Architectural Testing

STRUCTURAL PERFORMANCE TEST REPORT

Rendered to:

COLOR GUARD
A DIVISION OF POLY VINYL COMPANY, INC.

PRODUCT: 5 by 5 *Colonnade* Vinyl Porch Post

Report No: 81773.01-119-16
Report Date: 07/02/08

130 Derry Court
York, PA 17406-8405
phone: 717-764-7700
fax: 717-764-4129
www.archtest.com

Architectural Testing

STRUCTURAL PERFORMANCE TEST REPORT

Rendered to:

COLOR GUARD
A DIVISION OF POLY VINYL COMPANY, INC.
320 Range Line Road
Sheboygan Falls, Wisconsin 53085

Report No:	81773.01-119-16
Test Dates:	03/24/08
Through:	05/07/08
Report Date:	07/02/08

Product: 5 by 5 *Colonnade* Vinyl Porch Post

Project Summary: Architectural Testing, Inc. was contracted by Color Guard, A Division of Poly Vinyl Company, Inc. to evaluate the structural performance of their 5 by 5 *Colonnade* vinyl porch posts. The evaluation was for concentric axial load compression tests.

Test Samples: All test samples were provided by the manufacturer for testing. The samples measured 5 in by 5 in by a nominal 0.14 in thick and 108 in length. At the mid-height of the post, there was a simulated turned section with minor diameter of 4.75 in. Each sample was comprised of an aluminum reinforcing member (round tube) inside of vinyl porch post. The aluminum tube had a 0.070 in wall thickness and an outside diameter of 3.25 in. Each post had four 0.25 in x 3.85 in x 42-3/4 in long plastic spacers with two 0.75 in fins to contour to the steel at each end located between the aluminum reinforcement and the vinyl post. See attached drawings in Appendix A and photographs in Appendix B for additional description.

Equipment: For the top condition, the test fixture consisted of a flat steel support attached to a rigid steel column. The bottom consisted of a hydraulic jack positioned on a leveling fixture, fitted with a flat steel bearing plate and a 50,000 lb capacity load cell. Test duration, load and deflection were recorded electronically throughout the test.

Test Setup: The posts were installed into the compression fixture with no physical connections between the post and fixture. The compression fixture was plumbed using a laser plumbing device and the column was leveled with a 78 in level, while applying a minimal pre-load to hold the specimen in place. Two electronic linear transducers were positioned at the mid-height of two adjacent sides of the columns to measure lateral displacements about the X- and Y-axis of the column.

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Test Procedure: Each 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 the load test. Each test began with a small initial load and continued in incremental step loads until failure. The ultimate load and mode of failure were observed for each test.

Test Results: Test loads were imposed on the test specimens by concentric axial compression. X- and Y-Axis displacements were measured at the column's mid-height. Load / deflection curves were adjusted for the offset from the origin due to the initial load at the zero point of the deflection readings. X- and Y-Adjusted values are the X- and Y-Displacements plus the offset.

Specimen No. 1: **5 by 5 *Colonnade* Vinyl Porch Post**
Test Date: **03/24/08**

Test Load (lb)	**Displacement (in) - Origin Offset Adjustment**	
	X	**Y**
0	0.000	0.000
190	0.000	0.000
1,000	0.020	0.099
2,000	0.020	0.174
3,000	-0.001	0.221
4,000	-0.018	0.259
5,000	-0.026	0.278
6,000	-0.035	0.296
7,000	-0.046	0.316
8,000	-0.049	0.331
9,000	-0.053	0.352
10,000	-0.070	0.380
11,000	-0.080	0.398
12,000	-0.091	0.433
13,000	-0.106	0.474
14,000	-0.117	0.500
15,000	-0.130	0.535
16,000	-0.149	0.600
17,000	-0.175	0.680
18,000	-0.238	0.878
18,075	*Ultimate Load / Lateral Buckling*	

Test Results (Continued)

Specimen No. 2: **5 by 5 *Colonnade* Vinyl Porch Post**
Test Date: **05/07/08**

Test Load (lb)	Displacement (in) - Origin Offset Adjustment	
	X	Y
0	0.000	0.000
190	0.001	0.000
1,000	-0.021	0.091
2,000	-0.025	0.142
3,000	-0.016	0.171
4,000	0.005	0.213
5,000	0.018	0.244
6,000	0.027	0.266
7,000	0.037	0.290
8,000	0.044	0.336
9,000	0.068	0.378
10,000	0.078	0.411
11,000	0.104	0.472
12,000	0.125	0.524
13,000	0.147	0.576
14,000	0.168	0.643
15,000	0.199	0.743
15,926	*Ultimate Load / Lateral Buckling*	

Test Results (Continued)

Specimen No. 3: **5 by 5 *Colonnade* Vinyl Porch Post**
Test Date: **05/07/08**

Test Load (lb)	Displacement (in) - Origin Offset Adjustment	
	X	**Y**
0	0.000	0.000
190	0.000	0.000
1,000	-0.008	0.111
2,000	0.013	0.184
3,000	0.032	0.217
4,000	0.064	0.253
5,000	0.093	*0.274*
6,000	0.112	0.289
7,000	0.130	0.311
8,000	0.145	0.326
9,000	0.158	0.340
10,000	0.178	0.365
11,000	0.194	0.379
12,000	0.215	0.406
13,000	0.238	0.441
14,000	0.260	0.475
15,000	0.294	0.539
16,000	0.341	0.636
16,550	*Ultimate Load / Lateral Buckling*	

Summary of Axial Load Test Results: Three specimens were tested and an average was calculated. Results are summarized in the following table.

Specimen	Ultimate Load (lb)	Failure Mode
1	18,075	Lateral Buckling
2	15,926	Lateral Buckling
3	16,550	Lateral Buckling
Average:	16,850	

Reported results are ultimate load capacity of individual specimens and should not be interpreted as safe working loads or design loads.

Results are ultimate load capacity of individual specimens and should not be used as safe working values or design load values. Three specimens were tested for specific post types with lower ultimate loads and an average was obtained.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this test report, and all other supporting evidence will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, said materials shall be discarded without notice, and the service life of this report by Architectural Testing shall expire. 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, Inc.

For ARCHITECTURAL TESTING, INC.:

Digitally Signed by: Devon E. Cook

Devon E. Cook
Project Engineer - Structural Systems Testing

Digitally Signed by: Joseph A. Reed

Joseph A. Reed, P.E.
Director - Engineering and Product Testing

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

Appendix A - Drawings (3)
Appendix B - Photographs (2)

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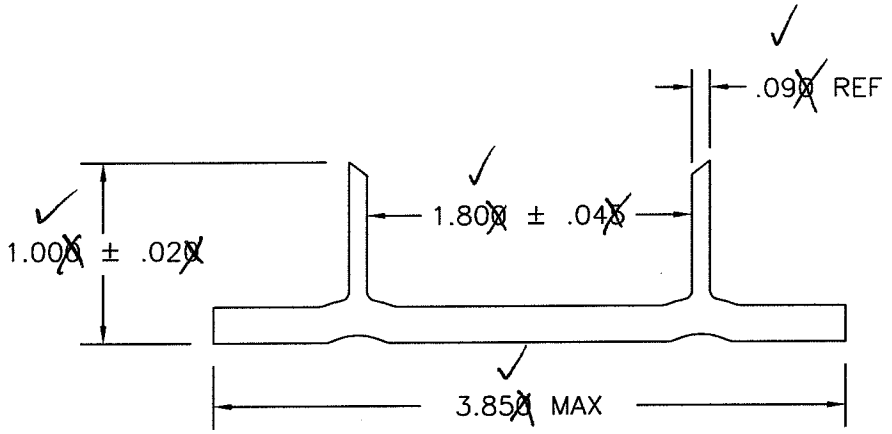
Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	07/02/08	N/A	Original report issue

APPENDIX A

Drawings



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 81773.01

Date 7/01/08 Tech DHC

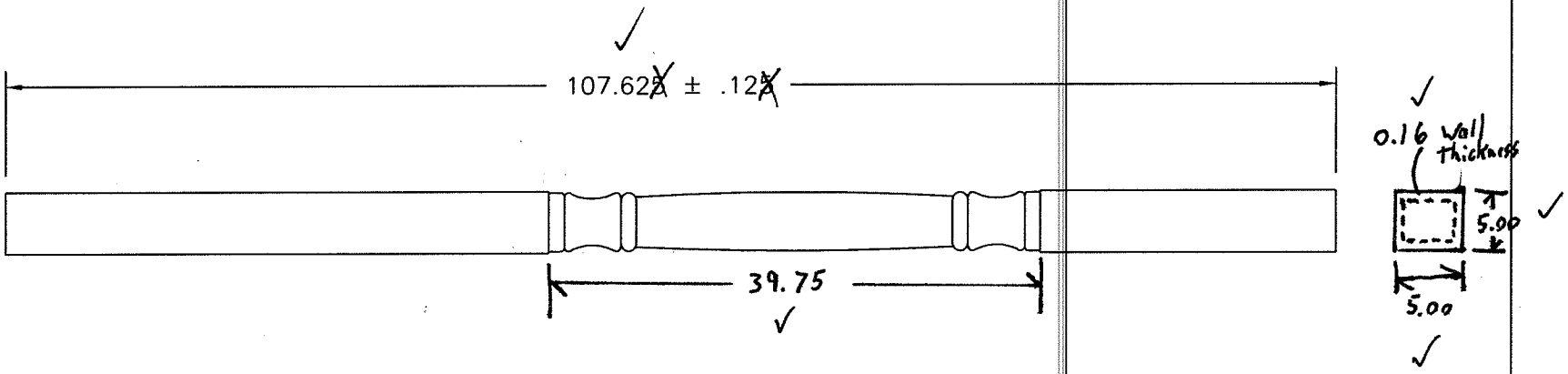
LENGTH– 43.000 +.000/–.500

NOTES:

1

2

Poly Vinyl Co.	
CUSTOM EXTRUSIONS DRAWER 300 SHEBOYGAN FALLS, WI 53085 PH. (920) 467-4685 FAX. (920) 467-3271	
WALL	
AREA– FLEXIBLE RIGID .851	LOG .4 REV. REL DR. BY DH
TOLERANCES– XX ± XXX ± .030 ANGLES	SCALE FULL DATE 3/27/01 DIE 3264
PART NO. 10000510	



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 81773.01

Date 7/01/08 Tech DKC

LENGTH–

NOTES:

1 ALL COMPONENT ITEMS MUST FIT MOLDED TUBE

2 REFERENCE COLONADE SAMPLE BOARD FOR FINISH REQUIREMENTS

3

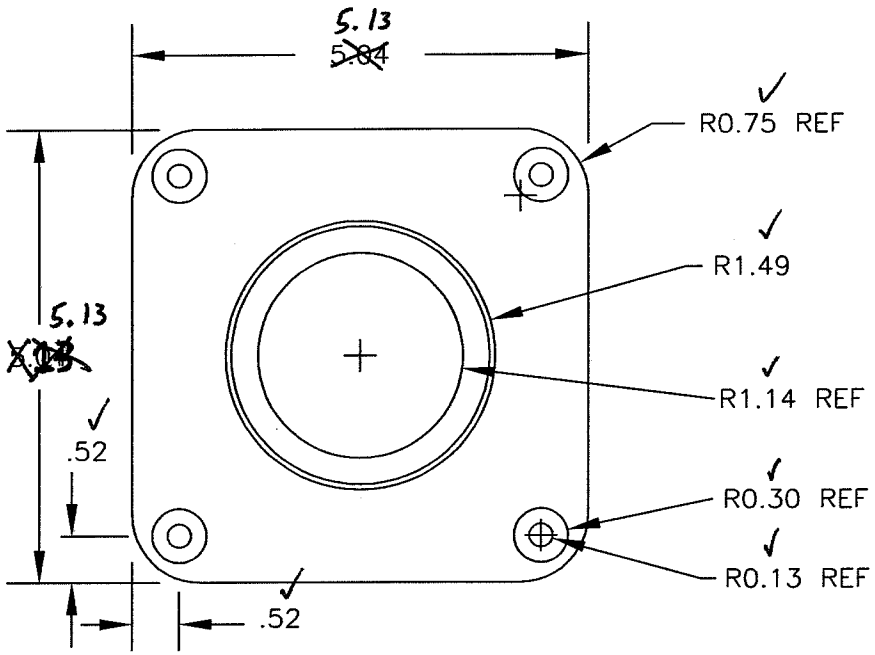
4

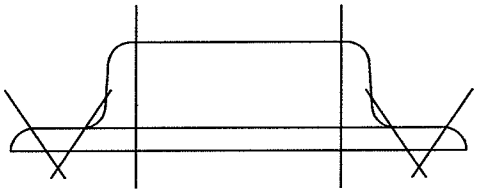
Poly Vinyl Co.
CUSTOM EXTRUSIONS
DRAWER 300 SHEBOYGAN FALLS, WI 53085
PH. (920) 467-4685 FAX. (920) 467-3271

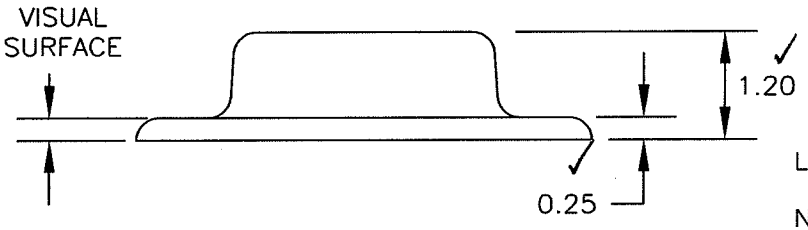
WALL	
AREA–	LOG .3
FLEXIBLE	REV. 1
RIGID	DR. BY DH
TOLERANCES–	SCALE
XX ± .020	DATE 5/22/01
XXX ± .010	DIE
ANGLES	

BUILDING PRODUCTS

PART NO. W55–108CP







LENGTH–

NOTES:

1 POWDER COAT PAINT
STANDARD COLOR GUARD WHITE

2

REV	DATE	INTL	EXPLANATION
1	11/2/05	TLB	CHANGE ALUMINUM ALLOY FROM 356 TO A-356
2	12/19/05	TLB	REFERENCE VS CRITICAL DIMENSIONS FLATTNESS, AND HOLE LOCATIONS

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 61773.01

Date 7/01/08 Tech DHC

Poly Vinyl Co.
CUSTOM EXTRUSIONS
DRAWER 300 SHEBOYGAN FALLS, WI 53085
PH. (920) 467-4685 FAX. (920) 467-3271

WALL	
AREA–	LOG
FLEXIBLE	REV. 2
RIGID	DR. BY TLB
TOLERANCES–	SCALE 1/2
XX ± .030	DATE 12/19/05
XXX ±	DIE
ANGLES	
TIE DOWN BRACKET	
PART NO. 720661	

APPENDIX B

Photographs

Photo No. 1
Axial Load Test Set-Up

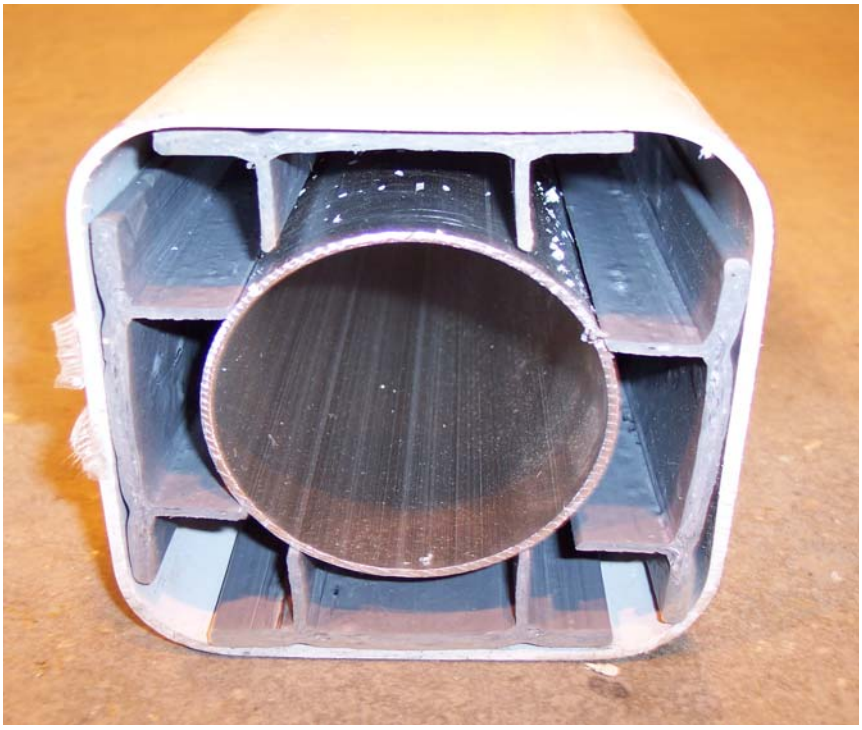


Photo No. 2
End View of Post Showing Aluminum Reinforcing Insert and Web Stiffeners

Photo No. 3
Cap and Base Plate