# Specifications for Baffle Wall and Inlet Baffles

**Part 1.0: GENERAL**

**Description of Work**

 The scope of this specification is intended to cover FRP Baffle Wall sections, and all required accessories shown on the drawings. This includes but is not limited to the following:

* Fiberglass Reinforced Plastic (FRP) “Baffle Wall”
* FRP supports and structural shapes
* FRP trim and flashing
* Fasteners required to secure the panels and flashing
* Closures required for a complete installation

**References**

* 1. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
	2. ASTM D 570 - Standard Test Method for Water Absorption of Plastics
	3. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
	4. ASTM D 696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C.
	5. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
	6. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
	7. ASTM D2344, Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates.
	8. CSA S806, Design and Construction of Building Structures with Fibre-Reinforced Polymers.
	9. UL 94, UL Standard for Safety Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

**Submittals**

**Product Data**

 Submit manufacturer’s product data, including description and physical properties of the FRP laminate.

 Submit manufacturer’s installation instructions.

**Shop Drawings**

 Submit manufacturer’s shop drawings showing plans, elevations, components, supports, dimensions, attachments, mounting, fasteners and anchors.

**Manufacturer’s Certification**

 Submit manufacturer’s certification that materials comply with specified requirements.

**Quality Control Submittals**

 Manufacturer’s Certificate of Compliance.

 Special shipping, storage and protection and handling instructions.

 Manufacturer’s written/printed installation instructions.

 A list of five installations of comparable size in operation for at least ten years in North America

**PRODUCTS**

**Manufacturer**

Protectolite Composites Inc.

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**Note NSF 61 Where Required**

**Part 1: Design Criteria**

* 1. The design of FRP products including connections shall be in accordance with governing building codes and standards as applicable.
	2. Design load is considered as uniform loading over the entire baffle panel. Design load shall be the greater of water differential or wind load in drained condition, but no combination of the two.
		1. Water Differential: (example: 2”, 6”, 12”)
		2. Wind Load: (example: 85 mph wind velocity, Exposure C with an Importance Factor of 1.15 in accordance with ASCE 7.)
		3. Closed cell panels to be analyzed for sediment-filled condition at 150 pcf.
		4. The baffle system is not intended to withstand a seismic event.
	3. Deflection Limits and Flexural Strength Factors of Safety
		1. Baffle panel deflection due to lateral loads less than L/D 240 and not to exceed panel thickness.
		2. Baffle panel deflection due to vertical load less than L/240
		3. Baffle panel Factor of Safety = 3.0
		4. Structural support deflection less than (example: L/240
		5. Structural support Flexural Strength Factor of Safety = 3.0
	4. Panels weakened by penetrations, cuts, etc. shall be stiffened or reinforced as necessary to restore their capacity to withstand the specified loading and deflection limits.
	5. Turbulent flow, increased water differential due to diffusers, shock loads due to pump or valve operations or other impact loads to be addressed by design professional.
	6. Baffle Wall shall meet the performance criteria described below for the spans indicated on the drawings.
		1. Tensile Strength: 52,200 psi (ASTM D638)
		2. Flexural Strength: 63,700 psi (ASTM D790)
		3. Flexural Modulus: 1,910,000 psi (ASTM D790)
		4. Water Absorption: 0.25% (ASTM D570) (typical value)
		5. IZOD Impact (Notched): 33.3 ft. lbs./in. (ASTM D256)
		6. Compressive Strength: 52,100 psi (ASTM D695

**Part 2: Materials and Finishes**

Baffle Wall units shall be Protectolite™ Baffle Walls or an approved equal that conforms to these specifications.

* 1. Baffle panel systems shall be manufactured using a pultruded process, in match metal die moulds, using an Isophthalic Polyester or Vinylester resin with ultraviolet (UV) inhibitor additives as required. A synthetic surface veil fabric shall encase the glass reinforcement.
	2. Reinforcement shall be continuous strand mat & rovings. Glass content shall be a minimum of 45% by weight. Sandwich panels, core panels or laminate structures not produced of 100% resin and fiberglass are not acceptable.
	3. FRP products exposed to weather shall contain ultraviolet inhibitors. Should additional ultraviolet protection be required, a one mil minimum UV coating can be applied, owner to specify.
	4. For sections longer than 20’ ft in length, adequate structural supports may need to be included in FRP, HDG Steel or Stainless Steel as specified by the owner. FRP structural supports and shapes shall be given preference over HDG and Stainless-Steel supports if not specified or requested. FRP Laminate construction shall adhere to the same requirements as set out in items 2.1 through 2.3 in this specification.
	5. Fasteners shall be stainless steel (304 series or Owner directed in 316SS or other), spaced and installed per manufacturer's recommendations on the drawings.
	6. The Baffle Wall manufacturer/supplier shall also supply all stainless steel anchorage for FRP to concrete or steel connections using concrete wedge anchors, epoxy anchors or other approved method.

**Part 3: Execution**

**3.1 Handling**

Protect the surface of FRP components from cuts, scratches, gouges, abrasions, and impacts. Do not use wire slings unless material is fully protected. Use spreader bars when lifting FRP.

**3.2 Storage**

Store panels under cover. Keep panels dry. Stack panels off ground with one end elevated to permit draining of incidental water which can permanently stain panels.

**3.3 Installation of FRP Pro’Deck Baffle**

**Installation Instructions**

Installer shall follow manufacturer's installation instructions and the shop drawings.

**Pilot Holes in Panels**

 Pilot holes shall be drilled in panels for all fasteners. Drill holes with a sharp carbide tipped bit. Pilot holes in panels shall be sized so that the fastener threads just clear the edges of the hole.

**Pilot Holes in Supports**

 Pilot holes in supports shall be sized as recommended by the panel or fastener manufacturer.

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