Code Compliance Research Report
CCRR-0111

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DIVISION: 06 - WOOD, PLASTICS, AND COMPOSITES
Section: 06 50 00 – Structural Plastics
Section: 06 63 00 – Plastic Railings

MISSOURI VINYL PRODUCTS, LLC
10887 North Service Road
Bourbon, Missouri 65441
(573) 860-7600
www.movinyl.com

REPORT SUBJECT:
Missouri Vinyl Products, LLC
Vinyl Guardrail Systems
Models: *Americana, Victoria*, and *Contempra*

1.0 SCOPE OF EVALUATION

1.1. This research report addresses compliance with the following Codes:

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

1.2. *Missouri Vinyl Products, LLC Americana, Victoria* and *Contempra* Railing Systems have been evaluated for the following properties:

- Structural Performance
- Durability
- Surface Burning

1.3. *Missouri Vinyl Products, LLC Americana, Victoria* and *Contempra* Railing Systems have been evaluated for the following uses:

- Railing Systems are guards 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.

2.0 STATEMENT OF COMPLIANCE

2.1. *Missouri Vinyl Americana, Victoria* and *Contempra* Railing Systems complies 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 6.0.

3.0 DESCRIPTION

3.1. Level guards with rail lengths up to 10 feet (120-inches) in length and a maximum installed height of 42-inches. See Table 1.

3.2. Railings are an assemblage of extruded and molded components utilizing white Poly Vinyl Chloride (PVC) material and aluminum reinforcements. These systems consist of the following components:

3.2.1. The top PVC rail is the "*ALZAR*" profile having overall dimensions of 3.50" wide by 3.50" tall. The bottom PVC rail is a rectangular profile 3.5" tall by 2.0" wide.

3.2.2. PVC Balusters in the *Americana* system are extruded .080" thick in the form of a 1.50" square picket, the *Victoria* systems are molded .08" thick PVC in the form of a turned spindle with 1.50" square ends.

3.2.3. Balusters in the *Contempra* system are 0.75" diameter, 6063-T6 aluminum tube balusters. These balusters are available in several colors. See Table 2 for a list of baluster styles.

3.2.4. Full length extruded aluminum inserts provides reinforcement for both the top and bottom rails of the referenced railing systems. (See Table 1).

3.2.5. Top and bottom rails are attached to conventional 4x4 wood posts. The top attachment is made utilizing an "*ALZAR*" style straight PVC molded bracket. The bottom rail attachment is made utilizing a 2" X 3.5" straight PVC molded bracket.

3.2.6. A non-structural PVC post sleeve can be provided as a cladding over conventional 4x4 wood posts

4.0 PERFORMANCE CHARACTERISTICS

4.1. *Missouri Vinyl* 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 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. The PVC materials used have a flame spread index not exceeding 200 when tested according to ASTM E84.

5.0 INSTALLATION

Missouri Vinyl Products, LLC Americana, Victoria and *Contempra* Railing 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.

5.1. Level Guard 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).

5.2. Top and bottom rail brackets are attached to the posts and rails with stainless steel screws in accordance with the fastening schedule shown in Table 3.

5.3. 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.

5.4. Compatibility of fasteners and other installation hardware with the supporting construction including treated wood is not within the scope of this report.

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. 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. See Table 1 for Use Groups.

6.3. Conventional wood supports 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.

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

6.5. The use of PVC post sleeves other than the hollow non-structural slipover sleeves provided by manufacturer are outside the scope of this report.

6.6. *Missouri Vinyl Products, LLC* Railing Systems are manufactured in Bourbon, Missouri in accordance with the manufacturer's approved quality control system with inspections by Intertek-ATI (IAS - 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 Acceptance Criteria for Deck Board Span ratings and Guardrail Systems (Guards and Handrails), AC174 revised December 2014 and ASTM D 7032-08, Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails).Intertek Listing Report "[Name of listing report}", on the Listed Product and Code Compliance Directory.

7.3. A quality control manual that is in accordance with the ICC-ES AC10, dated June 2014. "Acceptance Criteria for Quality Documentation."

8.0 IDENTIFICATION

The guard assemblies produced by *Missouri Vinyl Products, LLC* identified in this report, shall be identified with labeling on the individual components or the packaging that includes the name and/or trademark of the manufacturer, the identifying mark of the independent inspection agency, Intertek, (IAS - AA-676), the Intertek Code Compliance Research Report mark and Number (CCRR-0111), the phrase "For Use

in One and Two Family Dwellings Only," and the following statement: "See CCRR-0111 at whdirectory.intertek.com for uses and performance levels".

CODE COMPLIANCE
Intertek
CCRR-0111

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 Intertek website address: whdirectory.intertek.com is recommended to ascertain the current version and status of this report.

TABLE 1 - OCCUPANCY CLASSIFICATION

Guardrail System	Dimensions[1]	Guardrail Type	Baluster	Code Occupancy Classification
Americana	8 ft by 42 in	Level / In-Line Application	1-1/2 in square PVC picket	IBC – All Use Group
Contempra			3/4 in diameter aluminum tube	
Victoria			1-1/2 in square-ended, thermoformed PVC spindle (Series 3150)	
Americana	10 ft by 42 in		1-1/2 in square PVC picket	IRC – One and Two Family Dwellings
Contempra			3/4 in diameter aluminum tube	
Victoria			1-1/2 in square-ended, thermoformed PVC spindle (Series 3150)	

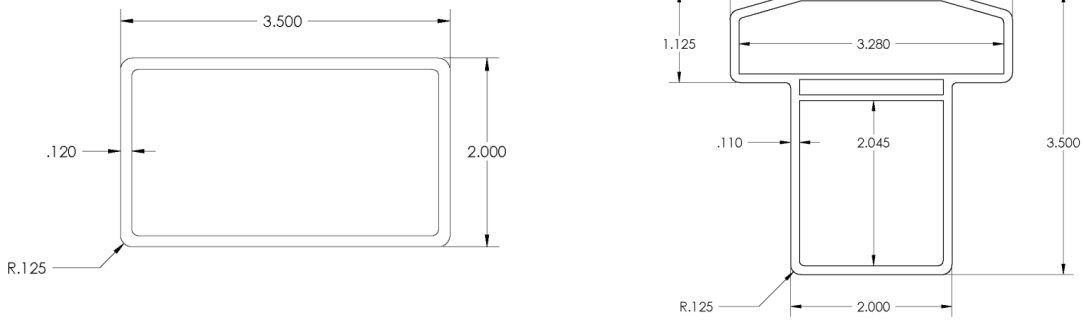
[1] Dimensions are rail length (ft.) clear distance between supports by overall installed height, walking surface to top of top rail.

TABLE 2 - BALUSTER DESCRIPTIONS

Missouri Vinyl Products, LLC Railing System	**Baluster Style**
Americana	White, 1-1/2" Straight Picket, extruded PVC
Victoria	White, 1-1/2" Spindle, molded PVC
Contempra	0.75” diameter, 6063-T6 aluminum tubing with colored finish

TABLE 3 - RAIL/BRACKET FASTENING SCHEDULE

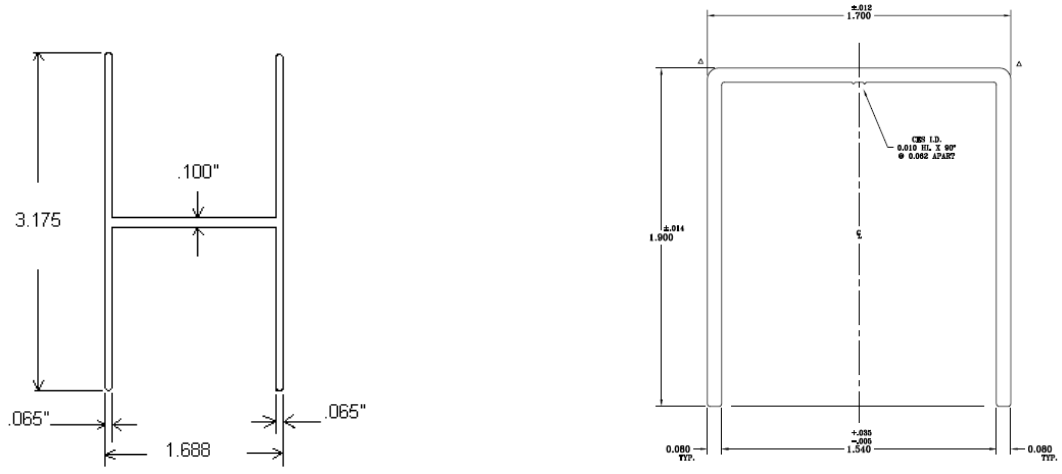
Rail – Bracket Combination	**Bracket to Post**	**Rail to Bracket**
ALZAR Straight Bracket	Six (6) #10 x 1-1/2" Stainless Steel Screws	One (1) #10 by 1.25” SST self tapping screw installed vertically through the rail and bracket. Two (2) #10 by .75” SST self tapping screws installed horizontally through each side of the rail and bracket.
2” x 3-1/2” Straight Rail Bracket	Four (4) #10 x 1-1/2" Stainless Steel Screws	One (1) #10 by 1.25” SST self tapping screw installed vertically through the rail and bracket. Two (2) #10 by .75” SST self tapping screws installed horizontally through each side of the rail and bracket.



Bottom PVC Rail

Top PVC *ALZAR* Rail

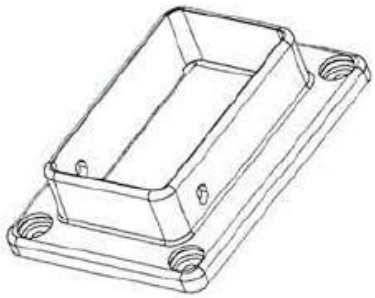
FIGURE 1 – RAIL PROFILES
Americana, Victoria* and *Contempra



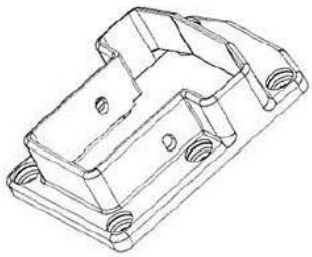
Bottom Rail Reinforcement

Top *ALZAR* Rail Reinforcement

FIGURE 2 – ALUMINUM REINFORCEMENT COMPONENTS
Americana, Victoria* and *Contempra



Straight Rail Bracket Applicable to Bottom Rail



ALZAR Straight Bracket Applicable to Top Rail

FIGURE 3 – ATTACHMENT BRACKETS

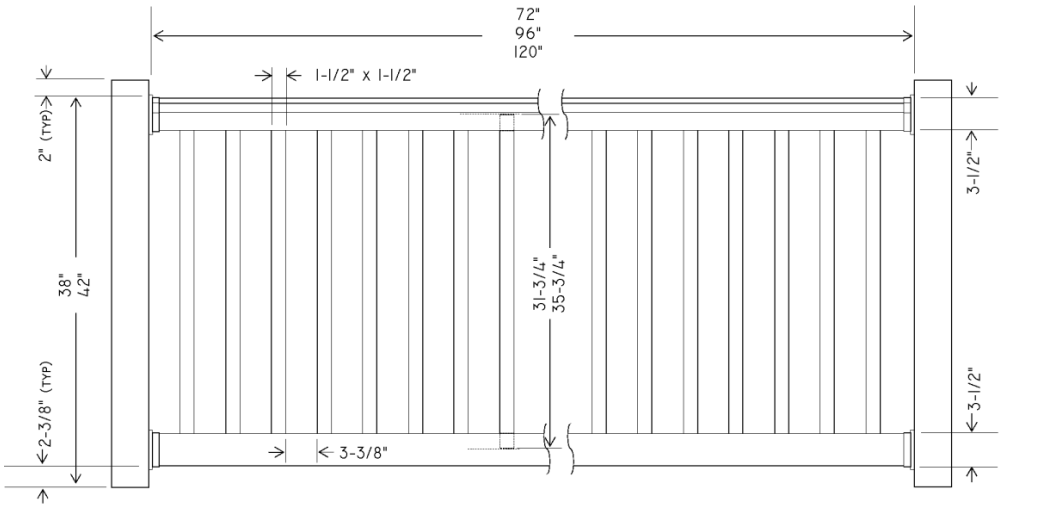


FIGURE 4 - TYPICAL RAIL ASSEMBLY - *AMERICANA* SERIES

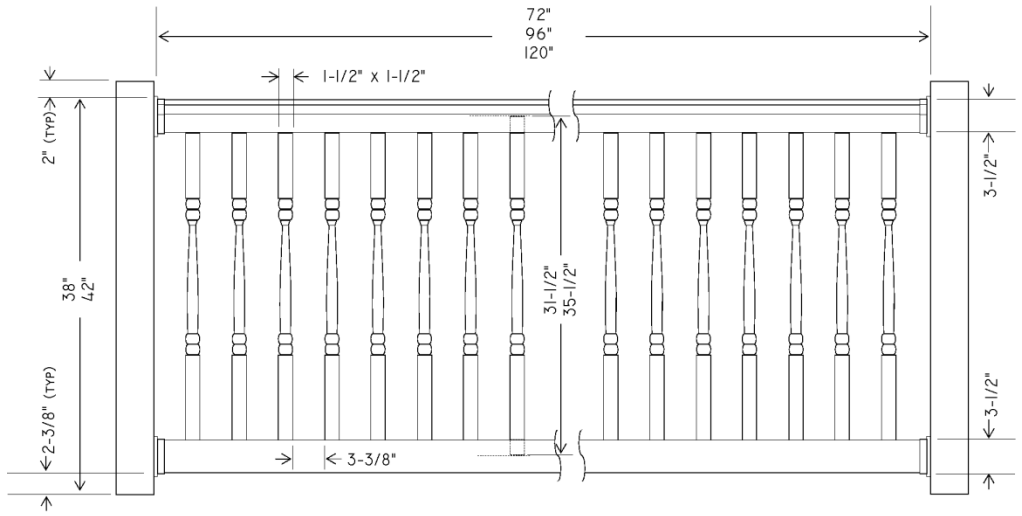


FIGURE 5 – TYPICAL RAIL ASSEMBLY - *VICTORIA* SERIES

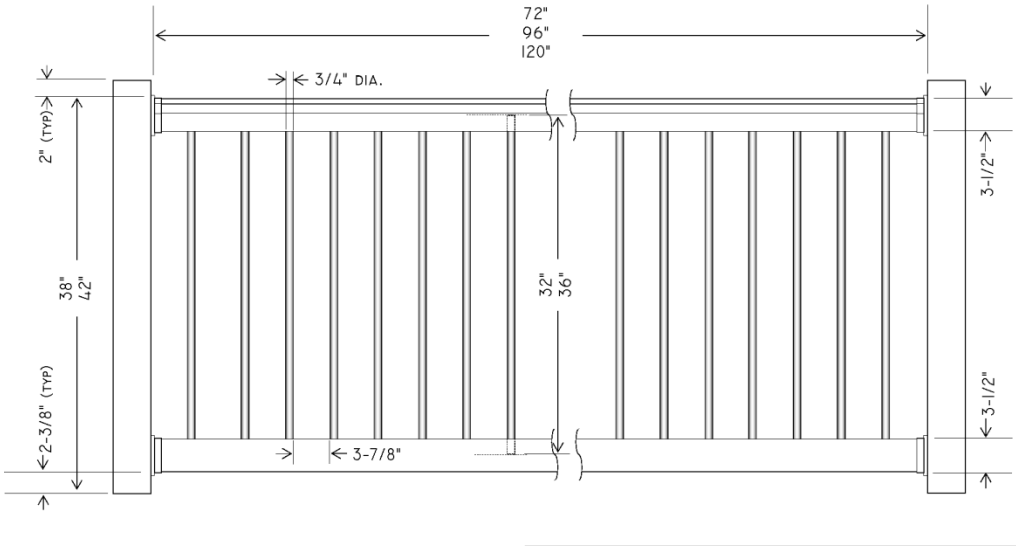


FIGURE 6 - TYPICAL RAIL ASSEMBLIES – *CONTEMPRA* SERIES