SECTION 13300
FIBERGLASS REINFORCED PLASTIC (FRP) TANK COVERS

Revision 1.0 — April 2026

PROJECT TEMPLATE: This document is provided as a specification template. Contact RPS Engineering at 847-931-1950 to work with our team on completing project-specific load requirements and specifications for your facility.

PART 1 — GENERAL

1.1 DESCRIPTION

A. This specification is for a fully engineered, substantially airtight, fiberglass reinforced plastic (FRP) cover structure comprised of panels and beams or trusses manufactured by RPS Engineering. This specification shall be regarded as a minimum standard for design and fabrication. All materials shall be suitable for continuous exposure to hydrogen sulfide (H2S) gas and other corrosive byproducts of wastewater treatment environments.

B. Scope of Work: Furnish all labor, materials, and equipment to provide a complete, installed system of easily removable, custom fit, flat FRP covers. The cover system includes cover panels, structural supports, access hatches, and attaching hardware.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM D-638 — Standard Test Method for Tensile Properties of Plastics.
2. ASTM D-790 — Standard Test Method for Flexural Properties of Plastics and Electrical Insulating Materials.
3. ASTM D-695 — Standard Test Method for Compressive Strength of Plastics.
4. ASTM E-84 — Standard Test Method for Surface Burning Characteristics of Building Materials.
5. ASTM E-72 — Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.

B. ASCE 7-22 — Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

C. International Building Code (IBC) 2021.

1.3 SUBMITTALS

A. Product Data, Shop Drawings: Send complete product data and shop drawings in accordance with submittal procedures. The submittal shall include:

1. Complete structural calculations showing the governing stresses in all members and connections, and detailed shop drawings. Preliminary drawings shall be stamped by the cover manufacturer’s registered Engineer. Final drawings and calculations shall bear the stamp of a PE.
2. Manufacturer’s warranty for one (1) year.

3. Contractor is responsible for verifying all field dimensions for development and approval of manufacturer's drawings.

1.4 QUALIFICATIONS

A. Manufacturer: Shall be a company specialized in providing engineered FRP covers for wastewater treatment tanks and troughs for at least five (5) years. When requested by the Engineer, submit written evidence to show experience qualifications and adequacy of plant capability and facilities for performance of contract requirements.

1.5 PERFORMANCE

A. Span: The clear span length of the cover shall be as noted in the scope of work.

B. Width: The inside width of the cover shall be as noted in the scope of work.

C. Distributed Design Live Load and Deflection: All structural components shall be designed to support the dead weight of the structure plus a live load of _____ pounds per square foot of surface. The maximum deflection of any component under this load shall not exceed L/_____ of the span of that component. In no event shall the dead load deflection exceed the rise of any component to avoid surface ponding. Minimum safety factor of 2.5 for deck panels and structural members.

D. Personnel Loads: Besides the tank cover loads outlined above, the whole tank cover shall be designed to sustain walking traffic with a design load of 100 pounds per square foot. The personnel load deflection shall not exceed ¼ inch. Loads in items C and D are not to be combined or added together. Minimum safety factor of 2.5.

E. Concentrated Live Load: The structural components shall be designed to support a 250-pound load on a 12" x 12" area found anywhere on the surface of the structure without permanently deforming the tested area.

F. Wind Uplift: Design tank cover system to withstand uplift caused by wind speeds per ASCE 7-22 for the project location. Minimum safety factor of 1.88 and deflection limit of L/60 for wind uplift.

G. Skid Resistance: An anti-skid grit coating shall be applied to the walking surface. The manufacturer of the non-skid surface shall demonstrate in writing satisfactory performance for a minimum period of 10 years in the wastewater industry for the intended purpose. This surface shall not be achieved using adhesive tapes.

H. Chemical Resistance: Panels shall be suitable for installation in environments with exposure to hydrogen sulfide (H2S) gas, moist chlorine vapor, and other corrosive byproducts of wastewater treatment. A mechanical and replaceable neoprene seal shall isolate the cover perimeter from the concrete wall. No foam tape or caulk shall be allowed.

I. Configuration: The FRP cover shall be composed of panels and beams or trusses. All panels shall inter-nest with the adjoining panel without the use of threaded fasteners. The weight of an individual panel shall not exceed 5 psf. Each removable panel shall be easy to remove, and the lifting force required shall not exceed the dead weight of the panel.

1.6 DELIVERY, STORAGE AND HANDLING

A. Delivery: Delivery of the components of the structure shall be made to a location nearest the site that is accessible to over-the-road trucks, unless otherwise specified. Handle all components in accordance with manufacturer's instructions to avoid cuts, scratches, gouges, abrasions, and impacts.

B. Storage: The Contractor shall handle jobsite storage of the delivered components. The components shall be stored off the ground on a level surface in such a manner as to prevent damage.

C. O&M Manual: The manufacturer shall provide an O&M Manual that includes “as-built” drawings, maintenance instructions, and removal and replacement instructions for the installed cover.

PART 2 — PRODUCTS

2.1 MANUFACTURER

A. RPS Engineering

1. 1300 Crispin Drive, Elgin, IL 60123
2. Phone: 847-931-1950 | Fax: 847-931-4274
3. www.rpsengineering.com
4. Woman-Owned Business

2.2 MATERIALS

A. Fiberglass: Fiberglass reinforced polyresin composite laminate with UV stabilizer. All materials shall be resistant to hydrogen sulfide (H2S) and corrosive gases typical of wastewater treatment environments.

1. Glass fiber content shall be minimum 50% by weight.
2. Physical Properties:
    a. Tensile Strength (ASTM D-638): 30,000 PSI minimum
    b. Compressive Strength (ASTM D-695): 30,000 PSI minimum
    c. Flexural Strength (ASTM D-790): 30,000 PSI minimum

B. Fasteners: All fasteners shall be stainless steel or structural plastic. Fasteners on underside of cover shall be Type 316 stainless steel. Beams and panels shall be fastened to concrete using Type 316 stainless steel drill-in-place anchor bolts.

C. Seals: A mechanical and replaceable neoprene bulb-type seal shall isolate the cover perimeter from the concrete wall. No foam tape or caulk shall be allowed.

D. Access Hatch: Provide raised access panels where indicated. Access panels shall be pultruded FRP. Provide Type 316 stainless steel fasteners, hinges, and hold-open device.

E. Structural Supports: Wide flange or fabricated FRP structural beam. Resin vinyl ester with UV stabilizers. Provide at all hatches and pipe penetrations.

F. Flashing: Provide FRP perimeter flashing as required to seal the cover system. Provide flashing at pipe penetrations.

PART 3 — EXECUTION

3.1 EXAMINATION

A. Verify that dimensions are correct and project conditions are suitable for installation.

3.2 INSTALLATION

A. Install FRP covers in accordance with manufacturer's instructions.

B. Anchor FRP cover panels to the structure per the shop drawing details and in accordance with the manufacturer's instructions.

C. Field cutting is not allowed without the Manufacturer's written consent. Coat all field cutting edges in accordance with the manufacturer's recommendations.

3.3 CLEANING

A. Clean surfaces in accordance with manufacturer's instructions.

B. Remove all trash and debris and vacuum clean contact basin after installation.

END OF SECTION 13300