



Code Compliance Research Report

CCRR-0157

Subject to Renewal: 09/29/2011

Issued: 09/29/2010

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1.0 Subject

Inspirations™ Railing

2.0 Research Scope

2.1. Building Codes:

2009 International Building Code (IBC)

2009 International Residential Code (IRC)

2.2. Properties:

Structural Performance

Durability

Surface Burning

Decay Resistance

Termite Resistance

3.0 Description

3.1. General – The *Inspirations* Guardrail Systems described in this report are guards and guardrails under the definitions of the referenced codes. They are intended for exterior use in One- and Two-Family Dwellings at or near the open sides of elevated walking areas of buildings and walkways as required by the referenced codes.

3.2. Guardrail systems include a top and bottom rails, vertical balusters, post sleeves, rail-to-post brackets, crush blocks and decorative moldings.

3.3. Rails, post sleeves, crush blocks, balusters and decorative moldings are manufactured from an extruded Wood-Plastic Composite (WPC) material that is part Poly Vinyl Chloride (PVC) and part wood fiber with a PVC cap stock applied by a co-extrusion process and are produced in a single color; White.

3.4. Level guards with heights of up to 42 inches above the floor surface are provided in lengths up to 92 inches, as measured along the top rail, from inside-to-inside of supports. See Figure 6.

3.5. Stair guards with heights of up to 42 inches above the floor surface are provided in lengths up to 67 inches, as measured along the top rail, from inside-to-inside of supports. See Figure 7.

3.6. The top assembly consists of one rail, and is attached to each support with a single powder-coated, stainless steel bracket. See Figures 1 and 2.

3.7. The bottom assembly consists of one rail, and is attached to each support with a single powder-coated, stainless steel bracket. See Figures 1 and 2.

3.8. Balusters are provided in two styles, square or round. The square balusters are extruded WPC with a PVC cap stock and are 1.25 inches square. The round balusters are 0.75 inch diameter, powder-coated, G60 galvanized steel. The balusters are secured to the top and bottom rails using a PVC "dagger" connector that is placed through routed openings in both the top and bottom rails. See Figures 3 and 4.

3.9. Post sleeves are 4 inches square and have a wall thickness of 0.16 inch.

4.0 Performance Characteristics

4.1. The guardrail systems described in this report have demonstrated the capacity to resist the design loadings specified in Chapter 16 of the IBC and Section R301 of the IRC when tested in accordance with ICC-ES AC174 and ASTM D 7032.

4.2. Structural performance has been demonstrated for a temperature range from -20°F to 125°F.

4.3. Materials used are deemed equivalent to preservative treated or naturally durable wood for resistance to weathering effects, decay, and attack from termites.

4.4. PVC materials used have a flame spread index of 35 when tested according to ASTM E 84.

5.0 Installation

5.1. Installation shall be in accordance with the manufacturer's installation instructions and this report. Where differences occur between this report and the manufacturer's installation instructions, this report shall govern.

5.2. The top and bottom rail assemblies are attached to WPC sleeved conventional wood posts or other supporting structure with steel mounting brackets. See Figure 2.

5.3. Crush blocks are intermediate bottom rail supports and are installed between the deck surface and the bottom rail at the mid-point of the rail length and consist of a 1.5 inch by 0.875 inch hollow, extruded, PVC capped, WPC tube cut to length and secured with a crush block bracket attached with one (1) #10 by 1 inch screw to the bottom rail. See Figure 5.

6.0 Supporting Evidence

6.1. Drawings and installation instructions submitted by the manufacturer.

6.2. Reports of testing and engineering analysis demonstrating compliance with the performance requirements of ICC-ES AC174 "Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems (Guards and Handrails)", effective June 1, 2009.

6.3. Reports of testing and engineering analysis demonstrating compliance with the performance requirements ASTM D 7032-07, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails).

6.4. A quality control manual that is in accordance with the ICC-ES AC10, "Acceptance Criteria for Quality Documentation", effective March 1, 2009.

7.0 Conditions of Use

The guardrail assemblies identified in this report are deemed to comply with the intent of the provisions of the referenced building codes subject to the following conditions.

7.1. Guards recognized in this report are limited to exterior use in One and Two Family Dwellings.

7.2. Conventional wood supports including support posts for guards are not within the scope of this report and are subject to evaluation and approval by the building official. Supports must satisfy the design load requirements specified in Chapter 16 of the IBC and must provide suitable material for anchorage of the rail brackets.

7.2.1. The wood in the supporting structure including support posts shall have a specific gravity of 0.50 or greater (Southern Yellow Pine or better) and a minimum thickness to allow full penetration of the bracket mounting screws.

7.2.2. Where required by the building official, engineering calculations and details prepared by a licensed design professional shall be provided.

7.3. Compatibility of fasteners and other metallic components with the supporting structure, including chemically treated wood, is not within the scope of this report.

7.4. All products are manufactured in New London, North Carolina by Fiberon, LLC in accordance with the manufacturer's approved quality control system with inspections by PFS Corp. (IAS - AA-652.)

8.0 Identification

The composite guard assemblies produced by Fiberon, LLC identified in this report, shall be identified with labeling on the individual components or the packaging and include the following;

8.1. Name and/or trademark of the manufacturer

8.2. The identifying mark of the independent inspection agency, PFS Corp. (IAS - AA-652)

8.3. The ATI Code Compliance Research Report Number (CCRR-0157)

9.0 Code Compliance Research Report Use

9.1. Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

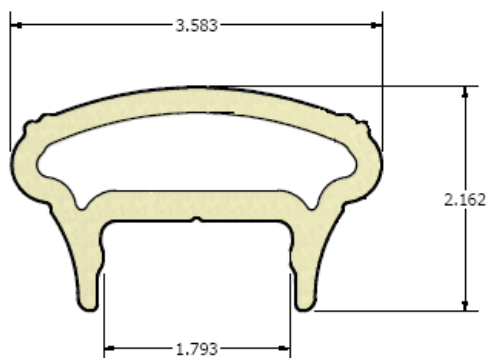
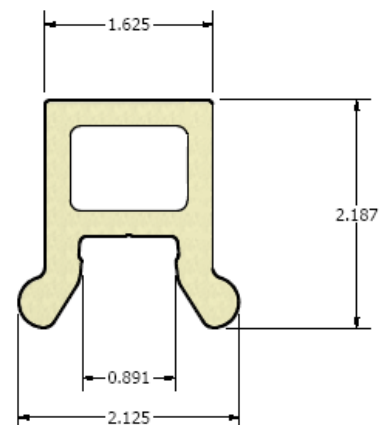
9.2. Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Architectural Testing.

9.3. Reference to the Architectural Testing internet web site address at www.archtest.com is recommended to ascertain the current version and status of this report.

Table 1

Connection	Fastener ¹
Top Rail Bracket to Top Rail (Level or Stair)	(2) #10 x 1 inch hex-head, self-starting screws
Top Rail Bracket to Post (Level)	(1) 0.25 inch x 2 inch hex-head lag screw (pre-drill post with 0.1875 inch bit) installed in the center hole (slotted) and (1) #10 x 1 inch self-starting, hex-head screw installed in the interior hole (nearest to inside of rail)
	Alternate Fastening: (2) #12 x 2 inch self-drilling, hex-head screws in outer bracket holes
Top Rail Bracket to Post (Stair)	(2) #12 x 2 inch flat-head, #3 square drive screws (pre-drill post with 0.125 inch bit)
Bottom Rail Bracket to Bottom Rail (Level and Stair)	(1) #10 x 1 inch hex-head, self-starting screw
Bottom Rail Bracket to Post (Level and Stair)	(1) #12 x 2 inch hex-head, self-starting screw

Note 1: All Hex-Head screws have an integral washer head


Top Rail Profile

Bottom Rail Profile
Figure 1 – Rail Profiles

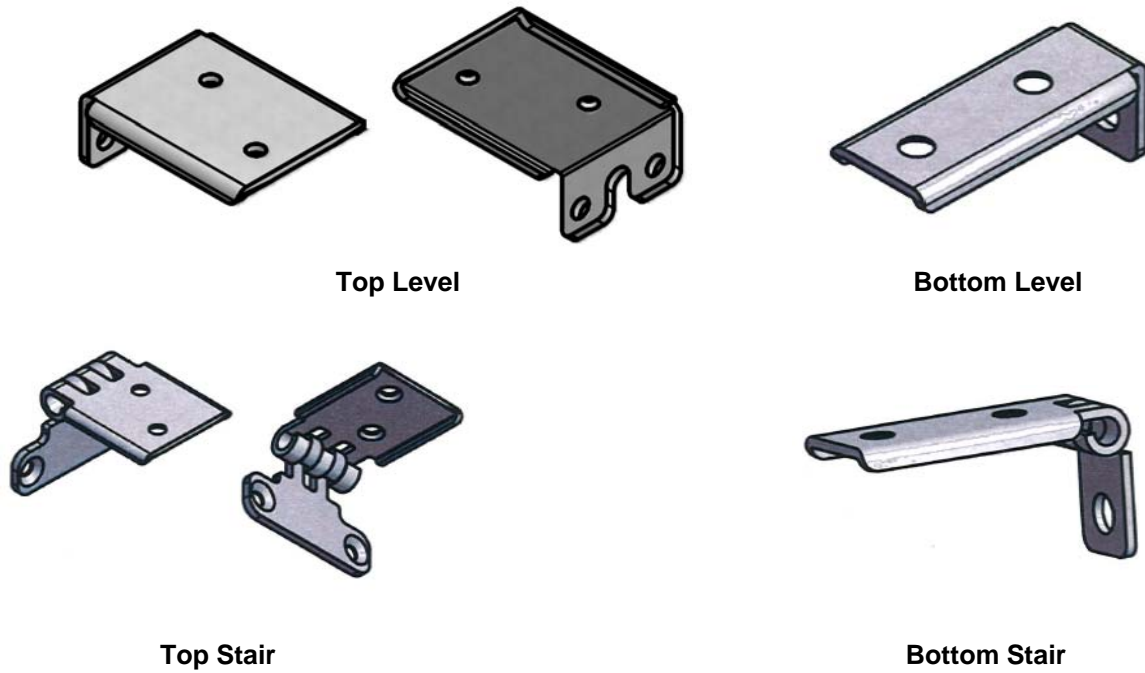


Figure 2 – Mounting Brackets

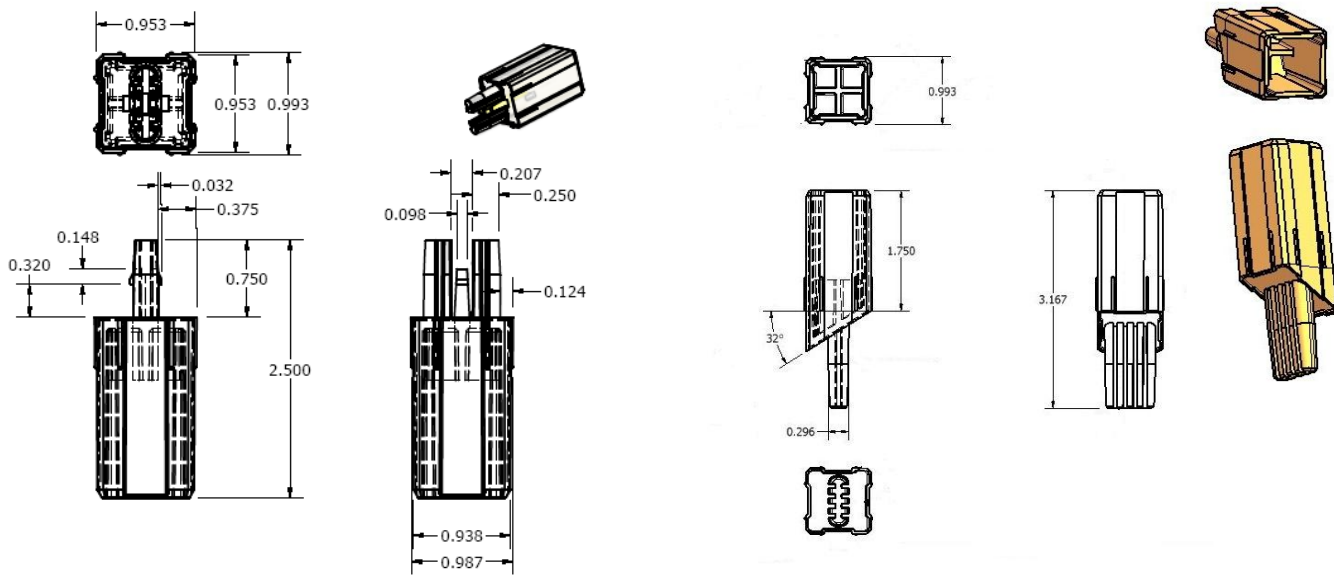
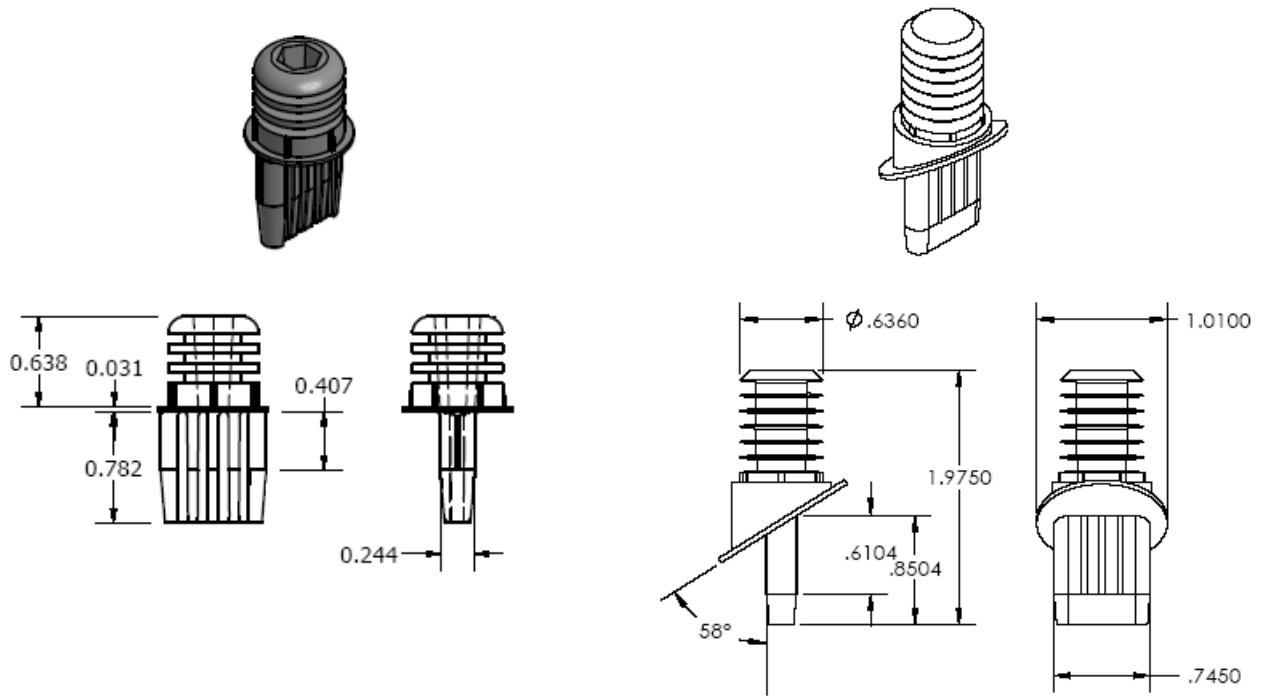
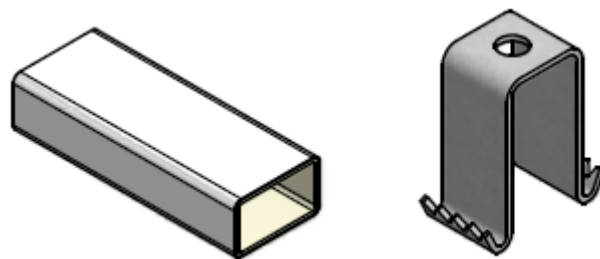


Figure 3 – Square Baluster Dagger Inserts



Level Rail Dagger

Stair Rail Dagger (Angled)

Figure 4 – Round Baluster Dagger Inserts

Figure 5 – Crush Block Bracket Assembly

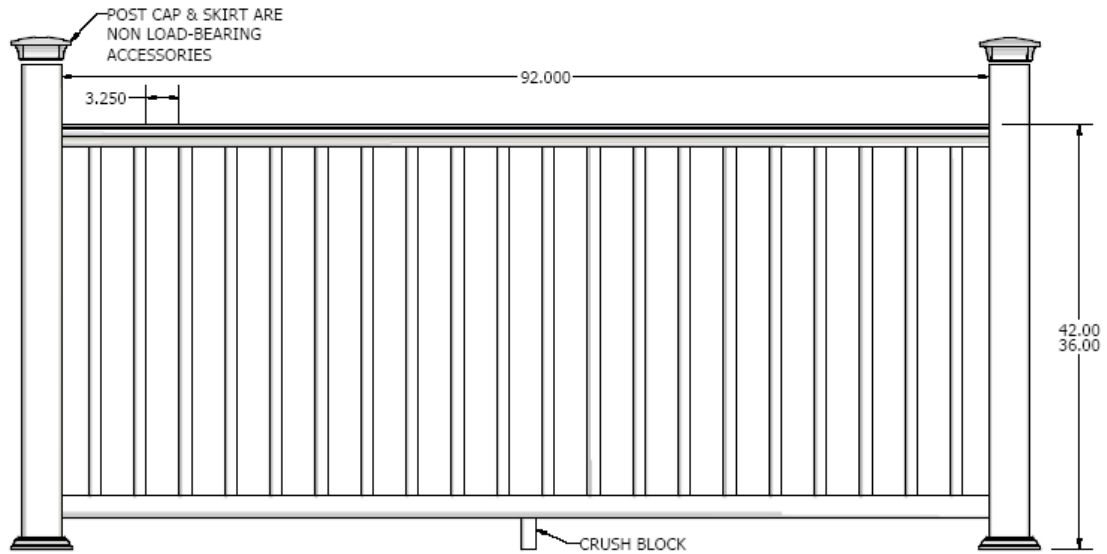


Figure 6 – Typical Level Assembly

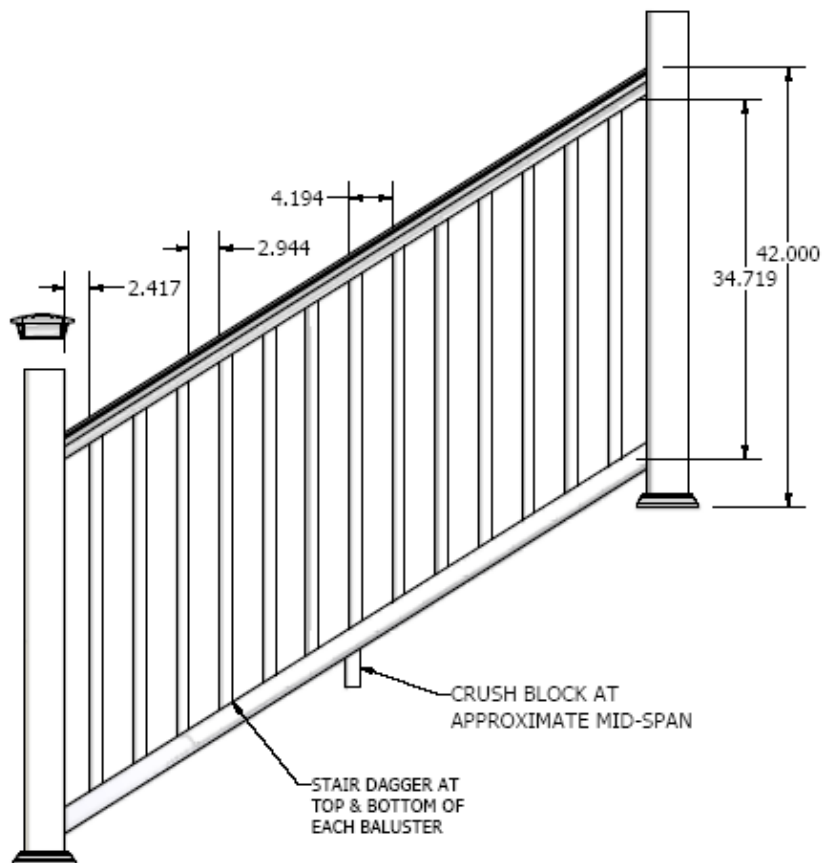


Figure 7 – Typical Stair Assembly