



STRONGWELL®

FRP Specifications

Section 06 74 13

Fiberglass Reinforced Polymer (FRP)

Molded Grating and Treads Products and Fabrications

REVISED 11.2016

BRISTOL FACILITY

400 Commonwealth Ave., P. O. Box 580, Bristol, VA 24203-0580 USA
(276) 645-8000 FAX (276) 645-8132

HIGHLANDS FACILITY

26770 Newbanks Road, Abingdon, VA 24210 USA
(276) 645-8000 FAX (276) 645-8132

CHATFIELD FACILITY

1610 Highway 52 South, Chatfield, MN 55923-9799 USA
(507) 867-3479 FAX (507) 867-4031

www.strongwell.com

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SECTION 06 74 13

FIBERGLASS REINFORCED POLYMER (FRP) PRODUCTS AND FABRICATIONS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.02 SUMMARY:

- A. This section includes FRP Products & Fabrications for Molded Gratings and Treads.

1.03 SCOPE OF WORK:

- A. Furnish all labor, materials, equipment and incidentals governed by this section necessary to install the fiberglass reinforced polymer (FRP) products as specified herein.

1.04 QUALITY ASSURANCE:

- A. The material covered by these specifications shall be furnished by an ISO-9001 certified manufacturer of proven ability who is regularly engaged in the manufacture, fabrication and installation of FRP systems.
- B. Substitution of any component or modification of system shall be made only when approved by the Architect or Design Engineer.
- C. Fabricator Qualifications: Firm experienced in successfully producing FRP fabrications similar to that indicated for this project, with sufficient production capacity to produce required units without causing delay in the work.
- D. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.

1.05 DESIGN CRITERIA:

- A. The design of FRP Molded Grating, including connections, shall be in accordance with governing building codes and standards as applicable.
- B. Design live loads of FRP molded grating shall be in accordance with the following design loads based on the latest adopted International Building Code:
 - 60 psf live load (non-emergency exit walkways)
 - 300 lb concentrated load
- C. Molded grating and molded stair treads shall not deflect more than $\frac{1}{4}$ " and structural support members shall not deflect more than L/180 of span for structural members unless specifically stated otherwise in drawings and/or supplementary conditions. Connections shall be designed to transfer the design loads.
- D. Temperature exposure is limited to _____°F (_____°C) unless specifically stated otherwise in drawings and/or supplementary conditions.

1.06 SUBMITTALS:

- A. Shop drawings of all fabricated molded gratings and treads shall be submitted to the Design Engineer for approval in accordance with the requirements of Section _____. Fabrication shall not start until receipt of Design Engineer's approval marked "Approved As Submitted" or "Approved As Noted".
- B. Manufacturer's catalog data showing:
 - 1. Materials of construction
 - 2. Dimensions, spacings, and construction of grating, handrails and building panels.
- C. Detail shop drawings showing:
 - 1. Dimensions
 - 2. Sectional assembly
 - 3. Location and identification mark
 - 4. Size and type of supporting frames required
- D. Samples of each type of product shall be submitted for approval in accordance with the requirements of Section _____.

1.07 SHIPPING AND STORAGE INSTRUCTIONS:

- A. All systems, sub-systems and structures shall be shop fabricated and assembled into the largest practical size suitable for transporting.
- B. All materials and equipment necessary for the fabrication and installation of molded gratings and treads and appurtenances shall be stored before, during, and after shipment in a manner to prevent cracking, twisting, bending, breaking, chipping or damage of any kind to the materials or equipment, including damage due to over exposure to the sun. Any material which, in the opinion of the Design Engineer, has become damaged as to be unfit for use, shall be promptly removed from the site of work, and the Contractor shall receive no compensation for the damaged material or its removal.
- C. Identify and match-mark all materials, items and fabrications for installation and field assembly.

PART 2 – PRODUCTS

2.01 GENERAL:

- A. Materials used in the manufacture of the FRP products shall be raw materials in conformance with the specification and certified as meeting the manufacturer's approved list of raw materials.
- B. All raw materials shall be as specified by the contract.
- C. Molded grating and molded stair treads shall be manufactured to achieve the following performance requirements (see Section 2.02 for resin systems):
 - 1. All mechanical performance standards set forth by the Fiberglass Grating Manufacturers Council (FGMC) in the *FRP Composites Grating Manual for Pultruded and Molded Grating and Stair Treads*.
 - 2. A flame spread rating of 25 or less in accordance with ASTM test method E-84, and flammability characteristics of UL 94 V0 and the self-extinguishing requirements of ASTM D635. (Polyester resin is available without flame retardant and UV inhibitor additives.)
 - 3. NSF® Standard 61 Certified with flammability characteristics of UL 94 V0 and the self-extinguishing requirements of ASTM D635.
 - 4. Food-grade with flammability characteristics of UL 94 V0 and the self-extinguishing requirements of ASTM D635
- D. If required, after fabrication, all cut ends, holes and abrasions of FRP products shall be sealed with a compatible resin coating.
- E. FRP products exposed to weather shall contain an ultraviolet inhibitor. Should additional ultraviolet protection be required, a one mil minimum UV coating can be applied.
- F. All glass fibers shall be covered with resin to protect against their exposure due to wear or weathering.
- G. Approved Manufacturers:
 - 1. Strongwell
- H. The materials covered by these specifications shall be furnished by an ISO-9001 certified manufacturer.
- I. All gratings shall be manufactured in the U.S.A.

2.02 MOLDED GRATING AND TREADS:

A. General

1. Grating shall be DURAGRATE® as supplied by Strongwell.
2. Grating shall be manufactured in the U.S.A.

B. Design

1. The grating shall be one piece construction with the tops of the bearing bars and cross bars in the same plane.
2. The mesh pattern and thickness shall be:
 - a. 1-1/2" (38.1 mm) square mesh, 1" (25.4 mm) thick
 - b. 1-1/2" (38.1 mm) square mesh, 1-1/2" (38.1 mm) thick
 - c. 2" (50.8 mm) square mesh, 2" (50.8 mm) thick
 - d. 1" (25.4 mm) x 4" (101.6 mm) rectangular mesh, 1" (25.4 mm) thick
3. The standard resin systems and colors are:

SELECT ONE

Description	Resin Base
Chemical Resistant - Fire Retardant	Vinyl Ester
Chemical Resistant - Extra Fire Retardant	Vinyl Ester
Industrial Grade - Fire Retardant	Isophthalic
Architectural Grade - Fire Retardant	Orthophthalic
Food Grade - Fire Retardant	Isophthalic
High Temperature – Low Smoke/Low Flame	Phenolic
Low Flame/Class 1 Smoke	Custom Blend

- a. The resin used in the manufacture of the grating shall be _____ (select from the table above).
- b. The color shall be _____ (chosen from manufacturer's standard colors).
4. Grating (exclusive of food grade) shall be fire retardant with a flame spread rating of 25 or less when tested in accordance with ASTM E-84. Food grade grating shall be fire retardant with a flame spread rating of 30 or less when tested in accordance with ASTM E-84.
5. Grating shall meet all mechanical performance standards set forth by the Fiberglass Grating Manufacturers Council (FGMC) in the *FRP Composites Grating Manual for Pultruded and Molded Grating and Stair Treads*.

6. For slip resistance, the top of each bar shall:
 - a. be manufactured with a meniscus or concave profile

SELECT ONE

-or-

- b. have sand or quartz grit applied

C. Products

1. The FRP molded grating and treads shall be manufactured by the open mold process.
2. Molded stairtreads shall be 1-1/2" (38.1 mm) thick in a 1-1/2" (38.1 mm) x 6" (152.4 mm) rectangular mesh pattern. The resin system will be the same as the molded grating or _____ (select vinyl ester, polyester, isophthalic or orthophthalic). The stairtread shall come complete with anti-slip nosing.
3. Hold down clamps shall be of type 316 stainless steel:
 - a. Type M clips for attaching grating to supports

SELECT ONE

-or-

- b. Type J clips for attaching grating to supports for moderate loads

4. Grating with cover plate
 - a. Grating shall be the same as described above in this section.
 - b. The cover plate for molded grating shall be an integrally molded plate as manufactured by Strongwell.
 - c. The integrally molded plate may use the same resin as the grating.
 - d. The integrally molded plate shall be bonded to the grating, and a non-skid grit shall be affixed to the top surface of the assembly.
5. If required, all cut and machined edges, holes and abrasions shall be sealed with a compatible resin.
6. All panels shall be fabricated to the sizes shown on the approved shop drawing.

PART 3 – EXECUTION

3.01 PREPARATION:

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.02 INSPECTION AND TESTING:

- A. The Design Engineer shall have the right to inspect and test all materials to be furnished under these specifications prior to their shipment from the point of manufacture.
- B. All labor, power, materials, equipment and appurtenances required for testing shall be furnished by the Contractor at no cost to the Owner.

3.03 INSTALLATION, GENERAL:

- A. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous FRP fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts and other connectors as determined by the Design Engineer.
- B. Cutting, fitting and placement: Perform cutting, drilling and fitting required for installation of miscellaneous FRP fabrications. Set FRP fabrication accurately in location, alignment and elevation; with edges and surfaces level, plumb, true and free of rack; measured from established lines and levels.
- C. Provide temporary bracing or anchors in form work for items that are to be built into concrete masonry or similar construction.

3.04 ALL FRP INSTALLATION:

- A. If required, all field cut and drilled edges, holes and abrasions shall be sealed with a catalyzed resin compatible with the original resin as recommended by the manufacturer.
- B. Install items specified as indicated and in accordance with manufacturer's instructions.

End of Section 06600