

SECTION 224200 - COMMERCIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Commercial lavatories.
 - 2. Commercial sinks.
 - 3. Commercial urinals.
 - 4. Commercial water closets.
 - 5. Flushometer valves.
 - 6. Toilet seats.
 - 7. Fixture carriers.

1.2 DEFINITIONS

- A. FRP: Fiberglass-reinforced plastic.
- B. PMMA: Polymethyl methacrylate; also known as "acrylic."
- C. WaterSense Fixture: Water closet and/or flushometer valve/tank certified by the EPA to meet the WaterSense performance criteria.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for plumbing fixtures.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings:
 - 1. Plans, elevations, sections, and attachment details.
 - 2. Details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Counter cutout templates for mounting of counter-mounted lavatories and/or counter-mounted sinks.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Lavatory faucets, sink faucets, and faucets intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), with requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 and NSF 372, or be certified in compliance with NSF 61 and NSF 372 by an ANSI-accredited third-party certification body, in that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 COMMERCIAL LAVATORIES

A. Lavatories, Counter Mounted:

1. Lavatories, Undercounter Mounted - Vitreous China, Oval

- a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) American Standard
 - 2) Kohler
 - 3) Sloan.
- b. Fixture:
 - 1) Standard: ASME A112.19.2/CSA B45.1.
 - 2) Type: For undercounter mounting.
 - 3) Color: White
 - 4) Mounting Material: Sealant and undercounter mounting kit.
- c. Faucet:
 - 1) Type: Refer to plumbing schedule.

B. Lavatories, Wall Mounted:

1. Lavatories, Wall Mounted - Vitreous China, Rectangular

- a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) American Standard
 - 2) Kohler
 - 3) Sloan.

- b. Fixture:
 - 1) Standard: ASME A112.19.2/CSA B45.1.
 - 2) Type: For wall hanging.
 - 3) Color: White.
 - 4) Mounting Material: Chair carrier.
- c. Faucet:
 - 1) Type: Refer to plumbing schedule.
- d. Support: Lavatory carrier, floor affixed with steel uprights concealed arm.

C. Lavatory Faucets, Manually Operated

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Delta
 - b. American Standard.
 - c. Chicago Faucets; Geberit Group.
 - d. Elkay.
- 2. Standard: ASME A112.18.1/CSA B125.1.
- 3. Operation Type: Single control, mixing
- 4. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punchings; coordinate outlet with spout and fixture receptor.
- 5. Body Type: Centerset
- 6. Body Material: Commercial, solid-brass, or die-cast housing with brazed copper and brass waterway.
- 7. Finish: Polished chrome plate

D. Lavatory Supply Fittings:

- 1. NSF Standard: Comply with NSF 61 and NSF 372 for supply-fitting materials that will be in contact with potable water.
- 2. Standard: ASME A112.18.1/CSA B125.1.
- 3. Supply Piping: Chrome-plated-brass pipe or chrome-plated copper tube matching water-supply piping size. Include chrome-plated-brass or stainless steel wall flange.
- 4. Supply Stops: Chrome-plated-brass, one-quarter-turn, ball-type or compression valve with inlet connection matching supply piping.
- 5. Operation: Wheel handle
- 6. Risers:
 - a. NPS 3/8.
 - b. ASME A112.18.6/CSA B125.6, braided or corrugated stainless steel, flexible hose riser.

E. Lavatory Waste Fittings:

1. Standard: ASME A112.18.2/CSA B125.2.
2. Drain: Grid type with NPS 1-1/4 offset and straight tailpiece.
3. Trap:
 - a. Size: NPS 1-1/2 by NPS 1-1/4.
 - b. Material:
 - 1) Chrome-plated, two-piece, cast-brass trap and swivel elbow with 0.032-inch-thick brass tube to wall and chrome-plated, brass or steel wall flange.

2.3 COMMERCIAL SINKS

A. Service Sinks, Floor Mounted:

1. Service Sinks, Floor Mounted - Terrazzo :
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) Acorn.
 - 2) Fiat.
 - 3) Stern_Williams.
 - b. Source Limitations: Obtain sinks from single source from single manufacturer.
 - c. Fixture:
 - 1) Material: Marble chips cast in portland cement to produce a compressive strength of not less than 3000 psi, seven days after casting.
 - 2) Shape: Square.
 - 3) Nominal Size: 24 by 24 inches.
 - 4) Height: 10 inches.
 - 5) Tiling Flange: Not required.
 - 6) Rim Guard: On all top surfaces.
 - 7) Drain: Grid with NPS 3 outlet.
 - d. Mounting: On floor and flush to wall.
 - e. Faucet: Refer to plumbing fixture schedule.

2.4 COMMERCIAL URINALS

1. Urinals, Wall Hung - Back Outlet, Washout :
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) American Standard.
 - 2) Kohler Co.
 - 3) Sloan

- b. Fixture:
 - 1) Standards:
 - a) ASME A112.19.2/CSA B45.1.
 - b) ASME A112.19.5/CSA B45.15.
 - 2) Material: Vitreous china.
 - 3) Type: Washout with extended shields.
 - 4) Strainer or Trapway: Manufacturer's standard strainer with integral trap.
 - 5) Water Consumption: 0.5 gpf.
 - 6) Spud Size and Location: NPS 3/4 top.
 - 7) Outlet Size and Location: NPS 2 back.
 - 8) Color: White
- c. Flushometer Valve: Refer to plumbing fixture schedule.
- d. Waste Fitting:
 - 1) Standard: ASME A112.18.2/CSA B125.2 for coupling.
 - 2) Size: NPS 2.
- e. Support: Urinal carrier, floor affixed with steel uprights with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture.
- f. Urinal Mounting Height: Standard and Accessible in accordance with ICC A117.1.

2.5 COMMERCIAL WATER CLOSETS

A. Water Closets, Floor Mounted:

- 1. Water Closets, Floor Mounted - Bottom Outlet, Top Spud:
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) American Standard.
 - 2) Kohler Co.
 - 3) Sloan
 - b. Source Limitations: Obtain water closets from single source from single manufacturer.
 - c. Standard: ASME A112.19.2/CSA B45.1.
 - d. Bowl:
 - 1) Material: Vitreous china.
 - 2) Type: Siphon jet.
 - 3) Style: Flushometer valve.
 - 4) Height: Standard and Accessible in accordance with ICC A117.1.
 - 5) Rim Contour: Elongated.
 - 6) Water Consumption: 1.28 gal. per flush.

- 7) Spud Size and Location: NPS 1-1/2; top.
- 8) Color: White.
- e. Flushometer Valve: Refer to plumbing fixture schedule.
- f. Toilet Seat: Refer to plumbing fixture schedule.

2.6 FLUSHOMETER VALVES

A. Flushometer Valves, Manually Operated:

- 1. Flushometer Valves, Manually Operated - Diaphragm, Lever Handle
 - a. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - 1) Sloan Valve Company.
 - 2) American Standard
 - b. Source Limitations: Obtain flushometer valve from single source from single manufacturer.
 - c. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
 - d. Minimum Pressure Rating: 125 psig.
 - e. Features: Include integral check stop and backflow-prevention device.
 - f. Material: Brass body with corrosion-resistant components.
 - g. Style: Exposed.
 - h. Flushometer-Valve Finish: Chrome-plated.

2.7 TOILET SEATS

A. Toilet Seats:

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Bemis Manufacturing Company.
 - b. Kohler Co.
 - c. Church
- 2. Source Limitations: Obtain toilet seat from single source from single manufacturer.
- 3. Standard: IAPMO/ANSI Z124.5.
- 4. Material: Plastic.
- 5. Type: Commercial (Heavy duty).
- 6. Shape: Elongated rim, open front.
- 7. Hinge: Self-sustaining, check.
- 8. Hinge Material: Noncorroding metal.
- 9. Seat Cover: Not required.
- 10. Color: White.
- 11. Surface Treatment: Antimicrobial.

2.8 FIXTURE CARRIERS

A. Fixture Carriers - Lavatory :

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. WATTS; A Watts Water Technologies Company.
 - c. Zurn Industries, LLC.
2. Source Limitations: Obtain lavatory carriers from single source from single manufacturer.
3. Standards:
 - a. ASME A112.6.1M.
 - b. ASME A112.6.2.

B. Fixture Carriers - Sink

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. WATTS; A Watts Water Technologies Company.
 - c. Zurn Industries, LLC.
2. Source Limitations: Obtain sink carriers from single source from single manufacturer.
3. Standards:
 - a. ASME A112.6.1M.
 - b. ASME A112.6.2.

C. Fixture Carriers - Urinal :

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. WATTS; A Watts Water Technologies Company.
 - c. Zurn Industries, LLC.
2. Source Limitations: Obtain urinal carriers from single source from single manufacturer.
3. Standard: ASME A112.6.1M.
4. Description: Waste-fitting assembly, as required to match drainage piping material and arrangement with faceplates, couplings, gaskets, and feet; bolts and hardware matching fixture

D. Fixture Carriers - Water Closet :

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. WATTS; A Watts Water Technologies Company.
 - c. Zurn Industries, LLC.
2. Source Limitations: Obtain water closet carriers from single source from single manufacturer.
3. Standard: ASME A112.6.1M.
4. Description: Waste-fitting assembly, as required to match drainage piping material and arrangement with faceplates, couplings, gaskets, and feet; bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water-supply piping and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.
- B. Examine walls and floors for suitable conditions where plumbing fixtures will be installed.
- C. Examine counters for suitable conditions where lavatories and sinks will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF COMMERCIAL PLUMBING FIXTURES

A. Lavatory Installation:

1. Install lavatories level and plumb in accordance with roughing-in drawings.
2. Install supports, affixed to building substrate, for wall-mounted lavatories.
3. Install accessible, wall-mounted lavatories at mounting height in accordance with ICC A117.1.
4. Install water-supply piping with stop on each supply to each lavatory faucet. Install stops in locations that are accessible for ease of operation.
5. Install trap and waste piping on each drain outlet of each lavatory to be connected to sanitary drainage system.
6. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220500 "Common Work Results for Plumbing."

7. Seal joints between lavatories, counters, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."
8. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

B. Sink Installation:

1. Install sinks level and plumb in accordance with roughing-in drawings.
2. Install supports, affixed to building substrate, for wall-mounted sinks.
3. Install accessible, wall-mounted sinks at mounting height in accordance with ICC A117.1.
4. Set floor-mounted sinks in leveling bed of cement grout.
5. Install water-supply piping with stop on each supply to each sink faucet.
 - a. Exception: Use ball or gate valves if supply stops are not specified with sink. Comply with valve requirements specified in Section 220523 "General Duty Valves for Plumbing Piping."
 - b. Install stops/valves in locations that are accessible for ease of operation.
6. Install trap and waste piping on each drain outlet of each sink to be connected to sanitary drainage system.
7. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220500 "Common Work Results for Plumbing."
8. Seal joints between sinks, counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."
9. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible sinks. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

C. Urinal Installation:

1. Install urinals level and plumb in accordance with roughing-in drawings.
2. Install wall-hung, back-outlet urinals onto waste-fitting seals and attached to supports.
3. Install wall-hung, bottom-outlet urinals with tubular waste piping attached to supports.
4. Install accessible, wall-mounted urinals at mounting height in accordance with ICC A117.1.
5. Install trap-seal liquid in waterless urinals.
6. Install supports, affixed to building substrate, for wall-hung urinals.
7. Use off-floor carriers with waste fitting and seal for back-outlet urinals.
8. Use carriers without waste fitting for urinals with tubular waste piping.
9. Use chair-type carrier supports with rectangular steel uprights for accessible urinals.
10. Measure support height installation from finished floor, not structural floor.
11. Install flushometer-valve, water-supply fitting on each supply to each urinal.
12. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
13. Install lever-handle flushometer valves for accessible urinals with handle mounted on open side of compartment.

14. Install actuators in locations easily reachable for people with disabilities.
15. Install new batteries in battery-powered, electronic-sensor mechanisms.
16. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Install deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220500 "Common Work Results for Plumbing."
17. Seal joints between urinals, walls, and floors using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to urinal color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

D. Water Closet Installation:

1. Install water closets level and plumb in accordance with roughing-in drawings.
2. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
3. Install supports, affixed to building substrate, for floor-mounted, back-outlet water closets.
4. Use carrier supports with waste-fitting assembly and seal.
5. Install floor-mounted, back-outlet water closets, attached to building floor substrate, onto waste-fitting seals; and attach to support.
6. Measure support height installation from finished floor, not structural floor.
7. Install flushometer-valve, water-supply fitting on each supply to each water closet.
8. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
9. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.
10. Install actuators in locations easily reachable for people with disabilities.
11. Install toilet seats on water closets.
12. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Install deep-pattern escutcheons if required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220500 "Common Work Results for Plumbing."
13. Seal joints between water closets, walls, and floors using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to water-closet color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 INSTALLATION OF PIPING CONNECTIONS

- A. Connect plumbing fixtures with water supplies and soil, waste, and vent piping. Use size fittings required to match plumbing fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Comply with soil, waste, and vent piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."
- D. Install protective-shielding pipe covers and enclosures on exposed supplies and waste piping of accessible plumbing fixtures. Comply with requirements in Section 220719 "Plumbing Piping Insulation."

- E. Where installing piping adjacent to water closets and urinals, allow space for service and maintenance.

3.4 ADJUSTING

- A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning plumbing fixtures, fittings, and controls.
- B. Adjust water pressure at faucets to produce proper flow.
- C. Adjust water pressure at flushometer valves to produce proper flow.

3.5 CLEANING AND PROTECTION

- A. After completing installation of plumbing fixtures, inspect and repair damages finishes. Replace any fixtures unable to be repaired to the satisfaction of the Owner.
- B. Clean plumbing fixtures and associated faucets, valves, flushometer valves, and fittings with manufacturers' recommended cleaning methods and materials.
- C. Provide protective covering for installed plumbing fixtures and associated faucets, valves, flushometer valves, and fittings.
- D. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224200