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SECTION 224213.16 - COMMERCIAL URINALS

TIPS:

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Stall urinals.
2. Wall-hung urinals.
3. Waterless urinals.
4. Urinal flushometer valves.
5. Supports.

B. Related Requirements:

1. Section 224600 "Security Plumbing Fixtures" for security urinals.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for urinals.
 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Sustainable Design Submittals:
 1. Product Data: For water consumption.
- C. Shop Drawings: Include diagrams for power, signal, and control wiring.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For flushometer valves[**and electronic sensors**] to include in operation and maintenance manuals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that are packaged with protective covering for storage and identified with labels describing contents.
 1. Flushometer-Valve Repair Kits: Equal to [10] <Insert number> percent of amount of each type installed, but no fewer than [one] [six] <Insert number> of each type.
 2. Waterless Urinal Trap-Seal Cartridges: Equal to [200] <Insert number> percent of amount of each type installed, but no fewer than [12] <Insert number> of each type.
 3. Waterless Urinal Trap-Seal Liquid: Equal to [1 gal. (3.8 L)] <Insert volume> for each urinal installed.

PART 2 - PRODUCTS

2.1 STALL URINALS

- A. Urinals - Stall, Washout Type: <Insert drawing designation>.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International; Dura-Ware Model 2180 <Insert drawing designation> or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.

- c. <Insert manufacturer's name>.
2. Urinal Fixture:
 - a. Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) ICC A117.1.
 - 3) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Material: 14 gauge minimum-thickness, Type 304 stainless steel.
 - c. Finish: [No. 4 satin finish on exposed surfaces, and matte finish on interior wetted surfaces] [Powder coated finish on exposed surfaces] <Insert color from manufacturer's color chart>.
 - d. Bowl:
 - 1) Type: Washout, with [back wall washdown] [continuous flush rim].
 - 2) Rim Height: Install stall trough flush with finished floor, for ADA compliance.
 - e. Inlet Connection: NPS 3/4 (DN 19) male spud, [exposed top] [concealed wall] supply.
 - f. Bottom Outlet Connection: NPS 2 (DN 50) for inside caulk waste.
 - g. Water Consumption, Washout Fixtures: [1.0 gal. (3.8 L)] [1.5 gal. (5.7 L)] per flush.
 - h. Supply Pressure: 25 psig (172 kPa), minimum.
 - i. Drain: Beehive dome strainer, tamper-resistant fasteners.
 - j. Mounting: Installed from fixture side to reinforced wall with backing that matches fixture-mounting locations.
 3. Flushometer Valve: <Insert urinal flushometer-valve designation from "Urinal Flushometer Valves" Article>.
 - a. Flushometer Valve Type: [Mechanical] [Hydraulic] [Electronic].
 - b. Flushometer-Valve Accessories: [Top supply flush valve cover] [Wall supply flush valve access panel].
 - c. Inlet Connection: NPS 3/4 (DN 19), [top] [back] spud.
 - d. Power: 120 Vac <Insert power source>.
 4. Accessories:
 - a. Flush valve through wall connection.
 - b. Transformer: 120 V ac to 24 V ac.

2.2 WALL-HUNG URINALS

- A. Urinals - Wall Hung, Back Outlet, Blowout: <Insert drawing designation>.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International; Dura-Ware Model [2160] [2165] <Insert drawing designation> or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. <Insert manufacturer's name>.

2. Urinal Fixture:
 - a. Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) ICC A117.1.

 - b. Material: 14 gauge minimum-thickness, Type 304 stainless steel.
 - c. Finish: [No. 4 satin finish on exposed surfaces, and matte finish on interior wetted surfaces] [Powder coated finish on exposed surfaces] <Insert color from manufacturer's color chart>.
 - d. Bowl:
 - 1) Type: Blowout, with [back wall washdown] [continuous flush rim].
 - 2) Rim Height: [20 inches (508 mm), straddle configuration,] [24 inches (610 mm)] <Insert value> above finished floor.
 - 3) Rim Height for ADA-Compliant Installation: [17 inches (432 mm)] <Insert value> above finished floor, straddle fixture configuration.

 - e. Inlet Connection: 1-1/2 inch NPT male, [top] [back] spud.
 - f. Back Outlet Connection: NPS 2 (DN 50) P-trap with O-ring adapter for 2 inch.
 - g. Water Consumption, Blowout Fixtures: 3.5 gal. (13.2 L) per flush.
 - h. Supply Pressure: 25 psig (172 kPa), minimum.
 - i. Mounting: Installed from fixture side to reinforced wall with backing that matches fixture-mounting locations.

3. Flushometer Valve: <Insert urinal flushometer-valve designation from "Urinal Flushometer Valves" Article>.
 - a. Flushometer Valve Type: [Mechanical] [Hydraulic] [Electronic].
 - b. Flushometer-Valve Accessories: [Top supply flush valve cover] [Wall supply flush valve access panel].
 - c. Inlet Connection: NPS 3/4 (DN 19), [top] [back] spud.
 - d. Power: 120 Vac.

4. Accessories:
 - a. Flush valve through wall connection.
 - b. Waste adapter to 2 inch NCT, female thread.
 - c. Waste adapter to 2 inch NPT, male thread.
 - d. Waste adapter to 2 inch NPT, female thread.
 - e. Waste adapter to NPS 2, no-hub.

f. Transformer: 120 V ac to 24 V ac.

B. Urinals - Wall Hung, Back Outlet, Siphon Jet: [**Accessible**] <Insert drawing designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. American Standard.
- b. Briggs Plumbing Products, Inc.
- c. Duravit USA, Inc.
- d. Gerber Plumbing Fixtures LLC.
- e. Kohler Co.
- f. Mansfield Plumbing Products LLC.
- g. Zurn Industries, LLC.
- h. <Insert manufacturer's name>.

2. Fixture:

- a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5/CSA B45.15.
- b. Material: Vitreous china.
- c. Type: Siphon jet[**with extended shields**].
- d. Strainer or Trapway: [**Manufacturer's standard strainer**] <Insert strainer> with integral trap.
- e. Water Consumption: [**0.125 gpf (0.5 Lpf)**] [**0.25 gpf (1.0 Lpf)**] [**0.5 gpf (1.9 Lpf)**] [**1.0 gpf (3.8 Lpf)**].
- f. Spud Size and Location: **NPS 3/4 (DN 20)**; [**back**] [**top**].
- g. Outlet Size and Location: **NPS 2 (DN 50)**; back.
- h. Color: [**White**] <Insert color>.

3. Flushometer Valve: <Insert urinal flushometer-valve designation from "Urinal Flushometer Valves" Article>.

4. Waste Fitting:

- a. Standard: ASME A112.18.2/CSA B125.2 for coupling.
- b. Size: **NPS 2 (DN 50)**.

5. Support: [**Type I urinal carrier**] <Insert carrier> with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture.[**Include rectangular, steel uprights.**]

6. Urinal Mounting Height: [**Standard**] [**Child**] [**Handicapped/elderly in accordance with ICC A117.1**].

C. Urinals - Wall Hung, Back Outlet, Washout: [**Accessible**] <Insert drawing designation>.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International; Dura-Ware Model [**2158**] [**2162**] [**2167**] [**2173**] [**2174**] [**2175**] [**2176**] [**2178**] <Insert drawing designation> or comparable product by one of the following:

- a. Metcraft Industries, Inc.

- b. Willoughby Industries.
 - c. <Insert manufacturer's name>.
2. Urinal Fixture:
- a. Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) ICC A117.1.
 - b. Material: [14] [16] gauge minimum-thickness, Type 304 stainless steel.
 - c. Finish: [No. 4 satin finish on exposed surfaces, and matte finish on interior wetted surfaces] [Powder coated finish on exposed surfaces] <Insert color from manufacturer's color chart>.
 - d. Bowl:
 - 1) Type: Washout, with [back wall washdown] [continuous flush rim].
 - 2) Rim Height: [20 inches (508 mm), straddle configuration,] [24 inches (610 mm)] <Insert value> above finished floor.
 - 3) Rim Height for ADA-Compliant Installation: [17 inches (432 mm)] <Insert value> above finished floor, straddle fixture configuration.
 - e. Water Inlet Connection:
 - 1) Washout: 3/4 NPT, [top] [back] spud.
 - 2) Washout Trough: 1-1/2 NPT, [top] [back] spud.
 - f. Back Outlet Connection: NPS 2 (DN 50) P-trap with O-ring adapter for 2 inch NCT connection.
 - g. Water Consumption, Washout Fixtures: [0.125 gal (0.5 L)] [0.5 gal (1.9 L), high-efficiency] [1.0 gal (3.8 L)] [1.5 gal (5.7 L)] per flush.
 - h. Supply Pressure: 25 psig (172 kPa), minimum.
 - i. Drain: Beehive dome strainer, tamper-resistant fasteners.
 - j. Mounting: Installed from fixture side to reinforced wall with backing that matches fixture-mounting locations.
3. Flushometer Valve: <Insert urinal flushometer-valve designation from "Urinal Flushometer Valves" Article>.
- a. Flushometer-Valve Type: [Mechanical] [Hydraulic] [Electronic].
 - b. Flushometer-Valve Accessories: [Top supply flush valve cover] [Wall supply flush valve access panel].
 - c. Inlet Connection: NPS 3/4 (DN 19), [top] [back] spud.
 - d. Power: 120 Vac.
4. Accessories:
- a. Flush valve through wall connection.
 - b. Waste adapter to 2 inch NCT, female thread.
 - c. Waste adapter to 2 inch NPT, male thread.

- d. Waste adapter to 2 inch NPT, female thread.
 - e. Waste adapter to NPS 2, no-hub.
 - f. Transformer: 120 V ac to 24 V ac.
- D. Urinals - Wall Hung, Bottom Outlet, Washout: **<Insert drawing designation>**.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Briggs Plumbing Products, Inc.
 - c. Zurn Industries, LLC.
 - d. **<Insert manufacturer's name>**.
 2. Fixture:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5/CSA B45.15.
 - b. Material: Vitreous china.
 - c. Drain: Separate removable chrome-plated dome strainer with chrome-plated, **NPS 1-1/2 (DN 40)** tailpiece.
 - d. Strainer or Trapway: Manufacturer's standard strainer and **NPS 1-1/2 (DN 40)** tailpiece.
 - e. Inlet Spud Size and Location: **NPS 3/4 (DN 20)**; top.
 - f. Outlet Size and Location: **NPS 1-1/2 (DN 40)**; bottom.
 - g. Color: **[White]** **<Insert color>**.
 - h. Water Consumption: **[0.125 gpf (0.5 Lpf)] [0.25 gpf (1.0 Lpf)] [0.5 gpf (1.9 Lpf)] [1.0 gpf (3.8 Lpf)]**.
 3. Flushometer Valve: **<Insert urinal flushometer-valve designation from "Urinal Flushometer Valves" Article>**.
 4. Waste Fitting:
 - a. Standard: ASME A112.18.2/CSA B125.2.
 - b. Trap:
 - 1) Size: **NPS 1-1/2 (DN 50)**.
 - 2) Material, Chrome Plated: **[Two-piece, cast-brass trap and swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall] [two-piece, cast-brass trap and ground-joint swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall] [one-piece, cast-brass trap with swivel 0.029-inch- (73-mm-) thick tubular brass wall bend]** **<Insert trap type>**; and chrome-plated brass or steel wall flange.
 - 3) Material, Stainless Steel: Two-piece trap and swivel elbow with **0.012-inch- (0.30-mm-)** thick, stainless steel tube to wall; and stainless steel wall flange.
 5. Support: **[Type II urinal carrier]** **<Insert carrier>** with hanger and bearing plates. **[Include rectangular, steel uprights.]**
 6. Urinal Mounting Height: **[Standard]** **[Child]** **[Handicapped/elderly in accordance with ICC A117.1]**.

- E. Urinals - Wall Hung, Back Outlet, Washdown: [**Accessible**] <**Insert drawing designation**>.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Kohler Co.
 - c. <**Insert manufacturer's name**>.
 2. Fixture:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5/CSA B45.15.
 - b. Material: Vitreous china.
 - c. Type: Washdown with extended shields.
 - d. Strainer or Trapway: [**Manufacturer's standard strainer**] <**Insert strainer**> with integral trap.
 - e. Water Consumption: [**0.125 gpf (0.5 Lpf)**] [**0.25 gpf (1.0 Lpf)**] [**0.5 gpf (1.9 Lpf)**] [**1.0 gpf (3.8 Lpf)**].
 - f. Spud Size and Location: **NPS 3/4 (DN 20)**, [**back**] [**top**].
 - g. Outlet Size and Location: **NPS 2 (DN 50)**, back.
 - h. Color: [**White**] <**Insert color**>.
 3. Flushometer Valve: <**Insert urinal flushometer-valve designation from "Urinal Flushometer Valves" Article**>.
 4. Waste Fitting:
 - a. Standard: ASME A112.18.2/CSA B125.2 for coupling.
 - b. Size: **NPS 2 (DN 50)**.
 5. Support: [**Type I urinal carrier**] <**Insert carrier**> with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture. [**Include rectangular, steel uprights.**]
 6. Urinal Mounting Height: [**Standard**] [**Child**] [**Handicapped/elderly in accordance with ICC A117.1**].
- F. Urinals, Wall Hung, Bottom Outlet, Washdown: <**Insert drawing designation**>.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Advanced Modern Technologies Corporation - AMTC.
 - b. American Standard.
 - c. Kohler Co.
 - d. Zurn Industries, LLC.
 - e. <**Insert manufacturer's name**>.
 2. Fixture:
 - a. Standards: ASME A112.19.1/CSA B45.2 and ASME A112.19.5/CSA B45.15.
 - b. Material: Enameled cast iron.

- c. Size: [**36 inches (915 mm)**] [**48 inches (1219 mm)**] [**60 inches (1525 mm)**] [**72 inches (1830 mm)**].
 - d. Drain: Separate removable chrome-plated dome strainer with chrome-plated, **NPS 1-1/2 (DN 40)** tailpiece.
 - e. Water Consumption: [**0.125 gpf (0.5 Lpf)**] [**0.25 gpf (1.0 Lpf)**] [**0.5 gpf (1.9 Lpf)**] [**1.0 gpf (3.8 Lpf)**].
 - f. Flushing Device: Manufacturer's standard self-closing valve with washdown pipe of length matching fixture.
 - g. Outlet Size and Location: **NPS 1-1/2 (DN 40)**; bottom.
 - h. Color: [**White**] <Insert color>.
3. Flushometer Valve:
- a. Standard: ASME A112.18.1/CSA B125.1.
 - b. Flushing Device: Manufacturer's standard for **NPS 1/2 (DN 15)** supply; self-closing valve; and washdown pipe of length matching fixture.
4. Waste Fitting:
- a. Standard: ASME A112.18.2/CSA B125.2.
 - b. Trap:
 - 1) Size: **NPS 1-1/2 (DN 50)**.
 - 2) Material, Chrome Plated: [**Two-piece, cast-brass trap and swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall**] [**two-piece, cast-brass trap and ground-joint swivel elbow with 0.032-inch- (0.83-mm-) thick brass tube to wall**] [**one-piece, cast-brass trap with swivel 0.029-inch- (73-mm-) thick tubular brass wall bend**] <Insert trap type>; and chrome-plated brass or steel wall flange.
 - 3) Material, Stainless Steel: Two-piece trap and swivel elbow with **0.012-inch- (0.30-mm-)** thick, stainless steel tube to wall; and stainless steel wall flange.
5. Support: [**Type I sink carrier**] <Insert carrier>.
6. Sink/Urinal Mounting Height: [**Standard**] [**Child**] [**Handicapped/elderly in accordance with ICC A117.1**].

2.3 WATERLESS URINALS

- A. Urinals - Wall Hung, Back Outlet, Waterless, Vitreous China: <Insert drawing designation>. Designed for liquid-trap-seal operation.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Duravit USA, Inc.
 - b. Falcon Waterfree Technologies.
 - c. Kohler Co.
 - d. Waterless Co.
 - e. Zero Flush.

- f. Zurn Industries, LLC.
 - g. <Insert manufacturer's name>.
2. Fixture:
 - a. Standard: ASME A112.19.2/CSA B45.1, except without water supply.
 - b. Trap-Seal Method: Proprietary cartridge with liquid seal.
 - c. Outlet Size and Location: [NPS 2 (DN 50)] <Insert pipe size> flange; back.
 - d. Trap-Sealing Liquid: Proprietary.
 - e. Color: [White] <Insert color>.
 3. Waste Fitting:
 - a. Standard: ASME A112.18.2/CSA B125.2 for transition coupling, trap, and waste pipe.
 - b. Size: [NPS 2 (DN 50)] <Insert pipe size>.
 4. Support: [Type I urinal carrier] <Insert carrier> with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture. [Include rectangular, steel uprights.]
 5. Urinal Mounting Height: [Standard] [Child] [Handicapped/elderly in accordance with ICC A117.1].
- B. Urinals - Wall Hung, Back Outlet, Waterless, Plastic: <Insert drawing designation>. Designed for liquid-trap-seal operation.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Waterless Co.
 - b. <Insert manufacturer's name>.
 2. Fixture:
 - a. Standard: IAPMO Z124/CSA B45.5, except without water supply.
 - b. Material: [FRP] <Insert material>.
 - c. Trap-Seal Method: Proprietary cartridge or trap system.
 - d. Outlet Size and Location: NPS 2 (DN 50); back. Include transition coupling.
 - e. Trap-Sealing Liquid: Proprietary.
 - f. Color: [White] <Insert color>.
 3. Waste Fitting:
 - a. Standard: ASME A112.18.2/CSA B125.2 for transition coupling, trap, and waste pipe.
 - b. Size: [NPS 2 (DN 50)] <Insert pipe size>.
 4. Support: [Metal plate in wall] [Wood blocking in wall] [Type I urinal carrier with fixture support plates and coupling with seal and fixture bolts and hardware matching fixture] <Insert carrier>. [Include rectangular, steel uprights.]

5. Urinal Mounting Height: [**Standard**] [**Child**] [**Handicapped/elderly in accordance with ICC A117.1**].

2.4 URINAL FLUSHOMETER VALVES

A. Lever-Handle, Diaphragm Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Advanced Modern Technologies Corporation - AMTC.
 - b. American Standard.
 - c. Delany Products.
 - d. Gerber Plumbing Fixtures LLC.
 - e. Zurn Industries, LLC.
 - f. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: **125 psig (860 kPa)**.
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [**Exposed**] [**Concealed**].
9. Consumption: [**0.5 gal. (1.9 L)**] [**1.0 gal. (3.8 L)**] <Insert value> per flush.
10. Minimum Inlet: [**NPS 3/4 (DN 20)**] [**NPS 1 (DN 25)**].
11. Minimum Outlet: [**NPS 3/4 (DN 20)**] [**NPS 1-1/4 (DN 32)**].

B. Solenoid-Actuator, Diaphragm Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Delany Products.
 - b. Stern Engineering Ltd.
 - c. Zurn Industries, LLC.
 - d. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: **125 psig (860 kPa)**.
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [**Exposed**] [**Concealed**].
9. 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.

10. Trip Mechanism: [**Battery-powered**] [**Hard-wired**] electronic sensor complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
11. Consumption: [**0.5 gal. (1.9 L)**] [**1.0 gal. (3.8 L)**] <Insert value> per flush.
12. Minimum Inlet: [**NPS 3/4 (DN 20)**] [**NPS 1 (DN 25)**].
13. Minimum Outlet: [**NPS 3/4 (DN 20)**] [**NPS 1-1/4 (DN 32)**].

C. Motor-Actuator, Diaphragm Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Advanced Modern Technologies Corporation - AMTC.
 - b. Zurn Industries, LLC.
 - c. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: **125 psig (860 kPa)**.
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [**Exposed**] [**Concealed**].
9. Actuator: Geared-motor actuator complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
10. Trip Mechanism: [**Battery-powered**] [**Hard-wired**] electronic sensor complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
11. Consumption: [**0.5 gal. (1.9 L)**] [**1.0 gal. (3.8 L)**] <Insert value> per flush.
12. Minimum Inlet: [**NPS 3/4 (DN 20)**] [**NPS 1 (DN 25)**].
13. Minimum Outlet: [**NPS 3/4 (DN 20)**] [**NPS 1-1/4 (DN 32)**].

D. Hydraulic-Actuator, Push-Button, Diaphragm Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Delany Products.
 - b. Zurn Industries, LLC.
 - c. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: **125 psig (860 kPa)**.
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [**Exposed**] [**Concealed**].
9. Consumption: [**0.5 gal. (1.9 L)**] [**1.0 gal. (3.8 L)**] <Insert value> per flush.

10. Minimum Inlet: [NPS 3/4 (DN 20)] [NPS 1 (DN 25)].
11. Minimum Outlet: [NPS 3/4 (DN 20)] [NPS 1-1/4 (DN 32)].

E. Lever-Handle, Piston Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Delany Products.
 - c. Kohler Co.
 - d. TOTO USA, INC.
 - e. Zurn Industries, LLC.
 - f. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [Exposed] [Concealed].
9. Consumption: [0.5 gal. (1.9 L)] [1.0 gal. (3.8 L)] <Insert value> per flush.
10. Minimum Inlet: [NPS 3/4 (DN 20)] [NPS 1 (DN 25)].
11. Minimum Outlet: [NPS 3/4 (DN 20)] [NPS 1-1/4 (DN 32)].

F. Hard-Wired, Solenoid-Actuator, Piston Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. TOTO USA, INC.
 - b. Zurn Industries, LLC.
 - c. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [Exposed] [Concealed].
9. 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.
10. Trip Mechanism: Hard-wired electronic sensor complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
11. Consumption: [0.5 gal. (1.9 L)] [1.0 gal. (3.8 L)] <Insert value> per flush.
12. Minimum Inlet: [NPS 3/4 (DN 20)] [NPS 1 (DN 25)].
13. Minimum Outlet: [NPS 3/4 (DN 20)] [NPS 1-1/4 (DN 32)].

G. Battery-Powered, Solenoid-Actuator, Piston Flushometer Valves: <Insert designation>.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Delany Products.
 - c. Hydrotek International, Inc.
 - d. Kohler Co.
 - e. TOTO USA, INC.
 - f. Zurn Industries, LLC.
 - g. <Insert manufacturer's name>.
2. Standard: ASSE 1037/ASME 112.1037/CSA B125.37.
3. Minimum Pressure Rating: 125 psig (860 kPa).
4. Features: Include integral check stop and backflow-prevention device.
5. Material: Brass body with corrosion-resistant components.
6. Exposed Flushometer-Valve Finish: Chrome plated.
7. Panel Finish: Chrome plated or stainless steel.
8. Style: [Exposed] [Concealed].
9. 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.
10. Trip Mechanism: Battery-powered electronic sensor complying with UL 1951; listed and labeled as defined in NFPA 70, by a qualified testing agency; and marked for intended location and application.
11. Consumption: [0.5 gal. (1.9 L)] [1.0 gal. (3.8 L)] <Insert value> per flush.
12. Minimum Inlet: [NPS 3/4 (DN 20)] [NPS 1 (DN 25)].
13. Minimum Outlet: [NPS 3/4 (DN 20)] [NPS 1-1/4 (DN 32)].

2.5 SUPPORTS

A. Type I Urinal Carrier:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Josam Company.
 - c. MIFAB, Inc.
 - d. Wade Drains.
 - e. WATTS.
 - f. Zurn Industries, LLC.
 - g. <Insert manufacturer's name>.
2. Standard: ASME A112.6.1M.

B. Type II Urinal Carrier:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Josam Company.
 - c. MIFAB, Inc.
 - d. Wade Drains.
 - e. WATTS.
 - f. Zurn Industries, LLC.
 - g. **<Insert manufacturer's name>**.
2. Standard: ASME A112.6.1M.

C. Type I Sink Carrier:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Josam Company.
 - c. MIFAB, Inc.
 - d. Wade Drains.
 - e. WATTS.
 - f. Zurn Industries, LLC.
 - g. **<Insert manufacturer's name>**.
2. Standard: ASME A112.6.1M.

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 urinal installation.
- B. Examine walls and floors for suitable conditions where urinals will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Urinal Installation:
 1. Install urinals level and plumb in accordance with rough-in drawings.
 2. Install wall-hung, back-outlet urinals onto waste fitting seals and attached to supports.
 3. Install wall-hung, bottom-outlet urinals with tubular waste piping attached to supports.

4. Install accessible, wall-mounted urinals at mounting height for the handicapped/elderly, in accordance with ICC A117.1.
5. Install trap-seal liquid in waterless urinals.

B. Support Installation:

1. Install supports, affixed to building substrate, for wall-hung urinals.
2. Use off-floor carriers with waste fitting and seal for back-outlet urinals.
3. Use carriers without waste fitting for urinals with tubular waste piping.
4. Use chair-type carrier supports with rectangular steel uprights for accessible urinals.

C. Flushometer-Valve Installation:

1. Install flushometer-valve water-supply fitting on each supply to each urinal.
2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
3. Install lever-handle flushometer valves for accessible urinals with handle mounted on open side of compartment.
4. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

D. Wall Flange and Escutcheon Installation:

1. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations.
2. Install deep-pattern escutcheons if required to conceal protruding fittings.
3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

E. Joint Sealing:

1. Seal joints between urinals and walls and floors using sanitary-type, one-part, mildew-resistant silicone sealant.
2. Match sealant color to urinal color.
3. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

3.3 PIPING CONNECTIONS

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

3.4 ADJUSTING

- A. Operate and adjust urinals and controls. Replace damaged and malfunctioning urinals, fittings, and controls.
- B. Adjust water pressure at flushometer valves to produce proper flow.
- C. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

3.5 CLEANING AND PROTECTION

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

END OF SECTION 224213.16