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ESR-3887

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Issued 06/2016

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

SECTION: 06 50 00—STRUCTURAL PLASTICS

SECTION: 06 63 00—PLASTIC RAILINGS

REPORT HOLDER:

FIBER COMPOSITES

**181 RANDOM DRIVE
NEW LONDON, NORTH CAROLINA 28127**

EVALUATION SUBJECT:

FIBERON SYMMETRY RAILING



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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)

Property evaluated:

- Structural
- Durability
- Surface-burning characteristics

2.0 USES

The Fiberon Symmetry Railing described in this report is limited to exterior use as guards for balconies, porches, decks and stairs. The products described in this report are used in exterior applications in Group R Occupancies (residential) in buildings of Type V-B (IBC) construction and other types of construction in applications where untreated wood is permitted by IBC Section 1406.3 or in buildings constructed in accordance with the IRC.

3.0 DESCRIPTION

3.1 General:

The Fiberon Symmetry Railing consists of composite substrate with PVC/Acrylic capstock guardrail with an aluminum sub-rail for the top rail and aluminum sub-rail for the bottom rail for the 10-foot and 12-foot (3.05 m and 3.65 m) rails (Figure 1). The railing components are available in white, brown or black and are manufactured by an extrusion process in accordance with the approved quality control documentation.

3.2 Guard:

The height of the railing assembly is 42 inches (1067 mm) above the walking surface. Each nominally 4-by-4 (102 mm by 102 mm) wood post is covered with a 5-inch-by-5-inch (127 mm by 127 mm) composite sleeve. The top rail has a width of 1.856 inches (47 mm) at the top, increasing to 3 inches (76 mm) before the finger recess area, and is 2⁷/₁₀ inches (68 mm) at the bottom and 3 inches (76 mm) in depth. The rectangular bottom rail is 2¹/₂ inches (63.5 mm) wide at the top and bottom, and it has a depth of 2 inches (50.8 mm) and a wall thickness of 0.392 inch (9.96 mm). The wall thickness of the rail is 0.19 inch (4.8 mm) thick. Both top and bottom rails are available in 6-foot, 8-foot, 10-foot and 12-foot (1.83, 2.43, 3.05 and 3.66 m) lengths (See Figure 2).

The balusters are 1¹/₄ inch (31.7 mm) square, with rounded corners, solid. The balusters are inserted in prerouted holes on the rails with a center-to-center spacing of 4-9/16 inches (116 mm).

The post sleeves are 5 inches (127 mm) square and have a wall thickness of 0.35 inches (8.8 mm) (See Figure 2). The top and bottom rail mounting brackets are made from molded nylon. The 10-foot and 12-foot (3.05 m and 3.65 m) utilize two intermediate bottom rail supports (located at one-third points), while the 6-foot and 8-foot (1.83 m and 2.44 m) rail systems utilize one intermediate bottom rail support located at the midspan.

The Top Rail H-Bar, aluminum reinforcement, is 1.57 inches (39.8 mm) wide, 2.17 inches (55.1 mm) deep and 0.075 inches (1.905 mm) thick for 6-foot and 8-foot guardrails and 0.110 inches (2.794 mm) thick for 10-foot and 12-foot guardrails and has prerouted holes where the balusters are slid into for installation purposes. The H-Bar is connected to the top rail per Section 4.3 of this report.

3.3 Durability:

When subjected to weathering, insect attack, and other decaying elements, the material used to manufacture the Fiber Symmetry Railing is equivalent in durability to code-complying, preservative-treated or naturally durable lumber when used in locations described in Section 2.0 of this report. Fiber Symmetry Railing has been evaluated for structural performance when exposed to temperatures from -20°F (-29°C) to 125°F (52°C).

3.4 Surface-burning Characteristics:

When tested in accordance with ASTM E84, Fiberon Symmetry Railing has a flame-spread index of no greater than 200.

4.0 DESIGN AND INSTALLATION

4.1 General:

The Fiber Symmetry Railing must be installed in accordance with the manufacturer's published installation instructions, the approved construction documents and this report. The manufacturer's published installation instructions must be available at all times on the jobsites during installation.

4.2 Design:

The Fiberon Symmetry Railing is satisfactory to resist loads specified in Section 1607.8.1 of the 2015 and 2012 IBC and Table R301.5 of the IRC, when installed at the maximum clear distance between the posts as noted in Table 1. When the railing is supported on one or both ends by the supporting structure, the maximum clear distance between the post and the supporting structure or between the structures must comply with the spans noted in Table 1.

4.3 Installation:

The top and bottom rails must be slid into their respective rail-to-post connector brackets. The top and bottom rail of the guard must be aluminum reinforced. The bottom aluminum reinforcing component must be installed with the top leg of the component facing the outside of the structure. Cover nominal 4-by-4 (102 mm by 102 mm) posts with post sleeves, verifying the post sleeves are plumb and are in contact with deck surface. Connect each baluster to the bottom rail using No. 10 by 1¹/₂-inch screws and to the aluminum H-bar rail in each prerouted hole with No. 8 x 1¹/₂-inch flat-head screws. Insert supplied bracket into aluminum H-bar and connect using No. 10 by 5⁵/₈-inch self-drilling screws. Secure the H-bar to the post sleeve with No. 10 by 2¹/₂ inch screws. Secure the H-bar to the top rail with 1⁷/₈-inch screws between the post and first baluster, at the center of the top rail and between every second baluster in the infill.

5.0 CONDITIONS OF USE

The Fiberon Symmetry Railing described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 This product is limited to exterior use as a guardrail system for balconies, porches and decks in buildings of Type V-B (IBC) construction and other types of construction in applications where untreated wood is permitted IBC Section 1406.3, or in buildings constructed in accordance with the IRC.
- 5.2 Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. When the manufacturer's published installation instructions differ from this report, this report governs.
- 5.3 Only those fasteners and fastener configurations described in this report have been evaluated for the installation of Fiberon Symmetry Railing. The

compatibility of the fasteners with the supporting construction, including chemically treated wood, is outside the scope of this report.

- 5.4 The Fiberon Symmetry Railing must be directly fastened to supporting construction having adequate strength and stiffness. Compatibility of the supporting construction materials with all fasteners and other building hardware components is subject to approval by the code official. Where required by the code official, engineering calculations and construction documents consistent with this report must be submitted for approval. The calculations must verify that the supporting construction complies with the applicable building code requirements and is adequate to resist the loads imparted upon it from the products and systems discussed in this report. The documents must contain details of the attachment to the supporting structure consistent with the requirements of this report. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.5 Only those types of fasteners and fastening methods described in this report have been evaluated for the installation of the Fiberon Symmetry Railing; other methods of attachment are outside the scope of this report.
- 5.6 The use of a corner rail connection is outside the scope of this report.
- 5.7 The use of Fiberon Symmetry Railing on stairs, angled line or using the ClearVisionSystem is outside the scope of this report.
- 5.8 The use of this product shall be limited to exterior use as a guard system for balconies and porches for one- and two-family dwellings for Type V-B (IBC) construction and structures constructed in accordance with the IRC.
- 5.9 This product has not been evaluated for use in areas in areas subject to Formosan termite attack.
- 5.10 The Fiberon Symmetry Railing is produced in New London, North Carolina under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Deck Board Span Ratings and Guardrail systems (Guards and Handrails) (AC174), dated January 2012.

7.0 IDENTIFICATION

The Fiberon Symmetry Railing described in this report is identified by a stamp on each individual piece or on the packaging, bearing the report holder's name (Fiber Composites), the product name (Fiberon Symmetry Railing), the allowable span, ICC-ES evaluation report number (ESR-3887), and the phrase "For Use in One- and Two-Family Dwellings Only."

TABLE 1-MAXIMUM GUARDRAIL SYSTEM SPANS¹

PRODUCT NAME/COMPONENT	APPLICABLE BUILDING CODE ^{2,3}		MAXIMUM SPAN ^{4,5} (ft.-in.)
	IBC	IRC	
Fiberon Symmetry Composite Railing	Yes	Yes	6 - 0 to 8 - 0
Fiberon Symmetry Composite Railing	No ⁶	Yes	10 - 0 to 12 - 0

For SI: 1 inch = 25.4 mm; 1 ft = 305 mm.

- ¹The ability of the supporting construction to resist the reactionary loads must be justified to the satisfaction of the code official.
- ²Indicates compliance with the respective building codes.
- ³The minimum height of the top rails is 42 inches for the IBC (Section 1015 in the 2015 IBC and Section 1013 in the 2012 IBC) and 36 inches for the IRC (Section R312).
- ⁴Maximum span is the clear distance measured from edge-of-post to edge-of-post, edge-of-post to edge-of-structure or edge-of-structure to edge-of-structure.
- ⁵Maximum allowable span has been adjusted for durability. No further increases are permitted.
- ⁶Exempt in one-and-two family dwellings.

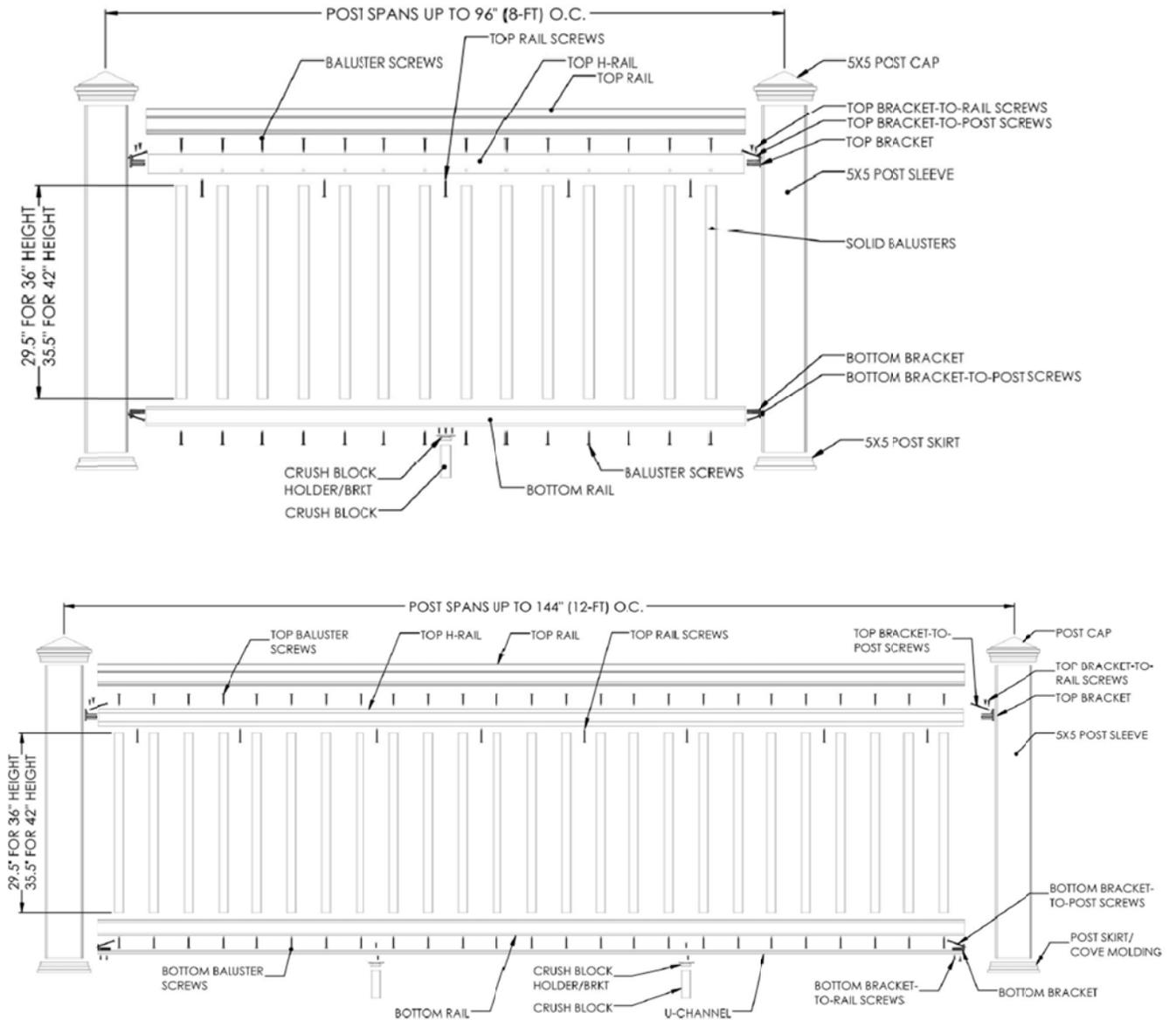


FIGURE 1—ASSEMBLIES

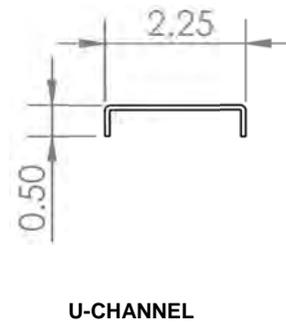
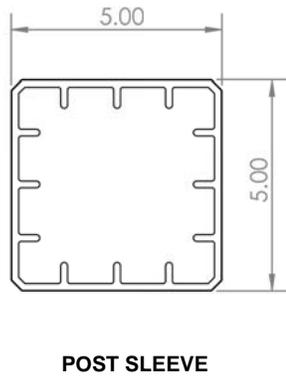
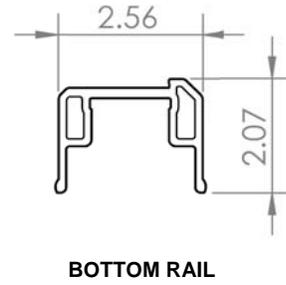


FIGURE 2

ICC-ES Evaluation Report**ESR-3887 FBC Supplement**

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EVALUATION SUBJECT:**FIBERON SYMMETRY RAILING****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that Fiberon Symmetry Railing, recognized in ICC-ES master evaluation report ESR-3887, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2014 *Florida Building Code—Building*
- 2014 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Fiberon Symmetry Railing, described in Sections 2.0 through 7.0 of the master evaluation report ESR-3887, complies with the 2014 *Florida Building Code—Building* and the 2014 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code*® (IBC) provisions noted in the master report.

Use of the Fiberon Symmetry Railing for compliance with the High-Velocity Hurricane Zone provisions of the 2014 *Florida Building Code—Building* and the 2014 *Florida Building Code—Residential* has not been evaluated and is outside the scope of this evaluation report.

For products falling under Florida Rule 9N-3, verification that the report holder's quality-assurance program is audited by a quality-assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the master report, issued June 2016.