STAMFORD DENSITY CURRENT BAFFLE 3.0

Stamford Density Current Baffle 3.0 (SB3.0) is an advanced baffle designed to improve the performance of the clarifier by a) substantially reducing clarifier effluent solids, b) increasing the clarifier's hydraulic capacity, c) promoting blanket formation, d) improving scum baffle function and e) minimizing potential short-circuiting through gas vents.

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. A list of five installations of comparable size in operation for at least three years.
v. Certified test reports of the physical and mechanical properties of the product. Each panel shall have the following physical properties:

Property	Test	Value
Tensile Strength	ASTM D-638	18,000 psi
Flexural Strength	ASTM D-790	26,000 psi
Flexural Modulus	ASTM D-790	1.01×10^6 psi
Barcol Hardness	ASTM D-2853	34
Notched Izod	ASTM D-256	10 ft-lbs/in
Water Absorption	ASTM D-570	0.08%

1.2. WARRANTY

A. Manufacturer shall warrant the Density Current 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 Stamford Density Current 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, 8895 North Military Trail, Bldg. C, Suite 100,
Palm Beach Gardens, FL 33410 (561-775-9303)

2.2. DESIGN

A. The Stamford Density Current Baffle shall consist of a series of baffle panels that are attached to the wall of the clarifier to form an inclined, shelf-like surface around the entire inner periphery of the tank. Each panel shall be molded of corrosion-resistant, UV-treated fiberglass. The panel shall be a maximum of 8 feet in length and shall be curved to follow the curvature of the clarifier tank. The width, inclination angle and mounting location of the baffle shall be determined based upon the clarifier configuration in order to provide optimum baffle performance. The panels shall be designed with a recess such that adjacent panels fit together to create a continuous flush surface. The completed installation will have a well-engineered and professional appearance.

B. The inclination angle of the baffle shall be 30 degrees as measured from the horizontal and; for circular tanks with a diameter of up to 120’-0”, the horizontal projection of the baffle shall be defined by the following equation:

Horizontal Projection (Inches) = 24 inches + 0.4in/ft x (tank diameter (ft) - 30)

For circular tanks with diameters greater than 120’-0”, the horizontal projection of the baffle shall be defined by the following equation:

Horizontal Projection (Inches) = 18 inches + 0.3in/ft x (tank diameter (ft) - 30)

Suppliers offering alternate configurations must provide CFD modeling results showing that the proposed alternate equals the performance of the specified configuration.

C. Provision shall be made to attach the panels to the clarifier wall and support them at the proper angle using a triangular panel bracket. The panel and bracket shall be molded as an integral part of each panel, forming a baffle module, or separate panels and brackets may be supplied. If the panel and bracket are molded as an integral unit with adequate stiffeners, 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. If separate panels and brackets are supplied, the panels shall be molded of fiberglass and shall meet the specifications of this section. The brackets shall be fabricated of 3” x 3” x 1/4" stainless steel angle and shall be triangular in shape, with the corners welded. Brackets shall be installed at a maximum spacing of four (4) feet. The panels shall be fastened to the brackets with stainless steel nuts, bolts and lock washers every 8 inches.

E. In the case of clarifiers/settling tanks with inboard launders, two scenarios are possible:

1) If there is sufficient vertical clearance between the top of the blanket and the bottom of the launder to position the bottom of the baffle at least two feet above the top of blanket, then the baffle shall be mounted directly to the tank wall at or above that position.
2) Where the clearance is more restricted, the baffle shall be mounted to the lower inboard corner of the launder trough. In this case, the width of the trough shall be taken into account when calculating the horizontal projection of the baffle, and the horizontal projection shall not be less than 24”.

F. 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 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.

G. Provision shall also be made to vent gases that may form beneath the baffle through 6” diameter half-round openings molded into the panel at its highest point. The vents shall aim radially towards the center of the tank, such that any bubbling and/or by-passing current is directed away from the weir, preventing short-circuiting. Especially in cases where the panels are to be launder-mounted, with the vents sitting directly below the weir and scum baffle.

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 upper surface of the baffle 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 (return flange on launder mount applications) 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 stainless steel.

B. The density current 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