

SECTION 22 4000 - 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. This Section includes the following:
 - 1. Faucets for lavatories and showers.
 - 2. Flushometers for water closets and urinals.
 - 3. Toilet seats.
 - 4. Protective shielding guards.
 - 5. Fixture supports.
 - 6. Water closets.
 - 7. Urinals.
 - 8. Water Coolers / Bottle Filling Stations
 - 9. Lavatories.
 - 10. Sinks and sink faucets.
 - 11. Service sinks and faucets.
 - 12. Mop sinks and faucets.
 - 13. Lab faucets.
 - 14. Shower cabinets.
 - 15. Shower receptors.

- B. Related Sections include the following:
 - 1. Section 22 1118 "Domestic Water Distribution System."
 - 2. Section 22 2114 "Plumbing Specialties."

1.3 DEFINITIONS

- A. ABS: Acrylonitrile-butadiene-styrene plastic.
- B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.
- C. FRP: Fiberglass-reinforced plastic.
- D. PMMA: Polymethyl methacrylate (acrylic) plastic.
- E. PVC: Polyvinyl chloride plastic.

- F. Solid Surface: Nonporous, homogeneous, cast-polymer-plastic material with heat-, impact-, scratch-, and stain-resistance qualities.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated, and including fixture/item dimensions and rough-in dimensions.

- B. *[LEED Submittal:***

- 1. *Product Data for Credit WE 2, 3.1, and 3.2: Documentation indicating flow and water consumption requirements.***
- 2. *Compliance documentation for meeting California Health and Safety Code 116875 (AB 1953) - 2010, for 25% low lead content of piping, pipe fittings, and faucets for water intended for human consumption, and NSF/ANSI Standard 61, including Annex G-2010 - Drinking Water System Components - Low Lead Content Requirement.]***

- C. Shop Drawings: Diagram power, signal, and control wiring, and for fixture supports and carriers.

- D. Operation and maintenance data.

- E. At closeout, Northwestern University Maintenance Requirement Forms, see Division 01 for more information.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

- B. Regulatory Requirements: Comply with requirements in ICC A117.1, "Accessible and Usable Buildings and Facilities"; Public Law 90-480, "Architectural Barriers Act"; and Public Law 101-336, "Americans with Disabilities Act"; and Illinois Accessibility Code for plumbing fixtures for people with disabilities.

- C. Regulatory Requirements: Comply with requirements in Public Law 102-486, "Energy Policy Act," about water flow and consumption rates for plumbing fixtures.

- D. Comply with California Health and Safety Code 116875 (AB 1953) - 2010, for 25% low lead content of piping, pipe fittings, and faucets for water intended for human consumption, and NSF/ANSI Standard 61, including Annex G-2010 - Drinking Water System Components - Low Lead Content Requirement.

- E. Comply with NSF/ANSI 372 - Low Lead Content Verification Requirement

- F. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

- G. Comply with the following applicable standards and other requirements specified for plumbing fixtures:

1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
2. Stainless-Steel Sinks: ASME A112.19.3.
3. Vitreous-China Fixtures: ASME A112.19.2M.
4. Water-Closet, Flush Valve, Tank Trim: ASME A112.19.5.
5. Water-Closet, Flushometer Tank Trim: ASSE 1037.

H. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:

1. Backflow Protection Devices for Faucets with Side Spray: ASME A112.18.3M.
2. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
3. Diverter Valves for Faucets with Hose Spray: ASSE 1025.
4. Faucets: ASME A112.18.1.
5. Hose-Connection Vacuum Breakers: ASSE 1011.
6. Hose-Coupling Threads: ASME B1.20.7.
7. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
8. NSF Potable-Water Materials: NSF 61.
9. Pipe Threads: ASME B1.20.1.
10. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
11. Supply Fittings: ASME A112.18.1.
12. Brass Waste Fittings: ASME A112.18.2.

I. Comply with the following applicable standards and other requirements specified for shower faucets:

1. Backflow Protection Devices for Hand-Held Showers: ASME A112.18.3M.
2. Combination, Pressure-Equalizing and Thermostatic-Control Antiscald Faucets: ASSE 1016.
3. Faucets: ASME A112.18.1.
4. Hand-Held Showers: ASSE 1014.
5. High-Temperature-Limit Controls for Thermal-Shock-Preventing Devices: ASTM F 445.
6. Hose-Coupling Threads: ASME B1.20.7.
7. Manual-Control Antiscald Faucets: ASTM F 444.
8. Pipe Threads: ASME B1.20.1.
9. Pressure-Equalizing-Control Antiscald Faucets: ASTM F 444 and ASSE 1016 or ASSE 1070.
10. Sensor-Actuated Faucets and Electrical Devices: UL 1951.
11. Thermostatic-Control Antiscald Faucets: ASTM F 444 and ASSE 1016.

J. Comply with the following applicable standards and other requirements specified for miscellaneous fittings:

1. Atmospheric Vacuum Breakers: ASSE 1001.
2. Brass and Copper Supplies: ASME A112.18.1.
3. Manual-Operation Flushometers: ASSE 1037.
4. Plastic Tubular Fittings: ASTM F 409.
5. Brass Waste Fittings: ASME A112.18.2.
6. Sensor-Operation Flushometers: ASSE 1037 and UL 1951.

K. Comply with the following applicable standards and other requirements specified for miscellaneous components:

1. Flexible Water Connectors: ASME A112.18.6.
2. Hose-Coupling Threads: ASME B1.20.7.

3. Off-Floor Fixture Supports: ASME A112.6.1M.
4. Pipe Threads: ASME B1.20.1.
5. Plastic Toilet Seats: ANSI Z124.5-2013.
6. Supply and Drain Protective Shielding Guards: ICC A117.1.

1.6 SPECIAL WARRANTIES

- A. Five (5) years, see Division 01 for more information.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. For flushing fixtures, lavatories, showers, service sinks, and mop sinks specified below, subject to compliance with requirements, provide the products indicated in the Fixture Schedule on the drawings, or a comparable product by one of the following:
 1. Kohler (preferred).
 2. American Standard (acceptable alternate).
 3. Geberit
- B. For Non-Lab duty faucets, subject to compliance with requirements, provide the products indicated in the Fixture Schedule on the drawings, or a comparable product by one of the following:
 1. Chicago Faucet.
 2. Kohler.
 3. Moen.
 4. Sloan Valve.
- C. For water closet and urinal flushometers, subject to compliance with requirements, provide the products indicated in the Fixture Schedule on the drawings, or a comparable product by one of the following:
 1. Moen (preferred).
 2. Sloan Valve.

2.2 LAVATORY FAUCETS

- A. Lavatory Faucets, **L-1 or LF-1**:
 1. Description: Single-control manual mixing valve. Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
 - a. Body Material: Commercial, solid brass.
 - b. Finish: Polished chrome plate.
 - c. Maximum Flow Rate: 0.5 gpm.
 - d. Centers: 4 inches.
 - e. Mounting: Deck, exposed.
 - f. Valve Handle: Lever.

- g. Inlets: NPS 3/8 tubing, with NPS 1/2 male adaptor.
- h. Spout: Rigid type.
- i. Spout Outlet: Spray, 0.5 gpm.
- j. Operation: Non-compression, manual.
- k. Drain: Grid.

****OR****

B. Lavatory Faucets, L-1 or LF-1:

1. Description: ADA compliant, electrically powered, sensor operated faucet. Coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
 - a. Body Material: Commercial, solid brass.
 - b. Finish: Polished chrome plate.
 - c. Maximum Flow Rate: 0.5 gpm.
 - d. Centers: 4 inches.
 - e. Mounting: Deck, exposed.
 - f. Inlet(s): NPS 3/8 tubing, with NPS 1/2 male adaptor.
 - g. Spout: Rigid type.
 - h. Spout Outlet: Laminar flow, 0.5 gpm.
 - i. Operation: sensor actuator, hardwired.
 - j. Drain: Grid.
 - k. Undercounter thermostatic mixing valve, adjustable brass with vandal-resistant cap, hot and cold check valves, and stainless steel internal strainer,

C. Lavatory Faucets, L-2 or LF-2:

1. Description: Single-control manual mixing valve. Include hot and cold water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
 - a. Body Material: Commercial, solid brass.
 - b. Finish: Polished chrome plate.
 - c. Maximum Flow Rate: 0.5 gpm.
 - d. Centers: 8 inches.
 - e. Mounting: Deck, exposed.
 - f. Valve Handle: Lever.
 - g. Inlets: NPS 3/8 tubing, with NPS 1/2 male adaptor.
 - h. Spout: Swing gooseneck, with dimensions to best serve lavatory use in each location.
 - i. Spout Outlet: Laminar flow, 0.5 gpm.
 - j. Operation: Non-compression, manual.
 - k. Drain: Grid.

****OR****

D. Lavatory Faucets, L-2 or LF-2:

1. Description: ADA compliant, electrically powered, sensor operated faucet. Coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.

- a. Body Material: Commercial, solid brass.
- b. Finish: Polished chrome plate.
- c. Maximum Flow Rate: 0.5 gpm.
- d. Centers: 8 inches.
- e. Mounting: Deck, exposed.
- f. Inlet(s): NPS 3/8 tubing, with NPS 1/2 male adaptor.
- g. Spout: Swing gooseneck, with dimensions to best serve lavatory use in each location Rigid type.
- h. Spout Outlet: Laminar flow, 0.5 gpm.
- i. Operation: sensor actuator, hardwired.
- j. Drain: Grid.
- k. Undercounter thermostatic mixing valve, adjustable brass with vandal-resistant cap, hot and cold check valves, and stainless steel internal strainer,

2.3 SHOWER FAUCETS

A. Shower Faucets, **SH-1**:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated the following:
 - a. Moen Commercial
 - b. Kohler
2. Description: Single-handle pressure-balance valve. Include hot- and cold-water indicators; check stops; and shower head, arm, and flange. Coordinate faucet inlets with supplies and outlet with diverter valve.
 - a. Valve Body Material: Solid brass.
 - b. Valve Body Finish: Polished chrome plate.
 - c. Maximum Flow Rate: 2.5 gpm.
 - d. Mounting: Concealed.
 - e. Antiscald Device: Integral with mixing valve.
 - f. Check Stops: Check-valve type, integral with or attached to body; on hot- and cold-water supply connections.
 - g. Supply Connections: 1/2" NPT.
 - h. Shower Head Type: Ball standard institutional showerhead with mounting flange.
 - i. Shower Head Material: Chrome plated brass arm with stainless steel wall flange.
 - j. Spray Pattern: Adjustable.
 - k. Integral Volume Control: Not required.
 - l. Shower-Arm Flow-Control Fitting: 1.5 gpm.

B. Shower Faucets, **SH-2**:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated by the following:
 - a. Moen Commercial
 - b. Kohler
2. Description: Prefabricated stainless steel shower unit with a single-handle pressure-balance valve. Include hot- and cold-water indicators; check stops; and shower head, arm, and flange, and hand held shower with 24" slide bar.

- a. Valve Body Material: Solid brass.
- b. Valve Body Finish: Polished chrome plate.
- c. Shroud: 18 gage stainless steel brushed finish with extension to conceal piping thru ceiling.
- d. Maximum Flow Rate: 2.0 gpm.
- e. Mounting: Exposed.
- f. Backflow Protection Device for Hand-Held Shower: Required.
- g. Antiscald Device: Integral with mixing valve.
- h. Check Stops: Check-valve type, integral with or attached to body; on hot- and cold-water supply connections.
- i. Supply Connections: Sweat.
- j. Shower Head Type: Ball joint and head integral with mounting flange and hand held, slide-bar mounted spray head.
- k. Shower Head Material: Metallic with chrome-plated finish.
- l. Spray Pattern: Adjustable.
- m. Diverter Valve: Required.
- n. Integral Volume Control: Not required.
- o. Shower-Arm Flow-Control Fitting: 1.5 gpm.

2.4 FLUSHOMETERS

A. Water Closet Flushometers, **WC-1 & -2**:

1. Description: Exposed, electrically powered, sensor operated, piston type flushometer for water-closet-type fixture. Include brass body with corrosion-resistant internal components, control stop with check valve, vacuum breaker, copper or brass tubing, and polished chrome-plated finish on exposed parts.
 - a. Internal Design: Piston operation.
 - b. Style: Exposed.
 - c. Inlet Size: NPS 1.
 - d. Trip Mechanism: Battery powered operated sensor actuator.
 - e. Consumption: 1.6 [**1.28**] gal/flush.
 - f. Tailpiece Size: NPS 1-1/2 and standard length to top of bowl.
 - g. Manual override button.

B. Flushometers, **UR-1 & -2**:

1. Description: Exposed, electrically powered, sensor operated, piston type flushometer for urinal-type fixture. Include brass body with corrosion-resistant internal components, control stop with check valve, vacuum breaker, copper or brass tubing, and polished chrome-plated finish on exposed parts.
 - a. Internal Design: Piston operation.
 - b. Style: Exposed.
 - c. Inlet Size: NPS 3/4.
 - d. Trip Mechanism: Battery powered operated sensor actuator.
 - e. Consumption: 0.5 [**0.125**] gal/flush.
 - f. Tailpiece Size: NPS 3/4 and standard length to top of urinal.
 - g. Manual override button.

2.5 TOILET SEATS

A. Toilet Seats:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Bemis Manufacturing Company, Duraguard (Basis of Design).
 - c. Church Seats.
 - d. Olsonite Corp.
2. Description: Toilet seat for water-closet-type fixture, heavy duty commercial.
 - a. Material: Molded, solid plastic with antimicrobial agent.
 - b. Configuration: Open front without cover.
 - c. Size: To fit bowl.
 - d. Hinge Type: Self-sustaining.
 - e. Class: Heavy-duty commercial.
 - f. Color: White.
 - g. Fasteners: 300 series stainless steel.

2.6 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Plumberex Specialty Products Inc.
 - b. TRUEBRO, Inc.
 - c. Zurn Plumbing Products Group; Tubular Brass Plumbing Products Operation.
2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) and Illinois Accessibility Code requirements.

2.7 FIXTURE SUPPORTS

A. Manufacturers for Water Closet Supports: Subject to compliance with requirements, provide products by one of the following:

1. Josam Company
2. Smith, Jay R. Mfg. Co.
3. Tyler Pipe; Wade Div.
4. Zurn Plumbing Products Group; Specification Drainage Operation.
5. Geberit

B. Water-Closet Supports:

1. Description: Combination carrier designed for accessible or standard mounting as indicated on drawings, for height of wall-mounting, water-closet-type fixture. Include single or double, vertical or horizontal, hub-and-spigot or hubless waste fitting as required

for piping arrangement; faceplates; couplings with gaskets; feet; and fixture bolts and hardware matching fixture. Include additional extension coupling, faceplate, and feet for installation in wide pipe space. Carrier must meet the 500 lb. minimum load bearing requirements of ASME A112.19.2-2005/CSA B45.1-05.

C. Urinal Supports:

1. Description: Wall plate.

D. Lavatory Supports:

1. Description: Wall plate.

E. Water Cooler Supports:

1. Wall plates.

2.8 WATER CLOSETS

A. Water Closets, **WC-1 & WC-2**:

1. Description: Accessible, wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.
 - a. Bowl Type: Elongated with siphon-jet design. Include bolt caps matching fixture.
 - b. Surface: Antimicrobial surface which inhibits the growth of stain and odor causing bacteria.
 - c. Height: Standard for **WC-1** and ADA for **WC-2**.
 - d. Design Consumption: 1.6 **[1.28]** gal/flush.
 - e. Color: White.
 - f. Basis of Design: Kohler K-4325-0 "Kingston" model.

2. Description: Accessible, floor-mounting, bottom outlet, vitreous-china fixture designed for flushometer valve operation.
 - a. Bowl Type: Elongated with siphon-jet design. Include bolt caps matching fixture.
 - b. Surface: Antimicrobial surface which inhibits the growth of stain and odor causing bacteria.
 - c. Height: Standard for **WC-1** and ADA for **WC-2**.
 - d. Design Consumption: 1.6 **[1.28]** gal/flush.
 - e. Color: White.
 - f. Basis of Design: Kohler K-4302-0 "Highcrest" model

3. Description: Accessible, floor-mounting, tank type, bottom outlet, vitreous-china fixture.
 - a. Bowl Type: Elongated with siphon-jet design. Include bolt caps matching fixture.
 - b. Surface: Antimicrobial surface which inhibits the growth of stain and odor causing bacteria.
 - c. Height: Standard for **WC-1** and ADA for **WC-2**.
 - d. Design Consumption: 1.6 **[1.28]** gal/flush.
 - e. Color: White.
 - f. Basis of Design: Kohler K-3887-0 "Cimarron" model.

2.9 URINALS

A. Urinals, **UR-1 & UR-2**:

1. Description: Accessible, wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.
 - a. Type: Siphon jet.
 - b. Strainer or Trapway: Integral cast strainer with integral trap.
 - c. Design Consumption: 0.5 gal/flush.
 - d. Color: White.
 - e. Supply Spud Size: $\frac{3}{4}$ inch.
 - f. Outlet Size: 2 inch.
 - g. Height: 24 inch for **UR-1** & 17 inch for **UR-2**.
 - h. Basis of Design: Kohler Dexter K-5016-ET-0.

2.10 WATER COOLERS / BOTTLE FILLING STATIONS

A. Water Cooler, **DF-1**:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Elkay.
 - b. Oasis
2. Description: Bi-level ADA Cooler with or without a Bottle Filling Station. High efficiency Filtered Refrigerated. Stainless. 8.0 GPH Chilling capacity. Electronic bottle filler sensor.

2.11 LAVATORIES

A. Lavatories, **L-1**:

1. Description: Accessible, wall mounted, vitreous-china fixture.
 - a. Type: Wall mounted with front overflow and backsplash.
 - b. Size (nominal): XX [20] by XX [18] inches.**
 - c. Faucet Hole Punching: [4 inch centers] [8 inch centers].**
 - d. Color: White.
 - e. Supplies: $\frac{3}{8}$ inch chrome-plated copper with stops.
 - f. Drain: Grid
 - g. Drain Piping: 1-1/4 by 1-1/2 inch chrome-plated, cast-brass P-trap; 1-1/2 inch, 0.045-inch- thick tubular brass waste to wall; and wall escutcheon.
 - h. Fixture Support: Required.
 - i. Protective Shielding Guards: Required.
 - j. Basis of Design: Kohler K-2030-0 "Greenwich" for 8" centers, Kohler K-2032-0 "Greenwich" for 4" centers.

B. Lavatories, **L-2**:

1. Description: Accessible, countertop, vitreous-china fixture.

- a. Type: Self-rimming countertop type with front overflow.
- b. **Size (nominal): XX [20] by xx [18] inches.**
- c. **Faucet Hole Punching: [4 inch centers] [8 inch centers].**
- d. Color: White.
- e. Supplies: NPS 3/8 chrome-plated copper with stops.
- f. Drain: Grid.
- g. Drain Piping: 1-1/4 x 1-1/2 inch chrome-plated, cast-brass P-trap; 1-1/2 inch, 0.045-inch- thick tubular brass waste to wall; and wall escutcheon.
- h. Protective Shielding Guards: Required.
- i. Basis of Design: Kohler K-2337-8 "Memoirs" for 8" centers, Kohler K-2337-"Memoirs" for 4" centers.

2.12 SINKS

A. Sinks, **S-1 & S-2**:

1. Subject to compliance with requirements, provide the product indicated in the Fixture Schedule on the drawings or a comparable product by one of the following:
 - a. Elkay.
 - b. Just Manufacturing Company.
 - c. Moen Commercial
2. Description: One or Two-bowl, as indicated below or as scheduled, counter-mounted, self rimming stainless-steel sink.
 - a. **Overall Dimensions: (S-1)17 x16 inch single bowl, and/or (S-2) 43 x22 inch double bowl (S-2).**
 - b. Metal Thickness: 18 gauge Type 304 stainless steel.
 - c. **Bowl Dimensions: (S-1) 14 x10 x 6½ inches and (S-2) 19 x16 x 7 5/8 inches.**
 - d. Drain: 3-1/2-inch crumb cup strainers centered in bowls.
 - e. Sink Faucet: Polished chrome plated body, gooseneck swing spout, lever handles, ADA design, and 1.5 GPM aerator.
 - f. **Faucet Hole Punching: [4 inch centers] [8 inch centers] [other - specify].**
 - g. Supplies: ½ inch chrome-plated copper with stops.
 - h. Drain Piping: 1½ inch chrome-plated, cast-brass P-trap; 0.045 inch thick tubular brass waste to wall, and wall escutcheon.

2.13 SERVICE SINKS

A. Service Sinks, **SS**:

1. Description: Trap-standard- and wall-mounting, enameled, cast-iron fixture with roll-rim two faucet holes in back and rim guard on front and sides.
 - a. **Size: 22 by 18 inches.**
 - b. Color: White.
 - c. Faucet: Sink mount utility type with lever handles, bucket hook, stops, vacuum breaker, spout support, and polished chrome finish. Chicago Faucet (preferred), or approved equal. No threads allowed spouts.
 - d. Drain: Grid with NPS 3 outlet.
 - e. Trap Standard: NPS 3 enameled, cast iron with cleanout and floor flange.
 - f. Fixture Support: Wall hanger furnished with sink.

2.14 MOP SINKS

A. Mop Sinks **MS**:

1. Description: Floor mounted, corner type enameled, terrazzo [**or fiberglass**] fixture with vinyl rim guard.
 - a. Size: 24 by 24 inches (minimum).
 - b. Color: White.
 - c. Faucet: Wall mount type with polished chrome finish, wall brace, vacuum breaker, lever handles, and stops.
 - d. Drain: Grid with NPS 3 outlet.
 - e. Basis of Design: Moen faucet, hose and mop bracket, integral checks, and stainless steel wall guards. No threads allowed on spouts.

2.15 LAB FAUCETS

A. Manufacturers: Subject to compliance with requirements, and if not provided with lab casework or by others, provide products by one of the following:

1. Chicago Faucet.
2. Water Saver.
3. Description: Dual handle, manual mixing valve model, ANSI 112.18.1, NSF 61, ADA ANSI/ICC A117.1. Include hot and cold water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.
 - a. Body Material: Commercial, solid brass.
 - b. Finish: Polished chrome plate.
 - c. Maximum Flow Rate: 1.5 gpm.
 - d. Centers: 8 inches.
 - e. Mounting: Deck, exposed.
 - f. Valve Handles: 4" vandal proof wristblades with hot/cold colorized markings.
 - g. Inlets: NPS 3/8 tubing, with NPS 1/2 male adaptor.
 - h. Spout: Swing gooseneck type.
 - i. Spray: Male rose.
 - j. Operation: Rebuildable compression cartridge manual.
 - k. Chicago Faucet 786 Series, or approved equal.

2.16 SHOWER CABINETS

A. Shower Cabinets **SC**:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated in the Fixture Schedule on the drawings or a comparable product by one of the following:
 - a. Fiat.
 - b. Florestone.
 - c. Stern-Williams
2. Description: Single access front opening cabinet with terrazzo base, soap dish, curtain rod, and curtain.

- a. Size: 36 x 36 x 82 inches.
- b. Floor: Terrazzo.
- c. Surround: Galvanized steel insulated sandwich panels with baked enamel finish.
- d. Color: White.
- e. Drain Location: Center.
- f. Drain: 2 inch stainless steel with grid strainer.
- g. Faucet and Head: Chrome plated single lever pressure balanced mixing valve with concealed check stops, bent arm and 1.5 GPM shower head.

B. Shower Cabinets HSC:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated in the Fixture Schedule on the drawings or a comparable product by one of the following:
 - a. Fiat.
 - b. Florestone.
 - c. Stern-Williams.
2. Description: Barrier-free ADA compliant shower cabinet with terrazzo base, soap dish, curtain rod, and weighted curtain.
 - a. Size: 39 x 39 x 82 inches.
 - b. Floor: Terrazzo.
 - c. Surround: Galvanized steel insulated sandwich panels with baked enamel finish.
 - d. Color: White.
 - e. Drain Location: Center.
 - f. Drain: 2 inch stainless steel with grid strainer.
 - g. Faucet: Chrome plated single lever pressure balanced mixing valve with concealed check stops.
 - h. ADA Options:
 - 1) Horizontal corner and vertical stainless steel grab bars.
 - 2) Folding wheelchair transfer seat.
 - 3) Wall hung shower head with 24 inch slide bar, stainless steel hose, and inline vacuum breaker.
 - i. Seat and Shower Head Locations: As indicated on the drawings.

2.17 SHOWER RECEPTORS**A. Shower Receptors SR:**

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated in the Fixture Schedule on the drawings or a comparable product by one of the following:
 - a. Fiat.
 - b. Florestone.
 - c. Stern-Williams.
2. Description: Precast-terrazzo base for field built shower walls.

- a. Type: Standard with 4 inch high shoulders and rabbets where called for in schedule on the drawings.
- b. Size: 36 x36 inches.
- c. Color: White.
- d. Drain: Cast-in stainless steel 2 inch drain body with removable grid strainer.
- e. Drain Location: Center.

B. Shower Receptors HSR:

1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated in the Fixture Schedule on the drawings or a comparable product by one of the following:
 - a. Fiat.
 - b. Florestone.
 - c. Stern-Williams.
2. Description: Wheelchair accessible Precast-terrazzo base for field built shower walls.
 - a. Type: ADA compliant with 4 inch high shoulders on three sides and entrance arranged for 2" floor depression.
 - b. Size: 36 x36 inches.
 - c. Color: White.
 - d. Drain: Cast-in stainless steel 2 inch drain body with removable strainer.
 - e. Drain Location: Center.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers' written instructions.
- B. Install off-floor supports, affixed to building substrate, for wall-mounting fixtures.
 1. Use carrier supports with waste fitting and seal for back-outlet fixtures.
 2. Use carrier supports without waste fitting for fixtures with tubular waste piping.
 3. Use chair-type carrier supports with rectangular steel uprights for accessible fixtures.
- C. Install back-outlet, wall-mounting fixtures onto waste fitting seals and attach to supports.
- D. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.
- E. Install wall-mounting fixtures with tubular waste piping attached to supports.
- F. Install fixtures level and plumb according to roughing-in drawings.
- G. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

- H. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.
- I. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.
- J. Install flushometer valves for accessible water closets and urinals with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
- K. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.
- L. Install toilet seats on water closets.
- M. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- N. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.
- O. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- P. Install shower flow-control fittings with specified maximum flow rates in shower arms.
- Q. Install traps on fixture outlets.
 - 1. Exception: Omit trap on fixtures with integral traps.
 - 2. Exception: Omit trap on indirect wastes, unless otherwise indicated.
- R.** Install escutcheons at piping wall and ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings. Escutcheons are specified in ***Division 22 Section "Escutcheons for Plumbing Piping."***
- S.** Seal joints between fixtures and walls, floors, and countertops using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Sealants are specified in ***Division 07 Section "Joint Sealants."***

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- C. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- D. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.3 FIELD QUALITY CONTROL

- A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.
- B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.
- C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.
- D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.
- E. Install fresh batteries in sensor-operated mechanisms.

3.4 PROTECTION

- A. Provide protective covering for installed fixtures and fittings.
- B. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 22 4000