# SECTION 13300

FIBERGLASS REINFORCED PLASTIC TANK COVERS

**PART 1 - GENERAL**

* 1. **DESCRIPTION**
1. This specification is for a fully engineered, substantially airtight, fiberglass reinforced plastic (FRP) cover structure comprised of panels, and beams or trusses as manufactured. This specification shall be regarded as a minimum standard for design and fabrication.
2. 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.

Please list all tanks, channels, etc. where an engineered cover system is required and clearly identify on the contract drawings provided:

1.

2.

3.

4.

# REFERENCES

1. American Society of Testing and Materials:
	1. D-638 standard Test Method for Tensile Properties of Plastics.
	2. D-790 Standard Test Method for flexural Properties of Plastics and Electrical Insulating Materials.
	3. D-695 Standard Test Method for Compressive Strength of Plastics.
	4. E-84 Standard Test method for Surface Burning Characteristics of Plastics.
	5. E-72 Strength of Panels for Building Materials.

# SUBMITTALS

1. Product Data, Shop Drawings: Submit complete product data and shop drawings in accordance with [SUBMITTALS]. 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 cover manufacturer’s registered Engineer. Final drawings and calculations shall bear the stamp of a PE.
	2. Manufacturer's warranty of \_\_\_\_\_\_ years.
	3. Contractor is responsible for verifying all field dimensions for development and approval of manufacturer’s drawings.

# QUALIFICATIONS

A. Manufacturer: Shall be a company specialized in providing engineered FRP covers for wastewater treatment tanks/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.

# PERFORMANCE

1. Span: The clear span length of the cover shall be as noted in the scope of work.
2. Width: The inside width of the cover shall be as noted in the scope of work.
3. 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/XXX of the span of that component. In no event shall the dead load deflection exceed the rise of any component in order to avoid surface ponding. Minimum Safety Factor of 2.5 for deck panels and structural members.
4. 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 1/4 inch. Loads in items C and D are not to be combined or added together. Minimum Safety Factor of 2.5.
5. Concentrated Live Load: The structural components shall be designed to support a 250- pound load on a 12" X 12" area located anywhere on the surface of the structure without permanently deforming the tested area.
6. Wind Uplift: Design tank cover system to withstand uplift caused by wind speeds of \_\_\_ mph. Minimum Safety Factor of 1.88 and Deflection Limit of L/60 for wind uplift.
7. 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 by the use of adhesive tapes.
8. Chemical Resistance: Panels shall be suitable for installation in a moist chlorine vapor environment. A mechanical and replaceable neoprene seal shall isolate the cover perimeter from the concrete wall. No foam tape or caulk shall be allowed.
9. 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.

# DELIVERY, STORAGE AND HANDLING

1. 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.
2. Storage: The Contractor shall be responsible for jobsite storage of the delivered components. The components shall be stored off the ground on level surface in such a manner as to prevent damage.
3. 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

* 1. **MANUFACTURER**

A. RPS Engineering

# MATERIALS

1. Fiberglass: Fiberglass reinforced poly resin composite laminate with UV stabilizer.
	1. Glass fiber content shall be minimum 50% by weight.
	2. Physical Properties:
		1. Tensile Strength (ASTM D-638) 30,000 psi
		2. Compressive Strength (ASTM D-695) 30,000 psi
		3. Flexural Strength (ASTM D-790) 30,000 psi
2. Fasteners: All fasteners shall be stainless steel or structural plastic. Fasteners on underside of cover shall be 316 stainless steel. Beams and panels shall be fastened to concrete using 316 stainless steel drill in place anchor bolts.
3. 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.
4. Access Hatch: Provide raised access panels where indicated. Access panels shall be pultruded FRP. Provide 316 stainless steel fasteners, hinges and hold open device.
5. Structural Supports: Wide flange or fabricated FRP structural beam. Resin vinyl ester with UV stabilizers. Provide at all hatches and pipe penetrations.
6. Flashing: Provide FRP perimeter flashing as required to seal the cover system. Provide flashing at pipe penetrations.

# PART 3 - EXECUTION

* 1. **EXAMINATION**

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

# INSTALLATION

1. Install FRP covers in accordance with manufacturer’s instructions.
2. Anchor FRP cover panels to the structure per the shop drawing details and in accordance with the manufacturer’s instructions.
3. Field cutting is not allowed without the Manufacturer’s written consent. Coat all field cut edges in accordance with the manufacturer’s recommendations.

# CLEANING

1. Clean surfaces in accordance with manufacturer’s instructions.
2. Remove all trash and debris and vacuum clean contact basin after installation.

# \*\* END OF SECTION \*\*