

FRP Baffle Wall Standard Specification-Section 11350

1. General Information

The work covered by this section shall include (but shall not be limited to) materials and installation for the fiberglass reinforced plastic (FRP) Baffle Wall System. FRP baffle wall panels, FRP columns, FRP angles, Column base plates/angles, Fasteners and connections shall be the sub sections of this FRP Baffle Wall System.

2. Design Criteria

Design load, considered as uniform loading over the entire wall, should include fluid flow pressure plus any dynamic pressure associated with mechanical equipment. Actual load requirements, which vary with process, should be specified by the Design Engineer.

- Design Load: The load for design shall be the greater of water differential or wind load but not a combination of the two.
 - Water Differential: 4 inches(Considered as a uniform load over the entire wall)
 - Wind Load (if applicable): Minimum 10 Lbs./SF Uniform Load or minimum load per ASCE 2000
- Deflection Limits and Factors of Safety
 - Baffle Panels: $L/D = 240$ (not to exceed panel depth); Factor of Safety = 3.0
 - Columns: $L/D = 240$, Factor of Safety = 3.0

3. Materials

A. Baffle panels, FRP columns, FRP angles, and associated components shall be ANSI certified for potable water application. (As applicable for water treatment applications)

1. Certification shall be by an approved, independent third party and in the Baffle Manufacturer's own name.
2. Certifications of raw materials, not in the Baffle Manufacturer's name, shall not be acceptable.

Physical Property at 70°F (For Baffle panel)	Amount	Test Method
Ultimate Tensile Strength	42 × 10 ³ psi	ASTM D 638
Flexural Strength	48 × 10 ³ psi	ASTM D 790
Compressive Strength	48 × 10 ³ psi	ASTM D 695
Flexural Modulus of Elasticity	2.5 × 10 ⁶ psi	ASTM D 790

FRP Baffle Wall Standard Specification

Load Impact (Notched)	15	ASTM D 256
Water Absorption - % (max)	0.2	ASTM D 570

B. Physical properties

Water Absorption - % (max)	0.2	ASTM D 570
Physical Property at 70°F (Molded)		
Ultimate Tensile Strength (min)	26 x 10 ³ psi	ASTM D 638
Flexural Strength (min)	39 x 10 ³ psi	ASTM D 790
Flexural Modulus of Elasticity (min)	1.5 x 10 ⁶ psi	ASTM D 790
Barcol Hardness (min)	35	ASTM D 2583
Water Absorption - % (max)	0.2	ASTM D 570

Table 1: Physical Properties

C. FRP Baffle Panels

- FRP baffle panels shall be a ribbed profile in 4" depth x 24" height coverage (Full panel dimension).
- FRP baffle panels shall be a minimum of 3/16" thick.
- FRP baffle panels shall have (top) horizontal ribs that slope downward not less than 10 degrees to minimize sediment build-up.
- If FRP perforated baffle panels are required, perforated baffle panels shall have factory drilled 2.5" diameter holes.
- FRP material shall include glass fiber reinforcements 45% (minimum) of the material weight embedded within UV Stabilized Polyester Resin. Color shall be standard gray.
- Factory cut edges and drilled holes shall be sealed with ANSI approved material.

D. FRP Structural Framing / Angles

- FRP framing shall comply with the structural requirements in Part 1. 1.05 Design Criteria.
- FRP angles shall be a minimum of 4" x 3/8" (.375 inch) thickness and 90 degrees.

FRP Baffle Wall Standard Specification

3. FRP material shall include glass fiber reinforcements 45% (minimum) of the material weight embedded within 0.25% UV Stabilized Polyester Resin. Color shall be standard gray.

4. FRP material shall have a surfacing veil on both sides.

5. Factory cut edges and drilled holes shall be sealed with ANSI approved material.

E. Other Structural Components (if indicated on drawings)

1. Column base plates or angles shall be: 316 Stainless Steel or FRP.

F. Hardware

1. Fasteners, anchorage and other structural hardware shall be: 316 Stainless Steel.

2. Panel fasteners shall be nut and bolt assembly with 1.25" diameter Fender washer.

3. All submerged anchors shall be epoxy adhesive type (size as required).

4. Submittals

Submittals shall include, but not be limited to:

A. Drawings including layouts; connection and framing details; fastener types and spacing; product description.

B. Material certifications.

C. Operation and maintenance data for the FRP Baffle Wall System.

5. Quality Assurance

A. Qualifications:

- Five years successful experience in fabricating FRP Baffle Wall Systems would be the minimum requirement for the manufacturer.
- FRP Baffle Wall manufacturer shall retain a registered professional engineer legally qualified to practice in same state as the Site.
- Responsibilities include:
 - FRP Baffle Wall System performance and design criteria stated in the Contract Documents shall be reviewed.
 - Written requests should be prepared for clarifications or interpretations of performance or design criteria for submittal to engineer or contractor.
 - Preparation of design calculations verifying compliance of FRP Baffle Wall System with requirements of the Contract Documents should be supervised.
 - Signing and sealing all calculations.
 - Design of FRP Baffle Wall Systems was performed in accordance with performance and design criteria stated in the Contract Documents should be certified

- Installer Qualifications
 - Retain a single installer trained and with record of successful experience in installing FRP Baffle Wall Systems.
 - Installer shall have record of successfully installing FRP Baffle Wall Systems in accordance with recommendations and requirements of manufacturer, or shall provide evidence of being acceptable to the manufacturer.
 - Installer shall employ only tradesmen with specific skill and successful experience in the type of Work required.
 - When requested by the engineer, submit name and qualifications of installer with the following information for at least three successful, completed projects:
 - Names and telephone numbers of owner and architect or engineer responsible for each project.

B. System Manufacture

1. EDGENG

Contact information 405-888-6327

Or approved equal.

2. If Contractor wished to furnish an alternate system manufacturer, Contractor shall first make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute.

C. Source Quality Control:

- FRP Baffle Wall System manufacturer shall prepare all Shop Drawings and other submittals (except for delegated design submittals, when professional engineer is retained by other than Baffle Wall manufacturer) for all components furnished under this Section.
- Components shall be specifically constructed for specified service conditions and shall be integrated into overall assembly by FRP Baffle Wall Systems.

6. Warranty

Minimum of one year for the materials and for the workmanship of the fabricated product, after the installation with a maximum of eighteen months would be the general warranty for these Baffle Walls.

7. Material Handling

- At the time of delivery, all materials shall be inspected for shipping damage. The freight company and the Manufacturer shall be notified immediately of any damage or quantity shortages.
- The Contractor shall protect FRP materials from cuts, scratches, gouges, abrasions, and impacts. When lifting FRP materials, spreader bars shall be used (not wire slings unless materials are fully protected). FRP components shall not be dragged across one another unless separated by a non-scratching spacer.

8. Installation

- Before placing and attaching components, the contractor shall confirm the alignment and location of column base plates, surfaces, brackets, saddles, etc. All bearing surfaces must be level, flat, clean and free of debris.
- Erection shall proceed according to sequence shown on the approved drawings.
- Contractor shall install pads, curbs or piers to modify uneven or sloped concrete surfaces to create a flat, level surface for baffle system attachment.
- Contractor shall field cut materials as required and shown on the Manufacturer's drawings.
- Contractor shall seal field cut edges with manufacture approved material.
- Contractor shall install beams and connections as shown on the approved layout drawings. Field modifications (cuts, copes, holes, etc.) unless shown on the drawings are not allowed without the manufacturer's written approval. Shim FRP beams with approved materials only.
- Before placement of baffle panels, contractor shall check alignment and location of FRP framing members and existing structure. Baffle panels shall be nested at side-lap conditions.
- Contractor shall adjust FRP baffle panels for proper bearing and alignment. The first panel installed at the bottom of the wall must have the side with a flat end (Not an upturn) at the bottom.
- Contractor shall drill holes for fasteners through baffle panel and support beam.
- Contractor shall fasten baffle panels to structural supports as shown on the approved layout drawings. Unless noted otherwise, FRP baffle panels shall be attached to each support with three (3) nut and bolt assemblies with Fender washers. At panel side laps, fastening shall be through two panels. Refer to manufacturer's installation instructions and drawings for proper fastener selection and procedure.