



DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 50 00—Structural Plastics

Section: 06 63 00—Plastics Railings

REPORT HOLDER:

HOMELAND VINYL PRODUCTS, INC.

EVALUATION SUBJECT:

NEXUS® AND SUMMIT® GUARDRAIL SYSTEMS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018, 2015, and 2012 *International Building Code*® (IBC)
- 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 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, Mocha Walnut, or Honey Maple, 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.

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.

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 time. 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 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 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).

7.2 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 SYSSTEMS AND CODE LIMITATIONS^{4,5,6,7}

| GUARDRAIL SYSTEM | INSERT | MAXIMUM 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 ² 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 | MAXIMUM SPAN (ft.) | MAXIMUM HEIGHT (in.) | APPLICABLE CODE |
|---------------------------------|--------------|---------------------|----------------------|---------------------------------------------|
| Summit® 3½" T-Rail | Inverted "h" | 6 | 42 | IRC ^{1,2} |
| Summit® 3½" T-Rail | H,P | 6 ⁸ 8 | 42 | IRC ^{1,2} |
| Summit® 3½" T-Rail | P | 10 | 42 | IRC ^{1,2} |
| Summit® 2" x 3½" Rectangular | Inverted "h" | 6 | 42 | IRC ^{1,2} |
| Summit® 2" x 3½" Rectangular | P | 6 8 | 42 | IRC ^{1,2} & IBC ³ |
| Summit® 2" x 3½" Deck-Over | Inverted "h" | 6 | 42 | IRC ^{1,2} |
| Summit® 2" x 3½" 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 3½" T-Rail | H,P | 6 8 | 42 | IRC ^{1,2} & IBC ³ |
| Summit® II 3½" T-Rail | Inverted "h" | 6 8 | 42 | IRC ^{1,2} & IBC ³ |
| Summit® II 2" x 3½" Rectangular | H,P | 6 8 | 42 | IRC ^{1,2} & IBC ³ |
| Summit® II 2" x 3½" 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.

⁸ Uses the "h" insert in the top rail.

TABLE 3—GUARDRAIL FASTENING REQUIREMENTS¹

| 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 REQUIREMENTS¹ (COMT'D)

| 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 1 1/2" 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

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

²SS is for Stainless Steel



NEXUS® GUARDRAIL SYSTEMS



SUMMIT® GUARDRAIL SYSTEMS



SUMMIT® II GUARDRAIL SYSTEMS

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

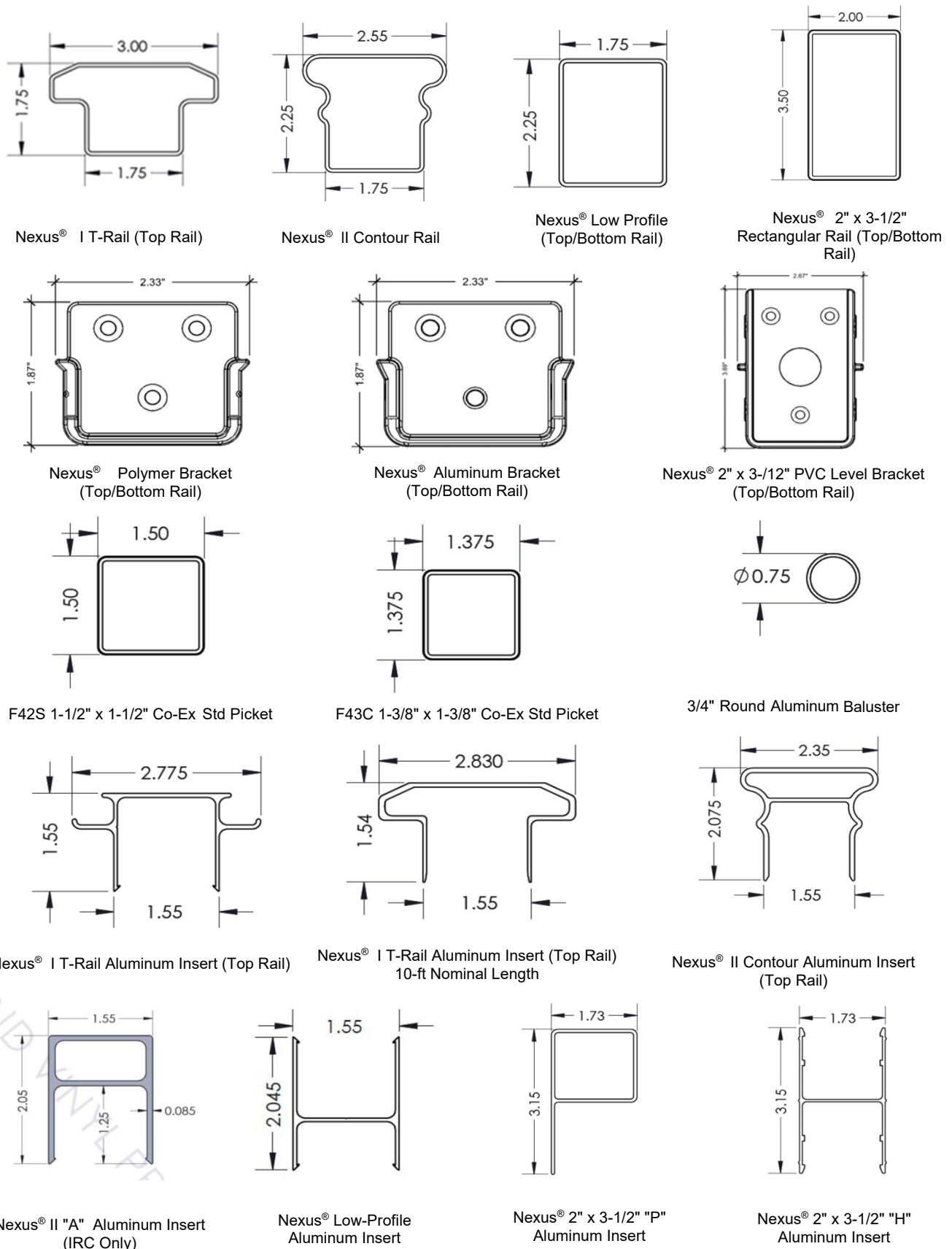
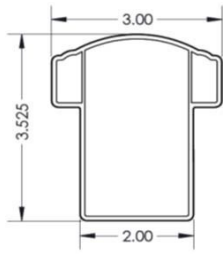
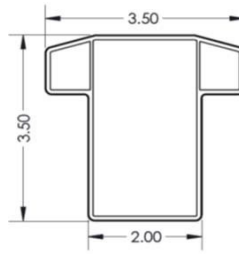


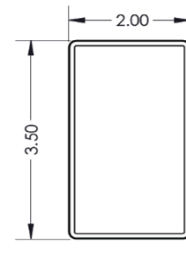
FIGURE 2—NEXUS® I & II GUARDRAIL SYSTEM COMPONENT PROFILES



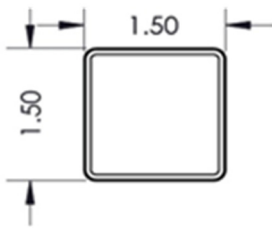
Summit® 3" Contour (Top Rail)



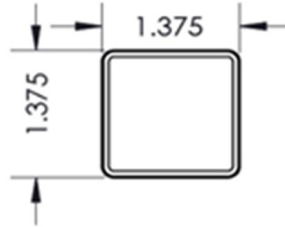
Summit® 3-1/2" T-Rail (Top Rail)



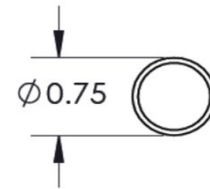
Summit® 2 x 3-1/2" Rectangular Rail (Top/Bottom Rail)



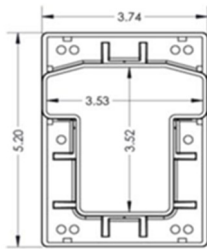
F42C 1-1/2" x 1-1/2" Co-Ex Std. Picket



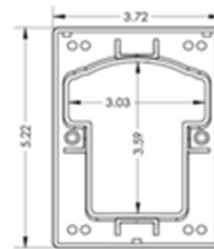
F43C 1-3/8" x 1-3/8" Co-Ex Std. Picket



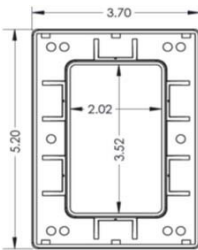
3/4" Round Aluminum Baluster



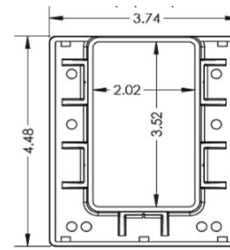
Summit® 3-1/2" T-Rail Bracket



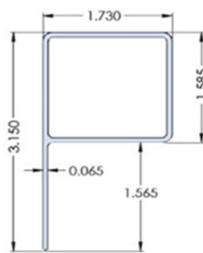
Summit® 3" Contour Bracket



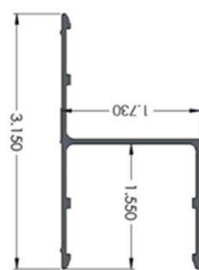
Summit® 2" x 3-1/2" Rectangular Bracket



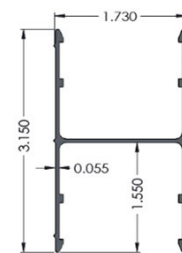
Summit® 2" x 3-1/2" Deck-Over Bracket



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

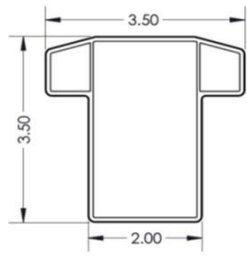


Summit® "h" Aluminum Insert (Top/Bottom Rail)

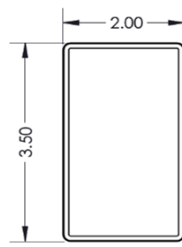


Summit® "H" Aluminum Insert (Top/Bottom Rail)

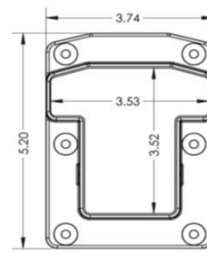
FIGURE 3—SUMMIT® GUARDRAIL SYSTEM COMPONENT PROFILES



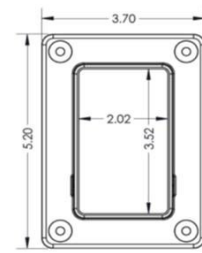
Summit® II 3-1/2" T-Rail
(Top Rail)



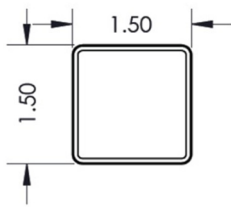
Summit® II 2 x 3-1/2"
Rectangular Rail
(Top/Bottom Rail)



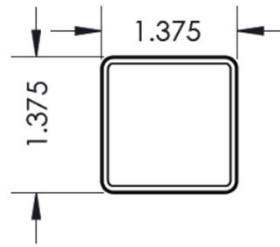
Summit® II 3-1/2" T-Rail Bracket



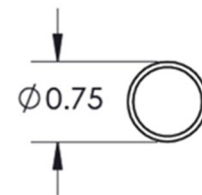
Summit® II 2" x 3-1/2"
Rectangular Bracket



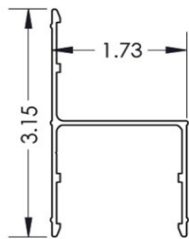
F42C 1-1/2" x 1-1/2" Co-Ex Std. Picket



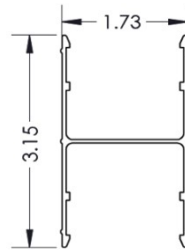
F43C 1-3/8" x 1-3/8" Co-Ex Std. Picket



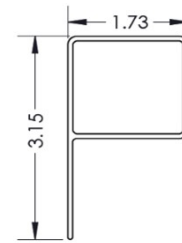
3/4" Round Aluminum Baluster



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



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



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

FIGURE 3—SUMMIT® II GUARDRAIL SYSTEM COMPONENT PROFILES (CONT'D)