

# ICC-ES Evaluation Report

**ESR-4945**

Reissued January 2024

This report also contains:


Revised October 2024

- FL Supplement

Subject to renewal January 2025

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<p><b>DIVISION: 05 00 00—METALS</b></p> <p><b>Section: 05 52 00—Metal Railings</b></p>	<p><b>REPORT HOLDER:</b></p> <p><b>FIBERON COMPOSITES, LLC</b></p>	<p><b>EVALUATION SUBJECT:</b></p> <p><b>FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL AND CITYSIDE CONTEMPORARY ALUMINUM GUARDRAIL</b></p>	
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## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2024, 2021, 2018, 2015, and 2012 [International Building Code® \(IBC\)](#)
- 2024, 2021, 2018, 2015, and 2012 [International Residential Code® \(IRC\)](#)

**Property evaluated:**

- Structural

## 2.0 USES

The Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail are used as a guardrail system and stair guardrail system where guardrail heights of 36 or 42 inches (914 or 1067 mm) are allowed in accordance with the IBC and IRC, as applicable. See [Table 1](#) for limitation of use of the guardrail systems.

## 3.0 DESCRIPTION

### 3.1 Fiberon® CitySide Traditional Aluminum Guardrail:

The Fiberon® CitySide Traditional Aluminum Guardrail is available as a guardrail system and as a stair guardrail system.

The guardrail system consists of the components described in [Table 2](#). See [Figure 1](#) for a depiction of the guardrail system. The stair guardrail system is similar, except swiveling brackets are used at the top and bottom rails, to allow for adjustment to accommodate the slope of the stair.

The top and bottom rail sleeves (brackets) may be welded to the aluminum posts at the manufacturing facility or may be fastened to the aluminum posts at the jobsite [for on-center post spacing less than or equal to 72 inches (1829 mm)]. The post base plate is fastened to the aluminum post at the manufacturing facility with four screws.

As an alternative to the aluminum posts, a nominal 4 x 4 [3.5 x 3.5 inch (89 x 89 mm)] wood post may be used with an optional 5 x 5-inch PVC sleeve as shown in [Figure 16](#).

### 3.2 Fiberon® CitySide Contemporary Aluminum Guardrail Systems:

#### 3.2.1 Fiberon® CitySide Contemporary Aluminum Guardrail with Balusters:

The Fiberon® CitySide Contemporary Aluminum Guardrail with balusters is available as a guardrail system and as a stair guardrail system.

The guardrail system consists of the components described in [Table 3](#). See [Figure 2](#) for a depiction of the guardrail system. The stair guardrail system is similar, except swiveling brackets are used at the top and bottom rails, to allow for adjustment to accommodate the slope of the stair.

The top and bottom rail sleeves (brackets) may be welded to the aluminum posts at the manufacturing facility or may be fastened to the aluminum posts at the jobsite [for on-center post spacing less than or equal to 72 inches (1829 mm)]. The post base plate is fastened to the aluminum post at the manufacturing facility with four screws.

### 3.2.2 Fiberon® CitySide Contemporary Aluminum Guardrail with Glass-Infill

The Fiberon® CitySide Contemporary Guardrail with glass-infill is available as a guardrail system,

The guardrail system consists of the components described in [Table 3](#). See [Figure 2](#) for a depiction of the guardrail system.

The top and bottom rail sleeves (brackets) may be welded to the aluminum posts at the manufacturing facility or may be fastened to the aluminum posts at the jobsite [for on-center post spacing less than or equal to 72 inches (1829 mm)]. The post base plate is fastened to the aluminum post at the manufacturing facility with four screws.

The allowable wind load for the glass-infill described in [Table 3](#) is shown in [Table 1](#).

### 3.3 Material:

For Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail material descriptions for guardrail systems components, see [Tables 2](#) and [3](#), respectively. Extruded and cast aluminum components have a black powder coating.

### 3.4 Fasteners:

Fasteners that are used to attach brackets to aluminum posts or to fasten brackets to rails are supplied by the report holder and are two #10-16 x  $\frac{3}{4}$ -inch-long (19.1 mm), star drive, pan head, self-drilling coated steel screws. The same fastener (#10-16 x  $\frac{3}{4}$  inch) is used to attach the support leg to the bottom rail.

For Fiberon® CitySide Traditional Aluminum Guardrail, fasteners that are used to attach rail brackets to the wood post are two #12-11 star drive, pan head, stainless steel screws.

For Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail with balusters, fasteners that are used to connect the post to its base plate are four  $\frac{1}{4}$ "-20 x 2.5-inch-long flat head screw. The post's base plate must be installed to the supporting structure with four  $\frac{5}{16}$ -inch-18 Grade 5 hex head bolts with flat washers (small Series N) or stronger.

For Fiberon® CitySide Contemporary Aluminum Guardrail with glass-infill, fasteners that are used to connect the post to its base are four  $\frac{1}{4}$ "-20 x 2.5-inch-long flat head screw. The post's base must be installed to the supporting structure with four  $\frac{3}{8}$ -inch Grade 5 hex-head bolts with flat washers (small Series N) or stronger.

## 4.0 DESIGN AND INSTALLATION

### 4.1 Design:

The opening between balusters must not exceed 4 inches (103 mm). However, the opening may be extended to  $4\frac{3}{8}$  inches (111 mm) when subjected to the limitations noted in 2024, 2021, 2018 and 2015 IBC Section 1015.4 (2012 IBC Section 1013.4) or 2024 IRC Section R321.1.3 (2021, 2018, 2015 and 2012 IRC Section R312.1.3), as applicable.

The Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail with balusters systems have been found to be capable of resisting the minimum design loads prescribed in 2024 IBC Section 1607.9.1.1, Exception 1 [2021 IBC Section 1607.9.1, Exception 1 (2018, 2015, and 2012 IBC Section 1607.8.1, Exception 1)]; 2024 and 2021 IBC Section 1607.9.1.2 (2018, 2015 and 2012 IBC Section 1607.8.1.2); and IRC Table R301.5 for a rail height of up to 42 inches (1067 mm) above the supporting surface and on-center spacing between posts of up to 96 inches (2438 mm). See [Table 1](#).

The Fiberon® CitySide Aluminum Contemporary Guardrail with glass-infill has been found capable of resisting the minimum design loads prescribed in 2024 and 2021 IBC Section 1607.9.1 [2018, 2015 and 2012 IBC Section 1607.8.1) and IRC Table R301.5 for a rail height of up to 36 inches (914 mm) above the supporting surface and on-center spacing between posts of up to 72 inches (1829 mm). See [Table 1](#).

The design of the aluminum guardrail post anchorage to the supporting surface has not been evaluated and must be designed in accordance with the applicable code. Evaluation of wood posts, the capacity of the bracket screws in the wood post, and the connection between the wood post and the supporting structure are outside the scope of this report and must be designed by a registered design professional.

#### 4.2 Installation:

Installation of Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

Jobsite fastening of components must be done using the fasteners which are supplied with the rail components. Holes must be pre-drilled in accordance with the report holder's published installation instructions. Base plates must be fastened to the supporting surface with four fasteners or anchors as needed.

### 5.0 CONDITIONS OF USE:

The Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The guardrails must be installed in accordance with the report holder's published installation instructions and this report. In the case of a conflict between this report and the report holder's published installation instructions, this report governs.
- 5.2 Adequacy of supporting construction and the anchorage of the guardrail post to the supporting construction is outside the scope of this report and must be justified to the satisfaction of the code official.
- 5.3 Adequacy of wood posts and connection to these posts are outside the scope of this report and must be justified to the satisfaction of the code official.
- 5.4 For stairs applications where the stair hinged brackets are used, the nominal length (measured along the rail) of the top and bottom rails between posts must not exceed 68.75 inches (1746 mm).
- 5.5 Under the 2024, 2021, 2018 and 2015 IBC the use of monolithic fully tempered glass is limited to uses in guardrails where there is no walking surface beneath them or the walking surface is permanently protected from the risk of falling glass, as noted in the exception in Section 2407.1 of the IBC.
- 5.6 Evaluation of guardrails fastened to walls or to posts other than the Fiberon® CitySide post described in this report is outside the scope of this report.
- 5.7 The Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail components are manufactured under a quality control system with inspections by ICC-ES.

### 6.0 EVIDENCE SUBMITTED

Data in accordance with [ICC-ES Acceptance Criteria for Handrails and Guards \(AC273\)](#), dated June 2017 (editorially revised April 2024).

### 7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4945) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 In addition, packages of Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail components are identified by the product name (Fiberon® CitySide Railing) and the component description. For railing systems shown in [Table 1](#) to be limited to use in one- and two-family dwellings, the product identification must include the following phrase, "For Use in One- and Two- Family Dwellings Only."
- 7.3 The report holder's contact information is the following:

**FIBER COMPOSITES, LLC**  
**181 RANDOM DRIVE**  
**NEW LONDON, NORTH CAROLINA 28127**  
**(800) 573-8841**  
[info@fiberondecking.com](mailto:info@fiberondecking.com)

TABLE 1—EVALUATED HEIGHTS AND SPANS AND APPLICABLE INSTALLATION LIMITATIONS FOR FIBERON RAILING SYSTEMS

RAILING SYSTEM	BRACKET-TO-POST CONNECTION TYPE <sup>2</sup>	MAXIMUM ON-CENTER POST SPACING (inches)	MAXIMUM HEIGHT (inches) <sup>4</sup>	MAXIMUM ALLOWABLE WIND LOAD	USE LIMITATIONS <sup>1</sup>
Fiberon® CitySide Traditional Aluminum Guardrail	Welded	96 <sup>3</sup>	42	-	One- and Two-Family Dwellings
	Fastened	72 <sup>3</sup>			
Fiberon® CitySide Contemporary Aluminum Guardrail with Balusters	Welded	96 <sup>3</sup>	42	-	One- and Two-Family Dwellings
	Fastened	72 <sup>3</sup>			
Fiberon® CitySide Contemporary Aluminum Guardrail with Glass-Infill	Welded	72	36	33.8 psf	Occupancy Groups R-2 and R-3 <sup>5</sup>
	Fastened				

For **SI**: 1 inch = 25.4 mm; 1 foot = 305 mm; 1 psf = 47.88 Pa

<sup>1</sup>Systems have only considered the following loads in accordance with the IBC/IRC, as applicable

- a) 50 plf uniform load for the top rail (not applicable to One- and Two-family Dwellings)
- b) 200-pound concentrated load for the top rail and post.
- c) 50-pound load on an area not to exceed 12-inch by 12-inch for baluster and glass-infill.

<sup>2</sup> The connection type is related to the top and bottom rail sleeves (brackets) either fastened or welded to the aluminum posts.

<sup>3</sup> Tabulated values are applicable to the top and bottom rail brackets included in this report except for the stair hinge brackets. For stair applications where the stair hinged brackets are used, the nominal length (measured along the rail) of the top and bottom rails between posts must not exceed 68.75 inches (1746 mm).

<sup>4</sup>The minimum height of the top rail must be in accordance with 2024, 2021, 2018 and 2015 IBC Section 1015.3 (2012 IBC Section 1013.3) for the IBC and 36 inches for the IRC.

<sup>5</sup> Under the 2024, 2021, 2018 and 2015 IBC the use of monolithic fully tempered glass complying with ASTM C1048, Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1 is limited to uses in guardrails where there is no walking surface beneath them or the walking surface is permanently protected from the risk of falling glass, as noted in the exception in Section 2407.1 of the IBC.

TABLE 2—FIBERON® CITYSIDE TRADITIONAL ALUMINUM RAIL COMPONENT DESCRIPTIONS

COMPONENT	MATERIAL SPECIFICATION	ADDITIONAL DESCRIPTION	FIGURE REFERENCE
Top rail	Extruded 6063-T5 Aluminum Alloy	Nominal length: 68.75 or 93.5 inches	<a href="#">3, 4</a>
Bottom rail	Extruded 6063-T5 Aluminum Alloy	Nominal length: 68.75 or 93.5 inches	<a href="#">3, 5</a>
Bottom Rail Straight Cap	Extruded 6063-T5 Aluminum Alloy	Has factory cut holes to receive balusters	<a href="#">3, 6</a>
Top and bottom rail inserts	Rigid PVC	Serve as a buffer between the balusters and the rails. Spacers used with the top rail snap into top rail insert.	—
Spacer Clip- Line Rail	Rigid PVC	3.875 inches long	—
Spacer Clip- Stair Rail	Rigid PVC	4.625 inches long	—
Guardrail Post	Extruded 6063-T5 Aluminum Alloy	Section: 2.5 x 2.5 x 0.07 inches 38.25 or 44.25-inch long	<a href="#">7</a>
Post Base Plate for 38.25-Inch-Long Guardrail Post	6061 Aluminum Alloy	Fastened to post at the manufacturing facility using four screws 4 x 4 x 0.250 inches	
Post Base Plate for 44.25-Inch-Long Guard Rail Post	6061 Aluminum Alloy	Fastened to post at the manufacturing facility using four screws 4 x 4 x 0.375 inches	
Pyramid Guardrail Post Cap	Cast A838 Aluminum Alloy	—	
Top and bottom rail sleeves (Brackets)	Extruded 6063-T5 Aluminum Alloy	Includes an end plate for jobsite fastening or is welded directly to the post at the manufacturing facility	<a href="#">8</a>
Swivel Post Bracket	Cast A838 Aluminum Alloy	Fastened to stair rail post to receive sleeves	<a href="#">9</a>
Hinged Stair Sleeve (Bracket)	Cast A838 Aluminum Alloy	Pinned into swivel post bracket for stair rail	
Baluster	Extruded 6063-T5 Aluminum Alloy	<sup>5</sup> / <sub>8</sub> x <sup>5</sup> / <sub>8</sub> x 0.05-inch square pickets	<a href="#">10</a>
Support Leg	Extruded 6063-T5 Aluminum Alloy	Located in the middle for the 68.75-inch bottom rails. Located at 32 inches from each post for the 93.5-inch bottom rails.	<a href="#">11</a>
Post Sleeve	Rigid PVC	5 x 5 x 0.175-inch square sleeve with nominal length of 39 or 45 inches.	<a href="#">16</a>

For **SI**: 1 inch = 25.4 mm

TABLE 3—FIBERON® CITYSIDE CONTEMPORARY ALUMINUM GUARDRAIL COMPONENT DESCRIPTIONS

COMPONENT	MATERIAL SPECIFICATION	ADDITIONAL DESCRIPTION	FIGURE REFERENCE
Top Rail	Extruded 6063-T5 Aluminum Alloy	Nominal length: 68.75 inches or 93.5 <sup>1</sup> inches	<a href="#">12</a>
Bottom Rail	Extruded 6063-T5 Aluminum Alloy	Nominal length: 68.75 inches or 93.5 <sup>1</sup> inches	<a href="#">5</a>
Bottom Rail Straight Cap	Extruded 6063-T5 Aluminum Alloy	Has factory cut holes to receive balusters	<a href="#">6</a>
Top and Bottom Rail Inserts <sup>1</sup>	Rigid PVC	Serve as a buffer between the balusters and the rails. Spacers used with the top rail snap into top rail insert.	—
Top and Bottom Rail Glass Inserts <sup>2</sup>	Rigid PVC	Captures top and bottom edges of the glass and serves as a buffer between glass infill and the rails.	<a href="#">13</a>
Spacer Clip-Line Rail <sup>1</sup>	Rigid PVC	3.875 inches long	—
Spacer Clip- Stair Rail <sup>1</sup>	Rigid PVC	4.625 inches long	—
Guardrail Post	Extruded 6063-T5 Aluminum Alloy	Section: 2.5 x 2.5 x 0.07 inches 38.25 or 44.25 <sup>1</sup> -inch long	—
Post Base Plate for 38.25-Inch-Long Guardrail Post	6061 Aluminum Alloy	Fastened to post at the manufacturing facility using four screws 4 x 4 x 0.250 inches	
Post Base Plate for 44.25-Inch-Long Guard Rail Post <sup>1</sup>	6061 Aluminum Alloy	Fastened to post at the manufacturing facility using four screws 4 x 4 x 0.375 inches	
Pyramid Guardrail Post Cap	Cast A838 Aluminum Alloy	—	—
Top and Bottom Rail Sleeves (Brackets)	Extruded 6063-T5 Aluminum Alloy	Includes an end plate for jobsite fastening or is welded directly to the post at the manufacturing facility	<a href="#">14</a>
Swivel Post Bracket <sup>1</sup>	Cast A838 Aluminum Alloy	Fastened to stair rail post to receive sleeves	<a href="#">15</a>
Hinged Stair Sleeve (Bracket) <sup>1</sup>	Cast A838 Aluminum Alloy	Pinned into swivel post bracket for stair rail	<a href="#">10</a>
Baluster <sup>1</sup>	Extruded 6063-T5 Aluminum Alloy	<sup>5</sup> / <sub>8</sub> x <sup>5</sup> / <sub>8</sub> x 0.05-inch square pickets	<a href="#">10</a>
Glass-Infill <sup>2</sup>	ASTM C1172, Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1 <sup>3</sup>	66- <sup>1</sup> / <sub>2</sub> -inch long by 31- <sup>5</sup> / <sub>16</sub> -inch high, nominal <sup>1</sup> / <sub>4</sub> -inch thick laminated glass comprised of two <sup>1</sup> / <sub>8</sub> -inch fully tempered glass lites with a PVB interlayer of 0.06 inches. The PVB Shear Modules (G) must be greater than or equal to 70 psi for Temperatures greater than 122°F (50°C)	—
	ASTM C1048, Category II of CPSC 16 CFR Part 1201 or Class A of ANSI Z97.1	66- <sup>1</sup> / <sub>2</sub> -inch long by 31- <sup>5</sup> / <sub>16</sub> -inch high, nominal <sup>1</sup> / <sub>4</sub> -inch thick monolithic fully tempered glass lite	
Support Leg	Extruded 6063-T5 Aluminum Alloy	Located in the middle for the 68.75-inch bottom rails. Located at 32 inches from each post for the 93.5-inch bottom rails.	<a href="#">11</a>

For SI: 1 inch = 25.4 mm

<sup>1</sup>Applicable only for Fiberon® CitySide Contemporary Guardrail with balusters.

<sup>2</sup>Applicable only for Fiberon® CitySide Contemporary Guardrail with glass-infill.

<sup>3</sup>The fully tempered glass lites used in the fabrication of the laminated glass must comply with ASTM C1048.

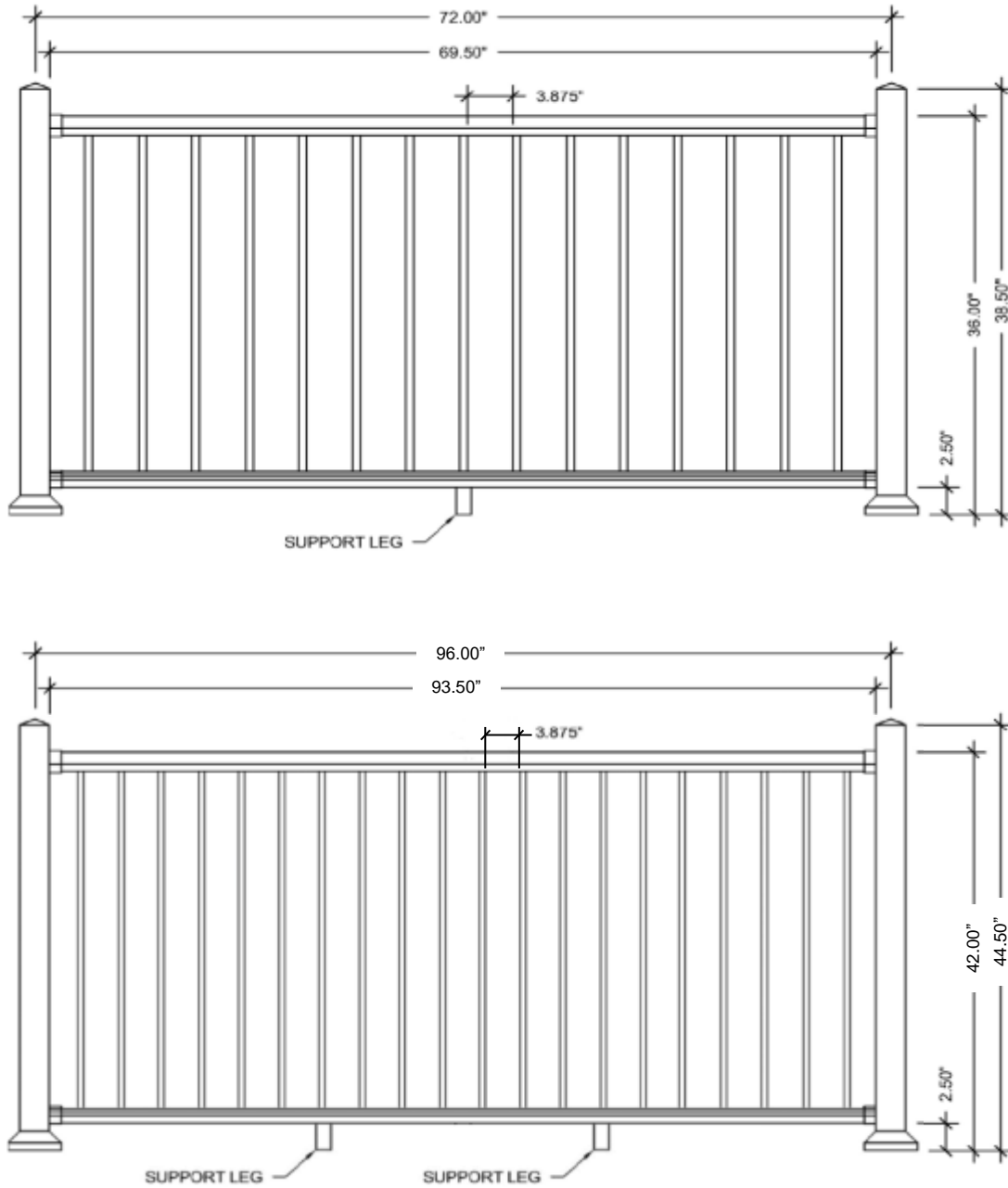


FIGURE 1—FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL ASSEMBLIES

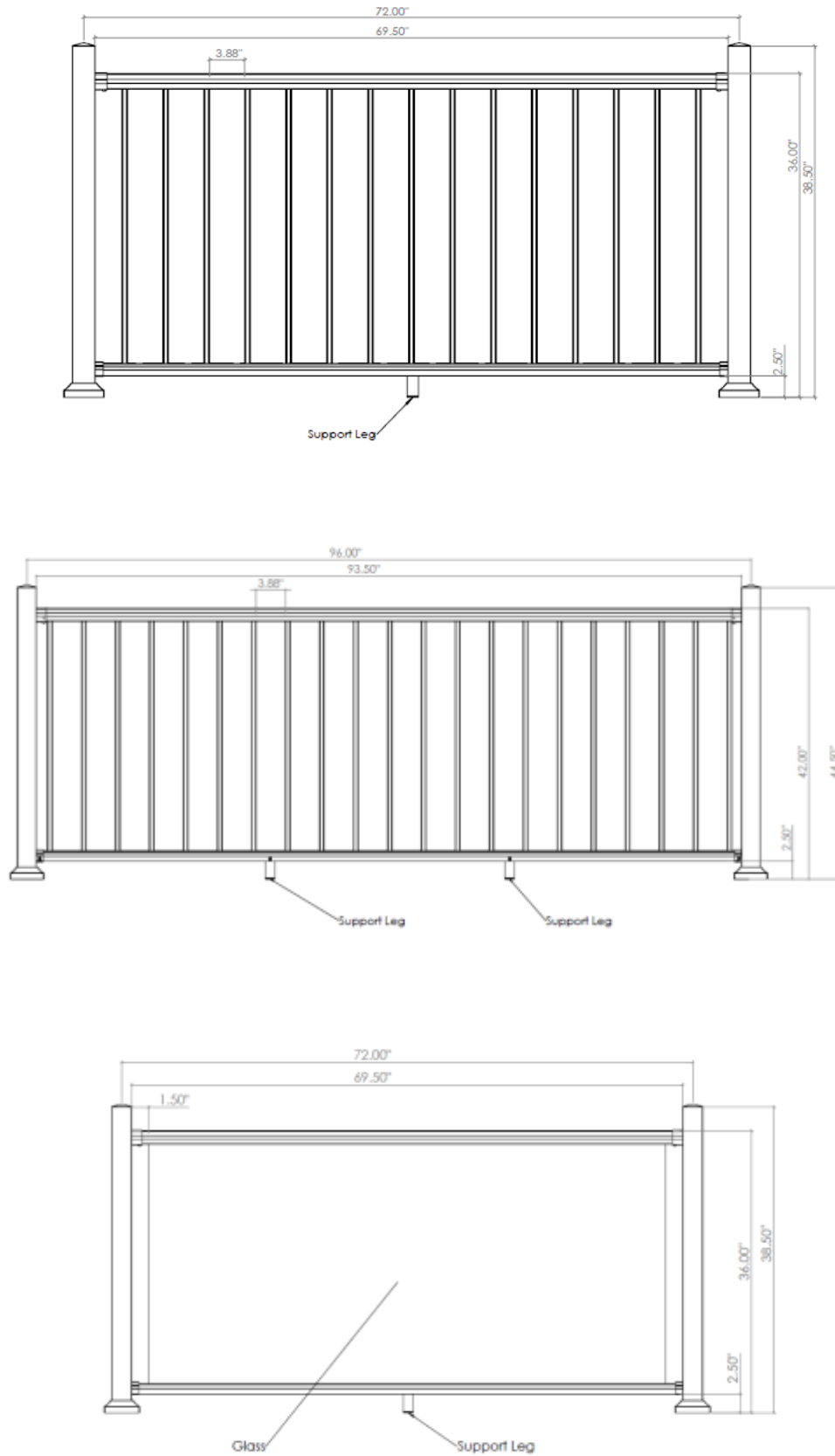


FIGURE 2—FIBERON® CITYSIDE CONTEMPORARY ALUMINUM GUARDRAIL ASSEMBLIES





FIGURE 3—TOP RAIL AND BOTTOM RAIL WITH INSERTS AND CAP  
FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL

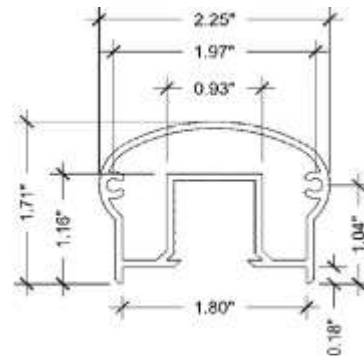


FIGURE 4—TOP RAIL PROFILE  
FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL

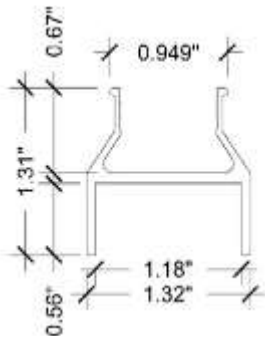


FIGURE 5—BOTTOM RAIL PROFILE

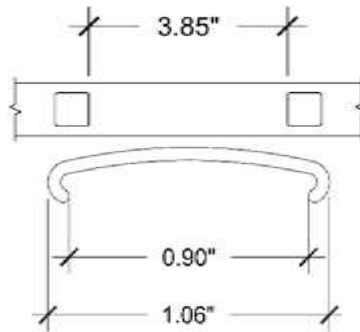


FIGURE 6—BOTTOM RAIL CAP



FIGURE 7—FIBERON® CITYSIDE TRADITIONAL POST

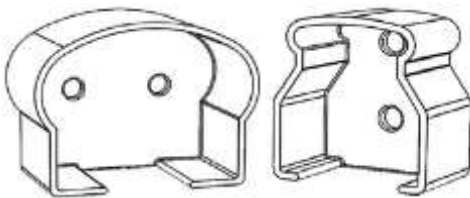


FIGURE 8—TOP AND BOTTOM RAIL BRACKETS  
FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL

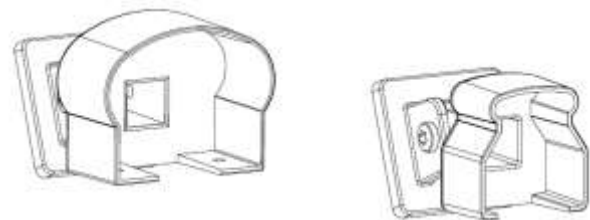


FIGURE 9—STAIR HINGED BRACKETS  
FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL

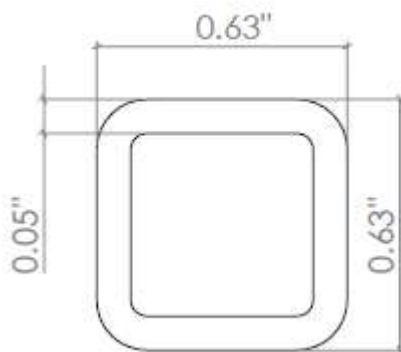


FIGURE 10- FIBERON® CITYSIDE BALUSTER

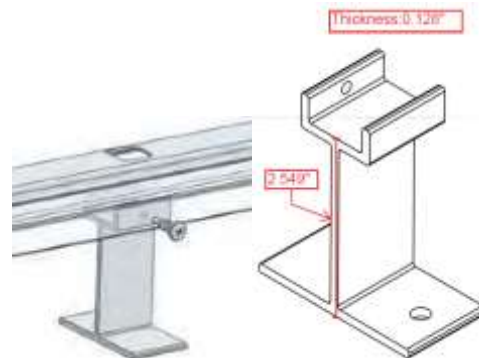


FIGURE 11—SUPPORT LEG



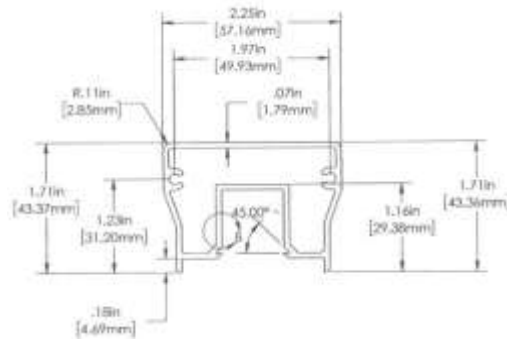


FIGURE 12 — TOP RAIL PROFILE FIBERON® CITYSIDE CONTEMPORARY ALUMINUM GUARDRAIL

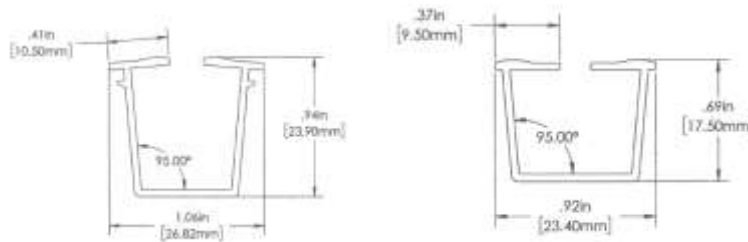


FIGURE 13 — TOP AND BOTTOM RAIL GLASS INSERTS

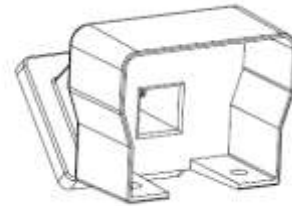
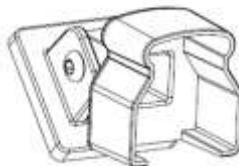
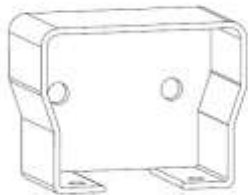


FIGURE 14—TOP AND BOTTOM RAIL BRACKETS  
FIBERON® CITYSIDE CONTEMPORARY ALUMINUM  
GUARDRAIL

FIGURE 15—STAIR HINGED BRACKETS  
FIBERON® CITYSIDE CONTEMPORARY ALUMINUM GUARDRAIL

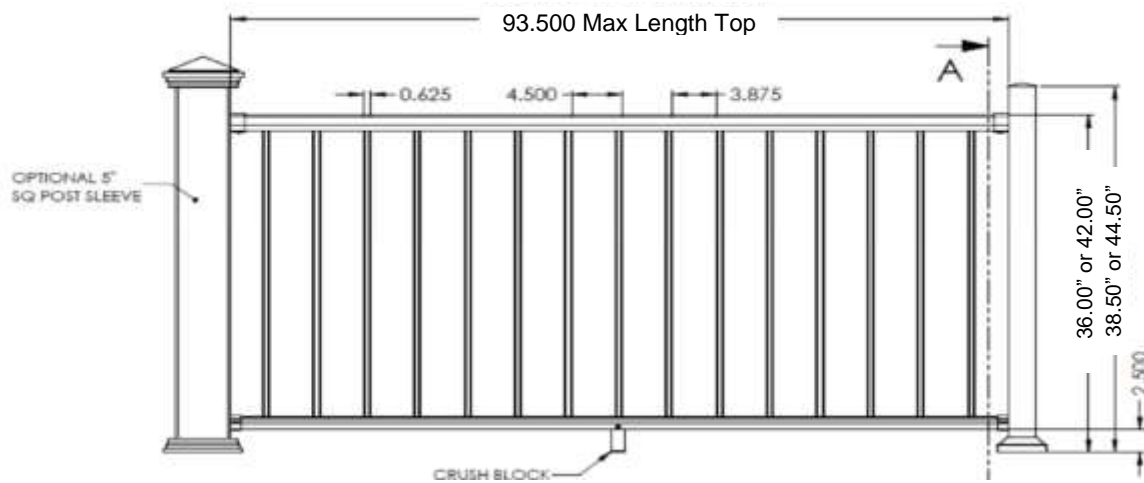


FIGURE 16—INSTALLATION WITH WOODEN POST

**DIVISION: 05 00 00—METALS**  
**Section: 05 52 00—Metal Railings**

**REPORT HOLDER:**

FIBER COMPOSITES, LLC

**EVALUATION SUBJECT:**

FIBERON® CITYSIDE TRADITIONAL ALUMINUM GUARDRAIL AND CITYSIDE CONTEMPORARY ALUMINUM GUARDRAIL

**1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that the Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail, described in ICC-ES evaluation report ESR-4945, has also been evaluated for compliance with the codes noted below.

**Applicable code editions:**

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

**2.0 CONCLUSIONS**

The Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4945, complies with the 2023 *Florida Building Code—Building* and the 2023 *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4945 for the 2021 *International Building Code*® and the 2021 *International Residential Code*® meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable.

Use of the Fiberon® CitySide Traditional Aluminum Guardrail and CitySide Contemporary Aluminum Guardrail for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, 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 evaluation report, reissued January 2024 and revised October 2024.