

This Product MasterSpec Section is licensed by Deltek, Inc. to Acorn Engineering; Morris Group International ("Licensee").

This Product MasterSpec Section modifies the original MasterSpec text and does not include the full content of the original MasterSpec Section.

Revisions made to the original MasterSpec text are made solely by the Licensee and are not endorsed by, or representative of the opinions of, Deltek or The American Institute of Architects (AIA). Neither AIA nor Deltek are liable in any way for such revisions or for the use of this Product MasterSpec Section by any end user. A qualified design professional should review and edit the document to suit project requirements.

For more information, contact Acorn Engineering; Morris Group International, 15125 Proctor Ave., City of Industry, CA 91746; Phone: (626) 336-4561 | (800) 488-8999; Fax: <Insert Fax number>; Website: www.acorneng.com; Email: <Insert Email address>.

For information about MasterSpec, contact Deltek at (800) 424-5080 or visit masterspec.com.

SECTION 224213.13 - COMMERCIAL WATER CLOSETS

TIPS:

To view non-printing **Editor's Notes** that provide guidance for editing, click on MasterWorks/Single-File Formatting/Toggle/Editor's Notes.

To read **detailed research, technical information about products and materials, and coordination checklists**, click on MasterWorks/Supporting Information.

Access Product MasterSpec Sections:

<[Double click here to view the list of manufacturer Sections available at ProductMasterSpec.com.](#)>

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Floor-mounted, bottom-outlet water closets.
2. Floor-mounted, back-outlet water closets.
3. Wall-mounted water closets.
4. Flushometer valves.
5. Toilet seats.
6. Supports.

B. Related Requirements:

1. Section 224100 "Residential Plumbing Fixtures" for residential water closets.
2. Section 224300 "Medical Plumbing Fixtures" for healthcare water closets.
3. Section 224600 "Security Plumbing Fixtures" for security water closets.

1.2 DEFINITIONS

- A. Effective Flush Volume: Average of two reduced flushes and one full flush per fixture.
- B. Remote Water Closet: Located more than **30 ft. (9.1 m)** from other drain line connections or fixture and where less than 1.5 drainage fixture units are upstream of the drain line connection.

1.3 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 water closets.
 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.

1.4 CLOSEOUT SUBMITTALS

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

1.5 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.

PART 2 - PRODUCTS

2.1 FLOOR-MOUNTED, BOTTOM-OUTLET WATER CLOSETS

- A. Water Closets, Floor Mounted, Bottom Outlet, Top Spud **<Insert drawing designation>**:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model [2120-T-3] [2141-T-3-FM]; **<Insert drawing designation for product>** or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. **<Insert manufacturer's name>**.
2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:
 - 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 16 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [No. 4 satin finish on exposed surfaces] [Powder coated finish on exposed surfaces, except interior of toilet bowl] **<Insert color from manufacturer's color chart>**.
 - 4) Seat Surface: [No. 4 satin] [No. 8 high-polish] finish on integral toilet seat. [Plastic hinged toilet seat, open front, less cover] [Plastic hinged toilet seat, open front, with cover] [Punched for field-installed toilet seat].
 - 5) Rim Height: **15 inches (381 mm)** above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
 - c. Floor Outlet Waste Connection (Siphon-Jet): Water-closet gasket waste flange.
 - d. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
 - e. Spud Size and Location: **NPS 1-1/2 (DN 40)**; top.
 - f. Supply Pressure: **25 psig (172 kPa)**, minimum.
 - g. Cabinet Mounting: On-floor.
3. Flushometer Valve: Mechanical type. **<Insert designation>**
 - a. Flushometer-Valve Accessories: [**Top supply flush valve cover**] [**ADA lever handle**].
4. Accessories:
 - a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.

- d. Cap nuts.
- e. Ligature-resistant water-closet skirt.
- f. Toilet shipping cover.
- g. Transformer: 120 V ac to 24 V ac.
- h. Vacuum flush system.

B. Water Closets, Bariatric, Floor Mounted, Bottom Outlet, Top Spud <Insert drawing designation>:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, Bariatric Toilet model 2125-A-T-3-FM; <Insert drawing designation for product> or comparable product by one of the following:

- a. Metcraft Industries, Inc.
- b. Willoughby Industries.
- c. <Insert manufacturer's name>.

2. Water Closet:

- a. Applicable Standards:

- 1) ASME A112.19.3/CSA B45.4.
- 2) Cal Green.
- 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
- 4) ICC A117.1.
- 5) U.S. Energy Policy Act of 1992 for Water Closets.

- b. Bowl:

- 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
- 2) Material: 14 gauge minimum-thickness, Type 304 stainless steel.
- 3) Finish: [No. 4 satin finish on exposed surfaces] [Powder coated finish on exposed surfaces, except interior of toilet bowl] <Insert color from manufacturer's color chart>.
- 4) Seat Surface: [No. 4 satin] [No. 8 high-polish] finish on integral toilet seat. [Big John brand plastic hinged toilet seat, open front, less cover] [Big John brand plastic hinged toilet seat, open front, with cover] [Punched for field-installed toilet seat].
- 5) Rim Height: 15 inches (381 mm) above finished floor.
- 6) Rim Height for ADA-Compliant Installation: 18 inches (457 mm) above finished floor.

- c. Floor Outlet Waste Connection (Siphon-Jet): Water-closet gasket waste flange.
- d. Water Consumption: [1.28 gal (4.8 L)] [1.6 gal (6 L)] per flush.
- e. Spud Size and Location: NPS 1-1/2 (DN 40); top.
- f. Supply Pressure: 25 psig (172 kPa), minimum.
- g. Cabinet Mounting: On-floor.

- 4) Seat Surface: [No. 4 satin] [No. 8 high-polish] finish on integral toilet seat. [Plastic hinged toilet seat, open front, less cover] [Plastic hinged toilet seat, open front, with cover] [Punched for field-installed toilet seat].
 - 5) Rim Height: 15 inches (381 mm) above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: 18 inches (457 mm) above finished floor.
- c. Floor Outlet Waste Connection (Siphon-Jet): Water-closet gasket waste flange.
 - d. Water Consumption: [1.28 gal (4.8 L)] [1.6 gal (6 L)] per flush.
 - e. Supply Pressure: 25 psig (172 kPa), minimum.
 - f. Cabinet Mounting: On-floor.
 - g. Fixture Mounting: Install from fixture side to reinforced wall and to floor with floor anchors.
3. Accessories:
- a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.
 - d. Cap nuts.
 - e. Ligature-resistant water-closet skirt.
 - f. Flush valve through-wall connection.
 - g. Toilet shipping cover.
 - h. Transformer: 120 V ac to 24 V ac.
 - i. Vacuum flush system.
- D. Water Closets, Bariatric, Floor Mounted, Back Outlet, Back Spud <Insert drawing designation>:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, Bariatric Toilet model 2125-A-W-2-FM; <Insert drawing designation for product> or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. <Insert manufacturer's name>.
 2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:

- 1) Type: Elongated, with wall inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 14 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [**No. 4 satin finish on exposed surfaces**] [**Powder coated finish on exposed surfaces, except interior of toilet bowl**] <Insert color from manufacturer's color chart>.
 - 4) Seat Surface: [**No. 4 satin**] [**No. 8 high-polish**] finish on integral toilet seat. [**Big John brand plastic hinged toilet seat, open front, less cover**] [**Big John brand plastic hinged toilet seat, open front, with cover**] [**Punched for field-installed toilet seat**].
 - 5) Rim Height: **15 inches (381 mm)** above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
- a. Wall Outlet Waste Connection: [**Gasket waste flange.**] [**NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit**].
 - b. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
 - c. Supply Pressure: **25 psig (172 kPa)**, minimum.
 - d. Cabinet Mounting: On-floor.
 - e. Fixture Mounting: Install from fixture side to reinforced wall and to floor with floor anchors.
3. Flushometer Valve: [**Mechanical**] [**Hydraulic**] [**Electronic**] type. <Insert designation>
 - a. Flushometer-Valve Accessories: [**Wall supply flush valve access panel**] [**ADA lever handle**].
 4. Toilet Flush Disabler/Overflow Prevention Device: [**Manual-reset**] [**Automatic-reset**] [**Electronic**] type. <Insert designation>
 5. Accessories:
 - a. Bedpan lugs.
 - b. Blind cap nuts.
 - c. Cap nuts.
 - d. Ligature-resistant water-closet skirt.
 - e. Flush valve through-wall connection.
 - f. Toilet shipping cover.
 - g. Transformer: 120 V ac to 24 V ac.
 - h. Vacuum flush system.
- E. Water Closets, Floor Mounted, Bottom Outlet, Close-Coupled Flushometer Tank <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. Bowl:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASSE/ASME 1037/CSA B125.37.
 - b. Material: Vitreous china.
 - c. Type: Siphon jet.
 - d. Style: Pressure assisted.
 - e. Height: **[Standard] [Handicapped/elderly, complying with ICC/ANSI A117.1]**.
 - f. Rim Contour: Elongated.
 - g. Water Consumption: Maximum **[1.1 gal (4.2 L)] [1.6 gal. (6 L)]** per flush.
 - h. Color: **[White] <Insert color>**.
 3. Bowl-to-Drain Connecting Fitting: **[ASTM A1045 or]**ASME A112.4.3.
 4. Flushometer Tank: Pressure assisted.
 5. Toilet Seat: **<Insert toilet-seat designation>**.
- F. Water Closets, Floor Mounted, Bottom Outlet, Child's **<Insert drawing designation>**:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Capizzi.
 - c. Crane Plumbing, L.L.C.
 - d. Gerber Plumbing Fixtures LLC.
 - e. Kohler Co.
 - f. Sloan Valve Company.
 - g. Zurn Industries, LLC.
 - h. **<Insert manufacturer's name>**.
 2. Bowl:
 - a. Standards: ASME A112.19.2/CSA B45.1 and ASME A112.19.5.
 - b. Material: Vitreous china.
 - c. Type: Siphon jet or reverse trap.
 - d. Style: Flushometer valve.
 - e. Height: **[Child] <Insert height>**.
 - f. Rim Contour: Modified elongated or regular.
 - g. Water Consumption: **[1.28 gal. (4.8 L)] [1.6 gal. (6 L)]** per flush.
 - h. Spud Size and Location: **NPS 1-1/2 (DN 40)**; back.
 - i. Color: **[White] <Insert color>**.
 3. Bowl-to-Drain Connecting Fitting: **[ASTM A1045 or]**ASME A112.4.3.
 4. Flushometer Valve: **<Insert flushometer-valve designation>**.
 5. Toilet Seat: IAPMO/ANSI Z124.5, Type A (residential), Shape 3 (elongated rim), open front, without cover, and shaped to match bowl.

2.2 FLOOR-MOUNTED, BACK-OUTLET WATER CLOSETS

A. Water Closets, Floor Mounted, Back Outlet, Top Spud <Insert drawing designation>:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model [2110-T] [2115-T] [2140-T-2-FM] [2141-T-2-FM]; <Insert drawing designation for product> or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. <Insert manufacturer's name>.
2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:
 - 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 16 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [No. 4 satin finish on exposed surfaces] [Powder coated finish on exposed surfaces, except interior of toilet bowl] <Insert color from manufacturer's color chart>.
 - 4) Seat Surface: [No. 4 satin] [No. 8 high-polish] finish on integral toilet seat. [Plastic hinged toilet seat, open front, less cover] [Plastic hinged toilet seat, open front, with cover] [Punched for field-installed toilet seat].
 - 5) Rim Height: 15 inches (381 mm) above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: 18 inches (457 mm) above finished floor.
 - c. Floor Outlet Waste Connection (Siphon-Jet): Water-closet gasket waste flange.
 - d. Water Consumption: [1.28 gal (4.8 L)] [1.6 gal (6 L)] per flush.
 - e. Spud Size and Location: NPS 1-1/2 (DN 40); top.
 - f. Supply Pressure: 25 psig (172 kPa), minimum.
 - g. Cabinet Mounting: On-floor.
 - h. Fixture Mounting: Install from fixture side to reinforced wall and to floor with floor anchors.
3. Flushometer Valve: Mechanical type. <Insert designation>

- a. Flushometer-Valve Accessories: [**Top supply flush valve cover**] [**ADA lever handle**].
4. Accessories:
- a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.
 - d. Cap nuts.
 - e. Ligature-resistant water-closet skirt.
 - f. Toilet shipping cover.
 - g. Transformer: 120 V ac to 24 V ac.
 - h. Vacuum flush system.
- B. Water Closets, Bariatric, Floor Mounted, Back Outlet, Top Spud **<Insert drawing designation>**:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, Bariatric Toilet model 2125-A-T-3-FM; **<Insert drawing designation for product>** or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. **<Insert manufacturer's name>**.
 2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:
 - 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 14 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [**No. 4 satin finish on exposed surfaces**] [**Powder coated finish on exposed surfaces, except interior of toilet bowl**] **<Insert color from manufacturer's color chart>**.
 - 4) Seat Surface: [**No. 4 satin**] [**No. 8 high-polish**] finish on integral toilet seat. [**Big John brand plastic hinged toilet seat, open front, less cover**] [**Big John brand plastic hinged toilet seat, open front, with cover**] [**Punched for field-installed toilet seat**].
 - 5) Rim Height: **15 inches (381 mm)** above finished floor.

- 6) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
 - c. Wall Outlet Waste Connection: [**Gasket waste flange.**] [**NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit.**]
 - d. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
 - e. Spud Size and Location: **NPS 1-1/2 (DN 40)**; top.
 - f. Supply Pressure: **25 psig (172 kPa)**, minimum.
 - g. Cabinet Mounting: On-floor.
 - h. Fixture Mounting: Install from fixture side to reinforced wall and to floor with floor anchors.
3. Flushometer Valve: Mechanical type. **<Insert designation>**
 - a. Flushometer-Valve Accessories: [**Top supply flush valve cover**] [**ADA lever handle**].
 4. Accessories:
 - a. Bedpan lugs.
 - b. Blind cap nuts.
 - c. Cap nuts.
 - d. Ligature-resistant water-closet skirt.
 - e. Toilet shipping cover.
 - f. Transformer: 120 V ac to 24 V ac.
 - g. Vacuum flush system.
- C. Water Closets, Floor Mounted, Back Outlet, Back Spud **<Insert drawing designation>**:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model [**2110-W**] [**2115-W**] [**2140-W-2-FM**] [**2141-W-2-FM**]; **<Insert drawing designation for product>** or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. **<Insert manufacturer's name>**.
 2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:

- 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 16 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [**No. 4 satin finish on exposed surfaces**] [**Powder coated finish on exposed surfaces, except interior of toilet bowl**] **<Insert color from manufacturer's color chart>**.
 - 4) Seat Surface: [**No. 4 satin**] [**No. 8 high-polish**] finish on integral toilet seat. [**Plastic hinged toilet seat, open front, less cover**] [**Plastic hinged toilet seat, open front, with cover**] [**Punched for field-installed toilet seat**].
 - 5) Rim Height: **15 inches (381 mm)** above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
- c. Wall Outlet Waste Connection: [**Gasket waste flange.**] [**NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit**].
 - d. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
 - e. Supply Pressure: **25 psig (172 kPa)**, minimum.
 - f. Cabinet Mounting: On-floor.
 - g. Fixture Mounting: Install from fixture side to reinforced wall and to floor with floor anchors.
3. Flushometer Valve: Mechanical type. **<Insert designation>**
 - a. Flushometer-Valve Accessories: [**Wall supply flush valve cover**] [**ADA lever handle**].
 4. Accessories:
 - a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.
 - d. Cap nuts.
 - e. Ligature-resistant water-closet skirt.
 - f. Flush valve through-wall connection.
 - g. Toilet shipping cover.
 - h. Transformer: 120 V ac to 24 V ac.
 - i. Vacuum flush system.
- D. Water Closets, Floor Mounted, Back Outlet, Close-Coupled Flushometer Tank **<Insert Drawing Designation>**:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Kohler Co.
 - c. Mansfield Plumbing Products LLC.
 - d. **<Insert manufacturer's name>**.
 2. Bowl:

- a. Standards: ASME A112.19.2/CSA B45.1 and ASSE/ASME 1037/CSA B125.37.
 - b. Material: Vitreous china.
 - c. Type: Siphon jet.
 - d. Style: Pressure assisted.
 - e. Height: **[Standard]** **[Handicapped/elderly, complying with ICC/ANSI A117.1]**.
 - f. Rim Contour: Elongated.
 - g. Water Consumption: Maximum **[1.1 gal (4.2 L)]** **[1.6 gal. (6 L)]** per flush.
 - h. Color: **[White]** **<Insert color>**.
3. Bowl-to-Drain Connecting Fitting: **[ASTM A1045 or]**ASME A112.4.3.
 4. Flushometer Tank: Pressure assisted.
 5. Toilet Seat: **<Insert toilet-seat designation>**.

2.3 WALL-MOUNTED WATER CLOSETS

A. Water Closets, Wall Mounted, Top Spud[, Accessible] **<Insert drawing designation>**:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model **[2110-W]** **[2115-W]** **[2140-W-2-FM]** **[2141-W-2-FM]**; **<Insert drawing designation for product>** or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. **<Insert manufacturer's name>**.
2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:
 - 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 16 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: **[No. 4 satin finish on exposed surfaces]** **[Powder coated finish on exposed surfaces, except interior of toilet bowl]** **<Insert color from manufacturer's color chart>**.
 - 4) Seat Surface: **[No. 4 satin]** **[No. 8 high-polish]** finish on integral toilet seat. **[Plastic hinged toilet seat, open front, less cover]** **[Plastic hinged toilet seat, open front, with cover]** **[Punched for field-installed toilet seat]**.
 - 5) Support: **[Water closet carrier]** **<Insert carrier>**.

- 6) Rim Height: **15 inches (381 mm)** above finished floor.
 - 7) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
- c. Wall Outlet Waste Connection: [**Gasket waste flange.**] [**NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit.**]
 - d. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
 - e. Spud Size and Location: **NPS 1-1/2 (DN 40)**; top.
 - f. Supply Pressure: **25 psig (172 kPa)**, minimum.
3. Flushometer Valve: Mechanical type. **<Insert designation>**
 - a. Flushometer-Valve Accessories: [**Top supply flush valve cover**] [**ADA lever handle**].
 4. Accessories:
 - a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.
 - d. Cap nuts.
 - e. Toilet shipping cover.
 - f. Transformer: 120 V ac to 24 V ac.
 - g. Vacuum flush system.
- B. Water Closets, Bariatric, Wall Mounted, Top Spud[, **Accessible**] **<Insert drawing designation>**:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model 2105BAR-T; **<Insert drawing designation for product>** or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. **<Insert manufacturer's name>**.
 2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:

- 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 14 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [**No. 4 satin finish on exposed surfaces**] [**Powder coated finish on exposed surfaces, except interior of toilet bowl**] <Insert color from manufacturer's color chart>.
 - 4) Seat Surface: [**No. 4 satin**] [**No. 8 high-polish**] finish on integral toilet seat. [**Big John brand plastic hinged toilet seat, open front, less cover**] [**Big John brand plastic hinged toilet seat, open front, with cover**] [**Punched for field-installed toilet seat**].
 - 5) Rim Height: **15 inches (381 mm)** above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
- c. Wall Outlet Waste Connection: [**Gasket waste flange.**] [**NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit**].
 - d. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
 - e. Spud Size and Location: **NPS 1-1/2 (DN 40)**; top.
 - f. Supply Pressure: **25 psig (172 kPa)**, minimum.
3. Flushometer Valve: Mechanical type. <Insert designation>
 - a. Flushometer-Valve Accessories: [**Top supply flush valve cover**] [**ADA lever handle**].
 4. Accessories:
 - a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.
 - d. Cap nuts.
 - e. Toilet shipping cover.
 - f. Transformer: 120 V ac to 24 V ac.
 - g. Vacuum flush system.
- C. Water Closets, Wall Mounted, Back Spud[, Accessible] <Insert drawing designation>:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model [**2100-W**] [**2105-W**] [**2140-W-1-FM**] [**2141-W-1-FM**]; <Insert drawing designation for product> or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. <Insert manufacturer's name>.
 2. Water Closet:
 - a. Applicable Standards:

- 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
- b. Bowl:
- 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 16 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: [**No. 4 satin finish on exposed surfaces**] [**Powder coated finish on exposed surfaces, except interior of toilet bowl**] <Insert color from manufacturer's color chart>.
 - 4) Seat Surface: [**No. 4 satin**] [**No. 8 high-polish**] finish on integral toilet seat. [**Plastic hinged toilet seat, open front, less cover**] [**Plastic hinged toilet seat, open front, with cover**] [**Punched for field-installed toilet seat**].
 - 5) Support: [**Water closet carrier**] <Insert carrier>.
 - 6) Rim Height: **15 inches (381 mm)** above finished floor.
 - 7) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
- c. Wall Outlet Waste Connection: [**Gasket waste flange.**] [**NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit**].
- d. Water Consumption: [**1.28 gal (4.8 L)**] [**1.6 gal (6 L)**] per flush.
- e. Spud Size and Location: **NPS 1-1/2 (DN 40)**; top.
- f. Supply Pressure: **25 psig (172 kPa)**, minimum.
3. Flushometer Valve: [**Mechanical**] [**Hydraulic**] [**Electronic**] type. <Insert designation>
- a. Flushometer-Valve Accessories: [**Wall supply flush access panel**] [**ADA lever handle**].
4. Accessories:
- a. 14 gauge housing.
 - b. Bedpan lugs.
 - c. Blind cap nuts.
 - d. Cap nuts.
 - e. Flush valve through-wall connection.
 - f. Toilet shipping cover.
 - g. Transformer: 120 V ac to 24 V ac.
 - h. Vacuum flush system.
- D. Water Closets, Bariatric, Wall Mounted, Back Spud[, **Accessible**] <Insert drawing designation>:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Engineering; Morris Group International, model 2105BAR-W; **<Insert drawing designation for product>** or comparable product by one of the following:
 - a. Metcraft Industries, Inc.
 - b. Willoughby Industries.
 - c. **<Insert manufacturer's name>**.
2. Water Closet:
 - a. Applicable Standards:
 - 1) ASME A112.19.3/CSA B45.4.
 - 2) Cal Green.
 - 3) EPA WaterSense Specifications for High Efficiency Flushometer Water Closets.
 - 4) ICC A117.1.
 - 5) U.S. Energy Policy Act of 1992 for Water Closets.
 - b. Bowl:
 - 1) Type: Elongated, with top inlet, integral trap, and integral contoured seat surface.
 - 2) Material: 14 gauge minimum-thickness, Type 304 stainless steel.
 - 3) Finish: **[No. 4 satin finish on exposed surfaces] [Powder coated finish on exposed surfaces, except interior of toilet bowl] <Insert color from manufacturer's color chart>**.
 - 4) Seat Surface: **[No. 4 satin] [No. 8 high-polish]** finish on integral toilet seat. **[Big John brand plastic hinged toilet seat, open front, less cover] [Big John brand plastic hinged toilet seat, open front, with cover] [Punched for field-installed toilet seat]**.
 - 5) Rim Height: **15 inches (381 mm)** above finished floor.
 - 6) Rim Height for ADA-Compliant Installation: **18 inches (457 mm)** above finished floor.
 - c. Wall Outlet Waste Connection: **[Gasket waste flange.] [NPS 2 (DN 50), extended 3 inches (76 mm) beyond back of unit]**.
 - d. Water Consumption: **[1.28 gal (4.8 L)] [1.6 gal (6 L)]** per flush.
 - e. Spud Size and Location: **NPS 1-1/2 (DN 40)**; top.
 - f. Supply Pressure: **25 psig (172 kPa)**, minimum.
3. Flushometer Valve: **[Mechanical] [Hydraulic] [Electronic]** type. **<Insert designation>**
 - a. Flushometer-Valve Accessories: **[Wall supply flush valve access panel] [ADA lever handle]**.
4. Toilet Flush Disabler/Overflow Prevention Device: **[Manual-reset] [Automatic-reset] [Electronic]** type. **<Insert designation>**
5. Accessories:

- a. 14 gauge housing.
- b. Bedpan lugs.
- c. Blind cap nuts.
- d. Cap nuts.
- e. Toilet shipping cover.
- f. Transformer: 120 V ac to 24 V ac.
- g. Vacuum flush system.

2.4 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. Delany Products.
 - c. Gerber Plumbing Fixtures LLC.
 - d. Sloan Valve Company.
 - e. Zurn Industries, LLC.
 - f. <Insert manufacturer's name>.
2. Standard: ASSE 1037.
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: [1.28 gal. (4.8 L)] [1.6 gal. (6 L)] [3.5 gal. (13.2 L)] <Insert value> per flush.
10. Minimum Inlet: NPS 1 (DN 25).
11. Minimum Outlet: 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. Gerber Plumbing Fixtures LLC.
 - c. Sloan Valve Company.
 - d. Zurn Industries, LLC.
 - e. <Insert manufacturer's name>.
2. Standard: ASSE 1037.
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, and 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, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
11. Consumption: [**1.28 gal. (4.8 L)**] [**1.6 gal. (6 L)**] [**3.5 gal. (13.2 L)**] <Insert value> per flush.
12. Minimum Inlet: **NPS 1 (DN 25)**.
13. Minimum Outlet: **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.
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, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
11. Consumption: [**1.28 gal. (4.8 L)**] [**1.6 gal. (6 L)**] [**3.5 gal. (13.2 L)**] <Insert value> per flush.
12. Minimum Inlet: **NPS 1 (DN 25)**.
13. Minimum Outlet: **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. Sloan Valve Company.
 - c. <Insert manufacturer's name>.

2. Standard: ASSE 1037.
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: [1.28 gal. (4.8 L)] [1.6 gal. (6 L)] [3.5 gal. (13.2 L)] <Insert value> per flush.
10. Minimum Inlet: NPS 1 (DN 25).
11. Minimum Outlet: 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. Sloan Valve Company.
 - e. TOTO USA, INC.
 - f. Zurn Industries, LLC.
 - g. <Insert manufacturer's name>.
2. Standard: ASSE 1037.
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: [1.28 gal. (4.8 L)] [1.6 gal. (6 L)] [3.5 gal. (13.2 L)] <Insert value> per flush.
10. Minimum Inlet: NPS 1 (DN 25).
11. Minimum Outlet: 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. American Standard.
 - b. Gerber Plumbing Fixtures LLC.
 - c. Moen Incorporated.
 - d. Sloan Valve Company.
 - e. Stern Engineering Ltd.
 - f. TOTO USA, INC.
 - g. Zurn Industries, LLC.
 - h. <Insert manufacturer's name>.

2. Standard: ASSE 1037.
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, and 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, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
11. Consumption: [**1.28 gal. (4.8 L)**] [**1.6 gal. (6 L)**] [**3.5 gal. (13.2 L)**] <Insert value> per flush.
12. Minimum Inlet: **NPS 1 (DN 25)**.
13. Minimum Outlet: **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. Gerber Plumbing Fixtures LLC.
 - d. Hydrotek International, Inc.
 - e. Kohler Co.
 - f. Moen Incorporated.
 - g. Sloan Valve Company.
 - h. Stern Engineering Ltd.
 - i. TOTO USA, INC.
 - j. Zurn Industries, LLC.
 - k. <Insert manufacturer's name>.
2. Standard: ASSE 1037.
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, and 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, and listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
11. Consumption: [**1.28 gal. (4.8 L)**] [**1.6 gal. (6 L)**] [**3.5 gal. (13.2 L)**] <Insert value> per flush.

12. Minimum Inlet: **NPS 1 (DN 25)**.
13. Minimum Outlet: **NPS 1-1/4 (DN 32)**.

2.5 TOILET SEATS

A. Toilet Seats <Insert drawing designation>:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Standard.
 - b. Bemis Manufacturing Company.
 - c. Centoco Manufacturing Corporation.
 - d. Church Seats; Bemis Manufacturing Company.
 - e. Jones Stephens Corp.
 - f. Kohler Co.
 - g. Olsonite Seat Co.
 - h. Sanderson Plumbing Products, Inc.
 - i. Sperzel of Lexington.
 - j. TOTO USA, INC.
 - k. Zurn Industries, LLC.
 - l. <Insert manufacturer's name>.
2. Standard: IAPMO/ANSI Z124.5.
3. Material: Plastic.
4. Type: [**Commercial (Standard)**] [**Commercial (Heavy duty)**].
5. Shape: [**Elongated rim, open front**] [**Elongated rim, closed front**] <Insert shape>.
6. Hinge: [**Check**] [**Self-sustaining**] [**Self-sustaining, check**] [**Self-raising**].
7. Hinge Material: Noncorroding metal.
8. Seat Cover: [**Required**] [**Not required**].
9. Color: [**White**] [**Black**] <Insert color>.

2.6 SUPPORTS

A. Water Closet Carrier:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Josam Company.
 - b. Zurn Industries, LLC.
 - c. <Insert manufacturer's name>.
2. Standard: ASME A112.6.1M.
3. Description: Waste-fitting assembly, as required to match drainage piping material and arrangement with faceplates, couplings gaskets, and feet; bolts and hardware matching fixture. [**Include additional extension coupling, faceplate, and feet for installation in wide pipe space.**]

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION, GENERAL

A. Water-Closet Installation:

- 1. Install level and plumb in accordance with roughing-in drawings.
- 2. Install floor-mounted water closets on bowl-to-drain connecting fitting attachments to piping or building substrate.
- 3. Install accessible, wall-mounted water closets at mounting height for handicapped/elderly, in accordance with ICC/ANSI A117.1.

B. 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 water closets attached to building floor substrate, onto waste-fitting seals; and attach to support.
- 4. Install wall-mounted, back-outlet water-closet supports with waste-fitting assembly and waste-fitting seals; and affix to building substrate.

C. Flushometer-Valve Installation:

- 1. Install flushometer-valve, water-supply fitting on each supply to each water closet.
- 2. Attach supply piping to supports or substrate within pipe spaces behind fixtures.
- 3. Install lever-handle flushometer valves for accessible water closets with handle mounted on open side of water closet.
- 4. Install actuators in locations that are easy for people with disabilities to reach.
- 5. Install fresh batteries in battery-powered, electronic-sensor mechanisms.

D. Install toilet seats on water closets.

E. 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.

3. Comply with escutcheon requirements specified in Section 220518 "Escutcheons for Plumbing Piping."

F. Joint Sealing:

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

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. 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 water closets, allow space for service and maintenance.

3.4 ADJUSTING

- A. Operate and adjust water closets and controls. Replace damaged and malfunctioning water closets, 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 water closets and fittings with manufacturers' recommended cleaning methods and materials.
- B. Install protective covering for installed water closets and fittings.
- C. Do not allow use of water closets for temporary facilities unless approved in writing by Owner.

END OF SECTION 224213.13