



SECTION 03540

GLASS FIBER REINFORCED CONCRETE (GFRC)

1 GENERAL:

REV: 11/99

1.1 SECTION INCLUDES

- .1 Furnish all materials, labor, equipment and services necessary for the supply and installation of PlasterForm GFRC Components as indicated on the drawings and contract documents, all in compliance with local codes and/or ordinances.
- .2 Work shall include supply, installation, patching, repairing and cleaning.

1.2 RELATED SECTIONS

- .1 Section 09100 : Metal Support Systems
- .2 Section 07900 : Sealants and Caulking
- .3 Section 06100 : Rough Carpentry
- .4 Section 09010 : Adhesives

1.3 INTENT

- .1 This specification is intended to generally outline the requirements of the GFRC components, as they pertain to the overall project design. In all cases, the manufacturer's printed specifications shall govern the work of this section.

1.4 RESPONSIBILITY

- .1 The Installing Contractor shall install the work under this section and he will be responsible for coordinating the installation with other trades.

1.5 SUBMITTALS

- .1 Submit a minimum of 3 - 8" x 8" PlasterForm GFRC flat samples to the architect for his review of color and texture specified.
- .2 Submit shop drawings for approval showing plans, sections, details, joint treatment, reinforcing, fastening devices and the relation of the GFRC Components to the surrounding construction.

1.6 MOCK-UP

- .1 Prior to production erect one proto-type component on-site or at the PlasterForm plant, for review by the architect. Once approved the proto-type will establish the standards by which the work will be judged.

1.7 SUBSTITUTIONS

- .1 Manufacturers desiring to submit proposals other than PlasterForm shall, at least 10 days prior to the bid date, submit to the architect all descriptive information of the system. These manufacturers must have a minimum of three years experience with the system and provide photographs and shop drawings of at least three projects similar in detail and scope with names, addresses and phone contacts of the respective architects and installation contractors. Independent test data showing compliance with the specified system and three samples of similar details must also be submitted.

2 PRODUCTS:

2.1 MANUFACTURER

- .1 PlasterForm Inc.
1180 Lakeshore Road E.
Mississauga, Ontario
Canada L5E 1E9

Local Contact: Arcspec, 225 Peterson Rd., Libertyville, IL 60048, phone: 847-362-1590,
fax: 847-362-1557

2.2 MATERIALS

- .1 PlasterForm GFRC components shall be asbestos free and prefabricated with integrally pigmented portland cement, polymers, aggregates, and reinforced with chopped strand fibers.
- .2 PlasterForm GFRC components shall be suitably reinforced with galvanized steel.
- .3 Fabrication will be as per approved shop drawings and will not include framing or assembly. If multiple components are required to complete design criteria as per contract drawings, additional site work under related sections, installation or finishing may be required.

2.3 TOLERANCES (FABRICATION)

Dimensional - all directions	+/- 1/8"
Thickness - skin	+/- 1/8"
Thickness - total unit	5/16"
Warping or Bowing	+/- 1/16"/foot

Site conditions and normal manufacturing variations may require additional site work to maintain these tolerances.

2.4 PHYSICAL PROPERTIES

Shell Thickness	3/8"
Weight (depending on reinforcement)	3 lbs/sq.ft
Density	130 - 140 lbs/cu.ft
Compressive Strength (ASTM C-109-92 Mod.)	9,810 p.s.i.
Flexural Strength (ASTM C-947-89 Mod.)	2,060 p.s.i.
Modulus of Elasticity - In Flexure (ASTM D638-94b Mod.)	2.28×10^6 p.s.i.
Tensile Strength (ASTM D-638-94b Mod.)	940 p.s.i.
Impact Strength (ASTM D-256-93a; Method A)	1.30 ft-lbs/in of notch
Coefficient of Linear Thermal Expansion (ASTM D-696-91)	$0.60 \times 10^{-5}/^{\circ}\text{F}$
Humidified Deflection (ASTM C-473-95)	No Measurable Value
Thermal Conductivity (ASTM C-177-85 (1993))	4.35 Btu-in/hr-sq.ft- $^{\circ}\text{F}$
Fuel Contribution (ASTM E-136-98a)	0
Flame Spread (ASTM E-84-98)	0, Class A
Smoke Index (ASTM E-84-98)	0, Class A
Resistance to Weathering (ASTM G-23-93)	Class 5, Negligible color alteration
Screw Withdrawal (standard lab procedure)	346 lbs
Fiber Content	5%-6% by weight

2.5 INSPECTION

The Architect or his representative shall have access to the manufacturing facilities, either prior to contract award or thereafter, to inspect or verify compliance with the above specifications.

3.0 EXECUTION:

3.1 PRE-INSTALLATION RESPONSIBILITY

- .1 Field Measurements: Prior to manufacturing, the installer will be responsible for obtaining all field dimensions for inclusion on the manufacturers shop drawings.
- .2 Co-Ordination: The installer will be responsible for the co-ordination of the installation with related sections, within the tolerances specified in the respective articles.
- .3 Discrepancies: Prior to installation, the installer shall check job site dimensions and conditions. Any discrepancies between design and field dimensions shall be brought to the attention of the General Contractor and the Architect.

3.2 DELIVERY, STORAGE, HANDLING AND PROTECTION

- .1 Transport and handle units in a manner that avoids excessive stresses or damage.
- .2 Components displaying obvious damage must be rejected at site at time of delivery.
- .3 Store the components in a controlled environment, protected from weather, on a level surface, with temporary supports as required. Do not stack or lean.

3.3 INSTALLATION

- .1 Components shall be lifted/handled with suitable devices.
- .2 Handle units with clean gloves.
- .3 Components shall be installed plum and true. Shim where necessary.
- .4 Pre-drill and countersink to 1/8" minimum below finished surface of unit.
- .5 Fasten components with stainless steel fasteners through embedded steel or face of GFRC as indicated on shop drawings.
- .6 Use PL Premium construction adhesive where indicated on shop drawings.
- .7 Where components are suspended, use as a minimum 12 gauge galvanized steel wire and the suspension points indicated on the shop drawings.
- .8 Allowable variation in material thickness at surface suspension points shall not exceed +/- 1/4".
- .9 Framing, hangers, etc, as specified elsewhere.
- .10 Butt joints are to be caulked as specified under Sealants and Caulking.

3.4 PATCHING AND CONTROL JOINTS

- .1 Introduce control joints as required (35'-0" O.C.) under related section of the Specification.
- .2 Patch any damage to match component texture, using mix and sealer provided by PlasterForm.

3.5 CLEANING

- .1 Clean components using soap & water. Remove and replace work which can not be successfully cleaned and repaired to permanently eliminate evidence of damage.