

## FRP Launder Cover Systems

Corrosion Resistance Superior Strength Long Service Life

Controlling growth of algae formed in the clarifier effluent stream is a challenge for today's modern water and wastewater treatment plants. Left unchecked, algae can change hydraulic dynamics of clarifiers by obstructing weir design features typically found in v-notched weir configurations.

Furthermore, at plants utilizing newer ultraviolet disinfection technology, larger algae strands tend to dislodge and move downstream through the plant to substantially cover UV bulbs making them ineffective and eventually may cause the expensive bulbs to fail all together.

Improving operations, Enduro Launder Covers prevent algae growth plus act as a weather and debris barrier for the launder. In addition, the covers contain odor and gas emissions associated with water and wastewater treatment operations.

Enduro Launder Covers consist of multiple, high strength sections fabricated to the contour of the clarifier or tank. Each section extends from the tank wall inward over the launder and weir to the scum baffle. With superior corrosion resistance and strength, use of FRP components ensures long, maintenance-free service life.

Fiberglass launder covers from Enduro Composites are custom designed for both round and rectangular tanks and provide important value for water and wastewater operations:

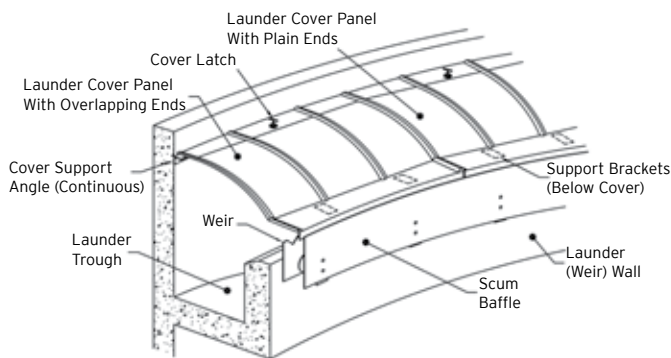
- Continuously inhibit algae growth
- Light weight cost effective solution
- Safe, reliable and efficient
- Operable access for inspections and maintenance
- Odor and vapor containment
- Long, reliable service

The FRP launder cover system inhibits (direct) sunlight from reaching the elevated growth areas at the clarifier launder and weir by forming a continuous protective environment above the effluent stream. Once installed, the system provides an attractive yet extremely low maintenance, passive structure designed to eliminate algae growth issues.

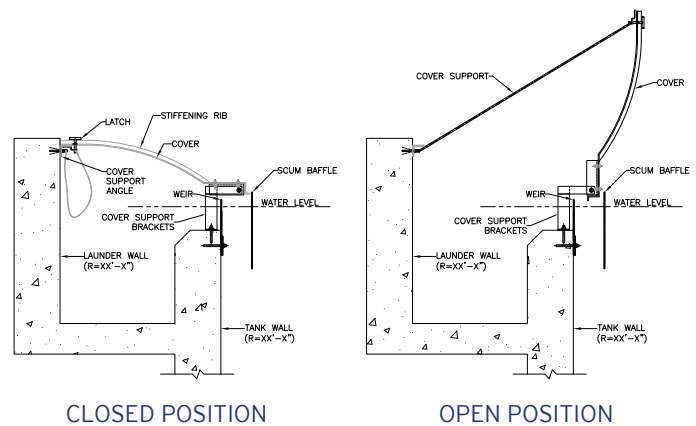
Additional benefits of the system help to prevent windblown debris like leaves, plastic bags, etc. from entering the stream and may also help to contain localized odors if present in the effluent trough - weir area.



LAUNDER COVER SYSTEM – PERSPECTIVE VIEW



LAUNDER COVER ARRANGEMENT



## SPECIFICATIONS: FIBERGLASS REINFORCED PLASTIC (FRP) LAUNDRER COVER

### PART 1 - GENERAL

#### 1.01 Description of Work

The work covered by this section shall include materials and installation for the fiberglass reinforced plastic (FRP) Launder Cover Panel System, which includes but is not limited to FRP Launder Cover panels, FRP or stainless steel support brackets, stainless steel fasteners and connections.

#### 1.02 Design Criteria

- A. The FRP launder cover system and associated FRP or stainless steel component material shall comply with ANSI/AWWA Standards as applicable for water or wastewater treatment applications.
- B. Unique design features incorporated into the size and mounting location of the FRP launder cover system work in conjunction with clarifier configuration to maximize coverage of the affected areas.
- C. FRP Launder cover system structural arched design shall be able to support its own weight plus snow and wind loads after installation when the tank is full or empty.

#### 1.03 Design Parameters

The manufacturer relies on the following critical information to provide an accurate arrangement for the design of the launder cover system to function as intended. Actual design requirements, which vary from plant to plant with process, must be established for each application.

##### Standard Design Parameters (Imperial or Metric):

Tank design (internal or external launder) = \_\_\_\_\_  
External launder wall inner radius = \_\_\_\_\_  
Launder trough width = \_\_\_\_\_  
Internal launder wall width = \_\_\_\_\_  
Internal (weir) wall inner radius = \_\_\_\_\_  
Scum baffle offset from weir = \_\_\_\_\_  
External launder wall top elevation = \_\_\_\_\_  
Internal (weir) wall top elevation = \_\_\_\_\_  
Weir top elevation = \_\_\_\_\_  
Scum baffle top elevation = \_\_\_\_\_  
Water surface elevation = \_\_\_\_\_  
Known obstructions = \_\_\_\_\_

### PART 2 - PRODUCTS

#### 2.01 Manufacturer(s)

- A. Standard design and characteristics shall be based on materials and components provided by Enduro Composites, Inc., Houston, TX (713) 358-4000, [www.endurocomposites.com](http://www.endurocomposites.com).

#### 2.02 Materials

A. FRP Launder cover panels and appurtenances shall be fiberglass reinforced plastic molded to produce uniform smooth surfaces and shall be consistent with environmental and structural conditions present for a particular application. The cover shall be resin rich, free of voids and porosity, without dry spots, crazes or unreinforced areas and shall provide for increased corrosion resistance. Launder cover panels shall include structural glass fiber reinforcements 30% (minimum) by the material weight embedded within UV stabilized Type 1 – Polyester or Isophthalic polyester resin for additional corrosion protection. FRP laminate shall have a nominal 20 mil marine grade gelcoat top surface and a resin rich hot coat bottom surface after a light sanding. Color shall be standard light grey or white. Factory cut edges and drilled holes shall be sealed with ANSI approved material.

B. FRP Launder Cover panels shall exhibit these minimum properties:

Tensile Strength	12,000 psi	ASTM D 638
Flexural Strength	20,000 psi	ASTM D 790
Flexural Modulus	1.0 x 10 <sup>6</sup> psi	ASTM D 790
Izod Impact (Notched)	12.0 ft-lb/in	ASTM D 256
Water Absorption	.10% maximum	ASTM D 570
Barcol Hardness	40 (nominal)	ASTM D 2853
Coef. of Thermal Expansion	15 x 10 <sup>-6</sup> in/in/°F (avg)	ASTM D 696

#### C. FRP Launder Cover Panels

- a. Nominal panel size is 1/4" thick x 4 feet long (minimum) x "width" generally described as the unobstructed distance extending from the external tank wall across the effluent trough and weir area to the scum baffle without interfering with the clarifier mechanism or as otherwise indicated on the drawings.
- b. The cover system shall be designed and molded of UV protected fiberglass-reinforced polyester resin composite laminate opaque to sunlight.
- c. Cover consists of individual adjacent panels that fit together side by side thus forming a continuous rigid structure to inhibit incident (direct) sunlight from reaching the effluent launder and weir area.
- d. The cover shall match the tank curvature (if round) or straight (if rectangular) as shown in the drawings.
- e. Cover supports shall be located and made in such a manner to hold the panels securely in place yet pivot to provide access to the launder and weir for inspection and maintenance.
- f. Designed to withstand common wind and snow loads (if applicable), the cover shall not be intended as a "walk-on" cover capable of supporting the weight of plant personnel.
- g. Cover design as shown or intended in the contract documents, shall open away from or toward the operator yet ultimately may depend on certain qualities or parameters associated with a particular tank configuration.
- h. Provide a means to restrain the cover from opening in the closed position or closing from the open position and also limit the travel of the operable section to avoid interfering with the clarifier mechanism.
- i. Where the trough is interrupted by a bridge-support or another obstacle, provide a fixed panel(s) around the support to ensure the surface of the cover remains continuous around the entire tank. Alternatively, vertical panels may be installed on both sides of the bridge supports to block out sunlight.
- j. All panel edges, mounting holes and top surface lap holes shall be factory drilled and sealed with resin unless otherwise noted or directed by the manufacturer for field modification on the approved installation drawings.

#### D. Hardware

- a. Fasteners, anchorage, and other structural hardware shall be stainless steel provided by the manufacturer:  
\_\_\_\_\_304 Stainless Steel \_\_\_\_\_316 Stainless Steel
- b. Cover panel fasteners shall be nut and bolt type assembly with washers and lock washer.
- c. Mounting anchors shall be expansion (wedge) type or adhesive type (sized as required).

### PART 3 – EXECUTION

#### 3.01 Installation

- A. Installer shall erect the FRP cover panels according to sequence shown or stated on the approved installation drawings. Cover panels shall be properly aligned by the installer at all mounting and connection conditions to form a professional looking rigid structure.
- B. Unless specifically shown or stated on the approved installation drawings, field modifications of any kind (cuts, copes, holes, etc.) are expressly prohibited without proper notification of the issue and a corrective action approved and authorized by the engineer. Only then will modifications be allowed as directed by Enduro Composites.
- C. Installer shall seal all field cut edges and drilled holes with an approved material.
- D. Install additional miscellaneous components or hardware as shown on the approved drawings.