

SECTION 224200 – PLUMBING FIXTURES AND ACCESSORIES

Latest Edition 06-01-2021 See Underlined Text for Edits

(Engineer shall edit specifications and blue text in header to meet project requirements. This includes but is not limited to updating Equipment and/or Material Model Numbers indicated in the specifications and adding any additional specifications that may be required by the project. Also turn off all “Underlines”.)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section and all other sections of Division 22.

1.2 SUMMARY

- A. This section includes the requirements for plumbing fixtures and accessories using the following: <Edit for particular project>

1. Water closets.
2. Urinals.
3. Lavatories.
4. Mop sink.
5. Bottle filling stations.
6. Laboratory countertop sinks.
7. Epoxy laboratory sink trim.
8. Laboratory cup sink trim.
9. Non laboratory countertop sinks.
10. Wall hung sinks.
11. Hand sinks.
12. Laboratory bar sink.
13. Emergency plumbing fixtures.
14. Fixture hardware and trim.
15. Miscellaneous accessories.
16. <Add other equipment as required for particular project>

- B. Products installed but not furnished under this Section include:

<Edit for particular project.>

1. Owner supplied fixtures, as indicated.
2. Accessories, appliances, appurtenances, and equipment specified in other sections, requiring plumbing services or fixture related devices, as indicated.

1.3 DEFINITIONS

- A. Accessible: Describes a plumbing fixture, building, facility, or portion thereof that can be approached, entered, and used by physically handicapped people.

- B. Accessory: Device that adds effectiveness, convenience, or improved appearance to a fixture but is not essential to its operation.
- C. Appliance: Device or machine designed and intended to perform a specific function.
- D. Appurtenance: Device or assembly designed to perform some useful function when attached to or used with a fixture.
- E. Equipment: Devices used with plumbing fixtures or plumbing systems to perform a certain function for plumbing fixtures but that is not part of the fixture.
- F. Fitting: Fitting installed on or attached to a fixture to control the flow of water into or out of the fixture.
- G. Fixture: Installed receptor connected to the water distribution systems, which receives and makes available potable water and discharges the used liquid or liquid borne wastes directly or indirectly into the drainage system. The term "Fixture" means the actual receptor, except when used in a general application where terms "Fixture" and "Plumbing Fixture" include associated trim, fittings, accessories, appliances, appurtenances, support, and equipment.
- H. Roughing-In: Installation of piping and support for the fixture prior to the actual installation of the fixture.
- I. Device normally concealed in building construction, for supporting and securing plumbing fixtures to walls and structural members. Supports for urinals, lavatories, and sinks are made in types suitable for fixture construction and the mounting required. Categories of supports are:
 - 1. Carrier: Floor mounted support for wall mounted water closet, and support fixed to wall construction for wall hung fixture.
 - 2. Chair Carrier: Support for wall hung fixture, having steel pipe uprights that transfer weight to the floor.
 - 3. Chair Carrier, Heavy Duty: Support for wall hung fixture, having rectangular steel uprights that transfer weight to the floor.
 - 4. Reinforcement: Wood blocking or steel plate built into wall construction, for securing fixture to wall.
- J. Trim: Hardware and miscellaneous parts, specific to a fixture and normally supplied with it required to complete fixture assembly and installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each specified product, include manufacturers cut sheets, dimensional data, performance data, installation instructions, color, power requirements, specified options, and warranty information.
- B. LEED Submittals: <Edit for particular project>
 - 1. Product Data for Prerequisite WE 1[and Credit WE 3] [, Credit WE 2, and Credit WE 3]: Documentation indicating flow and water consumption requirements.
 - 2. Product Data for Prerequisite WE 1: Documentation indicating flow and water consumption requirements.
 - 3. Product Data for Prerequisite WE 1[and Credit WE 2]: Documentation indicating flow and water consumption requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Include a copy of each approved submittal along with any applicable maintenance data in the project operation and maintenance manual.
- B. Maintenance Materials: Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents. <Revise, add to, or delete from list below as required.>
 - 1. Faucet Washers and O-rings: Furnish quantity of identical units not less than 10% of amount of each installed.
 - 2. Faucet Cartridges and O-rings: Furnish quantity of identical units not less than 5% of amount of each installed.
 - 3. Flushometer Repair Kits: Furnish quantity of identical units not less than 10 % of amount of each flushometer installed.
 - 4. Water Closet Tank Repair Kits: Furnish quantity of identical flush valve units not less than 5% of amount of each type installed.
 - 5. Toilet Seats: Furnish quantity of identical units not less than 5% of amount of each type toilet seat installed.
 - 6. Filter Cartridges: Furnish quantity of identical filter cartridges not less than 50% of amount of each type and size installed.

1.6 WARRANTY AND GUARANTEE

- A. See Division 22, Specification Section “Basic Mechanical Requirements – Plumbing” for warranty and guarantee requirements.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS

- A. Equipment Design and Selection: Plumbing fixtures and accessories shall be designed and selected, for the intended use, in accordance with the scheduled capacities on the drawings and the requirements of this specification.
- B. General: Provide all plumbing fixtures, and safety fixtures indicated on the drawings and as specified below, complete with all trim, hangers, fittings etc. for a complete installation. All exposed metal parts shall be polished chrome plated brass unless otherwise specified below.
- C. Provide an outlet floor drain trap primer for each floor drain where indicated on the drawings and as specified below.

2.2 STANDARD PLUMBING FIXTURE SCHEDULE

- A. P-1, P-1A - Water Closets: Wall hung, back outlet.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide American Standard Afwall wall hung water closet 2257.101, elongated bowl, one and one-half (1-1/2) inch top spud or comparable product by one (1) of the following:
 - a. Crane Plumbing, L.L.C.
 - b. Eljer.
 - c. Kohler Co.
 - 2. Bowl:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
 - b. Material: White Vitreous china.
 - c. Type: Siphon jet.
 - d. Style: Flushometer valve.
 - e. Rim Contour: Elongated.
 - f. Water Consumption: 1.6 gallons per flush.
 - g. Spud Size and Location: one and one-half (1-1/2) inch; top.
 - 3. Coordinate "Flushometer Valve" Subparagraph below with "Flushometer Valves" Article.
 - 4. Flushometer Valve: FV-1 or FV-2 <Coordinate with UMB and edit>
 - 5. Toilet Seat:
 - a. Basis-of-Design Product: Olsonite Seat Co #95 open front seat.
 - b. Standard: IAPMO/ANSI Z124.5.
 - c. Material: Plastic.
 - d. Type: Commercial Heavy duty
 - e. Shape: Elongated rim, open front.

- f. Hinge Material: No corroding metal.
 - g. Color: White
6. Support:
- a. Basis of Design Product: Zurn Model Z1203-N adjustable horizontal siphon jet no-hub for single and Zurn Model Z1203-ND4 for back to back or comparable product by one of the following:
 - 1) Josam
 - 2) Smith
 - b. Standard: ASME A112.6.1M.
 - c. 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. Mounting height:
 - 1) P-1: Fifteen (15) inches from finished floor to rim.
 - 2) P-1A: Accessible: Seventeen (17) inches from finished floor to rim.
- B. P-2, P-2A - Urinals: Wall hung, bottom outlet, washout.
- 1. Basis of Design Product: Subject to compliance with requirements, provide American Standard Washbrook wall hung urinal 6501.511 or comparable product by one (1) of the following:
 - a. Crane.
 - b. Elger.
 - c. Kohler Co.
 - 2. Fixture:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
 - b. Material: Vitreous china.
 - c. Drain: Separate removable chrome-plated dome strainer with chrome-plated, NPS 1-1/2 tailpiece.
 - d. Design Consumption: One (1) gallon per flush.
 - e. Inlet Spud Size and Location: Three quarter (3/4) inch top spud.
 - f. Outlet Size and Location: Two (2) inch; bottom.
 - g. Color: White.
 - 3. Flushometer Valve: FV-3 or FV-4 <Coordinate with UMB and edit>.

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4. Mounting Height:
 - a. P-2: Twenty four (24) inches above finished floor.
 - b. P-2A: Seventeen (17) inches above finished floor.

 5. Support:
 - a. Basis of Design Product: Zurn Model Z1221.
 - b. ASME A112.6.1M, Type II, urinal carrier with hanger and bearing plates.

 - C. P-3, P-3A - Lavatory: Vitreous china, wall mounted, with back.
 1. Basis of Design Product: Subject to compliance with requirements, provide American Standard Lucerne 0356.421 or comparable product by one (1) of the following:
 - a. Crane.
 - b. Elger.
 - c. Kohler Co.

 2. Fixture:
 - a. Standard: ASME A112.19.2/CSA B45.1.
 - b. Type: For wall hanging.
 - c. Nominal Size: Twenty five (25) inches x eighteen (18) inches.
 - d. Faucet-Hole Punching: Single center faucet hole.
 - e. Faucet-Hole Location: Top.
 - f. Color: White.
 - g. Mounting Material: Chair carrier or wall hanger.

 3. Support:
 - a. Basis of Design Product: Zurn Model Z1231.
 - b. ASME A112.6.1M, Type II, concealed-arm lavatory carrier with escutcheons.

 4. Mounting Height: Thirty four (34) inches above finished floor. (accessible)

 5. Faucet: LAF-1 or LAF-2 < Coordinate with UMB and edit >.

 6. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.

 7. Waste Fittings: WF-1

D. P-4 - Countertop Lavatory: Oval, self-rimming, vitreous china, and counter mounted.

1. Basis of Design Product: Subject to compliance with requirements, provide American Standard Aqualyn 0475.047 or comparable product by one (1) of the following:
 - a. Crane Plumbing, L.L.C.
 - b. Eljer.
 - c. Kohler Co.
2. Fixture:
 - a. Standard: ASME A112.19.2/CSA B45.1.
 - b. Type: Oval, self-rimming for above-counter mounting.
 - c. Nominal Size: Twenty and three eighths (20-3/8) inches x seventeen and three eighths (17-3/8) inches.
 - d. Bowl Size: Sixteen (16) inches wide x ten (10) inches front to back x five and five eighths (5-5/8) inches deep.
 - e. Faucet-Hole Punching: Single center faucet hole.
 - f. Faucet-Hole Location: Top.
 - g. Color: White.
 - h. Mounting Material: Sealant.
3. Faucet: LAF – 1 or LAF-2 < Coordinate with UMB and edit >.
4. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
5. Waste Fittings: WF-1

E. P-5 – Mop Sink:

1. Basis of Design Product: Subject to compliance with requirements, provide Crane Fiat Model MSB-2424.
2. Fixture:
 - a. Standard: IAPMO PS 99.
 - b. Shape: Square.
 - c. Nominal Size: Twenty four (24) inch x twenty four (24) inch
 - d. Height: Ten (10) inches.
3. Manufacturer's Options - Required:
 - a. Basin Model 1453 BB stainless steel strainer and drain body with a QDC-3 joint to a three (3) inch drain pipe. A combination dome strainer and lint basket made from stainless steel shall be included.

- b. Hose: Model No. 832 - AA heavy duty hose and bracket thirty (30) inch long flexible, heavy duty five eighths (5/8) inch rubber hose, cloth reinforced with three quarter (3/4) inch brass coupling at one end. Bracket is five (5) inch long x three (3) inch wide, stainless steel with rubber grip.
 - c. Hanger: Model No. 889-CC stainless steel mop bracket twenty four (24) inch long x three (3) inch wide with three (3) rubber tool grips.
 - d. Guard: Model No. E - 77- AA twenty four (24) inch long vinyl bumper guard.
4. Faucet Assembly: MSF-1
 5. Mounting: Floor mounted flush to wall.
- F. P-6 – Bottle Filling Station:
1. Basis of Design Product: Subject to compliance with requirements, Elkay Model [EZSTL8WSLK Bi Level, (left hand high)] [EZS8WSLK single] assembly or approved equal by Oasis [PG8SBFSL Bi Level, (left hand high)] [PG8SBF single] or Halsey Taylor [HTHB-HVRGRN8BL-NF Bi Level, (left hand high)] [HTHB-HVRGRN8-NF single].
<Engineer to coordinate type of unit (single or bi level) with architect and choose one of the above> <Engineer Note: Bi Level (left hand high) means the cooler unit is mounted high to the left of the bottle filler section.>
 2. Construction: Unit construction shall include the following:
 - a. Basin: Stainless steel basin with integral drain.
 - b. Cooler Cabinet: Light gray, vinyl clad steel
 - c. Cooler Chassis: Galvanized structural steel cooler chassis.
 - d. Bottle Filler: Stainless steel bottle filler wrapper with ABS plastic alcove.
 3. Bubbler: Flex guard safety bubbler with an infused anti microbial pliable elastomer to prevent accidental mouth injuries by flexing on impact.
 4. Bi Level Units: Cooler section shall be versatile, being able to be mounted in a standard (hi/low) configuration or in a reverse (low/high) configuration. <Delete if single unit is selected>
 5. Supply: NPS 3/8 with shutoff valve.
 6. Waste Fitting: One and one-half (1 1/2) inch cast brass P-trap.
 7. Filter: None.
 8. Activation: Activation features shall be as follows:

- a. Cooler: Easy touch front and side push bar control.
 - b. Bottle Filler: Sanitary touchless activation by an electronic sensor with a automatic twenty (20) second shut off timer.
9. Cooling System: Cooling system shall include the following:
- a. Compressor: Compressor shall be a hermetically sealed reciprocating type single phase compressor with sealed in lifetime lubrication.
 - b. Condenser: Condenser shall have copper tubes with aluminum fins and have a cooling fan with a permanently lubricated motor.
 - c. Cooling Unit: cooling unit shall be a combination tube-tank type unit with a continuous copper tubing and stainless steel tank, fully insulated with EPS foam which meets UL requirements for self-extinguishing material.
 - d. Refrigerant Type and Control: Refrigerant shall be R134a and is controlled by accurately calibrated capillary tube.
 - e. Temperature Control: Temperature control shall be by a unit mounted adjustable thermostat accessible through the panel.
10. 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.
11. Capacities and Characteristics: <Edit for project >
- a. Cooled Water: 8 gph.
 - b. Ambient-Air Temperature: 90°F.
 - c. Inlet-Water Temperature: 80°F.
 - d. Cooled-Water Temperature: 50°F.
 - e. Electrical Characteristics:
 - 1) Motor Horsepower: <Insert value>.
 - 2) FL Amps: [7.0 FLA by level] [5.0 FLA single].
 - 3) Rated Watts: [370 watts by level] [360 watts single].
 - 4) Volts: 120-V ac.
 - 5) Phase: Single.
 - 6) Hertz: 60.
12. Support: ASME A112.6.1M, Type I water-cooler carrier.
13. Certifications: Certifications shall include the following:
- a. ADA: Unit shall meet ADA Guidelines.
 - b. NSF: Unit shall be a lead free design certified to NSF/ANSI 61 and 372 and meets Federal and State low lead requirements.
 - c. UL: Unit shall be certified to UL399 and CAN.CSA 22.2 #120 and is FCC compliant.

G. P-7 – Laboratory Countertop Sinks: Stainless steel, counter mounted.

1. Basis of Design Product: Subject to compliance with requirements, provide Just Manufacturing Model SLX-2225-A-GR.
2. Fixture:
 - a. Standard: ASME A112.19.3/CSA B45.4.
 - b. Type: Ledge back.
 - c. Number of Compartments: One (1)
 - d. Overall Dimensions: Twenty two (22) inches by twenty five (25) inches.
 - e. Metal Thickness: 0.050 inch.
 - f. Compartment:
 - 1) Dimensions: Sixteen (16) inches wide by twenty two (22) inches long and ten and one half (10-1/2) inches deep.
 - 2) Drain: Polypropylene, one and one-half (1-1/2) inch 'P' trap threaded connections, with Just J-15-SSF-316 stainless steel drain with flat grid strainer.
 - 3) Drain Location: Centered in compartment.
3. Mounting: On counter with sealant
4. Faucet Hole: One (1) hole, centered.
5. Laboratory Faucet: LSF-1
6. RO/DI Faucet: LSF-2
7. Safety Eye Wash: EF-1
8. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
9. Waste Fittings: WF-2

H. P-8 - Epoxy Laboratory Sink: Epoxy sinks furnished with the case work shall be provided with the following hardware and trim:

1. Laboratory Faucet: LSF-1
2. RO/DI Faucet: LSF-2
3. Safety Eye Wash: EF-1
4. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
5. Waste Fittings: WF-2

I. P-9 – Laboratory Cup Sinks: Epoxy cup sinks are furnished with the case work and shall be provided with the following hardware and trim:

1. Faucet: LSF-5

2. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
 3. Waste Fittings: WF-2
- J. P-10 – Non Laboratory Countertop Sink: Stainless steel, countertop mounted.
1. Basis of Design Product: Subject to compliance with requirements, provide Just Manufacturing Model LLQ-17519-B-GR.
 2. Fixture:
 - a. Standard: ASME A112.19.3/CSA B45.4.
 - b. Type: Ledge back.
 - c. Number of Compartments: One
 - d. Overall Dimensions: Seventeen and one half (17-1/2) inch by nineteen (19) inch.
 - e. Metal Thickness: 0.050 inch.
 - f. Compartment:
 - 1) Dimensions: Eleven and one half (11-1/2) inches wide by sixteen (16) inches long and seven and six (6) inches deep.
 - 2) Drain Location: Centered in compartment.
 3. Mounting: On counter with sealant.
 4. Faucet Hole: One (1) hole, centered.
 5. Laboratory Faucet: LSF-2
 6. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
 7. Waste Fittings: WF-2
- K. P-11 – Wall Hung Hand Sink:
1. Basis of Design Product: Subject to compliance with requirements, provide Just Manufacturing Model A-33338.
 2. Fixture:
 - a. Standard: ASME A112.19.3/CSA B45.4.
 - b. Type: Ledge back.
 - c. Number of Compartments: One
 - d. Overall Dimensions: 12 inch by 18 inch.
 - e. Metal Thickness: 0.050 inch.
 - f. Compartment:
 - 1) Dimensions: Nine (9) inches wide by twelve (12) inches long and six (6) inches deep.

- 2) Drain: Polypropylene, one and one-half (1-1/2) inch P trap threaded connections, with Just J-15-SSF-316 stainless steel drain with flat grid strainer.
 - 3) Drain Location: Centered in compartment.
3. Support: One stainless steel wall clip with integral flange for wall mounting.
 4. Laboratory Faucet: LAF-3
 5. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
 6. Waste Fittings: WF-2
- L. P-12 - Laboratory Bar Sink:
1. Basis of Design Product: Subject to compliance with requirements, provide Just Manufacturing Model SBL-1812-A-GR.
 2. Fixture:
 - a. Standards: ASME A112.19.3/CSA B45.4 and NSF/ANSI 2.
 - b. Type: Back ledge
 - c. Nominal Size: Twelve (12) by eighteen (18) by six (6) inches.
 - d. Construction: Seamless welded construction, fabricated of 18 gauge type 304 stainless steel, with integral-formed apron, connected overflow and backsplash. All exposed surfaces shall be polished.
 - e. Sound Dampening: Underside of sink assembly shall be coated to insulate for sound and condensation reduction.
 - f. Drain Opening: Provide a center punch for a standard lavatory drain.
 - g. Faucet Ledge: Provide faucet ledge with four (4) inch centers, for faucet assembly specified below.
 3. Mounting: On counter with sealant.
 4. Laboratory Faucet: LAF-3
 5. Vacuum Breaker: Watts model NLF-9 vacuum breaker at the faucet outlet with a polished chrome finish.
 6. Supply Fittings: See Section: Plumbing Fixtures Hardware and Trim, Supply Fittings.
 7. Waste Fittings: WF-2
- M. P-13 - Emergency Shower: See emergency plumbing fixture EF-2 for requirements.
- N. P-14 – Fume Hoods: Fume hoods furnished with the case work shall be provided with the following:
1. Rough-in and Final Connection: Provide rough-in and final connections for laboratory waste, vent, air, gas, vacuum and domestic water, etc. as required

- and/or as indicated on the drawings. Provide accessible shut-off valve for each service.
2. Supply Fittings: Provide accessible shut-off valve for each service.
 3. Waste Fittings: WF-2
- O. P-15 – Bio Safety Cabinet: Bio Safety cabinets are either included in the contract or are furnished by the owner and installed by the contractor. Provide the following:
1. Rough-in and Final Connection: Provide rough-in and final connections for laboratory vacuum, and/or air, as required and/or as indicated on the drawings. Provide accessible shut-off valve for each service. Note: Natural gas connections to Bio Safety Cabinets are not permitted at UMB.

2.3 EMERGENCY PLUMBING FIXTURES

A. EF-1 - Eye Wash and Face Spray Deck Mounted, Plumbed Drench Hoses:

1. Basis of Design Product: Subject to compliance with requirements, provide Bradley Model S-19-465EFW or comparable product by one (1) of the following:
 - a. Water Saver Faucet Co. Model EW1022.
2. Capacity: Not less than 0.4 gallons per minutes.
3. Supply Fitting: NPS 1/2 brass with flow regulator.
4. Drench Hose: Hand-held spray head with squeeze-handle actuation and hose.
5. Mounting: In hole in deck.
6. Under counter guide and Bradley Model S45-2309 vacuum breaker.

B. EF-2 - Off-Floor, Plumbed Emergency Showers:

1. Basis of Design Product: Subject to compliance with requirements, provide Bradley model S19-130A or comparable product by one (1) of the following:
 - a. Water Saver Faucet Co.
2. Capacity: Not less than twenty (20) gallons per minute for at least fifteen (15) minutes.
3. Supply Piping: NPS 1 with flow regulator and stay-open control valve.
4. Control-Valve Actuator: Pull rod.
5. Shower Head: Eight (8) inch minimum diameter, stainless steel.
6. Mounting: Vertical from ceiling and supported from piping.

2.4 PLUMBING FIXTURE HARDWARE AND TRIM

A. Flush Valves - Water Closets:

1. Lever-Handle, Diaphragm Flushometer Valve FV-1
 - a. Basis of Design Product: Subject to compliance with requirements, provide Sloan Royal 111 flushometer with vacuum breaker, one (1) inch screw driver angle stop and flush connection or comparable product by one (1) of the following:
 - 1) Josam.
 - 2) Zurn Industries, LLC; Commercial Brass and Fixtures.
 - b. Standard: ASSE 1037.
 - c. Minimum Pressure Rating: 125 psig.
 - d. Features: Include integral check stop and backflow-prevention device.
 - e. Material: Brass body with corrosion-resistant components.
 - f. Exposed Flushometer-Valve Finish: Chrome plated.
 - g. Style: Exposed.
 - h. Consumption: 1.6 gal per flush.
 - i. Minimum Inlet: One (1) inch.
 - j. Minimum Outlet: NPS 1-1/4.
 - k. Trap Primer: For each floor drain within the toilet room provide a Sloan Vacuum Breaker VBF-72-A1 trap primer chrome plated flush connection with a special three eights (3/8) inch adaptor connection from the flush valve outlet, for a flex-bend connection, and a wall flange, for each floor drain. Trap primer shall be as manufactured by Sloan on approved equal.
2. Solenoid-Actuator, Diaphragm Flushometer Valves FV-2 (Optional):
 - a. Basis of Design Product: Subject to compliance with requirements, provide Sloan Regal 111 SMO-1.6-OR Battery Powered FV or comparable product by one (1) of the following:
 - 1) Zurn Industries, LLC; Commercial Brass and Fixtures.
 - b. Standard: ASSE 1037.
 - c. Minimum Pressure Rating: 125 psig.
 - d. Features: Include integral check stop and backflow-prevention device.
 - e. Material: Brass body with corrosion-resistant components.
 - f. Exposed Flushometer-Valve Finish: Chrome plated.
 - g. Panel Finish: Chrome plated or stainless steel.
 - h. Style: Exposed.
 - i. Actuator: Solenoid complying with UL 1951, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - j. Power Source: Four (4) size 'C' batteries.

- k. Battery Life: Three (3) years.
- l. Low Battery: Flashing LED.
- m. Manual Flush: Manual override flush button.
- n. Consumption: 1.6 gallons per flush.
- o. Minimum Inlet: NPS 1.
- p. Minimum Outlet: NPS 1-1/4.
- q. Trap Primer: For each floor drain within the toilet room provide a Sloan Vacuum Breaker VBF-72-A1 trap primer chrome plated flush connection with a special three eights (3/8) inch adaptor connection from the flush valve outlet, for a flex-bend connection, and a wall flange, for each floor drain. Trap primer shall be as manufactured by Sloan on approved equal.

B. Flush Valves – Urinals:

- 1. Lever-Handle, Diaphragm Flushometer Valves FV-3:
 - a. Basis of Design Product: Subject to compliance with requirements, provide Sloan Royal 186-1 flush valve with vacuum breaker, three fourth (3/4) inch screw driver angle stop and flush connection or comparable product by one (1) of the following:
 - 1) Josam.
 - 2) Zurn Industries, LLC; Commercial Brass and Fixtures.
 - b. Standard: ASSE 1037.
 - c. Minimum Pressure Rating: 125 psig.
 - d. Features: Include integral check stop and backflow-prevention device.
 - e. Material: Brass body with corrosion-resistant components.
 - f. Exposed Flushometer-Valve Finish: Chrome plated.
 - g. Style: Exposed.
 - h. Consumption: One (1) gallons per flush.
 - i. Minimum Inlet: NPS 1.
 - j. Minimum Outlet: NPS 1-1/4.
- 2. Solenoid-Actuator, Diaphragm Flushometer Valves FV-4 (Optional):
 - a. Basis of Design Product: Subject to compliance with requirements, provide Sloan Optima Model 186 – 1.0 – SMO Battery Powered FV or comparable product by one (1) of the following:
 - 1) Zurn Industries, LLC; Commercial Brass and Fixtures.
 - b. Standard: ASSE 1037.
 - c. Minimum Pressure Rating: 125 psig.
 - d. Features: Include integral check stop and backflow-prevention device.

- e. Material: Brass body with corrosion-resistant components.
- f. Exposed Flushometer-Valve Finish: Chrome plated.
- g. Panel Finish: Chrome plated or stainless steel.
- h. Style: Exposed.
- i. Actuator: Solenoid complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
- j. Power Source: Four (4) size ‘C’ batteries.
- k. Battery Life: Three (3) years.
- l. Low Battery: Flashing LED.
- m. Consumption: 1.0 gallons per flush.
- n. Minimum Inlet: NPS 3/4.
- o. Minimum Outlet: NPS 1-1/4.

C. Lavatory Sink Faucets (LAF):

- 1. Lavatory Faucets LAF-1: Manual-type, two-handle mixing, commercial, solid-brass valve.
 - a. Basis of Design Product: Subject to compliance with requirements, provide American Standard Model 6502.170 Monterrey Faucet complying with Standard ASME A112.18.1/CSA B125.1, and NSF Standard Comply NSF/ANSI 61, "Drinking Water System Components - Health Effects," for faucet materials that will be in contact with potable water.
 - b. General: Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture hole punching; coordinate outlet with spout and fixture receptor.
 - c. Body type in "Body Type" Subparagraph below must match fixture hole punching.
 - d. Body Type: Widespread.
 - e. Body Material: Commercial, solid brass.
 - f. Finish: Polished chrome.
 - g. Maximum Flow Rate: 1.0 gpm
 - h. Valve Handle(s): Wrist blade, four (4) inches.
 - i. Supply: Three eighths (3/8) inch supply stops with lead free angle valves and wall type escutcheon plates.
- 2. Lavatory Faucets LAF-2: Automatic-type, commercial, cast brass chrome plated faucet assembly.
 - a. Basis of Design Product: Subject to compliance with requirements, provide Model EAF-150-BAT-CP-1.0 GPM-AER-IR-IQ-FCT, Battery Power Supply, Integrated Side Mixer, Polished Chrome Finish, 1.0 gpm, Aerated Spray, Infrared Sensor, Optima® Battery-Powered Deck-Mounted Mid Body Faucet with hot and cold water supplies.

- b. Standard: ASME A112.18.1/CSA B125.1.
 - c. General: Commercial Grade, ADA Compliant, Electronic, Sensor-Activated, Cast Brass Hand Washing Faucet.
 - d. Details:
 - 1) Flow Rate: 1.0 gpm
 - 2) Spray Type: Aerated (AER)
 - 3) Sensor Type: Infrared (IR)
 - 4) Mounting Type: Single Hole
 - 5) Power Supply: Battery (BAT)
 - 6) Temperature Mixer: Integrated Side Mixer (ISM)
 - 7) Finish: Polished Chrome (CP)
 - 8) Factory Default Timeout: 30s
 - 9) Factory Default GPC: 0.5
 - e. Features:
 - 1) Commercial Grade, ADA Compliant, Electronic, Sensor-Activated, Cast Brass Hand Washing Faucet with the following features:
 - 2) Double Infrared Sensors with Automatic Setup and Indicator Light
 - 3) Automatic Self-adapting Sensor Technology
 - 4) Low Battery Indicator
 - 5) Magnetic Solenoid Valve
 - 6) Water Supply Connection with Flexible High-pressure Hose and Strainer
 - 7) 6 Volt Lithium 2CR5 Commercial Battery included
 - 8) Appropriate Mounting Hardware included
 - 9) Optional twenty four (24) Hour Sentinel Activation
 - 10) IQ-Click feature permits activation of continuous run and temporary off modes
 - f. Electrical:
 - 1) Battery Life: Three (3) years 8,000 cycles/month. Optional power harvesting significantly extends service life
 - 2) Self-Adjustment Range: 0" (0mm)
 - 3) Sensor Range: 0" (0mm)
 - 4) Timeout Adjustment Settings: Thirty (30) seconds
3. Wall Hung Hand Sink Faucet LAF-3: Manual-type, two-handle mixing, commercial, solid-brass valve.
- a. Basis of Design Product: Subject to compliance with requirements, provide Just Model J-1174-KS faucet assembly.
 - b. General: Coordinate faucet inlets with supplies and fixture hole punching; coordinate outlet with spout and fixture receptor.
 - c. Construction: Cast brass construction, six (6) inch wrist blades, water saving aerator, & swivel gooseneck. All exposed parts shall have a polished chrome finish.

D. Mop Sink Faucet (MSF):

1. Mop Sink Faucet MSF – 1: Mixing Faucet: T&S Brass BA-0665-BSTR wall mount mixing faucet with rough chrome plated brass body, rough chrome plated brass spout with vacuum breaker, pail hook and garden hose male outlet, compression cartridges with spring checks, lever handles, 1/2” NPT female inlets, upper support rod and built-in service stops. Certified to ASME A112.18.1/CSA B125.1, NSF 61 - Section 9, NSF 372 and ASSE 1001. Meets ADA ANSI/ICC A117.1 requirements.

E. Laboratory and Countertop Sink Faucets (LSF):

1. Laboratory Sink Faucet LSF-1: Deck mounted hot and cold water mixing faucet with vacuum breaker.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Chicago Faucets Model 930-GN8BVBE7CP.
 - b. Standard: ASME A112.18.1/CSA B125.1.
 - c. General: Coordinate faucet inlets with supplies and fixture hole punching; coordinate outlet with spout and fixture receptor.
 - d. Body type in "Body Type" Subparagraph below must match fixture hole punching.
 - e. Body Material: Commercial, solid brass.
 - f. Finish: Polished chrome
 - g. Eight (8) inch rigid/swing gooseneck spout with serrated nozzle.
 - h. Integral Atmosphere vacuum breaker.
2. Non Laboratory Countertop Sink Faucet LSF-2: Deck mounted hot and cold water mixing faucet with vacuum breaker.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Chicago Faucets Model 786-GN2FC319ABCP.
 - b. Standard: ASME A112.18.1/CSA B125.1.
 - c. General: Coordinate faucet inlets with supplies and fixture hole punching; coordinate outlet with spout and fixture receptor.
 - d. Body type in "Body Type" Subparagraph below must match fixture hole punching.
 - e. Body Material: Commercial, solid brass.
 - f. Finish: Polished chrome.
 - g. Eight (8) inch rigid/swing gooseneck spout with aerator.
3. Laboratory Bar Sink Faucet LSF-3: Deck mounted hot and cold water mixing faucet with vacuum breaker.

- a. Basis-of-Design Product: Subject to compliance with requirements, provide Just Bar and Pantry Faucet Model JGN - 740.
 - b. Standard: ASME A112.18.1/CSA B125.1.
 - c. General: Coordinate faucet inlets with supplies and fixture hole punching; coordinate outlet with spout and fixture receptor.
 - d. Body type in "Body Type" Subparagraph below must match fixture hole punching.
 - e. Body Material: Commercial, solid brass.
 - f. Finish: Polished chrome
 - g. Four (4) inch rigid/swing gooseneck spout with aerator.
 - h. Atmosphere vacuum breaker.
4. RO/DI Laboratory Gooseneck Sink Faucet LSF-4: Non-Recirculating, deck mounted gooseneck faucet assembly with integral vacuum breaker.
- a. Basis of Design Product: Subject to compliance with requirements, provide Plastinetics Model/Part QP1200299 – 001 or compatible product by:
 - 1) Harrington/Saint-Gobain Plastics Model/Part GT132893B-08M.
 - b. General: Coordinate all required plumbing rough-in locations with casework manufacture and all other trades.
 - c. Material: Unpigmented natural polypropylene.
5. Laboratory Cup Sink Faucets LSF-5: Deck mounted cold water mixing faucet with vacuum breaker.
- a. Basis of Design Product: Subject to compliance with requirements, provide Chicago Faucets Model 928-CP.
 - b. Standard: ASME A112.18.1/CSA B125.1.
 - c. General: Coordinate faucet inlets with supplies and fixture hole punching; coordinate outlet with spout and fixture receptor.
 - d. Body type in "Body Type" Subparagraph below must match fixture hole punching.
 - e. Body Material: Commercial, solid brass.
 - f. Finish: Polished chrome
 - g. Eight (8) inch rigid/swing gooseneck spout.
 - h. Atmosphere vacuum breaker.

F. Supply Fittings:

1. NSF Standard: Comply with NSF/ANSI 61, "Drinking Water System Components - Health Effects," for supply-fitting materials that will be in contact with potable water.

2. Standard: ASME A112.18.1/CSA B125.1.
3. Supply Piping: #10/8 three eight (3/8) inch supply risers twelve (12) inches long. Chrome-plated-brass pipe or chrome-plated copper tube. Include chrome-plated-brass or stainless-steel wall flange.
4. Supply Stops: Three eights (3/8) chrome-plated-brass, one-quarter-turn, lead free angle valves with inlet connection matching supply piping.
5. Operation: Wheel handle.

G. Waste Fittings:

1. Standard: ASME A112.18.2/CSA B125.2.
2. Type WF-1 - Lavatory Sinks:
 - a. Drain: Grid type with NPS 1-1/4 offset and straight tailpiece.
 - b. Trap: One and one-half (1-1/2) inch cast brass 'P' trap with cleanout.
3. Type WF-2 - Laboratory Sinks and Wall Hung Hand Sink:
 - a. Drain: One and one-half (1-1/2) inch threaded acid waste sink outlet with a plug, Harrington Plastics Model W301.
 - b. 'P' Trap: One and one-half (1-1/2) inch, two (2) piece, acid waste 'P' trap, Harrington Plastics Model W1121.

2.5 MISCELLANEOUS ASSESSORIES

- A. Ice Maker Wall Box: Provide an ice maker wall box where indicated on the drawings. The wall mounted box shall be a recessed box constructed of 20 gauge steel with a 28 gauge face plate, steel support brackets, supply valve complying with NSF Standard 61, Section 9 and ASME A112.18.1, and a water hammer arrestor complying with ASSE Standard 1010. Recess box dimensions shall be 5-1/2 inches square by 2-1/2 inches deep. Face plate dimension shall be 6-1/4 inch square. Entire assembly shall be Model #39140 as manufactured by Oatey, Cleveland, Ohio or approved equal.

PART 3 - EXECUTION

<Modify paragraphs below as required. Add instructions for additional fixtures types. Delete references to fixture types not in project.>

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 plumbing fixture installation.
- B. Examine counters and walls for suitable conditions where lavatories will be installed.

- C. Examine walls and floors for suitable conditions where plumbing fixtures will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 STANDARD PLUMBING FIXTURE INSTALLATION

A. Water-Closet Installation:

1. Install level and plumb according to roughing-in drawings.
2. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
3. For the trap primer, provide a TPL between its connection at the FV and the floor drain outlet pipe before the trap. Connecting the TPL to the drain body within the floor slab shall not be permitted.

B. Urinal Installation:

1. Install urinals level and plumb according to 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.

C. Lavatory Installation:

1. Install lavatories level and plumb according to roughing-in drawings.
2. Install supports, affixed to building substrate, for wall-mounted lavatories.
3. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings.
4. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories. Comply with requirements in Division 22 Section "Insulation for Plumbing Piping and Equipment".

D. Support Installation:

1. Install supports, affixed to building substrate, for floor-mounted, back-outlet water closets.
2. Use carrier supports with waste-fitting assembly and seal.
3. Install floor-mounted, back-outlet plumbing fixtures attached to building floor substrate, onto waste-fitting seals; and attach to support.
4. Install wall-mounted, back-outlet plumbing fixtures supports with waste-fitting assembly and waste-fitting seals; and affix to building substrate.

E. Flushometer-Valve Installation:

1. Install flushometer-valve, water-supply fitting on each supply to each water closet and urinal.
 2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
 3. Install lever-handle flushometer valves for accessible water closets and urinals with handle mounted on open side of water closet.
 4. Install actuators in locations that are easy for people with disabilities to reach.
- F. Install toilet seats on water closets.
- G. Mop Sink Installation:
1. Install fixtures level and plumb according to rough in drawings.
 2. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Install valves in locations where they can be easily reached for operation. Valves are specified in Division 22 Specification Section "Valves for Plumbing Piping Systems."
 3. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.
 4. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations.
 5. Install water service with shut off valve, strainer, RPZ backflow preventer and connection for a house keeping chemical mixer. See Mop Sink Detail on drawings for additional requirements. Backflow preventers are specified in Division 22 Specification Section "Domestic & Laboratory Water Piping Systems & Specialties"
- H. Electric water cooler or bottle filling station:
1. Install fixtures level and plumb according to roughing-in drawings.
 2. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.
 3. Install mounting frames, affixed to building construction, and attach recessed, pressure water coolers to mounting frames.
 4. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Install valves in locations where they can be easily reached for operation. Valves are specified in Division 22 Specification Section "Valves for Plumbing Piping Systems."
 5. Install trap and waste piping on drain outlet of each fixture 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 where required to conceal protruding fittings. 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 Architectural Specification Section "Joint Sealants."

I. Emergency Plumbing Fixture Installation:

1. Assemble emergency plumbing fixture piping, fittings, control valves, and other components.
2. Install fixtures level and plumb.
3. Fasten fixtures to substrate.
4. Install dielectric fitting in supply piping to emergency equipment if piping and equipment connections are made of different metals. Comply with requirements for dielectric fittings specified in Division 22 Specification Section "Domestic and Laboratory Water Piping Systems and Specialties."
5. Install indirect waste piping on drain outlet of emergency equipment receptors that are indicated to be indirectly connected to drainage system. Comply with requirements for waste piping specified in Division 22 Specification Section "Sanitary, Chemical and Vent Piping Systems."
6. Install escutcheons on piping wall and ceiling penetrations in exposed, finished locations.

J. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations and within cabinets and millwork.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.

K. Joint Sealing:

1. Seal joints between plumbing fixture and walls and floors using sanitary-type, one (1) part, mildew-resistant silicone sealant.
2. Match sealant color to water-closet color.

3.3 CONNECTIONS

- A. Connect water closets with water supplies and soil, waste, and vent piping. Use size fittings required to match water closets.
- B. Connect urinals with water supplies and soil, waste, and vent piping. Use size fittings required to match urinals.
- C. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- D. Comply with water piping requirements specified in Division 22 Specification Section "Domestic and Laboratory Water Piping Systems and Specialties."

- E. Comply with soil and waste piping requirements specified in Division 22 Specification Section "Sanitary, Chemical and Vent Piping Systems."
- F. Where installing piping adjacent to plumbing fixture, allow space for service and maintenance.

3.4 ADJUSTING

- A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning water closets, fittings, and controls.
- B. Adjust water pressure at flushometer valves to produce proper flow.
- C. Adjust fixture flow regulators for proper flow and stream height.
- D. Adjust pressure water-cooler temperature settings.

3.5 CLEANING AND PROTECTION

- A. Clean plumbing fixtures and fittings with manufacturers' recommended cleaning methods and materials.
- B. Install protective covering for installed plumbing fixtures and fittings.
- C. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224200