

DIVISION 06 00 00 – Wood, Plastics and Composites
Section: 06 50 00 – Structural Plastics
Section: 06 63 00 – Plastic Railings

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REPORT SUBJECT:

Kingston Railing System

1.0 SCOPE OF EVALUATION

1.1. Building Codes

2015 International Building Code (IBC)
2015 International Residential Code (IRC)

2012 International Building Code (IBC)
2012 International Residential Code (IRC)

2014 Florida Building Code (FBC)
(*Excluding High Velocity Hurricane Zone*)

Sections of the IBC and IRC referenced in this report are applicable to the Florida Building Code and Florida Residential Code respectively.

1.2. Properties

Structural Performance

Durability

Surface Burning

2.0 USES

2.1. Guardrail systems recognized in this report may be used in One- and Two-Family Dwellings regulated by the IRC and all construction types regulated by the IBC in accordance with IBC Section 1406.3, Exception 2. Guardrails less than 42 inches high are limited to use in One- and Two-Family Dwellings (IRC). See Table 1

for additional restrictions based upon Use and Occupancy classification.

2.2. The *Kingston Railing Systems* are guards and guardrails under the definitions of the referenced codes. They are intended for exterior use at or near the open sides of elevated walking areas of buildings and walkways as required by the referenced codes.

2.3. Guard systems are provided as level guards for level walking areas such as decks, balconies and porches, and sloped guards for open sides of stairways. See Table 1 for qualified lengths and configurations.

3.0 DESCRIPTION

3.1. The *Kingston Railing System* is an assemblage of extruded and molded poly vinyl chloride (PVC) components with aluminum inserts and brackets. PVC components are provided in three colors: almond, clay and white.

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

3.1.1.1. The top and bottom rails are extruded PVC, with overall dimensions of 3.25 inches wide and 1.5 inches tall. See Figure 3.

3.1.2. Balusters are supplied in the two styles identified below. Rails are routed to the shape of the baluster profile to receive balusters.

3.1.2.1. Blow-molded PVC spindles have a 1.5 inch square cross-section at the ends with a molded turned spindle through the middle of its length. See Figure 4.

3.1.2.2. Extruded PVC pickets have a 1.5 inch square cross-section along the entire length of the picket. See Figure 5.

3.1.3. Post sleeve is a 4 inch square profile. See Figure 6.

3.1.4. Top and bottom rails are connected to posts using external aluminum brackets, as identified in Figure 7 for straight and stair rail applications.



3.1.5. An extruded aluminum insert provides reinforcement in the top and bottom rails. See Figure 8.

4.0 PERFORMANCE CHARACTERISTICS

4.1. The guard 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. The materials used for the CertainTeed railing systems have a flame spread index less than 200 when tested in accordance with ASTM E 84.

5.0 INSTALLATION

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.

5.1. Railing assemblies consist of top and bottom rails with pre-routed holes to receive balusters. Aluminum railing reinforcements are inserted in the top and bottom rails during assembly. Aluminum insert lengths must be the same length as the PVC railings to assure bracket screws penetrate the aluminum inserts.

5.2. Railings are secured to sleeved 4x4 wood posts with aluminum brackets and stainless steel screws. 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. Rail attachment shall be in accordance with Table 2.

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 of ASTM D 7032-08.

6.4. Within the scope of this report, the following versions of referenced standards are deemed equivalent.

Standard	Version(s)	
	ASTM D7032	08
ASTM E84	09	2013a

6.5. 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. Guards recognized in this report are limited to exterior use in buildings as permitted in Table 1.

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 FBC. Supports and framing must provide suitable material for anchorage of the rail brackets. Where required by the building official, engineering calculations and details shall be provided.

7.3. Any component or configuration not identified in this report has not been evaluated for performance and/or compliance to the referenced codes. Identification of such components with the CCRR program mark or number is prohibited.

7.4. Only those types of fasteners and fastening methods described in this report have been evaluated for the installation of the products listed in Section 1.0; 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. The *Kingston Railing Systems* are manufactured in Buffalo, New York in accordance with the manufacturer's approved quality control system with inspections by Intertek Testing Services NA, Inc. (AA-676).

8.0 IDENTIFICATION

The guard assemblies produced by CertainTeed Corporation 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 and the manufacturer's address.
- 8.2. The following statement, "See CCRR-0211 at www.whdirectory.intertek.com for uses and performance levels".
- 8.3. The phrase, "For Use in One- and Two-Family Dwellings Only".
- 8.4. The Intertek Code Compliance Research Report mark and number (CCRR-0211).



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 Intertek Testing Services NA, Inc.
- 9.3. Reference to the Intertek web site address at www.whdirectory.intertek.com is recommended to ascertain the current version and status of this report.

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Table 1 – Kingston Railing System Building Code Recognition

Type of System	Guard System Dimensions		Code Recognition
	Maximum length ⁽¹⁾	Minimum height ⁽²⁾	
Level with straight brackets	116.25 in. ⁽³⁾	36 in.	Limited to exterior use as a guard system for balconies and porches for One- and Two-Family Dwellings.
Stair	90.5 in.	36 in.	

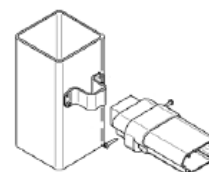
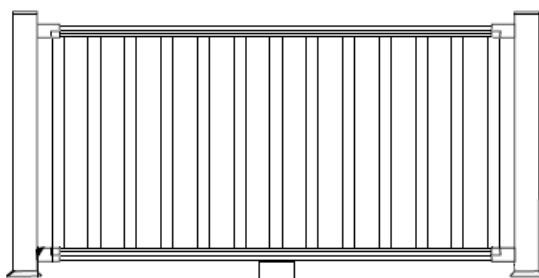
(1) Level rail lengths are maximum clear length between supports. Stair rail lengths are the sloping clear distance between supports.

(2) Level rail heights are minimum installed height from walking surface to top of top rail. Stair rail heights are minimum installed height as measured vertically from the leading edge of the stair nose.

(3) Level configurations utilize one intermediate crush block located at the mid-span of the bottom rail.

Table 2 – Rail/Bracket Fastening Schedule

Railing System	Connection	Fastener
Kingston Level and Stair Rails	Top Rail Bracket to Post	Two #8 x 2" stainless steel, self-starting screws in the top rail bracket's bottom holes
	Bottom Rail Bracket to Post	Two #8 x 2" stainless steel, self-starting screws in the bottom rail bracket's top holes
	Rail to Rail Bracket	Two #8 x 3/4" stainless steel or zinc-coated self-starting screws (once on each side of the rail)



Straight bracket

Figure 1 – Level Kingston Rail Configuration

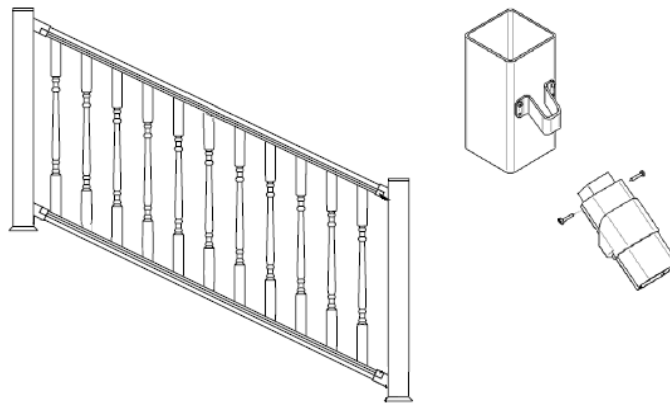


Figure 2 – Stair *Kingston* Rail Configuration

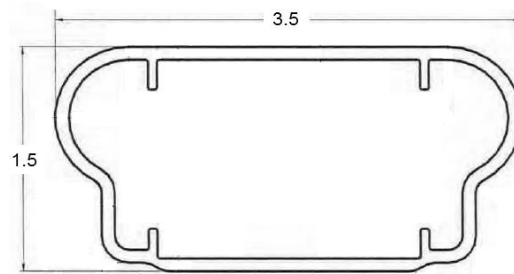


Figure 3 – *Kingston* Top and Bottom Rail

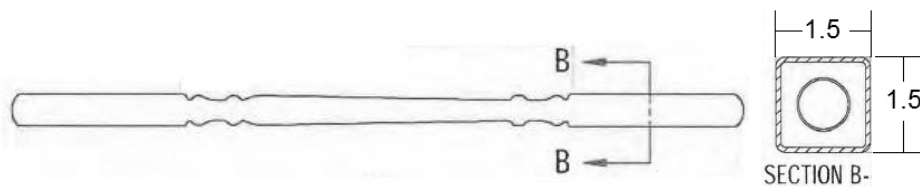


Figure 4 – *Kingston* Spindles

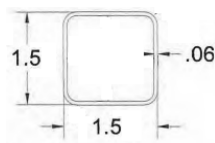


Figure 5 – Kingston Pickets

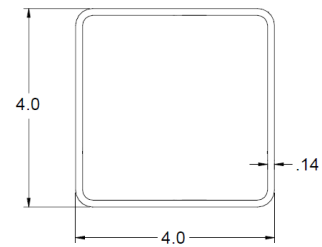


Figure 6 – Post Sleeve



Straight



Stair

Figure 7 – Kingston Aluminum Brackets

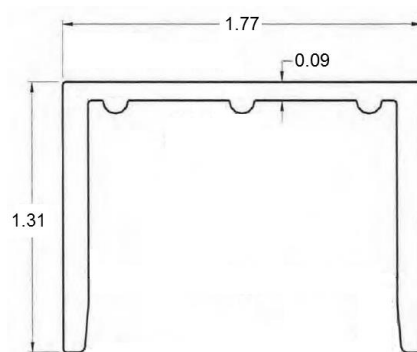


Figure 8 – Kingston Aluminum Insert for Top and Bottom Rails