



Code Compliance Research Report

CCRR-0135

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1.0 Subject

DuraLife RailWays Universal Railing Collection

2.0 Research Scope

2.1. Building codes:

2012 International Building Code (IBC)

2012 International Residential Code (IRC)

2.2. Properties:

Structural performance

Durability

Surface Burning

Decay Resistance

Termite Resistance

3.0 Description

3.1. General – *DuraLife RailWays Universal Railing Collection* Guardrail System is a guard or guardrail under the definitions of the referenced codes. It is intended for use at or near the open sides of elevated walking areas of buildings and walkways as required by the codes.

3.2. Guard Assemblies – Guards are provided as level guards for level walking areas such as decks, balconies, and porches.

3.2.1. Level guards are provided with rail lengths up to 94-1/2 inches in length (measured between inside of support posts) and a maximum installed height of 42 inches. See Table 1 for qualified lengths and configurations.

3.3. Materials and Processes - *DuraLife RailWays Universal Railing Collection* Guardrail Systems are an assemblage of an extruded wood-plastic composite (WPC) material with a polymer capstock produced in eight colors; Black, Burnt Walnut, Cedar, Driftwood, Golden Oak, Mahogany, Pebble, and White.

3.4. The guard system includes two identical rails used as both the top and bottom rail, vertical

balusters, 5 inch square post sleeves, baluster connectors, rail-to-post brackets, support block, decorative moldings and post caps.

3.4.1. The top and bottom rails are extruded composite rails having an overall nominal sectional dimension of 3-5/16 inch wide by 2-7/16 inch tall. See Figure 1.

3.4.2. The infill area consists of 1-1/2 inch square, hollow, extruded composite balusters with chamfered corners. See Figure 2.

3.4.3. The top and bottom rails are attached to structural supports with stainless steel mounting brackets. See Figure 5.

3.4.4. The balusters are secured to the top and bottom rail with 1.20 inch diameter Uni-Ball™ connectors. See Figure 4.

3.4.5. Railing systems are attached to conventional wood supports, which are sleeved with a 5 inch square composite post sleeve of 1/4 inch thickness. See Figure 3.

3.4.6. A support block is installed between the lower rail and the deck surface midway between supports. The single support block consists of a 1-1/2 inch square composite baluster cut to the appropriate length. It is attached to the bottom of the lower rail with a Uni-Ball™ connector.

4.0 Performance Characteristics

4.1. The guardrail system described in this report has 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. The WPC material used in the guardrail system has a flame spread index not greater than 200 when tested in accordance with ASTM E84.

5.0 Installation

The guard system shall be installed 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.

5.1. The top and bottom rails are attached to structural supports utilizing stainless steel level brackets. See Figure 5 and Table 2.

5.2. The baluster connections to both the top and bottom rails are made utilizing a Uni-ball™ connector at each attachment point. See Figure 4 and Table 2.

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

6.0 Supporting Evidence

6.1. Drawings and installation instructions submitted by the manufacturer.

6.2. The 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), revised December 2014.

6.3. The reports of testing and engineering analysis demonstrating compliance with the performance requirements ASTM D 7032-08, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)

6.4. Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report.

7.0 Conditions of Use

The guard 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. Guardrail systems recognized in this report may be used in detached One- and Two-Family Dwellings regulated by the IRC.

7.2. Conventional wood supports and supporting structural framing are not within the scope of this report and are subject to evaluation and approval by the building official.

7.3. Conventional 4x4 wood posts and structural support framing for post installations must satisfy the design load requirements specified in Chapter 16 of the IBC and must provide suitable material for anchorage. Wood shall have a specific gravity of 0.50 or greater (Southern Yellow Pine or better). Where required by the building official, engineering calculations and details shall be provided.

7.4. Only those types of fasteners and fastening methods described in this report have been evaluated for the installation of the *DuraLife RailWays Universal Railing Collection* guardrails; other methods of attachment are outside the scope of this report.

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

7.6. *DuraLife RailWays Universal Railing Collection* guardrail systems are manufactured by Integrity Composites in Biddeford, Maine. Manufacturing is in accordance with an approved quality control system and inspections by Architectural Testing (IAS AA-676).

8.0 Identification

The guard assemblies produced by Integrity Composites, identified in this report, shall be identified with labeling on the individual components or the packaging that includes the following:

8.1. Name and/or trademark of the manufacturer;

8.2. The following statement: "For Use in One- and Two-Family Dwellings Only";

8.3. The following statement: "ASTM D 7032 compliant. See CCRR-0135 at www.ati-es.com for uses and performance levels";

8.4. Architectural Testing Code Compliance Research Report mark and number (CCRR-0135).

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.ati-es.com is recommended to ascertain the current version and status of this report.

Table 1 – Qualified Guardrail Systems and Use Categories

<i>DuraLife RailWays Universal Railing Collection WPC Guardrail System</i> ⁽¹⁾	Guardrail Type	Code Occupancy Classification
94-1/2 inch by 42 inch	Level	The use of this product shall be limited to exterior use as a guard system for balconies and porches for detached one- and two-family dwellings.

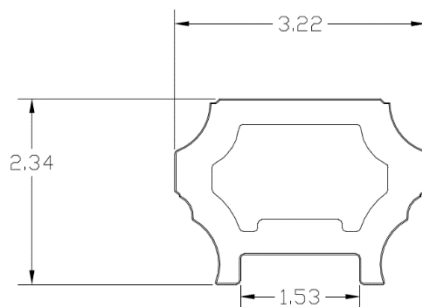
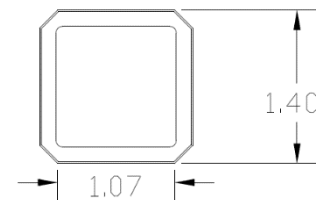
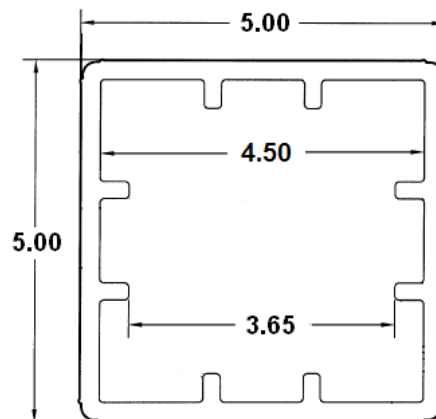
(1) Guardrails are qualified up to and including the listed maximum guardrail system dimensions for use in the referenced Code Occupancy Classification. Railing lengths are clear length between supports. Railing height is installed height from walking surface to top of top rail.

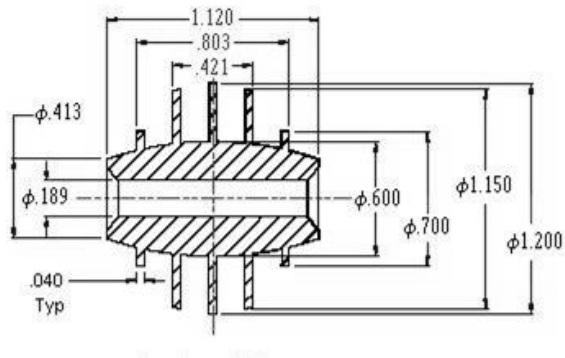
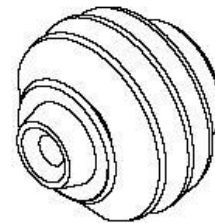
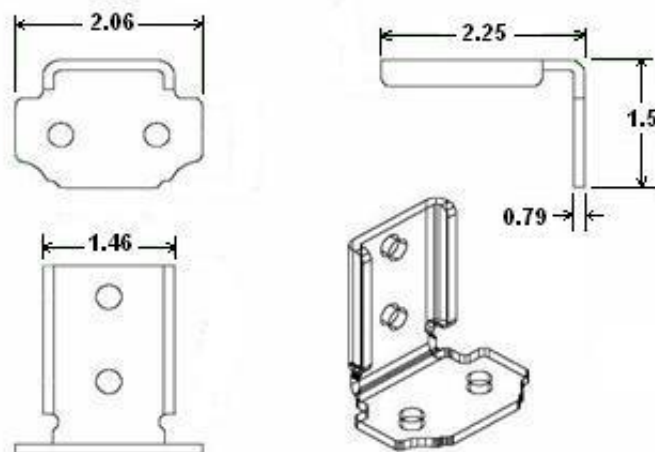
Table 2 – Fastening Schedule

Connection	Fastener	Qty.
Top Rail Bracket to Post ⁽¹⁾	1/4 inch x 2 inch hex-head lag bolts with nylon washers	2
Bottom Rail Bracket to Post ⁽¹⁾	1/4 inch x 1-1/2 inch hex-head lag bolts with nylon washers	2
Rail Bracket to Rail ⁽²⁾	1/4 inch x 1-1/2 inch hex-head lag bolts with nylon washers	2
Baluster to Top Rail	Uni-Ball™ connector secured to rail with one #8 x 2-1/4 inch stainless steel screw	1
Baluster to Bottom Rail	Uni-Ball™ connector secured to rail with one #8 x 2-1/4 inch stainless steel screw	1
Foot Block to Bottom Rail	Uni-Ball™ connector secured to rail with one #8 x 2-1/4 inch stainless steel screw	1

(1) 7/32 inch diameter pre-drill in post.

(2) 7/32 inch diameter pre-drill in rail.


Figure 1 - Rail Profile

Figure 2 - Baluster Profile

Figure 3 – 5x5 Composite Post Sleeve


Sectional View

Isometric View
Figure 4 - Uni-Ball™ Baluster Connector

Figure 5 - Level Rail Bracket