Code Compliance Research Report
CCRR-0132

Issue Date: 12-01-2008
Revision Date: 03-28-2018
Renewal Date: 03-28-2019

DIVISION: 06 00 00 – WOOD, PLASTICS AND COMPOSITES
Section: 06 63 00 – Plastic Railings

REPORT HOLDER:
Trex Company
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(540) 542-6854
www.trex.com

REPORT SUBJECT:
***Transcend® Series* Guardrail System**
***Select® Series* Guardrail System**

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2009 *International Building Code®* (IBC)
- 2009 *International Residential Code®* (IRC)

1.2 *Trex®* guardrail systems have been evaluated for the following properties:

- Structural Performance
- Durability
- Surface Burning
- Decay Resistance
- Termite Resistance

1.3 The *Trex® Transcend®* and *Select®* guardrail systems are guards and guardrails under the definitions of the referenced codes. They are intended for use at or near the open sides of elevated walking areas of buildings and walkways as required by the referenced codes.

2.0 STATEMENT OF COMPLIANCE

Trex® guardrail systems comply with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

3.0 DESCRIPTION

3.1 Railing systems include a top and bottom rail, baluster spacers, vertical balusters, post sleeves, rail-to-post brackets, foot blocks and decorative moldings. See Table 1 for recognized railing dimensions.

3.2 All rails (top and bottom), baluster spacers, balusters, post sleeves, foot blocks and decorative moldings are extrusions of a wood-plastic composite core material, with a PVC or Acrylic cap layer.

3.3 The *Trex® Transcend®* guardrail systems are produced in White, Black, Fire Pit, Gravel Path, Rope Swing, Tree House, and Vintage Lantern, consisting of the following components (See Figure 2):

3.3.1 Top rail is the crown rail profile, with overall dimensions of 2.75 inches wide by 2 inches tall.

3.3.2 Bottom rail is the universal rail profile, with overall dimensions of 3.125 inches wide by 2.25 inches tall.

3.3.3 Baluster is a 1.375 inch square profile. A baluster spacer is installed onto the top and bottom rails. The balusters are placed through these spacers at each end to provide a means for securing the balusters to the rails.

3.3.4 Rails are attached to posts with nylon composite brackets.

3.3.5 Post sleeve is a 4.45 inch square profile with three ribs on each side.

3.4 The *Trex® Select®* guardrail systems are produced in White, consisting of the following components (see Figure 4):

3.4.1 Top and bottom rails are a rectangular rail profile, with overall dimensions of 2.75 inches wide by 2 inches tall. Top rails are oriented horizontally, and bottom rails are oriented vertically.

3.4.2 Baluster is a 1.125 inch square profile.

3.4.3 Rails are attached to posts with nylon brackets.

3.4.4 Post sleeve is a 4.45 inch square profile with three ribs on each side**.**

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 D7032.

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. See Section 6.6 for limitations.

4.4 The materials used for the *Trex®* guardrail systems have a flame spread index less than 200 when tested in accordance with ASTM E 84.

5.0 INSTALLATION

5.1 General:

Trex® Guardrail Systems must be installed in accordance with the manufacturer's published installation instructions, the applicable Code, and this Research Report. A copy of the manufacturer's instructions must be available on the jobsite during installation.

5.2 *Trex® Transcend®* Series Guardrail System (Figure 1)

5.2.1 The top and bottom rail assemblies are attached to conventional 4x4 wood posts sleeved with a 4.45" by 4.45" composite post cover, with a mounting bracket. See Table 2 for fastening schedule.

5.2.2 Baluster spacers are installed along the lengths of the upper and lower rail and are secured by a friction fit into the top and bottom rails.

5.2.3 Foot blocks are an adjustable support and shall be installed at mid-span of the bottom rail between the deck surface and the rail using one #10 x 2" deck screw. Alternatively, a section of 1.375" baluster approximately 4" long may be used and secured using construction adhesive.

5.3 *Trex® Select®* Guardrail Systems (Figure 3)

5.3.1 The top and bottom rails are attached to conventional 4x4 wood posts sleeved with a 4.45" by 4.45" composite post cover with a mounting bracket. See Table 2 for fastening schedule.

5.3.2 Baluster connections to the top and bottom rails are made by inserting the balusters into the routed openings in both rails.

5.3.3 The wood in the supporting structure including support posts shall have a specific gravity of 0.55 or greater (Southern Yellow Pine or better) and a minimum thickness to allow full penetration of the bracket mounting screws.

6.0 CONDITIONS OF USE

6.1 Installation must comply with this Research Report, the manufacturer's published installation instructions, and the applicable Code. In the event of a conflict, this report governs.

6.2 Guardrails recognized in this report and regulated by the IBC or IRC are limited to exterior use in all construction types where wood is permitted in accordance with Section 1406.3 of the IBC and, in One and Two Family Dwellings regulated by the IRC.

6.3 Conventional wood supports including support posts for guardrails 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. Where required by the building official, engineering calculations and details shall be provided.

6.4 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.

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

6.6 The wood-plastic composite material used for the *Trex®* guardrail systems have not been evaluated for use in areas subject to Formosan termite attack.

6.7 Trex® Company, Inc. Railing Systems are manufactured in Winchester, Virginia and Fernley, Nevada in accordance with the manufacturer's approved quality control system with inspections by QAI.

7.0 SUPPORTING EVIDENCE

7.1 Drawings and installation instructions submitted by the manufacturer.

7.2 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), approved January 2012.

7.3 The reports of testing and engineering analysis demonstrating compliance with the performance requirements of ASTM D 7032-07.

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

8.0 IDENTIFICATION

The composite railing systems produced by Trex® Company, Inc. identified in this report, shall be identified with labeling on the packaging and include the following;

8.1 Name and/or trademark of the manufacturer and the manufacturers address.

8.2 The identifying mark of the independent inspection agency, (QAI).

8.3 The following statement, "See CCRR-0132 at whdirectory.intertek.com for uses and performance levels." For railing systems limited to IRC in Table 1, the label shall also include the phrase, "For Use in One- and Two-Family Dwellings Only."

8.4 The Intertek Code Compliance Research Report mark and number (CCRR-0132).

CODE COMPLIANCE
Intertek
CCRR-0132

9.0 OTHER CODES

This section is not applicable.

10.0 CODE COMPLIANCE RESEARCH REPORT USE

10.1 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.

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

10.3 Reference to the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

Table 1 – Guardrail System Building Code Recognition

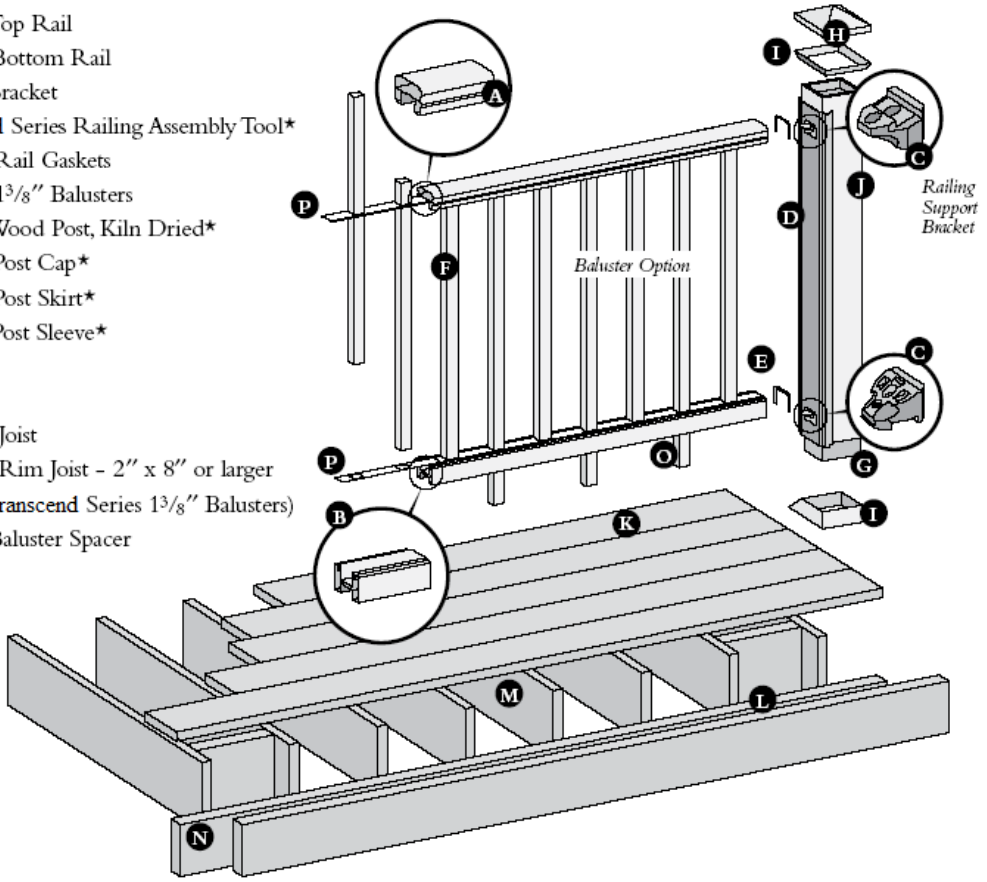
Guardrail System	Type	Guardrail System Size (Length x Height) (1)	Code Recognition
Trex® Transcend® Series	Level	67.5” by 42”	IBC – All Use Groups and IRC
Trex® Select® Series	Level	68.25” by 36”	Limited to exterior use as a guardrail system for balconies and porches for One- and Two-Family Dwellings of Type V-B (IBC) construction and structures constructed in accordance with the IRC.

(1) Level railing lengths are maximum clear length between supports. Railing height is the minimum installed height from walking surface to top of top rail.

Table 2 – Guardrail Fastening Schedule

Railing System	Connection	Fastener
Trex® Transcend® Series	Rail Bracket to Post	One nylon composite bracket is attached to the post using two #8 x 2 inch wood screws.
	Rail Bracket to Rail	One nylon composite bracket is attached to the rail using two #12 x 1.5 inch self-drilling, stainless steel screws.
	Foot Block to Bottom Rail	One #10 x 2 inch deck screw
Trex® Select® Series	Rail Bracket to Post	One nylon bracket is attached to the post using four #8 x 2 inch flat-head wood screws.
	Rail Bracket to Rail	Four #10 x 1 inch self-drilling, stainless steel screws (two on each side of the bracket)

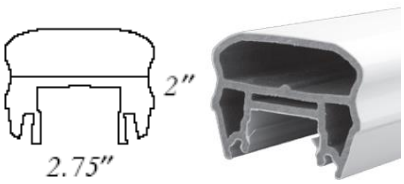
A. Trex Transcend Series Top Rail
B. Trex Transcend Series Bottom Rail
C. Trex Railing Support Bracket
D. TrexExpress™ Transcend Series Railing Assembly Tool*
E. Trex Transcend Series Rail Gaskets
F. Trex Transcend Series 1 3/8" Balusters
G. 4 x 4 Pressure Treated Wood Post, Kiln Dried*
H. Trex Transcend Series Post Cap*
I. Trex Transcend Series Post Skirt*
J. Trex Transcend Series Post Sleeve*
K. Trex® Decking
L. Trex Trim
M. Code-Approved Wood Joist
N. Code-Approved Wood Rim Joist - 2" x 8" or larger
O. Support Blocks (Trex Transcend Series 1 3/8" Balusters)
P. Trex Transcend Series Baluster Spacer



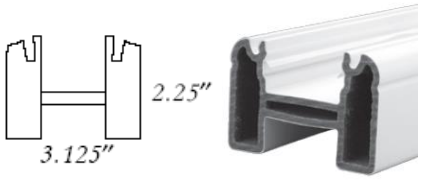
*Item not included in the Transcend Series Railing™ kits

Figure 1 – *Trex® Transcend® Series Railing* - Rail Assembly

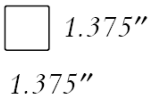
Note: Supporting structure including deck framing, decking and 4x4 conventional wood posts are not within the scope of this report.



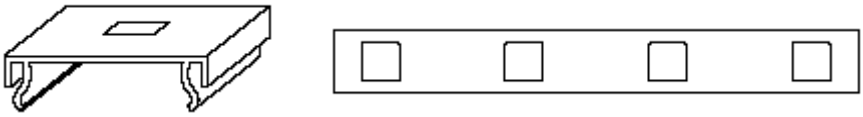
Top Rail



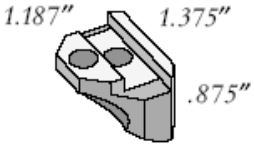
Bottom Rail



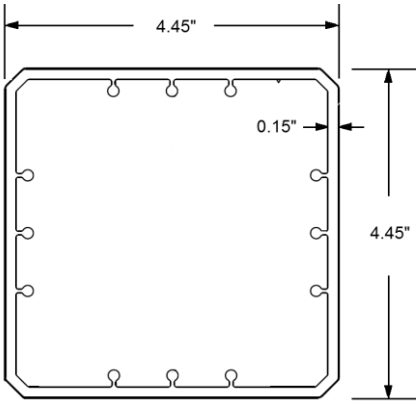
Baluster



Baluster Spacer

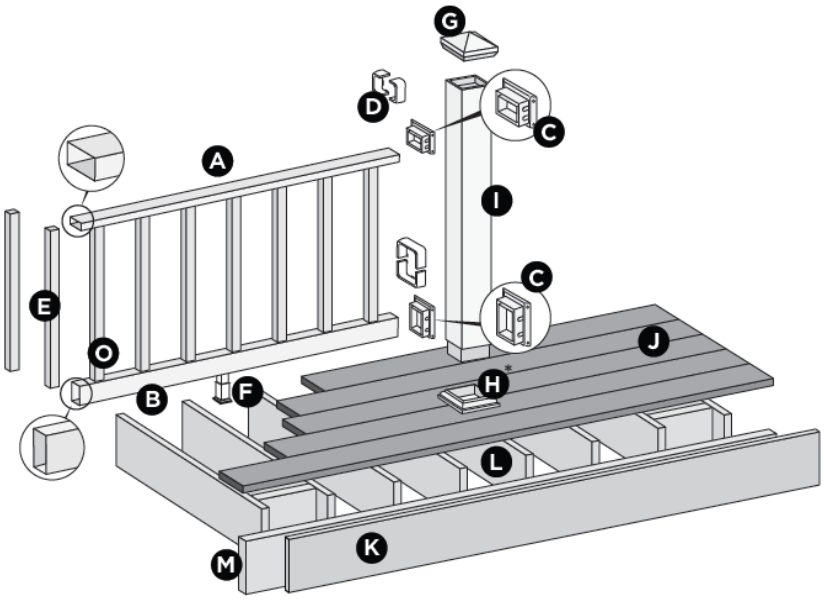


Rail Bracket



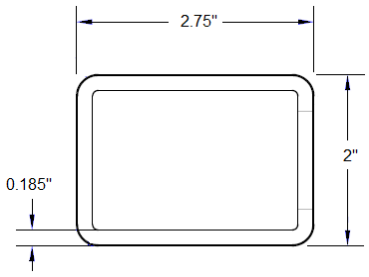
Post Sleeve

Figure 2 – *Trex*® *Transcend*® Guardrail Components

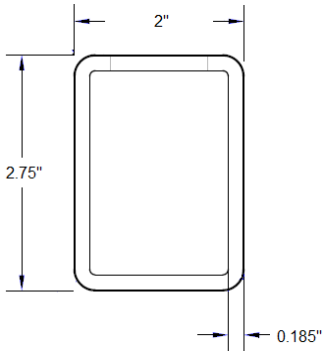


A. Select Top Rail
B. Select Bottom Rail
C. Select Brackets
D. Select Bracket Covers
E. Select Balusters
F. Adjustable Foot Block
G. Post sleeve cap
H. Post sleeve skirt
I. Post sleeve - 4″ x 4″
J. Trex decking
K. TrexTrim™ or Trex fascia
L. Code-approved wood joist - 2″ x 8″
M. Code-approved wood rim joist - 2″ x 8″ or larger

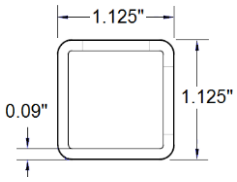
Figure 3 – *Trex® Select® Series Railing* - Rail Assembly
Note: Supporting structure including deck framing, decking and 4x4 conventional wood posts are not within the scope of this report.



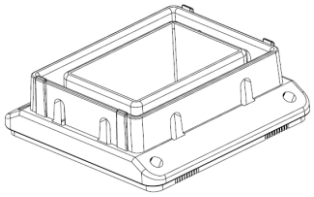
Top Rail



Bottom Rail



Baluster



Rail Bracket

Figure 4 – *Trex® Select®* Guardrail Components