

DIRECTOR II™

TANK BAFFLE SYSTEM

1.0 General Description

- 1.1 The tank baffles described in this specification shall be custom manufactured factory prefabricated hydraulic barrier curtain(s) designed to improve flow characteristics in a new or existing tank system. The manufacturer shall utilize virgin quality elastomeric geomembrane materials and factory dielectric and thermal seaming processes throughout. The tank baffle support hardware shall be manufactured in prefabricated kits to minimize field cutting and drilling. The tank baffles shall be designed for ease of installation in a new or existing tank.

2.0 Scope

- 2.1 Furnish and install Tank Baffles with appurtenances necessary to complete work as directed in the project specifications and drawings.
- 2.2 Each Tank Baffle shall include factory fabricated geomembrane panel(s) and related hardware required to complete the installation.

3.0 Qualifications

- 3.1 The diversion curtains shall be equivalent in all respects to the **DIRECTOR II™** series Tank Baffles manufactured by Environetics, Inc., Lockport, IL, Phone: 815-838-8331.
- 3.2 Qualified manufacturers must have at least 20 years experience in the fabrication of geomembrane products and must have manufactured a minimum of 50 structurally supported baffle systems.
- 3.3 Alternate manufacturers wishing to pre-qualify shall submit to the engineer, no later than 15 days prior to the bid date, a list of tank baffle projects with detail drawings meeting the requirements of this project specification.

4.0 Materials

4.1 Baffle Curtain Material

The tank baffle curtains shall be fabricated from polyester reinforced geomembrane material ENV-3004-12 (30 Mil XR®-5 8130). Any proposed substitution must be approved by the Engineer.

4.1.1 Material Properties

<u>Physical Properties</u>	<u>Test Method</u>	<u>Standard</u>
Base Fabric Type	ASTM D751	Polyester
Base Fabric Weight (nominal)	ASTM D751	6.5 oz/yd ²
Thickness	ASTM D751	30.0 mils. min.
Finished Coated Weight	ASTM D751	30.0 ± 2 oz/yd ²
Tear Strength	ASTM D4533 Trapezoid Tear	40/55 lb. min.

Breaking Yield Strength	ASTM D751 Grab Tensile	550/550 lb. min.
Low Temperature Resistance	ASTM D2136, 1/8-in. mandrel, 4 hrs.	Pass @ -30° F
Dimensional Stability	ASTM D1204 212°F - 1 hour	0.5% max. each direction
Adhesion-Heat Sealed Seam	ASTM D751, Dielectric Weld	40 lb./ 2-in. min.
Dead Load Seam Strength	ASTM D751 4 Hour test	2 in seam, 4 hours, 1 in strip Pass 240 lb. @ 70° F Pass 120 lb. @ 160° F
Bursting Strength	ASTM D751 Ball Tip	750 lb. min
Hydrostatic Resistance	ASTM D751, Procedure A	800 psi. min.
Blocking Resistance	ASTM D751 180° F	#2 Rating max
Adhesion - Ply	ASTM D413, Type A	15 lb./in. min. or Film Tearing Bond
Bonded Seam Strength	ASTM D751 Grab Test Method Procedure A	550 lb. min.
Abrasion Resistance	ASTM D3389, H-18 Wheel, 1kg Load	2000 cycles (min) before fabric exposure 50 mg/100 cycles maximum weight loss
Weathering Resistance	ASTM G153 (Carbon-Arc)	8000 hrs. (min)- No appreciable changes or stiffening or cracking of coating
Water Absorption	ASTM D471 Section 12, 7 days	0.025 kg/m ² max @ 70°F. 0.14 kg/m ² max @ 212°F.
Wicking	ASTM D751	1/8-in max.
Puncture Resistance	ASTM D4833	275 lb. min.
Coefficient of Thermal Expansion/Contraction	ASTM D696	8 x 10 ⁻⁶ in/in/°F max.
Puncture Resistance	FED-STD 101C Method 2031	350 lb. (approximate)

4.1.2 Nylon reinforced materials will not be acceptable. The nylon reinforcing fabric will absorb water through the exposed scrim causing swelling and material delamination.

4.1.3 Baffle Hems - The baffle manufacturer shall provide a top support pipe hem and 3-in. wide two-ply perimeter hems for anchoring purposes.

4.1.4 Equalization Ports – For baffles other than the flow-under type, 10-in. radius semi-circle reinforced cutout equalization ports shall be incorporated at the bottom of the baffle to alleviate differential head pressure on the baffle walls during filling of the reservoir. Fill rate of the reservoir should be limited to 300 GPM, or the size of the equalization port will need to be adjusted to one square foot of flow- through area per 300 GPM of fill flow.

4.2 Baffle Support and Anchoring Hardware

4.2.1 The baffle curtain(s) shall be supported in the tank with a stainless steel structural support pipe combined with stainless steel structural support fittings which shall attach to the tank structure.

- 4.2.1.1 Structural support pipes shall be minimum 2-1/2-in. diameter Schedule 40 stainless steel.
- 4.2.1.2 Structural support fittings shall be fabricated from stainless steel.
 - 4.2.1.2.1 Structural support fittings shall be designed to allow installation of structural support pipes without field welding or threading.
 - 4.2.1.2.2 Structural support fittings shall be mounted to the tank walls and floor with minimum 5/8-in. diameter by 4-3/4-in. long stainless steel expansion anchor bolts.
 - 4.2.1.2.3 Structural support fittings shall be engineered to withstand peak hydraulic loads and forces present in the tank during operational conditions.
- 4.2.2 The bottom and side hems of the baffle curtain shall be attached to the tank structure by clamping the baffle curtain material between stainless steel batten strips and the concrete structure and secured with stainless steel expansion anchor bolts.
 - 4.2.2.1 The stainless steel batten strips shall have a minimum cross section of 1/4-in. by 2-in. with \varnothing 1/2-in. diameter holes minimum 12-in. on center.
 - 4.2.2.2 The stainless steel expansion anchor bolts shall be minimum \varnothing 3/8-in. diameter by 3-3/4-in. long installed minimum 12-in. on center.
- 4.2.3 Should diagonal support member(s) be required, all supports shall be minimum L 3-in. x 3-in. x 1/4-in. stainless steel angle with mounting brackets and hardware.
- 4.2.4 All hardware shall be supplied in ready to install kit form. Structural support pipes shall be supplied with one end of the pipe pre-cut and pre-drilled to minimize field cutting and drilling. Field welding of stainless steel support hardware shall not be required.
- 4.2.5 All anchoring and support hardware shall be Type 304 or Type 316 stainless steel.

5.0 Execution

5.1 Verified Field Dimensions

- 5.1.1 Although the approved submittal drawings include dimensions, the drawings may differ from the actual dimensions in the field and therefore must be verified.
- 5.1.2 The product is custom made to fit the specific location. Prior to production, verified field dimensions are required to ensure that the product fits the location properly.
- 5.1.3 The contractor shall field verify all dimensions prior to releasing the baffle for fabrication.

5.2 Installation

- 5.2.1 The installation contractor shall install the tank baffle(s) in the position(s) shown on the project drawings.

- 5.2.2 The tank baffle(s) shall be installed in accordance with the manufacturer's drawings, instructions and recommendations.
- 5.2.3 The manufacturer shall provide remote technical support to ensure proper installation of the baffle system.
- 5.2.4 The manufacturer shall, upon request, provide on-site technical support for additional cost to ensure proper installation of the baffle system.

5.3 Warranty

- 5.3.1 Tank baffles shall have a limited 2-year warranty from the date of shipment covering workmanship and materials. All warranties must be submitted in writing by the manufacturer and confirmed by the end user.
- 5.3.2 An extended 10-year pro-rated warranty is available from the membrane material manufacturers, providing that the installation is supervised by an authorized representative of the supplier.
- 5.3.3 XR-3PW is a registered trademark of Seaman Corporation.

PLEASE NOTE; UNDERLINED TEXT IN THE BODY OF THIS SPECIFICATION ARE OPTIONS AND REQUIRE SELECTION INPUT FROM THE PROJECT ENGINEER.

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