



ATI Evaluation Service

A Division of Architectural Testing – Certification Services



Code Compliance Research Report

CCRR-0132

Subject to Renewal: 01/29/2011

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1.0 Subject

Guardrail Systems

Artisan Series Railing® system

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 Trex® *Artisan Series Railing* 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.

3.2. Guard systems include a top and bottom rail, baluster spacers, vertical balusters, post sleeves, rail-to-post brackets, foot blocks and decorative moldings.

3.3. All rails (top and bottom), baluster spacers, balusters, post sleeves, foot blocks and decorative moldings are extrusions of a common composite core material, comprised of approximately 60% PVC (PolyVinyl Chloride) and 40% Hardwood, with a 100% PVC cap layer produced in a single color: White.

3.4. The top assembly consists of one rail, and is attached to each post with a single post bracket using two (2) #12 x 2.5" flat-head screws. See Figures 1 and 5. Stair railings utilize two interlocked post brackets. See Figure 6.

3.5. The bottom assembly consists of one rail, and is attached to each post with a single post bracket using two (2) #12 x 2.5" flat-head screws. See Figures 2 and 5. Stair railings utilize two interlocked post brackets. See Figure 6.

3.6. Balusters are 1.375" square. See Figure 3. 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. See Figures 3, 4 and 8.

3.7. Level guards with heights of 36" and/or 42" above the floor surface are provided in rail lengths up to 91.5". This provides 8 ft (96") from post center to post center. See Table 1.

3.8. Stair guards are provided in rail lengths up to 91.5" as measured along the upper rail. See Table 1.

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 composite material has a flame spread index of 15 when tested according to ASTM E 84. The referenced criteria within AC174, requires a flame spread index not exceeding 200 when tested in accordance with 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, both level and stair, are attached to conventional 4x4 wood posts sleeved with a 4.25" by 4.25" composite post cover with a mounting bracket. See Figures 1, 2, 5 and 7. Stair railings utilize two interlocked post brackets. See Figure 6.

5.3. One mounting bracket attaches to each end of the upper rail utilizing two (2) #12 x 1.625" self-tapping screws. The brackets are attached to the post utilizing two (2) #12 x 2.5" flat-head screws. See Table 2, Figures 1, 5 and 8.

5.4. One mounting bracket attaches to each end of the lower rail utilizing two (2) #12 x 1.625" self-tapping screws. The brackets are attached to the post utilizing two (2) #12 x 2.5" flat-head screws. See Table 2, Figures 2, 5 and 8.

5.5. 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.

5.6. 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 (1) #12 x 3.5" deck screw. Alternatively, a section of 1.375" baluster approximately 4" long may be used and secured using construction adhesive.

5.7. 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.

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)", effective June 1, 2009.

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

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 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 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.

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. Where required by the building official, engineering calculations and details 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. Trex[®] Company, Inc. Guard Systems are manufactured in North Branch Minnesota in accordance with the manufacturer's approved quality control system with inspections by PFS Corporation (AA-652.)

8.0 Identification

The composite guard assemblies produced by Trex[®] Company, Inc. 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 manufacturers address

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

8.3. The ATI Code Compliance Research Report Number (CCRR-0132)

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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
Railing System Building Code Recognition

| Trex® Artisan Series Railing | Type of System | Guard System Size (Length x Height) and Building Code Recognition | |
|-------------------------------------|------------------------------|--------------------------------------------------------------------------|------------------------|
| | | IBC | IRC³ |
| Level and Stair | Level Systems ⁽¹⁾ | 91.5" x 42" | 91.5" x 36" |
| | Stair Systems ⁽²⁾ | 91.5" x 34" | 91.5" x 34" |

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.

² Stair Railing lengths are maximum clear length between supports. Stair Heights indicate minimum allowed height as measured vertically from the leading edge of the stair nose

³ Limited to use in One- and Two-Family Dwellings (IRC).

Table 2
Rail/Bracket Fastening Schedule

| Guard System | Bracket to Top and Bottom Rails | Foot Blocks to Bottom Rail | Rail Bracket to Post |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------|
| <i>Artisan Series Rail System</i> Level and Stair | One (1) nylon composite bracket is attached to each end of the upper and lower rails using two (2) #12 x 1.625" self-tapping screws | One (1) #12 x 3.5" deck screw | Two (2) #12 x 2.5" flat-head screws. |

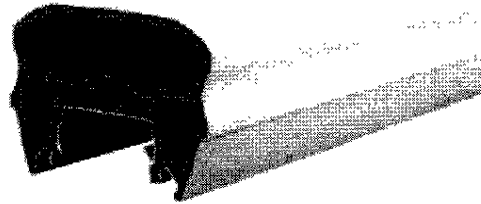
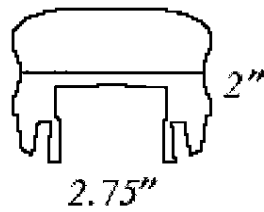


Figure 1
Trex® Artisan Series Railing - Top Rail Profile

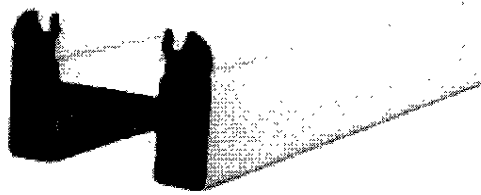
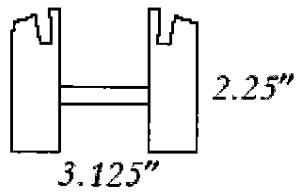


Figure 2
Trex® Artisan Series Railing - Bottom Rail Profile

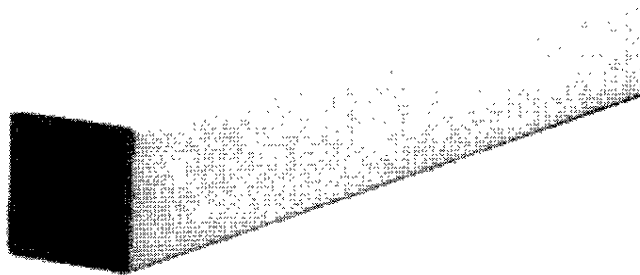
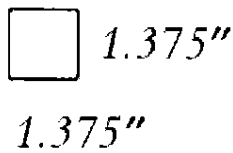


Figure 3
Trex® Artisan Series Railing - Baluster Profile

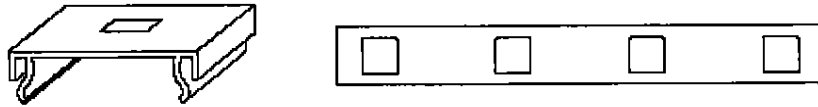


Figure 4
Trex® Artisan Series Railing - Baluster Spacer

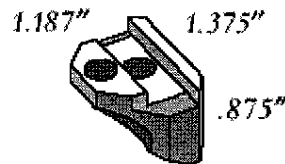


Figure 5
Trex® Artisan Series Railing - Rail Bracket

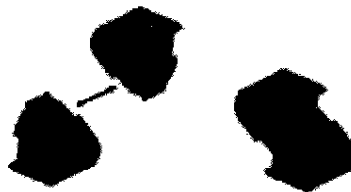


Figure 6
Trex® Artisan Series Railing - Stair Rail Bracket

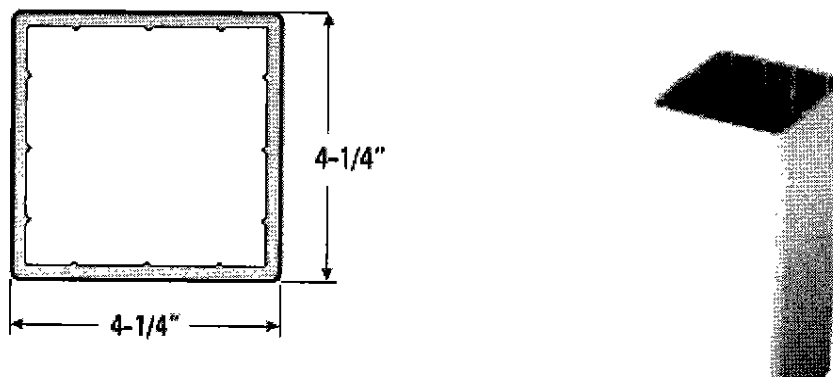
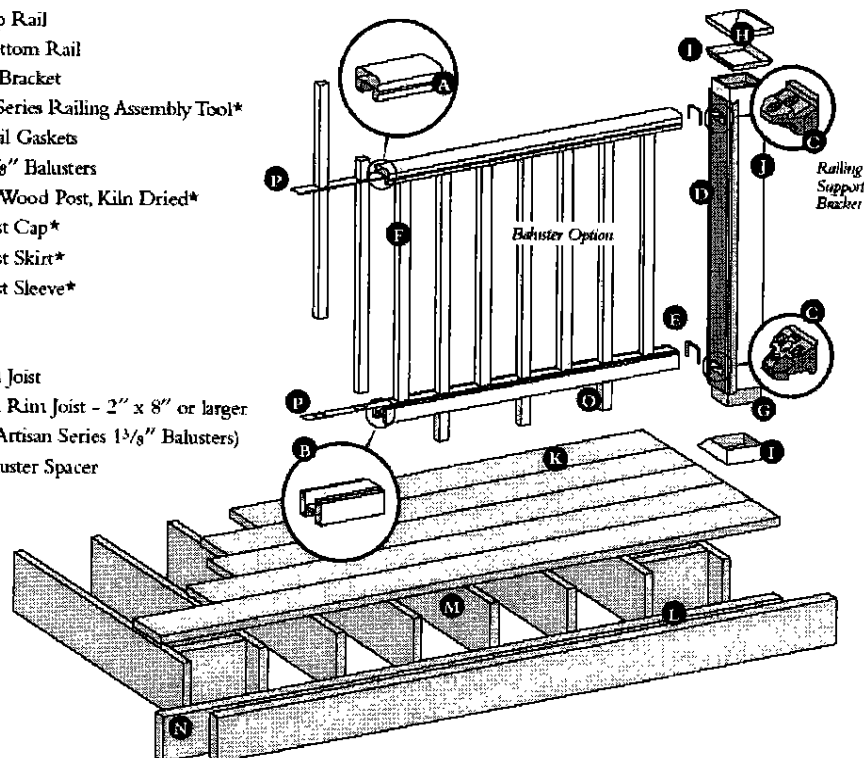


Figure 7
Trex® Artisan Series Railing - Post Sleeve Profiles

Trex Artisan Series Railing® Components

- A. Trex Artisan Series Top Rail
- B. Trex Artisan Series Bottom Rail
- C. Trex Railing Support Bracket
- D. TrexExpress™ Artisan Series Railing Assembly Tool*
- E. Trex Artisan Series Rail Gaskets
- F. Trex Artisan Series 1³/₈" Balusters
- G. 4 x 4 Pressure Treated Wood Post, Kiln Dried*
- H. Trex Artisan Series Post Cap*
- I. Trex Artisan Series Post Skirt*
- J. Trex Artisan 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 Artisan Series 1³/₈" Balusters)
- P. Trex Artisan Series Baluster Spacer



*Item not included in the Artisan Series Railing™ kits

Figure 8
Trex® Artisan Series Railing - Rail Assembly

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



MEMORANDUM

To: Concerned Parties
From: Craig H. Wagner, P.E.
Director – ATI Evaluation Service
CC:
Date: April 12, 2012
Re: **Valid Code Compliance Research Reports**

Only Code Compliance Research Reports (CCRR's) which are posted on the CCRR web page at www.ati-es.com are valid reports and only the ATI-ES on-line posted report is current and valid.

All Code Compliance Research Reports (CCRR's) posted on the CCRR web site at www.ati-es.com are valid reports including any with a "subject to renewal" date that has passed. Posted CCRR's with dates for renewal that have passed, have been maintained by the report holder as required for a valid report but have had the renewal delayed for reasons that do not affect the validity of the current published report.

To verify the validity of a Code Compliance Research Report (CCRR), visit the ATI-ES web site at www.ati-es.com or contact ATI Evaluation Service at (717) 764-7700.