ICC-ES Evaluation Report

ESR-4954

Reissued March 2025

Subject to renewal March 2026

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2025 ICC Evaluation Service, LLC. All rights reserved.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES **Section: 06 50 00—Structural Plastics** **Section: 06 63 00—Plastic Railings**	**REPORT HOLDER: USA VINYL, LLC**	**EVALUATION SUBJECT: USA VINYL WXR AND CXR SERIES GUARDRAILS**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

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

Properties evaluated:

- Structural
- Durability
- Surface-burning characteristics

2.0 USES

The USA Vinyl WXR and CXR Series guardrails described in this evaluation report are limited to exterior use guardrails for balconies, porches, stairs and decks of buildings of Type V-B construction in accordance with the IBC and dwellings construction in accordance with the IRC.

3.0 DESCRIPTION

3.1 General:

The USA Vinyl WXR and CXR Series guardrail parts, top and bottom rails, balusters, are co-extruded using a polyvinyl chloride resin (PVC) and available in three colors, white, tan and khaki. The WXR and CXR Series guardrails are designed for a maximum installed height of 42-inches (1067 mm) above the walking surface when used in both IBC and IRC applications; and available with a maximum clear-span of 96-inches (2438 mm) or 120-inches (3048 mm) when measured between the interior faces of the posts. The top rails are strengthened with 0.065- inch (1.65 mm), 0.075-inch (1.91 mm) or 0.100-inch (2.54 mm) thick extruded aluminum rail reinforcement. The bottom rails are either supported by crush blocks or an aluminum rail reinforcement. The top and bottom rails are attached to the posts that are made of a 4-inch (101.6 mm) square wood posts covered with vinyl sleeve, using a specific bracket and stainless steel screws. The top and bottom rails are manufactured with pre-cut openings spaced at 4-inch (101.6 mm) on center to accommodate the vertical balusters that are placed tight-fit in the pre-cut openings in the rails. See Table 1 for the guardrail models, requirements for aluminum channels (reinforcements), brackets allowed, and the applicable code compliances. Figures 1 to 7 depict the specifications and requirements for guardrails and installation accessories.

3.2 Durability:

When subject to weathering, insect attack and other decaying elements, material used to manufacture the USA Vinyl WXR and CXR Series guardrails is equivalent to preservative-treated or naturally durable lumber when used in locations described in Section 2.0 of this report. The USA Vinyl WXR and CXR Series guardrails have been evaluated for structural performance when exposed to temperatures from -20°F (-29°C) to 125°F (52°C).

3.3 Surface-burning Characteristics:

When tested in accordance with ASTM E84, the USA Vinyl WXR and CXR Series guardrails have a flame-spread index of no greater than 200.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation of the USA Vinyl WXR and CXR Series guardrails must comply with this report and the manufacturer's published installation instructions. A copy of the manufacturer's published installation instructions must be available on the jobsite at all times during installation. When the manufacturer's published installation instructions differ from this report, this report governs.

4.2 Design:

The USA Vinyl WXR and CXR Series guardrails are satisfactory to resist the loads specified in Section 1607.8.1 of the 2015 and 2012 IBC and in Table R301.5 of the IRC, when installed at the maximum span noted in Table 2. The maximum span is the clear distance between the inside faces of the end posts. The post and post anchorage requirements are outside the scope of this report.

4.3 Installation:

The USA Vinyl WXR and CXR Series guardrails have been evaluated for installations between two 4-inch (101.6 mm) square wooden posts, covered with vinyl sleeves. The top and bottom rail assemblies are attached to the posts using mounting brackets (See Table 1) that are installed using bracket screws (See Table 2) installed through the composite post sleeve into the wooden posts. Each mounting bracket attaches to the top and bottom rail using self-drilling screws (See Table 2). The balusters are installed into the pre-cut openings of the top and bottom rails. Foot blocks, if used, are installed between the deck surface and the bottom surface of the bottom rail. The attachment of the posts to the deck structure must be adequate and is outside the scope of this report.

5.0 CONDITIONS OF USE:

The USA Vinyl WXR and CXR Series guardrails described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The USA Vinyl WXR and CXR Series guardrails described in this evaluation report are limited to exterior use guardrails for balconies, porches, stairs and decks of buildings of Type V-B construction in accordance with the IBC and dwellings construction in accordance with the IRC

5.2 Installation of the USA Vinyl WXR and CXR Series guardrails must comply with the applicable code, this evaluation report, and the manufacturer's approved installation instructions for the Classic Straight Railing, Classic Stair Railing, Premium Straight Railing, Premium Stair Railing and Premium Deck Board Railing. A copy of the manufacturer's approved Installation Instructions must be available at the jobsite.

5.3 All framing, including wood posts, beams, joists, stringers, and the associated connections needed to support the USA Vinyl, LLC guardrail systems are outside the scope of this evaluation report. All framing and the associated connections must follow applicable codes and be designed by a registered design professional. Stairway handrails must be designed and constructed in accordance with the applicable codes.

5.4 All USA Vinyl, LLC guardrails shall be fastened to wood framing in accordance with the bracket systems described in Table 1 and Figures 1 through 7, respectively. Crush blocks shall be fastened to the bottom rail and to 1-inch (25.4 mm) thick minimum treated lumber deck board using (2) #8 x 1-inch (25.4 mm) long stainless steel wood screws unless otherwise noted.

5.5 The pre-cut openings in the rails shall not be altered or made larger. The tight fit is important to the integrity of the assembly.

5.6 All USA Vinyl, LLC guardrails are produced by and USA Vinyl, LLC in Groveport, OH, under an approved quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Report of the railing system load testing in accordance with ASTM D7032.

Report of the ultraviolet resistance (UV) testing in accordance with ASTM 7032.

Report of the durability and flame spread testing in accordance with ASTM D7032 and ASTM E84, respectively.

USA Vinyl LLC's Railing Program Quality Control Manual.

7.0 IDENTIFICATION

7.1 The USA Vinyl guardrails must be identified by a stamp, on each individual component or on the packaging, bearing the report holder's name (USA Vinyl , LLC) and address, the guardrail model, the allowable span, and the ICC-ES evaluation report number (ESR-4954).

7.2 Each package of accessories for USA Vinyl guardrails must be labeled with the guardrail model and the ICC-ES evaluation report number (ESR-4954).

7.3 The report holder's contact information is the following:

USA VINYL, LLC
5795 GREEN POINTE DRIVE
GROVEPORT, OHIO 43125
888-743-3673
www.weatherables.com
sales@weatherables.com

TABLE 1—MODEL SPECIFIC CODE COMPLIANCE

Model Code[1,2]	2015		2012		Aluminum Channel Thickness in Top Rail Required (inch)	Aluminum Channel Thickness in Bottom Rail Required[4] (inch)	Brackets Allowed
	IRC	IBC	IRC	IBC			
WX R-T42-A8	X	X	X	X	Yes - 0.065 or 0.075	Yes - 0.065 or 0.075	LMT 1422-CM or 1520-WP
WX R-T42-A10	X	X[3]	X	X[3]	Yes - 0.075 or 0.100[6]	Yes - 0.065, 0 .075 or 0.100	LMT 1422-CM or 1520-WP
WX R-T42-C8	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WX R-T42-C10	X	X[3]	X	X[3]	Yes – 0.075" or 0.100[6]	No[4]	LMT 1422-CM or 1520-WP
WX R-T42-R8	X	X	X	X	Yes - 0.065 or 0.075	Yes - 0.065 or 0.075	LMT 1422-CM or 1520-WP
WX R-T42-R10	X	X[3]	X	X[3]	Yes - 0.075 or 0.100[6]	Yes - 0.065, 0 .075 or 0.100	LMT 1422-CM or 1520-WP
WX R-T42-S8	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WX R-T42-S10	X	X[3]	X	X[3]	Yes - 0.075" or 0.100[6]	No[4]	LMT 1422-CM or 1520-WP
WX R-R42-A8	X	X	X	X	Yes - 0.065 or 0.075	Yes - 0.065 or 0.075	LMT 1422-CM or 1520-WP
WX R-R42-A10	X	X	X	X	Yes - 0.100	Yes - 0.065, 0 .075 or 0.100	LMT 1422-CM
WX R-R42-C8	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WX R-R42-C10	X	X	X	X	Yes - 0.100	No[4]	LMT 1422-CM
WX R-R42-R8	X	X	X	X	Yes - 0.065 or 0.075	Yes - 0.065 or 0.075	LMT 1422-CM or 1520-WP
WX R-R42-R10	X	X	X	X	Yes - 0.100	Yes - 0.065, 0 .075 or 0.100	LMT 1422-CM
WX R-R42-S8	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WXR-R42-S10	X	X	X	X	Yes - 0.100	No[4]	LMT 1422-CM
WX R-R42-A8DB	X	X	X	X	Yes - 0.065 or 0.075	Yes - .065" or .075"	LMT 1422-CM or 1520-WP
WX R-R42-C8DB	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WX R-R42-R8DB	X	X	X	X	Yes - 0.065 or 0.075	Yes - 0.065 or 0.075	LMT 1422-CM or 1520-WP
WX R-R42-S8DB	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WX R-T42R3-S8	X	X	X	X	Yes - 0.065 or 0.075	No[4]	LMT 1422-CM or 1520-WP
WX R-T42R3-S10	X	X[3]	X	X[3]	Yes - 0.075 or 0.100[6]	No[4]	LMT 1422-CM or 1520-WP
CX R-R42-A8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1219
CX R-R42-C8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1219
CX R-R42-E8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1219
CX R-R42-R8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1219
CX R-R42-S8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1219
CX R-T42-A8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1182
CX R-T42-C8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1182
CX R-T42-E8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1182
CX R-T42-R8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1182
CX R-T42-S8	X		X		Yes - 0.075	No[4]	LMT 1422CM, 1520-WP or 1182

For **SI**: 1 inch = 25.4 mm and 1 foot = 304.8 mm.

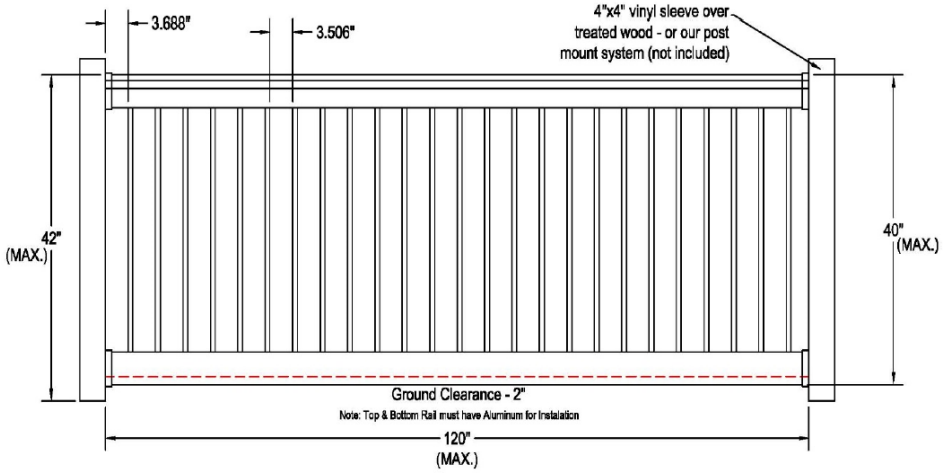
[1] All railings have been tested at a height of 42-inches (203 mm). Shorter railings may be installed at the same span length as long as local code requirements for railing height are met. The maximum allowable railing clear span is indicated by the last number in the model code (i.e. "8" = 8-feet (244 cm) clear span).
[2] The second letter in the model code (X) refers to the railing color and will be labeled as follows: W = White, T = Tan, or K = Khaki.
[3] Brackets must be installed with longer #10 x 2-inch (50.8 mm) stainless steel screws or as noted in Table 2 when using the 1520-WP bracket. These longer screws are not provided with railing kits and shall be purchased separately by the installer.
[4] Supplied foot blocks shall be installed for all cases where an aluminum channel is not used in the bottom rail. See the figures as denoted throughout this report for more details.
[5] For this profile, the 1422-CM bracket requires the use of the .065-inch (1.651 mm) aluminum top rail reinforcement when the span exceeds 8-feet (244 cm).
[6] Must use the 0.100-inch (2.54 mm) channel with the 1422-CM brackets for the 10 foot (304.8 cm) span.
[7] See Table 2 for fastening requirements

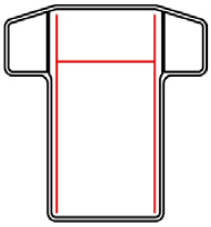
TABLE 2—GUARDRAIL FASTENING REQUIREMENTS

Rail Profile[1,2]	Maximum Span (ft.)	Connection	Bracket	Rail Reinforcement Thickness (in.)	Fastener	Qty*
WXR-R42-XX & WXR-T42-XX Series Guardrails	8	Bracket to Post	LMT 1422-CM	0.065	#10 x 1-1/2-inch Pan-head/Phillips self-drilling SS screws	4
		Bracket to Guardrail			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	2
		Bracket to Bottom Guardrail			#10 x 1" Pan-head/Phillips SS steel self-drilling screws	2
	10	Bracket to Post	LMT 1422-CM	0.100	#10 x 1-1/2-inch Pan-head/Phillips self-drilling SS screws	4
		Bracket to Guardrail			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	4
		Bracket to Bottom Rail			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	4
	8	Bracket to Post	1520-WP	0.075	#10 x 2-inch Pan-head/Phillips self-drilling SS screws**	4
		Bracket to Guardrail			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	4
		Bracket to Bottom Guardrail[4]			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	4
WXR-T42-X10	10	Bracket to Post	1520-WP	0.075	#10 x 2-inch Pan-head/Phillips self-Drilling SS screws**	4
		Bracket to Guardrail			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	4
		Bracket to Bottom Guardrail[4]			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	4
CXR-R42-XX & CXR-T42-XX Series Guardrails	8	Bracket to Post	LMT 1182 / 1219	0.075	#10 x 2-inch Pan-head/Phillips self-drilling SS screws**	6/4
		Bracket to Guardrail			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	2
		Bracket to Bottom Guardrail[4]			#10 x 1-inch Pan-head/Phillips SS steel self-drilling screws	2

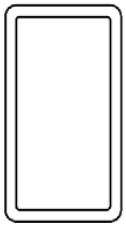
For **SI**: 1 inch = 25.4 mm and 1 foot = 304.8 mm

[1] Baluster options are not included and do not affect bracket fastening. See Table 1 for Baluster options.
[2] Rail profiles using "DB" or "R3" must follow fastening defined for the bracket and rail span desired, see Table 1.
[3] Brackets must be installed with longer #10 x 2-inch (50.8 mm) stainless steel screws or as noted in Table 2 when using the 1520-WP bracket. These longer screws are not provided with railing kits and shall be purchased separately by the installer.
* Per Bracket
** The #10 x 2-in fastener was used to the 10-feet (304.8 cm) length to for IBC use. The #10 x 1-1/2-inch (38.1 mm) can be used for anything under 10-foot (304.8 cm) spans.

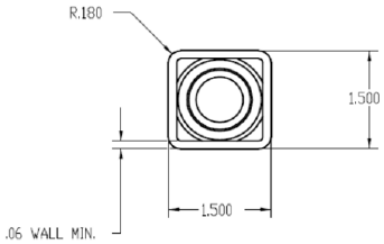




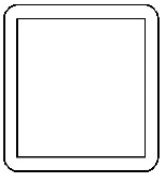
Top T-Rail with Aluminum Reinforcement



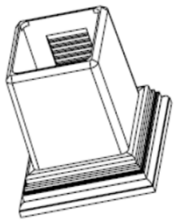
2" x 3.5" Vinyl Bottom Rail



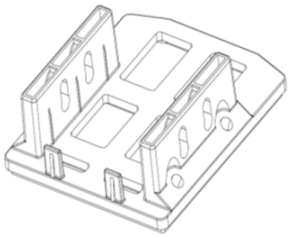
1.50" x 1.50" Thermo-Formed Spindle (No. 3005) (WXR-T42-C8/10)



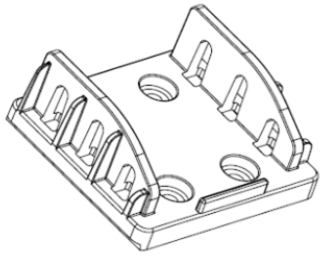
1.5" x 1.5" Co Extruded PVC Baluster (WXR-T42-S8/10)



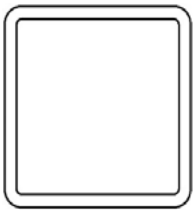
1.5" Foot Block



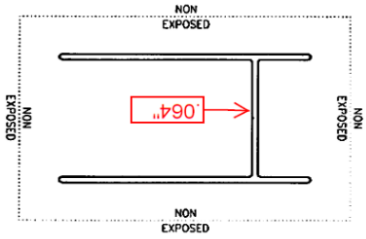
LMT Bracket 1520-WP



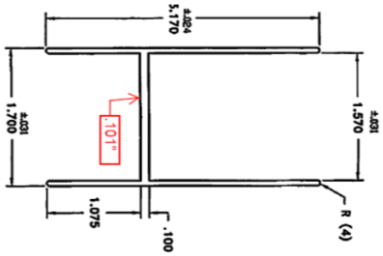
Alternative LMT Bracket 1422-CM



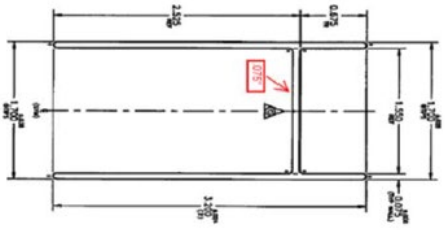
4" x 4" Co-Extruded PVC Plastic Sleeve



.065" Aluminum Reinforcement (1422-CM Bracket)

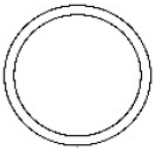


.100" Aluminum Reinforcement (1422-CM Bracket)

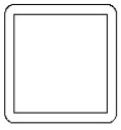


.075" Aluminum Reinforcement (1520-WP Bracket)

Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.

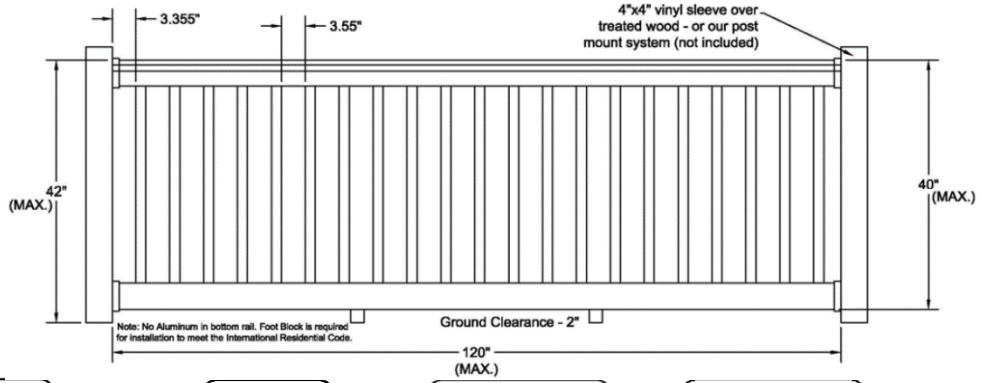


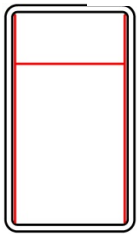
3/4" Round Aluminum Baluster (WXR-T42-R8/10)



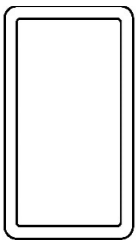
3/4" x 3/4" Suare Aluminum Baluster (WXR-T42-A8/10)

FIGURE 1—WXR-T42-A8(A10), WXR-T42-C8(C10), WXR-T42-R8(R10) & WXR-T42-S8(S10)

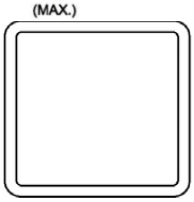




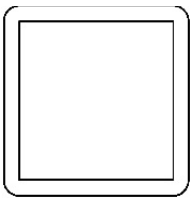
Top Rail with Aluminum Reinforcement



2" x 3.5" Bottom Rail



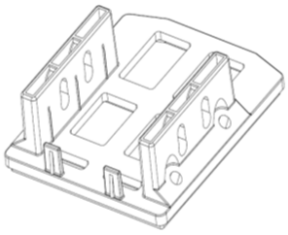
4" x 4" Vinyl Sleeve (Opt)



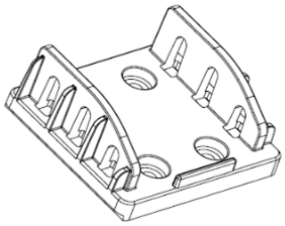
1.5" x 1.5" Co-Extruded PVC Baluster (WXR-R42-S8/10)



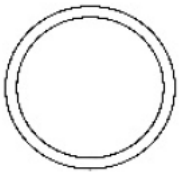
1.5" Footblock



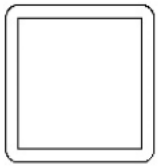
LMT Bracket 1520-WP



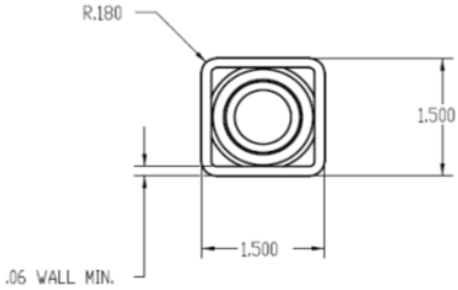
LMT Bracket 1422-CM



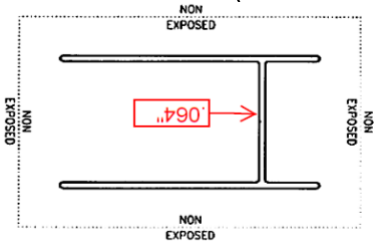
3/4" Aluminum Baluster (WXR-R42-R8/10)



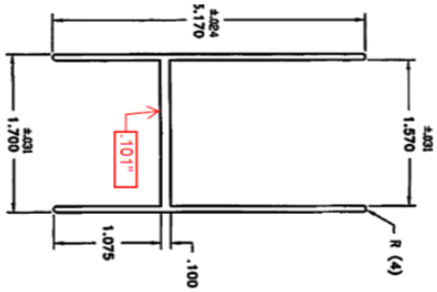
3/4" x 3/4" Suare Aluminum Baluster (WXR-R42-A8/10)



1.50" x 1.50" Thermo-Formed Spindle (No. 3005) (WXR-R42-C8/10)

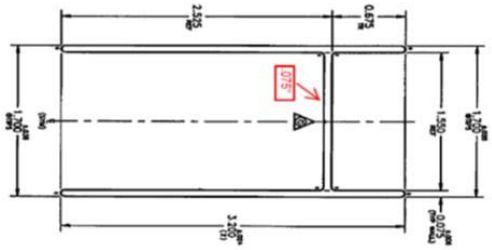


.065" Aluminum Reinforcement (1422-CM Bracket) WXR-R42-S8



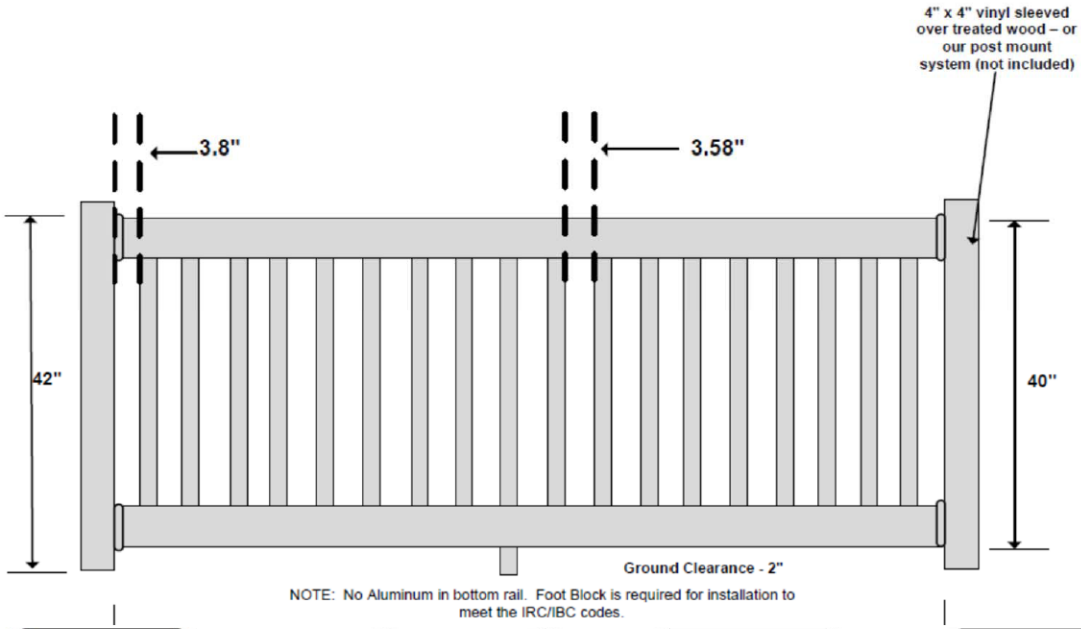
.100" Aluminum Reinforcement (1422-CM Bracket) WXR-R42-S10

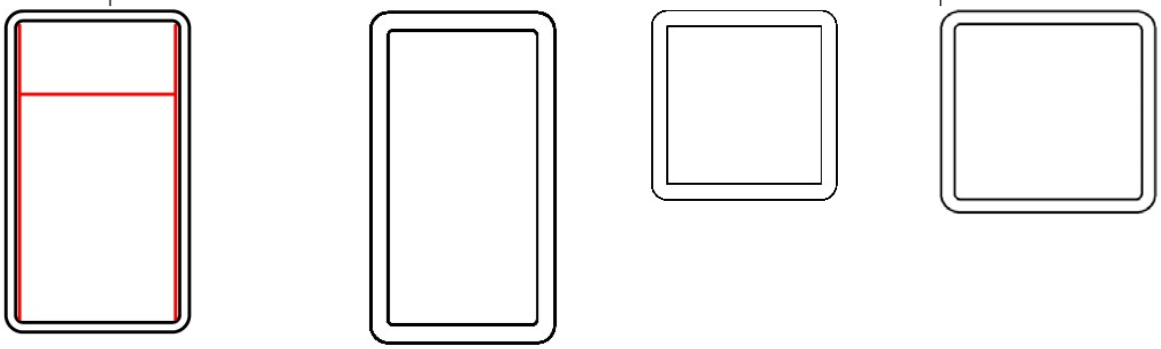
Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.



.075" Aluminum Reinforcement (1520-WP Bracket) (WXR-R42-R10)

FIGURE 2—WXR-R42-A8(10), WXR-R42-C8(10), WXR-R42-R8(10), WXR-R42-S8(10)



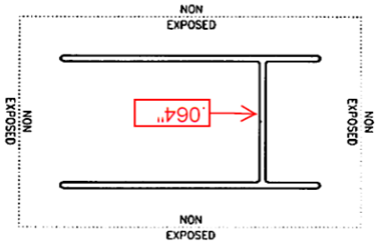


Top Rail w/Aluminum Reinforcement

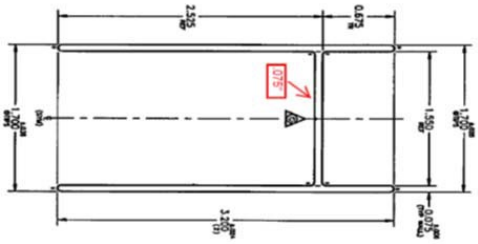
2" x 3.5" Bottom Rail

1.5" x 1.5" Co-Extruded PVC Baluster (WXR-R42-S8DB)

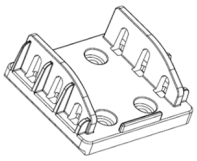
4" x 4" Vinyl Sleeve (Opt)



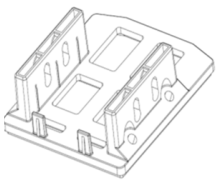
.065" Aluminum Reinforcement (1422-CM Bracket)



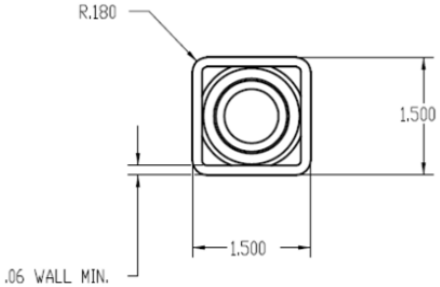
.075" Aluminum Reinforcement (1520-WP Bracket)



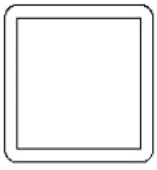
LMT Bracket 1422-CM



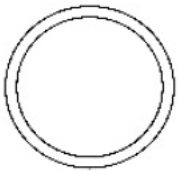
LMT Bracket 1520-WP



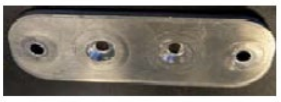
1.50" x 1.50" Thermo-Formed Spindle (No. 3005) (WXR-R42-C8DB)



3/4" x 3/4" Suare Aluminum Baluster (WXR-R42-A8DB)



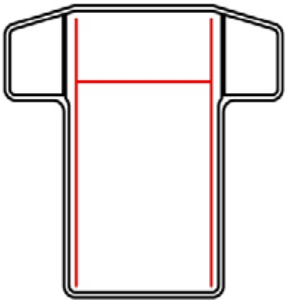
3/4" Aluminum Baluster (WXR-R42-R8DB)



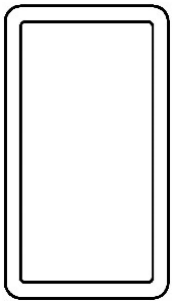
Deck Board Clip

Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.

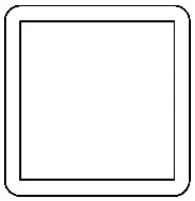
FIGURE 3—WXR-R42-A8DB, WXR-R42-C8DB, WXR-R42-R8DB, WXR-R42-S8DB



Top Rail w/Aluminum Reinforcement



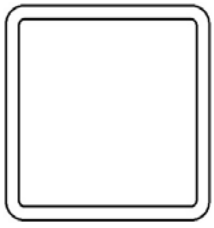
Middle & Bottom Rail



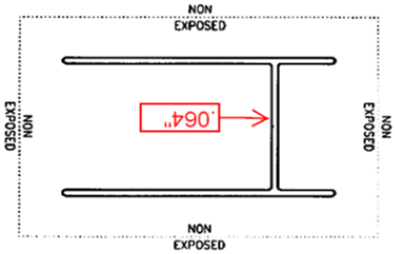
1.5" x 1.5" Co-Extruded PVC Baluster



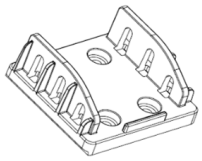
1.5" Footblock



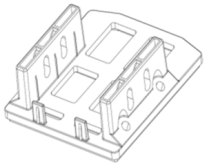
4" x 4" Vinyl Sleeve (OPT)



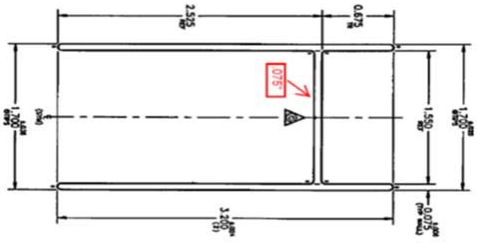
.065" Aluminum Reinforcement (1422-CM Bracket) 8-FT



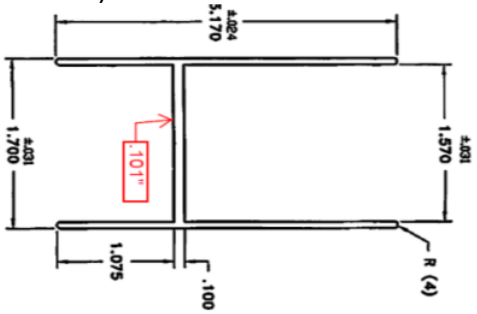
Alternative LMT Bracket 1422-CM



LMT Bracket 1520-WP



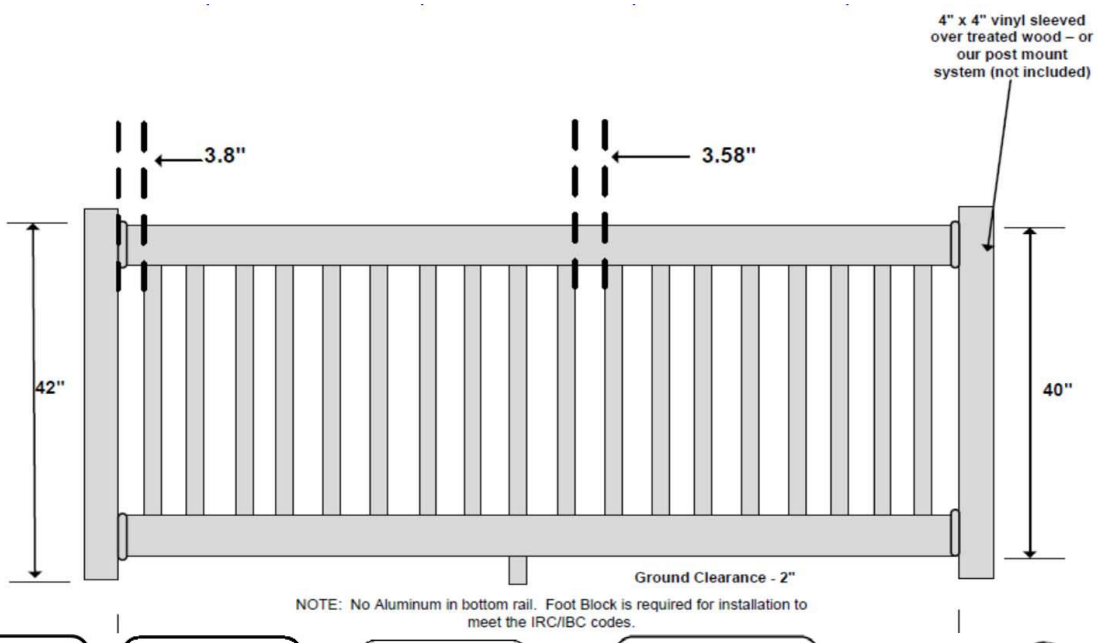
.075" Aluminum Reinforcement (1520-WP Bracket)

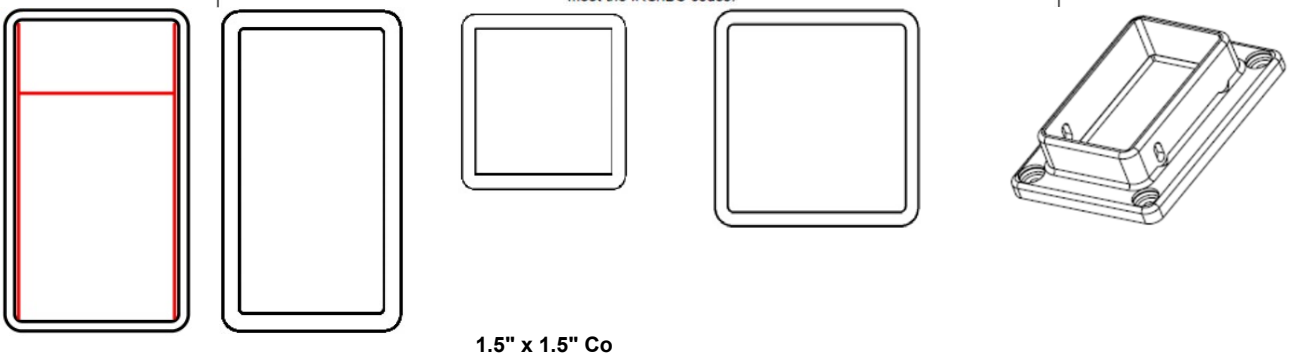


.100" Aluminum Reinforcement (1422-CM Bracket) 10-FT

Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.

FIGURE 4—WXR-T42R3-S8, WXR-T42R3-S10





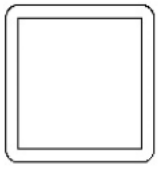
Top Rail w/Aluminum Reinforcement

Bottom Rail

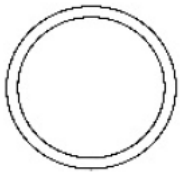
1.5" x 1.5" Co Extruded PVC Baluster (CXR-R42-S8)

4" x 4" Vinyl Sleeve (OPT)

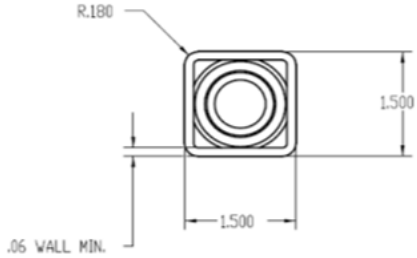
Top/Bottom Rail Bracket (LMT 1182)



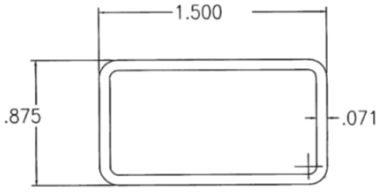
3/4" x 3/4" Suare Aluminum Baluster (CXRR42-A8)



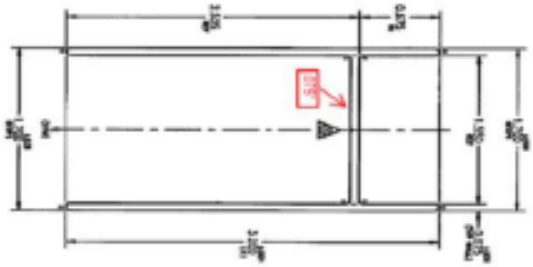
3/4" Aluminum Baluster (CXR-R42-R8)



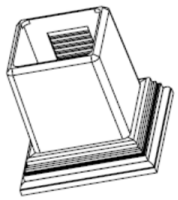
1.50" x 1.50" Thermo-Formed Spindle (No. 3005) (CXR-R42-C8)



.875 x 1.5" Baluster (CXR-R42-E8)



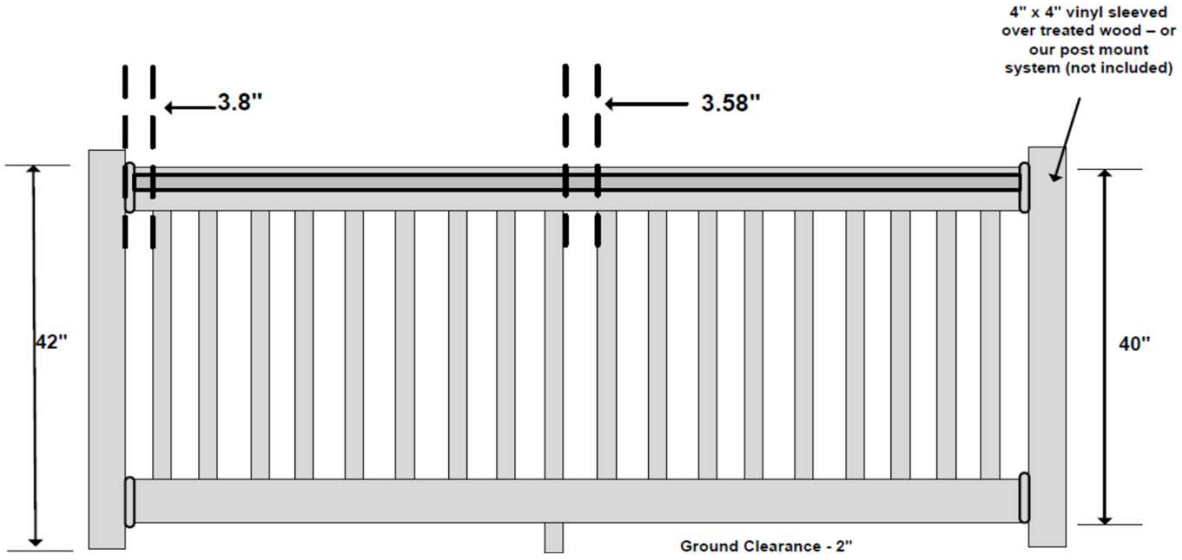
.075" Aluminum Top Rail Reinforcement

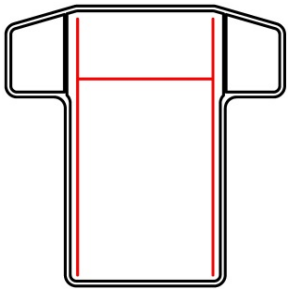


1.5" Footblock

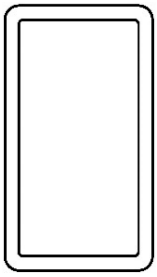
Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.

FIGURE 5—CXR-R42-A8, CXR-R42-C8, CXR-R42-E8, CXR-R42-R8, CXR-R42-S8

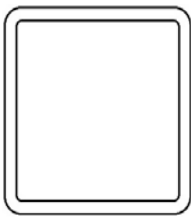




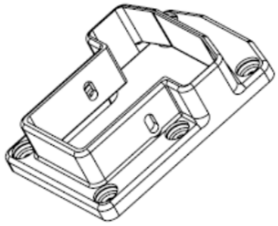
T-Rail w/Aluminum Reinforcement



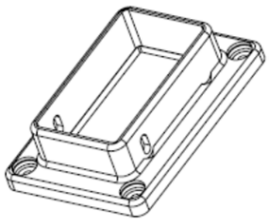
Bottom Rail



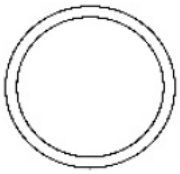
4" x 4" Vinyl Sleeve (Opt)



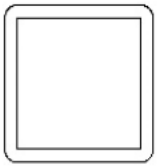
Top Rail Bracket



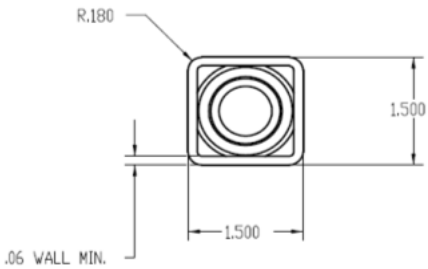
Top/Bottom Rail Bracket



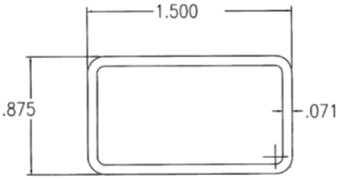
3/4" Aluminum Baluster (CXR-T42-R8)



3/4" x 3/4" Suare Aluminum Baluster (CXR-T42-A8)



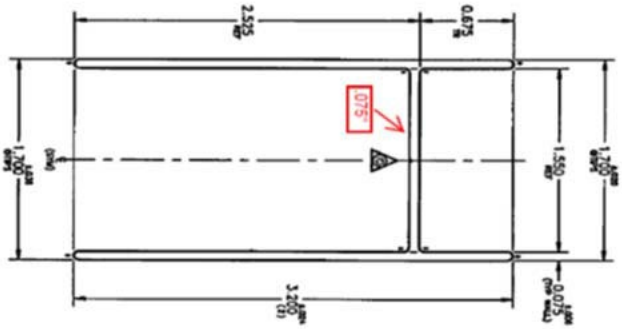
1.50" x 1.50" Thermo-Formed Spindle (No. 3005) (CXR-T42-C8)



.875 x 1.5" Baluster (CXR-T42-E8)



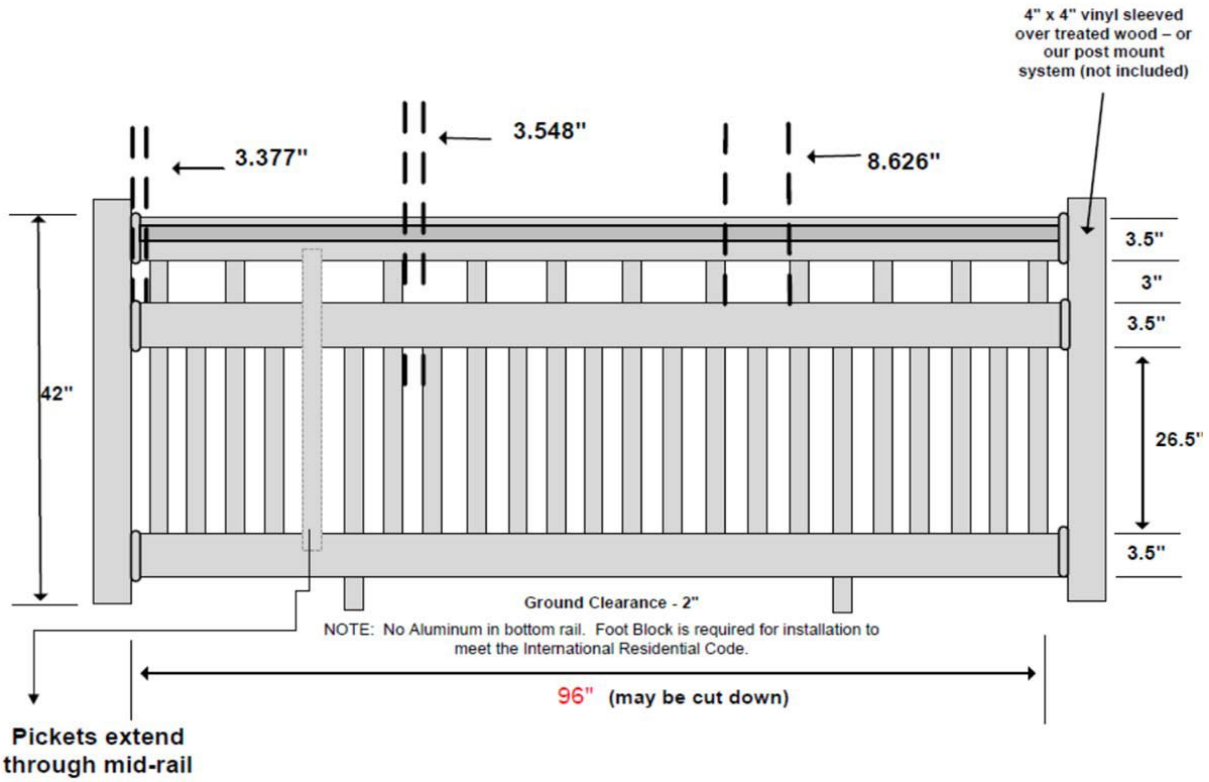
1.5" Footblock

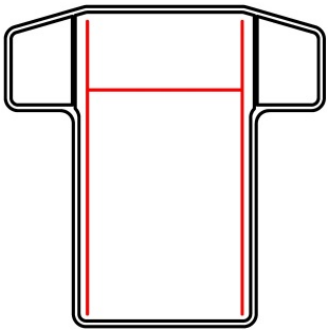


.075" Aluminum Top Rail Reinforcement

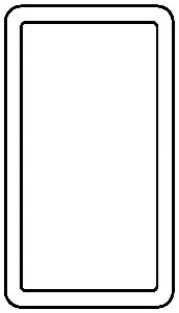
Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.

FIGURE 6—CXR-T42-A8, CXR-T42-C8, CXR-T42-E8, CXR-T42-R8, CXR-T42-S8

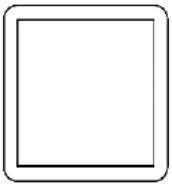




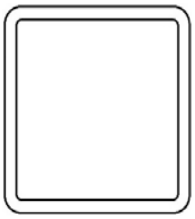
Top Rail w/Aluminum Reinforcement



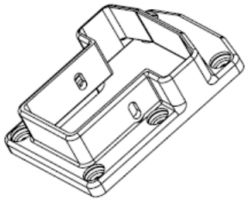
Middle & Bottom Rail



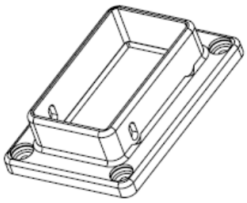
1.5" x 1.5" Co-Extruded PVC Baluster



4" x 4" Vinyl Sleeve (OPT)



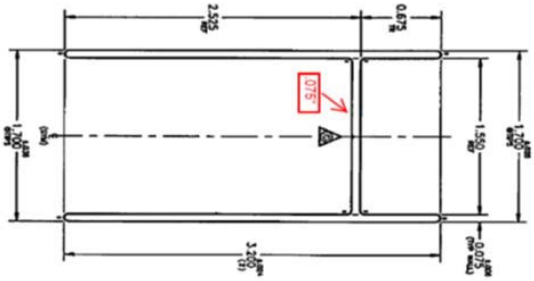
Top Rail Bracket (LMT 1182)



Top/Bottom Rail Bracket (LMT 1219)



1.5" Footblock



.075" Aluminum Reinforcement

Note: CAD's will be different per the different railing styles, since the measurements and spacing are all different for each baluster style.

FIGURE 7—CXR-T42R3-S8