

SECTION 224200 - COMMERCIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes
 1. Water Closets
 2. Urinals
 3. Lavatories
 4. Sinks
 5. Water Coolers
 6. Mop Basin

1.3 DEFINITIONS

- A. Effective Flush Volume: Average of two reduced flushes and one full flush per fixture.
- B. FRP: Fiberglass-reinforced plastic.
- C. PMMA: Polymethyl methacrylate, also known as "acrylic."
- D. Remote Water Closet: Located more than 30 feet from other drain line connections or fixture and where less than 1.5 drainage fixture units are upstream of the drain line connection.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. Water closets: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 2. Urinals: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 3. Lavatories: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 4. Sinks: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 5. Water Coolers: Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
 6. Mop Basins: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes

7. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data:
 1. For flushometer valves and electronic sensors to include in operation and maintenance manuals.
- B. Servicing and adjustments for automatic faucets.
- C. Maintenance Data: For pressure water coolers and bottle filling stations to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.
 1. Water Closet Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than one of each type.
 2. Urinal Flushometer-Valve Repair Kits: Equal to 10 percent of amount of each type installed, but no fewer than one of each type
 3. Lavatory Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
 4. Lavatory Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.
 5. Water Cooler Filter Cartridges: Equal to 10 percent of quantity installed for each type and size indicated, but no fewer than 1 of each.
 6. Service Faucet Washers and O-Rings: Equal to 10 percent of amount of each type and size installed.
 7. Service Faucet Cartridges and O-Rings: Equal to 5 percent of amount of each type and size installed.

PART 2 - PRODUCTS

- 2.1 Refer to drawing **P0.01 PLUMBING LEGEND, NOTES AND SCHEDULES** for basis of design fixture specifications and alternate manufacturers.

2.2 PERFORMANCE REQUIREMENTS

- A. Lavatory
 1. Lavatory faucets intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61/NSF 372, or be certified in compliance with NSF 61/NSF 372 by an American National Standards Institute (ANSI) accredited third-

party certification body, that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

B. Water Cooler

1. Pressure water coolers and bottle filling stations intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 or NSF 372, or be certified in compliance with NSF 61 or NSF 372 by an ANSI-accredited third-party certification body, that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.
2. Comply with ASHRAE 34 for water coolers. Provide HFC 134a (tetrafluoroethane) refrigerant unless otherwise indicated.
3. Comply with UL 399.
4. Comply with ASME A112.19.3/CSA B45.4.
5. 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.
6. Comply with NSF 42 and NSF 53 for water filters for water coolers and bottle filling stations.
7. Comply with ICC A117.1 for accessible water coolers and bottle filling stations.

2.3 GROUT

- A. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- B. Characteristics: Non-shrink; recommended for interior and exterior applications.
- C. Design Mix: 5000 psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before water-closet, urinal, lavatory, sink, water cooler, and[mop basin] installation.
- B. Examine walls and floors for suitable conditions where water-closet, urinal, lavatory, sink, water cooler, and[mop basin] will be installed.
- C. Examine walls and 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, GENERAL

A. Water-Closet Installation:

- a. Install level and plumb according to roughing-in drawings.
 - b. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
 - c. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, according to ICC/ANSI A117.1.
2. Flushometer-Valve Installation:
- a. Install flushometer-valve, water-supply fitting on each supply to each water closet.
 - b. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
 - c. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.
 - d. Install actuators in locations that are easy for people with disabilities to reach.
 - e. Install fresh batteries in battery-powered, electronic-sensor mechanisms.
 - f. Provide YJ Bracket on flush valve top spud.
3. Install toilet seats on water closets.
4. Wall Flange and Escutcheon Installation:
- a. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
 - b. Install deep-pattern escutcheons if required to conceal protruding fittings.
 - c. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
5. Joint Sealing:
- a. Seal joints between water closets and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
 - b. Match sealant color to water-closet color.
 - c. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

B. Urinal Installation:

- a. Install urinals level and plumb according to rough-in drawings.
 - b. Install wall-hung, back-outlet urinals onto waste fitting seals and attached to supports.
 - c. Install wall-hung, bottom-outlet urinals with tubular waste piping attached to supports.
 - d. Install accessible, wall-mounted urinals at mounting height for the handicapped/elderly, according to ICC A117.1.
2. Support Installation:
- a. Install supports, affixed to building substrate, for wall-hung urinals.
 - b. Use off-floor carriers with waste fitting and seal for back-outlet urinals.
 - c. Use carriers without waste fitting for urinals with tubular waste piping.
 - d. Use chair-type carrier supports with rectangular steel uprights for accessible urinals.
3. Flushometer-Valve Installation:
- a. Install flushometer-valve water-supply fitting on each supply to each urinal.
 - b. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
 - c. Install lever-handle flushometer valves for accessible urinals with handle mounted on open side of compartment.
 - d. Install fresh batteries in battery-powered, electronic-sensor mechanisms.
4. Wall Flange and Escutcheon Installation:

- a. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations.
 - b. Install deep-pattern escutcheons if required to conceal protruding fittings.
 - c. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
 5. Joint Sealing:
 - a. Seal joints between urinals and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
 - b. Match sealant color to urinal color.
 - c. Comply with sealant requirements specified in Section 079200 "Joint Sealants."
- C. 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 handicapped/elderly mounting height for people with disabilities or the elderly, in accordance with ICC A117.1.
 4. 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 220518 "Escutcheons for Plumbing Piping."
 5. 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."
 6. 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."
 7. Provide thermostatic protection at all lavatories. Thermostatic mixing valve shall conform to ASSE 1070. Set outlet temperature to 105 degrees Fahrenheit.
- D. Sink Installation
 1. Install sinks level and plumb in accordance with rough-in drawings.
 2. Install supports, affixed to building substrate, for wall-hung sinks.
 3. Install wall-mounted sinks at accessible 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 valves if supply stops are not specified with sink. Comply with valve requirements specified in Section 220523 "Valves for Plumbing Piping".
 - b. Install stops in locations where they can be easily reached for operation.
 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 220518 "Escutcheons for Plumbing Piping."
 7. Seal joints between sinks and 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."
 8. 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."
- E. Water Cooler Installation

1. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.
2. Set freestanding, pressure water coolers on floor.
3. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.
4. Install mounting frames, affixed to building construction, and attach recessed, pressure water coolers, and bottle filling stations to mounting frames.
5. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523 "Valves for Plumbing Piping"
6. Install trap and waste piping on drain outlet of each fixture 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 where required to conceal protruding fittings. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."
8. Seal joints between fixtures 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."

F. Mop Basin Installation

1. Install mop basin level and plumb in accordance with rough-in drawings.
2. Set floor-mounted sinks in leveling bed of cement grout.
3. Use ball valves with mop basin service faucet. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping".
4. 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 220518 "Escutcheons for Plumbing Piping."
5. Seal joints between mop basin and 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."

3.3 CONNECTIONS

- A. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- B. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."
- C. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.
- D. Connect urinals with water supplies and soil, waste, and vent piping. Use size fittings required to match urinals.
- E. Where installing piping adjacent to water closets, allow space for service and maintenance.
- F. Where installing piping adjacent to urinals, allow space for service and maintenance.

- G. Install shutoff valve on water supply to each fixture. Install valve upstream from filter for water cooler. Comply with valve requirements specified in Section 220523 "Valves for Plumbing Piping".
- H. Connect lavatories with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- I. Connect sinks with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- J. Connect water coolers with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- K. Connect mop basin with water supplies, ball valves, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

3.4 ELECTRICAL CONNECTIONS

- A. Ground equipment according to "Grounding and Bonding for Electrical Systems."
- B. Install electrical devices furnished by manufacturer, but not factory mounted, according to NFPA 70 and NECA 1.

3.5 ADJUSTING

- A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, fittings, and controls.
- B. Operate and adjust urinals and controls. Replace damaged and malfunctioning urinals, fittings, and controls.
- C. Adjust water pressure at flushometer valves to produce proper flow.
- D. Operate and adjust lavatory and controls. Replace damaged and malfunctioning lavatory, fittings, and controls.
- E. Operate and adjust sinks and controls. Replace damaged and malfunctioning sinks, fittings, and controls.
- F. Install fresh batteries in battery-powered, electronic-sensor mechanisms.
- G. Adjust fixture flow regulators for proper flow and stream height.
- H. Adjust pressure water-cooler temperature settings.
- I. Operate and adjust service faucet with mop basin. Replace if damaged or malfunctioning.

3.6 CLEANING AND PROTECTION

- A. Water Closets
 - 1. Clean water closets and fittings with manufacturers' recommended cleaning methods and materials.
 - 2. Install protective covering for installed water closets and fittings.
 - 3. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.
- B. Urinals
 - 1. Clean urinals and fittings with manufacturers' recommended cleaning methods and materials.
 - 2. Install protective covering for installed urinals and fittings.
 - 3. Do not allow use of urinals for temporary facilities unless approved in writing by Owner.
- C. Lavatories
 - 1. After completing installation of lavatories, inspect and repair damaged finishes.
 - 2. Clean lavatories, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
 - 3. Provide protective covering for installed lavatories and fittings.
 - 4. Do not allow use of lavatories for temporary facilities unless approved in writing by Owner.
- D. Sinks
 - 1. After completing installation of sinks, inspect and repair damaged finishes.
 - 2. Clean sinks, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
 - 3. Provide protective covering for installed sinks and fittings.
 - 4. Do not allow use of sinks for temporary facilities unless approved in writing by Owner.
- E. Water Coolers
 - 1. After installing fixture, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
 - 2. Clean fixtures, on completion of installation, according to manufacturer's written instructions.
 - 3. Provide protective covering for installed fixtures.
 - 4. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.
- F. Mop Bains
 - 1. After completing installation of mop basin, inspect and repair damaged finishes.
 - 2. Clean mop basin, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.
 - 3. Provide protective covering for installed mop basin and service faucet.
 - 4. Do not allow use of mop basin for temporary facilities unless approved in writing by Owner.

END OF SECTION 224200