

## SECTION 03 49 00

### GLASS FIBER REINFORCED CONCRETE

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- A. Glass fiber reinforced concrete fabrications as indicated on the drawings.

##### 1.2 RELATED SECTIONS

- A. Section 05 50 00 - Metal Fabrications: Supplementary supports for large items.
- B. Section 06 10 00 - Rough Carpentry: Supplementary supports for large items.
- C. Section 09 90 00 - Paints and Coatings: Field painting and sealing prior to painting.

##### 1.3 REFERENCES

- A. ASTM C 150 - Standard Specification for Portland Cement; 1999a.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 1999.
- C. ASTM G 23 - Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials; 1996.

##### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 00 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including dimensions, finishes, storage and handling requirements and recommendations, and installation recommendations.
- C. Shop Drawings: For custom items, provide drawings showing dimensions, layout, joints, details, metal support framing and interface with adjacent work; include field measured dimensions of the spaces where items are to be installed, if critical to proper installation.
- D. Samples: For each custom finish specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

##### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Regularly engaged and experienced in the installation of glass fiber reinforced concrete or precast concrete units.

##### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Transport, lift, and handle units with care, avoiding excessive stress and preventing damage; use appropriate equipment.

- B. Store products in manufacturer's unopened packaging until ready for installation, in a clean dry area protected from weather, moisture and damage; store units upright and not stacked unless permitted by manufacturer.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Stromberg Architectural Products Inc; PO Box 8036, I-30 West, 4400 Oneal, Greenville, TX 75404. ASD. Tel: (903) 454-0904. Fax: (903) 454-3642. Email: sales@strombergarchitectural.com. www.strombergarchitectural.com.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 00 00.

### 2.2 MATERIALS

- A. Glass Fiber Reinforced Concrete Fabrications: High density concrete made of ASTM C 150 Portland cement, crushed stone, silica sand, and polymers reinforced with continuous filament glass fiber mat and structural reinforcing as required; asbestos free.
  1. Color: As selected from manufacturer's selection.
  2. Density: 140 pcf (2240 kg/cu m).
  3. Shell Thickness: 3/8" to 3/4 inch (9.5 mm), nominal.
  4. Surface Burning Characteristics: Flame spread index of 0, smoke developed index of 5; when tested in accordance with ASTM E 84. Fuel contribution of 3.
  5. Weather Resistance: No significant loss in strength or change in appearance after 200 hours accelerated weathering conducted in accordance with ASTM G 23.
  6. Flexural Strength: 1000 to 1800 psi (6.9 to 12.4 MPa).
  7. Modulus of Elasticity:  $2 \times 10^5$  psi (1370 MPa).
  8. Compressive Strength: Over 5000 psi (34 MPa).
  9. Variation from Dimensions Indicated on Drawings: Plus and minus 1/8 inch (3 mm), maximum.
  10. Variation from Plane Along Edge or Surface: Plus and minus 1/16 inch per linear foot (1.5 mm in 300 mm), maximum.
  11. Outside Corner Radius: 1/16 inch to 1/8 inch (1.5 to 3 mm).
  12. Draft Angle: 3 degrees, minimum, on returns, setbacks, reveals, and grooves.
  13. Provide concealed anchorage points for plaster type wire anchors.
  14. Provide screwed or bolted anchors with reinforced holes through face of units.
  15. Provide anchors and reinforced anchoring points as indicated on drawings.

### 2.3 SUPPORT FRAMING

- A. Support Framing: Design and fabricate galvanized metal framing system to adequately support GFRC components and anchor to building to withstand loading conditions.
- B. Comply with 2003 International Building Code requirements for wind, snow and seismic loadings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly constructed; verify that substrates are plumb and true.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Check field dimensions before beginning installation. If dimensions vary too much from design dimensions for proper installation, notify Architect and wait for instructions before beginning installation.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Install supplementary temporary and permanent supports as required for proper installation.

### 3.3 INSTALLATION

- A. Install in accordance with applicable code and manufacturer's recommendations, plumb and true to line; shim where necessary.
- B. Provide control joints at not more than 35 feet (10.5 m) on center if not indicated on drawings.
- C. Provide expansion joints where moving joints in substrate occur.
- D. Patch exposed anchor points to match color and texture of unit.

### 3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

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