FIBERGLASS REINFORCED PLASTIC BAFFLE WALL – H SERIES BOLTED

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. Work covered by this section shall include materials and installation for the bolted fiberglass reinforced plastic (FRP) Baffle Wall System, which includes but is not limited to:

1. FRP baffle wall panels
2. FRP columns
3. FRP angles
4. Column base plates/angles
5. Fasteners and connections
6. Please list all process tanks, channels and areas requiring an FRP Baffle Wall:
    a.
    b.
    c.

1.2 QUALITY ASSURANCE

A. Supplier of baffle wall system shall manufacture and fabricate all fiberglass components utilized for baffle wall system in its own facility, which must be ISO9001 certified.

B. Manufacturer of baffle wall system shall have completed within the last five years a minimum of five (5) projects of similar type as those required in this scope.

C. Contractor shall be responsible for verifying all field dimensions for development and approval of the manufacturer's drawings.

1.3 PRODUCT SUBSTITUTIONS

A. Substitutions shall be considered only if Engineer has received a written request at least two weeks prior to bid date. If substitutions are acceptable, bidders shall be notified by addendum.

B. Requests for substitutions shall include technical information and any other information required for evaluation.

1.4 PERFORMANCE TESTING

A. Materials shall comply with Federal and Local laws or ordinances, applicable codes, standards, regulations, and/or regulatory agency requirements including:

1. ASTM D 638, Standard Test Method for Tensile Properties of Plastics
2. ASTM D 790, Standard Test Method for Flexural Properties of Plastics
3. ASTM D 570, Standard Test Method for Water Absorption of Materials
4. ASTM D 256, Standard Test Method for Izod Impact (Notched)

1.5 DESIGN CRITERIA

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

B. Design Load: Load for design shall be the greater of water differential or wind load but not a combination of the two.

1. Water Differential: _____ inches, w.c. *(Considered as a uniform load over the entire wall)*
2. Mass Differential: _____ psf *(As applicable, for load variance from one aeration zone to another side of wall due to operating load variances or startup/downcycle of aeration zone)*
3. Wind Load (if applicable): 10 Lbs./SF Uniform Load *(Minimum load per ASCE 2000)*

C. Deflection Limits and Factors of Safety

1. Baffle Panels: L/D = 90 (not to exceed 2.75"); Factor of Safety = 2.0
2. Columns: L/D = 100, Factor of Safety = 2.5

1.6 SUBMITTALS

A. Submittals shall include, but not be limited to:

1. Drawings including layouts; connection and framing details; fastener types and spacing; product description, installation guidelines.
2. Material certifications.

PART 2 – PRODUCTS

2.1 MANUFACTURER(S)

A. The standard for design, characteristics, and performance shall be based on materials and components provided by Enduro Composites, Inc., located at 16602 Central Green Blvd., Houston, TX 77032; 713-358-4000, 800-231-7271; www.endurocomposites.com.

2.2 MATERIALS

A. Baffle panels, FRP columns, FRP angles, and associated components shall be ANSI/NSF Standard 61 certified for potable water application (as applicable for water treatment applications).

1. Certification shall be by an approved, independent third party, and in Baffle Manufacturer's own name.
2. Certifications of raw materials, not in Baffle Manufacturer's name, shall not be acceptable.
3. Each fiberglass component in the baffle wall system shall have third party certification for ANSI/NSF Standard 61 with each individual component having a rating of designated maximum surface area to volume ratio of 490 sq. cm/L or more.

B. FRP structural materials shall exhibit these minimum physical properties:

Tensile Strength	48,000 psi	ASTM D 638
Flexural Strength	58,000 psi	ASTM D 790
Flexural Modulus	3,220,000 psi	ASTM D 790
Izod Impact (Notched)	25	ASTM D 256
Water Absorption	.20% maximum	ASTM D 570

C. FRP Baffle Panels

1. FRP baffle panels shall be ribbed profile in 2.75" depth x 24" height coverage (full panel dimension).
2. FRP baffle panels shall be minimum of 1/4" (.25 inch) thick.
3. FRP baffle panels shall have (top) horizontal ribs that slope downward not less than 10 degrees to minimize sediment build-up.
4. FRP perforated baffle panels (as required and detailed on plan drawings) shall have factory drilled 2.5-inch diameter holes for 10% void area (maximum).
5. FRP baffle panels shall comply with the structural requirements in Part 1: 1.5 DESIGN CRITERIA.
6. FRP material shall include glass fiber reinforcements 50% (minimum) of the material weight embedded within UV Stabilized Polyester Resin. Color shall be standard gray.
7. FRP material shall have a surfacing veil on both top and bottom sides.
8. Factory cut edges and drilled holes shall be sealed with ANSI/NSF approved material.

D. FRP Structural Framing / Angles

1. FRP framing shall comply with the structural requirements in Part 1: 1.5 DESIGN CRITERIA.
2. FRP vertical columns shall be: ____Braced ___Bottom Cantilevered
3. FRP angles shall be a minimum of 3/8" (.375 inch) thickness and 90 degrees.
    a. Manufacturer shall factory attach FRP angles to FRP columns (as applicable).
    b. Installing contractor shall field attach FRP angles to concrete structure or steel walls.
4. FRP material shall include glass fiber reinforcements 50% (minimum) of the material weight embedded within UV Stabilized Polyester Resin. Color shall be standard gray.
5. FRP material shall have surfacing veil on both top and bottom sides.
6. Factory cut edges and drilled holes shall be sealed with ANSI/NSF approved material.

E. Other Structural Components (if indicated on drawings)

*** Note to Specifier ** Select suitable material*

1. Column base plates or angles shall be: ___316 Stainless Steel ___304 Stainless Steel
2. Base plates or angles shall be field attached unless noted otherwise on drawings.
3. Base plates made of FRP shall not be allowed.
4. Base plates must be a full moment connection.

F. Hardware

*** Note to Specifier ** Select suitable material*

1. Fasteners, anchorage, and other hardware shall be: ___316 Stainless Steel ___304 Stainless Steel
2. All submerged anchors shall be epoxy adhesive type (size as required).

G. Pipe Penetrations

1. Pipe penetrations (if shown on drawings) shall be retrofitted by contractor to penetrate tank cover at 90-degree angles.

H. Doors

1. Hinged doors (as required and detailed on the plan drawings) shall be factory fabricated by the FRP baffle system manufacturer.
2. Each door shall be: ___High x ___Wide

PART 3 – EXECUTION

3.1 MATERIAL HANDLING

A. At the time of delivery, all materials shall be inspected for shipping damage. Freight company and the manufacturer shall be notified immediately of any damage or quantity shortages.

B. Contractor shall protect FRP materials from cuts, scratches, gouges, abrasions, and impacts. When lifting crated 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.

3.2 INSTALLATION

A. Before placing and attaching components, 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.

B. Erection shall proceed according to sequence shown on the approved drawings.

C. Contractor shall install pads, curbs or piers to modify uneven or sloped concrete surfaces to create a flat, level surface for baffle system attachment.

D. Contractor shall field cut materials as required and shown on the manufacturer's drawings.

E. Contractor shall seal field cut edges with NSF approved material.

F. 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 only with approved materials.

G. Before placement of baffle panels, contractor shall check alignment and location of FRP framing members and existing structure.

H. Contractor shall adjust FRP baffle panels for proper bearing and alignment.

I. Contractor shall drill holes for fasteners through baffle panel and support beam.

J. 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 per the manufacturer's recommendations with nut and bolt assemblies. Refer to the manufacturer's installation instructions and drawings for proper fastener selection and procedure.

K. Contractor shall seal field-drilled holes with NSF approved material.

L. Contractor shall place and fasten other miscellaneous components or hardware as shown on the approved drawings.