

NEFCO FRP TANK COVERS

** Engineer to select where there's a [] present.

PART 1–GENERAL

1.01 SUMMARY

- A. The prefabricated fiberglass reinforced plastic (FRP) tank covers are designed to help contain odors, inhibit algae growth and prevent debris from entering a tank. They span the full open distance of the tank and can provide a walkway for personnel.
- B. The cover may be outfitted for an odor control/air scrubber system to be attached by way of pipe flanges or openings. [] yes [] no
- C. Related Sections and Divisions: Applicable or reference sections and divisions

1.02 SYSTEM DESCRIPTION

- A. The FRP cover system shall be designed to cover the structure and other equipment as shown in the contract drawings.
- B. Each cover system shall consist of cover panels, structural supports (if required), access hatches (if required), gaskets (if required), flashing and trim (as required), hardware, anchors and fasteners and other items necessary for a complete FRP cover system. All materials and appurtenances shall be furnished by the same supplier.

1.03 SUBMITTALS

- A. Submit shop drawings and Operation & Maintenance Manuals.
- B. Shop drawings shall specify all materials. The size, number, and location of the following shall be indicated: handles, fasteners, structural members, connections, attachments, openings, and other items not listed that are a necessary component of a complete installation.
- C. Provisions for special openings, removable sections, seals for inlet/outlet ports or vents, or other areas as noted on the drawings shall be provided and detailed by the manufacturer on the shop drawings.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer shall maintain a continuous quality control program and shall furnish to the Engineer certified test results for all the FRP production parts.
 - 2. Must be manufactured in the U.S.A.

3. The manufacturer shall have been engaged in the design and fabrication of similar structures for a minimum of 5 years and shall submit a list that states the location and description of five installations minimum.
4. Manufacturer shall submit to the Engineer a certification that the cover system was manufactured in compliance to the specifications and meets or exceeds the requirements of the specification.

1.05 PROJECT CONDITIONS

- A. Contractor shall confirm the condition and configuration of the structure to be covered. This includes field measurements and locating obstacles that may inhibit the installation.

1.06 WARRANTY

- A. Standard One-Year Warranty: Unless otherwise stated below, manufacturer shall warrant the equipment to be free from defects in material and workmanship for a period of 1 year from the date of equipment acceptance.

PART 2-PRODUCTS

2.01 MANUFACTURERS

- A. The Full Span Cover System as manufactured by NEFCO SYSTEMS, Incorporated, 8895 Military Trail, Building C, Suite 100, Palm Beach Gardens, FL 33410 shall be considered as the basis of design and quality required as defined in the General Conditions.

2.02 MATERIALS AND ACCESSORIES

A. General:

1. The cover system shall be a flat, walk-on type. It will consist of a series of FRP panels with support structure (if required). Hinged hatches for inspection and maintenance shall be provided (if required). The surface of the covers shall be flat without any protruding items that may cause a tripping hazard. The covers shall completely cover the tank and or structure as required per plans. The cover panels shall have an anti-skid surface (if required).
2. Each cover panel shall be manufactured by the pultrusion process utilizing [] Isophthalic polyester [] Vinyl Ester resin with corrosion resistant properties and additives to inhibit UV absorption. A synthetic surfacing veil shall be the outermost layer covering the exterior surface. Open molded panels are acceptable if they meet the deflection and load requirements. The "minimum physical properties" table will not apply for the open molded panels since it represents pultruded material.

3. The pultruded fiberglass laminate shall have the following minimum physical properties:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Tensile strength	64,000 psi	ASTM D638
Flexural strength	61,000 psi	ASTM D790
Flexural modulus	1.8×10^6	ASTM D790
Notched Izod (ft-lb/in)	25	ASTM D256
Barcol Hardness	45	ASTM D2583
Water Absorption (%)	0.2%	ASTM D570
Thermal Expansion (in/°F)	7.0×10^{-6}	ASTM D696

4. Procedure used in determining the above properties shall be in accordance with the ASTM standards using the method designated above. Test coupons shall be prepared in accordance with the appropriate ASTM test method.
5. Design loads shall comply to local building codes with combined loads determined by allowable stress method
- Live or Snow: psf
 - Wind Uplift: psf
 - Dead Load: psf
6. Design Limits
- Dead + Live or Snow load: Deflection limit=L/180. FOS = 2.5
 _____Engineer requires
 - Wind Uplift Less Dead Load: Deflection limit=L/60. FOS = 2.0
 _____Engineer requires
 - Personnel Load: 250 lb. Load distributed over a 2.5' x 2.5' area with Deflection limit not to exceed L/180
 _____Engineer requires

B. Structural Framing (if required)

- FRP and/or SST structural components shall be attached to the inner and/or top of the tank wall to support the cover system.
- FRP support structure or components shall be Isophthalic Vinyl Ester. If Fire Retardant (FR) is required, flame spread rating of 25 or less per ASTM E84 test shall be a minimum.
- If the cover system requires metal structure or components, the metal structure or components shall be type 304 stainless steel, 316 stainless steel, HDG, or aluminum as required.

2.03 FINISHES

- A. The top surface of the cover shall have a non-skid surface (if required). yes no

- B. FRP or stainless flashing (if required). [] yes [] no, Type_____
- C. Hatches (if required). [] yes [] no
- D. Vents (if required). [] yes [] no
- E. Pipe flanges or openings for odor control system connection. [] yes [] no
(Provide description and quantity)
- F. Lifting handles (if required). [] yes [] no (specify material and grade)
- G. Provisions for special openings, removable sections, seals for inlet/outlet ports or vents, or other areas as noted on the drawings shall be provided and detailed by the manufacturer on the shop drawings

2.04 FASTENERS

- A. Provide all required fasteners for equipment furnished. Fasteners shall be type [] 304 [] 316 stainless steel. Size determined by manufacturer.

2.05 ANCHORS

- A. Provide all required anchors for attaching the cover system to existing concrete structure. Anchors shall be type [] 304 [] 316 stainless steel. Size determined by manufacturer.

PART 3-EXECUTION

3.01 FIELD QUALITY CONTROL AND DEMONSTRATION

- A. **Prior to fabrication** of the cover system, the installation CONTRACTOR shall field measure the following:
 1. Wall to Wall lengths for square/rectangular tanks
 2. Radius or diameter for circular tanks
 3. Load bearing wall thickness
 4. Locate obstacles or structures such as cross bridges, walkways or mechanisms that interrupt the span or installation of the cover.
 5. Any additional field requirements to ensure the correct fitment of the cover system.
- B. Upon completion of installation, the following inspection functions shall be performed by the installation contractor.
 1. All components are fitting together properly to form a rigid structure and has a well-engineered and professional appearance.
 2. All fasteners and anchors are present and tight.
 3. Hatches operate properly.
 4. Vents are clear

END OF SECTION