



TEST REPORT

Rendered to:

BARRETTE OUTDOOR LIVING, INC.

For:

***VersaRail* Aluminum Guardrail Assembly**

Report No: C5346.01-119-19
Report Date: 03/13/13

TEST REPORT

C5346.01-119-19
March 13, 2013

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TEST REPORT

Rendered to:

BARRETTE OUTDOOR LIVING, INC.
740 North Main Street
Bulls Gap, Tennessee 37711

Report No: C5346.01-119-19
Test Date: 01/14/13
Through: 01/15/13
Report Date: 03/13/13

1.0 General Information

1.1 Product

Aluminum Guardrail System - *VersaRail*

1.2 Project Description

Architectural Testing was contracted by Barrette Outdoor Living Inc. to perform structural testing on their 6 ft by 42 in *VersaRail* aluminum level guardrail (railing) system. This report is in conjunction with Architectural Testing Report No. C3866.01-119-19 which includes structural testing of the aluminum post mount. The purpose of the testing is code compliance evaluation in accordance with the following criteria:

2010 National Building Code of Canada (NBC)

Testing is limited to test loads equal to 1.67 times the design load for all components.

According to Table 9.8.8.2 of the 2010 *NBC*, the following tests are required for guards within dwelling units and exterior guards serving not more than 2 dwelling units:

- Horizontal in-fill load tests at center and bottom / $112 \text{ lb} \times 1.67 = 187 \text{ lb}$ on three balusters¹
- Vertical uniform load test on top rail / $103 \text{ plf} \times 1.67 \times 6 \text{ ft} = 1,032 \text{ lb}$
- Horizontal concentrated load test applied at any location / $224 \text{ lb} \times 1.67 = 374 \text{ lb}$ ¹

¹ Testing is required in both the inward or outward direction. The *VersaRail* guardrail assembly tested herein was symmetrical; therefore, the load direction was insignificant.

1.3 Limitations

All tests performed were to evaluate structural performance of the level railing assembly to carry and transfer imposed loads to the supports (posts). The test specimen evaluated included the pickets, rails, rail brackets, attachment of the rail brackets to the support posts and the support posts' attachment to the support structure (simulated mock wood deck).

1.4 Qualifications

Architectural Testing has demonstrated compliance with ANS/ISO/IEC Standard 17025 and is consequently accredited as a Testing Laboratory (TL-144) by International Accreditation Service, Inc.

1.5 Witnessing

A representative of Barrette Outdoor Living, Inc was present on 01/14/13 and 01/15/13 to witness the following test and assist in test specimen fabrication:

- structural performance testing of assembled railing systems

1.6 Conditions of Testing

Unless otherwise indicated, all testing reported herein was conducted in a laboratory set to maintain temperature in the range of $68 \pm 4^{\circ}\text{F}$ and humidity in the range of $50 \pm 5\% \text{ RH}$. All test specimen materials provided by Barrette Outdoor Living were stored in the laboratory environment for no less than 40 hours prior to testing.

1.7 Product Description

Barrette Outdoor Living provided the test specimens with details as listed below. See drawings in Appendix A and photographs in Appendix B for additional details.

Top Rail Cap: 2-1/8 in high by 1-3/4 in wide contoured 6063-T5 aluminum extrusion with 0.07 in wall

Top Sub-rail and Bottom Rail: 1-3/16 in wide by 1 in deep **U**-shaped 6063-T5 aluminum extrusion with 0.07 in wall

Balusters: 3/4 in square, hollow 6063-T5 aluminum extrusion with 0.04 in wall

Baluster Locking Strip: 3/4 in wide by 0.07 in thick glass reinforced polypropylene extrusion located in bottom and top sub-rail

Rail Brackets: Die cast AA380.0-F aluminum socket brackets contoured to shape of rails

1.7 Product Description (Continued)

Fasteners:

- #8 x 1-1/2 in (18-TPI, 0.164 in major dia., .0116 in minor dia.) pan head, square drive, self-starting, yellow zinc screws (four in top bracket / post, two in bottom bracket / post, and two in top bracket / rail) (9/64 in pre-drill)

Support Blocks: Extruded aluminum support leg located directly under the fifth baluster in from each post.

Post Mounts:

- Aluminum Post Mount: 2-1/2 in square by 0.08 in thick extruded aluminum tube attached to a 5-1/4 in square by 0.25 in thick AISI 1010 steel base plate with four 1/4 in by 2-1/2 in flat head, phillips drive, steel screws driven through raceway channels in aluminum tube; a 5-1/4 in by 3/16 in thick steel mounting plate was included for wood deck installation; post mount was attached to wood deck with four 5/16 in by 3-1/2 in Grade 5 hex head bolts with nut and washer.
- Steel Post Mount: 2 in square by 0.125 in thick hot-rolled steel tube attached to a 4 in square by 0.375 in thick steel base plate with a 3/16 in by 1-3/4 in long fillet weld on each side; the steel tube was sleeved at the top and bottom by a 4 in square by 6-1/8 in long HDPE internal spacer; the internal spacers were sleeved by a 4-1/2 in square by 6-5/8 in long plastic sleeve; a 5 in square PVC post sleeve was fitted over the post/spacer assembly; a 4 in square by 1/4 in thick steel mounting plate was included for wood deck installation; post mount was attached to wood deck with four 5/16 in by 6 in Grade 5 hex head bolts with nut and washer.

Wood Deck:

- Aluminum Post Mount: 24 in by 33-1/2 in screwed construction of 2x8 preservative-treated No. 2 KD Southern Pine framing with two 5/4x6 by 17-1/2 in preservative-treated, Southern Pine deck boards over one 2x8 by 14-1/2 in preservative-treated No. 2 KD Southern Pine horizontal blocking; #9 x 3 in deck screws for 2x8's and decking. Refer to installation instructions in Appendix A and photographs in Appendix B for further construction details.
- Steel Post Mount with PVC Sleeve: 24 in by 33-1/2 in screwed construction of 2x8 preservative-treated No. 2 KD Southern Pine framing with two 5/4x6 by 17-1/2 in preservative-treated, Southern Pine deck boards over two 2x8 by 14-1/2 in preservative-treated No. 2 KD Southern Pine horizontal blocking; #9 x 3 in deck screws for 2x8's and decking. Refer to installation instructions in Appendix A and photographs in Appendix B for further construction details.

2.0 Structural Performance Testing of Assembled Railing Systems

2.1 Test Equipment

The guardrail was tested in a self-contained structural frame designed to accommodate anchorage of the guardrail assembly and application of the required test loads. The specimens were loaded using an electric winch mounted to a rigid steel test frame. High strength steel cables, nylon straps, and load distribution beams were used to impose test loads on the specimens. Applied load was measured using an electronic load cell located in-line with the loading system. Electronic linear displacement transducers were used to measure deflections.

2.2 Test Setup

The 6 ft by 42 in *VersaRail* aluminum level guardrail assembly was installed and tested as a single railing section by directly securing the posts into a simulated mock wood deck. Additional wood blocking was added to the simulated wood deck per the manufacturer's instructions. Refer to installation instructions in Appendix A for additional information. Transducers mounted to an independent reference frame were located to record movement of reference points on the guardrail system components (ends and mid-point) to determine net component deflections. See photographs in Appendix B for individual test setups.

2.3 Test Procedure

The test specimen was inspected prior to testing to verify size and general condition of the materials, assembly, and installation. No potentially compromising defects were observed prior to testing. One specimen was used for all load tests which were performed in the order reported. Each design load test was performed using the following procedure:

1. Zeroed transducers and load cell at zero load; and
2. Increased load to specified test load in no less than ten seconds.

The testing time was continually recorded from the application of initial test load until the ultimate test load was reached.

2.4 Test Results

The following tests were performed on the guardrail assemblies for the design load requirements of the referenced code. Deflection and permanent set were component deflections relative to their end-points; they were not overall system displacements. All loads and displacement measurements were horizontal, unless noted otherwise.

Key to Test Results Tables:

Load Level: Target test load

Test Load: Actual applied load at the designated load level (target).

Elapsed Time (E.T.): The amount of time into the test with zero established at the beginning of the loading procedure.

6 ft by 42 in VersaRail Level Guardrail System Installed in Mock Wood Deck

Test No. 1 – Test Date: 01/14/13 Design Load: 112 lb / 1 Square ft of Infill at Center of Three Balusters			
Load Level	Test Load (lb)	E.T. (min:sec)	Result
187 lb (1.67 x D.L.)	188	00:42	Withstood load equal to or greater than 187 lb without failure

Test No. 2 – Test Date: 01/14/13 Design Load: 112 lb / 1 Square ft of Infill at Bottom of Three Pickets			
Load Level	Test Load (lb)	E.T. (min:sec)	Result
187 lb (1.67 x D.L.)	188	00:48	Withstood load equal to or greater than 187 lb without failure

Test No. 3 – Test Date: 01/14/13 Design Load: 224 lb Concentrated Load at Midspan of Top Rail						
Load Level	Test Load (lb)	E.T. (min:sec)	Displacement (inches)			
			End	Mid	End	Net ¹
224 lb (D.L.)	224	00:40	1.55	1.89	1.08	0.58
374 lb (1.67 x D.L.)	376	01:05	Result: Withstood load equal to or greater than 374 lb without failure			

¹ Each end displacement was measured at the center of the support. Net displacement was the rail displacement relative to the supports.

2.4 Test Results (Continued)

Test No. 4 – Test Date: 01/14/13 Design Load: 103 plf x 1.67 x 6 ft = 1032 lb Vertical Uniform Load on Top Rail			
Load Level	Test Load (lb)	E.T. (min:sec)	Result
1032 lb	1034	01:46	Withstood load equal to or greater than 1032 lb without failure

Test No. 5 – Test Date: 01/15/13 Design Load: 34.3 plf x (93-1/2 in Rail Length¹ + 5 in Post Width ÷ 12 in/ft) = 282 lb Concentrated Load on Top of a Single Post (Steel Post Mount Installed in Mock Wood Deck)			
Load Level	Test Load (lb)	E.T. (min:sec)	Displacement (inches)
282 lb (D.L.)	282	01:00	4.03
470 lb (1.67 x D.L.)	470	01:46	Result: Withstood load equal to or greater than 470 lb without failure

¹ 8 ft rail length used in determining post mount design load in order to qualify post mount for use with rail length of 8 ft.

2.5 Summary and Conclusions

The 6 ft by 42 in *VersaRail* aluminum level guardrail (railing) system reported herein met the design load requirements (as specified in Table 9.8.8.2 of the 2010 *NBC* for guards within dwelling units and exterior guards serving not more than 2 dwelling units) and safety factors of the 2010 *NBC* as installed between the support posts and guardrail details as described above.

3.0 Closing Statement

Architectural Testing will service this report for the entire test record retention period. The report retention will be four years from the report date. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period. Results obtained are tested values and were secured using the designated test methods. This report neither constitutes certification of this product nor expresses an opinion or endorsement by this laboratory; it is the exclusive property of the client so named herein and relates only to the tested specimens. This report may not be reproduced, except in full, without the written approval of Architectural Testing.

For ARCHITECTURAL TESTING:

Kyle J. Evans
Technician II
Structural Systems Testing

V. Thomas Mickley, Jr., P.E.
Program Manager
Structural Systems Testing

KJE:kje/vtm

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix A – Drawings / Installation Instructions (18)

Appendix B - Photographs (5)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	03/13/13	N/A	Original report issue

APPENDIX A

Drawings



Aluminum Rail Post

INSTALLATION INSTRUCTIONS

PLEASE READ OWNER'S MANUAL COMPLETELY
BEFORE INSTALLING POSTS.

34109318BOM V3 3/13

Models

73013157 / 73013158 / 73013159
73013160 / 73013174 / 73013175
73003797 / 73017827 / 73017828

Owner's Manual

Version

3.0

Thank you for choosing the Barrette Outdoor Living Rail or Stair Rail Kit. Please read the instructions completely before assembling your rail. Retain manual and your dated sales slip for future reference and warranty claims.

Before You Begin...

Make sure your project meets local building codes before beginning installation.

Tools Needed:

- Level
- Drill & bits
- $\frac{5}{16}$ " diameter grade 5 bolts and nuts galvanized per ASTM F2329

- $\frac{5}{16}$ " masonry anchors (for concrete application)
- $3\frac{1}{2}$ " deck screws (for deck/wood application)
- $\frac{5}{16}$ " wrench

Additional Products Needed for 36" Residential Installations

(Somerset, New Castle, Versarail, Elite Aluminum Rail)

- Post Mount Kit

Additional Products Needed for 42" Commercial Installations

(Versarail, Elite Aluminum Rail)

- Post Mount Kit
- Post Install Kit - for 42" rail installations

Deck/Wood Surface (36" & 42" Residential Installation Only)

- 1.) Attach mounting plate to post with provided $\frac{1}{4}$ " x $2\frac{1}{2}$ " Phillips head screws (Figure 1).
- 2.) Install blocking at post locations:
 - a. Layout railing installation to determine post locations
 - b. Beneath all post locations install at least two 2x8 blocks using at least three #10 x $3\frac{1}{2}$ " deck screws penetrating through the joists at least $1\frac{1}{2}$ " into the blocks (Figures 2 & 3)
- 3.) Mark holes through the bottom plate of steel post onto deck surface – remove steel post and drill $\frac{3}{8}$ " hole in all four marks through the deck board and blocking.
- 4.) Purchase $\frac{5}{16}$ " diameter grade 5 bolts and nuts galvanized per ASTM F2329 approximately 1" longer than the distance between steel mounting plates (minimum 5")
 - a. Push $\frac{5}{16}$ " bolts through post plate and attach separate bottom plate from beneath deck surface (posts can be leveled as needed by using steel washers as shims) (Figure 4)

Figure 1

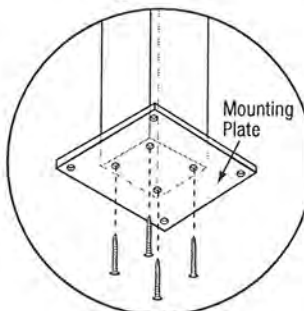


Figure 2

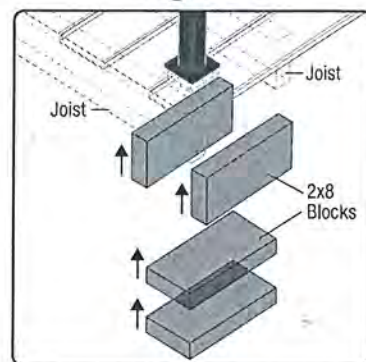


Figure 3

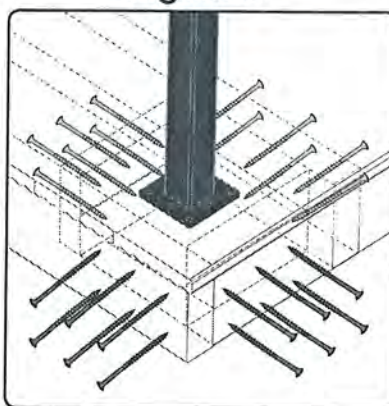
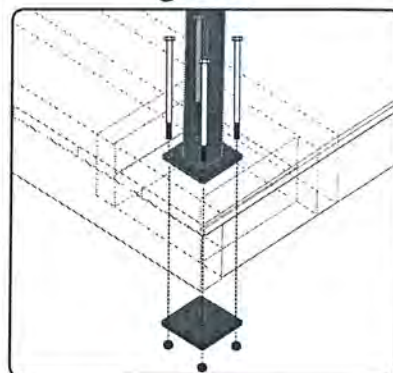


Figure 4



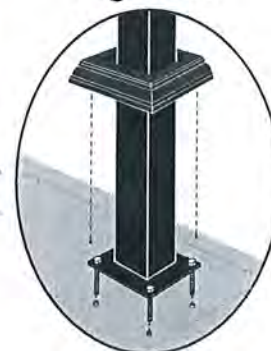
Concrete Surface

Note: Purchase four $\frac{5}{16}$ " masonry anchors according to local building codes.

For Residential (Somerset, New Castle, Versarail, Elite Aluminum Rail)

- 1.) Attach mounting plate to post with provided $\frac{1}{4}$ " x $2\frac{1}{2}$ " Phillips head screws (Figure 1).
- 2.) Mark holes through mounting plate onto concrete surface and follow anchor/screw installation instructions.
- 3.) Install base trim (Figure 5) around post prior to installing rail.

Figure 5



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Deviations are noted.

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Date

8/12/19

Tech

KJB

For Commercial (Versarail, Elite Aluminum Rail):

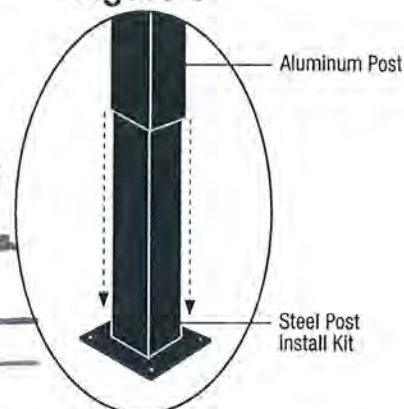
Note: The aluminum railing posts MUST be reinforced with an additional steel post mount kit/surface mount. Commercial aluminum railing must be installed on concrete.

For commercial installations, you will also need a Post Mount Kit and a steel Post Install Kit. All parts will be used except the two steel plates that come with the Post Mount Kit.

- 1.) Slide Aluminum Post over the top of the Post Install Kit (Figure 6).
- 2.) Using the provided 1/4" x 2-1/2" Phillips flat head screws from the Post Mount Kit, connect the bottom of the Post Mount Kit to the Aluminum Post (Figure 1).
- 3.) Mark holes through mounting plate onto concrete surface and follow anchor/screw installation instructions.
- 4.) Install base trim (Figure 5) around post prior to installing rail.

Architectural Testing
Test sample complies with these details.
Deviations are noted.
Report# CS346.01-119-19
Date 3/12/13 Tech KJE

Figure 6



Transferable Limited Lifetime Warranty

What is covered: Barrette Outdoor Living warrants vinyl and aluminum products to include; vinyl and aluminum fence, vinyl and aluminum railing and plastic lattice against defects or workmanship for as long as you own your home. Barrette Outdoor Living will at its option replace the product in question with new product of the same or equivalent value at no charge. Barrette Outdoor Living warrants these products against peeling, flaking, splintering, corrosion, rusting or abnormal discoloration under normal use and service per ASTM D 2244. This warranty extends to the original purchaser or transferee as specified herein on the products noted above. Separate and distinct warranties for hardware and other products are not covered under this warranty.

What this warranty does not cover: This limited warranty does not cover damage resulting from accident, unreasonable use, neglect, alteration, improper service, improper installation, acts of God or any other causes not arising out of defects in materials or workmanship. Additionally, this warranty does not cover costs of installation, removal, reinstallation or surface mold and mildew created by excessive environmental conditions. Any service or repair provided outside the scope of this limited warranty shall be at Barrette Outdoor Living's rate and terms then in effect.

What do we do to correct the problems? Should your Barrette Outdoor Living product prove defective under warranty, reference the website or call the phone number listed below. Your problem will be assigned a tracking number and an authorized Barrette Outdoor Living representative will contact you to arrange a convenient time to schedule an onsite inspection, or request pictures, if need be. If after inspection product is deemed to be manufacturer defect we will make arrangements to rectify the issue. You must have proof of your purchase in order for the problem to be corrected.

Transferee Coverage: Warranty coverage will be extended to one transferee on the above listed products with the following limitations. Transferee must obtain an original or copy of the initial sales receipt (with proof of date) from the previous owner(s). Additionally, if fence is purchased from a builder or installer, documentation must be supplied that names the product installed on property and date of transfer.

THIS WARRANTY IS IN LIEU OF ALL CONDITIONS OR WARRANTIES, EXPRESS, OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED CONDITIONS OR WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THE PART OF Barrette OR ITS LICENSORS, SOME STATES DO NOT ALLOW THE EXCLUSIONS OF IMPLIED WARRANTIES OR LIMITATIONS OF HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. IF THE PRODUCT IS DEFECTIVE PER THE ABOVE COVERAGES, YOUR SOLE AND EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. BARRETTE AND ITS LICENSORS SHALL NOT BE LIABLE FOR ANY DAMAGES, LOSS OF USE, LOSS OF PROFITS OR INTERRUPTION OF BUSINESS WHETHER SUCH ALLEGED DAMAGES ARE BASED IN WARRANTY, TORT, CONTRACT, OR INDEMNITY. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. This warranty is valid only in the United States and Canada.

Refer to www.BarretteOutdoorLiving.com for specific details about warranty limitations.
1-800-336-2383

To register your product, please visit: www.barretteoutdoorliving.com/product-registration

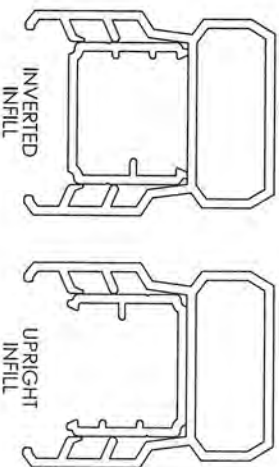


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<http://www.barretteoutdoorliving.com> • 1-800-336-2383

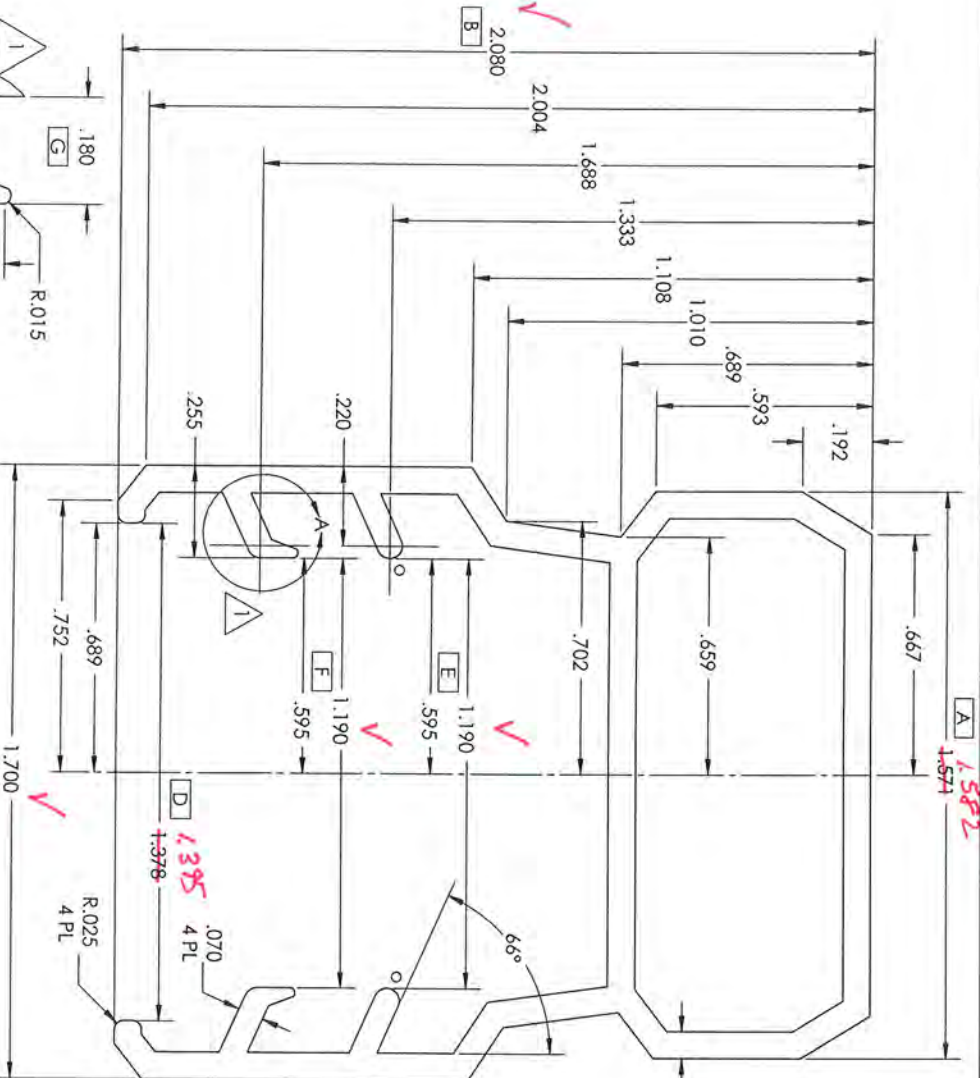


Test sample compares with these details.
 Dimensions are in inches.

Report# **CS346.01-119-19**
 Date **3/12/13**



Dim	Print	Min.	Max	Actual
A	1.571			
B	2.080			
C	0.075			
D	1.378			
E	0.595			
F	0.595			
G	0.180			



DETAIL A
 SCALE 5 : 1

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF STATISTICAL ANALYTICAL RESEARCH, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION IS PROHIBITED.

Weight = 0.68 lbs
 Material = 6063-T5 Aluminum

TOLERANCES	FRACTION	DECIMAL
	± 1/64"	± 0.015"
	± 1/32"	± 0.031"
	± 1/16"	± 0.062"
	± 1/8"	± 0.125"
	± 1/4"	± 0.250"
	± 1/2"	± 0.500"
	± 3/4"	± 0.750"
	± 1"	± 1.000"
	± 1 1/2"	± 1.500"
	± 2"	± 2.000"
	± 3"	± 3.000"
	± 4"	± 4.000"
	± 6"	± 6.000"
	± 8"	± 8.000"
	± 10"	± 10.000"
	± 12"	± 12.000"
	± 14"	± 14.000"
	± 16"	± 16.000"
	± 18"	± 18.000"
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	± 1692"	± 1692.000"
	± 1704"	± 1704.000"
	± 1716"	± 1716.000"
	± 1728"	± 1728.000"
	± 1740"	± 1740.000"
	± 1752"	± 1752.000"
	± 1764"	± 1764.000"
	± 1776"	± 1776.000"
	± 1788"	± 1788.000"
	± 1800"	± 1800.000"
	± 1812"	± 1812.000"
	± 1824"	± 1824.000"
	± 1836"	± 1836.000"
	± 1848"	± 1848.000"
	± 1860"	± 1860.000"
	± 1872"	± 1872.000"
	± 1884"	± 1884.000"
	± 1896"	± 1896.000"
	± 1908"	± 1908.000"
	± 1920"	± 1920.000"
	± 1932"	± 1932.000"
	± 1944"	± 1944.000"
	± 1956"	± 1956.000"
	± 1968"	± 1968.000"
	± 1980"	± 1980.000"
	± 1992"	± 1992.000"
	± 2004"	± 2004.000"
	± 2016"	± 2016.000"
	± 2028"	± 2028.000"
	± 2040"	± 2040.000"
	± 2052"	± 2052.000"
	± 2064"	± 2064.000"
	± 2076"	± 2076.000"
	± 2088"	± 2088.000"
	± 2100"	± 2100.000"
	± 2112"	± 2112.000"
	± 2124"	± 2124.000"
	± 2136"	± 2136.000"
	± 2148"	± 2148.000"
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	± 2172"	± 2172.000"
	± 2184"	± 2184.000"
	± 2196"	± 2196.000"
	± 2208"	± 2208.000"
	± 2220"	± 2220.000"
	± 2232"	± 2232.000"
	± 2244"	± 2244.000"
	± 2256"	± 2256.000"
	± 2268"	± 2268.000"
	± 2280"	± 2280.000"
	± 2292"	± 2292.000"
	± 2304"	± 2304.000"
	± 2316"	± 2316.000"
	± 2328"	± 2328.000"
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	± 2376"	± 2376.000"
	± 2388"	± 2388.000"
	± 2400"	± 2400.000"
	± 2412"	± 2412.000"
	± 2424"	± 2424.000"
	± 2436"	± 2436.000"
	± 2448"	± 2448.000"
	± 2460"	± 2460.000"
	± 2472"	± 2472.000"
	± 2484"	± 2484.000"
	± 2496"	± 2496.000"
	± 2508"	± 2508.000"
	± 2520"	± 2520.000"
	± 2532"	± 2532.000"
	± 2544"	± 2544.000"
	± 2556"	± 2556.000"
	± 2568"	± 2568.000"
	± 2580"	± 2580.000"
	± 2592"	± 2592.000"
	± 2604"	± 2604.000"
	± 2616"	± 2616.000"
	± 2628"	± 2628.000"
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	± 2652"	± 2652.000"
	± 2664"	± 2664.000"
	± 2676"	± 2676.000"
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	± 2736"	± 2736.000"
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	± 2760"	± 2760.000"
	± 2772"	± 2772.000"
	± 2784"	± 2784.000"
	± 2796"	± 2796.000"
	± 2808"	± 2808.000"
	± 2820"	± 2820.000"
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	± 2856"	± 2856.000"
	± 2868"	± 2868.000"
	± 2880"	± 2880.000"
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	± 2916"	± 2916.000"
	± 2928"	± 2928.000"
	± 2940"	± 2940.000"
	± 2952"	± 2952.000"
	± 2964"	± 2964.000"
	± 2976"	± 2976.000"
	± 2988"	± 2988.000"
	± 3000"	± 3000.000"

NOTES:
 (O) DENOTES FULL R 2 PL
 BREAK SHARP CORNERS .015 R

BUILT BY
Barrette
 Outdoor Living

75 John B Brooks Rd
 Pendergrass, Ga
 30567
 706-693-4062
 706-693-4064 fax

OWNER: Roy Clark DATE: 10/25/2012 SCALE: 3:1

SECTION: VERSARAIL HANDRAIL

REVISION: 1 of 1 SHEET: 1

PLEASE INDICATE EXPOSED SURFACES
PLEASE INDICATE WHERE INTX I.D. GOES

SIGNATURE

YOUR SIGNATURE INDICATES NO CHANGES TO DIMENSIONS OR TOLERANCES AS SHOWN ON THIS DRAWING.

THIS IS NOT AN INTERNATIONAL EXTRUSIONS DESIGN, IT IS AN INTERPRETATION OF THE CUSTOMER'S DRAWING. NO WARRANTY OF FITNESS OR APPLICATION OF USE IS IMPLIED. ALL DIMENSIONAL CHECKS WILL BE DONE USING THIS PRINT ONLY.

USING THIS PRINT ONLY.

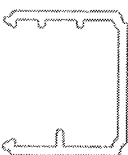
For sample comparison with these data, the following data were obtained:

100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098

Date 3/12/13
Tech KJB

100

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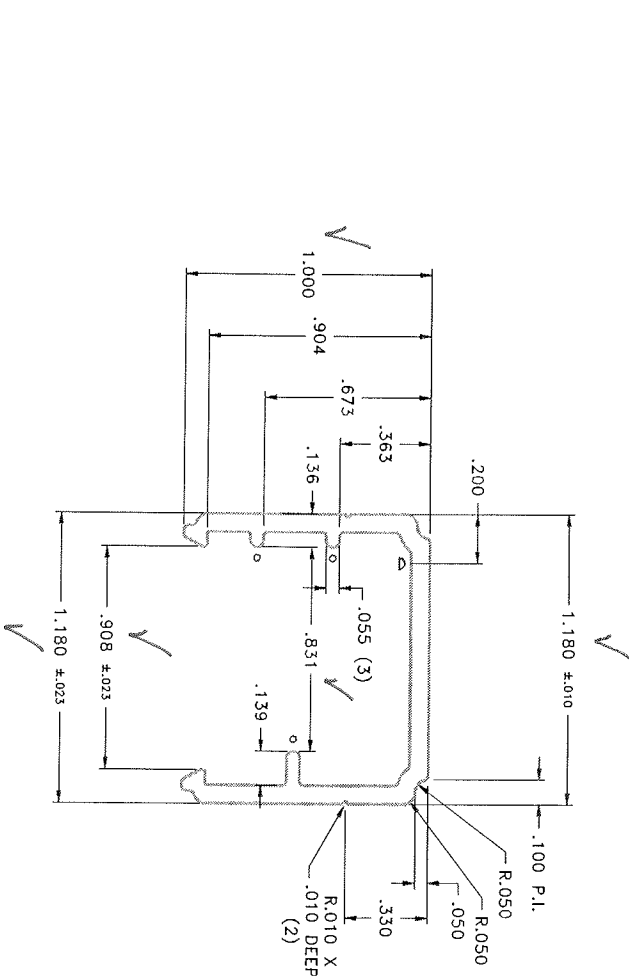
Material = 6063-T5

(Δ) R.01 X .01 DEEP I.D. MARK
(○) DENOTES FULL R (3)
TYPICAL UNMARKED WALL .075
BREAK SHARP CORNERS .015 R

Generational Extensions

ALUMINUM ASSOCIATES STANDARD EXTRUSION TOLERANCES
WILL APPLY UNLESS OTHERWISE NOTED ON PRINT

DIMENSIONS CHECK BY		ALUMINUM ASSOCIATES STANDARD EXTRUSION TOLERANCES WILL APPLY UNLESS OTHERWISE NOTED ON PRINT			
EST. AREA	.237	DESCRIPTION INFILL PROFILE		DR. BY <i>ECP</i> DATE 6-22-2011	
EST. WT. FT.	.285				
EST. PER.	6.562				
FIN. PER.					
CLASS	SOLID	CUSTOMER BARRETTE OUTDOOR PRODUCTS		SCALE 2X	
CIRCLE SIZE	1.500				
CUT REV LEV	NONE				
		DWG# 11B173B2		DIE NO.	
				PART NO. NONE	



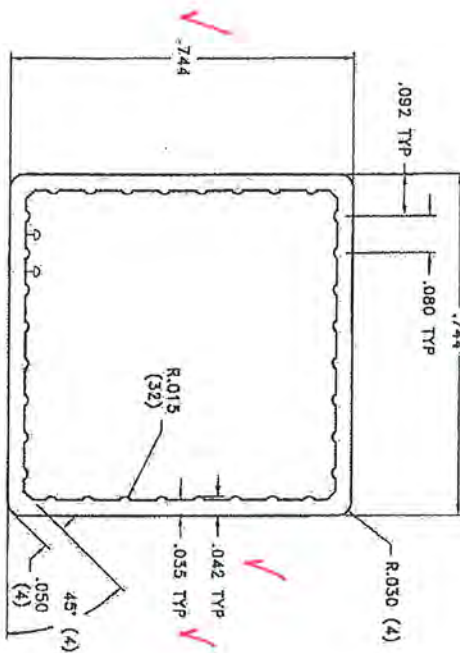


Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# **CS346.01-119-19**

Date **3/12/13** Tech **KJB**



ACTUAL SIZE



EXTERIOR PERIMETER EXPOSED

PRELIMINARY DRAWING

Material = 6063-T5
(c) R.01 X .01 HI I.D. MARK
BREAK SHARP CORNERS .010 R

DIMENSIONS CHKO BY		DESCRIPTION	
EST. AREA	.103	NEW 3/4" SQUARE	
EST. WT. FT.	.124	COMMERCIAL PICKET	
EST. PER.	2.924		
FIN. PER.	2.924		
CLASS	HOLLOW		
CIRCLE SIZE	1.250		
CUST REV LEV	NONE		

International Extrusions
2900 Varsity Rd. - Garden City MI 48135
ALUMINUM ASSOCIATES STANDARD EXTRUSION TOLERANCES
WILL APPLY UNLESS OTHERWISE NOTED ON PRINT

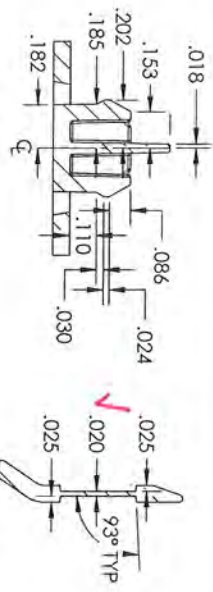
DR. BY	<u>ECF</u>	DATE	4-20-2011
S.S.	97	SCALE	AX
FILE	PLUTO	DIE	
DWG#	11511082	NO.	
PRODUCTS		PART NO.	RND75040

PRINTED AND PROCESSED

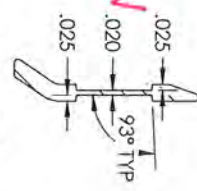
PLEASE INDICATE EXPOSURE ANALYSIS
THICKNESS INDICATED BY L.D. DIMS
COMPLIANT *Shelley M. Tark.*

EXPOSURE *4/20/11*

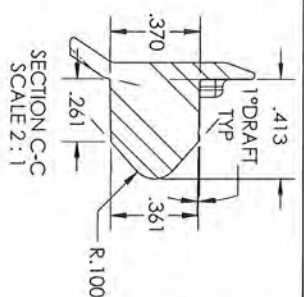
YOUR SIGNATURE INDICATES NO CHANGE TO DIMENSIONS
OR TOLERANCES AS SHOWN ON THE DRAWING.
IT IS AN INTERPRETATION OF THE CUSTOMER'S DRAWING.
NO WARRANTY OF FITNESS OR APPLICATION OR USE IS
MADE. DIMENSIONAL CHANGES WILL BE DONE
INSIDE THE PRINT ONLY.



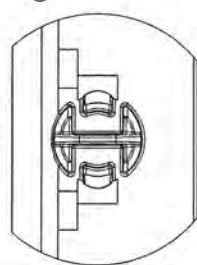
SECTION A-A
SCALE 2:1



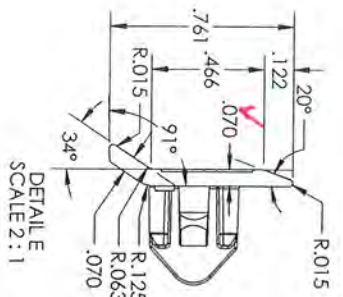
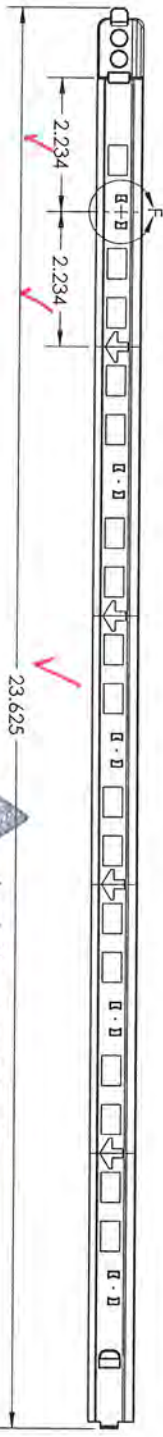
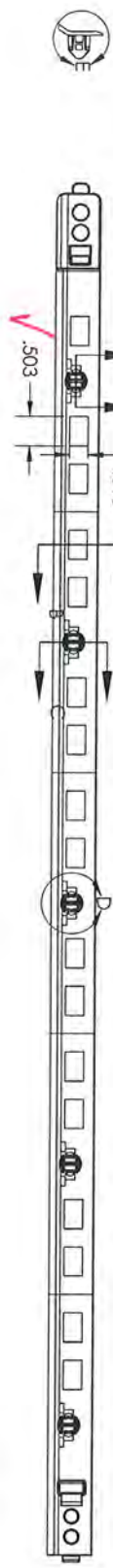
SECTION B-B
SCALE 2:1



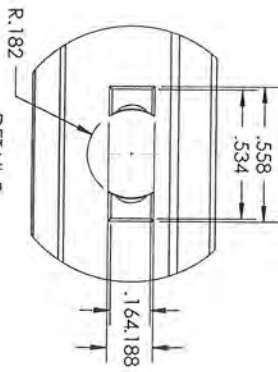
SECTION C-C
SCALE 2:1



DETAIL D
SCALE 2:1



DETAIL E
SCALE 2:1



DETAIL F
SCALE 2:1

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TOLERANCES	
FINISH	± .004"
DR	± 0.010"
LOC	± 0.005"
ANGLE	± 1°
UNSPECIFIED FINISH	125 RMS
UNLESS OTHERWISE SPECIFIED	

Weight = 0.05 lbs
Material = PP/Glass 30%

Date 5/12/13 Tech KJE

Report# CS346.01-119-19

Test sample complies with these details.
Deviations are noted.

Architectural Testing

BUILT BY Barrette Outdoor Living		75 John B Brooks Rd Pendergrass, Ga 30067 706-693-4062 706-693-4064 fax	
DRAWN BY Roy Clark	DATE 11/15/2011	SCALE 1:2	
TITLE CORIGIN STRIP WITH ENDS		SECTION 2 of 2	REVISION 61104553



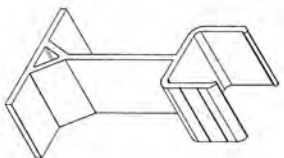
Architectural Testing

Test sample complies with these details.
Deviations are noted.

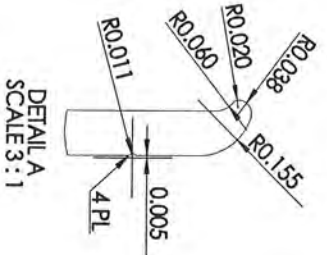
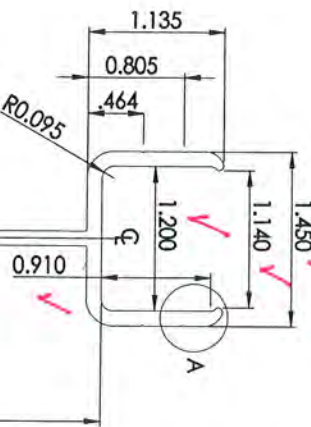
Report# **CS34C.01-119-19**

Date **3/12/13** Tech **KJB**

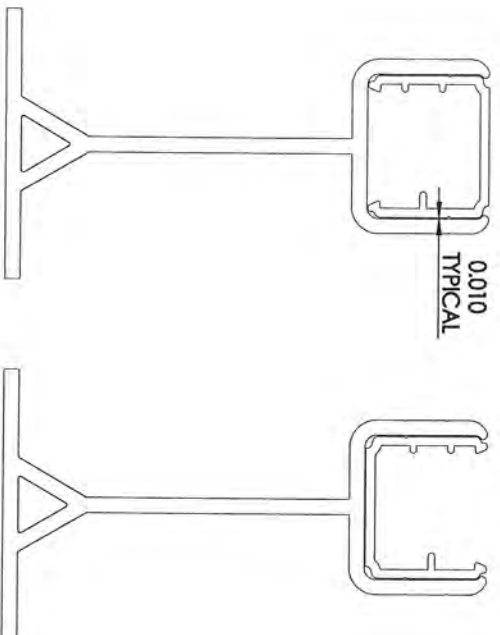
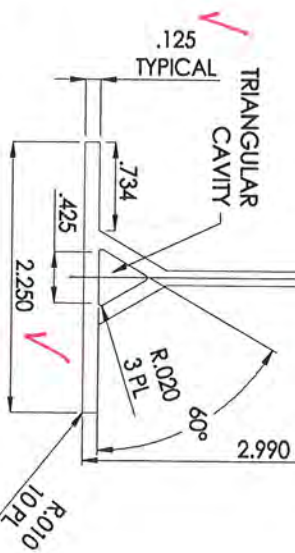
ORIENTATION AND RELATIONSHIP TO OUR
EXISTING PART #KE10590 -YOUR DWG #11B17382



ALL FEATURES ARE SYMMETRICAL



DETAIL A
SCALE 3:1



REVISION 03
EQUILATERAL TRIANGULAR CAVITY
REVISION 02
TRIANGULAR CAVITY ADDED
AS AID TO PAINTING

Weight = 0.1362 lbs/linear ft
Material = 6063-T5

TOLERANCES					
FRACTION	± 1/64"				
DEC	± 0.010"				
DEC	± 0.005"				
ANGLE	± 1°				
UNSPECIFIED FINISH (1)	125 RMS				
UNLESS OTHERWISE SPECIFIED					

DRAWN BY: Roy Clark		DATE: 1/10/2012		SCALE: 1:1	
TITLE: P-Engineering 2011 Research and Development/250444		BUILT BY: Barrette Outdoor Living		75 John B Brooks Rd Pondorgrass, Ga 30567 706-693-4062 706-693-4064 fax	
EQUIPMENT INC.		SECTION: CRUSH BLOCK 03		REVISION: DRAWING INC.	
REFERENCE INC.		1 of 1		/0	

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ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION IS PROHIBITED

Architectural Testing

Test sample compares with these statistics.
Deviations are normal.

Report# C5346.01-119-19

Date 3/12/13

Tech K3E

Material = 6005-T5
EXTERIOR PERIMETER EXPOSED

(ϕ) R.01 X .01 HI I.D. MARK
TYPICAL UNMARKED WALL .075
BREAK SHARP CORNERS .015 R

International Extrusions
5800 Venoy Rd. - Garden City MI 48135

5800 Venoy Rd. - Garden City MI 48135

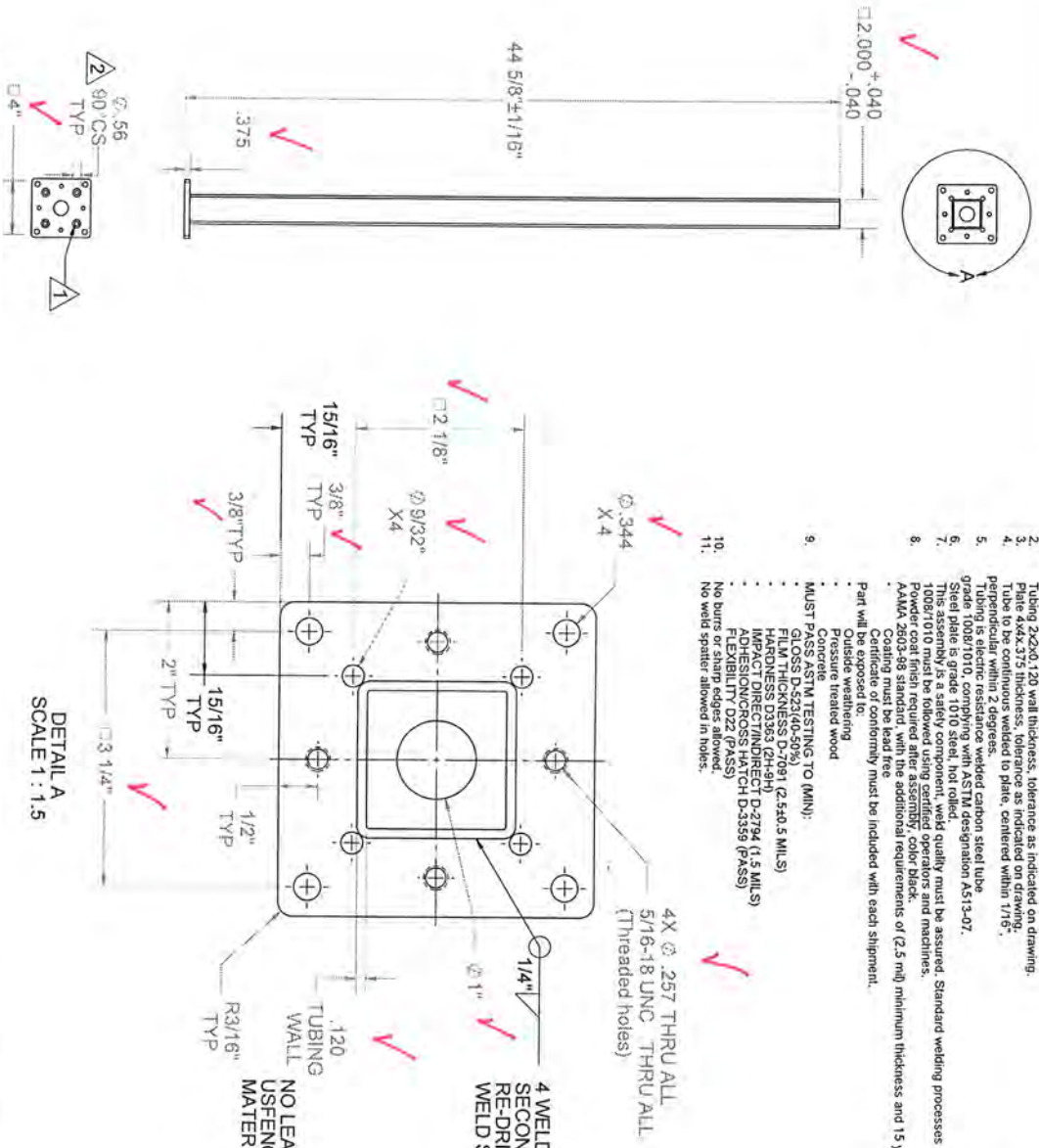
MINIMUM ASSOCIATES STANDARD EXTRUSION TOLERANCES
WILL APPLY UNLESS OTHERWISE NOTED ON PRINT

DIMENSIONS CHKD BY		ALUMINUM ASSOCIATES STANDARD EXTRUSION TOLERANCES WILL APPLY UNLESS OTHERWISE NOTED ON PRINT			
EST. AREA	.828	2-1/2" POST			
EST. WT. FT.	.994				
EST. PER.	9.785				
FIN. PER.	9.785				
CLASS	HOLLOW				
CIRCLE SIZE	3.500	CUSTOMER			
CUST REV LEV	NONE				
BARETTE OUTDOOR PRODUCTS		DR. BY	<i>BCP</i>	DATE	7-16-2008
		SLS	97	SCALE	FULL
		FILE	PLUTO	DIE	NO. KE9582
		DWG#	08S198B1		
		PART NO.	NONE		

Final Sample Complies with these details.

Report # **C5346.01-119-19**
 Date **3/12/13** Tech **KJB**

- Notes:
- Part to be tool from 3D CAD model.
 - Tubing 2x2x.120 wall thickness, tolerance as indicated on drawing.
 - Plate 4x4x.375 thickness, tolerance as indicated on drawing.
 - Tube to be continuous welded to plate, centered within 1/16".
 - Perpendicular within 2 degrees.
 - Using 1008/1010 grade resistance welded carbon steel tube.
 - Using 1008/1010 grade resistance welded carbon steel plate.
 - Steel plate is grade 1010 steel, hot rolled.
 - 1008/1010 must be followed using certified operators and machines.
 - Powder coat finish required after assembly, color black.
 - ASME B31.3 standard, with the additional requirements of (2.5 mil) minimum thickness and 15 year warranty.
 - Certificate of conformity must be included with each shipment.
 - Part will be exposed to:
 - Outside weathering
 - Pressure treated wood
 - MUST PASS ASTM TESTING TO (MIN):
 - GLOSS D-523 (60-80)
 - FILM THICKNESS D-7091 (2.5±0.5 MILS)
 - HARDNESS D3363 (2H-9H)
 - IMPACT DIRECT/INDIRECT D-2794 (1.5 MILS)
 - ADHESION/CROSS HATCH D-3359 (PASS)
 - ADHESION D-22 (PASS)
 - No burrs or sharp edges allowed.
 - No weld spatter allowed in holes.



DETAIL A
SCALE 1 : 1.5

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REV.	BY	DATE	PCR	DESCRIPTION
1	WD	5/24/2012	120605MED-A	ADD 4 HOLES TO PLATE
2	WD	7/16/2012	N/A	CHG WELD FROM CONTINUOUS TO ADD SECONDARY OPERATION, CHG CS ANGLE AND INCREASE DIAMETER

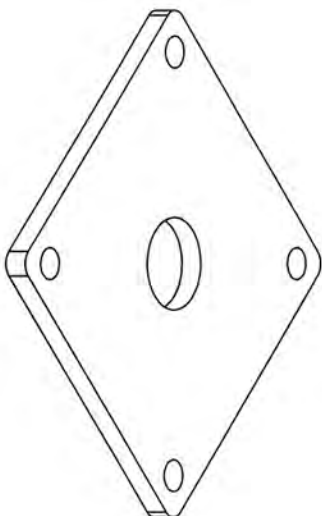
TOLERANCES		BARRETTE	
FRACTION	1/164	DATE	2/20/2011
XX	±0.01	W. DIXON	3/20/2011
XXX	±0.005	DATE	3/20/2011
ANGLE	±1.0°	W. DIXON	3/20/2011
FINISH	125 RMS	DATE	3/20/2011
UNLESS OTHERWISE SPECIFIED		34106320	

BARRETTE
 Outdoor Living
 740 N. Main St. Suite 200, TN 37215

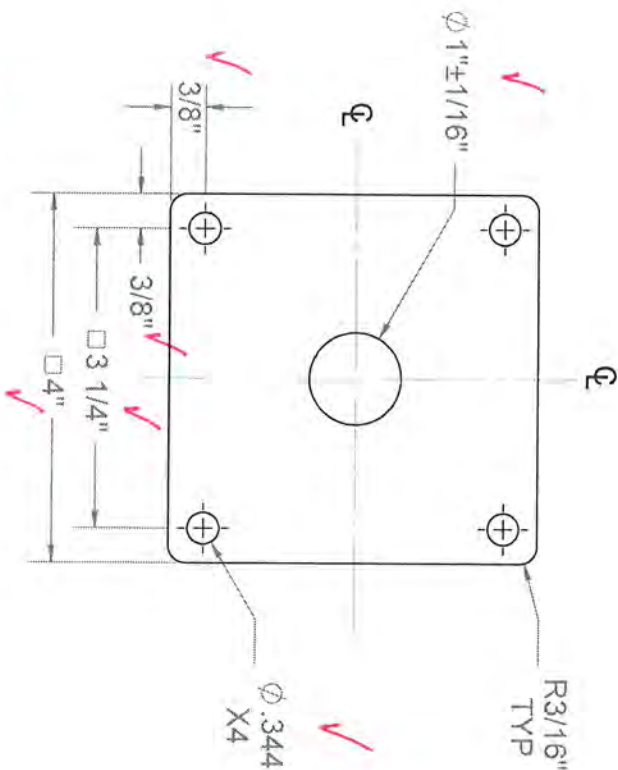
Notes:

1. Material grade 1010 steel, hot rolled.
 2. Powder coat finish required, color black.
AAMA 2603-98 standard, with the additional requirements of (1.5 mil) minimum thickness and 15 year warranty.
 - Coating must be lead free
 - Certificate of conformity must be included with each shipment.
 3. Part will be exposed to:
 - Outside weathering
 - Pressure treated wood
- No burrs or sharp edges allowed.

China supplied part



Isometric View



Architectural Testing

Test sample conformed with these details.
Deviations are noted.

Report# C5346.01-119-19
Date 3/12/13 Tech KJB

TOLERANCES

FRACTION	±1/64
XX	±0.01
XXX	±0.005
ANGLE	±1.0°
FINISH	125 RMS



BARRETTE

Outdoor Living

740 N. Main St., Bulls Gap, TN 37711

W DIXON DATE 2/1/2011

POST INSTALL BOTTM PLATE W/

LIGHTING HOLE

SHEET 1 OF 1

SCALE 1:2

WEIGHT: 1.04



34106307

REV.

BY

DATE

PCR

DESCRIPTION

UNLESS OTHERWISE SPECIFIED

REVISION PART NUMBER

34106307

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Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# **CS346.01-119-19**
Date **3/12/13** Tech **KJE**

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ITEM NO. 1 DESCRIPTION 5.25" Base for 2.5" Hand Rail Post LENGTH 5.25" QTY. 1

Weight = 1.91 lbs
Material = AISI 1010 Steel, hot rolled bar

TOLERANCES
FRACTION $\pm 1/64"$
DEC $\pm 0.010"$
HOLE $\pm 0.005"$
HOLE $\pm 1"$
UNSPECIFIED FINISH 125 RMS
UNLESS OTHERWISE SPECIFIED

REVISION

DRAWN BY: Roy Clark DATE: 10/18/2012 SCALE: 1:1.5

TITLE: Engineering 2011 Research and Development/Shop/Standard Drawings for Testing Local
5.25" Base for 2.5" Hand Rail Post

75 John B Brooks Rd
Pendergrass, Ga 30567
706-693-4062
706-693-4064 fax

BUILT BY
Barrette
Outdoor Living

SECTION: 1 of 1

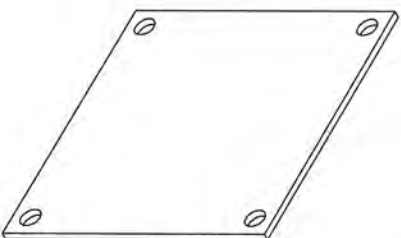
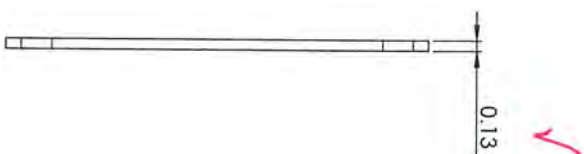
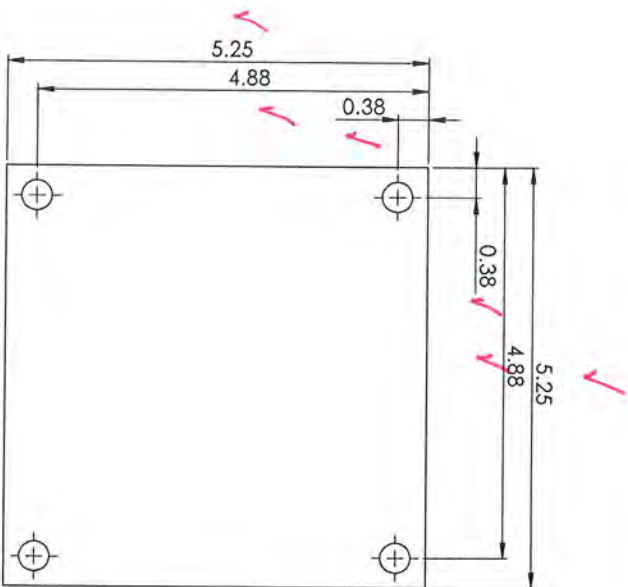
REVISION: 1 of 1



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# C5346.01-119-19
Date 3/12/13 Tech KJB



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Weight = 1.00 lbs
Material = AISI 1010 Steel, hot rolled bar

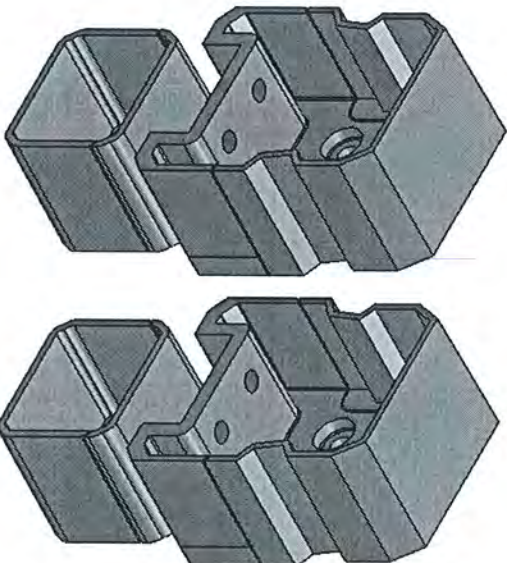
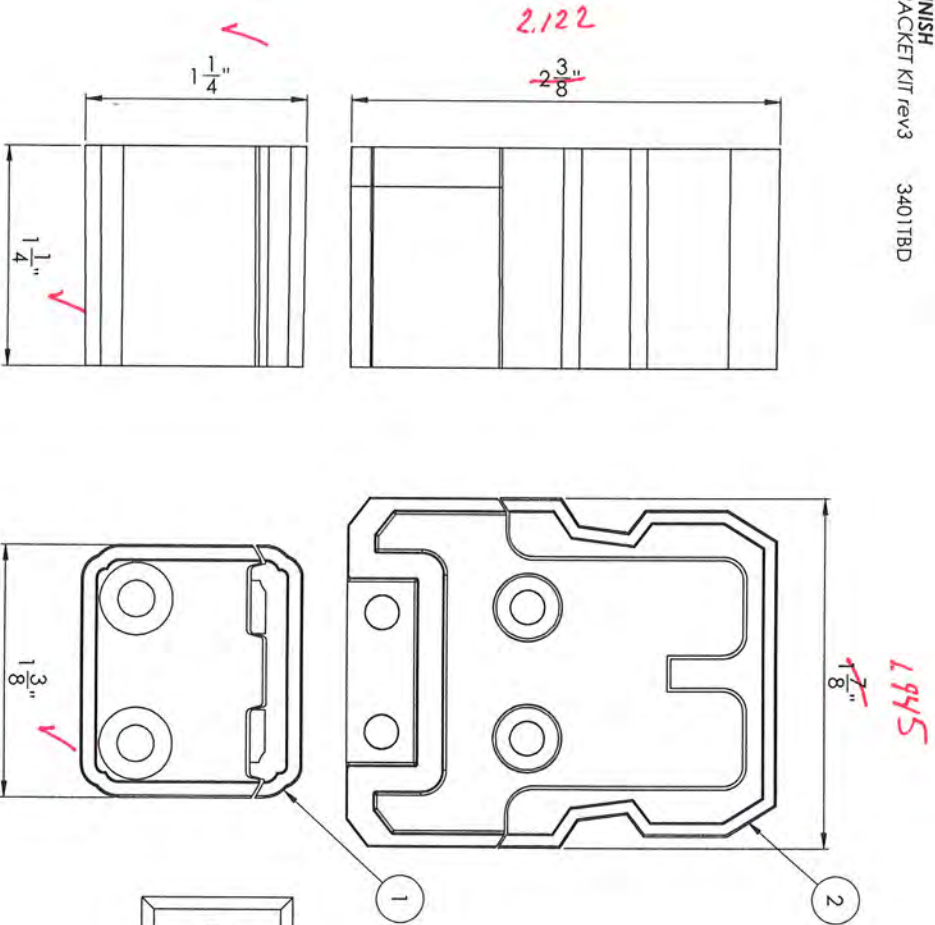
TOLERANCES					
FINISH	± .004"				
AX	± 0.010"				
AXX	± 0.005"				
ANGLE	± 1°				
UNFINISHED FINISH IN	125 RMS				
UNLESS OTHERWISE SPECIFIED					

DRAWN BY		DATE		SCALE	
Roy Clark		10/18/2012		1:1.5	
BUILT BY		DATE		SCALE	
Barrette		10/18/2012		1:1.5	
Outdoor Living		10/18/2012		1:1.5	
75 John B Brooks Rd		Pendergrass, Ga		30567	
706-693-4062		706-693-4064 fax			
TITLE		SECTION		REVISION	
5.25" BACKUP PLATE - 4 HOLE		1 of 1		Sheet 1	
EQUIPMENT No.		SECTION		REVISION	
REFERENCE No.		1 of 1		Sheet 1	

POWDER COAT OPTIONS

BLACK FINISH	
VERSARAIL LINE BRACKET KIT rev3	34011BD
WHITE FINISH	
VERSARAIL LINE BRACKET KIT rev3	34011BD

ITEM	DESCRIPTION	QTY.
1	LOWER LINE BRACKET W/COVERS	2
2	UPPER LINE BRACKET W/ COVERS rev3	2



LINE BRACKET SCREW KIT rev3	
DESCRIPTION	QTY
8 x 1.5" Pan head square drive, self drilling screw, 410 stainless, 1000hr coating, powder coat head	16



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BUILT BY		75 John B Brooks Rd	
Barrette		Pendergrass, Ga	
Outdoor Living		30567	
706-693-4062		706-693-4064 fax	
DRAWN BY	DATE	SCALE	TITLE
Roy Clark	2/5/2013	1:5:1	LINE BRACKET KIT rev3
EQUIPMENT NO.	SECTION	REVISION	DRAWING NO.
	1 of 1	1	Sheet

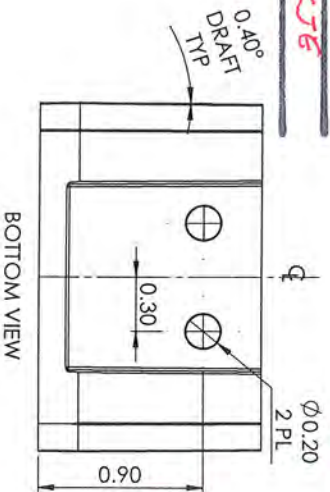
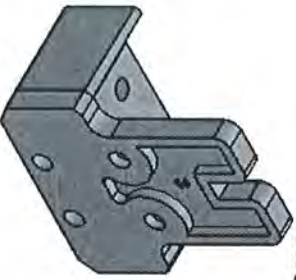
Report# CS346.01-118-19

Date 3/12/13 Tech KJB

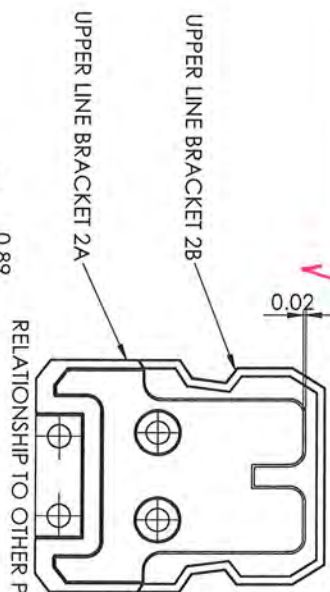
Test sample compares with these data.
Deviation was noted.

Report# CS346.01-119-19
Date 3/12/13 KJE

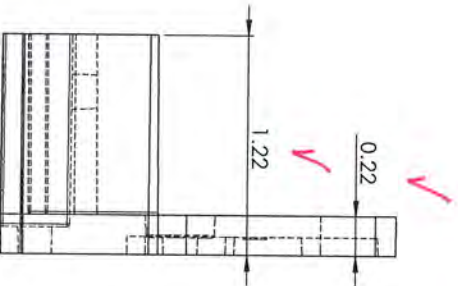
KTE



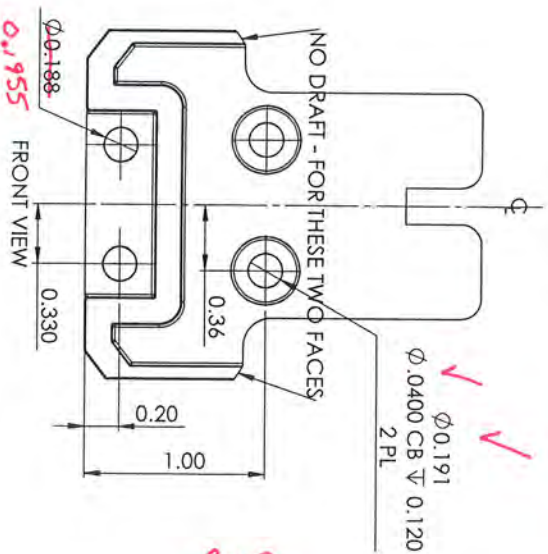
BOTTOM VIEW



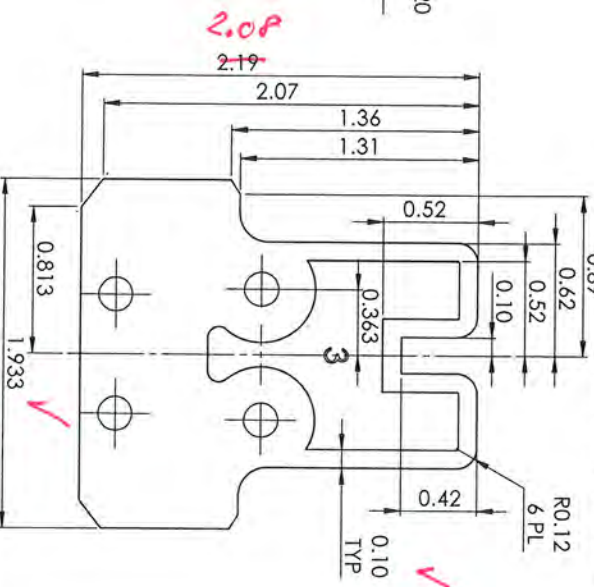
RELATIONSHIP TO OTHER PART



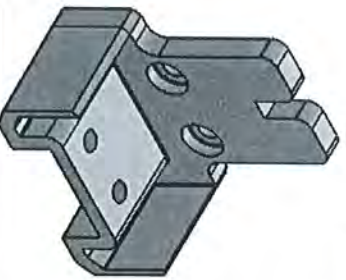
SIDE VIEW



FRONT VIEW



VIEW OF BACK



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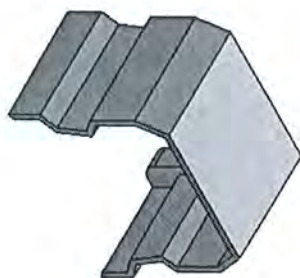
Weight = 0.1027 lbs
Material = AA380.0-F die Aluminum

TOLERANCES		
FRACTION	$\pm 1/64$	
INCH	± 0.010	
XXX	± 0.005	
ANGLE	$\pm 1^\circ$	
UNLESS OTHERWISE SPECIFIED		
125 RIMS		
NO	NAME	DATE
REVISION		DESCRIPTION

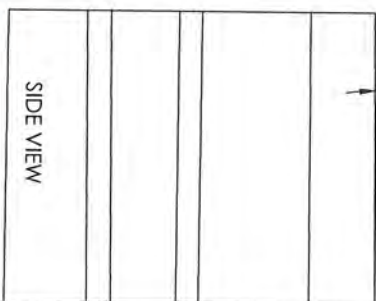
DRAWN BY		DATE	SCALE
Roy Clark		1/29/2013	1:5.1
TITLE			
UPPER LINE BRACKET 2A			
EQUIPMENT NO.	SECTION	REVISION	DRAWING NAME
REFERENCE NO.	1 of 1	0	Sheet 1

Architectural Testing

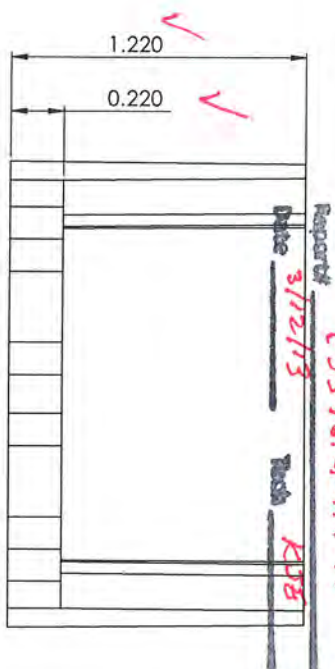
Test sample compilers with these details.
Deviations are noted.



0.5°
DRAFT
TYPICAL



SIDE VIEW



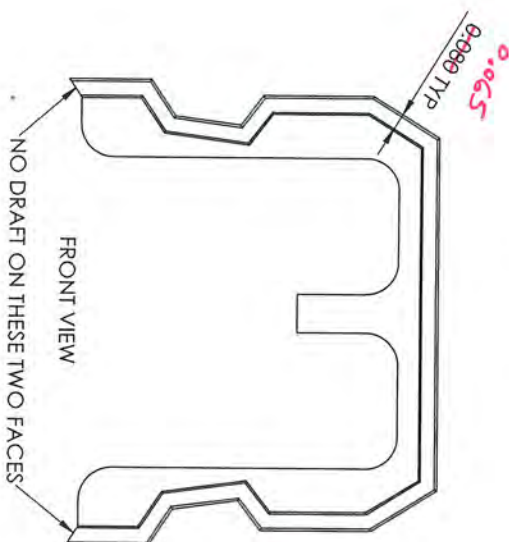
Request for

3/12/13

Price

100

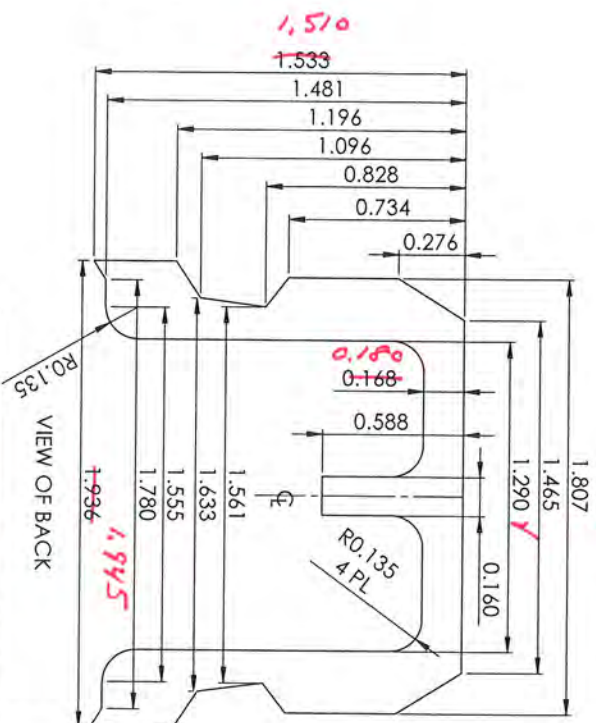
BOTTOM VIEW



0.065
0.080 TYP

FRONT VIEW

NO DRAFT ON THESE TWO FACES




UPPER LINE BRACKET 2B

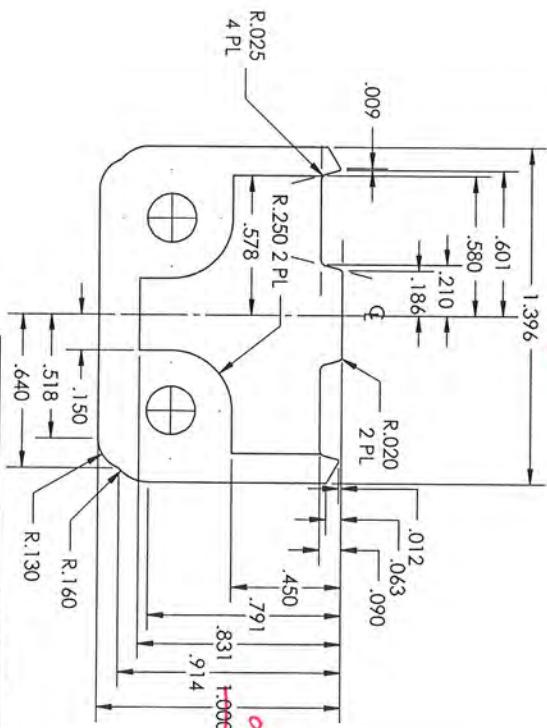
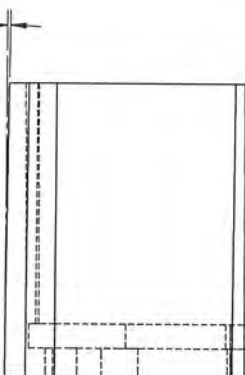
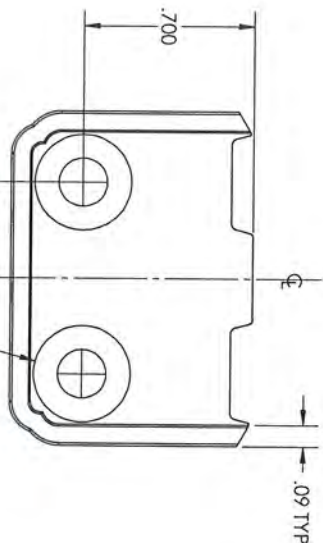
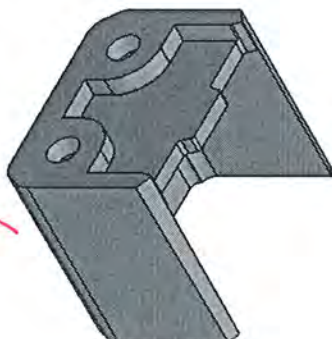
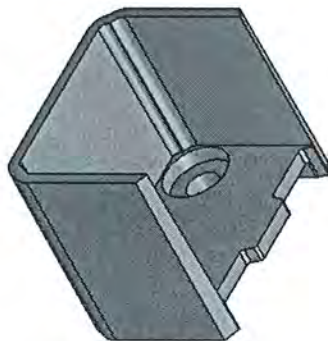
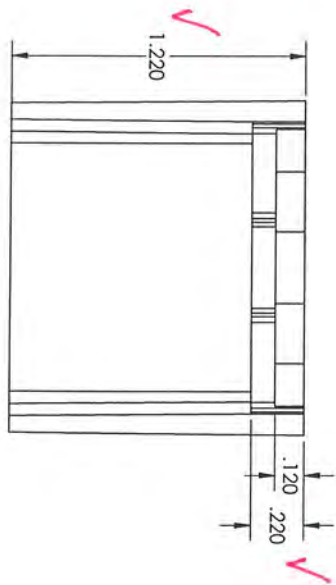
RELATIONSHIP TO OTHER PART

Weight = 0.0532 lbs
Material = AA380.0-F die Aluminum

TOLERANCES							
FRACTION							
IN	$\pm 1/64"$						
XX	$\pm 0.010"$						
XXX	$\pm 0.005"$						
MODE	$\pm 1^{\circ}$						
UNDEFINED PARENT LIT	125 RMS						
UNLESS OTHERWISE SPECIFIED							
NO VALUE	DATE						
1	R/C	2-5-13					
		Assembly model updated to NBCC ver 3					
		DESCRIPTION					
		REVISION					

DRAWN BY	Roy Clark	DATE	2/5/2013	SCALE	2:1
TITLE	UPPER LINE BRACKET 2B				
DOCUMENT NO.	SECTION	REVISION	DRAWING NO.		
REFERENCE NO.	1 of 1		Sheet 1		

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Architectural Testing

Test sample conforms with these details.
Deviations are noted.

Report# **C5346.01-11-8-19**
Date **3/12/13**
By **RSE**

REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION IS PROHIBITED.

Weight = 0.0413 lbs
Material = AA380 0-F die Aluminum

TOLERANCES	
FINISH	± .164"
SIZE	± .010"
LOC	± .0005"
ANGLE	± 1°
UNLESS OTHERWISE SPECIFIED	125 RMS

NO	NAME	DATE
1	ROY CLARK	1/17/2012
2	ROY CLARK	1/17/2012
3	ROY CLARK	1/17/2012
4	ROY CLARK	1/17/2012
5	ROY CLARK	1/17/2012
6	ROY CLARK	1/17/2012
7	ROY CLARK	1/17/2012
8	ROY CLARK	1/17/2012
9	ROY CLARK	1/17/2012
10	ROY CLARK	1/17/2012

BUILT BY

Barrette

Outdoor Living

75 John B Brooks Rd

Pendergrass, Ga

30567

706-693-4062

706-693-4064 fax

OWNER: Roy Clark

DATE: 1/17/2012

SCALE: 2:1

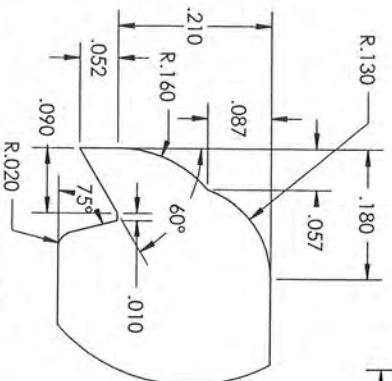
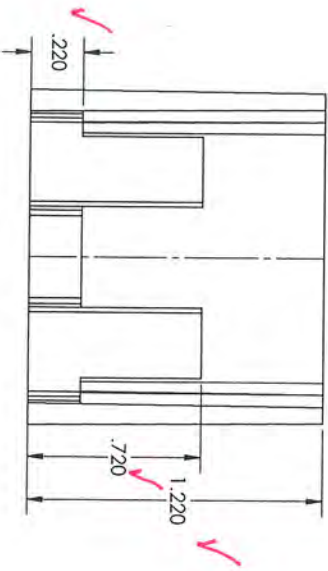
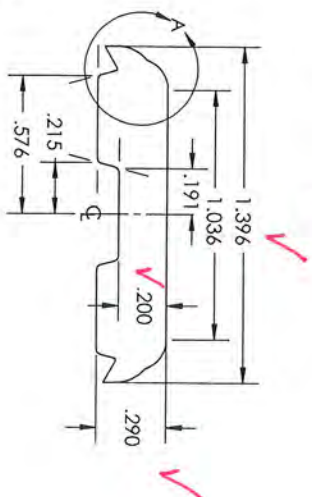
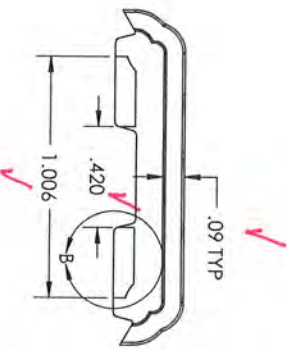
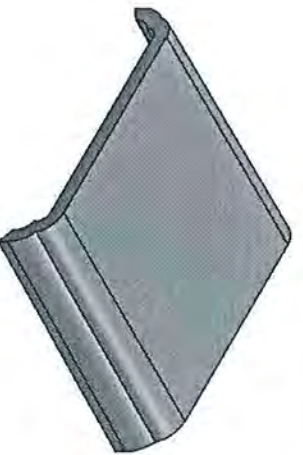
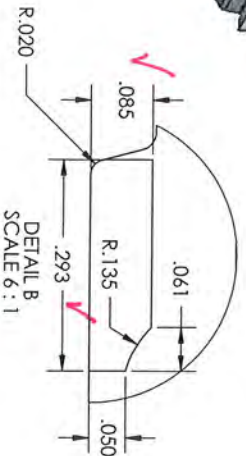
TITLE: LOWER LINE BRACKET - BOTTOM

REVISION: 1 of 2

PART A

Test sample conformed with these details.
Deviations are noted.

Report# **C5346.01-119-19**
Date **3/12/13** Tech **KJE**



Weight = 0.0216 lbs
Material = AA380.0-F die Aluminum

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TOLERANCES									
FINISH	± .1/64"								
AX	± 0.010"								
AXX	± 0.005"								
ANGLE	± 1°								
UNFINISHED FINISH 1/2	125 RMS								
NO	NAME								
	DATE								
REVISION									
DESCRIPTION									

BUILT BY

Barrette

Outdoor Living

75 John B Brooks Rd

Pendergrass, Ga

30567

706-693-4062

706-693-4064 fax

DESIGNED BY

Roy Clark

DATE

1/17/2012

SCALE

2:1

TITLE

LOWER LINE BRACKET - TOP

SECTION

2 of 2

REVISION

PART B

APPENDIX B

Photographs



Photo No. 1
Infill Loading at Center of Three Balusters



Photo No. 2
Infill Loading at Bottom of Three Balusters



Photo No. 3
Concentrated Load at Midspan of Top Rail

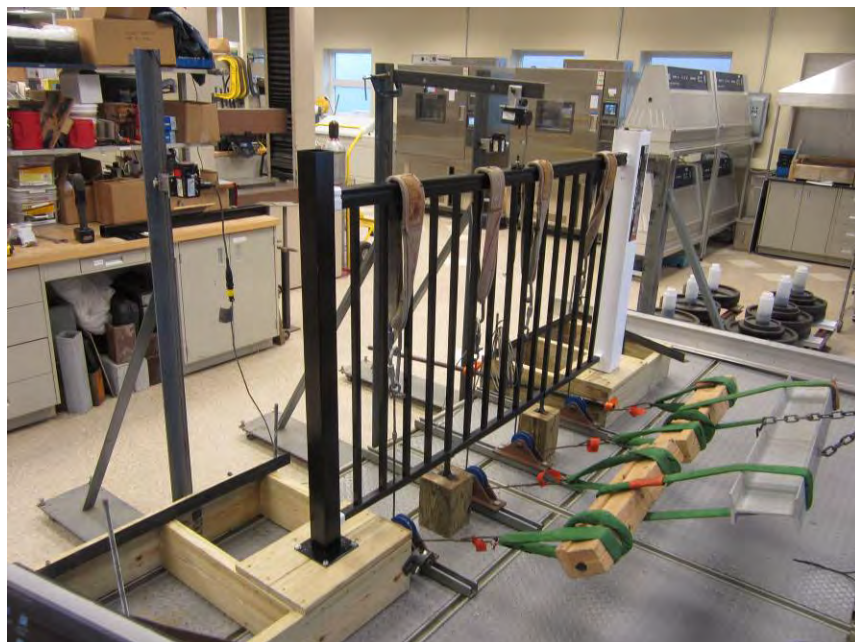


Photo No. 4
Vertical Uniform Load on Top Rail



Photo No. 5
Concentrated Load on Top of Single Post



Photo No. 6
Top Rail-Bracket-Post Attachment



Photo No. 7
Bottom Rail-Bracket-Post Attachment

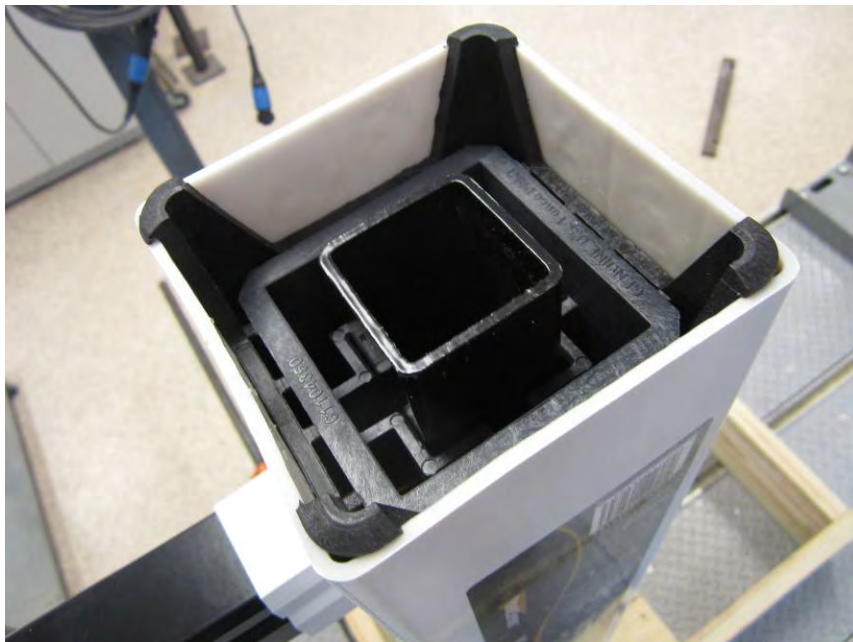


Photo No. 8
2 in Square Steel Post Mount with 5 in Square PVC Post Sleeve with Internal Spacers



Photo No. 9
Mounting Plate Attachment to the Underside of the Horizontal Wood Blocking
of the Mock Wood Deck



Photo No. 10
PVC Post Sleeve Top and Bottom Internal Spacers (Steel Post Mount)