

ICC-ES Evaluation Report

ESR-4217

Reissued September 2019

This report is subject to renewal September 2020.

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A Subsidiary of the International Code Council®

DIVISION: 05 00 00—METALS

Section: 05 52 00—Metal Railings

REPORT HOLDER:

CPG INTERNATIONAL LLC dba THE AZEK COMPANY LLC

EVALUATION SUBJECT:

IMPRESSION RAIL EXPRESS BY THE AZEK COMPANY

1.0 EVALUATION SCOPE

Compliance with the following codes:

2015, 2012, 2009, and 2006 *International Residential Code*® (IRC)

Property evaluated:

Structural

2.0 USES

The Impression Rail Express railing system described in this report is limited to exterior or interior use as a guardrail system for balconies, porches, and decks for one- and two-family dwellings constructed in accordance with the IRC.

3.0 DESCRIPTION

3.1 General:

The Impression Rail Express railing system is a guard consisting of extruded aluminum posts, sub-rail panel with top and bottom channel rails and balusters, bottom-rail support leg, and top and bottom rail covers. The railing components are produced from 6063-T5 aluminum alloy; the posts are produced from 6005A-T5 aluminum alloy; and the post caps and post base plates are produced from A380 aluminum alloy.

The minimum yield and tensile strengths, minimum thickness of the railing components, and manufacturing extrusion process are specified in accordance with the approved quality control documentation. The railing components are available in a white, black or bronze powder-coated finish.

3.2 Guard:

The height of the railing assembly is 42 inches (1067 mm) above the walking surface. The top rail cover has a wall thickness of 0.055-inch (1.40 mm); and depending on the top rail series, the overall top

rail width ranges from 2 inches (50.8 mm) minimum to 2½ inches (63.5 mm) maximum, and the overall top rail depth ranges from 1.92 inches (48.8 mm) minimum to 2.35 inches (59.7 mm) maximum. The bottom rail cover has a wall thickness of 0.055 inch (1.40 mm), a width of 1½ inches (38.1 mm), and a depth of 1½ inches (38.1 mm). For the sub-rail panels, both top and bottom h-channel rails having a varying wall thicknesses between 0.065-inch (1.65 mm) and 0.083-inch (2.11 mm) thick, a width of 1.38 inches (35.1 mm), and a depth of 0.97 inch (24.6 mm). Both top and bottom rail covers and sub-rail panels are available in 6-foot (1.83 m) and 8-foot (2.44 m) lengths. They are produced from 6063-T5 aluminum alloy and come in a powder coated finish. The maximum railing span is noted in Table 1.

The pickets are hollow rectangular extruded 6063-T5 aluminum. The pickets have a wall thickness of 0.050 inch (1.27 mm), a width of ½ inch (12.7 mm), and a depth of ¾ inch (19.1 mm) and come in a powder coated finish. Each picket is inserted in the pre-punched holes on the top and bottom h-channel rails of each sub-rail panel, with a center-to-center spacing of 4½ inches (114.3 mm).

The posts are 3-inch (76.2 mm) square hollow extruded 6005A-T5 aluminum with a wall thickness of 0.065-inch (1.65 mm) and come in a powder-coated finish. The post base plate is produced from A380 aluminum alloy and is installed at the bottom of the extruded post; it measures 4.99 inches (126.7 mm) by 4.99 inches (126.7 mm) square. The 6-foot (1.83 m) and 8-foot (2.44 m) railing systems utilize one intermediate bottom rail support leg located at the midspan. Each support leg is a 1½-inch (38.1 mm) square hollow extruded 6063-T5 aluminum with a wall thickness of 0.052 inch (1.32 mm) and comes in a powder-coated finish.

The top and bottom rail connector clips are made from 0.080-inch-thick (2.03 mm) 5052-H32 aluminum sheets and measures 1-inch (25.4 mm) wide by 0.94-inch (23.9 mm) long by 0.060-inch (1.52 mm) deep, with two 0.16-inch-diameter (4.06 mm) holes for securing into the post.

See Figure 1 for details of the components for the railing system.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The Impression Rail Express railing system is satisfactory to resist loads specified in IRC Table

R301.5, 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 supporting structures must comply with the spans noted in Table 1.

4.2 Installation:

Installation must be in accordance with the manufacturer’s published installation instructions, this report, and guard height and opening limitations provisions specified in IRC Section R312. The manufacturer’s published installation instructions must be available at the jobsite at all times during installation.

Each top and bottom rail cover snaps over the sub-rail panel’s corresponding top and bottom h-channel rails. The pickets are inserted into the pre-punched holes on the top and bottom h-channel rails of the sub-rail panel. The sub-rail panel is then attached to an extrusion post on each end by installing top and bottom rail connector clips with #8 x 3/4-inch-long (19.05 mm) stainless steel TEK screws. Four screws (two inside and one on each side) per each top and bottom connector clip, as shown in Figure 1. The bottom rail connector clip must be located 3 3/4 inches (95.25 mm) from the top edge of the clip to the bottom of the post extrusion at center. All connector clips must be installed with two #8 x 3/4-inch-long (19.05 mm) stainless steel TEK screws. Each support leg is fastened at the midspan of the bottom rail with one #8 x 3/4-inch-long (19.05 mm) stainless steel TEK screw. Each extruded post is attached to a post base plate with four M8 x 80 mm-long stainless steel lag screws, which are fastened on the underside of the post base plate, as shown in Figure 1.

5.0 CONDITIONS OF USE

The Impression Rail Express 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 guardrail system for balconies, porches, and decks for one- and two-family dwellings 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 the Impression Rail Express railing system. The compatibility of the post base plate’s fasteners with the supporting construction, including chemically treated wood, is outside the scope of this report.

- 5.4 The Impression Rail Express 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 top rail of the Impression Rail Express railing system, for use as a handrail, is outside the scope of this report.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Handrails and Guards (AC273), dated June 2017.

7.0 IDENTIFICATION

- 7.1 The Impression Rail Express railing system described in this report is identified by a stamp, on each individual piece or on the packaging, bearing the report holder’s name (CPG International LLC dba The Azek Company LLC), the product name (Impression Rail Express), the allowable span, and the ICC-ES evaluation report number (ESR-4217).

The label shall also include the phrase “For Use in One- and Two-Family Dwellings Only.”

- 7.2 The report holder’s contact information is the following:

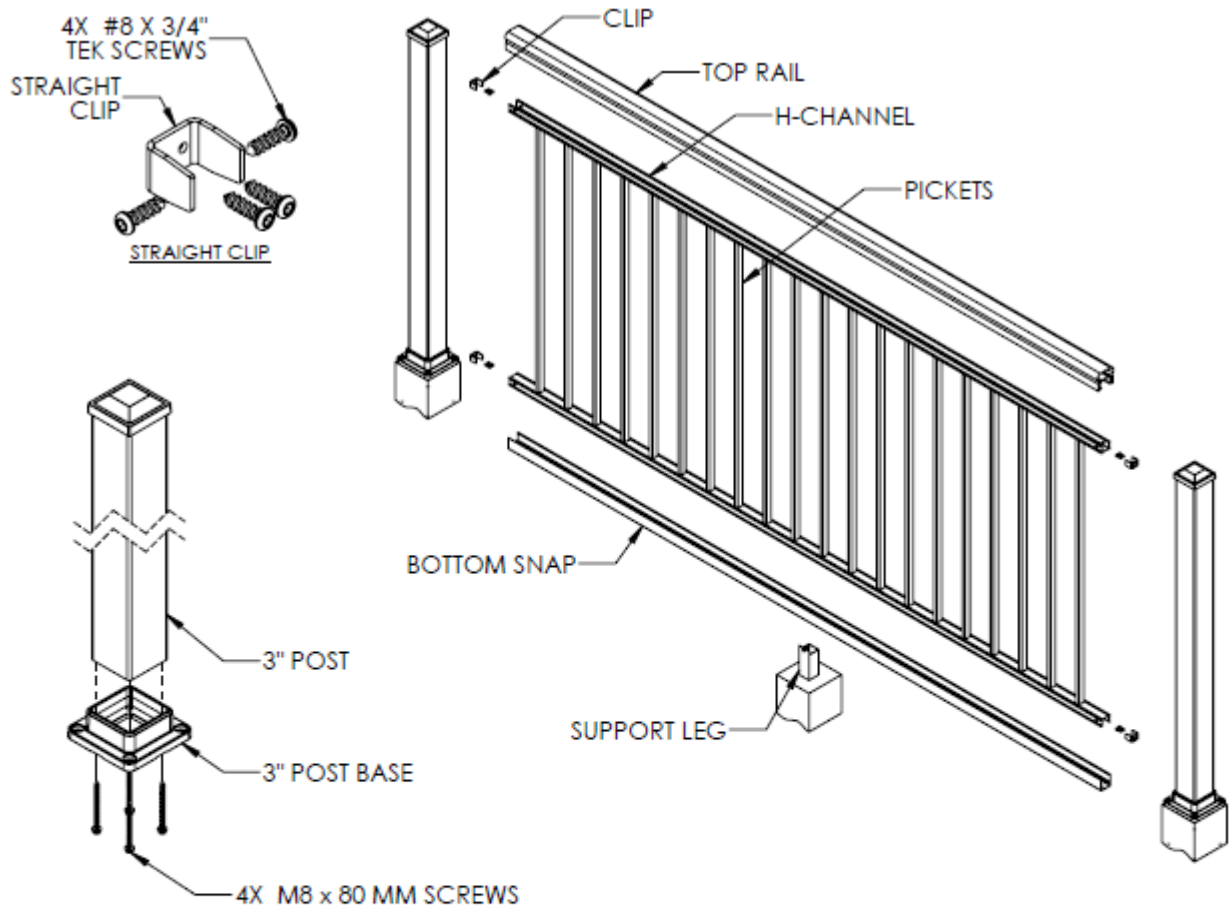
CPG INTERNATIONAL LLC
dba THE AZEK COMPANY LLC
894 PRAIRIE AVENUE
WILMINGTON, OHIO 45177
www.AZEKCO.com

TABLE 1—MAXIMUM GUARDRAIL SYSTEM SPAN

PRODUCT NAME	APPLICABLE BUILDING CODE	MAXIMUM SPAN ¹ (in)
	IRC	
Impression Rail Express	YES	96

For SI: 1 inch = 25.4 mm

¹Maximum span is measured from edge-of-support to edge-of-support.



POST ASSEMBLY
DETAIL

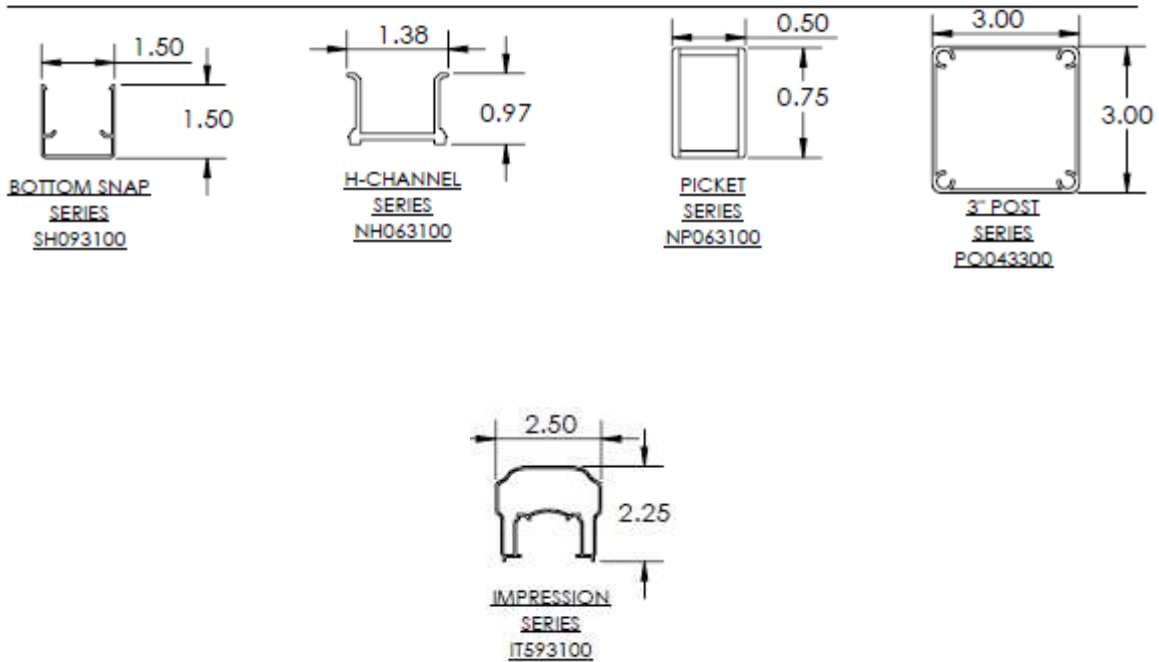


FIGURE 1—TYPICAL GUARDRAIL ASSEMBLY AND COMPONENT PROFILES

ICC-ES Evaluation Report

ESR-4217 FBC Supplement

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Impression Rail Express railing system recognized in ICC-ES master evaluation report ESR-4217 has also been evaluated for compliance with the codes noted below.

Applicable code edition:

2017 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Impression Rail Express railing system described in Sections 2.0 through 7.0 of the master evaluation report ESR-4217, complies with the *Florida Building Code—Residential*, provided the design and installation are in accordance with the 2015 *International Residential Code*® provisions noted in the master report.

Use of the Impression Rail Express railing system for compliance with the High-Velocity Hurricane Zone provisions of the *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, reissued September 2019.