch hose end spout, and with the following features.
 - 1. 1/2 inch eccentric inlets on 8 inch centers and integral stops.
 - 2. Integral wall flanges.
 - 3. Renewable units.
 - 4. Metal, four arm or lever, indexed handles.
 - 5. Integral vacuum breaker.
 - 6. 10 inches from finished wall to center of spout outlet.
 - 7. Five foot rubber hose with threaded connector to fit the hose bibb.
 - a. Hose wall hook.
- D. Rim Guard: Anodized aluminum, stainless steel, or pre-molded vinyl plastic, as recommended by the receptor manufacturer.
- E. Wall Guard: Anodized aluminum, stainless steel, or pre-molded vinyl plastic, as recommended by the receptor manufacturer.

2.03 LAVATORY

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Kohler Co.
 - c. TOTO USA, INC.
 - d. Or approved equal
- B. Supply Fitting:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Kohler Co.
 - b. Sloan Valve Company.
 - c. T&S Brass and Bronze Works, Inc.
 - d. Or approved equal

Maximum Flow: 0.5 gpm at 80 psi.

- a. Exception: Metering faucets shall have a maximum flow of 0.25 gallons per cycle.
 2. Over rim spout with aerator.
 3. Renewable operating units.
 4. Vandal resistant assembly.
 5. 1/2 inch inlet lock nut and coupling nut.
 6. Operators:
 - a. Standard Fixtures: Metal four arm indexed handles, with either integral splines, or ceramic spline inserts. Plastic spline inserts will not be accepted.
 - b. Handicapped Accessible Fixtures: Metal 4 inch minimum indexed blade handles set, with either integral splines, or ceramic spline inserts. Plastic spline inserts will not be accepted.
 - 1) Maximum Activation Force: 5 lbf.
- C. Waste Fitting: Grid Strainer.
 1. Metal grid strainer to match fixture finish.
 2. Cast escutcheon.
 3. 1-1/4 inch tailpiece.
 4. Vandal resistant assembly.
- D. Trap: Cast brass, non-adjustable P trap, 1-1/4 inch tubing inlet, 1-1/2 inch ips outlet.
 1. Bottom cleanout plug.
 2. Ips brass nipple with solid cast brass escutcheon.
- E. Supplies: 3/8 inch ips brass with operated stops and solid cast brass escutcheons.
 1. Wall Supplies: Angle stops.
- F. Faucet Hole Cover: Cast brass, rounded top, and threaded shank, with backing plate, lock washer and nut.

2.04 FIXTURE SUPPORTS AND SUPPORTING DEVICES FOR LAVATORIES, SINKS, AND EQUIPMENT

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Jay R Smith.
 - b. Josam Company.
 - c. Zurn Industries, LLC.
 - d. Or approved equal
- B. General: Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.
- C. Floor Mounted Carrier Supports: Steel pipe uprights, 1-1/4 inch ips minimum diameter, or 1 inch x 3 inch steel tubing uprights, with cast iron or welded steel feet, drilled for bolting to the floor construction. Each carrier shall be provided with the appropriate fixture supporting devices specified, or recommended by the carrier manufacturer's Fixture Support Selection Guide.
 1. Concealed Arms: Steel, with fixture locking lugs, leveling screws and a means of attaching, positioning and securing the fixture to the carrier.

- a. Trim: Polished, chrome plated metal escutcheon to space fixture two inches from the wall.
 - b. Vandal Resistant Trim: Polished, chrome plated metal cap nuts and washers retained with vandal resistant set screws or other approved means of securing trim.
- D. Wood Stud Filler Piece: 2 inch x 8 inch wood planking cut to fit between wood studding. Fasten with four 3/8 inch x 2-1/2 inch lag bolts with washers.

2.05 COUNTERTOP SINK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- a. Kohler.
 - b. Sloan Valve Company.
 - c. Zurn Industries, LLC.
 - d. Or approved equal
- B. Material: See plans for make and model.
- 1. Features: Self-rimming, extended back ledge, with faucet and spray hose punchings spaced on 4 inch centers. Cove corners 1-3/4 inch minimum radius; fully coat underside with sound deadening and condensation barrier.
 - 2. Finish: Satin finish exposed surfaces.
- C. Supply Fitting: See plans for make and model.
- 1. Maximum Flow: 2.5 gpm at 80 psi.
 - 2. 8 inch swing spout.
 - 3. 1/2 inch inlets on 8 inch centers.
 - 4. Renewable units.
 - 5. Supplies: 1/2 inch ips brass, with angle stops, and cast brass escutcheons.
- D. Drain Assembly:
- 1. Stainless steel removable strainer basket with neoprene stopper and 1-1/2 inch tubing tailpiece.
- E. Fastening Devices: Stainless steel spring clip assemblies or clamping devices for securing sink to the countertop.

2.06 VITREOUS CHINA WATER CLOSETS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
- a. American Standard.
 - b. Crane Plumbing, L.L.C.
 - c. Kohler Co.
 - d. TOTO USA, INC.
 - e. Zurn Industries, LLC.
 - f. Or approved equal

- B. Vitreous china, full size, elongated bowl with integral flushing rim and jet; trapway at the rear and the outlet centered between a pair of hold down bolt holes.
 - 1. Trapway size: Pass minimum ball of 2 inches.
 - 2. Trap seal: 2 inches minimum.
 - 3. Water surface area: 12 inches x 10 inches minimum.
 - 4. Provisions for flushing:
 - a. 1-1/2 inch spud for flush valve operation.
 - 5. Fixture Installation Heights:
 - a. Standard Fixture: 14 to 15 inches from finished floor to rim.
 - b. Handicapped Accessible Fixture: 17 to 19 inches from finished floor to top of seat (15-13/16 to 17-13/16 inches from finished floor to top of rim based on 1-3/16 inch seat height).
- C. Operation: Fixture shall flush satisfactorily without extraordinary rise of water level in the bowl.
 - 1. Maximum gallons of water per flush: 1.28 gallons.
- D. Closet Seat: Extra heavy duty, commercial design.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Model 1655-C by Bemis Mfg. Co.
 - b. Model No. 527-CH by Beneke Corp.
 - c. Model No. 9500C by Church Seat Co.
 - d. Or approved equal
 - 2. Material and Construction: Solid plastic, open front, less cover, molded in one piece with no joints, seams or crevices.
 - 3. The manufacturer's name shall be molded into the seat.
 - 4. Metal check hinges shall be integrally molded into the seat. Hinges, inserts, bearings and posts shall be of brass or stainless steel. Cover upper post and metal exposed above fixture rim with plastic to match seat.
 - 5. Surface shall be hard, polished, impervious to moisture, and not affected by the action of uric acid.
 - 6. Color: White.
- E. Water Closet Types:
 - 1. Type E-1 Water Closet: Wall hung, back outlet, top spud inlet, siphon jet action, activated by means of an exposed flush valve.

2.07 WATER CLOSET CARRIER

- A. Closet Carrier (For Wall Hung Water Closets): Commercial type cast iron combination chair carrier and drainage fitting with the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - e. Jay R Smith.
 - f. Josam Company.

- g. Zurn Industries, LLC.
 - h. Or approved equal
- 2. Face Plate: Cast iron; height adjustable.
 - 3. Feet: Cast iron, adjustable, with provisions for bolting to the floor slab.
 - 4. Studs, Nuts and Washers: Steel, treated for corrosion resistance.
 - 5. Fixture Washers: Plastic.
 - 6. Adjustable Closet Connection: Cast iron, steel, or ABS plastic.
 - 7. Fitting Ends: Compatible with the drainage piping system.
 - 8. Gasket: Impregnated felt or neoprene closet gasket; lead or neoprene face plate gasket.
 - 9. Stud thread protectors.
 - 10. Factory painted.
 - 11. Trim: Polished chrome plated metal cap nuts and washers.
 - 12. Vandal Resistant Trim: Polished chrome plated metal cap nuts and washers retained with vandal resistant set screws.
- B. Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.

2.08 VITREOUS CHINA URINALS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
- a. American Standard.
 - b. Crane Plumbing, L.L.C.
 - c. Kohler Co.
 - d. TOTO USA, INC.
 - e. Zurn Industries, LLC.
 - f. Or approved equal

Wall Supported Fixture: Vitreous china, with elongated rim, integral trap and extended side shields.

- 1. Dimensions (approx.): 28 inches high, 18 inches wide, 12 inches front to back.
 - 2. Method of Support: Wall hangers and lugs for bearing plate bolting.
- B. Operation: Fixture shall flush satisfactorily with a maximum of one gallon of water and be accomplished without extraordinary rise in water level in the bowl.
- C. Fixture Types:
- 1. Type C-1 Urinal: Wall supported, washout action, back outlet, and a 3/4 inch top spud inlet for an exposed flush valve connection.

2.09 URINAL CARRIER

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- a. Jay R Smith.
 - b. Josam Company.
 - c. Zurn Industries, LLC.
 - d. Or approved equal

- B. Floor Mounted Carrier Support (For Wall Hung Urinals): 1-1/4 inch ips steel pipe upright supports with block feet arranged with provisions for bolting to the floor slab, and with the following:
 - 1. Hanger Plate: Steel, height adjustable with provisions for mounting and positioning the fixture hanger.
 - 2. Bearing Plate: Steel, adjustable, with bearing studs, nuts and washers.
 - 3. Studs, Nuts and Washers: Steel, treated for corrosion resistance.
 - 4. Fixture Washers: Plastic.
 - 5. Stud thread protectors.
 - 6. Factory Painted.
 - 7. Trim: Polished chrome plated metal cap nuts and washers.
 - 8. Vandal Resistant Trim: Polished chrome plated metal cap nuts and washers retained with vandal resistant set screws.
- C. Ferrous metal members of carriers and supporting devices with the exception of chrome plated or porcelain enameled cast iron, shall be factory painted for corrosion resistance.

2.10 FLUSH VALVES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Kohler.
 - b. Sloan Valve Company.
 - c. Zurn Industries, LLC.
 - d. Or approved equal
- B. Control Mechanism: Diaphragm or piston operated; do not intermix types. See plans for make and model.
- C. Maximum Flow Per Flush:
 - 1. Water Closet: 1.28 gallons.
 - 2. Urinal: 0.5 gallons.
- D. Flush Valve Assemblies: Flush valve, stop-check, tailpiece, vacuum breaker, and fixture spud coupling, including wall and spud flanges.
- E. Valve Materials:
 - 1. Valve Body: Brass or bronze.
 - 2. Valve Internal Parts: Corrosion resistant materials that will not be affected by the action of or contact with water.
- F. Operating Features:
 - 1. Valve operators shall employ the non hold-open feature.
 - 2. Piston type valves shall be field adjustable.
- G. Valve Operators:
 - 1. Oscillating Handle: 4 inch brass spring loaded self return handle.
 - 2. Oscillating Disc: 3 inch diameter, cast brass, spring loaded and self returning.
 - a. Concealed Installations: Furnish wall escutcheon with operators.

3. Push Button Operator: 1 inch cast brass spring loaded push button, wall escutcheon, sleeve with guides and brass push rod; vandal resistant assembly.
 4. Maximum Activation Force (Handicapped Accessible Operators): 5 lbf.
- H. Assembly Components:
1. Flush Pipe: Seamless brass tubing with integral vacuum breaker, No. 18 B & S gage.
 2. Fitting: Cast brass.
 3. Stop-Check: Brass or bronze body, non rising stem stop valve with a built-in automatic check.
 - a. Exposed Stop-Check: Screwdriver operated with protective cap.
 - b. Concealed Stop-Check: Wheel handle operated.
 4. Spud Coupling and Wall Flanges: Cast brass.

PART 3 - EXECUTION

3.01 FIXTURE SUPPORT AND SUPPORTING DEVICE INSTALLATION

- A. Install heavy duty floor mounted carrier supports with specified fixture supporting devices for wall type plumbing fixtures.
1. Secure to building construction with lag bolts and metal expansion shields, or other appropriate means as required by the construction encountered.
- B. Wall Mounted Carrier Supports: Install the following fixtures on wall mounted carrier supports:
- C. Fixture Supporting Devices: Attach fixtures by means of the following fixture supporting devices attached to carrier supports.

FIXTURE	SUPPORTING DEVICE
Clinical Service Sink	Fixture hangers & bearing
Lavatory, Vitreous China, with back	Concealed arms.
Lavatory, Vitreous China, slab type	Concealed arms.
Lavatory, Type D	Concealed arms.
Lavatory, Type E	Through bolt.
Water Closet	Bolt to comb. carrier and drainage fitting.
Urinal	Fixture hanger and bearing plate.
Drinking Fountain	Fixture hanger.
Water Cooler (wall mounted)	Fixture hanger.
Water Cooler (Recessed)	Mounting frame.

- D. Secure exposed external components in place with vandal resistant fasteners or devices which cannot be removed without the use of special tools.

3.02 FIXTURE INSTALLATION

- A. Install the Work of this section in accordance with the manufacturer's printed installation instructions.

- B. Install fixtures level and at proper height, tighten connections, and install hold-down bolts, cap nuts and cover plates, where required.
- C. Secure exposed external components in place with vandal resistant fasteners or devices which cannot be removed without the use of special tools.
- D. Mop Service Sinks:
 - 1. Set receptor leveled in bed of mortar laid on clean roughened surface. Remove excess mortar and strike a neat joint.
 - 2. Make connection from drainage pipe to receptor drain.
 - 3. Caulk joints between receptor and wall or floor with Type 1D sealant; strike a neat joint.
 - 4. Install service fittings.
- E. Lavatories:
 - 1. Mount lavatories 31 inches from finished floor to rim unless otherwise specified.
 - 2. Mount handicapped accessible fixtures 34 inches from finished floor to rim. Refer to Standard Drawing No. 93/S3013 bound herein, for special clearances required for handicapped accessible fixtures.
 - 3. Caulk joint between fixture back and wall with Type 1D sealant; strike a neat joint.
- F. Countertop Fixtures:
 - 1. Install fixture with securing devices supplied.
 - 2. Set fixture on bedding of sealant, tighten securing devices and remove excess sealant.
- G. Water Closets:
 - 1. Wall Hung Fixtures:
 - a. Standard Fixtures: Install wall hung fixtures 15 inches from finished floor to rim unless otherwise specified.
 - b. Handicapped Accessible Fixtures: Install fixtures 18 inches from finished floor to top of seat (16-13/16 inches floor to rim based on 1-3/16 inches seat height).
 - c. Set bearing nuts to position fixture 1/16 inch clear of finished wall.
 - d. Caulk the joint between fixture back and wall with Type 1D sealant; strike a neat joint.
 - 2. After connections are tightened, install cap nuts and washers.
 - 3. Install water closet seats when directed.
- H. Urinals:
 - 1. Wall Hung Fixtures:
 - a. Standard Fixtures: Install wall hung fixtures 24 inches from finished floor to rim.
 - b. Handicapped Accessible Fixtures: Install wall hung handicapped accessible fixtures 14 inches (minimum) to 17 inches (maximum) from finished floor to rim.
 - c. Set bearing nuts on floor mounted carrier supports to position wall hung fixtures 1/16 inch clear of finished wall.
 - d. Caulk the joint between fixture back and wall with Type 1D sealant; strike a neat joint.
 - 2. After connections are tightened, install cap nuts and washers.
- I. Flush Valves:
 - 1. Standard Fixtures: Install flush valves on fixture centerline, and at following heights above fixture rim or back to centerline of water inlet to flush valve.
 - a. Water Closet: 11-1/2 inches.

- b. Urinal: 11-1/2 inches.
- 2. Handicapped Accessible Fixtures: Install flush valves on fixture centerline, and at following height above finished floor to centerline of flush valve operator. Distance between centerline of flush valve operator and centerline of water inlet is 1-1/2 inches.
 - a. Water Closet: Approximately 31-1/2 inches, and mounted on wide side of stall.
 - 1) Coordinate mounting height with Construction Work Contractor to avoid interference with grab bar, and to facilitate flush valve servicing.
 - b. Urinal: Maximum 44 inches.
- 3. Set oscillating handles parallel to wall on exposed installation.
- 4. Slip joints in flush pipe connections allowed only at fixture spud and vacuum breaker ends; others shall be screwed connections.
- 5. Score tubing ends before assembling to assure tight slip joint connections. No score marks shall be visible after assembly.
- 6. In utility corridors, solder screwed flush pipe connections.

3.03 CLEANING, FLUSHING AND ADJUSTMENT

- A. Clean fixture and trim. Remove grease and dirt; polish surfaces but leave stickers and warning labels intact.
- B. Flush supply piping and traps; clean strainers.
- C. Adjust stops for proper delivery.
- D. Adjust metering faucets for proper timing.

END OF SECTION 224200