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

REPORT HOLDER:

VEKA, INC.
100 VEKA Drive
Fombell, PA 16123
(800) 654-5589
www.vekaoutdoorliving.com

REPORT SUBJECT:

VEKA Vinyl Guardrail Systems:

- Whitman system
- Regal system
- Majestic system
- Conrad system
- Stanfield system
- Trustin system
- Genova system
- Potenza system
- Deck Teck system

Additional Listee:

Great Railing, Inc.
1086 North Black Horse Pike
Williamstown, NJ 08094
(856) 975-0050

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2015 and 2012 *International Building Code*® (IBC)
- 2015 and 2012 *International Residential Code*® (IRC)

1.2 VEKA Vinyl Guardrail Systems have been evaluated for the following properties:

- Structural Performance
- Durability
- Surface Burning
- Decay Resistance
- Termite Resistance

1.3 VEKA Vinyl Guardrail Systems have been evaluated for the following uses (see Table 1):

- The VEKA Vinyl Guardrail Systems described in this report 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.
- 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 in accordance with IBC 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.

2.0 STATEMENT OF COMPLIANCE

VEKA Vinyl Guardrail Systems comply 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.

3.0 DESCRIPTION

3.1 Guardrail systems include a top and bottom rail, with or without aluminum inserts (See Table 1), vertical balusters, post sleeves, rail-to-post brackets, foot blocks and decorative moldings.

3.2 Rails, post sleeves, foot blocks, balusters and decorative moldings are Polyvinyl Chloride (PVC). PVC components are produced in three colors: White, Almond or Khaki. Galvanized, powder-coated iron balusters are also utilized and produced in various colors.

3.3 All top rails are provided with an aluminum insert (See Table 1 and Figure 2). The top rail insert is either 6005A-T5 ("Regal" system only) or 6063-T5 or 6063-T6 aluminum. See Figure 2.

3.4 The bottom rail is supplied with or without an aluminum insert (See Table 1 and Figure 2). The bottom rail insert is 6063-T5 or 6063-T6 aluminum alloy.



3.5 Level guards with heights of 36 inches or 42 inches above the floor surface are provided in lengths up to 10 feet as measured from inside-to-inside of supports. See Table 1.

3.6 The top assembly consists of one rail, and is attached to each support with a single bracket. The top rail may be a T-shape, an ornamental shape or a rectangular shape. See Figure 1.

3.7 The bottom assembly consists of one rail, and is attached to each support with a single bracket. The bottom rail is a rectangular shape measuring 2 inches wide and 3.5 inches deep. See Figure 1.

3.8 Balusters are blow-molded PVC, co-extruded PVC, galvanized powder-coated iron, or aluminum and are supplied in various dimensions and styles. The balusters are placed through routed openings in both the top and bottom rails to provide a means for securing the balusters in the rails. See Figures 3 through 5.

3.9 The baluster spacing resulting from assemblies recognized in this report shall provide spacing such that a 4 inch diameter sphere cannot pass through any opening between balusters.

3.10 The rail assembly utilizing the T-shaped top rail and the rectangular bottom rail is referred to as the "Conrad", "Trustin" "Potenza" or "Deck Teck" system. The rail assembly utilizing the ornamental shaped top rail and rectangular bottom rail with Vision PVC brackets is referred to as the "Regal" system. The rail assembly utilizing the ornamental shaped top rail and rectangular bottom rail with Stallion Die-Cast brackets is referred to as the "Majestic" system. The rail assembly utilizing the rectangular rail for both the top and bottom rails is referred to as the "Whitman", "Stanfield" or "Genova" system. See Figure 1.

3.11 Post sleeves are 4 inches square and have a wall thickness of either 0.16 inch or 0.135 inch. See Figure 6.

3.12 The LMT and Vision mounting brackets are molded plastic. Other LMT mounting brackets are made from die cast zinc or aluminum with a plastic cover. See Table 1 and Figure 7.

4.0 PERFORMANCE CHARACTERISTICS

4.1 The 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 the 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 All components have a flame spread not exceeding 200 when tested according to ASTM E 84.

5.0 INSTALLATION

5.1 General:

VEKA Vinyl Guardrail 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.

5.2 The top and bottom rail assemblies are attached to PVC sleeved conventional wood posts or other supporting structure with a mounting bracket. See Table 1.

5.3 One mounting bracket attaches to each end of the upper rail. The brackets are attached to the supports. See Tables 1 and 3 for attachment details.

5.4 One mounting bracket attaches to each end of the lower rail. The brackets are attached to the supports. See Tables 1 and 3 for attachment details.

5.5 Foot blocks are intermediate bottom rail supports and are installed between the deck surface and the rail for all with exception of the Deck Teck systems. Two supports are used for the 10 foot rail systems and are located at the one-third points. The 6 and 8 foot rails systems utilize one intermediate support located at the mid-point.

5.6 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 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 The guardrail 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:

6.2.1 Guardrails 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.

6.2.2 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 (See 5.5 under "Installation"). Where required by the building official, engineering calculations and details prepared by a licensed design professional shall be provided.

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

6.3 VEKA Vinyl Guardrail Systems are manufactured in Fombell, Pennsylvania by VEKA Inc. and in Williamstown, New Jersey by Great Railing in accordance with the manufacturer's approved quality control system with inspections by Intertek Testing Services NA, Inc. (IAS AA-676).

7.0 SUPPORTING EVIDENCE

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

7.2 Drawings and installation instructions submitted by the manufacturer.

7.3 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)", revised December 2014.

7.4 The reports of testing and engineering analysis demonstrating compliance with the performance requirements of ASTM D 7032-08.

8.0 IDENTIFICATION

The VEKA Vinyl Guardrail Systems are identified with the manufacturer's name (VEKA, INC.), address and telephone number, the product name (VEKA Vinyl Guardrail Systems), the phrase "For Use in One- and Two-Family Dwellings Only." when applicable in accordance with Table 1, the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-0138).



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 <https://bpdirectory.intertek.com> is recommended to ascertain the current version and status of this report.



**TABLE 1 – GUARDRAIL ASSEMBLIES AND CODE OCCUPANCIES**

Guard System	Rail Inserts	Rail Brackets ⁴		Balusters ⁵	Maximum Rail Length ^{1, 2, 3} (ft.-in.)	Code Occupancy Classification
		Top	Bottom			
<i>Conrad</i>	Top Only	LMT PVC	LMT PVC	#1-14	10' - 0"	Exterior use for one- and two-family dwellings only.
<i>Stanfield</i>	Top And Bottom	LMT Aluminum	LMT Aluminum	#1-14	8' - 0"	
<i>Trustin</i>	Top And Bottom	LMT Aluminum	LMT Aluminum	#1-14	8' - 0"	
<i>Conrad</i>	Top Only	LMT PVC	LMT PVC	#1-14	8' - 0"	Exterior use in all IBC Occupancies and the IRC. Limited in Types I, II, III and IV Construction to conditions where wood is permitted in accordance with Section 1406.3 of the IBC.
<i>Majestic</i>	Top And Bottom	LMT Zinc	LMT Aluminum	#1-14	8' - 0"	
<i>Regal</i>	Top And Bottom	Vision PVC	Vision PVC	#1-14	8' - 0"	
<i>Stanfield</i>	Top And Bottom	LMT Aluminum	LMT Aluminum	#1-14	8' - 0"	
<i>Trustin</i>	Top And Bottom	LMT Aluminum	LMT Aluminum	#1-14	8' - 0"	

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TABLE 1 – GUARDRAIL ASSEMBLIES AND CODE OCCUPANCIES (CONTINUED)

Guard System	Rail Inserts	Rail Brackets ⁴		Balusters ⁵	Maximum Rail Length ^{1, 2, 3} (ft.-in.)	Code Occupancy Classification
		Top	Bottom			
<i>Whitman</i>	Top Only	LMT PVC	LMT PVC	#1-14	8' - 0"	IRC – Residential Use Only
<i>Genova</i>	Top Only	LMT PVC	LMT PVC	#1-14	8' - 0"	
<i>Potenza</i>	Top Only	LMT PVC	LMT PVC	#1-14	8' - 0"	
Deck Teck	Top ⁶ and Bottom	LMT PVC	LMT PVC	5, 9, 13, 14	8' - 0"	IBC – All Use Groups
Deck Teck	Top ⁶ and Bottom	LMT PVC	LMT PVC	5, 9, 13, 14	6' – 0"	

¹ The supporting structure must be constructed to the satisfaction of the code official. See 7.2 under "Conditions of Use"

² Maximum rail length is measured from inside-to-inside of supports.

³ The minimum height of the top rail is 42 inches for the IBC (Section 1013.2) and 36 inches for the IRC (Section R312).

⁴ Refer to the Bracket fastening schedule and Figure 7

⁵ Refer to the Baluster schedule in Table 2. Baluster style #7 is limited to use in 36" Guardrail heights.

⁶ Deck Tek top rail insert: "h" Profile up to 6', "H" Profile up to 8'. See Figure 2 – Aluminum Rail Inserts.



Table 2 - Balusters

Code #	Baluster Schedule
1	1 inch square PVC picket
2	7/8 inch by 1-1/2 inch rectangular picket
3	1-1/4 inch square picket
4	1-1/2 inch square picket
5	1-1/2 inch square picket (Economy)
6	1-1/2 inch by 1-1/2 inch molded PVC spindle
7	3/4 inch galvanized powder coated iron balusters
8	1-1/2 inch fluted picket
9	3/4 inch Diameter Aluminum Picket
10	3/4 inch Square Aluminum Picket
11	1-1/2 inch Square LMT Series #3160 Spindle
12	1-1/2 inch Square LMT Series #3260 Spindle
13	1-1/2 inch Square LMT Series #3180 Spindle
14	1-1/2 inch Square LMT Series #3100 Spindle

Table 3 – Fastening Schedule

Bracket	Fastening for Whitman, Conrad, Stanfield, Trustin, Majestic and Regal	
	Bracket To Post	Bracket To Rail
LMT PVC	4 - #10 x 2-1/4" stainless steel wood screws	4 - #10 x 3/4" stainless steel pan-head screws
LMT Zinc	4 - #10 x 2" stainless steel wood screws	2 - #10 x 1-1/4" stainless steel pan-head screws
LMT Aluminum	6 - #10 x 2" stainless steel wood screws	4 - #10 x 1-1/4" stainless steel pan-head screws
Vision PVC	4 - #10 x 3/4" stainless steel pan-head screws	4 - #10 x 1" stainless steel pan-head screws
Bracket	Fastening for Deck Teck	
	Bracket To Post	Bracket To Rail
LMT PVC	Top Rail and Bottom Rail Six #10-10 x 1-1/2" (0.116 minor diameter) Philips drive, pan-head, self-starting screws	Four #10-10 x 1-1/2" (0.1124 minor diameter) Philips drive, pan-head, self-starting screws

Table 3– Fastening Schedule (continued)

Bracket	Fastening for Genova and Potenza	
	Bracket To Post	Bracket To Rail
LMT PVC	Top and Bottom (Potenza and Genova) Six #10-8x2" (0.129 minor diameter) flathead, type 17 point square drive, stainless steel screws	Four #10-16x1" (0.135 minor diameter) pan-head, self starting, square drive stainless steel screws
LMT PVC	Top and Bottom (Whitman) Four #10-10 x 10 1/2" (0.121 minor diameter) pan-head, self-starting philips drive stainless steel screws	Two #10-12 x 1" (0.135 minor diameter) panhead, self-starting Philips drive stainless steel screws

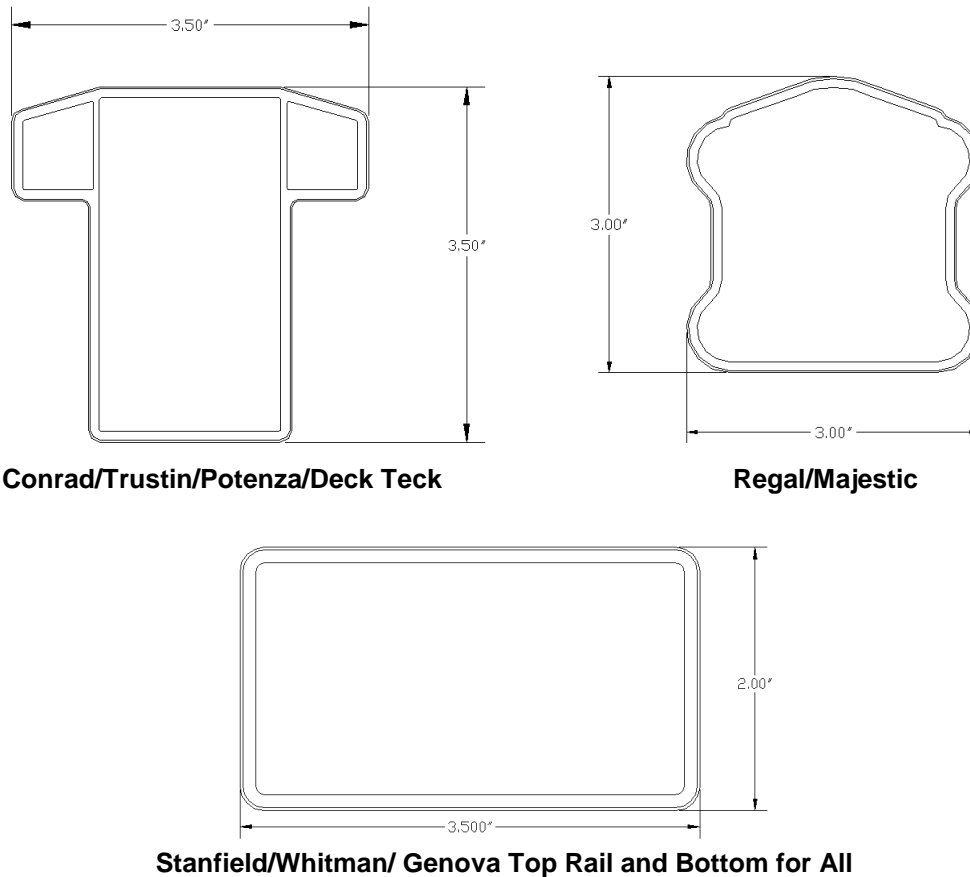
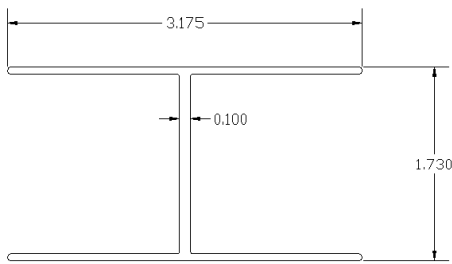
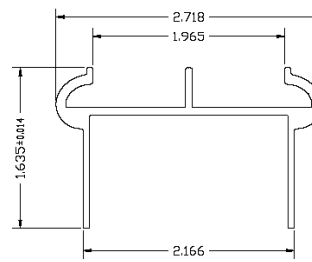


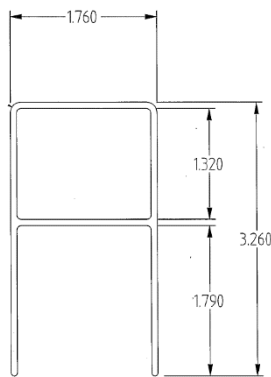
FIGURE 1 – PVC RAIL PROFILES



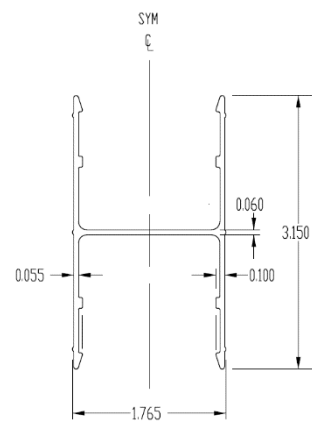
Top Rail: *Conrad, Stanfield, Trustin and Whitman*
Bottom Rail: *Majestic, Regal, Stanfield, and Trustin,*



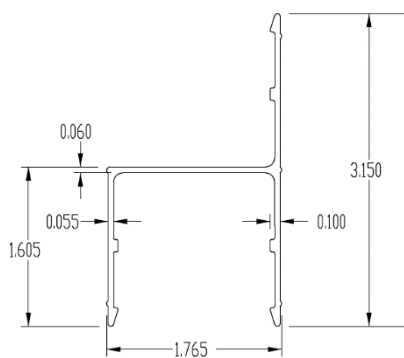
Top Rail: *Regal and Majestic*



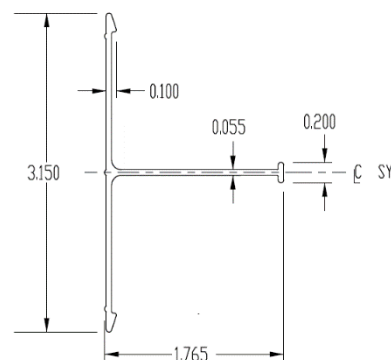
Top Rail: *Genova, Potenza Top Rails*



Top Rail Deck Teck (8 foot length)

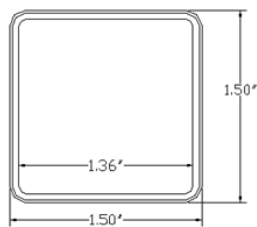


Top Rail: *Deck Teck (6 foot length)*

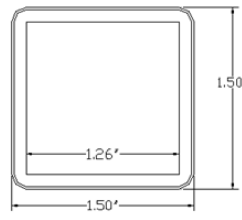


Bottom Rail: *Deck Teck*

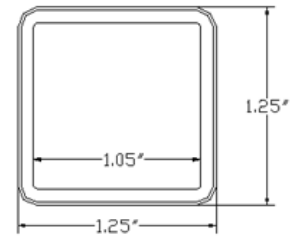
FIGURE 2 - ALUMINUM RAIL INSERTS



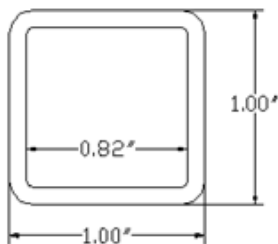
1-1/2" X 1-1/2"
PICKET



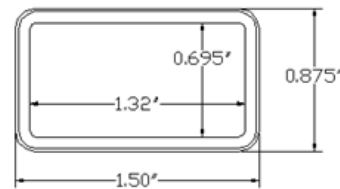
1-1/2" X 1-1/2"
PICKET/SPINDLE



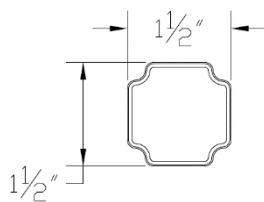
1-1/4" X 1-1/4"
PICKET



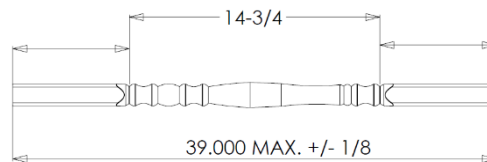
1" X 1" PICKET



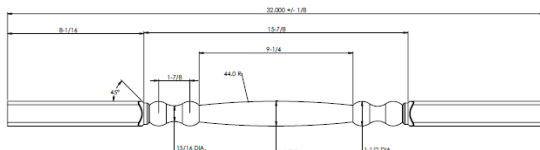
7/8" X 1-1/2"
PICKET



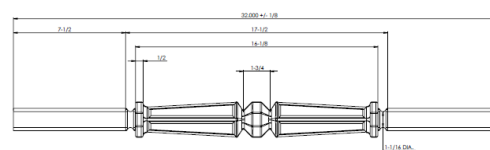
1 1/2" X 1 1/2" FLUTED PICKET



LMT Spindle 3160



LMT Spindle 3180



LMT Spindle 3260



LMT Spindle 3100

FIGURE 3 – PVC BALUSTERS



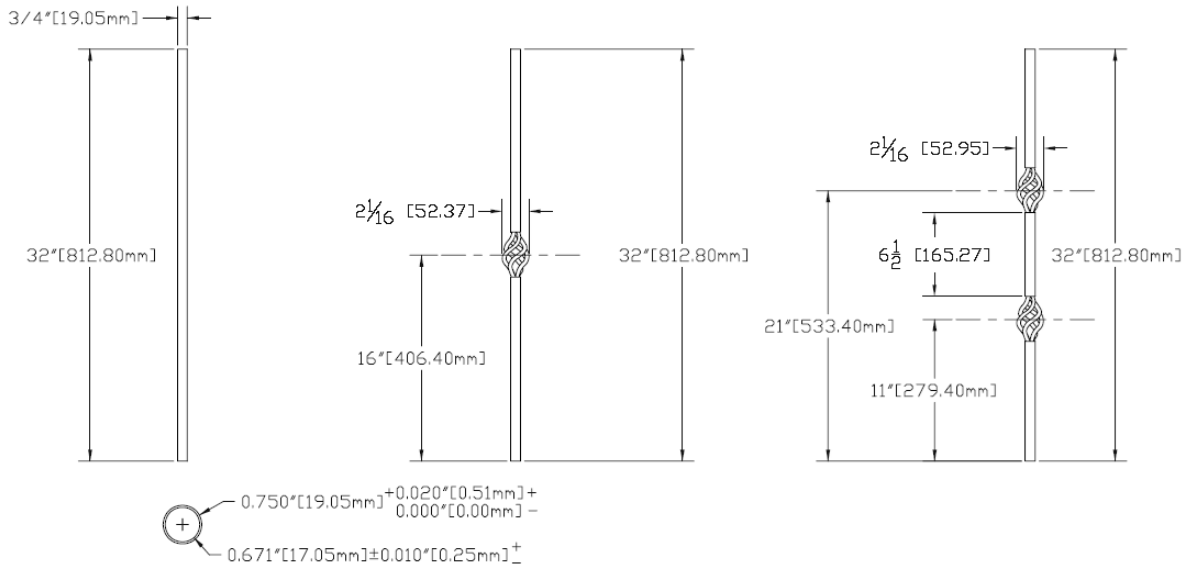


FIGURE 4 – IRON BALUSTERS

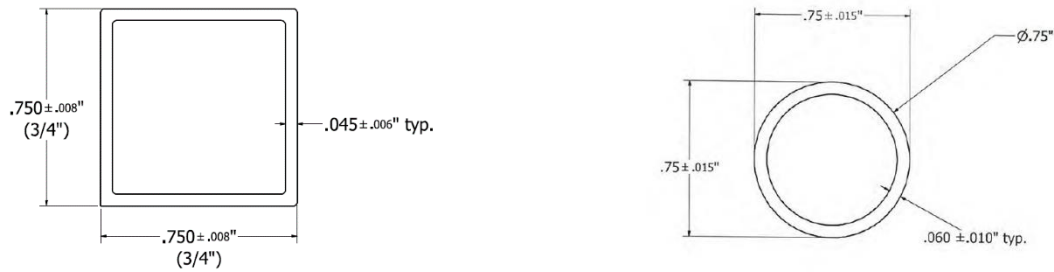


FIGURE 5 – ALUMINUM BALUSTERS

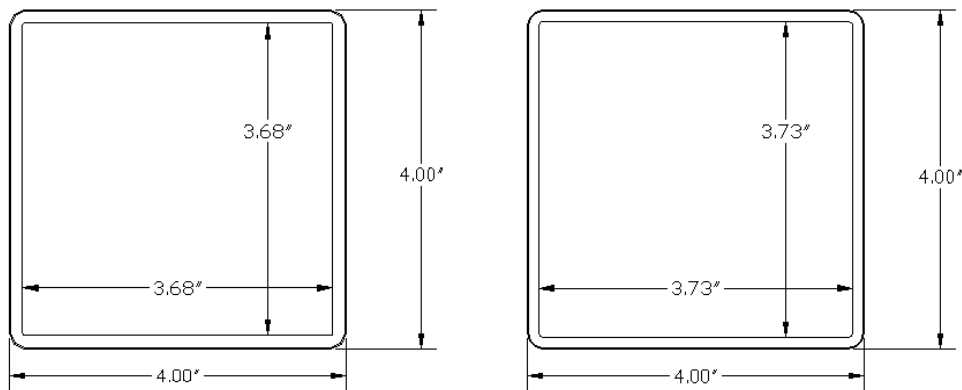
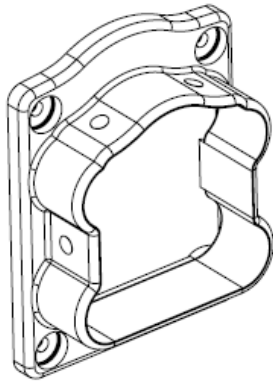
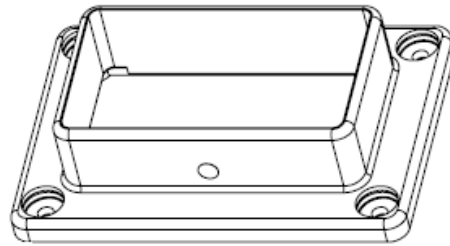


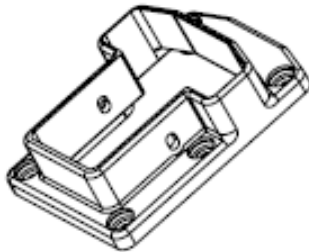
FIGURE 6 – POST SLEEVES



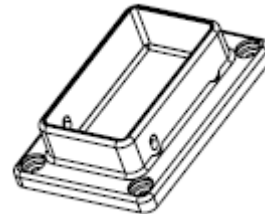
Regal Top Bracket



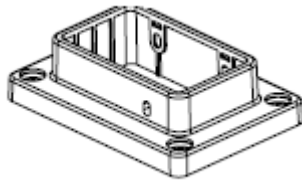
Regal Bottom Bracket



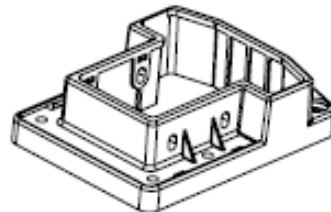
Conrad Top Bracket



*Whitman Top and Bottom Bracket
Conrad Bottom Bracket*

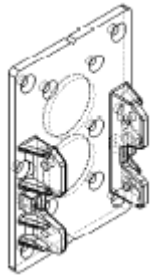


Deck Teck Bottom Bracket

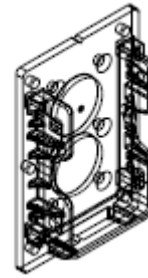


Deck Teck Top Bracket

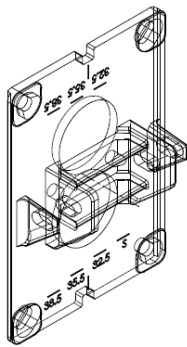
FIGURE 7 – BRACKETS



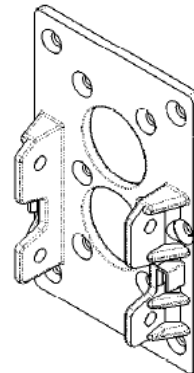
Potenza Top Bracket



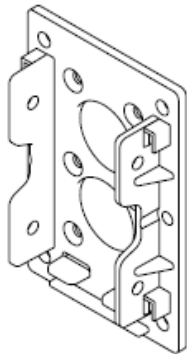
*Potenza Bottom Bracket
Genova Top and Bottom Bracket*



Majestic Top Bracket



Trustin Top Bracket



*Stanfield Top and Bottom Brackets
Trustin and Majestic Bottom Bracket*

FIGURE 7 – BRACKETS (CONTINUED)