

# SPECIFICATION

## FIBERGLASS REINFORCED PLASTIC LAUNDRER COVER



The Launder Cover is an advanced cover system designed to inhibit the growth of algae on the launder troughs and weirs of clarifier tanks by minimizing incident sunlight on these surfaces, while minimizing effluent TSS by keeping leaves and other airborne debris from entering the launder. In addition, the Cover system can be minimally altered to contain foul odors.

### PART 1 GENERAL

#### 1.1. DESIGN CRITERIA

- A. The Launder Cover shall consist of a system of molded fiberglass panels that come together to form a continuous cover over the launder trough and weir within the treatment tank. The Cover shall be designed and manufactured to inhibit incident sunlight from striking the surfaces of the launder and weir. Each Cover section shall be molded of UV-protected fiberglass and shall be opaque to sunlight. Individual sections shall be a minimum of four feet in length and curved to follow the curvature of the tank. The Cover shall extend over the trough and weir as far as possible and may extend to a point immediately outside the scum baffle ring to avoid interference with the sweep arm. The Cover shall be designed such that adjacent panels fit together properly and the completed Cover, when installed, forms a rigid structure, and has a well-engineered and professional appearance.
- B. Provision shall be made to support the Cover in such a manner that the panels are held securely in place, with the panels' pivoting point to provide access to the launder and weir for inspection and maintenance. Neither the Cover nor the means used to support it shall interfere with effluent flow over the weir or within the trough. Cover pivoting / support brackets shall not impede personnel from entering and traversing the launder. Cover supports that cantilever from the outer effluent launder wall without support at the weir wall are unacceptable.
- C. Launder cover panels shall have a cross-sectional ridge over the width of the launder trough <in the direction of the flow> to strengthen the panel and minimize possible deflections against snow loads. Additional reinforcement against snow loads may be incorporated into the design by means of stiffening flanges fastened radially to the cover panel's underside.
- D. The Cover shall be designed to open away from the operator and toward the center of the tank. Each Cover segment shall consist of a single Cover Section fastened to the top or side of the weir wall using two (2) pivoting support brackets. The pivoting support brackets shall provide a rigid mount for the Cover Sections and ensure the proper fixed spacing between them. Cover systems comprised of cover sections with multiple parts connected by piano hinges are unacceptable.
- E. The Launder Cover sections can be designed to open in one of three (3) configurations:
  - I. Consecutively – In sequence.
  - II. Independently; or
  - III. Alternatively – Every other panel opens independently to allow the intermediate panels to open.
- F. Provision shall be made to secure the Cover in the closed position for safety and security. This is accomplished by means of an easily operated, spring-loaded latch mechanism that secures the Launder Cover panels in the closed position. Handles or lift rings may also be required for some panels. A means of limiting the travel of the Launder Cover sections, in the form of a restraint cable or tether, may also be provided to protect against damage. Covers with inspection hatches or cleanout doors are unacceptable.
- G. Where the circumference of the trough is interrupted by a bridge-support or another obstacle, a fixed panel(s) shall be installed over the trough beneath the support such that the surface of the Cover is continuous around the entire tank. Alternatively, vertical panels may be installed on both sides of the bridge supports to block out sunlight.
- H. The Cover system shall be designed to withstand common wind and snow loads but the entire Cover shall not be intended as a "walk-on" Cover designed to support the weight of plant personnel. Adequate stiffeners shall be integral to each panel, but panels reinforced with balsa or foam cores are not acceptable except where a single or double length reinforced walk-on section is used for safe entry to the launder.

#### 1.2. SUBMITTALS

- A. Shop Drawings
  - i. Manufacturer's catalog information, descriptive literature, specifications, and identification of materials of construction, including resins and glass fiber content and layout for FRP constructions.
  - ii. Detailed drawings showing equipment fabrication, dimensions, method of attachment including number, locations and size of fasteners and weights of fabrications.
  - iii. Manufacturer's recommended Cover dimensions, mounting configuration and location for each application.
- B. Quality Control Submittals
  - i. Manufacturer's Certificate of Compliance.
  - ii. Special shipping, storage and protection and handling instructions.
  - iii. Manufacturer's written/printed installation instructions.
  - iv. A list of ten installations of comparable size in operation for at least five years.
  - v. Certify that the cover meets local building code specifications for wind load, including uplift and deflection.
  - vi. Certified test reports of the physical and mechanical properties confirming Cover panels meet specification section 2.2.C.

**1.3. WARRANTY**

- A. Seller’s warranty for proven manufacturing defects and workmanship is applicable for parts manufactured by Seller only; for supply of replacement materials only; and for the time period of one year after date of shipment. The warranty is not applicable for parts not manufactured by Seller such as metal fasteners, sealants, or closures nor does it include repair or replacement labor.

**1.4. COORDINATION**

- A. Manufacturer shall coordinate the Launder Cover design and installation requirements with the clarifier mechanism, scum box and launder effluent channel configurations.

**PART 2 PRODUCTS**

**2.1. MANUFACTURER(S)**

- A. Standard design and characteristics shall be based on materials, equipment, and components provided by Enduro Composites Inc., 16602 Central Green Blvd., Houston, TX 77032.

**2.2. MATERIALS**

- A. Each Cover panel shall be molded of fiberglass, reinforced plastics. The resins and fiberglass reinforcing materials shall be consistent with the environmental conditions and structural requirements of the application.
- B. The resin shall be an industrial quality, isophthalic polyester resin with UV suppression additives, or equivalent. The resin shall be pigmented to ensure that the resulting part is opaque. The glass reinforcement shall be continuous fiberglass mats/roving combination, or equivalent. Multiple continuous panels of woven roving may be applicable for extra-large panels. Additional reinforcement in the form of stiffening ribs shall be added when necessary. The glass content of the finished laminate shall be not less than 35% by weight (ASTM D2584-18). The nominal thickness of each panel shall be 1/4 inch. The laminate shall consist of resin-rich glossy surface finish. The laminations shall be dense and free of voids, dry spots, cracks, or crazes. All factory-trimmed edges shall be sanded and sealed. The finished laminate shall have a smooth, even appearance.
- C. FRP Launder Cover panels shall exhibit these minimum properties:
 

Tensile Strength (ASTM D-638)	26,000 psi
Flexural Strength (ASTM D-790)	30,000 psi
Flexural Modulus (ASTM D-790)	1.9 X 10 <sup>6</sup> psi
Barcol Hardness (ASTM D-2853)	50
Notched Izod (ASTM D-256)	20 ft-lbs/in
Water Absorption (ASTM D-570)	0.25% (MAX)
- D. Each cover panel’s weight shall not supersede 55 lbs. max.
- E. Fasteners, handles, hinge, and latches shall be stainless steel. The weir wall mounting brackets shall be stainless steel, FRP or a combination of the two. The latch/handle shall be spring-loaded, where the mechanism shall have a positive detent positioned to indicate the closed/locked position of the handle. The spring-loaded latch is activated by pressing down on the handle and turning it.
- F. The tether or restraint cable shall consist of a length of stainless-steel cable secured to the tank wall and the hinged Cover Section by means of stainless-steel eyebolts. The length of the cable is selected to limit the travel of the Cover.

**PART 3 EXECUTION**

**3.1. INSTALLATION**

- A. The Cover sections shall be mounted to the weir wall on stainless steel or FRP brackets. The free end of each Cover panel shall be supported at the outer tank wall by an FRP support flange that attaches to the entire periphery of the tank.
- B. The installation contractor shall install the Cover in accordance with the contract drawings, manufacturing drawings and manufacturer’s recommendations. Field cutting of panels shall be allowed to complete the structure and accommodate in-tank obstructions. All cut ends shall be dressed as per the manufacturer’s recommendations.
- C. All the fasteners and brackets required for the installation shall be Stainless Steel and shall be supplied by the Cover manufacturer. The support flange and weir wall brackets are installed using 3/8” x 3-3/4” expansion anchors with flat washers, lock washers and hex nuts.

END OF SECTION