

Code Compliance Research Report

CCRR-0125

Subject to Renewal: 02/05/2012
Visit www.archtest.com for current status

Issued: 02/05/2010
Page 1 of 8

COLOR GUARD, INC.
320 Rangeline Rd.
Sheboygan Falls, WI 53085
920-467-8640

www.colorguardrailing.com

1.0 Subject

Color Guard Vinyl Railing System

- Classic Railing
- Architectural Series
- Madison Series

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

3.0 Description

3.1 General – The Color Guard Vinyl Railing System is a guardrail 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 codes.

3.2 The Color Guard Vinyl Railing Systems are an assemblage of extruded and molded components utilizing Poly Vinyl Chloride (PVC) material produced in the following colors; White, Clay and Tan.

3.3 The railing systems provide guardrails up to 10 feet (120 inches) in length and a maximum installed height of 42 inches. See Table 1.

3.4 The Classic and Architectural systems include an extruded PVC top rail measuring 3 inches wide by 1.5 inches in height and an extruded bottom rail measuring 3 inches wide by 2 inches in height. Aluminum reinforcement is used in both top and bottom rail members. See Figures 1 through 4.

3.4.1 The Classic and Architectural systems utilize two different extruded PVC baluster styles measuring 1.5 inch by 1.5 inch, Architectural molded or Classic square. See Figures 5 through 7.

3.5 The Madison system includes an extruded PVC top rail measuring 3 inches wide by 2 inches in height and an extruded bottom rail measuring 3 inches wide by 2 inches in height. Aluminum reinforcement is used in both top and bottom rail members. See Figures 3 and 12.

3.5.1 The Madison system utilizes an extruded PVC baluster measuring 2 inches by 2 inches square,

3.6 All rail systems utilize an intermediate support block installed between the bottom rail and the deck surface midway between the support posts; a 4 inch by 4 inch extruded PVC post sleeve; and PVC mounting brackets.

3.6 The attachment system is designed for mounting the railing to a post or wall with a PVC straight bracket, PVC 22½° angle bracket, or PVC 45° angle bracket. See Figures 8 through 11.

4.0 Performance Characteristics

4.1 The Color Guard Vinyl Railing 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 IRC, when tested in accordance with ICC-ES AC174.

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 PVC materials used have a flame spread index of 20 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 of the Color Guard Vinyl System must comply with the manufacturer's published installation instructions and this report. Where differences occur between this report and the manufacturer's installation instructions, this report shall govern.

5.2 Guardrail assemblies consist of top and bottom rails with pre-routed holes to receive balusters. Full length aluminum railing reinforcements are inserted in the rails during assembly as specified for the type and length of railing (See Table 1).

5.3 The maximum installed span of the guard rail system as measured from inside edge to inside edge of the post or wall supports shall not exceed the limits given in Table 1 according to the building use classification.

5.4 Molded PVC brackets are utilized to attach top and bottom rails to a PVC sleeved conventional 4x4 wood post or other suitable supporting structure. Rail brackets are attached to the supports and rails with stainless steel screws in accordance with the fastening schedule shown in Table 2. The wood in the supporting structure 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 Conditions of Use

The Color Guard Vinyl Railing System identified in this report is deemed to comply with the intent of the provisions of the referenced building codes subject to the following conditions:

6.1 The use of this product is limited to exterior use in buildings as permitted in Table 1.

6.2 Compatibility of fasteners, metal mount components, and other metal hardware with the supporting construction including chemically treated wood is outside the scope of this report.

6.3 Conventional wood supports (posts or walls) 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 prepared by a licensed design professional shall be provided.

6.4 The Color Guard Vinyl Railing System is produced in Sheboygan Falls, Wisconsin under a quality control program that is inspected by Architectural Testing, Inc. (AA-676).

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)", effective June 1, 2009.

7.3 A quality control manual that is in accordance with the ICC-ES AC10, "Acceptance Criteria for Quality Documentation", effective March 1, 2009.

8.0 Identification

The Color Guard Vinyl Railing System produced in accordance with this report shall be identified with labeling on the individual packages that include the following information: product name, manufacturer, the mark of the independent inspection agency ATI-AA676, and the Code Compliance Research Report Number "CCRR-0125".

9.0 Code Compliance Research Report Use

9.1 Approval for 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 or manufacturer by Architectural Testing, Inc.

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 – MAXIMUM GUARDRAIL SPANS

System	Type	Maximum Installed Height ²	Code	Maximum Span ¹
Architectural or Classic Series	Level	42"	IBC	8'-0"
	Level	36" or 42"	IRC ³	10'-0"
	Level 22-1/2° or 45° Angle Brackets	36"	IRC ³	6'-0"
		42"	IBC	6'-0"
Madison Series	Level	42"	IBC	8'-0"
		36" or 42"	IRC ³	10'-0"

¹ Maximum span is measured from inside to inside of supports (post or wall).

² Railing height is installed height from walking surface to top of top rail.

³ Guardrails with a 42" installed height may also be used under the IBC in the following conditions;

- Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress.
- Use Group R3 adult and child care facilities that are within a single-family home.
- Use Group R4 provided the building is protected by an automatic sprinkler system.

TABLE 2 – FASTENING SCHEDULE

System	Connection	Fastener
Classic and Architectural	PVC Socket Bracket to PVC-sleeved wood post or; PVC Socket Bracket to 22-1/2° or 45° Mounting Block	Four #10 x 1-1/2 inch self-starting, pan head screws
	22-1/2° or 45° Rail Bracket Mounting Block to Post	Four #8 x 2-1/2 inch self-starting, pan head screws
	All PVC brackets to rail ¹	Two #6 x 3/4 inch self-starting, pan head screws
Madison	PVC Socket Bracket to PVC-sleeved wood post	Four #10 x 1-1/2 inch self-starting, pan-head screws
	Socket bracket to rail ¹	Two #6 x 3/4 inch self-starting, pan-head screws

¹ Fasteners must penetrate the PVC bracket, rail and aluminum insert.

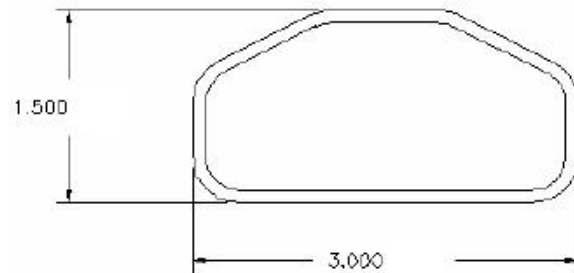


Figure 1 – Classic And Architectural Top Rail Profile

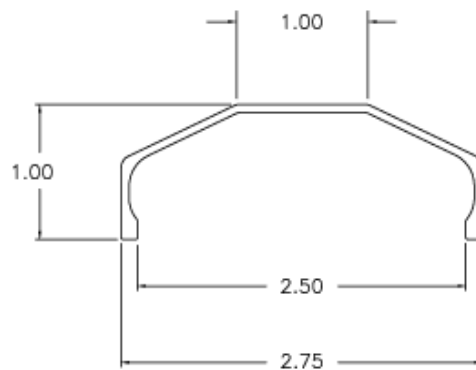


Figure 2 – Classic And Architectural Top Rail Aluminum Insert

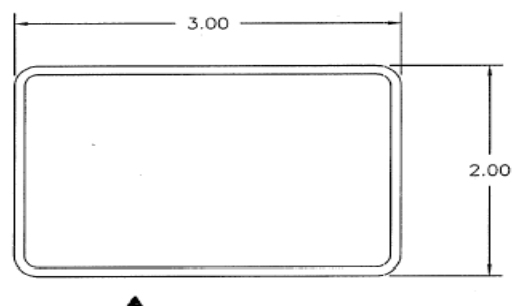


Figure 3 – Bottom Rail And Madison Top Rail

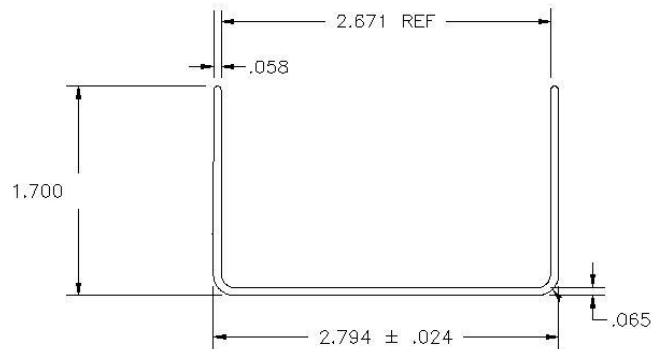
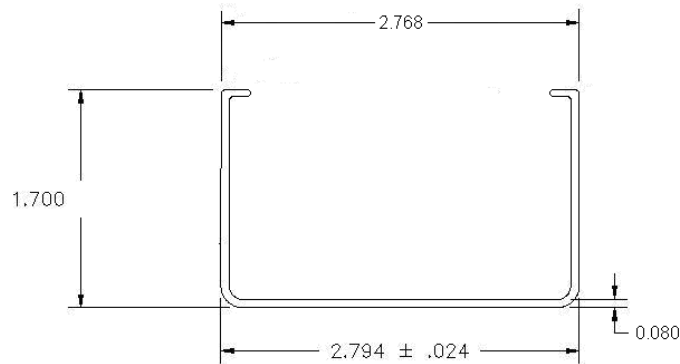
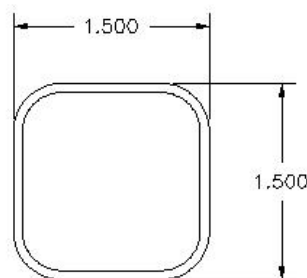


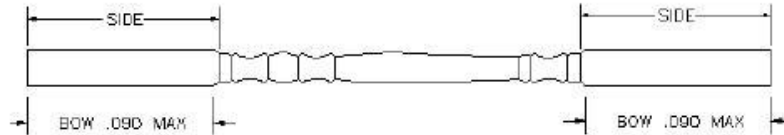
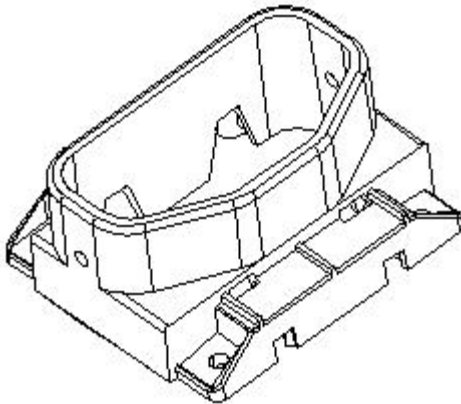
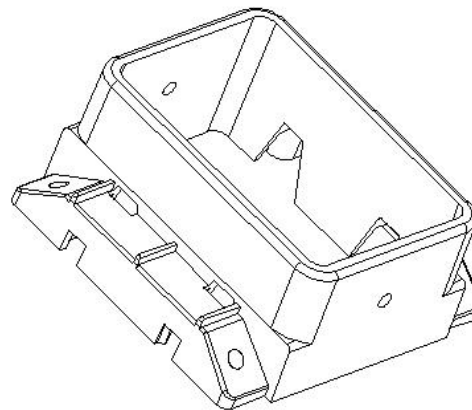
Figure 4 – Classic And Architectural Bottom Rail Aluminum Insert



**Figure 5 – Madison Rail Aluminum Insert
(Top and Bottom)**



**Figure 6 –Baluster Profile Architectural & Classic
(Classic And Architectural Shown; Madison is a 2" Square Profile)**

**Figure 7 – Architectural Spindle****Figure 8 – PVC Straight Bracket****Figure 9 – PVC Bottom Bracket**

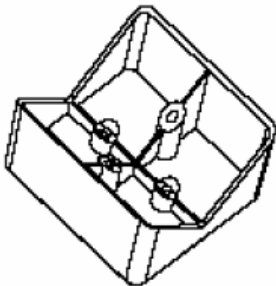
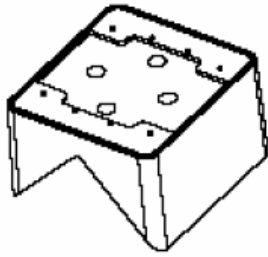


Figure 10 – 45° Bracket Mounting Block

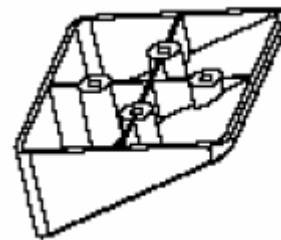
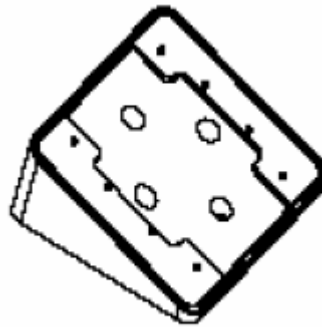


Figure 11 – 22.5° Bracket Mounting Block

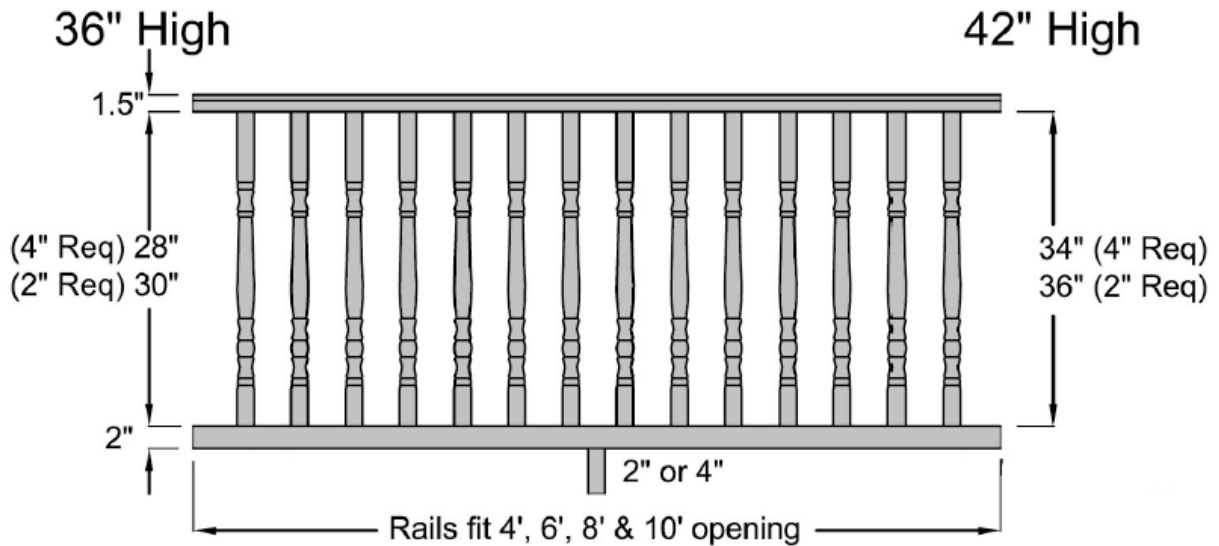


Figure 12 – Architectural Series

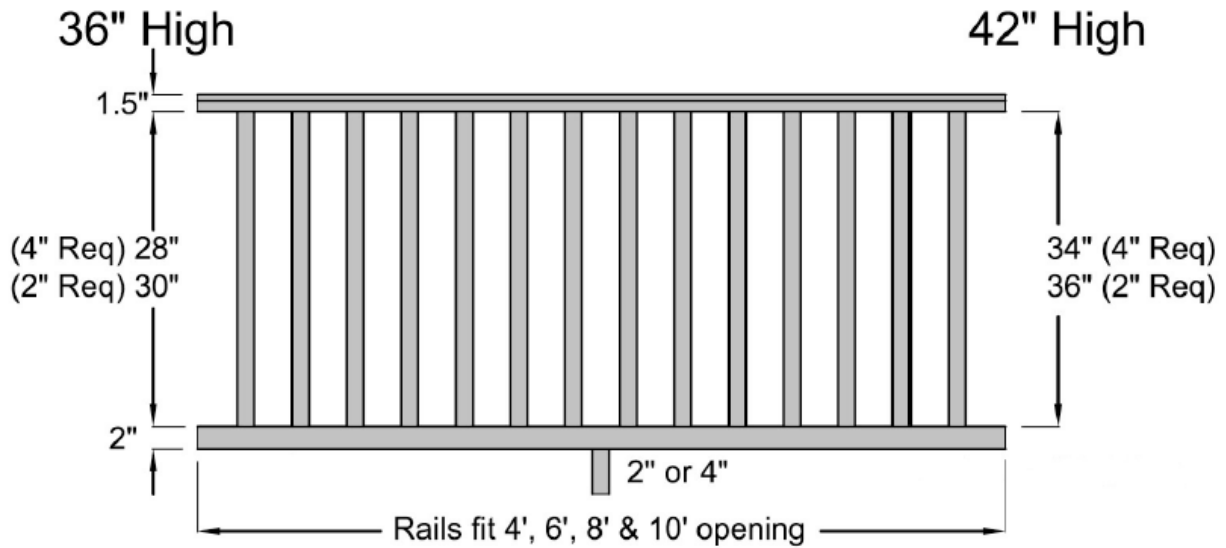


Figure 13 – Classic Series

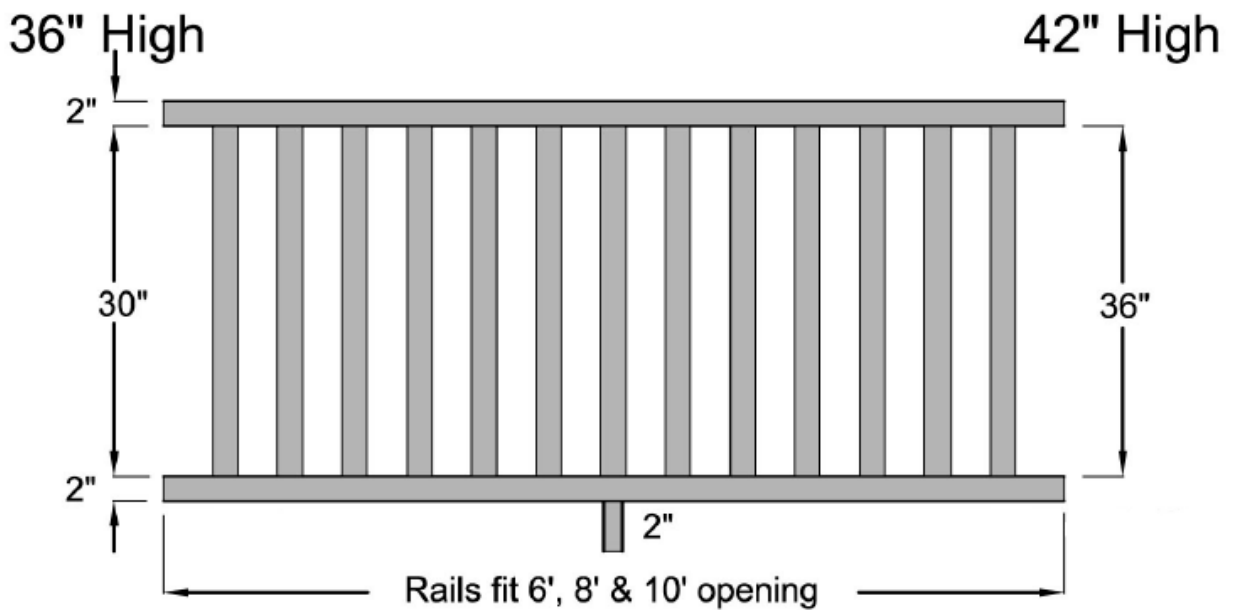


Figure 14 – Madison Series