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Product Guide Specification

Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat*, *SectionFormat*, and *PageFormat*, contained in the *CSI Manual of Practice*.

The section must be carefully reviewed and edited by the Engineer to meet the requirements of the project. Coordinate this section with other specification sections and the drawings.

Delete all "Specifier Notes" when editing this section.

SECTION 11201

FRP TROUGHS

Specifier Notes: This section covers MFG Water Treatment Products Company FRP troughs. Troughs are custom produced in any size or design. Consult MFG Water Treatment Products Company for assistance in editing this section for the specific application.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. FRP troughs.

1.2 RELATED SECTIONS

Specifier Notes: Edit the following list of related sections as required for the project. List other sections with work directly related to this section.

- A. Section 11200 - Water Supply and Treatment Equipment.
- B. Section 11204 - Weir Plates and Scum Baffles.
- C. Section 11205 - Density Current Baffles.

1.3 REFERENCES

Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used.

- A. ANSI/AWWA F101 - Contact-Molded, Fiberglass-Reinforced Plastic Wash Water Troughs and Launderers.
- B. ANSI/AWWA F102 - Matched-Die-Molded, Fiberglass-Reinforced Plastic Weir Plates, Scum Baffles, and Mounting Brackets.
- C. ANSI/NSF 61 - Drinking Water System Components - Health Effects.
- D. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
- E. ASTM D 570 - Standard Test Method for Water Absorption of Plastics.
- F. ASTM D 618 - Standard Practice for Conditioning Plastics for Testing.
- G. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics.
- H. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- I. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

1.4 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including description and physical properties of fiberglass reinforced plastic laminate. Submit manufacturer's installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings showing plans, elevations, sections, and details of materials, components, structural supports, dimensions, tolerances, connections, attachments, adjustments, openings, mounting, fasteners, anchors, and assembly hardware.
- D. Samples: Submit manufacturer's 6-inch square sample of fiberglass reinforced plastic laminate of same construction, nominal thickness, and color as troughs.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

Specifier Notes: Use the following sentence when NSF certification is required.

- F. Product Certification: Submit proof of NSF labeled products.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site banded on skids or other suitable packaging for ease of handling and to minimize damage during shipping, with labels clearly identifying manufacturer.

- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions.
- C. Handling: Protect materials from damage during handling and installation.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. MFG Water Treatment Products Company, 55 Fourth Avenue, PO Box 458, Union City, Pennsylvania 16438. Toll Free (877) 826-2509. Phone (814) 438-3959. Fax (814) 438-8538. Web Site www.mfgwtp.com.

2.2 FRP TROUGHS

- A. Material:
 - 1. Fiberglass reinforced isophthalic polyester resin contact-molded composite laminate.
 - 2. Nominal Thickness: 1/4 inch.
 - 3. Gel-Coat Resin Finish: On all surfaces, contain ultraviolet inhibitor.
 - 4. Seal cut edges with polyester resin.
 - 5. Glass: Type E, random chopped with chrome or silane finish.
 - a. Binder: Compatible with resin.
 - b. Glass Strand Length: Minimum 1 inch.
 - 6. Adequate contact molding pressure to ensure complete resin wet-out of glass fibers.
 - 7. Color: Aqua. Color molded-in with ultraviolet inhibitor.
- B. Fiberglass Reinforced Plastic (FRP) Laminate Physical Properties:
 - 1. Tensile Strength, ASTM D 638: 12,000 psi.
 - 2. Flexural Strength, ASTM D 790: 19,000 psi.
 - 3. Flexural Modulus, ASTM D 790: 900,000 psi.
 - 4. Barcol Hardness, ASTM D 2583: 35.
 - 5. Notch Izod Impact, ASTM D 256: 13 ft-lbs/inch.
 - 6. Water Absorption, ASTM D 570: 0.2 percent.
 - 7. Test Coupon Preparation: ASTM D 618.
- C. Design:
 - 1. Support applied downward vertical or gravity loadings:
 - a. Fabrication.
 - b. Attachments.
 - c. Water fill.
 - 2. Deflection:
 - a. Resist buoyant or gravity water load deflection.
 - b. Maximum Upward and Downward Deflection: L/1,000. L equals unsupported trough length in inches.
 - c. Maximum Vertical Deflection at Trough Midpoint Between Supports: 3/16 inch.
- D. Compliance:

Specifier Notes: Specify the required standards.

- 1. ANSI/AWWA F101, Type I.
- 2. ANSI/AWWA F101, Type II.

3. ANSI/NSF 61.

E. Construction:

Specifier Notes: Specify bottom shape of trough.

1. Bottom of Trough With Vertical Sides: [Round] [Square] [V-shape].
2. Top Edge: Straight with a maximum of 1/8 inch deviation from true plane over 10 feet.
3. Unit Rigidity: Longitudinal steel stiffening ribs integrally molded-in as required.
4. Spreader Bars: Sufficient number of PVC spreader bars to maintain uniform width over length of each trough.
5. Open End Condition:

Specifier Notes: Specify one of the following open end conditions.

- a. Grouting Rib: 2-inch wide, 1/2-inch thick wall, molded outside of each trough at gullet end, to act as water stop when trough grouted in place.
- b. Saddle: At trough end with slotted holes to allow a minimum vertical adjustment of 1 inch.

Specifier Notes: Specify the following if closed end of trough is integrally molded-in.

6. Closed End of Trough, Integrally Molded-In: 1.5 times thickness of trough body.
7. Spacer Rods: PVC.

Specifier Notes: Specify the following if weir plates are required. Refer to Section 11204 - Weir Plates and Scum Baffles. Consult MFG Water Treatment Products Company for additional information.

- F. Weir Plates:
1. Match-metal-die-molded fiberglass reinforced plastic in accordance with ANSI/AWWA F102.
 2. Depth: As specified in Section 11204.
 3. Mounting Holes: 2-1/2-inch diameter at 12 inches on center.

Specifier Notes: Specify Type 304 or Type 316 stainless steel fasteners and anchors.

- G. Fasteners and Anchors: [Type 304] [Type 316] stainless steel.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive troughs.
- B. Verify field dimensions.
- C. Notify Engineer of conditions that would adversely affect installation. Do not proceed with

installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install troughs in accordance with manufacturer's instructions.
- B. Install troughs plumb, level, square, in true and proper alignment, and without warp or twist.
- C. Adjust weir plates as specified or as directed by Engineer.
- D. Grout troughs in place after leveling.
- E. Adjust lengths of plates as necessary due to field conditions as approved by Engineer. Do not perform excessive cutting.
- F. Seal with manufacturer's sealant field cut edges and drilled holes.

END OF SECTION