Code Compliance Research Report
CCRR-0223

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Renewal Date: 06-30-2026

DIVISION: 05 50 00 - Metal Fabrications
Section: 05 52 00 - Metal Railings

REPORT HOLDER:
Ultra Aluminum Manufacturing, Inc.
2124 Grand Commerce Drive
Howell, MI 48855
(800) 656-4420

Additional Listee:

Absolute Distribution Inc.
2125 Broadway Street NE
Minneapolis, MN 55413
(612) 630-5010
www.AbsoluteDist.com

REPORT SUBJECT:

Ultra Aluminum Inc. Guardrail Systems
- **Ultra Rail - Franklin Profile**
- **Deck-Over™ - Franklin Aluminum Railing**
- **Ultra MAX Adams Railing**

Absolute Distribution Inc.
- **Dek Pro Prestige**
- **Ultra MAX Adams Railing**

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)
- 2017 *Florida Building Code* (See Section 9) *Including High Velocity Hurricane Zones (HVHZ)*

1.2. Guardrail systems have been evaluated for the following properties (see Table 1):
- Structural Performance

1.3. The *Ultra Rail, Deck-Over, Dek Pro Prestige, and Ultra MAX* railing systems have evaluated for the following uses:
- Guards or guardrails under the definitions of the referenced codes. It is intended for use at or near the open sides of elevated walking areas of buildings and walkways as required by the codes.
- Guards are provided as level guards for level walking areas such as decks, balconies, and porches.

2.0 STATEMENT OF COMPLIANCE

Aluminum guardrail systems recognized in this report 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 6.0

3.0 DESCRIPTION

3.1. Guard Assemblies - The level guards are provided with rail lengths up to 97-1/4 inches in length (measured between the inside of support posts) and an installed height of 42 inches. See Table 2 for qualified configurations.

3.2. Materials and Processes - The aluminum guardrail systems recognized in this report are an assemblage of extruded aluminum materials, extruded HDPE rail inserts and connectors, and stainless-steel fasteners. The systems are available in various colors and architectural grade powder coated finishes.

3.3. Components - The guardrail systems include a top rail, optional mid rail, bottom rail, vertical balusters, structural aluminum posts, rail-to-post brackets, bottom rail support blocks, decorative moldings and post caps.

3.4. The top, mid and bottom rails are connected to the aluminum posts via cast aluminum saddle brackets. See Table 3 for Fastening Schedule.

3.5. Rails

3.5.1. The *Ultra Rail* top rail system is composed of three pieces. The 6005-T5 aluminum Franklin gripping profile surface interlocks over the 6005-T5 aluminum Ultra Rail routed internal rail section. This internal section is configured to receive the third piece which is a HPDE rail insert with integral connectors that slides inside the Ultra Rail A profile and drops into routed holes for the connection of the balusters. The bottom rail utilizes the same Ultra Rail A profile with an aluminum snap cover which is simply inverted for connection of the balusters. See Figures 1 & 2.

3.5.2. The *Deck-Over* top rail is composed of three pieces. The 1-5/16 in high by 1-3/8 in wide profile, 6005-T5 routed aluminum extrusion rail with internal longitudinal ribs, the 6005-T5 aluminum extrusion top cap, and the HDPE rail insert for connection of the balusters. The top rail can be used separately, or a decking board may be attached to the top surface of the aluminum rail for aesthetic purposes. This same profile is inverted and used as the bottom rail for the *Deck-Over* rail system. See Figures 3 & 4.

3.5.3. The *Dek Pro Prestige* top un-routed rail is composed of a 6005-T5 Franklin gripping profile. The bottom rail utilizes a one-piece rail profile. See Figures 6 & 7.

3.5.4. The Ultra MAX Adams top rail is an extruded aluminum profile composed of 6005-T5. Both top and bottom rails utilize a one-piece rail profile. See Figure 8.

3.6. Balusters and connectors:

3.6.1. The infill area for all styles utilizes 6063-T6 aluminum balusters that are 3/4 inch square or 3/4 inch diameter round. See Figure 12.

3.6.2. The *DekPro Prestige and Ultra MAX* guardrails use a 0.66 in diameter by 0.69 in high HDPE connector that is attached to the top and bottom un-routed rails with stainless steel fasteners or aluminum rivets with a stainless-steel mandrel per the Table 3 Fastening Schedule.

3.6.3. The *Ultra Rail* and *Deck-Over* guardrails utilize a 1-1/8-inch-wide by 3/4 in high HDPE strip inserted into the *Ultra Rail* A top & inverted Rail A bottom routed rail profiles. The connectors on the HDPE strip drop through routed holes in the rail allowing the balusters to friction connect to the HDPE strip. See Figure 5 which shows the HDPE insert and its location in the routed aluminum railings.

3.6.4. The *Ultra MAX Adams* Rail balusters are secured to top rails with HDPE baluster plugs. Balusters are inserted into routed holes in the bottom rails. See Figure 11.

3.7. A bottom rail support block is composed of 3/4 inch square x 2-inch-long, hollow 6063-T6 aluminum, extrusion secured to the underside of the bottom rail with a stainless-steel fastener and secured to the deck surface with a cast aluminum collar bracket. See Figure 10 and Table 3 Fastening Schedule. The support block is located at mid-span.

3.8. Aluminum Posts:

3.8.1. The 2-inch-square by 0.125-inch-wall post is extruded 6005-T5 aluminum tube with internal screw slots. See Figure 16.

3.8.2. The 2-1/2-inch-square by 0.10-inch-wall residential post is extruded 6005-T5 aluminum tube with internal screw slots. See Figure 17.

3.8.3. The 3-inch-square by 0.125-inch-wall residential post is extruded 6005-T5 aluminum tube with four internal screw slots. See Figure 18.

3.8.4. The 3-inch-square by 0.125-inch-wall commercial post is extruded 6005-T5 aluminum tube with six internal screw slots. See Figure 19.

3.9. All aluminum components are factory powder coated in four different satin colors: Black, Bronze, Khaki and White.

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 both the IBC and Section R301 of the IRC when tested in accordance with ICC-ES AC273.

5.0 INSTALLATION

5.1. General:

The *Ultra Rail, Deck-Over, Dek Pro Prestige,* and *Ultra MAX* railing systems described in this Research Report 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. Application:

5.2.1. The *Ultra Rail*, *Deck-Over*, *Ultra MAX*, and *Dek Pro Prestige* railing systems top and bottom rails are attached directly to structural posts utilizing cast aluminum mounting brackets via mechanical fasteners. See Figures 13 to 15 and Table 3 Fastening Schedule.

5.2.2. Infill aluminum balusters are inserted onto 0.66-inch diameter HDPE plugs for the *Ultra MAX* and *Dek Pro Prestige* railing systems. See Figure 9. For the *Ultra Rail* and *Deck-Over* railing systems, the balusters are installed onto a 1-1/8-inch-wide by 3/4-inch-high HDPE strip inserted into the top and bottom routed rails. See Figure 5.

6.0 CONDITION 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. Attachment of guardrail systems described herein to conventional wood supports is 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 equal to 3/8 inch.

6.3.3. When the supporting structure is a wood-framed deck, installation must include anchorage to suitable structural framing. Decking is not considered structural framing, and anchorage to decking alone is not an approved installation method.

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

6.4. Where aluminum is in contact with dissimilar materials, direct contact between the aluminum and the other material shall be prevented by factory finish or a heavy coat of alkali-resistant bituminous paint or other coating providing the equivalent protection before installation.

6.5. Compatibility of fasteners and other metallic components with the supporting structure, including chemically treated wood, is outside the scope of this report.

6.6. Ultra Aluminum Manufacturing Inc. manufactures the *Ultra Rail, Deck-Over, DekPro Prestige,* and *Ultra MAX* railing systems in Howell, Michigan in accordance with an approved quality control system that includes independent third-party inspections by Intertek.

7.0 SUPPORTING EVIDENCE

7.1. Drawings and installation instructions submitted by Ultra Aluminum Manufacturing Inc.

7.2. Reports of testing demonstrating compliance with the performance requirements of ICC-ES AC273, Acceptance Criteria for Handrails and Guards, revised March 2016.

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

8.0 IDENTIFICATION

The *Ultra Rail, Deck-Over, Dek Pro Prestige,* and *Ultra MAX* railing systems described in this Research Report are identified by a marking bearing the Report Holder's or Additional Listee's name, the Intertek mark, and the Code Compliance Research Report number (CCRR-0223) and the following statement: "See CCRR-0223 at https://bpdirectory.intertek.com for uses and performance levels."

9.0 FLORIDA BUILDING CODE

9.1. Scope of Evaluation:

The aluminum guardrail systems recognized in this report were evaluated for compliance with the *Florida Building Code – Building* and *Florida Building Code – Residential.*

9.2. Conclusion:

The aluminum guardrail systems, described in Sections 2.0 through 7.0 of this Research Report, comply with the *Florida Building Code – Building* and *Florida Building Code – Residential*, including High Velocity Hurricane Zones (HVHZ).

Intertek is an approved evaluation entity and quality assurance entity pursuant to Florida Statute 553.842 – *Product Evaluation and Approval*.

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

TABLE 1 – PROPERTIES EVALUATED

PROPERTY	2015 AND 2012 IBC	2015 AND 2012 IRC	2017 FBC	2017 FBC-RESIDENTIAL
Structural Performance	1607.8	R301.5	1607.8	R301.5

TABLE 2 – CODE OCCUPANCY CLASSIFICATION

Guardrail System	Guardrail Type	Post	IBC(1)(2)	IRC(1)(3)
Ultra Rail	Level	2-1/2-inch	62-1/2 inch x 42 inch	97-1/4 inch x 36 inch
		3-inch Residential	92-1/2 inch x 42 inch	97-1/4 inch x 36 inch
Deck-Over	Level	2-inch	n/a	60-1/2 inch x 36 inch
		2-1/2-inch		
		3-inch Residential		
Ultra MAX Adams	Level	2-inch	61-7/16 inch x 42 inch	97-1/4 inch x 36 inch
		2-1/2-inch	62-1/2 inch x 42 inch	97-1/4 inch x 36 inch
		3-inch Residential	80-1/2 inch x 42 inch	97-1/4 inch x 36 inch
		3-inch Commercial	97-1/4 inch x 42 inch	97-1/4 inch x 36 inch
Dek Pro Prestige	Level	2-1/2-inch	62-1/2 inch x 42 inch	97-1/4 inch x 36 inch
		3-inch Residential	92-1/2 inch x 42 inch	97-1/4 inch x 36 inch

(1) Level rail lengths are maximum clear length between supports. Railing height is the minimum installed height from walking surface to top of top rail.

(2) All Use Groups

(3) One- and Two-Family Dwellings

TABLE 3 – FASTENING SCHEDULE

Connection	Fastener
Top / Bottom Rail Bracket to Post[1]	Two 1/4-20 x 1-inch flat-head, Type F thread cutting point, stainless steel[2] screws or Two 1/4-14 x 1-inch flat-head, self-drilling, stainless steel[2] screws
Top / Bottom Rail Bracket to Rail[1]	One 1/4-20 x 1-inch flat-head, Type F thread cutting point, stainless steel[2] screw or One 1/4-14 x 1-inch flat-head, self-drilling, stainless steel[2] screw
HDPE Baluster Plug to Top / Bottom Rail[1]	One #10-24 x 3/4-inch flat-head, Type F thread cutting point, stainless steel[2] screw or One 3/16-in-diameter aluminum body with steel mandrel blind rivet
Support Block to Bottom Rail	Slip fit onto HDPE baluster plug
Ultra MAX Baluster to Bottom Rail	Slip fit into routed hole
Ultra Max Support Block Baluster Plug to Bottom Rail	One #8-18 x 1-inch (0.117 in minor diameter) pan head, self-drilling, coated steel screw
Post to Substructure	Four 3/8-inch dia. anchor bolts. (See Section 6.3 for additional requirements)

[1] Pre-drilled 13/64-inch diameter

[2] 300 Series stainless steel

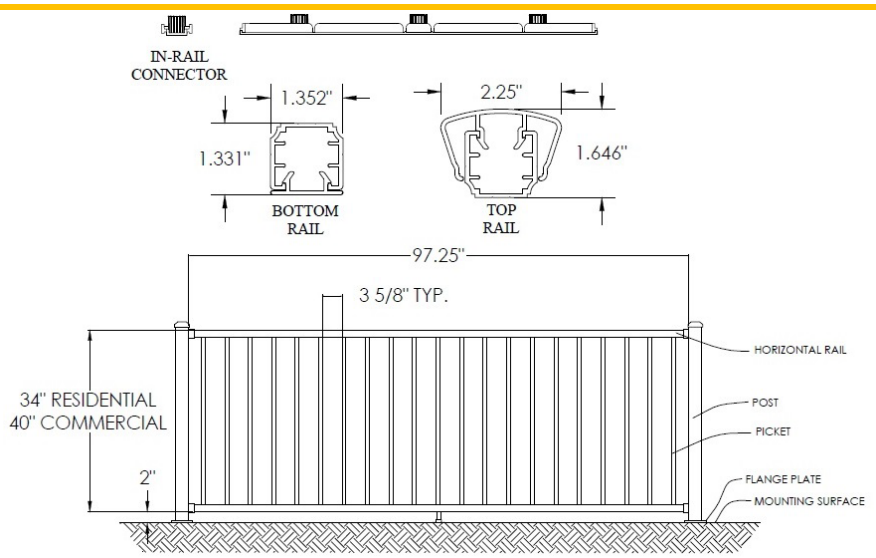


FIGURE 1 - ULTRA RAIL ALUMINUM TWO RAIL SYSTEM

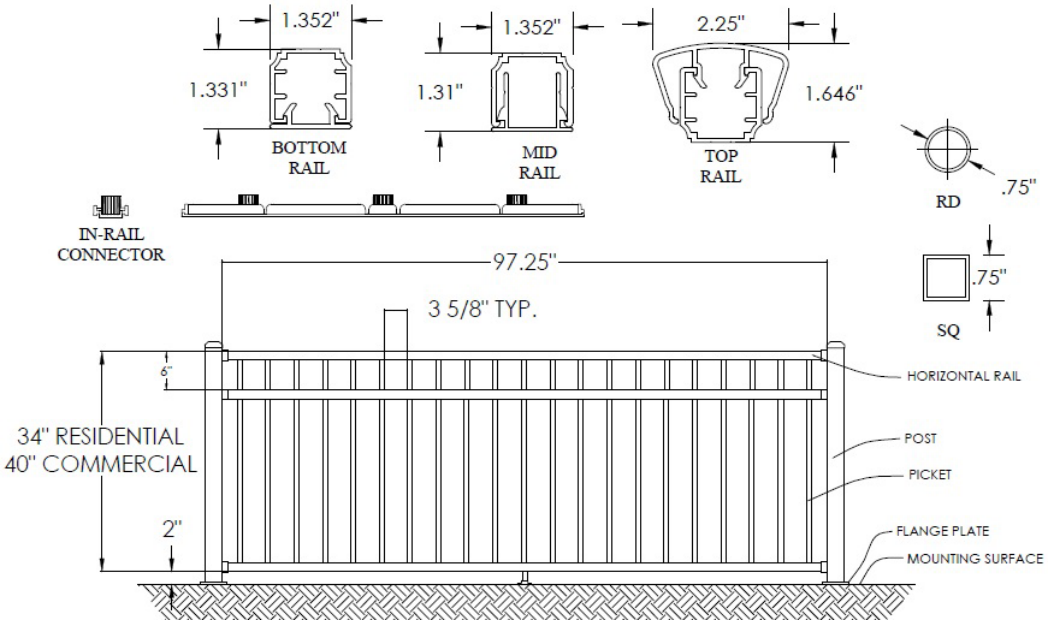


FIGURE 2 - ULTRA RAIL ALUMINUM THREE RAIL SYSTEM

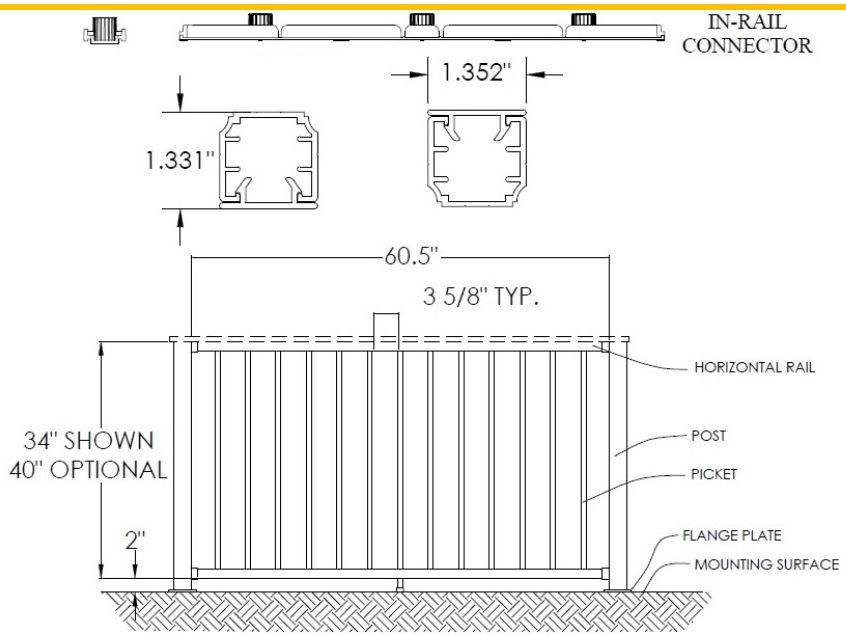


FIGURE 3 – DECK-OVER ALUMINUM TWO RAIL SYSTEM

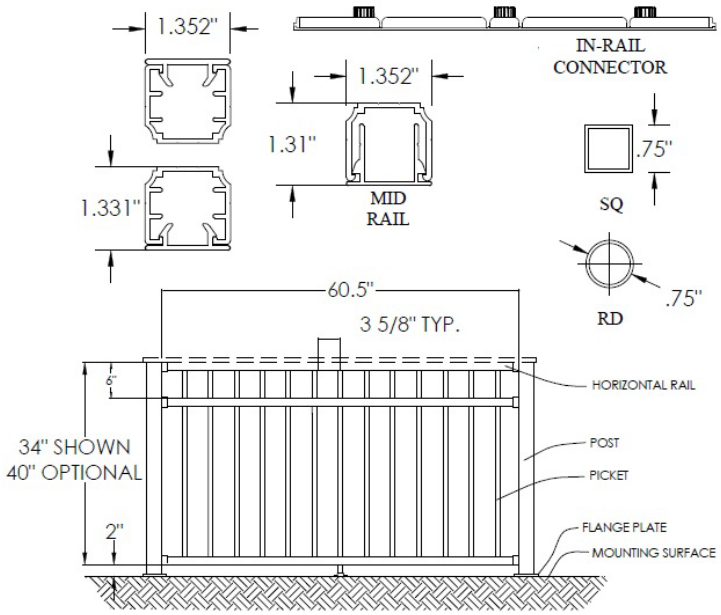


FIGURE 4 – DECK-OVER ALUMINUM THREE RAIL SYSTEM

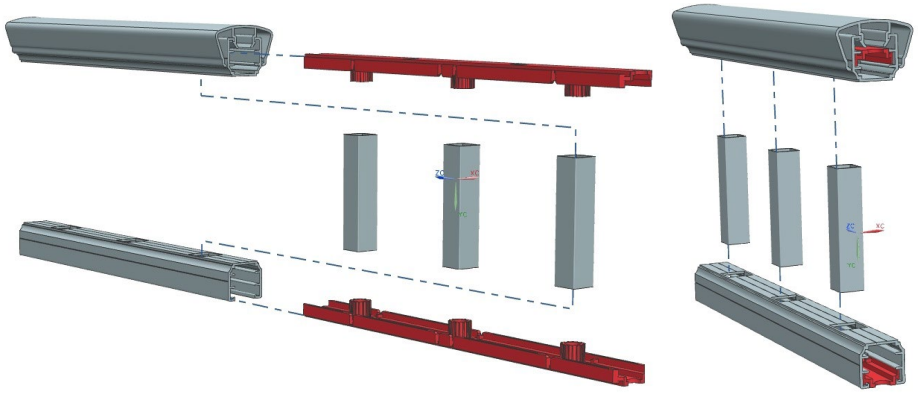


FIGURE 5 – ULTRA RAIL & DECK-OVER ALUMINUM RAILING SYSTEM
(with HDPE insert strip for baluster connections)

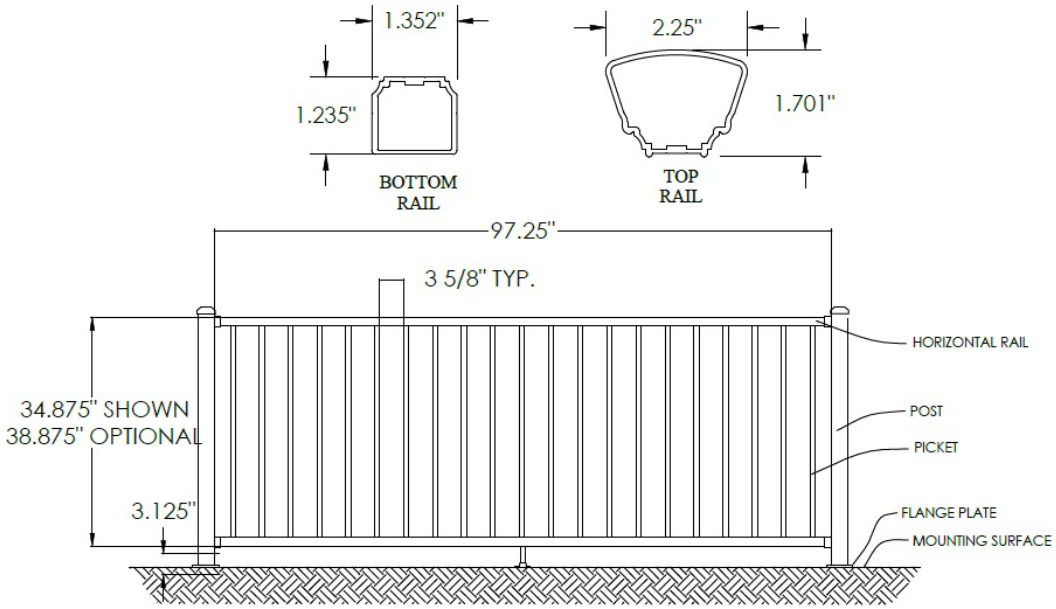


FIGURE 6 – DEK PRO PRESTIGE ALUMINUM TWO RAIL SYSTEM

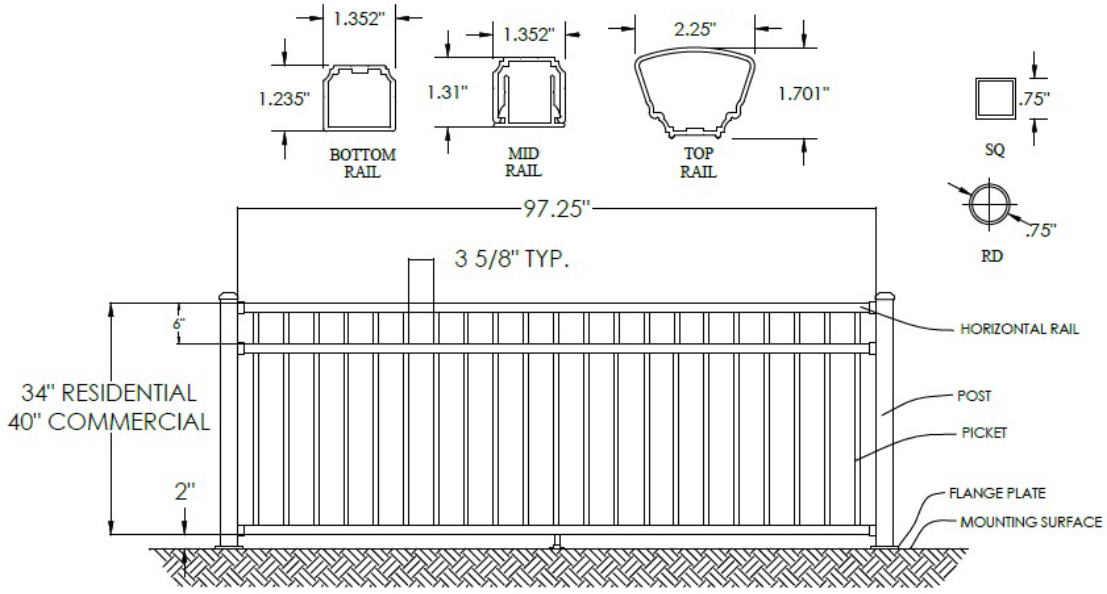
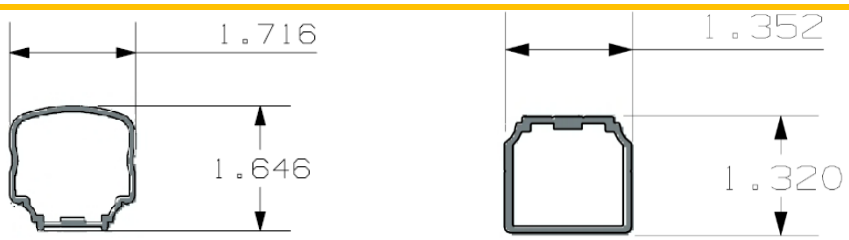


FIGURE 7 – DEK PRO PRESTIGE ALUMINUM THREE RAIL SYSTEM



TOP RAIL BOTTOM RAIL

FIGURE 8 – ULTRA MAX TOP AND BOTTOM RAIL PROFILES

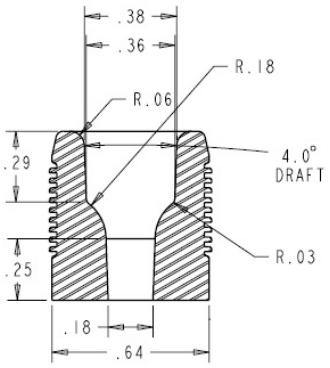


FIGURE 9 – HDPE CONNECTORS FOR ULTRA MAX & DEK PRO BALUSTERS

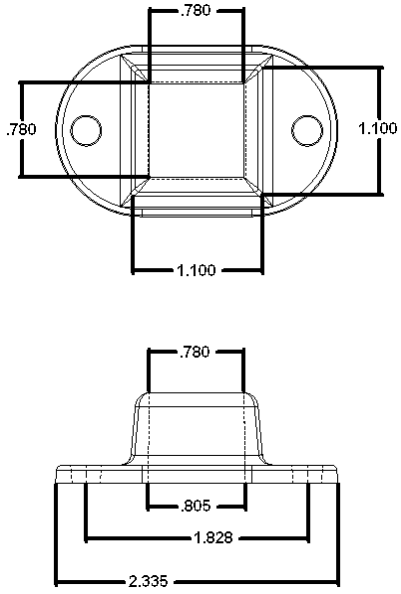


FIGURE 10 – BOTTOM RAIL FOOT BLOCK

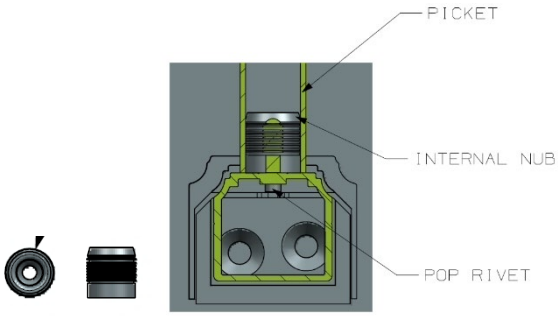
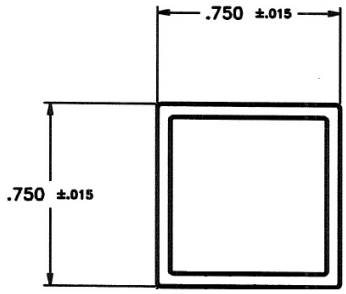
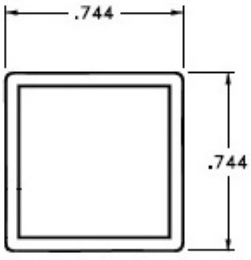


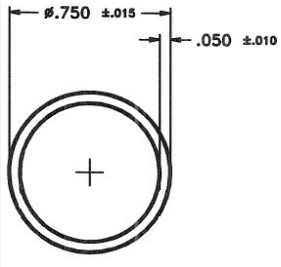
FIGURE 11 – ULTRA MAX PICKET CONNECTION WITH INTERNAL NUB



(0.05-inch wall)



(0.055-inch wall)



(0.05-inch wall)

Ultra Max Baluster

FIGURE 12 – ALUMINUM BALUSTERS

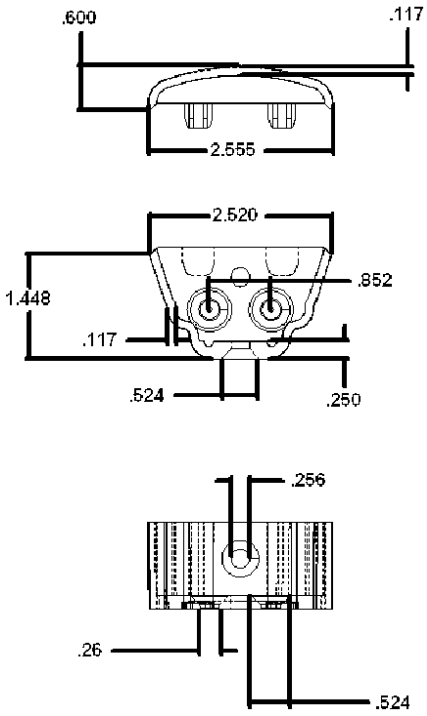


FIGURE 13 – Franklin Top Rail Bracket

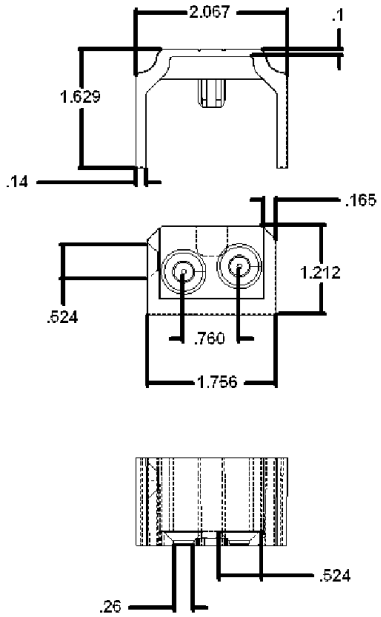


FIGURE 14 – DECK-OVER, MID-RAIL, OR BOTTOM RAIL BRACKET

Top Rail Bracket **Bottom Rail Bracket**

FIGURE 15 – ULTRA MAX BRACKETS

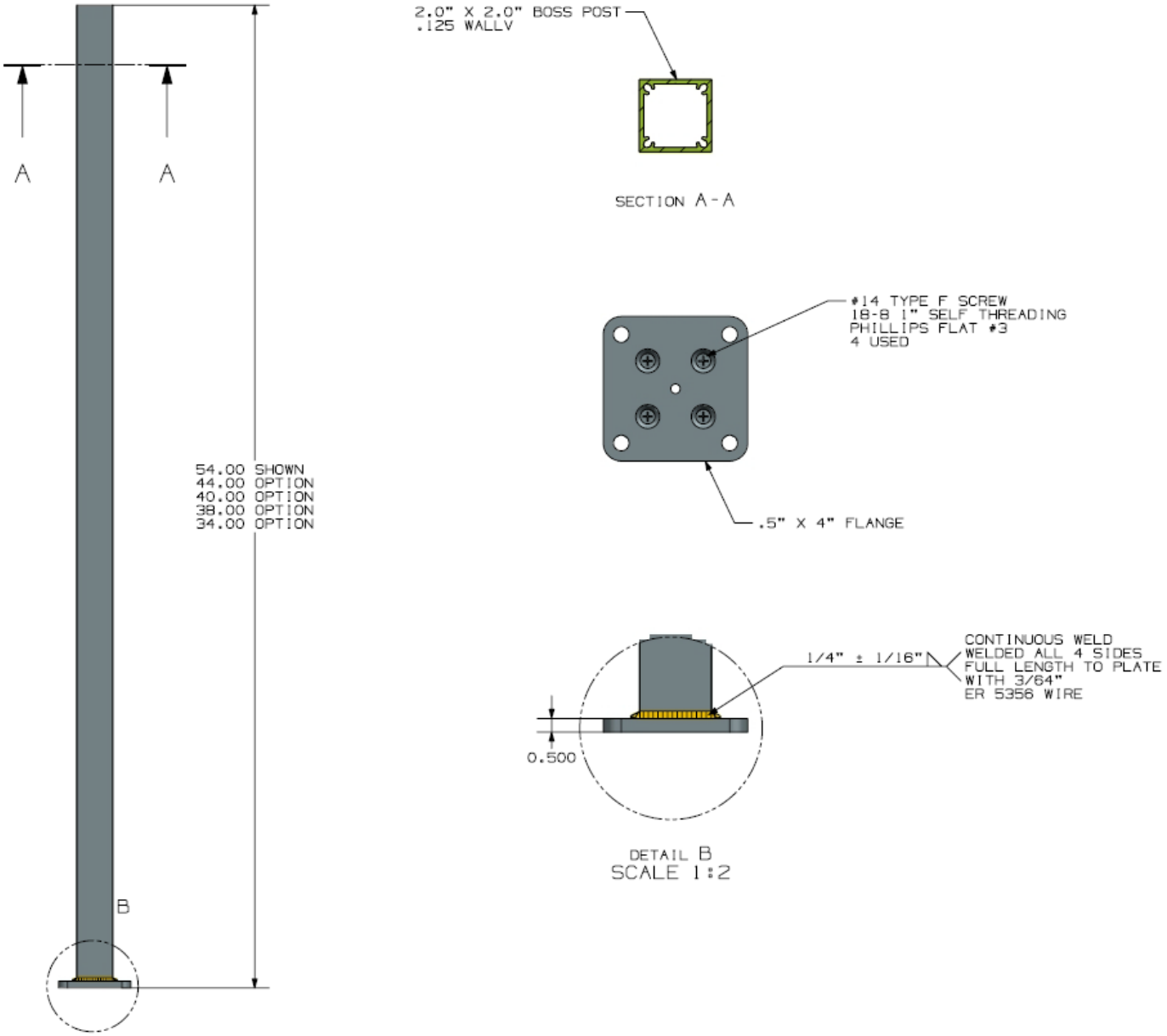


FIGURE 16 – 2-INCH POST

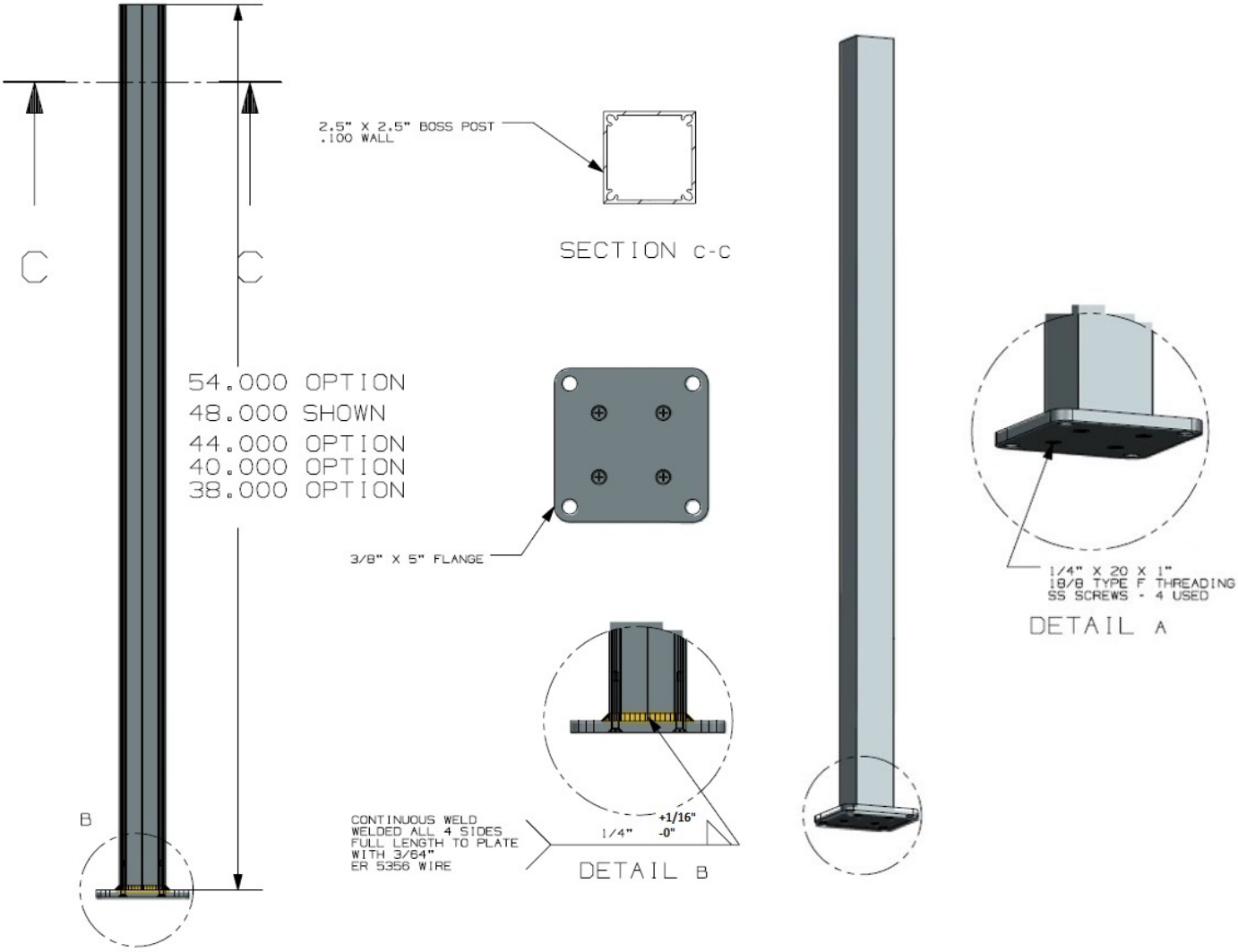


FIGURE 17 – 2-1/2-INCH POST

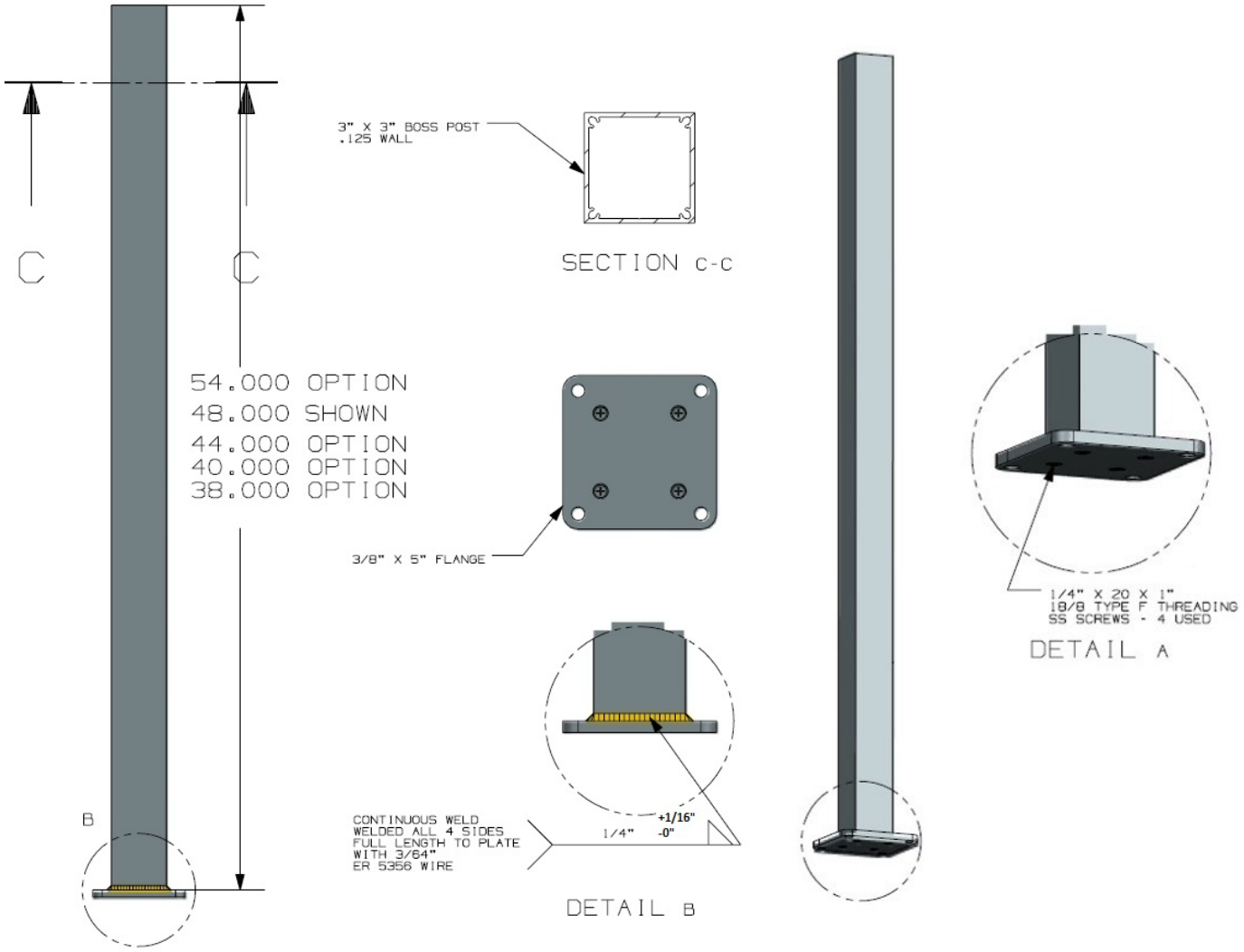


FIGURE 18 – 3-INCH RESIDENTIAL POST

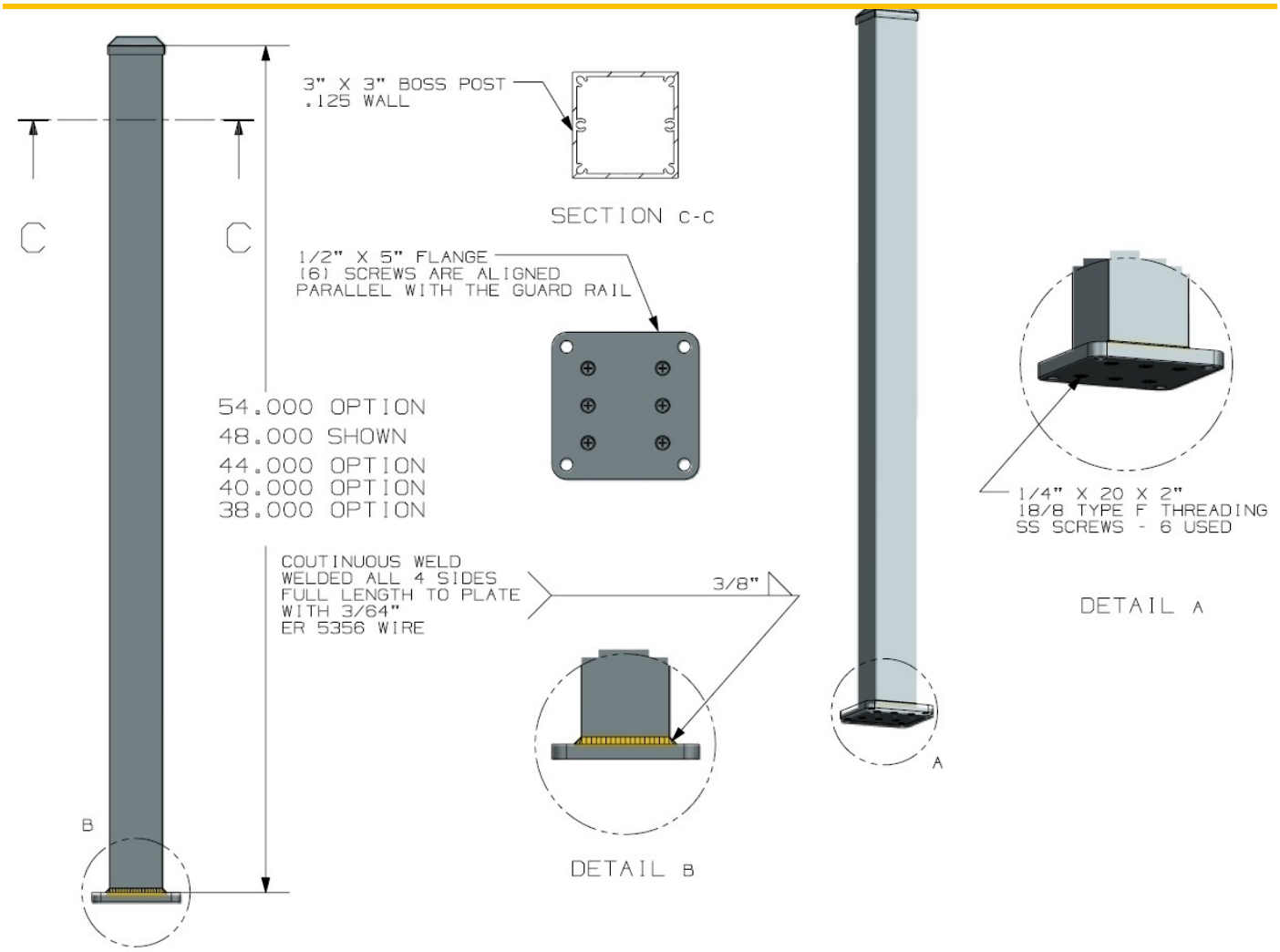


FIGURE 19 – 3-INCH COMMERCIAL POST