



Building Product Evaluation Report 0103

Oldcastle Polycomposite Guardrail Systems

Initial Acceptance: September 19, 2017

Expiration: September 19, 2027

Revision: 29 July, 2025

Version: 3.0

TYPE OF ACCEPTANCE

Product Material – Wood and Plastics

CSI Specification Division: 06 50 00 (Structural Plastic) and 06 63 00 (Plastic Railing)

MANUFACTURER IDENTIFICATION:

Oldcastle

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EVALUATION REPORT SUBJECT:

Polycomposite™ Guardrail Systems for Exterior Applications

Installation on construction complying with the International Residential Code® (IRC) or with the International Building Code® (IBC), including IBC exceptions in Section 1015.3 of the IBC.

DESCRIPTION OF BUILDING COMPONENTS:

Oldcastle guardrail system in this Report is identified as **Polycomposite**. The guardrail system comes in three different styles identified as **Traditional**, **Williamsburg**, **Traditional with Steel** and **Traditional with Aluminum**. The guardrail is used in areas as referenced in the applicable sections of the codes noted in this Report. This guardrail system provides a protective barrier for walking areas, walkways, balconies, porches and ramps. The guardrail system is manufactured by an extrusion process and is produced in white and other colors.

1. Guardrail – Polycomposite

- (a) The guardrail system consists of a top rail, bottom rail, and balusters. The top rail, bottom rail, and balusters (Traditional and Williamsburg) are manufactured with PVC material by a molded or co-extrusion process.
- (b) The **Polycomposite** guardrail system has a top rail that comes in two styles: Bread Loaf and T-Rail profiles. The Bread Loaf design, is contoured, hollow in the center, has rounded edges, is pre-routed for balusters and has a PVC cap stock. The profile comes in 0.165-in., 0.225-in., and 0.270-in. nominal wall thickness. The **Polycomposite** Bread Loaf top rail with 0.225-in. wall thickness has 6005-T5 aluminum insert reinforcement requirements for the 8-foot guardrail length. The **Polycomposite** Bread Loaf top rail with 0.270-in. wall thickness does not require a stiffener. The top rail is connected to the supports utilizing a PVC bracket or aluminum bracket. The T-Rail top rail profile is a T-shaped profile that comes in 0.175-in. wall thickness, hollow in the center, has rounded edges, is pre-routed for balusters and has a PVC cap stock. See Table 1 in this Report for drawings and dimensions.
- (c) The **Polycomposite** guardrail system has a bottom rail that is rectangular in shape, hollow in the center, has rounded edges and is pre-routed for balusters. The bottom rails connect to the supports utilizing molded PVC brackets. See Table 1 in this Report for drawing and dimensions.



- (d) The **Polycomposite** guardrail system has three baluster designs. The **Traditional** baluster is 1-3/8-inch square in shape, has rounded edges and hollow in the center. The **Williamsburg** baluster has turned spindle shape with 1-3/8-inch square ends, and hollow in the center. The **Traditional Steel** baluster is circular in shape, is hollow in the center and is galvanized steel with 0.06 wall thickness. The **Traditional Aluminum** baluster is circular in shape, is hollow in the center and is an extruded aluminum hollow 6005-T5 material. See Table 1 in this Report for drawings and dimensions.
- (e) The **Polycomposite** guardrail system connections for the top rail and bottom rail to the supports are brackets. The brackets are secured to the supports with steel screws (stainless, corrosion-resistant, or galvanized) suitable for use in preservative-treated wood. See Tables 1 and 3 in this Report for drawings of the brackets and number of fasteners required.
- (f) See Table 2 in this Report for the **Polycomposite** guardrail system height and length. The guardrail system that is 6 feet in length requires intermediate support between the supports under the bottom rail and the guardrail system that is 8 feet in length requires two supports that are located under the bottom rail and are evenly spaced between supports. See the manufacturer's installation instructions 34111360 Rev 013-22 for additional details.
- (g) The **Polycomposite** guardrail system has PVC post sleeves that are square in shape, non-structural and can be used to cover wood support posts.

2. Stairs – Polycomposite

- (a) The guardrail system can be used as a stair guard. See Tables 1, 2 and 3 for maximum length between posts, bottom rail supports, top and bottom rail connection brackets and fasteners required.
- (b) When the guardrail is used with stairs, the guardrail must be installed in accordance with the applicable code, manufacturer's installation instructions and Table 1, 2 and 3 in this Report. When the manufacturer's installation instructions differ from this Report, this Report governs. Additionally, in order to comply with the IBC or IRC graspability requirements, a separate handrail complying with IBC Section 1014.3 or IRC Section R311.7.8.3 must be provided. Specific details regarding the construction installation and attachment to the stair guardrail and/or posts have not been evaluated and are outside the scope of this Report. Specific details when required must be furnished to the authority having jurisdiction.
- (c) See Manufacturer's published installation instructions 34111360 Rev 01.22 and 34110953 Rev 11.21 for additional installation details.

APPLICABLE CODES:

- 2015, 2018, and 2021 International Building Code (IBC)
- 2015, 2018, and 2021 International Residential Code (IRC)

APPLICABLE CHARACTERISTICS REVIEWED:

1. Structural Performance:

- (a) Oldcastle **Polycomposite** guardrail system has been reviewed for maximum span as indicated in Table 2 in this Report. Table 2 in this Report also indicates the limitations of use evaluated for this design.

2. Durability - Temperature:

- (a) Oldcastle **Polycomposite** guardrail system was evaluated for a temperature range of -20 degrees F (-29 degrees C) to 125 degrees F (52 degrees C).

3. Flame Spread Index:

- (a) Oldcastle **Polycomposite** guardrail system flame spread rating was less than 200 for **Polycomposite** and PVC material when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*.

4. Decay Resistance:

- (a) The material used in the Oldcastle **Polycomposite** guardrail system does not contain any wood and has been deemed comparable to naturally resistant wood or to preservative-treated wood for resistance to fungal decay.

5. Termite Resistance:

- (a) The material used in the Oldcastle **Polycomposite** guardrail system does not contain any wood and has been deemed comparable to naturally resistant wood or to preservative-treated wood for resistance to termite attack.



6. UV Testing:

- (a) The UV testing was conducted, and an appropriate adjustment factor was applied in accordance with ASTM D7032, *Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards and Handrails*.

7. Fastening:

- (a) Oldcastle **Polycomposite** guardrail system top and bottom rails are fastened to posts with brackets using steel (stainless, corrosion-resistant or galvanized) screws. See Table 3 in this Report and manufacturer's installation instructions.
- (b) Oldcastle **Polycomposite** guardrail system used for stairs is connected with a Molded PVC or two-piece adjustable (Angle Wizard) brackets. The socket bracket receives the end of the rail (top or bottom) and is mounted to a stationary base. The base is adjustable up and down to meet the slope of the stairs. The Molded PVC brackets allow the rails to pivot to meet the slope of the stairs. Level rails are connected with Level Rail or Optional Level Rail brackets.
- (c) The fasteners and brackets are supplied by the manufacturer and must be used in the installation of the Oldcastle **Polycomposite** guardrail system. Use of other brackets and fasteners is not covered under this Report.

8. Posts:

- (a) Wood posts or other wood support framing members are not covered under this Report and fall outside of this Report. Wood posts and other wood support framing members are subject to evaluation by the local building official. Wood posts and other wood must meet the load requirement in the building code and the wood members must have a minimum specific gravity of 0.50 (southern pine or better) and a minimum thickness to allow full penetration of bracket mounting screws. Other wood posts or wood support framing members not meeting these requirements are not covered under this Report.

APPLICABLE USES:

Oldcastle **Polycomposite** guardrail system evaluated in this Report is for installation on construction complying with IRC or complying with the IBC Exceptions indicated in Section 1015.3. The guardrail system is limited to a height of 36 inches. See limitations of acceptance below and Table 2.

LIMITATIONS OF ACCEPTANCE:

Oldcastle **Polycomposite** guardrail system described in this Report complies with those codes listed in the Applicable Codes section above and is subject to the following conditions:

1. Oldcastle **Polycomposite** guardrail system is limited to exterior balconies and porches in construction complying with the IRC or complying with the IBC exceptions indicated in Section 1015.3 of the IBC. See Table 2 for additional restrictions and limitations.
2. Installation of the guardrail system must comply with this Report; the manufacturer's published installation instructions identified as 34111360 Rev 01-22, 34110953 Rev 11.21, and the applicable code. When the guardrail installation instructions differ from this Report, this Report governs.
3. The fasteners described in this Report must be used for installation of the Oldcastle **Polycomposite** guardrail. Structural wood posts and framing support members for posts must be designed to satisfy load requirements (live and dead) indicated in the building code. Material necessary for anchorage of the guardrail system(s) and compatibility of the fasteners to treated supporting construction has not been evaluated.
4. Oldcastle **Polycomposite** guardrail system indicated in this Report must be fastened with manufacturer's provided fasteners to the supporting posts as indicated in the manufacturer's installation manual and as outlined in this Report. When guardrail fastening instructions differ from this Report, this Report governs.
5. Top rail component for the Oldcastle **Polycomposite** guardrail system does not meet graspability when used as a handrail for stairs. See Description of Building Components 2(b) for additional requirements.
6. When required, the guardrail system, including a stair handrail (see Description of Building Components 2(b)), must be designed by a design professional and submitted to the authority having jurisdiction for final acceptance.
7. Oldcastle **Polycomposite** guardrails have not been evaluated as a member of a fire-resistance-rated assembly.
8. Oldcastle has a Third-Party inspection program provided by PFS Corporation.
9. The structural design for code compliance of supporting members for the guard rail, has not been evaluated and is not part of this Report.



DOCUMENTATION SUBMITTED:

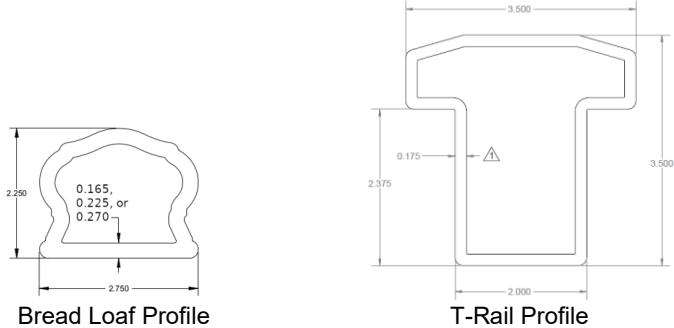
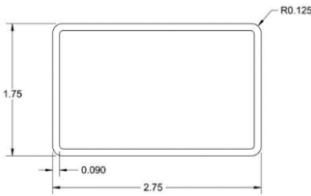
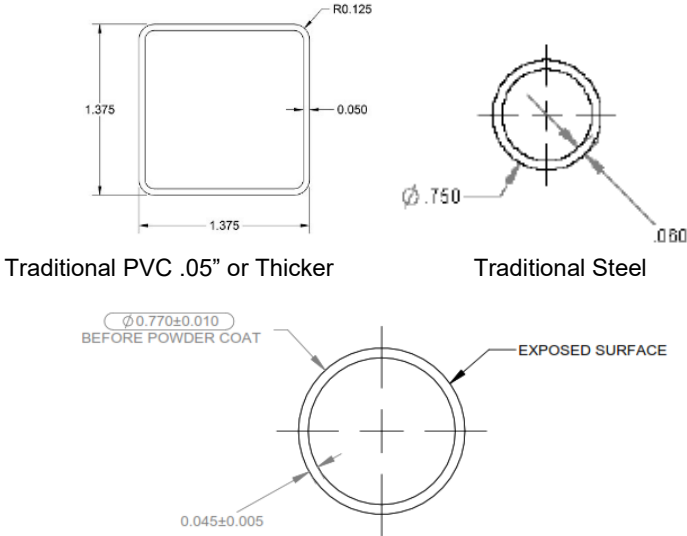
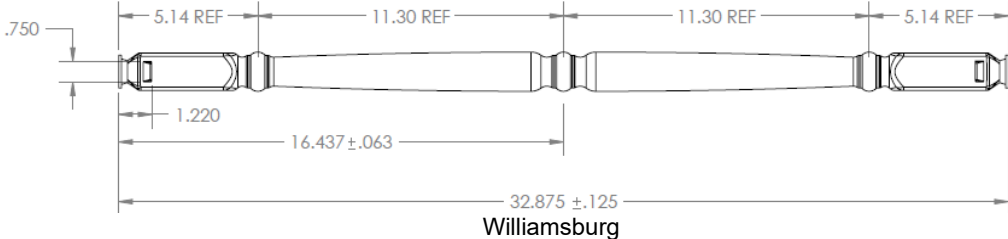
Submitted data was provided in accordance with PFS TECO Certification and Inspection Policy: Deck Boards and Guardrails (Quality control manual, Specifications, Manufacturer's installation instructions, Test data, and Description information) and the products have been evaluated in accordance with ICC-ES AC174, *Acceptance Criteria for Deck Board Span Ratings and Guardrail Systems*.

PRODUCT IDENTIFICATION:

The Oldcastle guardrail system must be identified with a label on each component or on the packaging. The required information on the label is as follows: Oldcastle, product identification (***Polycomposite™***), compliance to ASTM D7032 including the maximum guardrail span and loading, the PFS TECO Building Product Evaluation Research number (BPER 0103), and the PFS Certification Mark (see image below). Guardrails that are 36 inches high require a label indicating the following: "Guardrail installation in residential (1 & 2 Family) units only." Guardrails without this information are not covered under this Report.



Table 1: Schematics of Polycomposite Guardrail System Components

Description	Profile
Top Rail	 Bread Loaf Profile T-Rail Profile
Bottom Rail	
Balusters	 Traditional PVC .05" or Thicker Traditional Steel Traditional Aluminum  Williamsburg

Top Rail Insert 6005-T5 Aluminum	
Bread Loaf Level Rail Brackets	Top Rail Bracket Bottom Rail Bracket
Bread Loaf Optional Level Rail Brackets	Optional Top Rail Bracket with Cover Optional Bottom Rail Bracket with Cover
Bread Loaf Stair Bracket Molded PVC	Top Rail Top Top Rail Bottom Bottom Rail
Bread Loaf Stair Bracket Angle Wizard	Top Rail Angle Wizard Bottom Rail Angle Wizard

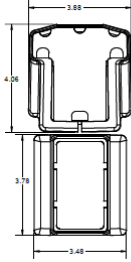
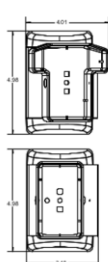
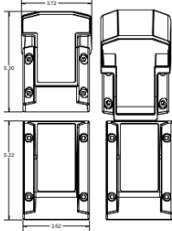
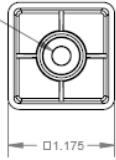
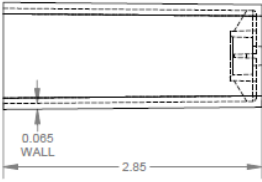
T-Rail Level Rail Brackets	 Molded Brackets  Angle Wizard Brackets
T-Rail Stair Rail Brackets	
Bottom Rail Support Block	 



Table 2: Maximum Span Table for Polycomposite Guardrail Assembly
(Max. Guardrail Height 36 in. for IRC Residential Dwellings – (TYPE V-B))

Guardrail Type	Top Rail	Top Rail Insert	Bottom Rail Insert	Baluster	Max Guardrail Length
Level	Bread Loaf 0.165-in.	None	None	Traditional 0.05" or Thicker, Williamsburg Steel	67-3/4-in.
	Bread Loaf 0.225-in.	None			67-3/4-in.
		6005-T5 Aluminum			92-1/2-in.
	Bread Loaf 0.270-in.	None			92-1/2-in.
	T-Rail	None		Traditional 0.05" or Thicker	96-in.
Stair with Molded PVC Bracket	Bread Loaf 0.165-in.	None	None	Traditional 0.05" or Thicker, Williamsburg Steel	64-1/2-in.
	Bread Loaf 0.225-in.	None			64-1/2-in.
		6005-T5 Aluminum			90-5/8-in.
	Bread Loaf 0.270-in.	None			90-5/8-in.
	T-Rail	None		Traditional 0.05" or Thicker	90-in.
Stair with Molded Angle Wizard Bracket	Bread Loaf 0.225-in.	None	None	Traditional 0.05" or Thicker, Williamsburg Steel	72-1/4-in.
		6005-T5 Aluminum			96-in.
	Bread Loaf 0.270-in.	None			96-in.

for SI conversion: 1 in = 25.4 mm, 1 psf = 47.9 Pa, 1 lbf = 0.0044 kN

Refer to Table 3 for fastening schedule

Maximum span is clear length between posts measured parallel to top/bottom rail



Table 3: Fastening Schedule for Polycomposite Guardrail Assembly

<i>Location</i>	<i>Connection</i>	<i>Fasteners</i>
Level Rail Assembly		
Bread Loaf Level Top Rail with PVC Bracket	Rail Bracket to Post ⁴	Two #10 x 2-1/2" Pan #2 Square Drive SDS 410 SS screw ¹
	Rail Bracket to Rail	Two #10 x 1-1/4" Pan #2 Square Drive SDS 302 SS screw
Bread Loaf Level Top Rail with Optional Aluminum Bracket	Rail Bracket to Post	Two #10 x 2-1/2" Pan #2 Square Drive SDS 410 SS screw ¹
	Rail Bracket to Rail	Three #10 x 1-1/4" Pan #2 Square Drive SDS 302 SS screw
T-Rail Level Top Rail with PVC Bracket	Rail Bracket to Post	Four #10 x 2" Pan #2 Square Drive SDS 410 SS screw
	Rail Bracket to Rail	Three #10 x 1-1/4" Pan #2 Square Drive SDS 410 SS screw
T-Rail Level Top Rail with Adjustable Bracket	Rail Bracket Base to Post	Four #10 x 1-1/2" Pan Phillips Drive SDS 410 SS screw
	Rail Bracket to Rail	Two #10 x 1" Flat Head #2 Square Drive SDS 410 SS screw ¹
	Rail Bracket to Bracket Base	Two #10 x 1" Pan Head Phillips Drive SDS 410 SS screw
Bottom Rail Level with PVC Bracket	Rail Bracket to Post	Four #10 x 1-1/4" Pan #2 Square Drive SDS 302 SS screw ¹
	Rail Bracket to Rail	Slip fit – No mechanical connection
Bottom Rail Level with Optional PVC Bracket	Rail Bracket to Post	Two #10 x 1-1/4" Pan #2 Square Drive SDS 302 SS screw ¹
	Rail Bracket to Rail	Slip fit – No mechanical connection
Stair Rail Assembly		
Bread Loaf Top Rail Stair with Molded PVC Bracket	Rail Bracket to Post	Two #10 x 2" Pan #2 Square Drive SDS 410 SS screw ¹
	Rail Bracket to Rail	One #10 x 1" Pan #2 Square Drive SDS 410 SS screw
T-Rail Top Rail Stair with Molded PVC Bracket	Rail Bracket to Post	Four #10 x 1-1/2" Pan #2 Square Drive SDS 410 SS screw
	Rail Bracket to Rail (Optional)	One #10 x 1" Pan #2 Square Drive SDS 410 SS screw
Bottom Rail Stair Molded PVC Bracket	Rail Bracket to Post	Four #10 x 1-1/4" Pan #2 Square Drive SDS 410 SS screw ¹
	Rail Bracket to Rail	Slip fit – No mechanical connection
Bread Loaf Top Rail Stair with Angle Wizard Bracket	Rail Bracket Base to Post	Four #10 x 2" Pan #2 Square Drive SDS 410 SS screw ²
	Rail Bracket to Rail	Two #10 x 1" Flat Head SS screw
	Rail Bracket to Bracket Base	Two #10x 1" Pan 18-8 SS screw



Bottom Rail Stair with Angle Wizard Bracket	Rail Bracket Base to Post	Four #10 x 1-1/2" Pan #2 Square Drive SDS 410 SS screw ²
	Rail Bracket to Rail	Slip fit – No mechanical connection
	Rail Bracket to Bracket Base	One #10 x Pan 18-8 SS screw
Support Block ³ to Bottom Rail		One #10 x 3/4" Pan #2 Square Drive Tapping 302 SS screw

¹ Pre drill with 5/32" drill bit

² Pre drill with 1/8" drill bit

³ Use one Support Block for 6-ft span and two Support Blocks for longer span

⁴ See Applicable Characteristics Reviewed – 8 for additional post information