

ICC-ES Evaluation Report


ESR-4813

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<p>DIVISION: 05 00 00—METALS</p> <p>Section: 05 52 00—Metal Railings</p>	<p>REPORT HOLDER:</p> <p>FIREBALL FAB & METAL SALES, LLC</p> <p>ADDITIONAL LISTEES:</p> <p>DUXXBK COMPOSITE DECKING</p>	<p>EVALUATION SUBJECT:</p> <p>KADENZ® DRINK RAIL</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021 [International Building Code® \(IBC\)](#)
- 2021 [International Residential Code® \(IRC\)](#)

Property evaluated:

- Structural

2.0 USES

The metal railing system described in this report is limited to exterior or interior use as a guard system for balconies, porches, and decks of residential buildings constructed in accordance with the IBC and IRC.

3.0 DESCRIPTION

The metal railing system is shown [Figure 1](#) and is made from extruded aluminum alloy components. The component dimensions and materials are shown in [Figure 2](#) and [Table 1](#), respectively. The railing components are available in textured black, statuary bronze, and white powder-coated finishes.

The typical railing system infill panel is made from horizontal top and bottom channels that support vertical, equally spaced pickets. The top infill channel is fastened to the graspable top rail. The post side has an inside top rail sleeve and an outside bottom mount for the top rail and bottom rail installations, respectively, as shown in [Figure 1](#). The inside top rail sleeve is welded to the post (ER4943 aluminum/silicon TIG welding rod).

The height of the railing assembly is 36 inches (914 mm) above the finished surface. The top rail qualifies as a Type II handrail according to the IBC Section 1014.3 and the IRC Section R311.7.8.5. The top rail is available in 8-foot (2.44 m), 12-foot (3.66 m), 16-foot (4.88 m), and 20-foot (6.10 m) lengths.

The infill pickets are spaced at 4.5 inches (114 mm) on center. The pickets are welded (ER4943 aluminum/silicon TIG welding rod) to the top infill channel and the bottom infill channel to create an infill panel. Each infill panel is available in 6-foot (1.83 m) and 8-foot (2.44 m) widths.

The post and base plate dimensions are shown in [Figure 2](#). The post cap is 3 inches (76.2 mm) square. The post base plate has 5 – 0.344-inch (8.74 mm) diameter holes and 4 – 0.344-inch (8.74 mm) diameter countersunk holes. The baseplate is connected to a post before shipping with 4 – 5/16-inch x 2-inch-long (7.93 mm x 50.8 mm) 82D FLAT HD Type A screws (RC 33-99 core hardness) manufactured by SCREWS Industries.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The metal railing system is satisfactory to resist loads specified in Section 1607.9.1 of the IBC and Table R301.5 of the IRC when installed with maximum on center spacing between posts of 96 inches (2.438 m) for one- and two-family dwellings and 72 inches (1.829 m) otherwise.

4.2 Installation:

Installation must be in accordance with the manufacturer's published installation instructions, this report, and handrail height and opening limitations provisions specified in Sections 1015 of IBC and IRC Section R312, as applicable. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

The post baseplate must be installed to the wood substrate with 4 – $5/16$ -inch x 6-inch-long (7.93 mm x 152 mm) GRK fasteners (hardened carbon steel) through the holes in the corners of the baseplate. Slide the baseplate cover over the post. Place the handrail ends inside the post openings and through the post sleeves. Attach the handrail to each post with 2 – #10 x $3/4$ -inch-long (#10 x 19.0 mm) Tek screws manufactured by Winlink Fasteners Co., LTD (HV 380-470 core hardness) driven through the handrail post sleeve. Attach an infill panel to the handrail by driving 6 equally spaced #10 x $1\frac{1}{2}$ -inch-long (#10 x 38.1 mm) Tek screws (Winlink Fasteners Co., LTD, HV 380-470 core hardness) per panel upward through the top infill channel into the handrail cavity. Slide a bottom mount over each infill bottom channel and align the screw chases with pre-drilled holes in the post. Attach a bottom mount to each post face with 2 – #10 x $1\frac{1}{2}$ inch-long (#10 x 38.1 mm) Tek screws (Winlink Fasteners Co., LTD, HV 380-470 core hardness) driven into the bottom mount screw chases. Tighten the GRK fasteners at the corners of each post baseplate.

5.0 CONDITIONS OF USE:

The metal railing system 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 or interior use as a guard system for wooden supports of residential buildings constructed in accordance with the IBC and 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 the metal railing system. The compatibility of the post baseplate fasteners with the supporting construction, including chemically treated wood, is outside the scope of this report.
- 5.4 The metal railing system must be directly fastened to supporting construction having adequate strength and stiffness. 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 The use of the metal railing system as a guard is limited to the exceptions of Section 1015.3 of the IBC and the requirements of IRC.
- 5.6 The products are manufactured in Minnesota under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the [ICC-ES Acceptance Criteria for Handrails and Guards \(AC273\)](#), dated June 2017 (editorially revised May 2021).

7.0 IDENTIFICATION

- 7.1 Product labeling shall include the name of the report holder or listee, and the ICC-ES mark of conformity. The listing or evaluation report number (ICC-ES ESR-4813) may be used in lieu of the mark of conformity. The Kadenz® Drink Rail components described in this report are identified by a stamp, on each individual piece or on the packaging bearing the report holder's name (Fireball Fab & Metal Sales, LLC), the product name (Kadenz® Drink Rail), the acronym "ICC-ES", and the report number (ESR-4813).

Alternatively, the products described in this report are identified by a stamp, on each individual piece or on the packaging, bearing the additional listee's name (Duxxbak Composite Decking), the product name (Optima® Plus Rail), the allowable span, the acronym "ICC-ES", and the evaluation report number (ESR-4813).

7.2 The report holder's contact information is the following:

FIREBALL FAB & METAL SALES, LLC
26605 FALLBROOK AVENUE
WYOMING, MINNESOTA 55092
(651) 770-0400
www.fireballfab.com
info@fireballfab.com

7.3 The additional listee's contact information is the following:

DUXXBK COMPOSITE DECKING
1518 SOUTH BROADWAY
GREEN BAY, WISCONSIN 54304
(877) 804-0137
www.duxxbakdecking.com
info@greenbaydecking.com

TABLE 1—METAL RAILING SYSTEM COMPONENTS

COMPONENT DESCRIPTION	PART NUMBER	ALUMINUM TYPE
Graspable Top Rail	KD-2404	6005-T5
Post	KD-6036632	6005-T5
Bottom Mount	091101	6005-T5
Infill Panel Bottom Channel	WPKT-BOTTOM CHANNEL	6005-T5
Infill Panel Top Channel	515000	6005-T5
Picket	5/8-picket	6063-T5
Base Plate	990102805	6061-T6
Base Plate Cover	293500	6005-T5
Post Cap	APC-D0350	6063-T5

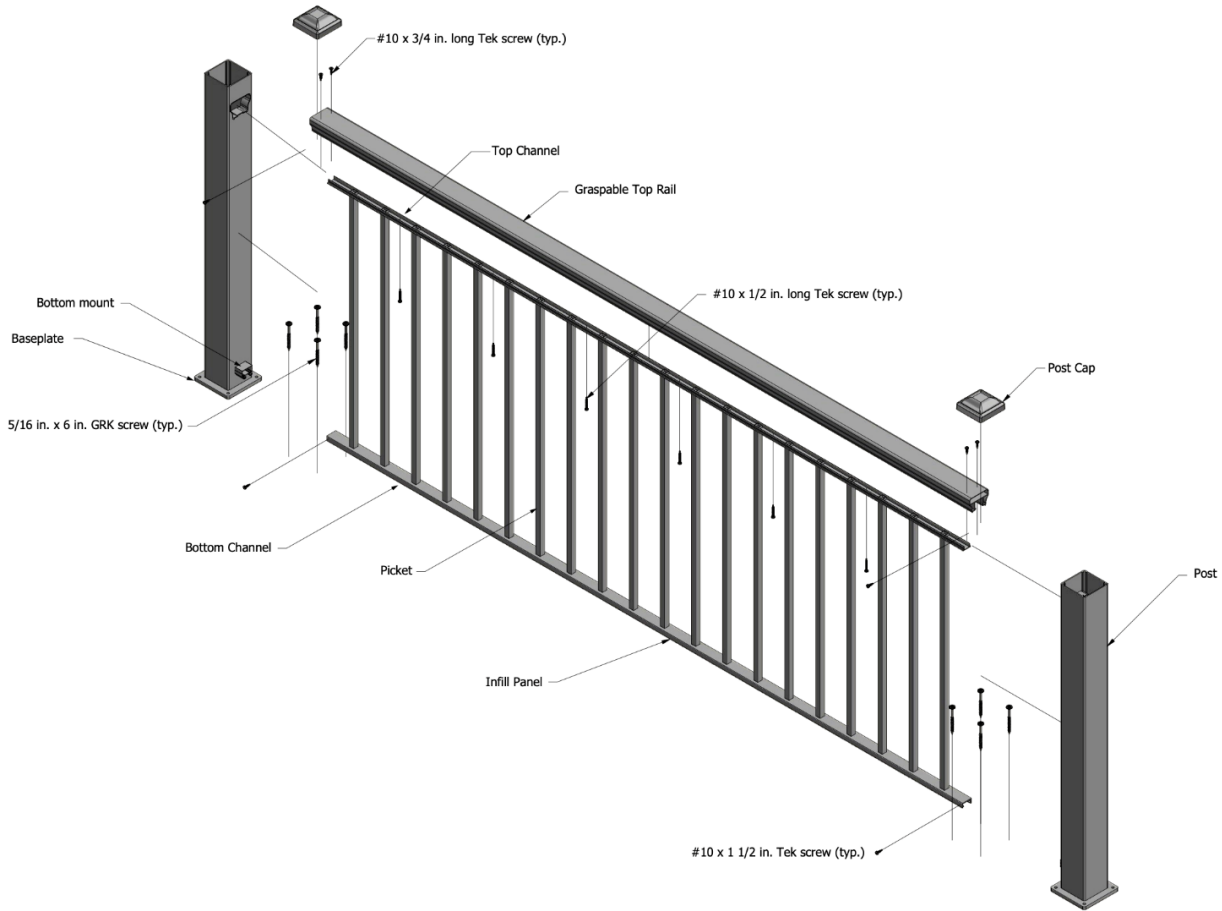


FIGURE 1—METAL RAILING SYSTEM ASSEMBLY

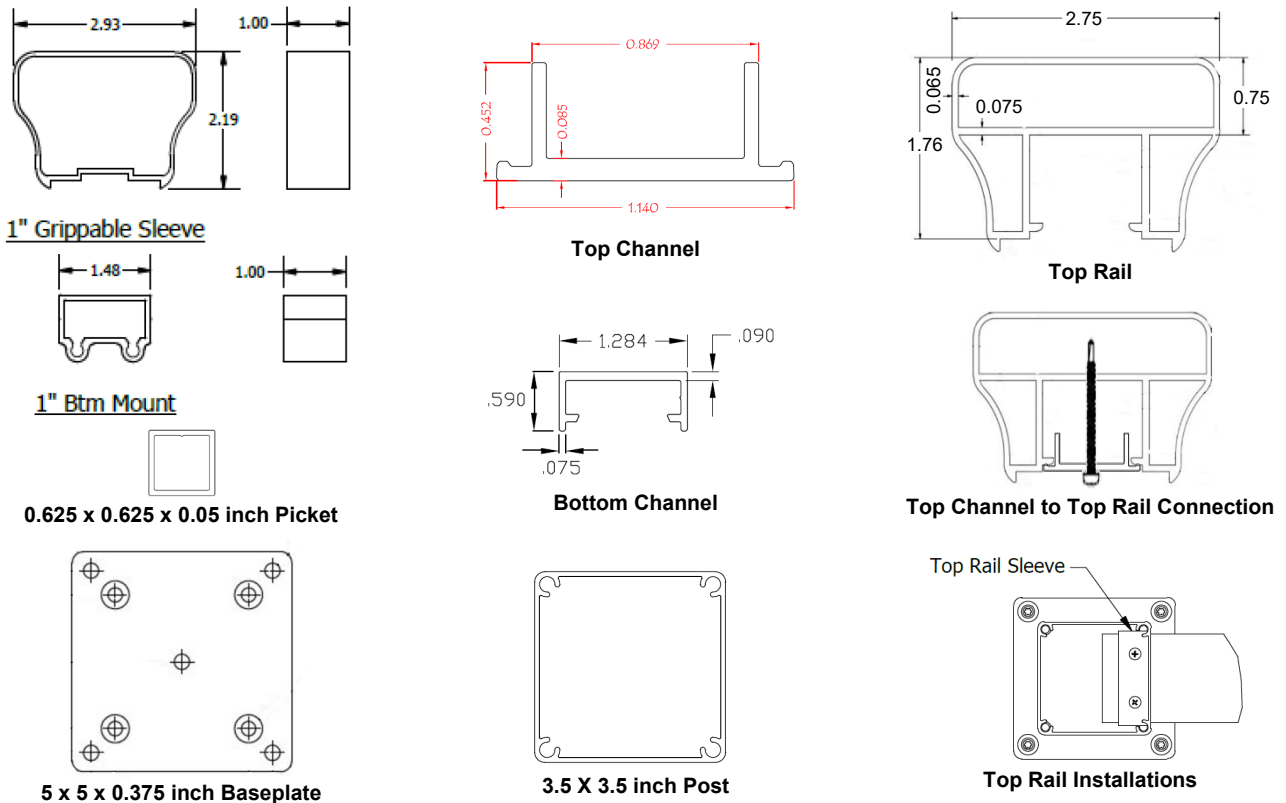


FIGURE 2—METAL RAILING SYSTEM COMPONENTS