

USA Vinyl LLC

TEST REPORT

SCOPE OF WORK

CXR-AR42-A8 Aluminum Railing System

REPORT NUMBER

200115007SHF-001

TEST DATE(S)

2020-01-15 - 2020-03-11

ISSUE DATE

2020-03-11

PAGES

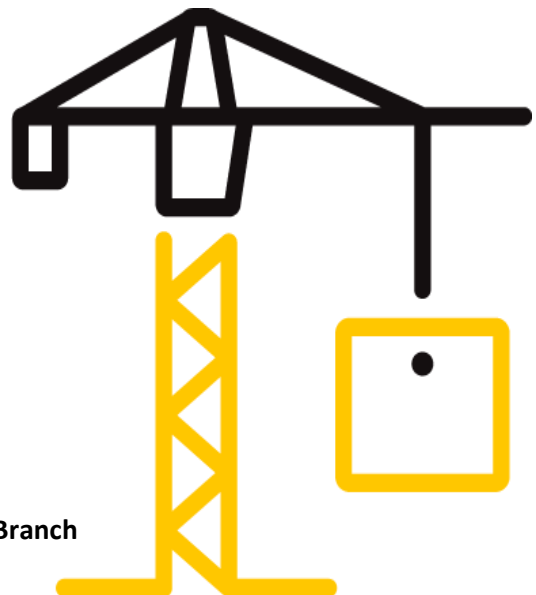
14

DOCUMENT CONTROL NUMBER

LFT-APAC-SHF-OP-10k(May 1, 2019)

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Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch



Test Report

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Test Report

Issue Date: 2020-03-11 Intertek Report No. 200115007SHF-001
 Applicant: USA Vinyl LLC
 Address: 5795 Green Pointe Drive S Groveport , OH 43125
 Attn: Brad Halley
 Test Type : Performance test, samples provided by the applicant.

Product Information

Product Name	CXR-AR42-A8 Aluminum Railing System	Brand	Multiple Brands
Sample Description	Good Condition	Sample Amount	3 Sets
		Received Date	2020-01-13
Sample ID	Model	Specification	
S200115007SHF.001~003	CXR-AR42-A8	8'x42"	

Test Methods And Standards

Test Standard	ICC-ES AC 273 Approved February 2008 (Editorially revised March 2016), Section 4.2.2, 4.2.3, 4.2.4
Specification Standard	ICC-ES AC 273 Approved February 2008 (Editorially revised March 2016), Section 4.2.2, 4.2.3, 4.2.4
Test Conclusion	The samples were tested according to the above standards, and the results are shown in the following page.

Note:


1.This report relates specifically to the sample(s) that were drawn and provided by the applicant or their nominated third party. The reported result(s) provide no warranty or verification on the sample(s) representing any specific goods and/or shipment and only relate to the sample(s) as received and tested.

Test Conclusion

The samples were tested according to the above standards, and the results are shown in the following page. In conclusion, this product up to 42" high x 8' wide meets 2015 IBC All Use Groups (section 1607.87.1)

Report Authorized

Daniel Zhang *Jackie Zhou*
 Name: Daniel Zhang Name: Jackie Zhou
 Title: Reviewer Title: Project Engineer



Test Report

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Test Items, Method and Results:

Test Items	Test Method	Test Result	Requirement	Verdict
In-fill load test	ICC-ES AC 273 Approved February 2008 (Editorially revised March 2016), Section 4.2.2	Withstood load equal to 125 lbf (556 N) without failure after load at three positions. Position 1: Center of middle two pickets; Position 2: Left of top two pickets; Position 3: Right of bottom two pickets.	The test specimen shall be capable of satisfactorily resisting a load of 125 lbf (556 N) applied over a one-square foot area. After test, there shall be no failure, nor evidence of disengagement of any component, nor visible cracks in any component.	Pass

Note:

1. Reference to IBC 2015 section 1607.8.1

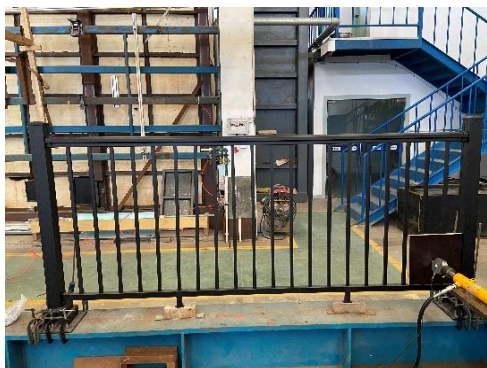
Test Photo:



In-fill load position 1



In-fill load position 2



In-fill load position 3

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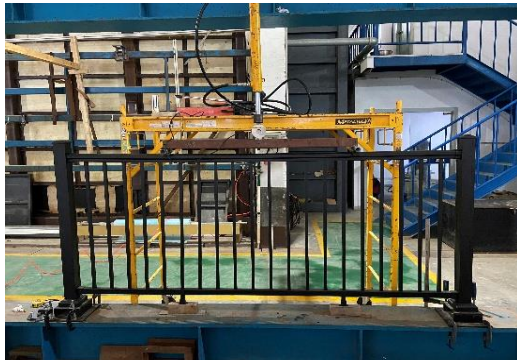
Test Items, Method and Results:

Test Items	Test Method	Test Result	Requirement	Verdict
Uniform load test	ICC-ES AC 273 Approved February 2008 (Editorially revised March 2016), Section 4.2.3	Withstood load equal to 125 plf (1825 N/m) without failure. Loads were applied vertically and in an outward direction at an angle of 45 degrees from horizontal.	<p>The top rail of the guard and handrail test specimens shall be subjected to a single test where a maximum uniform load of 125 plf (1825 N/m) is applied vertically and in an outward direction at an angle of 45 degrees from horizontal.</p> <p>After test, there shall be no failure, nor evidence of disengagement of any component, nor visible cracks in any component.</p>	Pass

Note:

1. The uniform load was applied by quarter point load. The effective rail length was 96 inch. The required load shall be 1000 lbf. (Test load: $125\text{plf} \times 96\text{inch}/12 = 1000\text{ lbf}$)
2. Reference to IBC 2015 section 1607.8.1

Test Photo:



Uniform load vertically



Uniform load with 45 degrees

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Test Items, Method and Results:

Test Items	Test Method	Test Result	Requirement	Verdict
Concentrated load test	ICC-ES AC 273 Approved February 2008 (Editorially revised March 2016), Section 4.2.4	Location: Top rail midspan between posts Deflection of sample 1 was 0.96 in. Deflection of sample 2 was 1.02 in. Deflection of sample 3 was 0.95 in. when the applied load reached 200 lbf (890 N). It didn't exceed the deflection limits 2.88 in. Withstood load equal to 500 lbf without failure	A 500-lbf load (2224 N) is applied at the midspan of the top rail and at the top of a single post in an outward direction. The deflection at the point of loading shall be recorded when the load reaches 200 lbf (890 N) and shall not exceed their respective allowable deflection limits.	Pass
		Location: Top of the post Deflection of sample 1 was 0.63 in. Deflection of sample 2 was 0.68 in. Deflection of sample 3 was 0.59 in. when the applied load reached 200 lbf (890 N). It didn't exceed the deflection limits 3.75 in. Withstood load equal to 500 lbf without failure	After test, the rail system should be no failure, nor any evidence of disengagement of any component, nor visible cracks in any component.	

Note:

1. The deflection limit for top rail = $h/24 + L/96 = 2.75$ in, which h is the rail height (42 in.) and L is the rail length (96 in.). The deflection limit for post = $h/12 = 3.50$ in, which h is the effective newel post height (42 in.)
2. Reference to IBC 2015 section 1607.8.1

Test Photo:



Concentrated on top rail



Concentrated on post

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APPENDIX A: Drawings

Connection	Fastener
Top Rail Bracket to Post	Three #10x1", Self-drill steel screws
Bottom Rail Bracket to Post	Two #10x1", Self-drill steel screws
Top Rail Bracket to Rail	#8x3/4", Self-drill steel screws
Bottom Rail Bracket to Rail	No mechanical fastener

USA VINYL, LLC 5795 GREEN POINT DRIVE GROVEPORT, OH 43215	Design by		Product name	CXR-AR42-A8
	Check by		Drawing NO	CBR-AR42-A8
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	Complete date			Sheet 1 Of 14

Parts List			
S.N.	Item	QTY	Material
1	Top Rail 2125	1	Aluminum 6061 - T6
2	Bottom Rail 12515	1	Aluminum 6061 - T6
3	3/4 " Picket	20	Aluminum 6061 - T6
4	Spacer	21	Aluminum 6061 - T6
5	Vinyl Insert	2	Vinyl
6	3.0" Post	2	Aluminum 6061 - T6
7	Base Plate	2	#45 steel
8	0.4 x 2 3/4 Bolt(Base Plate To Post)	8	carbonsteel Level 8.8
9	3.0" Post Trim	2	ADC-12
10	3.0" Post Cap	2	ADC-12
11	Top Bracket	2	ADC-12
12	Bottom Bracket	2	ADC-12
13	10# 1" Screw(All Brackets To Post)	10	SCM435
14	8# 3/4" Screw(Top Bracket To Rail)	4	SCM435
15	Bottom Rail Support	2	Aluminum 6061 - T6

USA VINYL, LLC 5795 GREEN POINT DRIVE GROVEPORT, OH 43215	Design by		Product name	CXR-AR42-A8
	Check by		Drawing NO	CBR-AR42-A8
	Approve by		Revision	1/0
	Complete date			Sheet 2 Of 14

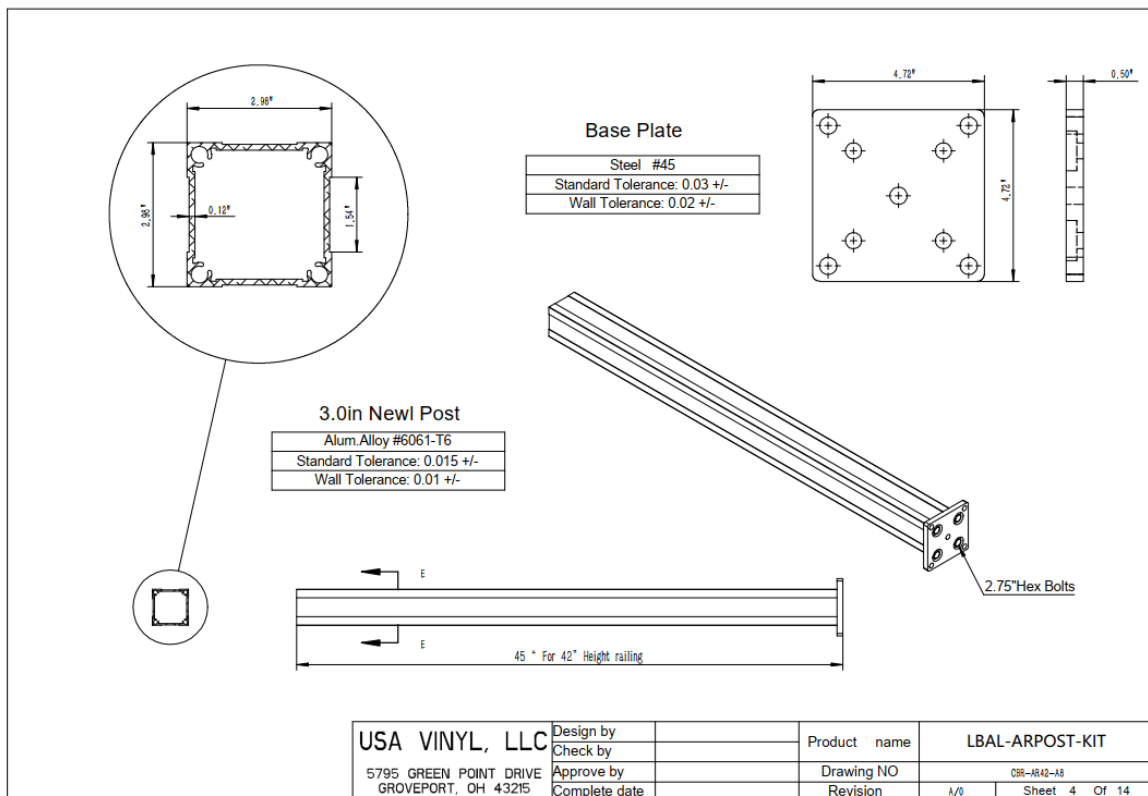
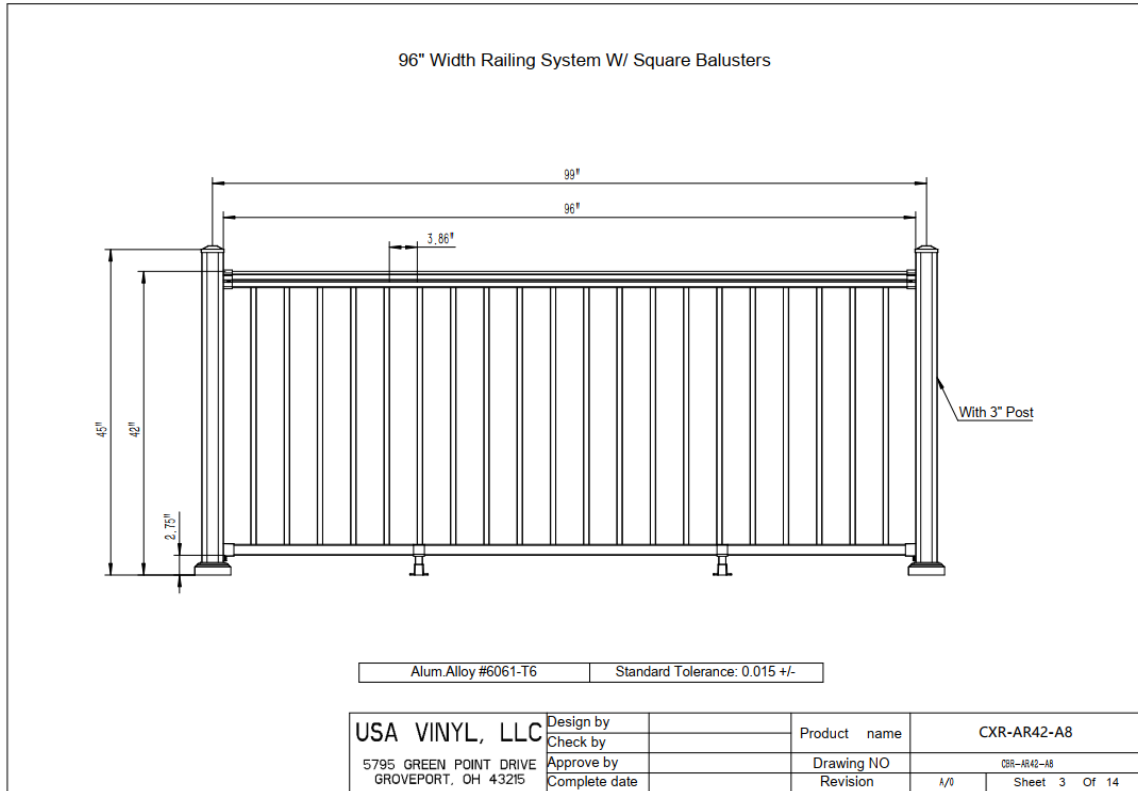
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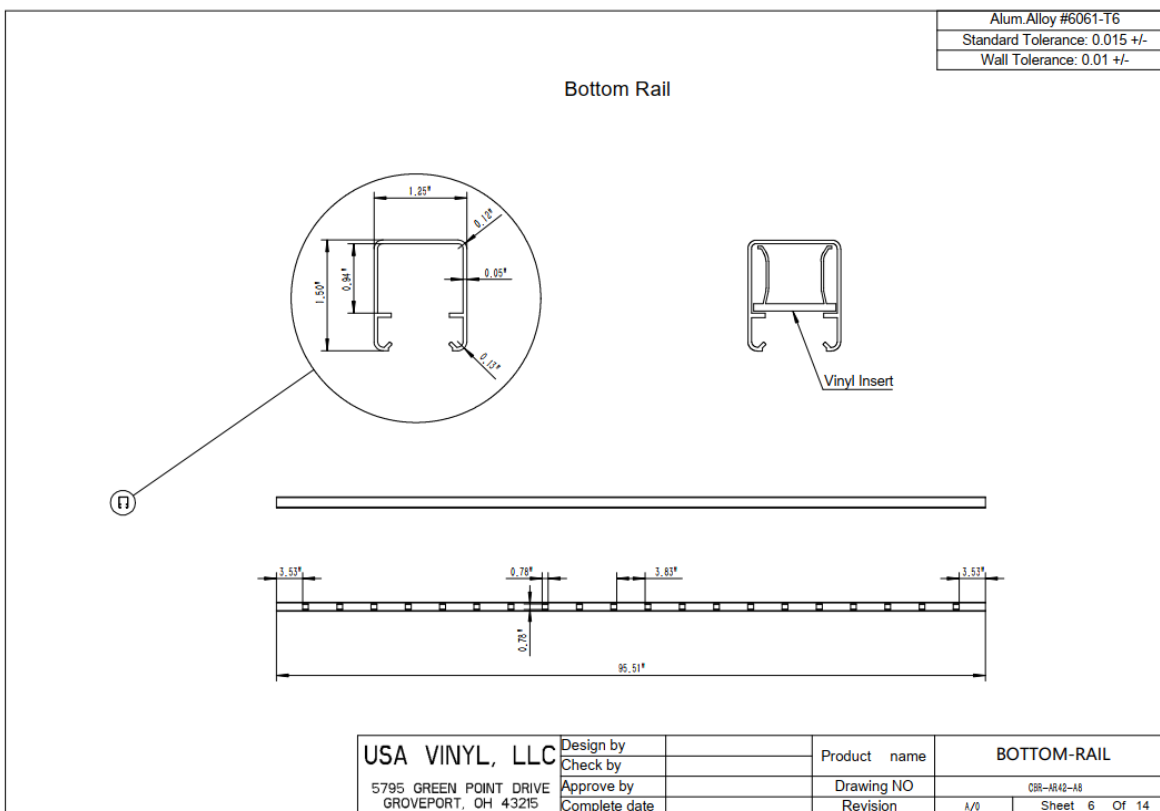
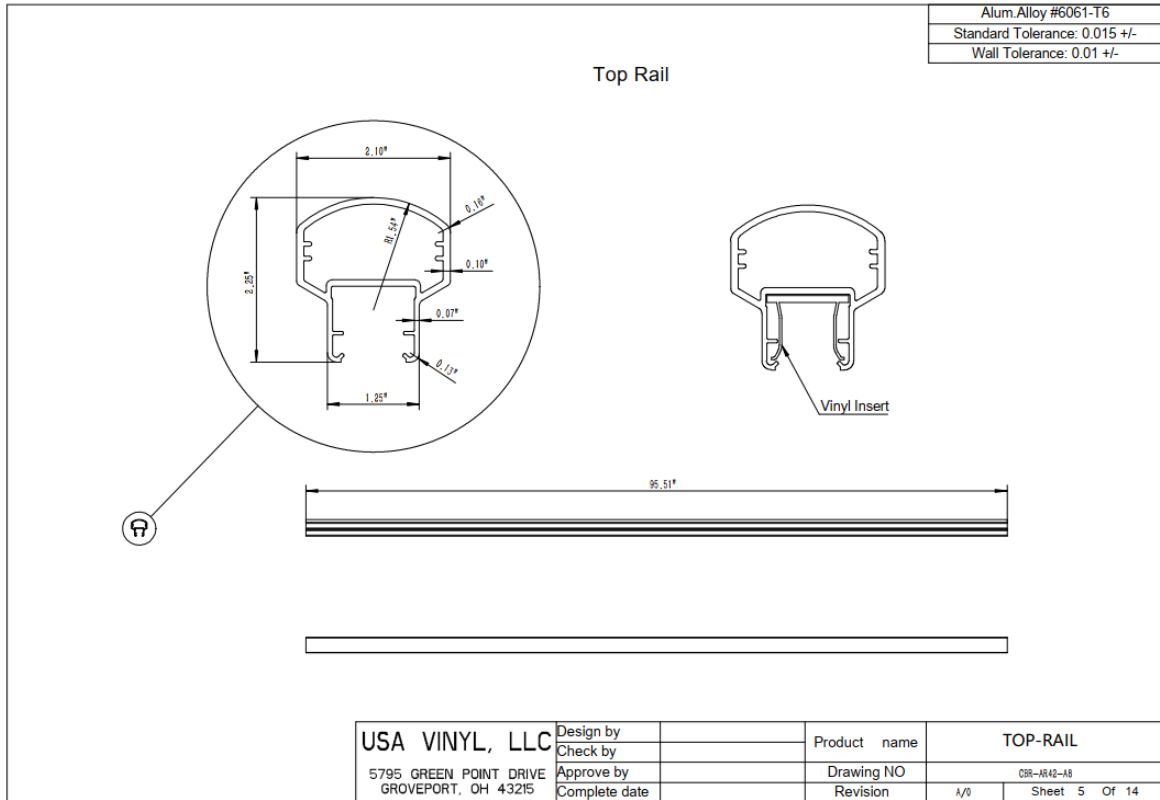
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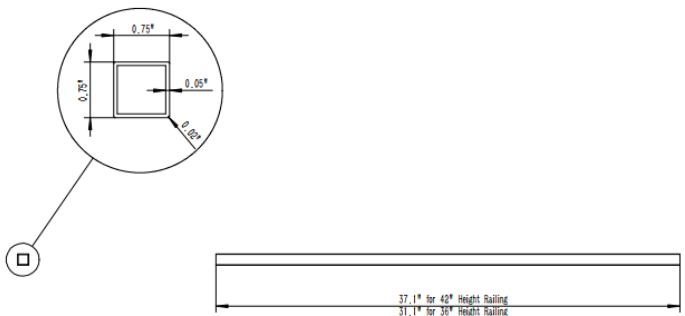
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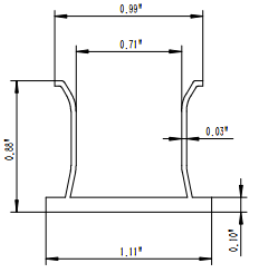


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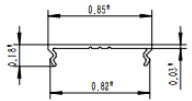

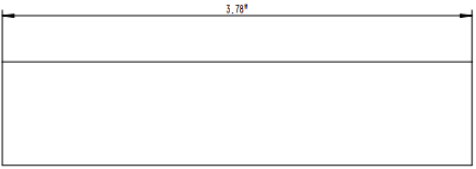
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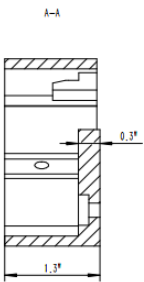
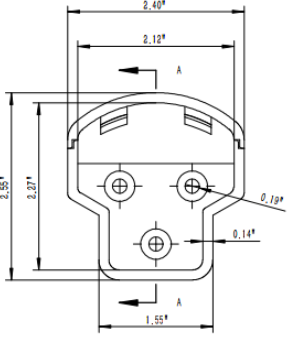
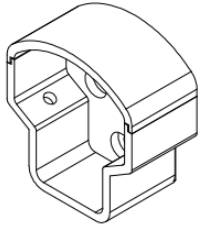
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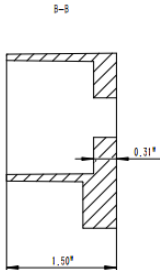
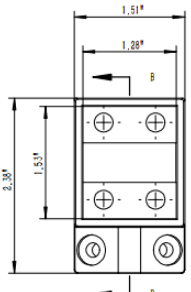
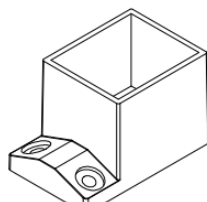

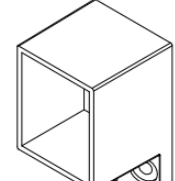
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Revision	A/0										
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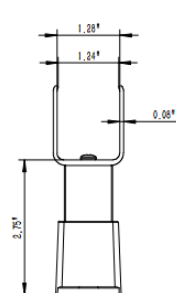
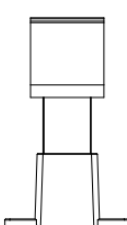
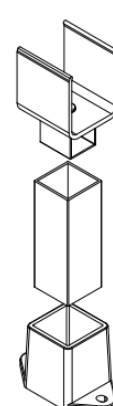
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Drawing NO	CRB-RR42-18										
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		Alum.Alloy #ADC12	
Bottom Rail Bracket			
			
			
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		Alum.Alloy #ADC12	
		Alum.Alloy #6061-T6	
Bottom Rail Support			
			
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Alum.Alloy #ADC12

3" Post Cap

USA VINYL, LLC 5795 GREEN POINT DRIVE GROVEPORT, OH 43215	Design by		Product name	POST-CAP	
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Alum.Alloy #ADC12

3" Post Trim

USA VINYL, LLC 5795 GREEN POINT DRIVE GROVEPORT, OH 43215	Design by		Product name	POST-TRIM	
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Appendix A: Sample Received Photo



Revision:

NO.	Date	Changes	Author	Reviewer
200115007SHF-001	2020-03-11	First issue	Jackie Zhou	Daniel Zhang