

# FIBERGLASS REINFORCED PLASTIC (FRP) BAFFLE WALL

Revised 7-26-2024

## 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. The manufacturer 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.

### 1.2. COORDINATION

- A. Manufacturer shall coordinate the Baffle Wall design, configuration, and installation requirements with adjacent mechanisms (if any) within the same structure.

## PART 2 PRODUCTS

### 2.1. MANUFACTURERS

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

National Manufacturing Water Treatment Products 7870 West Ridge Road Suite #9  
Fairview, PA 16415 [dvorse@nationalcomposites.com](mailto:dvorse@nationalcomposites.com)

- B. All FRP products shall be manufactured and fabricated entirely in the United States.

### 2.2. DESIGN

- A. The design of FRP products including connections shall be in accordance with governing building codes and standards as applicable.
- B. Structural Members shall be designed to support all applied loads. Deflection in any direction shall not be more than L/180 of span for structural members. Connections shall be designed to transfer loads.
- C. Baffle Panels to be 3/16" thick.

D. 24" Baffle Wall Panel Design Properties:

$I_{xx} = 11.388 \text{ in}^4$  or  $474 \text{ cm}^4$

Modulus of Elasticity =  $2.5 \times 10^6 \text{ psi}$  or  $17.2 \times 10^6 \text{ kPa}$

Moment Capacity =  $32,620 \text{ in-lb.}$  or  $3,682 \text{ n-m}$

Stiffness  $EI = 28.47 \times 10^6 \text{ lb-in}^2$

2. 24" Baffle Wall Panel Deflection (Static Differential Head of Water)

CALCULATED BAFFLE DEFLECTION (Static Differential Head of Water)					
SPAN Ft (M)	HEAD 12" (300mm)	HEAD 6" (150mm)	HEAD 3" (975mm)	L/100	L/150
3.28	0.011"	0.006"	0.003"	0.39"	0.26"
(1.00)	(.280 mm)	(.152 mm)	(.076 mm)	(10 mm)	(6.67 mm)
6.65	0.200"	0.096"	0.048"	0.79"	0.52"
(2.00)	(5.08 mm)	(2.44 mm)	(1.21 mm)	(20 mm)	(13.3 mm)
9.84	0.92"	0.46"	0.23"	1.18"	0.79"
(3.00)	(23.3 mm)	(11.7 mm)	(5.84 mm)	(30 mm)	(20 mm)
13.13	2.93"	1.46'	0.74"	1.57"	1.05"
(4.00)	(74.4 mm)	(37.1 mm)	(18.8 mm)	(40 mm)	(26.7 mm)
16.41	7.15"	3.58"	1.79"	1.97"	1.31"
(5.00)	(182 mm)	(90.9 mm)	(45.5 mm)	(50 mm)	(33.3 mm)

E. Hardware

1. All fasteners, anchors, and structural hardware shall be stainless steel or FRP.
2. All connections of Baffle Wall Panels to fiberglass columns or super structure shall be as shown on the approved shop drawings.

PROPERTIES	ASTM TEST METHOD	UNITS	VALUE
Tensile Strength	D638	PSI <sup>2</sup>	42,000
		kPa	2.89 x 10 <sup>4</sup>
Flexural Strength	D790	PSI	32,000
		kPa	2.2 x 10 <sup>4</sup>
Flexural Modulus	D790	PSI	1.5 x 10 <sup>8</sup>
		kPa	1.03 x 10 <sup>7</sup>
Compressive Strength	D695	PSI	50,000
		kPa	3.44 x 10 <sup>8</sup>
IZOD Impact Strength	D756	ft.lbs./in.	25
		J/M	1334

### 2.3. MATERIALS

- A. Each baffle panel shall be manufactured by the pultrusion process utilizing polyester or vinyl ester resin to ANSI/NSF standard 61 certified for potable water applications (as required). A synthetic surface veil shall be the outermost layer covering the exterior surface.
- B. FRP Baffle Panels shall possess the above typical coupon properties:
- C. Materials used in the manufacture of the FRP products shall be raw materials in conformance with the specification.
- D. All materials shall be of the kind and quality specified.
- E. If required, after fabrication, all cut ends, holes, and abrasions of FRP items shall, be coated with a compatible resin coating.
- F. FRP products exposed to weather shall contain an ultraviolet inhibitor. Should additional ultraviolet protection be required, a one mil minimum UV coating can. be applied.
- G. All exposed surfaces shall be smooth and true to form.

## PART 3 EXECUTION

### 3.1. INSTALLATION

- A. The installation contractor shall field verify existing dimensions and install the baffle wall 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 accommodate 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 wall manufacturer.

The baffle wall panels shall be attached to the surrounding concrete structure using adequate anchors given the application and/or working conditions with stainless steel washers, and hex nuts. All of the installation fasteners shall be stainless steel.

END OF SECTION