

**SECTION 07400**  
**INSULATED FRP WALL AND ROOF PANELS**

**PART 1 – GENERAL**

**1.1 SECTION INCLUDES**

- A. Glass fiber reinforced plastic (FRP/GRP) roof panels.
- B. Glass fiber reinforced plastic (FRP/GRP) wall panels.
- C. Glass fiber reinforced plastic (FRP/GRP) liner panels.
- D. FRP/GRP trim and flashing.
- E. Fasteners for panels and flashing.
- F. Closures and sealants.
- G. Panel insulation.
- H. Panel subgirts.

**1.2 RELATED SECTIONS**

**\*\* Note to Specifier \*\* Add or delete sections as required for this project.**

- A. Section 06500 - Structural Plastic Shapes and Plates.
- B. Section 07712 - Gutter and Downspout.
- C. Section 07720 - Ridge Vents.
- D. Section 08090 - Louvers and Vents.
- E. Section - FRP/GRP Roof Deck.
- F. Section - FRP/GRP Form Deck.

**1.3 REFERENCES**

A. ASTM International (ASTM):

- 1. ASTM E72 - Strength of Panels for Building Construction.
- 2. ASTM E84 - Surface Burning Characteristics of Building Materials.
- 3. ASTM D696 - Coefficient of Linear Thermal Expansion of Plastics.
- 4. ASTM 2583 - Indentation Hardness of Plastics.
- 5. ASTM D1494 - Diffused Light Transmission.

B. FM Standard 4880 - Class 1 Fire Rating for Wall and Roof/Ceiling Panels. This applies for FM approved panels only.

**1.4 PERFORMANCE REQUIREMENTS FOR ROOF SYSTEMS**

A. Design Requirements:

- 1. The roof system shall be designed and furnished by the manufacturer as a complete system.
- 2. Design loads shall be in accordance with local building code.
- 3. Dead load shall be the weight of the roof system.
- 4. Live load shall be a minimum of 20 lbs./sf (98 kg/sq. m).
- 5. Snow load shall be defined in accordance with local building code.
- 6. Design positive load shall be the higher of the live or snow load.
- 7. Wind loads shall be based on wind criteria in accordance with local building code.
- 8. Collateral loads shall not be applied to the roof panels.
- 9. Deflection requirements shall be in accordance with the applicable building code and deflection limit of L/\_\_\_\_.
- 10. Factor of safety of 2.5 shall apply for positive loads. Factor of safety of 1.88 shall apply for wind loads.
- 11. Accessories and fasteners shall be capable of resisting specified wind uplift loads.

**1.5 PERFORMANCE REQUIREMENTS FOR WALL SYSTEMS**

A. Design Requirements:

- 1. The wall system shall be designed and furnished by the manufacturer as a complete system.
- 2. Design loads shall be in accordance with local building code.
- 3. Wind loads shall be based on criteria in accordance with local building code, but not less than 20 lbs./sf (49 kg/sq.m).
- 4. Deflection requirements shall be in accordance with the applicable building code and deflection limit of L/\_\_\_\_.
- 5. Factor of safety of 1.88 shall apply for wind loads.
- 6. Accessories and fasteners shall be capable of resisting specified wind loads.

**1.6 SUBMITTALS**

A. Submit under provisions of Section 01300.

- 1. Product Data: Manufacturer's data sheets on each product to be used.
- 2. Storage and handling instructions.
- 3. Installation instructions.

B. Submittals shall include layout drawings.

1. Drawings shall be approved prior to manufacture and fabrication.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer shall have current ISO 9001 certification.
- B. Manufacturer shall submit names and addresses of five previous projects of comparable scope as requested by Engineer or Architect.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be unloaded and stored per manufacturer's instructions to prevent damage.
- B. When handling materials, spreader bars shall be used when lifting FRP panels and surfaces protected from cuts, gouges, abrasions and impacts. Wire slings shall not be used unless panels are protected.
- C. During storage, bundled panels shall be kept dry and under cover but ventilated. For water drainage and air circulation, panels shall be stored off of the ground with one end elevated. Standing water must be removed from top of and in between sheets.

### PART 2 – PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Enduro Composites, Inc., located at 16602 Central Green Blvd., Houston, TX 77032; 713-358-4000, 800-231-7271; sales@endurocomposites.com; [www.endurocomposites.com](http://www.endurocomposites.com).
- B. Substitutions: Not permitted unless allowed by and in accordance with provisions in Section 01600. Any proposed substitution shall include manufacturer's data showing the product meets all listed Performance Requirements, certification and approval requirements, and material requirements relevant to performance including, but not limited to, resin material, UV coating protection, and glass fiber reinforcing content.

#### 2.2 GLASS FIBER REINFORCED PLASTIC INSULATED ROOF PANELS

- A. FRP/GRP Roof Panels: Tuff Span FRP Roof Panel as manufactured by Enduro Composites, Inc. shall have ribs \_\_\_\_ in. (\_\_\_\_ mm) on center with \_\_\_\_ in. (\_\_\_\_ mm) depth and coverage of \_\_\_\_ inches (\_\_\_\_ mm).
- B. Roof Panel shall be Series \_\_\_\_ at minimum and meet all specified Design Requirements.
- C. Tuff Span FRP Liner Panel as manufactured by Enduro Composites, Inc. shall have ribs 4 3/16 in. (106 mm) on center with 9/16 in. (14 mm) depth and coverage of 42.25 inches (1073 mm).
- D. Roof Liner Panel shall be Series \_\_\_\_ at minimum and meet all specified Design Requirements.
- E. Color of exterior panel shall be Enduro standard or as selected by owner. Liner panel color shall be Enduro standard white.

#### 2.3 GLASS FIBER REINFORCED PLASTIC INSULATED WALL PANELS

- A. Tuff Span FRP Siding Panel as manufactured by Enduro Composites, Inc. shall have ribs \_\_\_\_ in. (\_\_\_\_ mm) on center with \_\_\_\_ in. (\_\_\_\_ mm) depth and coverage of \_\_\_\_ inches (\_\_\_\_ mm).
- B. Siding Panel shall be Series \_\_\_\_ at minimum and meet all specified Design Requirements.
- C. Tuff Span FRP Liner Panel as manufactured by Enduro Composites, Inc. shall have ribs 4 3/16 in. (106 mm) on center with 9/16 in. (14 mm) depth and coverage of 42.25 inches (1073 mm).
- D. Wall Liner Panel shall be Series \_\_\_\_ at minimum and meet all specified Design Requirements.
- E. Color of exterior panel shall be Enduro standard or as selected by owner. Liner panel color shall be Enduro standard white.

#### 2.4 GLASS FIBER REINFORCED PLASTIC PANEL MATERIAL

- A. Material resin shall be premium grade, Isophthalic Polyester, UV stabilized with neopentyl glycol and acrylic monomer.
- B. Glass fiber reinforcements shall be continuous, straight and bi-directional along the length and width. Glass content shall be minimum 48% by weight.  
**\*\* Note to Specifier \*\* For FM approved panels, revise to: Glass content shall be minimum of 33% by weight.**
- C. Material shall be fire retardant with UL Class 1 Flame Spread Rating of 25 or less per ASTM E-84 test.  
**\*\* Note to Specifier \*\* For FM approved panels, add: Materials shall have FM approval per Standard 4880.**
- D. Finish:
  1. Acrylic polymer exterior UV coating protection, factory-applied with minimum .4 mil dry film thickness.
  2. Embossed exterior, smooth interior surface.

#### 2.5 ACCESSORIES

- A. Accessories shall include flashing, trim, closures, sealant, fasteners, and other items as required for a complete installation.
- B. FRP/GRP flashing and trim shall be in thickness, dimensions, and profile as required.
- C. Fasteners  
**\*\* Note to Specifier \*\* Indicate whether fasteners are to be 304 or 316 stainless steel.**
  1. Structural fasteners shall be \_\_\_\_ stainless steel with seal washers and installed per manufacturer's instructions.
  2. Side lap and flashing fasteners shall be \_\_\_\_ stainless steel SB2 grommets and installed per manufacturer's instructions.
- D. Closures and Sealant

1. Closures shall be EPDM material and match panel profile.

2. Sealant for opaque roofing shall be 3/32 x 1/2 inch, non-shrink/non-hardening butyl tape.

#### 2.6 INSULATION AND SUBGIRTS

A. Insulation between exterior panel and liner panel shall be \_\_\_\_\_ type with R value of \_\_\_\_\_.

B. Subgirts between exterior panel and liner panel shall be 1.25"x2"x1.25", 18 gage, 304 stainless steel, maximum spacing of 5'0" (127 mm).

### PART 3 – EXECUTION

#### 3.1 EXAMINATION

A. Installation shall not begin until substrates have been properly prepared.

#### 3.2 INSTALLATION

A. Materials shall be installed in accordance with Manufacturer's Installation Instructions and Drawings.

B. For Type A or B stainless steel self-tapping screws, pilot holes must be drilled through the panel and support. Pilot holes are not required for self-drilling stainless steel screws, suitable for steel thickness of 1/4" (6 mm).

C. For SB2 Grommets used for side lap and flashing attachment, a pilot hole must drilled through panels and flashing.

D. End laps shall be 6 inches minimum for roofing panels and 4 inches minimum for siding panels.