

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

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REPORT SUBJECT:

V200 Vinyl Railing (aka. Fairway Vinyl Systems):

V210 Vinyl Railing (aka. Standard Rail System)

V220 Vinyl Railing (aka. Contour Rail System)

1.0 SCOPE OF EVALUATION

This research report addresses compliance with the following Codes:

- 2015, 2012 International Building Code® (IBC)
- 2015, 2012 International Residential Code® (IRC)
- 2014 Florida Building Code® (FBC)
Excluding High Velocity Hurricane Zone (HVHZ)

IBC and FBC reference numbers are the same for both codes

Fairway Vinyl Systems / V200 Vinyl Railing have been evaluated for the following properties:

- Structural Performance
- Durability
- Surface Burning

2.0 USES

2.1. General - Fairway Architectural Railing Solutions vinyl systems are guardrails under the definitions of the referenced codes intended for use on elevated walking areas in buildings and walkways as required by the codes.

2.2. Guardrail Assemblies – Railing systems are provided as level guardrails for level walking areas such as decks, balconies and porches, and sloped guardrail for open sides of stairways.

2.3. Guardrail systems recognized in this report may be used in One- and Two-Family Dwellings regulated by the IRC and all construction types regulated by the IBC/FBC in accordance with IBC/FBC Section 1406.3, Exception 2. Guardrails less than 42 inches high are limited to use in One- and Two-Family Dwellings (IRC). See Table 1 for additional restrictions based upon Use and Occupancy classification.

3.0 DESCRIPTION

3.1. Level guardrails with a 36 inch overall installed height are provided in lengths up to 10 feet (120 inches). Guardrails with a 42 inch overall installed height are provided in lengths up to 8 feet (96 inches). See Table 1 – Maximum Railing System Size and Code Recognition.

3.2. Stair guardrails are provided in lengths up to 8 feet (96 inches) sloping length with a height up to that corresponding to a 42 inch level rail. See Table 1 – Maximum Railing System Size and Code Recognition.

3.3. Materials and Processes - Railings are an assemblage of extruded and molded components utilizing Poly Vinyl Chloride (PVC) material and aluminum reinforcements. Vinyl components are produced in three colors: White, Tan, and Khaki. All systems consist of the following components:

3.3.1. The top and bottom rails are extruded PVC profiles of various styles.

3.3.2. Balusters are extruded PVC profiles in various dimensions. Some extrusions are reshaped by a thermoform process to simulate a turned spindle design. See Table 4 for a list of styles.

3.3.3. An extruded aluminum (6105-T5 or 6005-T5) insert provides reinforcement for the top and bottom rails.



3.3.4. Top and bottom rails are connected to posts with molded plastic brackets (See Figure 8) that are secured to the supports with stainless steel screws.

3.3.5. Supports - Railing systems are attached to conventional wood supports which are outside the scope of this report. A PVC post sleeve that is non-structural is provided as a cladding over conventional 4x4 wood posts.

4.0 PERFORMANCE CHARACTERISTICS

4.1. The railing systems described in this report have demonstrated the capacity to resist the design loadings for Guardrails specified in Chapter 16 of the IBC 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 E 84-09. The referenced criteria, AC174, requires a flame spread index not exceeding 200.

5.0 INSTALLATION

Fairway Vinyl Systems / V200 Vinyl Railing must be installed in accordance with the manufacturer's published installation instructions, the applicable Code and this Research Report. The manufacturer's published installation instructions and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

5.1. Railing assemblies consist of top and bottom rails with pre-routed holes to receive balusters. Aluminum railing reinforcements are inserted in the rails during assembly as specified for the type and length of railing (see Table 2 and Table 3).

5.2. Railings attached to wood supports with molded PVC brackets utilize stainless steel "Hi-Lo" wood screws for anchorage. 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. Bracket attachment shall be in accordance with Table 5.

5.2.1. Where required by the building official, engineering calculations and details shall be provided. The calculations shall verify that the anchorage complies with the building code for the type and condition of the supporting construction.

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

6.0 SUPPORTING EVIDENCE

6.1. Manufacturer's drawings and installation instructions.

6.2. 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)*, revised December 2014, and ASTM D 7032-10a, *Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails)*.

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

7.0 CONDITIONS OF USE

The *Fairway Vinyl Systems / V200 Vinyl Railing* described in this Research Report comply with, or is a suitable alternative to what is specified in those Codes listed in Sections 1.0 and 2.0 of this report, subject to the following conditions:

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

7.2. Conventional wood guardrail supports 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, post mount brackets, and other metallic components with the supporting structure, including chemically treated wood, is not within the scope of this report.

7.4. Fairway Architectural Railing Solutions V200 vinyl rails are manufactured in Mount Joy, PA and York, NE in accordance with the manufacturer's approved quality control system with inspections by Intertek.

8.0 IDENTIFICATION

The *Fairway Vinyl Systems / V200 Vinyl Railing* described in this Research Report are identified by a marking bearing the report holder's name (Fairway Architectural Railing Solutions.); the Intertek Mark and the Code Compliance Research Report number (CCRR-0153); and where applicable (for rails over 8 ft long, as shown in Table 1), the label shall include the phrase: "For Use in One- and Two-Family Dwellings Only"; and the following statement: "See CCRR-0153-

at <https://whdirectory.intertek.com> for uses and performance levels."



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 Intertek.

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

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TABLE 1 – MAXIMUM RAILING SYSTEM SIZE AND CODE RECOGNITION

STYLE	CODE RECOGNITION	
	Maximum Railing Size (Length x Height) ¹	
	IBC and FBC	IRC and FBC-Residential ²
<i>Standard Rail / V210 Vinyl Railing</i>	8' x 42" Level 87-1/2" x 42" Stair	10' x 42" Level 87-1/2" x 42" Stair
<i>Contour Rail / V220 Vinyl Railing</i>	8' x 42" Level 91-3/4" x 42" Stair	10' x 42" Level 91-3/4" x 42" Stair

¹ Railing lengths are clear length between supports. Railing height is installed height from walking surface to top of top rail. Minimum bottom rail clearance is 2".

² The use of this product shall be 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.

TABLE 2 - LEVEL RAILING SYSTEMS DESCRIPTIONS

STYLE	LEVEL RAILING SYSTEM COMPONENTS (See Table 4 for available Balusters)	
	RAILS	BRACKETS
<i>Standard Rail / V210 Vinyl Railing</i>	Top: 2x3-1/2" <i>Standard Rail / V210 Vinyl Railing</i> with Alum "H" channel Bottom: 2x3-1/2" <i>Standard Rail / V210 Vinyl Railing</i> (Alum "H" Channel in lengths exceeding 8 feet.)	Top: OEM Bottom: OEM
<i>Contour Rail / V220 Vinyl Railing</i>	Top: <i>Contour Rail / V220 Vinyl Railing</i> with Contour Alum insert Bottom: 2x3-1/2" STD Rail (Alum "H" Channel in lengths exceeding 8 feet.)	Top: Two-Piece <i>Contoured / V220 Vinyl Railing</i> Bottom: OEM



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TABLE 3 – STAIR RAILING SYSTEM DESCRIPTIONS

STYLE	STAIR RAILING SYSTEM COMPONENTS (See Table 4 for available balusters)	
	RAILS	BRACKETS
<i>Standard Rail / V210 Vinyl Railing</i>	Top: 2x3-1/2" <i>Standard Rail / V210 Vinyl Railing</i> with Alum "H" channel Bottom: 2x3-1/2" STD Rail with Alum "H" Channel	Top & Bottom: OEM
<i>Contour Rail / V220 Vinyl Railing</i>	Top: <i>Contour Rail / V220 Vinyl Railing</i> with <i>Contour</i> Alum insert Bottom: 2x3-1/2" <i>Standard Rail</i> with Alum "H" Channel	Top: <i>Contour / V220 Vinyl Railing</i> Stair Bracket Bottom: OEM

TABLE 4 - BALUSTERS

BALUSTER STYLE
3/4" x 1-1/2" PVC Baluster
1-1/4" Square PVC Baluster
1-3/8" Square PVC Baluster
1" x 2" PVC Baluster

TABLE 5 – RAIL BRACKET FASTENING SCHEDULE

RAIL – BRACKET COMBINATION	BRACKET TO POST	RAIL TO BRACKET
2" x 3-1/2" <i>Standard Rail / V210 Vinyl Railing</i> with OEM Bracket	(4) #12 x 1-1/4" Stainless Steel Screws	(2) #10 x 1" self-tapping screws
2-1/4" x 3" <i>Contour Rail / V220 Vinyl Railing</i> w/ Two-Piece <i>Contour</i> Bracket	(4) #10 x 2" Stainless Steel Screws	(2) #10 x 1" self-tapping screws
2-1/4" x 3" <i>Contour Rail / V220 Vinyl Railing</i> w/ Contoured Stair Bracket	(2) #10 x 4" Stainless Steel Screws	(2) #10 x 1" self-tapping screws



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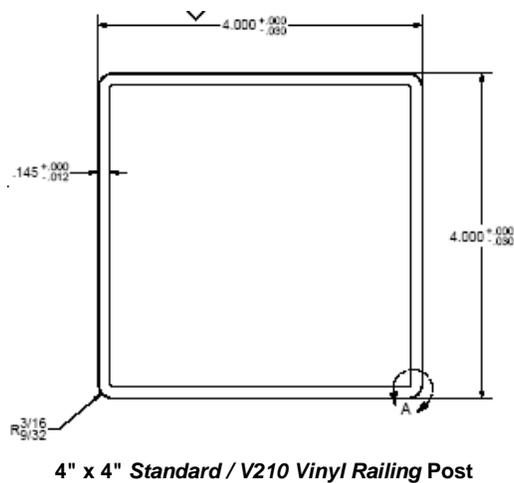
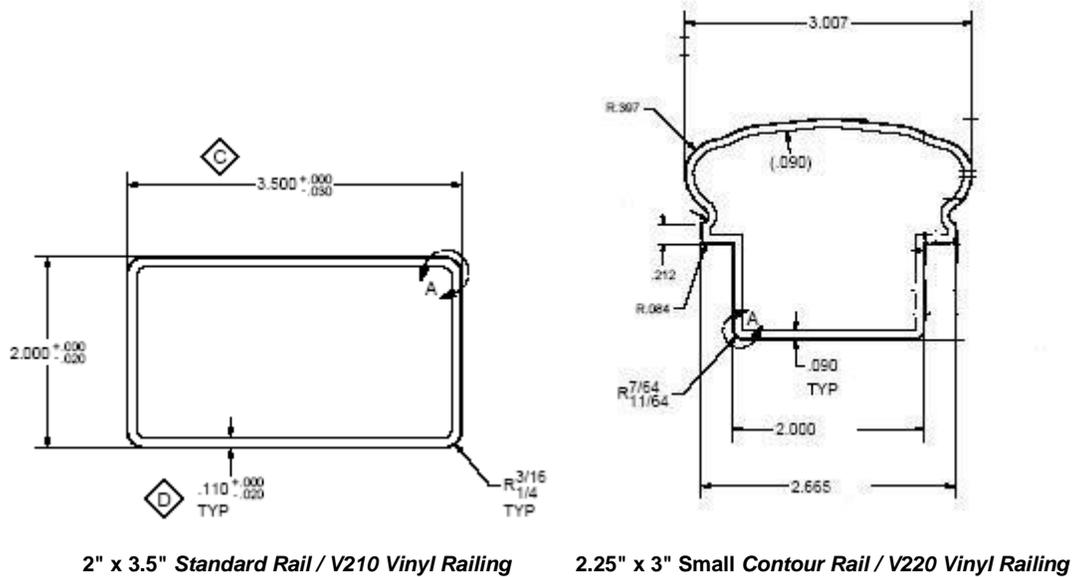


FIGURE 1 – PVC RAIL AND POST PROFILE DRAWINGS

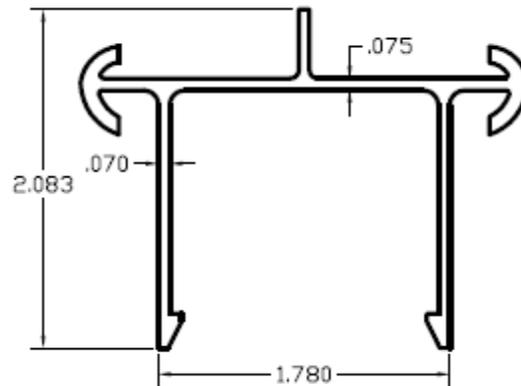


FIGURE 2 – 2.25" X 3.00" *CONTOUR RAIL / V220 VINYL RAILING ALUMINUM INSERT*

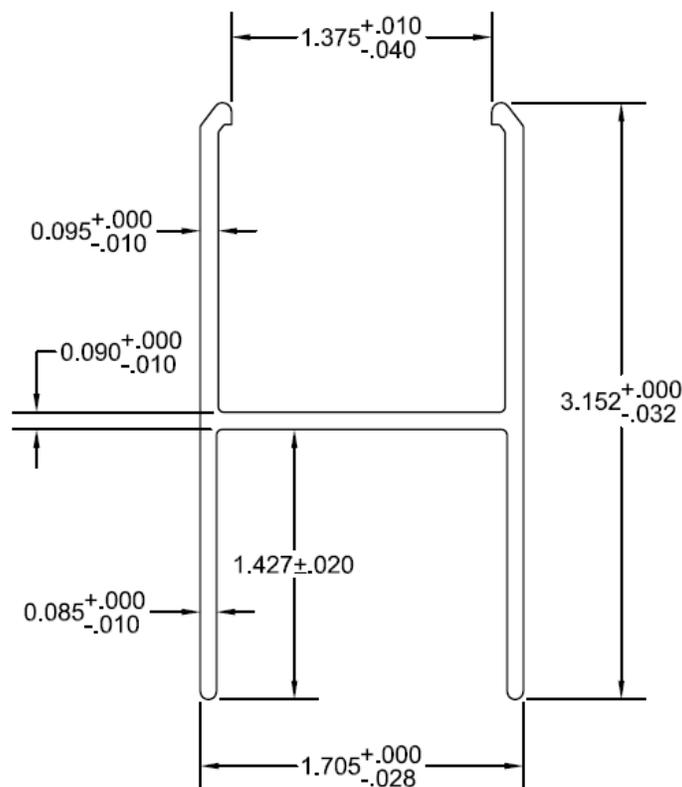


FIGURE 3 - 2.00" X 3.50" *STANDARD RAIL / V210 VINYL RAILING ALUMINUM H-CHANNEL INSERT*

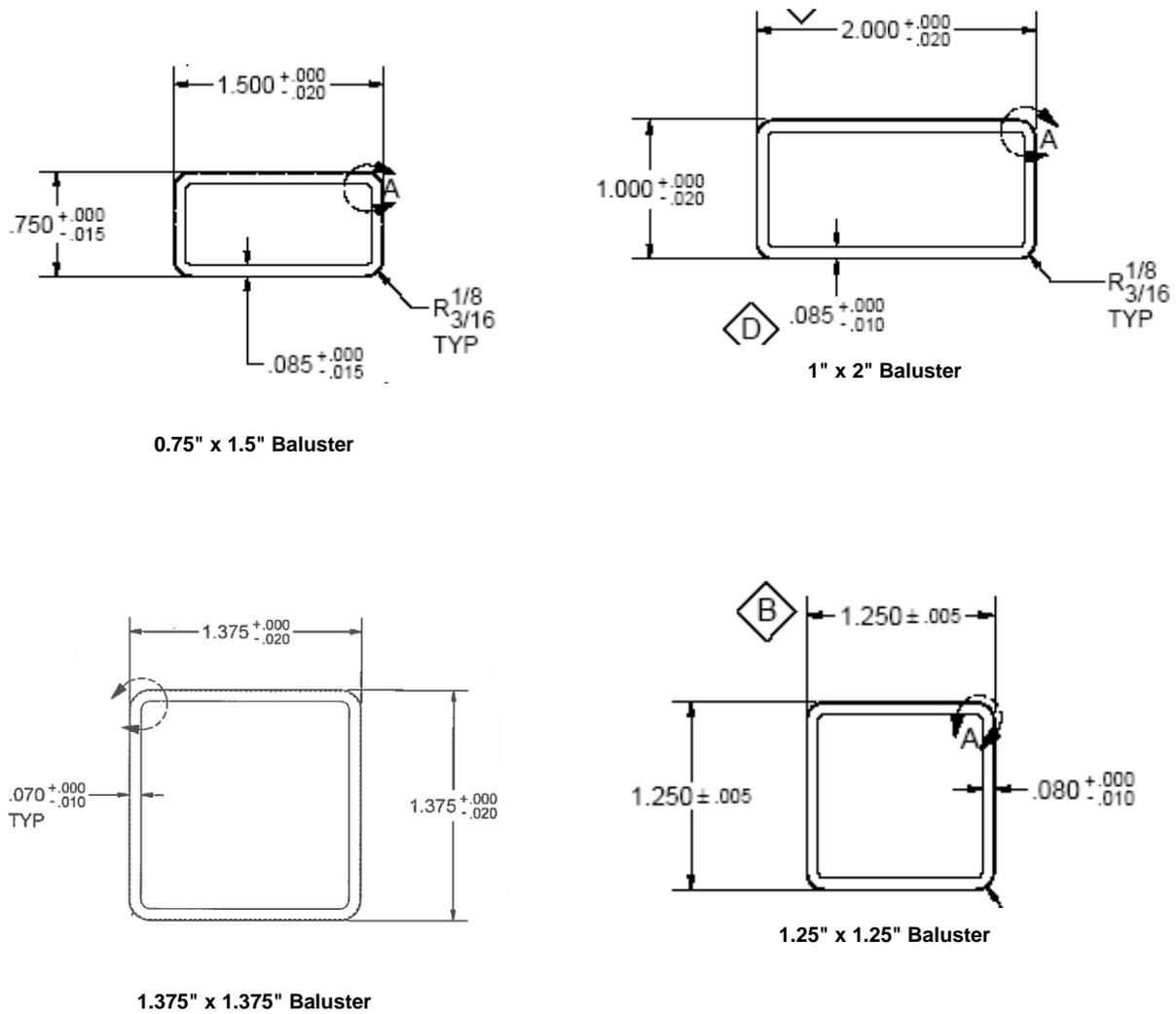


FIGURE 4 –BALUSTER PROFILES

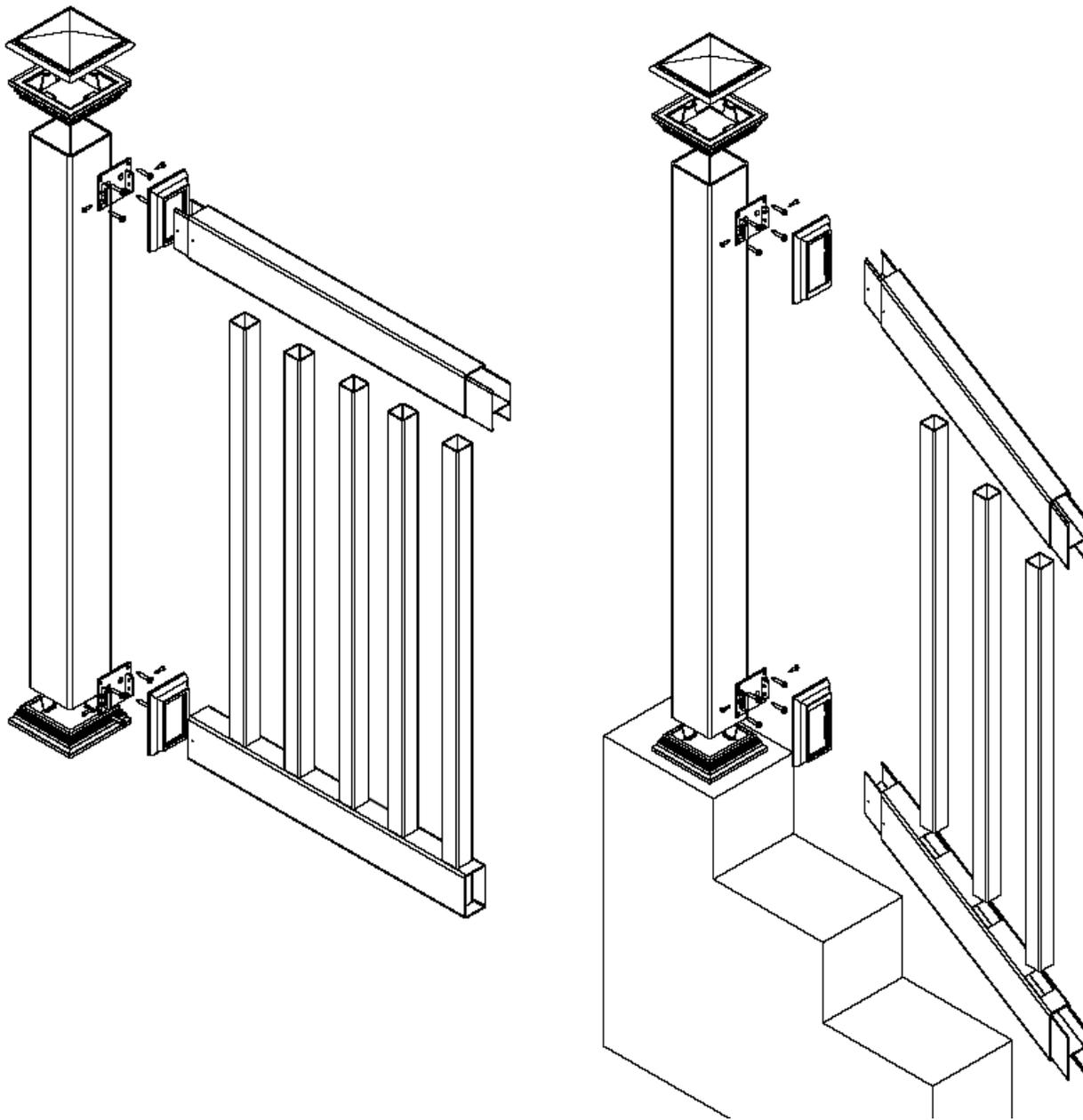


FIGURE 5 – 2 X 3-1/2 STANDARD RAIL / V210 VINYL RAILING (LEVEL AND STAIR)

Bottom rail reinforcement not shown for level rail. See Table 2 for requirement.

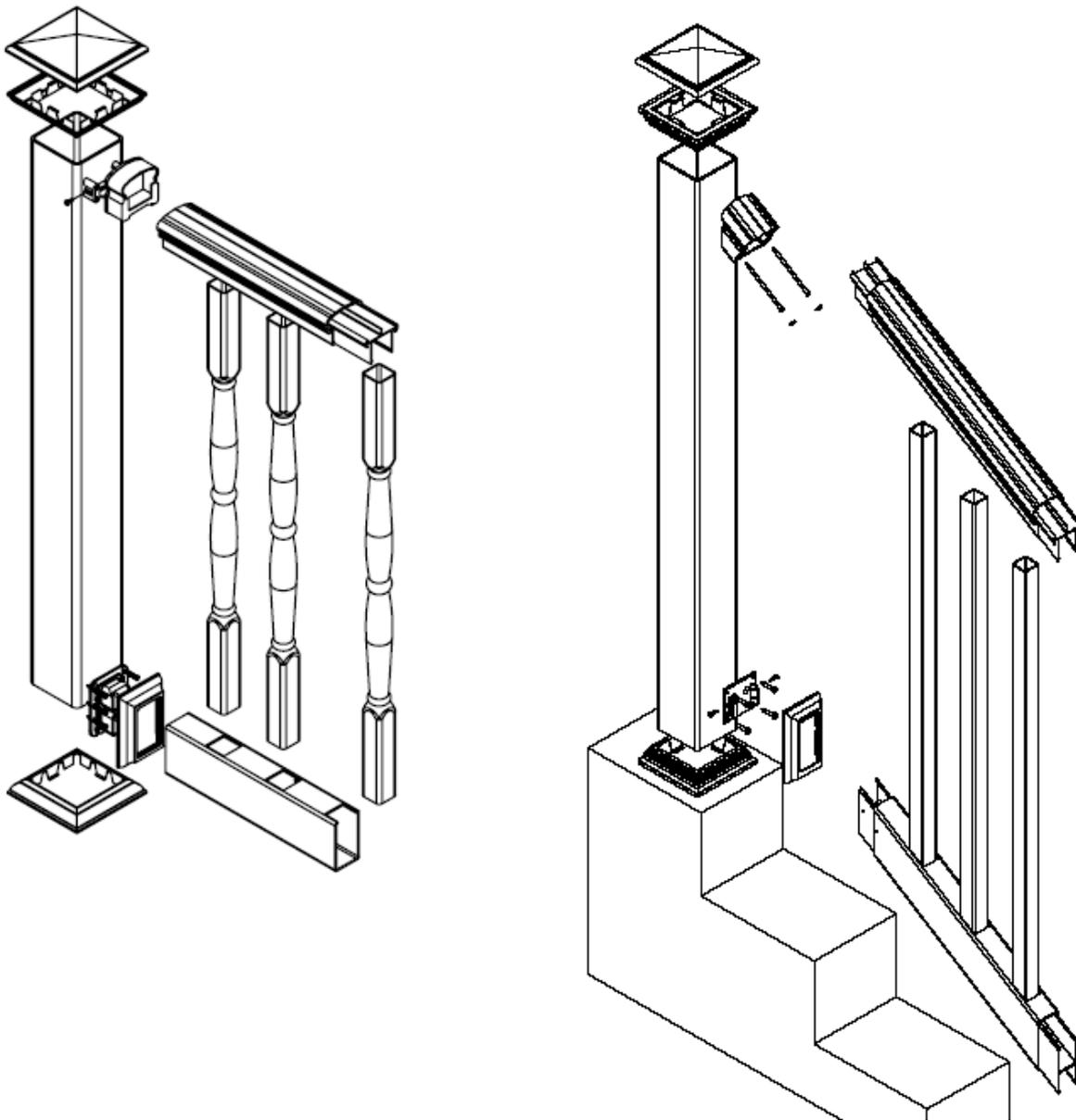


FIGURE 6 - CONTOUR RAIL / V220 VINYL RAILING (LEVEL AND STAIR)

Bottom rail reinforcement not shown for level rail. See Table 2 for requirement.

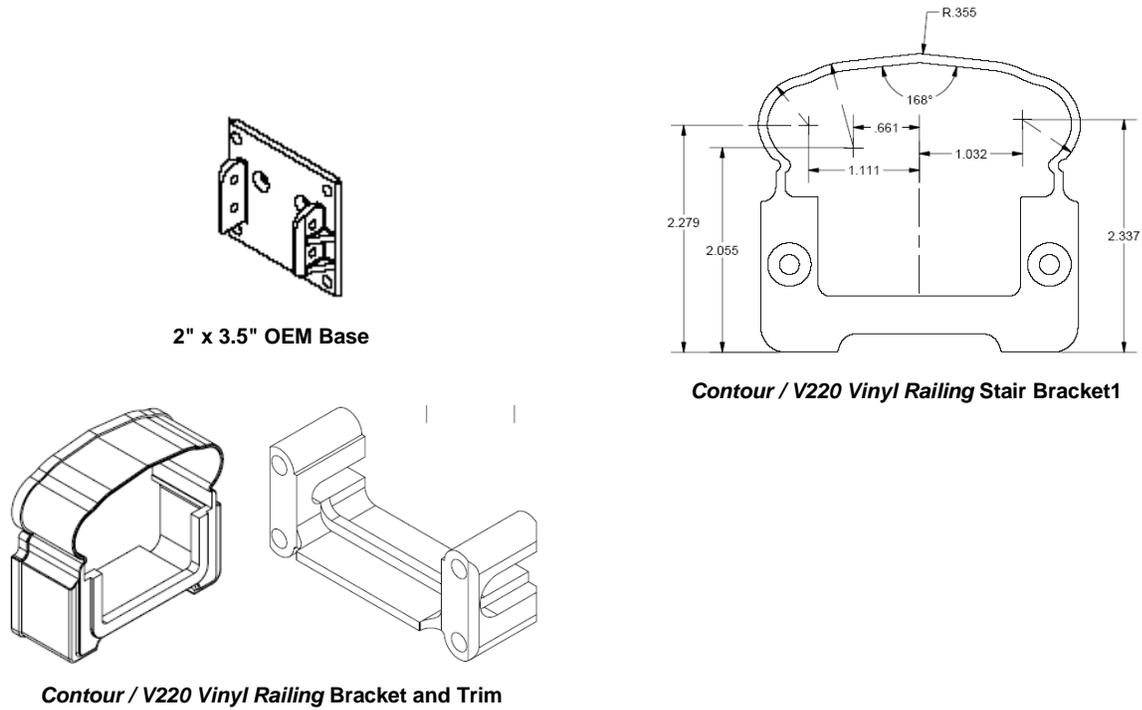


FIGURE 7 - PLASTIC BRACKETS

:¹ *Contour* brackets are field cut for a flush fit to the supporting surface with an angle corresponding to the stair slope. The end cut shall be limited to providing the required angle and shall not reduce the overall length of the bracket.