

DUAL SURFACE DENSITY CURRENT BAFFLE

May 2011

The Dual Surface Baffle is an advanced density current baffle designed to improve the performance of the clarifier by intercepting the density currents formed within the clarifier and diverting the flow back into the main clarification volume of the tank. The Dual Surface Baffle is specifically intended for use in larger clarifiers with surface overflow rates in excess of 900 gallons per day/per square foot of clarifier surface area.

PART 1 GENERAL

1.1. 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 baffle dimensions, deflection angle 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. Certified test reports of the physical and mechanical properties of the product. Each panel shall have the following minimum physical properties:

<u>Property</u>	<u>Test</u>	<u>Minimum Value</u>
Tensile Strength	ASTM D-638	12,000 psi
Flexural Strength	ASTM D-790	20,000 psi
Flexural Modulus	ASTM D-790	1.0 x 10 ⁶ psi
Barcol Hardness	ASTM D-2853	40
Notched Izod	ASTM D-256	12 ft-lbs/in
Water Absorption	ASTM D-570	0.2%

1.2. WARRANTY

- A. Manufacturer shall warrant the Dual Surface Baffle to be free of defects in materials and workmanship for a period of five years after the date of Substantial Completion.

1.3. COORDINATION

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

PART 2 PRODUCTS

2.1. MANUFACTURERS

- A. Materials, equipment and components in this section shall be the products of:

NEFCO, Incorporated, 4362 Northlake Boulevard, Palm Beach Gardens, FL 33410

2.2. DUAL SURFACE BAFFLE

- A. The Dual Surface Baffle System shall consist of an inclined upper baffle surface and a lower surface that mirrors the upper surface. The upper and lower panels may be formed as a single molded unit, or supplied as individual panels that are assembled in the field. Alternatively, lower panels may be attached to an existing Stamford Density Current Baffle to form a Dual Surface Baffle. The upper and lower panels are attached to the wall of the clarifier to form a wedge-like surface around the entire inner periphery of the tank. The panels shall be designed such that adjacent panels fit together without overlapping or cutting, and the completed baffle when installed, has a well-engineered and professional appearance.
- B. The individual panel sections shall be a maximum of 8 feet in length and shall be curved to follow the curvature of the clarifier tank. The inclination angle of the baffle shall be 30 degrees as measured from the horizontal. The horizontal projection of the baffle shall be determined by the following equation that relates baffle projection to clarifier diameter:

$$\text{Horizontal Projection (Inches)} = 24 \text{ inches} + 0.4 \text{ in/ft} \times (\text{tank diameter (ft)} - 30)$$

- C. Each panel shall be molded of corrosion-resistant, UV-treated fiberglass. Provision shall be made to attach the panels to the clarifier wall and support them at the proper angle using a triangular panel bracket attached to the upper panel. That bracket shall be molded as an integral part of each panel, forming a baffle module. Only one bracket is required per panel. A specially formed "free-end" bracket shall be provided to support the free end of the last panel where the run of panels is interrupted by an obstruction. Panels may be cut as required to fit around obstructions.
- D. A method of interconnecting adjacent panels shall be provided such that the entire assembly forms a rigid structure capable of supporting its own weight plus snow and wind loads in the event the tank is out of service. The baffle shall also be designed to withstand a buoyant force load equal to the weight of the water displaced from the volume beneath the baffle. The angled working surface of each baffle shall be sufficient in pitch and width to divert the flow and to create a self-cleaning action of the baffle itself. Provision shall also be made to vent gases that may form beneath the baffle through 3" diameter half round openings molded into the panel at its highest point. Vents shall also be provided at the lowest point of the lower panel to allow any accumulated solids to escape and facilitate hosing out the baffle periodically when the clarifier is dewatered.

2.3. MATERIALS

- A. Each baffle panel shall be molded of fiberglass-reinforced plastic. The resins and fiberglass reinforcing material shall be consistent with the environmental conditions and structural requirements.
- B. The resin shall be an isophthalic polyester resin with corrosion-resistant properties, Corezyn COR75-AQ-010 or equivalent, suitable for use in submerged waste treatment applications. The resin shall not contain fillers except as required for viscosity control. For viscosity control, a thixotropic agent up to 5% by weight may be added to the resin. The resin shall be treated to provide UV suppression.
- C. Glass reinforcement shall consist of chemically bonded surfacing mat and chopped strand roving. Surfacing mat shall be Type C veil. The glass reinforcement shall be 357-211 PLN CTC chopped strand roving or equivalent. The glass content of the finished laminate shall not be less than 30% by weight. The nominal thickness of each baffle panel shall be 1/4" \pm 1/16 inch thick with resin rich surfaces and edges to prevent migration of moisture and fiber "blooming." The baffle shall be black in color.
- D. The upper surface of each panel shall be mold smooth and no glass fibers shall be exposed. Laminations shall be dense and free of voids, dry spots, cracks or crazes. The surfaces of both the upper and lower baffle panels shall be reinforced with one layer of surfacing veil followed by 2 ounces or more of chopped strand roving. In addition, the vertical mounting flange shall be reinforced with one layer of 24 oz woven roving.
- E. No other glass product is permitted between these layers. All factory-trimmed edges shall be "hot coated" with resin to prevent wicking.

PART 3 EXECUTION

3.1. INSTALLATION

- A. The installation contractor shall field verify existing dimensions and install the baffle in accordance with the contract drawings, approved shop drawings and manufacturer's recommendations. Mounting holes shall be factory drilled. Field cutting of baffle panels will be allowed to complete the structure and accommodate in-tank obstructions. All field cut or drilled edges shall be coated per the manufacturer's recommendations to prevent fiber blooming or fraying. All of the fasteners required for installation shall be supplied by the baffle manufacturer. The baffle panels shall be attached to the wall using 3/8" x 3-3/4" concrete expansion anchors with oversized 1/8" x 2-1/4" stainless steel washers, and hex nuts, Adjacent baffle panels are fastened together using 1/4" bolts, 2 flat washers, lock washer, and hex nut. All of the installation fasteners shall be 316 stainless steel.
- B. The Dual Surface baffle shall extend completely around the tank and shall be level, rigid and free of sway that could work anchors loose or cause undue wear.

END OF SECTION