



## GENERAL

### 1.01 SCOPE

Design, supply and erection include all labor, materials, equipment and services necessary or incidental to completion of molded glass-fiber reinforced cement composites (G.R.G.) in accordance with the contract documents and specifications in compliance with local government codes.

### 1.02 QUALITY ASSURANCE

Manufacturers shall submit data, samples and certified testing reports showing compliance to all guidelines set forth in the G.R.G. Specification.

### 1.03 SUBMITALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including dimensions, finishes, storage and handling requirements and recommendations, and installation recommendations.
- B. Shop Drawings: Provide drawings showing dimensions, layout, joints, details, and interface with adjacent work; include field-measured dimensions of the spaces where items are to be installed.
- C. Samples: For each custom finish specified; two samples, minimum size 200x200 mm, representing actual product, color, and patterns.
- D. Specified Option: If the G.R.G. scope and complexity warrant a prototype, upon request erect one prototype unit on site or at our plant for inspection and approval by the architect.

## PRODUCTS

### 2.01 MATERIALS

- A. High density composite of Alpha Gypsum Cement – Low alkalinity alpha-calcium sulphate hemidhydrate-plaster with and a purity of not less than 90% by weight of CaSO<sub>4</sub>.2H<sub>2</sub>O reinforced with at least two layers of alkali-resistance glass-fiber continuous filament, chopped strand mat is not permitted..
- B. Embeds and reinforcement to be galvanized steel or wood.
- C. Countersunk fasteners and damage shall be patched with gypsum plaster to match the texture of units.
- D. Miscellaneous materials: All other materials i.e. bolted anchors, screws, washers, clips and adhesives to be per manufacturer's shop drawings and/or job specifications.

### 2.02 PHYSICAL PROPERTIES (G.R.G.)

1. Glass fiber	= 5-6	% by weight
2. Shell thickness	= 4-12	mm nominal
3. Dry Density	= 1750~1800	Kg/m <sup>3</sup>
4. Ultimate Flexural Strength (ASTM C580)	= 35	MPa
5. Ultimate Compressive Strength (ASTM C39/C109)	= 22	MPa
6. Ultimate Tensile Strength (ASTM D638)	= 8	MPa
7. Modulus of Elasticity – Flexure	= 1500	MPa
8. Water absorption	= <0.2%	
9. Impact (ASTM D256)	= 8	ft. lbs./in.
10. Thermal Coefficient Expansion	= 5.4 x 10 <sup>6</sup>	in./in./°F
11. Toxicity NBS/U.S.	= Non-Toxic	
12. Fire Protection Resistance: BS 476 Part 4	= Non-combustible	



## 2.03 TOLERANCES

- |                              |       |              |
|------------------------------|-------|--------------|
| 1. Dimension- all directions | = ±3  | mm           |
| 2. Thickness                 | = ± 2 | mm           |
| 3. Warpage or bowing         | = 2   | mm per meter |

## EXECUTION

### 3.01 DELIVERY, STORAGE AND HANDLING

- A. All G.R.G. materials shipped to be placed in custom built crates or pallets, and shipped in a manner that will protect the pieces from weather, damage, dirt, moisture and warping.
- B. Support pieces during shipment on non-staining shock absorbing materials.
- C. Storage: Once uncrated, material to be stored in an upright position on a flat, smooth and level surface. Avoid stacking and leaning of pieces.
- D. Cover and protect pieces from weather, excessive dirt, moisture, surface damage or other jobsite hazards.

### 3.03 ERECTION

- A. Safety: installer is responsible for handling and installing the G.R.G. material in a safe manner.
- B. Experienced workmen to install the G.R.G. pieces. Materials will be installed level and plump and as per approved drawings. All pieces will be securely anchored and joints finished as shown in the approved shop drawings.

### 3.04 TAPING, PATCHING AND CONTROL JOINTS

- A. Exterior tape and bed joints are to be attached with an exterior grade construction adhesive. Then taped and floated using fiberglass mesh tape and a bedding compound of Portland cement, bonding agent, water and fine washed silica sand and clean the joint to match piece surface and shape.
- B. Countersunk fasteners and damage are to be patched using same bedding compound as used to float joints.
- C. Control joints shall be installed at minimum of 10 meter centers.

### 3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products and clean before handover.

## WARRANTY

- 4.01 SUNYARDS is warranting our G.R.G. products for one (1) year from the date of acceptance to remain free from cracks, chips and marks by defective material or workmanship.