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DIVISION: 05 00 00 - METALS
Section: 05 52 00 – Metal Railings

REPORT HOLDER:
Maine Ornamental, LLC
933 US Route 202
Greene, Maine 04236
www.maineornamental.com

REPORT SUBJECT:
ALX Contemporary Guardrail Systems

1.0 SCOPE OF EVALUATION

1.1 This Research Report addresses compliance with the following Codes:

- 2018, 2015 *International Building Code*® (IBC)
- 2018, 2015 *International Residential Code*® (IRC)

NOTE: This report references 2018 Code sections with [2015] Code sections shown in brackets where they differ.

1.2 The ALX Contemporary Guardrail Systems have been evaluated for the following properties (see Table 1):

- Structural Performance

1.3 The ALX Contemporary Guardrail Systems have been evaluated for the following uses (see Table 1):

- Guards or guardrails under the definitions of the referenced codes.
- Guardrail assemblies are provided as level guards for walking areas such as decks, balconies. Sloped guardrails are for open sides of stairways.

2.0 STATEMENT OF COMPLIANCE

The ALX Contemporary 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 Level guardrails are provided with rail lengths up to 96 inches in length and installed heights of 42 inches measured from the top of the upper rail to the walking surface. See Table 2 for lengths and configurations.

3.2 Stair guardrails are provided with rail lengths up to 76 inches along the sloping length between the inside of supports and an installed height of 42 measured vertically from the top of the upper rail to the leading edge of the stair tread or landing.

3.3 The ALX Contemporary Guardrail Systems are an assemblage of extruded aluminum top rails, bottom rails, brackets, balusters and posts.

3.4 The ALX Contemporary Guardrail top rails are round or rectangular extruded 6060-T6 aluminum. See Figures 1 and 2.

3.5 The ALX Contemporary Guardrail bottom rail is square extruded 6060-T6 aluminum. See Figure 3.

3.6 Zinc die-cast collar brackets for various configurations. See Figures 4-8.

3.7 Round and square extruded aluminum balusters fit into routings in the top and bottom rails. See Figure 9.

3.8 Posts consist of square aluminum extrusions welded to an aluminum base plate that is pre-drilled for anchoring to the supporting structure. See Figures 10 & 11.

3.8.1 The heavy wall post is a 2-1/2 inch square by 0.15 inch wall aluminum extrusion

3.8.2 The light wall post is a 2-1/2 inch square by 0.080 inch aluminum extrusion

3.8.3 Heavy and light posts are attached to a 5 inch x 5 inch x 3/8 inch thick aluminum base plate with a 1/4 inch continuous fillet weld.



3.8.4 The base plates have four 3/8 inch diameter holes for attachment to the deck surface.

4.0 PERFORMANCE CHARACTERISTICS

4.1 The guardrail system described in this report has demonstrated capacity to resist design loading specified in Chapter 16 of the IBC and Section R301 of the IRC when tested in accordance with ICC-ES AC 273.

5.0 INSTALLATION

5.1 The ALX Contemporary 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 Guardrails may be assembled in various configurations identified in Table 2. Refer to Table 3 for the fastening schedule of all system components.

5.3 Posts are anchored to with (4) 3/8” bolts of the type and size suitable for the construction type and condition of the supporting structure. See Section 6.3 under Conditions Of Use for additional requirements

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 Only those types of fasteners and fastening methods described in this report have been evaluated for the installation of ALX Contemporary Guardrail Systems. Other methods of attachment are outside the scope of this report.

6.3 Anchorage of the structural post is not within the scope of this report and is subject to evaluation and approval by the building official. Anchors must satisfy the design load requirements specified in Chapter 16 of the building code and must meet the following minimum requirements:

6.3.1 A minimum of four anchor bolts must be used and located in the four pre-drilled holes in the structural post base plate.

6.3.2 The anchors must have a minimum nominal diameter of 3/8 inch.

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

6.4 The ALX Contemporary Guardrail Systems are manufactured under an approved quality control system with third party inspections by Intertek.

7.0 SUPPORTING EVIDENCE

7.1 Drawings and installation instructions submitted by the manufacturer.

7.2 Reports of testing and engineering analysis demonstrating compliance with the performance requirements of Acceptance Criteria for Handrails and Guards ICC-ES AC 273, revised June 2017.

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

8.0 IDENTIFICATION

The ALX Contemporary Guardrail Systems are identified with the manufacturer’s name (Maine Ornamental, LLC), address and telephone number, the product name ALX Contemporary Guardrail Systems, when applicable “For Use in One-and Two Family Dwellings Only.”, the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-0280).





9.0 OTHER CODES

This section is not applicable.

10.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

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.

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

TABLE 1 - PROPERTIES EVALUATED

PROPERTY	2015 IBC SECTION	2018 IBC Section	2015 IRC SECTION	2018 IRC Section
Guardrail Structural Performance	1607.8.1	1607.8.1	Table R301.5	Table R301.5

TABLE 2: CODE OCCUPANCY CLASSIFICATION

GUARDRAIL TYPE	GUARDRAIL SYSTEM	BALUSTER	SUPPORT POST	CODE OCCUPANCY CLASSIFICATION
Level / In-Line Application	97 in by 42 in ALX Contemporary Round Railing	3/4 in Diameter Round Hollow Aluminum Baluster	Heavy Wall	IRC - One- and Two-Family Dwellings
	73 in by 42 in ALX Contemporary Rectangular Railing	3/4 in Square Hollow Aluminum Picket	Light Wall	
	93-1/2 in by 42 in ALX Contemporary Rectangular Railing	3/4 in Square Hollow Aluminum Picket	Heavy Wall	
Stair Application	75-1/2 in by 42 in by 38° ALX Contemporary Rectangular Railing	3/4 in Square Hollow Aluminum Picket	Heavy Wall or Light Wall	IBC - All Use Groups
	75-1/2 in by 42 in by 38° ALX Contemporary Round Railing	3/4 in Diameter Round Hollow Aluminum Baluster	Heavy Wall or Light Wall	

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TABLE 3: FASTENING SCHEDULE

Fastening Schedule - Level

CONNECTION	FASTENER ¹
Top Rail Bracket to Post	Two 1/4-14 x 1 in hex-head, self-drilling sheet metal screws
Top Rail Bracket to Rail	Four #8-18 x 1-1/2 in flat-head, machine screws
Bottom Rail Bracket to Post	Two 1/4-14 x 1 in hex-head, self-drilling sheet metal screws
Bottom Rail Bracket to Rail	Two #8-18 x 1-1/2 in flat-head, machine screws
Post to Substructure	Four 3/8 inch Grade 5 hex-head bolts with washer
Support Block / Nylon Connector to Bottom Rail	One #8-14 x 1 in flat head, machine screw

1. All fasteners are 300 series stainless steel.

Fastening Schedule - Stair

CONNECTION	FASTENER ¹
Top Rail Bracket to Post	Two #10-32 x 1 in flat-head, self-drilling sheet metal screws
Top Rail Bracket to Rail	Two #10-16 x 1 in pan-head, self-drilling sheet metal screws
Bottom Rail Bracket to Post	Two #10-32 x 1 in flat-head, self-drilling sheet metal screws
Bottom Rail Bracket to Rail	Two #10-16 x 1 in pan-head, self-drilling sheet metal screws
Swivel to Collar	1/4-28 x 1 in button head socket cap screw
Support Block / Nylon Connector to Bottom Rail	One #8-14 x 1 in flat head, machine screw

1. All fasteners are 300 series stainless steel.



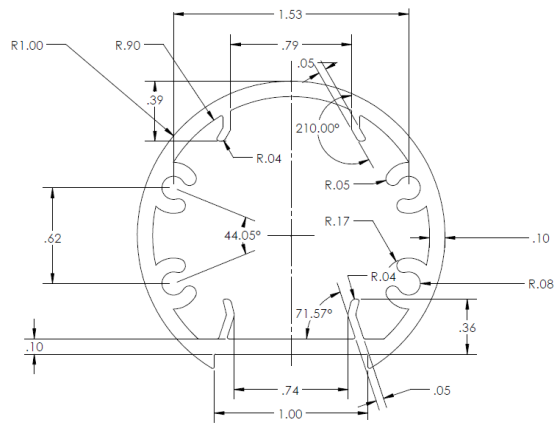


FIGURE 1 – ROUND TOP RAIL

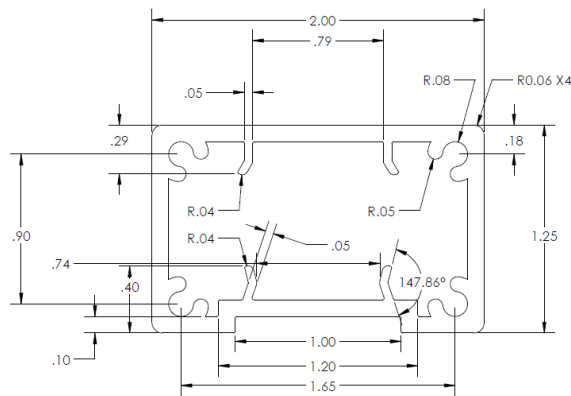


FIGURE 2 - RECTANGULAR TOP RAIL

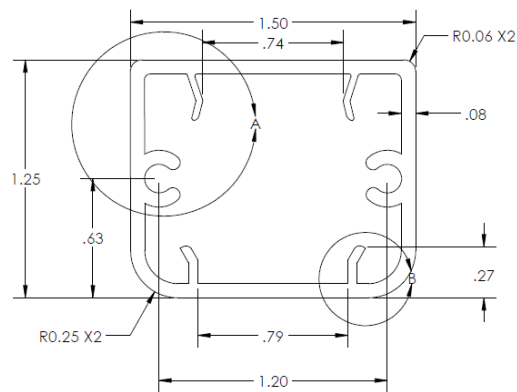


FIGURE 3 – SQUARE BOTTOM RAIL



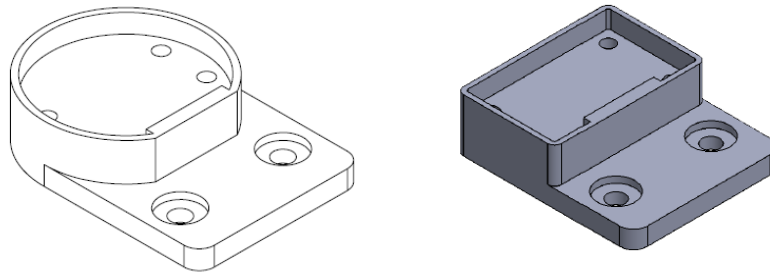


FIGURE 4 – LEVEL ROUND AND RECTANGULAR TOP RAIL BRACKETS

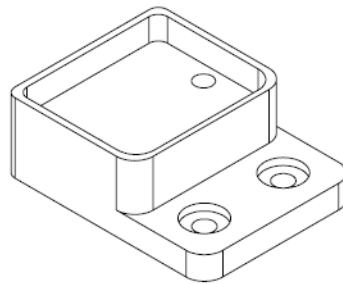


FIGURE 5 – LEVEL SQUARE BOTTOM LEVEL RAIL BRACKET

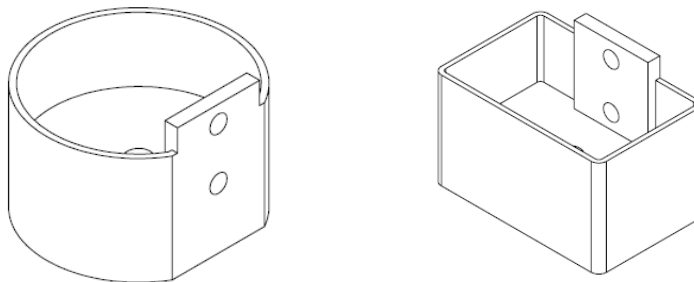


FIGURE 6 – STAIR TOP ROUND AND RECTANGULAR BRACKETS

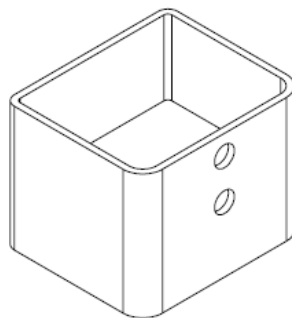


FIGURE 7 – STAIR BOTTOM BRACKET

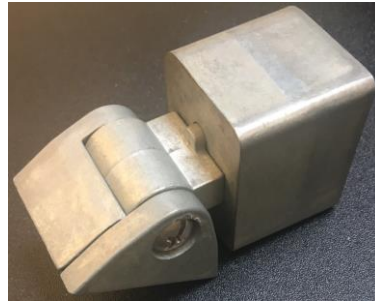
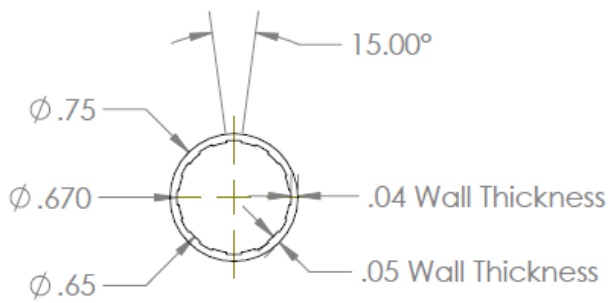
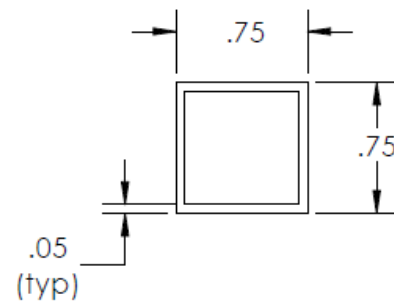


FIGURE 8 – TOP AND BOTTOM STAIR BRACKET ASSEMBLY

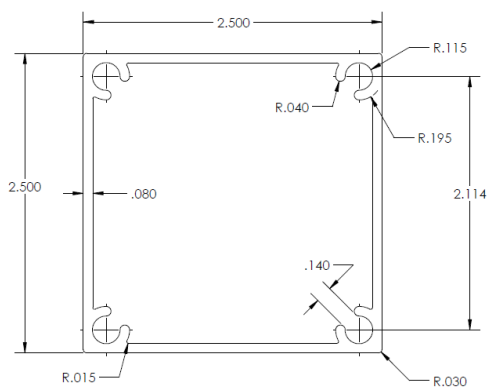


Classic Baluster Profile

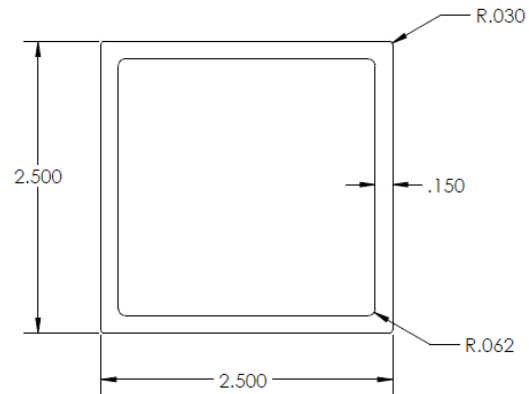


Estate Baluster Profile

FIGURE 9 – BALUSTERS



Light Wall Post



Heavy Wall Post

FIGURE 10 – SUPPORT POSTS

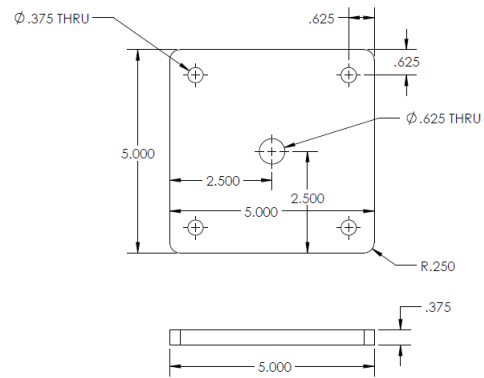


FIGURE 11 – SUPPORT POST BASE PLATE