ICC-ES Evaluation Report

ESR-5018

Reissued November 2024

Subject to renewal November 2025

DIVISION: 06 00 00 — WOOD, PLASTICS AND COMPOSITES **Section: 06 50 00 — Structural Plastics** **Section: 06 63 00 — Plastic Railings**	**REPORT HOLDER: HOMELAND VINYL PRODUCTS, INC.**	**EVALUATION SUBJECT: NEXUS® AND SUMMIT® GUARDRAIL SYSTEMS**	

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)

Properties evaluated:

- Structural
- Durability
- Surface burning characteristics

2.0 USES

The NEXUS® and SUMMIT® 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:

The NEXUS® and SUMMIT® 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, “A”, “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 five colors: White, Adobe, Tan, or Mocha Walnut, as depicted in Figure 1. Figures 2 through 4 depict the guardrail components, inserts, and component materials. Tables 1 through 3 list the Nexus® and Summit® 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 -20ºF (-29ºC) to 125ºF (52ºC).

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 INSTALLATION

Installation of NEXUS® and SUMMIT® 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 NEXUS® and SUMMIT® guardrail systems described in this report complies 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 tests 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 guardrails systems described in this report have been evaluated to the design rating and requirements of Table 1 of this report.

5.7 The guardrails systems are manufactured at Homeland Vinyl Products, Inc.' manufacturing facilities located in Birmingham, Alabama and Surgoinsville, Tennessee 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 report number (ICC-ES ESR-5018) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the NEXUS® and SUMMIT® guardrail systems described in this report are identified on each package by a stamp bearing the report holder's name (Homeland Vinyl Products, Inc.); the product name; the allowable span; the date of manufacture; and the ICC-ES evaluation report number (ESR-5018).

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

HOMELAND VINYL PRODUCTS, INC.
3300 PINSON VALLEY PARKWAY
BIRMINGHAM, ALABAMA 35217
(205) 314-2496
www.homelandvinyl.com
engineering@homelandvinyl.com

TABLE 1—NEXUS® GUARDRAIL SYSYTEMS AND CODE LIMITATIONS[4,5,6,7]

GUARDRAIL SYSTEM	INSERT	GUARDRAIL SPAN (ft.)	MAXIMUM HEIGHT (in.)	APPLICABLE CODE
Nexus® I T-Rail with Polymer Bracket	Nexus® I T-Rail Aluminum Insert	6 8	42	IRC[1,2]
Nexus® I T-Rail with Aluminum Brackets	Nexus® I T-Rail Aluminum Insert	6 8	42	IRC[1,2] & IBC[3]
Nexus® I T-Rail with Aluminum Brackets	Nexus® I T-Rail (10-ft) Aluminum Insert	10	42	IRC[1,2]
Nexus® I T-Rail with Polymer & PVC Brackets	Nexus® I T-Rail Aluminum Insert	6 8	42	IRC[1,2] & IBC[3]
Nexus® I T-Rail with Aluminum & PVC Brackets	Nexus® I T-Rail Aluminum Insert	6 8	42	IRC[1,2] & IBC[3]
Nexus® II Contour with Polymer Brackets	Nexus® II “A” Insert	6 8	42	IRC[1,2]
Nexus® II Contour with Aluminum Brackets	Nexus® II Contour Insert	6 8	42	IRC[1,2] & IBC[3]
Nexus® II Contour with Polymer & PVC Brackets	Nexus® II Contour Insert	6 8	42	IRC[1,2] & IBC[3]
Nexus® II Contour with Aluminum & PVC Brackets	Nexus® II Contour Insert	6 8	42	IRC[1,2] & IBC[3]
Nexus® 2 x 3-1/2" Rectangular Rail with PVC Brackets	Nexus® “H”, “P”	6 8	42	IRC[1,2]
Nexus® Low-Profile Rectangular Rail with Polymer Brackets	Nexus® Low Profile	6	42	IRC[1,2]

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 Nexus® I T-Rail are manufactured from 6005A-T61 aluminum alloy. See Figures starting on page 4 for profile details.

[5] The top rail inserts for Nexus® II are manufactured from 6005A-T61 aluminum alloy. See Figures starting on page 4 for profile details.

[6] The installation brackets for Nexus® guardrail systems are manufactured from either aluminum, polyethylene or PVC materials.

[7] 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 2—SUMMIT® GUARDRAIL SYSTEMS AND CODE LIMITATIONS[4,5,6,7]

GUARDRAIL SYSTEM	INSERT	GUARDRAIL SPAN (ft.)	MAXIMUM HEIGHT (in.)	APPLICABLE CODE
Summit® 3 1/2" T-Rail	Inverted "h"	6	42	IRC[1,2]
Summit® 3 1/2" T-Rail	H,P	6 8	42	IRC[1,2] & IBC[3]
Summit® 3 1/2" T-Rail	P	10	42	IRC[1,2]
Summit® 2" x 3 1/2" Rectangular	Inverted "h"	6	42	IRC[1,2]
Summit® 2" x 3 1/2" Rectangular	P	6 8	42	IRC[1,2] & IBC[3]
Summit® 2" x 3 1/2" Deck-Over	Inverted "h"	6	42	IRC[1,2]
Summit® 2" x 3 1/2" Deck-Over	P	6 8	42	IRC[1,2] & IBC[3] Codes
Summit® 3" Contour	Inverted "h"	6	42	IRC[1,2]
Summit® 3" Contour	P	6 8	42	IRC[1,2] & IBC[3]
Summit® II 3 1/2" T-Rail	H,P	6 8	42	IRC[1,2] & IBC[3]
Summit® II 3 1/2" T-Rail	Inverted "h"	6 8	42	IRC[1,2] & IBC[3]
Summit® II 3 1/2" T-Rail	A	10	42	IRC[1,2]
Summit® II 2" x 3 1/2" Rectangular	H,P	6 8	42	IRC[1,2] & IBC[3]
Summit® II 2" x 3 1/2" Rectangular	Inverted "h"	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 Summit® I T-Rail are manufactured from 6005A-T61 aluminum alloy. See Figures starting on page 4 for profile details.

[5] The top rail inserts for Summit® II are manufactured from 6005A-T61 aluminum alloy. See Figures starting on page 4 for profile details.

[6] The installation brackets for Summit® guardrail systems are manufactured from either aluminum, polyethylene or PVC materials.

[7] 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 REQUIREMENTS[1]

GUARDRAIL PROFILE	CONNECTION	BRACKET	FASTENER[2]	QUANTITY
Nexus® I T-Rail	Top/Bottom Brackets to Post	Nexus® 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
Nexus® I T-Rail	Top Rail Brackets to Post	Nexus® 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
Nexus® I T-Rail	Top Rail Brackets to Post	Nexus® Polymer Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bottom Rail Bracket to Post	Nexus® PVC Level Bracket	No. 9 x 1 1/2" flat-head SS self-drilling screws	6
	Bracket to Top Guardrail	Nexus® Polymer Bracket	No. 9 x 7/8" pan head galvanized self-drilling screws	4
	Bracket to Bottom Guardrail	Nexus® PVC Level Bracket	No. 9 x 7/8" pan head galvanized self-drilling screws	4
Nexus® I T-Rail	Top Rail Brackets to Post	Nexus® Aluminum Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bottom Rail Brackets to Post	Nexus® PVC Level Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bracket to Top Guardrail	Nexus® Aluminum Bracket	No. 9 x 7/8" pan head galvanized steel self-drilling screws	2
	Bracket to Bottom Guardrail	Nexus® PVC Level Bracket	No. 9 x 7/8" pan head galvanized steel self-drilling screws	2
Nexus® II Contour	Top/Bottom Brackets to Post	Nexus® Polymer Bracket	No. 8 8 x 1 5/8" flat head, square drive Type 17 point SS Screws	12
	Bracket to Top Guardrail		No. 10 16 x 3/4" pan head, No. 2 square drive, self-drilling coated carbon screws	4
	Bracket to Bottom Guardrail		No. 10 16 x 3/4" pan head, No. 2 square drive, self-drilling coated carbon screws	4
Nexus® II Contour	Top/Bottom Brackets to Post	Nexus® Aluminum Bracket	No. 8 8 x 1 5/8" flat head, square drive Type 17 point SS Screws	12
	Bracket to Top Guardrail		No. 10 16 x 3/4" pan head, No. 2 square drive, self-drilling coated carbon screws	4
	Bracket to Bottom Guardrail		No. 10 16 x 3/4" pan head, No. 2 square drive, self-drilling coated carbon screws	4
Nexus® II Contour	Top Rail Brackets to Post	Nexus® Polymer Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bottom Rail Bracket to Post	Nexus® PVC Level Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bracket to Top Guardrail	Nexus® Polymer Bracket	#9 x 7/8" pan-head galvanized steel self-drilling screws	4
	Bracket to Bottom Guardrail	Nexus® PVC Level Bracket	#9 x 7/8" pan-head galvanized steel self-drilling screws	4
Nexus® II Contour	Top Rail Brackets to Post	Nexus® Aluminum Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bottom Rail Bracket to Post	Nexus® PVC Level Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	6
	Bracket to Top Guardrail	Nexus® Aluminum Bracket	#9 x 7/8" pan-head galvanized steel self-drilling screws	4
	Bracket to Bottom Guardrail	Nexus® PVC Level Bracket	#9 x 7/8" pan-head galvanized steel self-drilling screws	4
Nexus® 2 x 3 1/2"	Top/Bottom Rail Bracket to Post	Nexus® PVC Level Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	12
	Bracket to Top Guardrail		No. 10 x 3/4" pan-head galvanized steel self-drilling screws	4
	Bracket to Bottom Guardrail		No. 10 x 3/4" pan-head galvanized steel self-drilling screws	4
Nexus® Low Profile	Top/Bottom Brackets to Post	Nexus® Polymer Bracket	No. 8 8 x 1 5/8" flat head, square drive Type 17 point SS Screws	12
	Bracket to Top Guardrail		No. 10 16 x 3/4" pan head, No. 2 square drive, self-drilling coated carbon screws	4
	Bracket to Bottom Guardrail		No. 10 16 x 3/4" pan head, No. 2 square drive, self-drilling coated carbon screws	4

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

TABLE 3—GUARDRAIL FASTENING REQUIREMENTS[1] (CONTINUED)

GUARDRAIL PROFILE	CONNECTION	BRACKET	FASTENER[2]	QUANTITY
Summit® T-Rail	Top Rail Brackets to Post	Summit® T-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	Summit® 2" x 3 1/2" 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
Summit® 2 x 3 1/2"	Top/Bottom Rail Bracket to Post	Summit® 2" x 3 1/2" 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
Summit® Contour	Top Rail Bracket to Post	Summit® Contour Rail Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	12
	Rail Bracket to Rail		No. 10 x 3/4" pan-head, square-drive, self-starting screws	4
	Bottom Rail Bracket to Post	Summit® 2" x 3 1/2" Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	8
	Rail Bracket to Rail		No. 10 x 3/4" pan-head, square-drive, self-starting screws	4
Summit® Deck-Over	Top Rail Bracket to Post	Summit® Deck-Over Bracket	No. 9 x 11/2" flat head SS self-drilling screws	12
	Rail Bracket to Rail		No. 10 x 3/4" pan-head, square-drive, self-drilling screws	4
	Bottom Rail Bracket to Post	Summit® 2" x 3 1/2" Bracket	No. 9 x 1 1/2" pan-head SS self-drilling screws	8
	Bracket to Bottom Guardrail		#10 x 3/4" pan-head, SS self-drilling screws	4
Summit® II T-Rail	Top Rail Bracket to Post	Summit® II T-Rail Bracket	No. 9 x 1 1/2" pan-head SS thread cutting screws (for use in wood)	12
	Rail Bracket to Rail		No. 10 x 1" pan-head galvanized steel self-drilling screws	4
	Bottom Rail Bracket to Post	Summit® II 2" x 3 1/2" Bracket	No. 9 x 1 1/2" pan-head SS thread cutting screws (for use in wood)	8
	Bracket to Bottom Guardrail		No. 10 x 3/4" pan-head galvanized steel self-drilling screws	4
Summit® II 2 x 3 1/2"	Top/ Bottom Rail Brackets to Post	Summit® II 2" x 3 1/2" Bracket	No. 9 x 1 1/2" flat head SS self-drilling screws	16
	Rail Bracket to Rail		No. 10 x 3/4" pan-head galvanized steel self-drilling screws	8

For **SI**: 1 in. = 25.4 mm

[1] Mechanical fasteners are not required to install the crush blocks underneath the bottom rails.

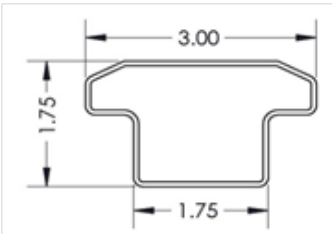
[2] SS is for Stainless Steel

NEXUS® GUARDRAIL SYSTEMS

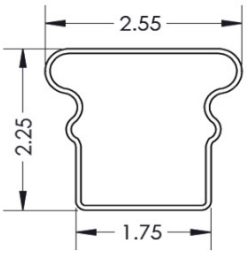
SUMMIT® GUARDRAIL SYSTEMS

SUMMIT® II GUARDRAIL SYSTEMS

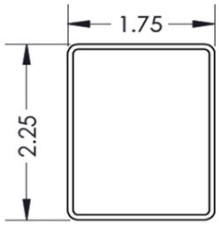
FIGURE 1—COLORS FOR NEXUS® AND SUMMIT® GUARDRAIL SYSTEMS



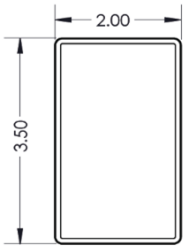
Nexus® I T-Rail (Top Rail)



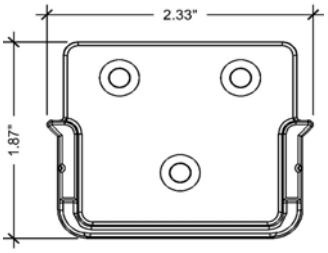
Nexus® II Contour Rail



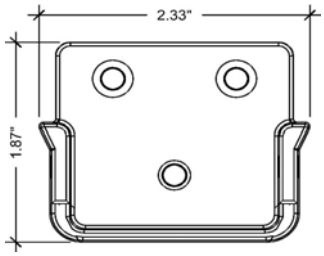
Nexus® Low Profile (Top/Bottom Rail)



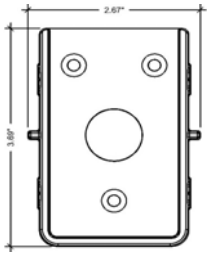
Nexus® 2" x 3-1/2" Rectangular Rail (Top/Bottom Rail)



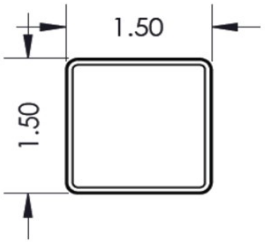
Nexus® Polymer Bracket (Top/Bottom Rail)



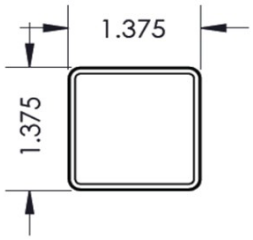
Nexus® Aluminum Bracket (Top/Bottom Rail)



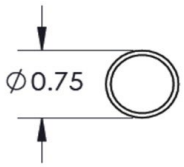
Nexus® 2" x 3-/12" PVC Level Bracket (Top/Bottom Rail)



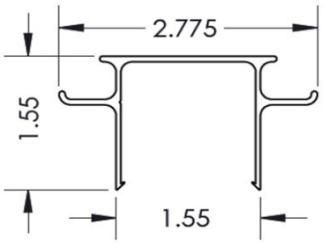
F42S 1-1/2" x 1-1/2" Co-Ex Std Picket



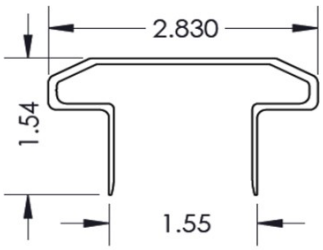
F43C 1-3/8" x 1-3/8" Co-Ex Std Picket



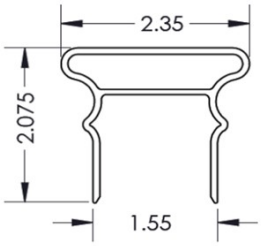
3/4" Round Aluminum Baluster



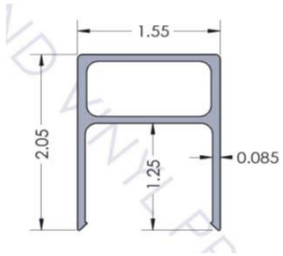
Nexus® I T-Rail Aluminum Insert (Top Rail)



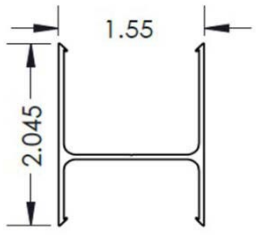
Nexus® I T-Rail Aluminum Insert (Top Rail) 10-ft Nominal Length



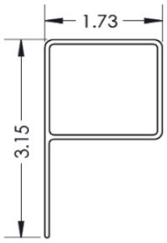
Nexus® II Contour Aluminum Insert (Top Rail)



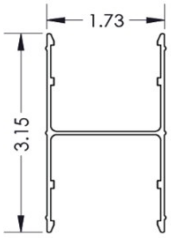
Nexus® II "A" Aluminum Insert (IRC Only)



Nexus® Low-Profile Aluminum Insert



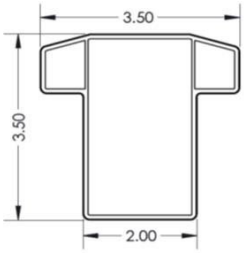
Nexus® 2" x 3-1/2" "P" Aluminum Insert



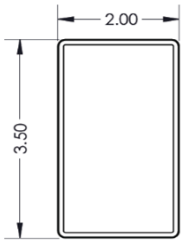
Nexus® 2" x 3-1/2" "H" Aluminum Insert

FIGURE 2—NEXUS® I & II GUARDRAIL SYSTEM COMPONENT PROFILES

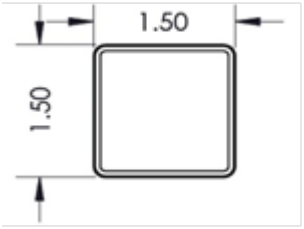
Summit® 3" Contour (Top Rail)



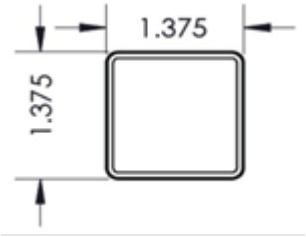
Summit® 3-1/2" T-Rail (Top Rail)



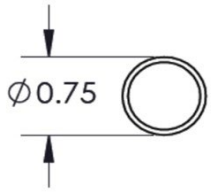
Summit® 2 x 3-1/2" Rectangular Rail (Top/Bottom Rail)



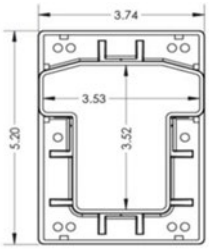
F42C 1-1/2" x 1-1/2" Co-Ex Std. Picket



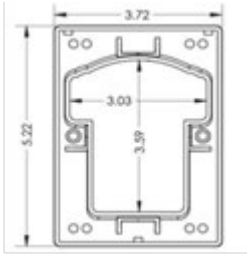
F43C 1-3/8" x 1-3/8" Co-Ex Std. Picket



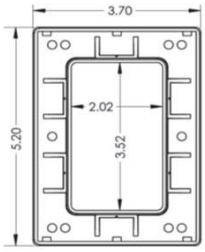
3/4" Round Aluminum Baluster



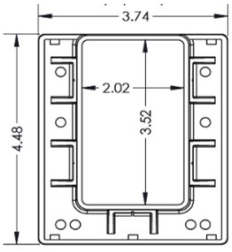
Summit® 3-1/2" T-Rail Bracket



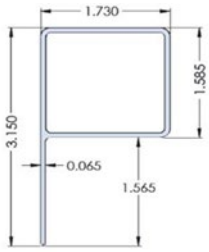
Summit® 3" Contour Bracket



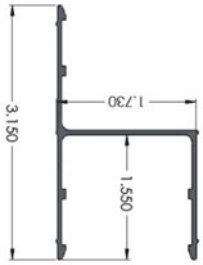
Summit® 2" x 3-1/2" Rectangular Bracket



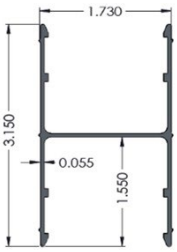
Summit® 2 x 3-1/2" Deck- Over Bracket



Summit® "P" Aluminum Insert (Top Rail)

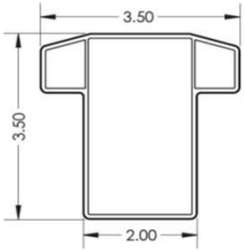


Summit® "h" Aluminum Insert (Top/Bottom Rail)

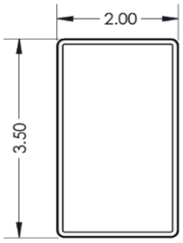


Summit® "H" Aluminum Insert (Top/Bottom Rail)

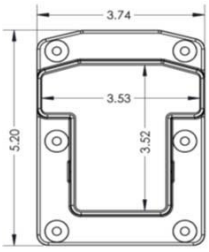
FIGURE 3—SUMMIT® GUARDRAIL SYSTEM COMPONENT PROFILES



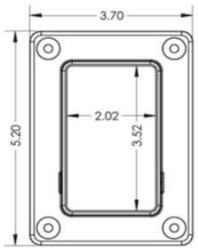
Summit® II 3-1/2" T-Rail
(Top Rail)



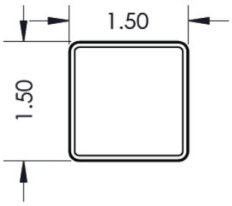
Summit® II 2 x 3-1/2"
Rectangular Rail
(Top/Bottom Rail)



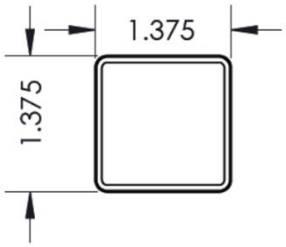
Summit® II 3-1/2" T-Rail Bracket



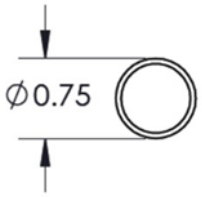
Summit® II 2" x 3-1/2"
Rectangular Bracket



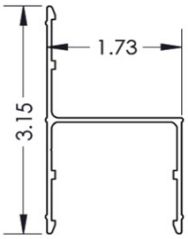
F42C 1-1/2" x 1-1/2" Co-Ex Std. Picket



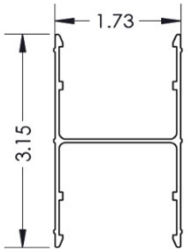
F43C 1-3/8" x 1-3/8" Co-Ex Std. Picket



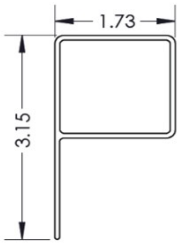
3/4" Round Aluminum Baluster



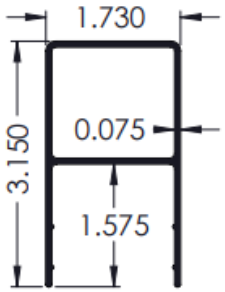
Summit® II "h" Aluminum Insert
(Top/Bottom Rail)



Summit® II "H" Aluminum Insert
(Top/Bottom Rail)



Summit® II "P" Aluminum Insert (Top Rail)



Summit® II "A" Aluminum Insert
(Top Rail)

FIGURE 4—SUMMIT® II GUARDRAIL SYSTEM COMPONENT PROFILES