

ICC-ES Evaluation Report


ESR-5437

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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: DMV WHOLESALE DISTRIBUTION	EVALUATION SUBJECT: DMV RAILING	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

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

Property evaluated:

- Structural
- Durability
- Surface burning characteristics

2.0 USES

The DMV Railing guardrail systems described in this evaluation report are limited to exterior use as deck boards and guardrails for balconies, porches, and decks of Type V-B construction (IBC) and other types of construction in applications where untreated wood is permitted by 2021 and 2018 IBC Section 705.2.3.1 (2015 and 2012 IBC Section 1406.3), or in structures constructed in accordance with the IRC. The guardrail systems have been evaluated by testing for structural strength to meet the design loads and requirements of the IBC and IRC.

3.0 DESCRIPTION

3.1 General:

DMV Railing includes the following guardrail systems: Oriole Rail, Eagle Rail, and Cardinal Rail. The DMV Railing guardrail systems described in this report consist of top and bottom rails with various shapes, hollow pickets having square or round shapes, installation brackets with different shapes, “P”, “h” and “H” shaped aluminum inserts used as reinforcements for top rails, and installation self-drilling screws with different screws heads. The top and bottom rails; and pickets are co-extruded from rigid polyvinyl chloride (PVC) with a PVC capstock. The guardrail systems are available in four colors: White, Adobe, Tan, or Mocha Walnut, as depicted in [Figure 1](#). [Figures 2](#) and [3](#) depict the guardrail components, inserts, and component materials. [Tables 1](#) through [3](#) list the DMV Railing guardrail systems with the code limitations and the fastening requirements, respectively.

The guardrail systems comply with the requirements of ASTM D7032.

3.2 Durability: When subjected to weathering, insect attack, and other decaying elements, materials used to manufacture guardrail systems are equivalent in durability to preservative-treated or naturally durable lumber when used in locations described in Section 2.0. The guardrail systems have been evaluated for structural performance when exposed to temperatures from -20°F (-29°C) to 125°F (52°C).

3.3 Surface-burning Characteristics: When tested in accordance with ASTM E84, guardrail systems have a flame-spread index of no greater than 200.

4.0 DESIGN AND INSTALLATION

Installation of DMV Railing guardrail systems 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.

5.0 CONDITIONS OF USE:

The DMV Railing guardrail systems 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** Installation must comply with this evaluation report, the manufacturer's published installation instructions and the applicable code. A copy of the manufacturer's published installation instructions shall be available at the jobsite at all times. When the manufacturer's published installation instructions differ from this report, this report governs.
- 5.2** The guardrail systems described in this evaluation report are limited to exterior use as guards for balconies, porches, and decks of structures of Type V-B construction (IBC) and other types of construction in applications where untreated wood is permitted by 2021 and 2018 IBC Section 705.2.3.1 (2015 and 2012 IBC Section 1406.3), or in structures constructed in accordance with the IRC.
- 5.3** All framing, wood posts, beams, joists, stringers, and associated connections required to anchor the railing posts are outside the scope of this report. All framing shall follow applicable codes or be designed by a licensed Engineer. Stairway handrails shall be designed and constructed in accordance with the applicable codes.
- 5.4** Only those fasteners and fastener configurations described in this report have been evaluated for the installation of the guardrail systems.
- 5.5** The guardrail systems described in this report were load tested by using nominally 4x4 (88.9 mm x 88.9 mm) Douglas Fir or 4x4 (88.9 mm x 88.9 mm) treated Southern Pine posts. Where other lumber species are utilized, the fastener capacity shall be verified by the code official or a registered design professional, as applicable.
- 5.6** The guardrail systems described in this report have been evaluated to the design rating and requirements of [Table 1](#) of this report.
- 5.7** The guardrail systems are manufactured under an approved 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 (editorially revised April 2021).

7.0 IDENTIFICATION

- 7.1** The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5437) along with the name, registered trademark, or registered logo of the report holder (DMV Wholesale Distribution) must be included in the product label.
- 7.2** In addition, the DMV Railing guardrail systems described in this report are identified on each package by a stamp bearing the product name; the allowable span; and the date of manufacture.
- 7.3** The report holder's contact information is the following:

DMV WHOLESALE DISTRIBUTION
6006 BEALETON ROAD
BEALETON, VIRGINIA 22712
(571) 605-8550
www.dmvwholesaleproducts.com

TABLE 1—EAGLE RAIL GUARDRAIL SYSTEMS AND CODE LIMITATIONS^{4,5}

GUARDRAIL SYSTEM	INSERT	GUARDRAIL SPAN (ft.)	MAXIMUM HEIGHT (in.)	APPLICABLE CODE
Eagle Rail with Polymer Bracket	Eagle Rail Aluminum Insert	6 8	42	IRC ^{1,2}
Eagle Rail with Aluminum Brackets	Eagle Rail Aluminum Insert	6 8	42	IRC ^{1,2} & IBC ³
Eagle Rail with Aluminum Brackets	Eagle Rail (10-ft) Aluminum Insert	10	42	IRC ^{1,2}
Eagle Rail with Polymer & PVC Brackets	Eagle Rail Aluminum Insert	6 8	42	IRC ^{1,2} & IBC ³
Eagle Rail with Aluminum & PVC Brackets	Eagle Rail Aluminum Insert	6 8	42	IRC ^{1,2} & IBC ³

For SI: 1 in. = 25.4 mm and 1 ft. = 304.8 mm

¹ All guardrail systems have been tested at the maximum height noted in the above table, measuring from walking surface to top surface of top rail, and the maximum spans. A guardrail system less than 42 inches in height may be installed at the same tabulated maximum spans, as long as the local code requirements for guardrail heights are met.

² Applicable to One and Two-Family Dwellings in the IRC.

³ Applicable to all Use Groups under the IBC.

⁴ The top rail inserts for Eagle Rail are manufactured from 6005A-T61 aluminum alloy. See [Figure 2](#) for profile details.

⁵ The installation brackets for Eagle Rail guardrail systems are manufactured from either aluminum, polyethylene or PVC materials.

TABLE 2—ORIOLE RAIL AND CARDINAL RAIL GUARDRAIL SYSTEMS AND CODE LIMITATIONS^{4,5,6}

GUARDRAIL SYSTEM	INSERT	GUARDRAIL SPAN (ft.)	MAXIMUM HEIGHT (in.)	APPLICABLE CODE
Oriole Rail	Inverted "h"	6	42	IRC ^{1,2}
Oriole Rail	H,P	6 8	42	IRC ^{1,2} & IBC ³
Oriole Rail	P	10	42	IRC ^{1,2}
Cardinal Rail	Inverted "h"	6	42	IRC ^{1,2}
Cardinal Rail	P	6 8	42	IRC ^{1,2} & IBC ³

For SI: 1 in. = 25.4 mm and 1 ft. = 304.8 mm

¹ All guardrail systems have been tested at the maximum height noted in the above table, measuring from walking surface to top surface of top rail, and the maximum spans. A guardrail system less than 42 inches in height may be installed at the same maximum span as long as the local code requirements for guardrail heights are met.

² Applicable to One and Two-Family Dwellings in the IRC.

³ Applicable to all Use Groups under the IBC.

⁴ The top rail inserts for Oriole Rail and Cardinal Rail are manufactured from 6005A-T61 aluminum alloy. See [Figure 3](#) for profile details.

⁵ The installation brackets for Oriole Rail and Cardinal Rail guardrail systems are manufactured from either aluminum, polyethylene or PVC materials.

⁶ The "P" or Inverted "h" aluminum inserts shall be oriented the long leg of the "P" or the Inverted "h" towards the walking surface.

TABLE 3—GUARDRAIL FASTENING REQUIREMENTS¹

GUARDRAIL PROFILE	CONNECTION	BRACKET	FASTENER ²	QUANTITY
Eagle Rail	Top/Bottom Brackets to Post	Eagle Rail Polymer Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	12
	Bracket to Top Guardrail		No. 9 x 7/8" pan head galvanized steel self-drilling screws	4
	Bracket to Bottom Guardrail		No. 9 x 7/8" pan head galvanized steel self-drilling screws	4
Eagle Rail	Top Rail Brackets to Post	Eagle Rail Aluminum Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	12
	Bottom Rail Bracket to Post		No. 9 x 7/8" pan head galvanized steel self-drilling screws	4
	Bracket to Top Guardrail		No. 9 x 7/8" pan head galvanized steel self-drilling screws	4
Eagle Rail	Top Rail Brackets to Post	Eagle Rail Polymer Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bottom Rail Bracket to Post	Eagle Rail PVC Level Bracket	No. 9 x 1 1/2" flat-head SS self-drilling screws	6
	Bracket to Top Guardrail	Eagle Rail Polymer Bracket	No. 9 x 7/8" pan head galvanized self-drilling screws	4
	Bracket to Bottom Guardrail	Eagle Rail PVC Level Bracket	No. 9 x 7/8" pan head galvanized self-drilling screws	4
Eagle Rail	Top Rail Brackets to Post	Eagle Rail Aluminum Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bottom Rail Brackets to Post	Eagle Rail PVC Level Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bracket to Top Guardrail	Eagle Rail Aluminum Bracket	No. 9 x 7/8" pan head galvanized steel self-drilling screws	2
	Bracket to Bottom Guardrail	Eagle Rail PVC Level Bracket	No. 9 x 7/8" pan head galvanized steel self-drilling screws	2
Oriole Rail	Top Rail Brackets to Post	Oriole Rail Bracket	No. 9 x 1 1/2" SS, pan head, square drive, self-drilling screws	12
	Rail Bracket to Rail		No. 10 x 3/4" pan-head, square drive, self-starting screws	4
	Bracket to Top Guardrail	Cardinal Rail Bracket	No. 9 x 1 1/2" SS, pan head, square drive, self-drilling screws	8
	Bracket to Bottom Guardrail		No. 10 x 3/4" pan-head, square drive, self-starting screws	4
Cardinal Rail	Top/Bottom Rail Bracket to Post	Cardinal Rail Bracket	No. 9 x 1 1/2" SS, pan head, square drive, self-drilling screws	16
	Rail Bracket to Rail		No. 10 x 3/4" pan-head, square drive, self-starting screws	8

For SI: 1 in. = 25.4 mm

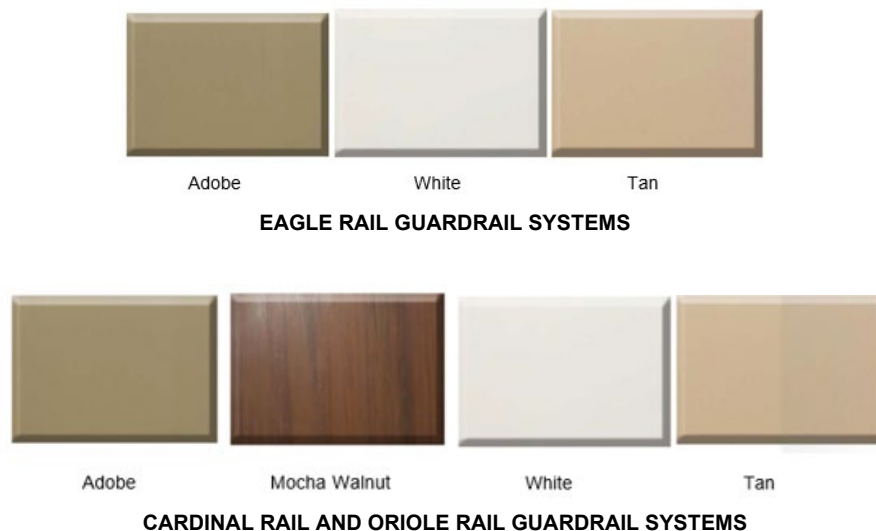
¹ Mechanical fasteners are not required to install the crush blocks underneath the bottom rails.² SS is for Stainless Steel

FIGURE 1—COLORS FOR DMV RAILING GUARDRAIL SYSTEMS

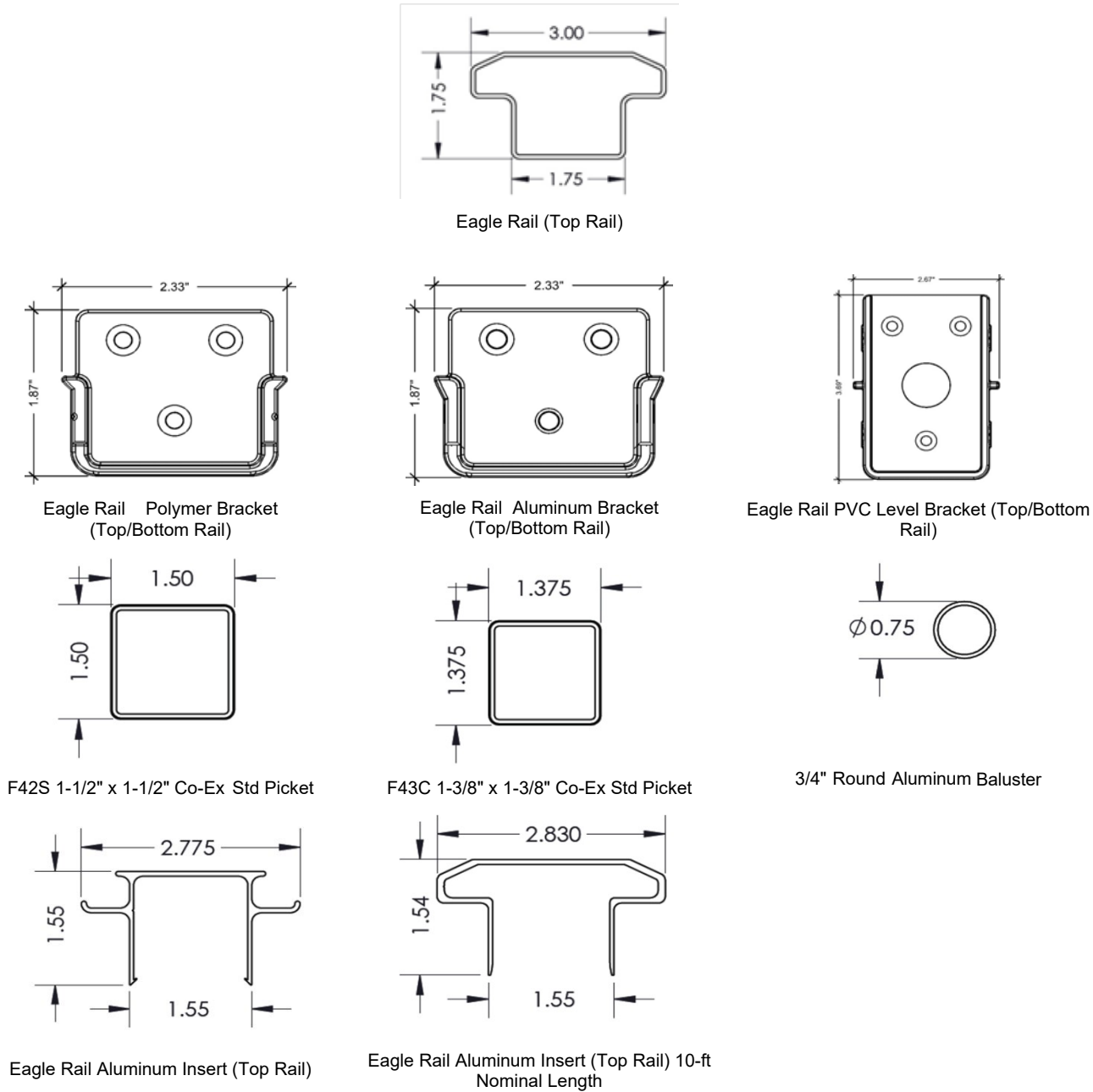
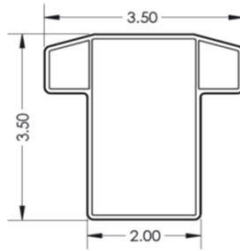
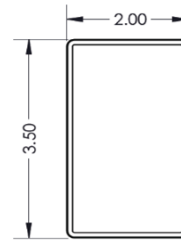


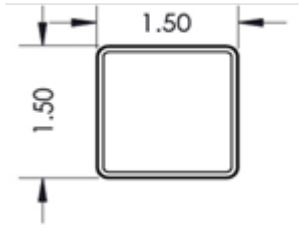
FIGURE 2—EAGLE RAIL GUARDRAIL SYSTEM COMPONENT PROFILES



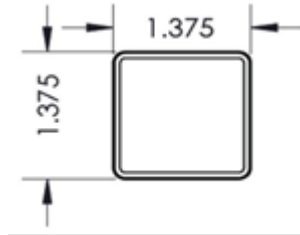
Oriole Rail (Top Rail)



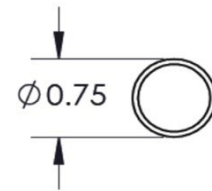
Cardinal Rail (Top/Bottom Rail)



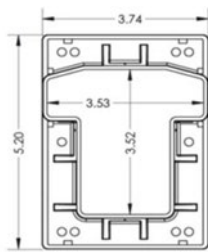
F42C 1-1/2" x 1-1/2" Co-Ex Std. Picket



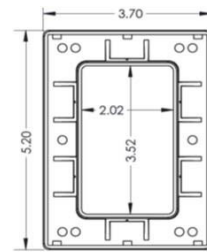
F43C 1-3/8" x 1-3/8" Co-Ex Std. Picket



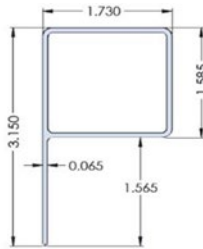
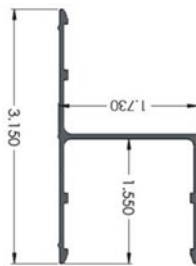
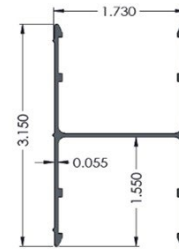
3/4" Round Aluminum Baluster



Oriole Rail Bracket



Cardinal Rail Bracket

Oriole/Cardinal Rail "P" Aluminum Insert
(Top Rail)Oriole/Cardinal Rail "h" Aluminum Insert
(Top/Bottom Rail)Oriole Rail "H" Aluminum Insert
(Top/Bottom Rail)**FIGURE 3—ORIOLE RAIL AND CARDINAL RAIL GUARDRAIL SYSTEM COMPONENT PROFILES**