



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.C.) 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.C. Specification. Quality control complies with BS 1169. Testing of GRC complies with BS EN 1170 or GRCA Method of Testing GRC material/ Part 1.

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 150x150 mm, representing actual product, color, and patterns.
- D. Specified Option: If the G.R.C. 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. GlassFiber Reinforced Cement: High density composite made of Portland cement, silica sand, and polymers reinforced with chopped Alkali-Resistance glass fiber. Manufacture by premix or spraying in according to requirements.
- B. Where exposed face fasteners are used, these shall be stainless steel; all other fasteners or connectors shall be galvanized or plated.
- C. 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.C.)

- | | | |
|--|------------|-------------------|
| 1. Glass fiber | = 3-5 | % by weight |
| 2. Shell thickness | = 20 | mm nominal |
| 3. Dry Density | = 2000 | Kg/m ³ |
| 4. Ultimate Bending Strength (MOR) | = 20 | MPa |
| 5. Ultimate Tensile Strength (UTS) | = 8 | MPa |
| 6. In-plan Shear Strength | = 8 | MPa |
| 7. Compressive strength (ASTM D695) | = 60 | MPa |
| 8. Modulus of Elasticity | = 1370 | MPa |
| 9. Outside Corner Radius | = 1.5 to 3 | mm |
| 10. Impact (ASTM D256) | = 15 | KJ/m ² |
| 11. Fire Protection Resistance: BS 476 Part 4 | | |
| 12. Weather Resistance: No significant loss in strength or change in appearance after 200 hours accelerated weathering conducted in accordance with ASTM G 23. | | |



2.03 TOLERANCES

- | | | |
|------------------------------|-------|--------------|
| 1. Dimension- all directions | = ± 3 | mm |
| 2. Thickness | = ± 2 | mm |
| 3. Warpage or bowing | = 6 | mm per meter |

EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

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

3.03 ERECTION

- A. Safety: installer is responsible for handling and installing the G.R.C. material in a safe manner.
- B. Experienced workmen to install the G.R.C. 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 or exposed joints to be filled with appropriate backer rod and a sealant capable of withstanding $\pm 0.25\%$ joint movement between G.R.C. panels.

3.05 PROTECTION

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

WARRANTY

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