



STRONGWELL®

FRP Specifications

Section 06 73 13

Fiberglass Reinforced Polymer (FRP) Heavy Duty Pedestrian Decking System and Fabrications

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Table of Contents

PART 1: GENERAL

1.01	Related Documents	3
1.02	Summary.....	3
1.03	Scope of Work	3
1.04	Quality Assurance.....	3
1.05	Design Criteria	4
1.06	Submittals	4
1.07	Shipping and Storage Instructions	5

PART 2: PRODUCTS

2.01	General	6
2.02	FRP SAFPLANK HD® Planks	6-8

PART 3: EXECUTION

3.01	Preparation	9
3.02	Inspection and Testing.....	9
3.03	Installation, General	9
3.04	All FRP Installation.....	9

SECTION 06 73 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 FRP Pedestrian Decking Planks in 36" widths.

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 products including connections shall be in accordance with governing building codes and standards as applicable.
- B. Design load is considered as uniform loading over the entire decking system. Design live loads shall be in accordance with the following minimum design loads based on the latest adopted International Building Code:
 - 60 psf live load (non-emergency exit walkways)
 - 300 lb concentrated load (on 12" x 12" area)
- C. Planks and structural support members shall not deflect more than L/240 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. Planks weakened by penetrations, cuts, etc. shall be stiffened or reinforced as necessary to restore their capacity to withstand the specified loading and deflection limits.
- E. Design planks in accordance with the Strongwell Design Manual for in-service temperatures of _____ degrees Fahrenheit (example: 125 degrees) with ultimate stress retention of _____ (example: 85% for 125 degrees) and a modulus of elasticity retention of _____ (example: 90% for 125 degrees).

1.06 SUBMITTALS:

- A. Shop drawings of all fabricated pultruded SAFPLANK HD® planks 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 planks or 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 pultruded SAFPLANK HD® planks 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. FRP planks shall be shipped from the manufacturer, palletized and banded with exposed edges protected to prevent damage in shipment.
- B. Each piece shall be clearly marked showing manufacturer's applicable drawing number.
- C. FRP planks shall be SAFPLANK HD® as manufactured by Strongwell.

2.02 FRP SAFPLANK HD® PLANKS

A. Materials

- 1. The FRP planks shall be manufactured by the pultrusion process. Planks will be manufactured using polyester resin to ANSI/NSF standard 61 certified for potable water applications, if required. The planks shall be 6" deep and 36" wide. The glass fiber reinforcement for the planks shall be a core of continuous glass strand rovings wrapped with continuous strand glass mat. A synthetic surface veil shall be the outermost layer covering the exterior surfaces.
- 2. Fiberglass planks shall be made from a fire retardant (select premium polyester or vinyl ester) resin system that meets the flame spread rating of 25 or less in accordance with ASTM E-84, flammability characteristics of UL 94 V0 and meets the self-extinguishing requirements of ASTM D635. UV inhibitors are added to the resin.
- 3. SAFPLANK HD® planks shall be manufactured by Strongwell.
- 4. Color shall be slate gray.

B. Design

1. The top surface of all planks shall have a non-skid grit.
2. Planks shall be fabricated to the sizes shown on the drawings.

3. **SAFPLANK HD® Mechanical Properties**

Uniform Load

LOAD in LB / SQUARE FOOT (PSF)

I = 129.8 in⁴, A = 25.0 in², wt = 21.0 lb / lin. Ft

SPAN (ft)	40		60		80		100	
	Deflection (in)	L/Ratio						
10	0.07	1731	0.10	1154	0.14	865	0.17	692
12	0.14	1002	0.22	668	0.29	501	0.36	401
14	0.27	631	0.40	420	0.53	315	0.67	252
16	0.45	423	0.68	282	0.91	211	1.14	169
18	0.73	297	1.09	198	1.46	148		
20	1.11	216						
22	1.62	163						

Concentrated Line Load

LOAD in LB / FOOT of WIDTH

I = 129.8 in⁴, A = 25.0 in², wt = 21.0 lb / lin. Ft

SPAN (ft)	100		300		600	
	Deflection (in)	L/Ratio	Deflection (in)	L/Ratio	Deflection (in)	L/Ratio
10	0.03	4327	0.08	1442	0.17	721
12	0.05	3005	0.14	1002	0.29	501
14	0.08	2207	0.23	736	0.46	368
16	0.11	1690	0.34	563	0.68	282
18	0.16	1335	0.49	445	0.97	223
20	0.22	1082	0.67	361	1.33	180
22	0.30	894	0.89	298		

Notes:

Contact Strongwell for higher load conditions than what is tabulated.
 Values are limited to deflection ratios less than L/150 or a maximum span of 22 feet.

Material Property Data:

Full Section Modulus of Elasticity = 3,000,000 psi (minimum)
 Coefficient of Thermal Expansion (LW) = 4.7 x 10⁻⁶ in/in/°F
 Coefficient of Thermal Expansion (CW) = 13.9 x 10⁻⁶ in/in/°F
 EXTREN® Minimum Material Strength Properties for Lengthwise and Crosswise Directions

C. Hardware

SELECT ONE

1. All fasteners, anchors, and structural hardware shall be 316 stainless steel.
2. All connections of SAFPLANK HD® planks to fiberglass columns or super structure shall be as shown on the approved shop drawings.

D. Approved Manufacturers

1. STRONGWELL

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.
- B. Coordinate delivery of all listed 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