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.P.) 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.P. 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.P. 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. The G.R.P. modules shall be constructed from glass-reinforced plastic containing approximately 35% glass fiber content and top quality polyester resin. Raw materials and manufacture shall comply with BS 3532 for resin and BS 3496 and BS 3691 for glass reinforcement.

B. The maximum deflection shall not exceed 2% of the span measured between centers of supports for any specified loadings.

C. GRP shall be ultra-violet resistant in which high quality Gelcoat pigment shall be adopted to avoid rapid discoloring.

2.02 PHYSICAL PROPERTIES (G.R.P.)

1.	Glass fiber	= 35	% by weight
2.	Dry Density	= 1500-1800	Kg/m^3
3.	Ultimate Flexural strength	= 280	MPa
4.	Ultimate Compressive strength	= 180	MPa
5.	Ultimate Tensile Strength	=160	MPa
6.	Modulus of elasticity	= 9500	MPa
7.	In plan shear strength	= 110	MPa
8.	Inter laminate shear strength	=18	MPa
9.	Barcol Hardness	= 35	
10.	Elongation	= 2.3~2.5%	
11.	Fire Protection Resistance: Up to BS 476 Part 7		

2.03 All fixing of G.R.P. modules shall be stainless steel grade 316 or passivated zinc-plated mild steel to be BS1706. All internal flanges shall be bolted through with compression joint seals to ensure complete weatherproofing.

EXECUTION

3.01 DELIVERY, STORAGE AND HANDLING

A. All G.R.P. 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. 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.

D. Cover and protect pieces from excessive dirt, moisture, surface damage or other jobsite hazards.

3.02 INSPECTION

A. Contractor shall be responsible for inspecting job conditions and providing lines, centers, grades and marks in sufficient detail for correct installation.

B. Installers will verify all marks and check jobsite conditions for clearance, working space and all marks provided before commencement of installation. Installer will also inspect all pieces prior to installation. Installer will be responsible for repairing all installed pieces except manufacturing defects. All discrepancies affecting the installation of the G.R.P. members will be brought to the attention of the General Contractor and resolved before the installation begins.

C. General Contractor to provide sufficient space for unloading and transport of pieces as required.

3.03 ERECTION

A. Safety: installer is responsible for handling and installing the G.R.P. material in a safe manner. Report and unsafe conditions immediately to the General Contractor.

B. Installer will use experienced workmen to install the G.R.P. pieces. Materials will be installed level and plump and as shown in the approved shop drawings. All pieces will be securely anchored and joints finished as shown in the approved shop drawings.

C. After erection and acceptance of finished pieces, all damage and repair will be the responsibility of the General Contractor.

3.04 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.P. products for one (1) year from the date of acceptance to remain free from cracks, chips and marks by defective material or workmanship.