



Farabaugh Engineering and Testing Inc.

Project No. T129-17

Report Date: February 28, 2017

No. Pages: 10 (inclusive)

PERFORMANCE TEST REPORT

ASTM E330-02 UNIFORM LOAD STRUCTURAL TEST


ON

**HIGHLINE SERIES B1
(12" WALL PANEL)**

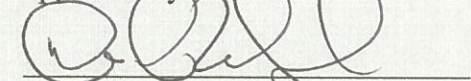
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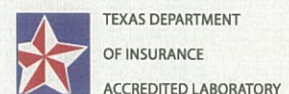
PETERSEN ALUMINUM CORP.
10551 PAC ROAD
TYLER, TX. 75707

Prepared by:


Paul G. Farabaugh

Approved by:


Daniel G. Farabaugh



Project No. T127-17

Purpose

The purpose of this test is to establish structural loading on the referenced test specimen in accordance with ASTM E-330-02, "Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference "and as provided herein.

Test Completion Date

1/18/17

Test Specimen

Customer: Petersen Aluminum
10551 PAC Rd.
Tyler, TX. 75707

Panel Series: Highline B1 Series

Panel Tested: B1 Wall Panel, 11.356"(coverage) width x 0.032" Alum. or 24 Ga. Steel, with clip end (**HLB1C Panel**) or screw leg end (**HLB1 Panel**).

Panel Clip 20 ga. x 2.5" wide clip

Test Apparatus

A test chamber was used with two static pressure taps located at diagonally opposite corners. A controlled blower provided a uniform pressure load the specimen mock-up. Calibrated manometers were used to measure the pressure at each pressure tap. The uniform load pressure was performed in the negative directions on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

Test Assembly

- The mock-up was 8'-0" wide X 8'- 0" high and consisted of a 8 panel wide mock up with 16 ga. horizontal studs spaced at 24" o.c. The specimen was surrounded by a 2 X 12 wood framed perimeter.
- The panels were attached to the 16ga. steel supports using #14 - 13 x 1-1/2" long self drill, flat head, Concealor fasteners. Test #1 & #3 used clip leg with clips using two fasteners per clip and Test #2 & 4 had a screw leg using one screw at each support. The starter panel was also face fastened with (2) 1/4 - 14 x 2" long tek fasteners at each support. The last panel was face fastened with (2) 1/4 - 14 x 2" long tek fasteners. The ends of each panel were fixed to the supports using (1) 1/4-14 x 1-1/2" long tek fastener at the one interior low cells of the panel.
- 4 mil Plastic Sheeting was placed between the structural steel and the exterior metal face panel.
- See attached drawing showing test set-up and assembly details.

Test Procedure

The tests were conducted in accordance with ASTM E-330-02, "Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference "and as provided herein.

Project No. T129-17

ASTM E330 UNIFORM LOAD TEST - NEGATIVE PRESSURE
TEST #1

Panel Tested: **HLB1C Wall Panel**, 12"(nominal) Panel Width x **0.032" Aluminum**

Test Condition: 2 Fasteners per clip at clip leg into supports spaced @ 2' -0" o.c..

LOAD * (PSF)	DEFLECTION READING
	D-1 (in)
0.7	0.000
11.1	0.060
0.7	0.007
21.5	0.198
0.7	0.010
31.9	0.323
0.7	0.017
42.3	0.493
0.7	0.033
52.7	0.584
0.7	0.036
63.1	0.695
0.7	0.047
73.5	0.826
0.7	0.066
83.9	0.961
0.7	0.113
94.3	1.095
0.7	0.171
104.7	1.269
0.7	0.265
115.1	1.425
0.7	0.395
125.5	1.591
0.7	0.474
136.0	1.741
0.7	0.566
146.4	1.923
0.7	0.695
156.8	2.093
0.7	0.824
167.2	2.188
0.7	0.997
177.6	2.373
0.7	1.178
188.0	2.561
0.7	1.259
198.4	2.694
0.7	1.298
208.8	2.764
0.7	1.495

RESULTS

Failure Load = 222.1 psf* . Panel buckled (Note - * - Includes panel weight)

Project No. T127-17

ASTM E330 UNIFORM LOAD TEST - NEGATIVE PRESSURE
TEST #2

Panel Tested: **HLB1 Wall Panel**, 12"(nominal) Panel Width x **0.032" Aluminum**

Test Condition: 1 Fastener thru screw leg into supports spaced at 2'- 0" o.c..

LOAD * (PSF)	DEFLECTION READING D-1 (in)
0.7	0.000
11.1	0.056
0.7	0.001
21.5	0.145
0.7	0.003
31.9	0.238
0.7	0.007
42.3	0.337
0.7	0.009
52.7	0.423
0.7	0.015
63.1	0.538
0.7	0.023
73.5	0.638
0.7	0.027
83.9	0.764
0.7	0.052
94.3	0.893
0.7	0.102
104.7	1.014
0.7	0.158
115.1	1.149
0.7	0.225
125.5	1.415
0.7	0.361
136.0	1.658
0.7	0.503

RESULTS

Failure Load = 136.9 psf *. Panel disengagement.

(Note - * - Includes panel weight)

ASTM E330 UNIFORM LOAD TEST
TEST #3

Panel Tested: **HLB1C Wall Panel**, 12”(nominal) Panel Width x **24 ga. steel**

Test Condition: 2 Fasteners per clip at clip leg into supports spaced @ 2' -0" o.c..

POSITIVE PRESSURE

LOAD (PSF)	DEFLECTION READING D-1 (in)
0.0	0
30.0	0.222
0.0	0.022
60.0	0.403
0.0	0.044
90.0	0.549
0.0	0.068

NEGATIVE PRESSURE

LOAD * (PSF)	DEFLECTION READING D-1 (IN)
1.6	0
27.6	0.055
1.6	0.007
53.7	0.142
1.6	0.018
79.7	0.238
1.6	0.034
90.1	0.281
1.6	0.046

RESULTS

Upon completion of the testing as the positive and negative pressures noted above there were no noticeable failures of the specimen

Project No. T129-17

ASTM E330 UNIFORM LOAD TEST - NEGATIVE PRESSURE
TEST #4

Panel Tested: **HLB1 Wall Panel**, 12”(nominal) Panel Width x **24 ga. steel**

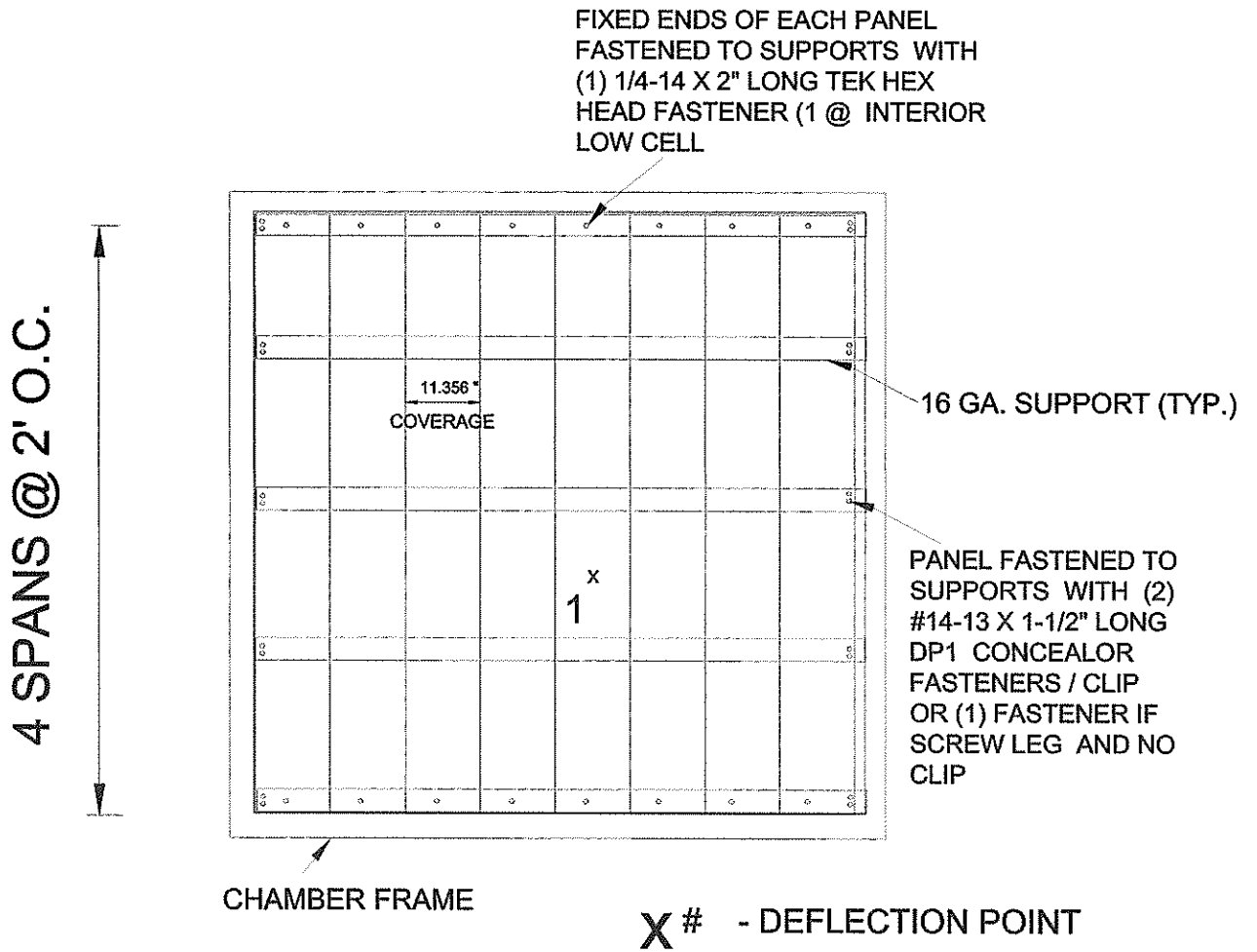
Test Condition: 1 Fastener thru screw leg into supports spaced at 2'- 0" o.c..

LOAD * (PSF)	DEFLECTION READING D-1 (in)
1.6	0.000
12.0	0.050
1.6	0.001
22.4	0.118
1.6	0.002
32.8	0.181
1.6	0.002
43.2	0.244
1.6	0.006
53.7	0.313
1.6	0.009
64.1	0.387
1.6	0.011
74.5	0.461
1.6	0.016
84.9	0.541
1.6	0.022
95.3	0.616
1.6	0.034
105.7	0.696
1.6	0.051
116.1	0.884
1.6	0.136
126.5	0.941
1.6	0.146
136.9	1.008
1.6	0.161
147.3	1.106
1.6	0.197
157.7	1.251
1.6	0.385
168.1	1.627
1.6	0.511

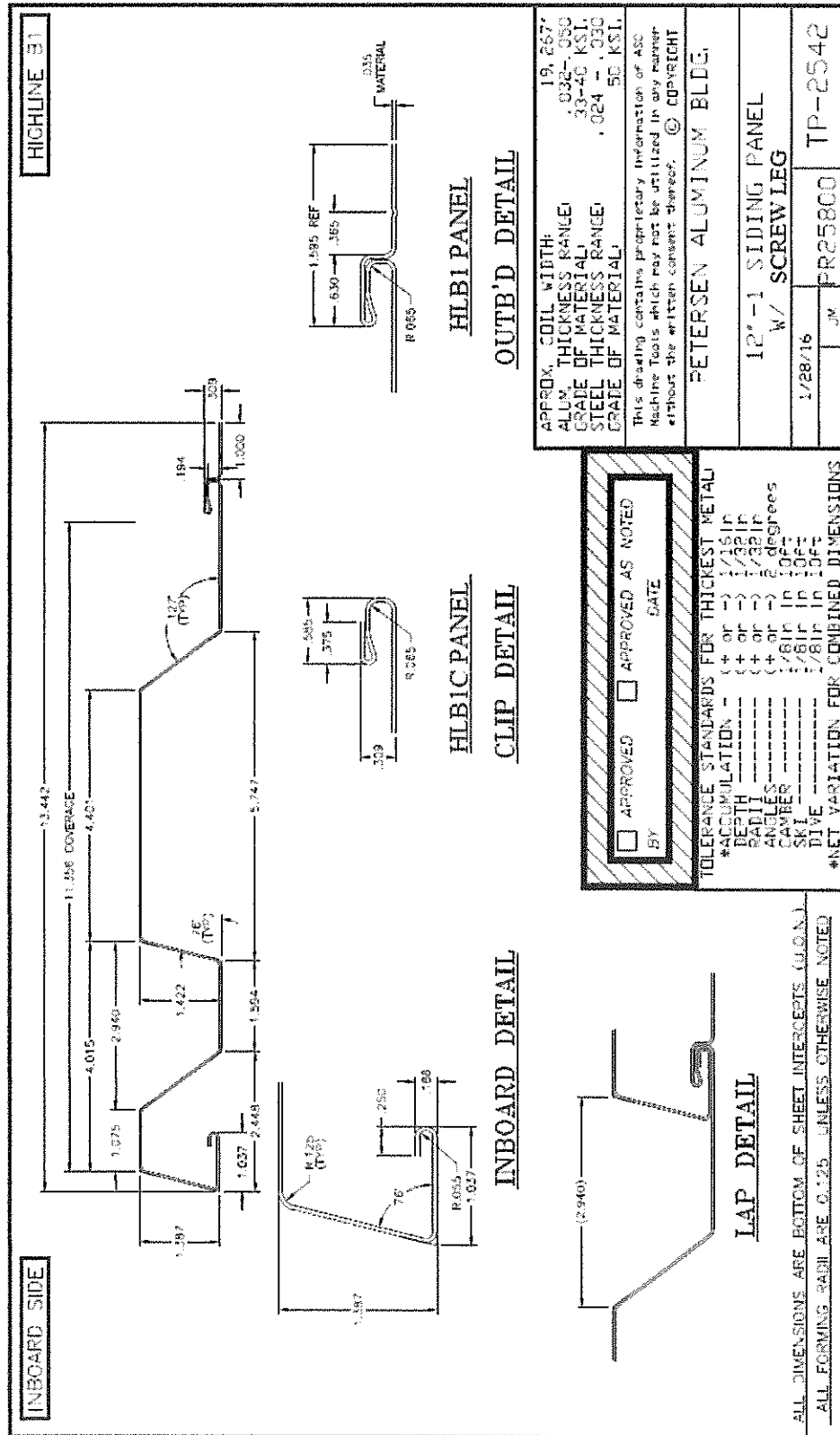
RESULTS

Failure Load = 169.1 psf* . Panel disengagement. (Note - * - Includes panel weight)

TEST SETUP

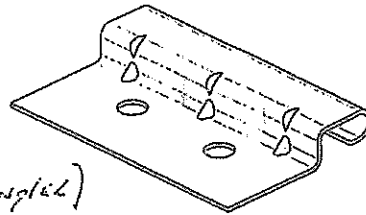


PLAN VIEW



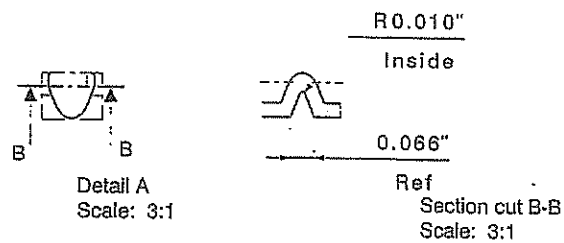
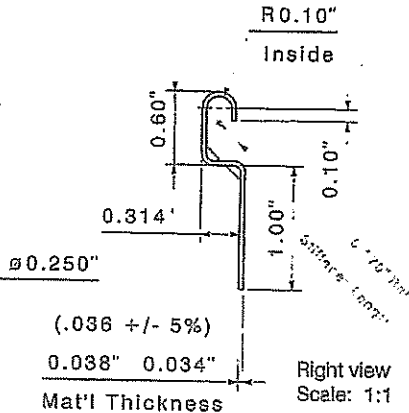
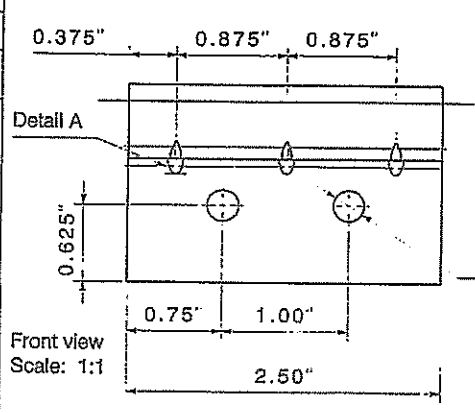
CUSTOMER APPROVAL:
 My signature on this print indicates approval of all the information shown (or as amended hereon) and that items made to these specifications will be accepted

NAME: [Signature] (Tina. Applegate)
 DATE: 4/12/11



Isometric view
 Scale: 1:1

METRIC UNITS (mm) Regular: 1" = 25.4 mm Decimal: 1/16" = 1.5875 mm Fractional: 1/32" = 0.79375 mm	
TOLERANCE (unless otherwise noted) Fractional: ± 0.005 Decimal: ± 0.005 Holes: ± 0.010 Holes: ± 0.015	
ENGLISH UNITS (Inches) Fractional: 1/16" Decimal: 0.005 Holes: ± 0.010 Holes: ± 0.015	
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Material: G-90 Galv	Material Spec: Commercial Quality	 P.O. Box 6626 Wyomissing, PA 19810 T. 610.578.5731 F. 610.578.0932	Description: Petersen Horizontal Wall Panel Clip
Surface Treatment: --	Performance: --		Drawing No.: XP-1806
Scale: As Shown Above			Drawn By: scda
			Date: 4/15/2011

Project No. T129-17

TENSILE TEST REPORT

Client: Petersen Aluminum
10551 PAC Rd.
Tyler, TX. 75707

Test Date: 9/30/15 and 2/22/17

Test Method: ASTM A370-10 - steel
ASTM B557-10 - aluminum

Material Description:

Sample #0029-17 -HLB1C Wall Panel, 12”(nominal) Width, 0.032" Alum. with clip leg
Sample #0037-17 HLB1 Wall Panel, 12”(nominal) Width, 0.032" Alum. with screw leg
Sample #0094-15 - HLB1C Wall Panel, 12”(nominal)Width, 24 Ga. Steel with clip leg
Sample #0028-17 - HLB1 Wall Panel, 12”(nominal)Width, 24 Ga. Steel with screw leg

Sample No.	Width (in)	Thickness (in)	Yield Load (lb)	Max. Load (lb)	0.2% Offset Yield Strength (psi)	Tensile Strength (psi)	Elongation (% in 2 inches)
0029-17	0.504	0.029	358.9	385.3	24,559	26,360	11.7
0037-17	0.509	0.029	367.3	389.7	24,885	26,398	13.2
0094-15	0.502	0.023	646.3	750.5	55,978	65,001	25.0
0028-17	0.499	0.023	586.2	679.3	51,080	59,186	25.7

Equipment Used: Tensile Machine #QT7-061196-020
Caliper #1074379
Extensometer #10311744D
Micrometer #110596927