Farabaugh Engineering and Testing Inc.

Project No. T130-17

Report Date: February 28, 2017

No. Pages: 10 (inclusive)

PERFORMANCE TEST REPORT

ASTM E330-02 UNIFORM LOAD STRUCTURAL TEST

ON

HIGHLINE SERIES B2
(16" WALL PANEL)

FOR

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

Prepared by:

Paul G. Farabaugh

Approved by:

Daniel G. Farabaugh

Project No. T130-17

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
2/14/17

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

Panel Series: Highline B2 Series

Panel Tested: B2 Wall Panel, 15.356" (Coverage) Width x 0.032" Alum. & 24 Ga. Steel with clip end (**HLB2C Panel**) or screw leg end (**HLB2 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 direction 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 two 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. T130-17

ASTM E330 UNIFORM LOAD TEST - **NEGATIVE PRESSURE TEST #1**

Panel Tested: **HLB2C Wall Panel**, 16"(nominal) Panel Width, **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)
0.6	0.000
11.0	0.329
0.6	0.011
21.4	0.626
0.6	0.021
31.8	0.936
0.6	0.056
42.2	1.240
0.6	0.151
52.6	1.567
0.6	0.341
63.0	1.867
0.6	0.582
73.5	2.156
0.6	0.836
83.9	2.421
0.6	1.092
94.3	2.709
0.6	1.391
104.7	2.910
0.6	1.627
115.1	3.165
0.6	1.9
125.5	3.441
0.6	2.336
135.9	3.681
0.6	2.526
146.3	3.811
0.6	2.641
156.7	3.974
0.6	2.791

RESULTS

Failure Load = 157.2 psf* . Panel disengagement. Note: *- Panel weight included

.

Project No. T130-17

ASTM E330 UNIFORM LOAD TEST - **NEGATIVE PRESSURE TEST #2**

Panel Tested: **HLB2 Wall Panel**, 16"(nominal) Panel Width, **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)
0.6	0.000
11.0	0.270
0.6	0.005
21.4	0.521
0.6	0.009
31.8	0.786
0.6	0.042
42.2	1.033
0.6	0.107
52.6	1.36
0.6	0.235
63.0	1.682
0.6	0.446
73.5	1.952
0.6	0.652
83.9	2.247
0.6	0.952

RESULTS
Failure Load = 87.0 psf* . Panel disengagement.

Note: *- Panel weight included

.

Project No. T130-17

ASTM E330 UNIFORM LOAD TEST
TEST #3

Panel Tested: **HLB2C Wall Panel**, 16"(nominal) Panel Width, **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	0.000
26.0	0.644
0.0	0.052
52.0	1.196
0.0	0.106
78.1	1.662
0.0	0.157
104.1	2.070
0.0	0.185
124.9	2.201
0.0	0.199

NEGATIVE PRESSURE

LOAD * (PSF)	DEFLECTION READING D-1 (IN)
1.2	0.000
27.3	0.188
1.2	0.016
53.3	0.376
1.2	0.049
79.3	0.574
1.2	0.093
105.3	0.770
1.2	0.164
126.1	0.995
1.2	0.266

RESULTS

Upon completion of the testing at the positive and negative pressures noted above there were no noticeable failures of the specimen. Note: *- Panel weight included

Project No. T130-17

ASTM E330 UNIFORM LOAD TEST - **NEGATIVE PRESSURE TEST #4**

Panel Tested: **HLB2 Wall Panel**, 16"(nominal) Panel Width, **24 ga. steel**

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

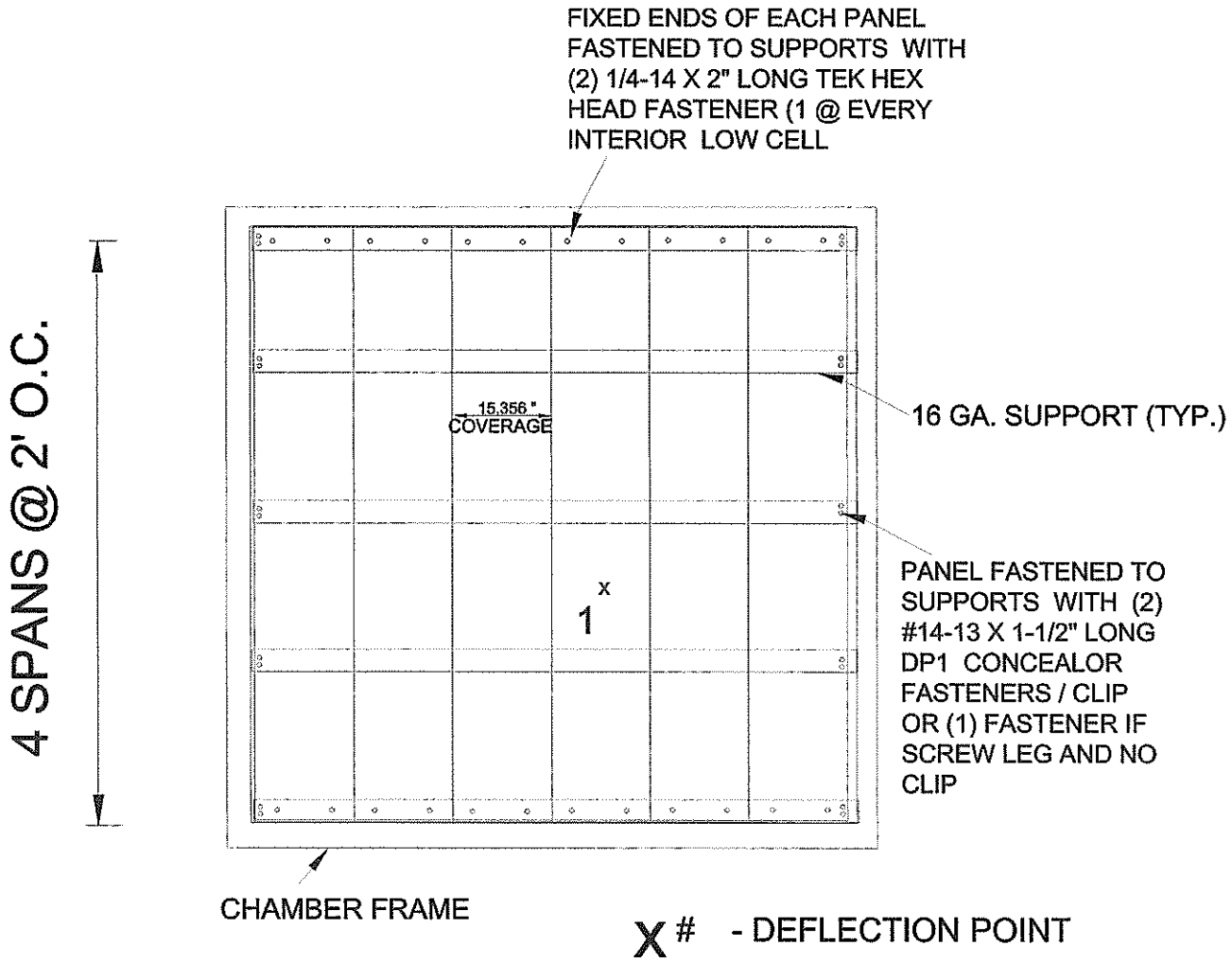
LOAD * (PSF)	DEFLECTION READING D-1 (in)
1.2	0.000
11.6	0.085
1.2	0.008
22.1	0.210
1.2	0.010
32.5	0.323
1.2	0.015
42.9	0.441
1.2	0.020
53.3	0.55
1.2	0.028
63.7	0.654
1.2	0.035
74.1	0.772
1.2	0.045
84.5	0.887
1.2	0.078
94.9	1.019
1.2	0.123
105.3	1.153
1.2	0.183
115.7	1.282
1.2	0.223
126.1	1.409
1.2	0.313
136.5	1.833
1.2	0.703

RESULTS

Failure Load = 137.1 psf *. Panel disengagement

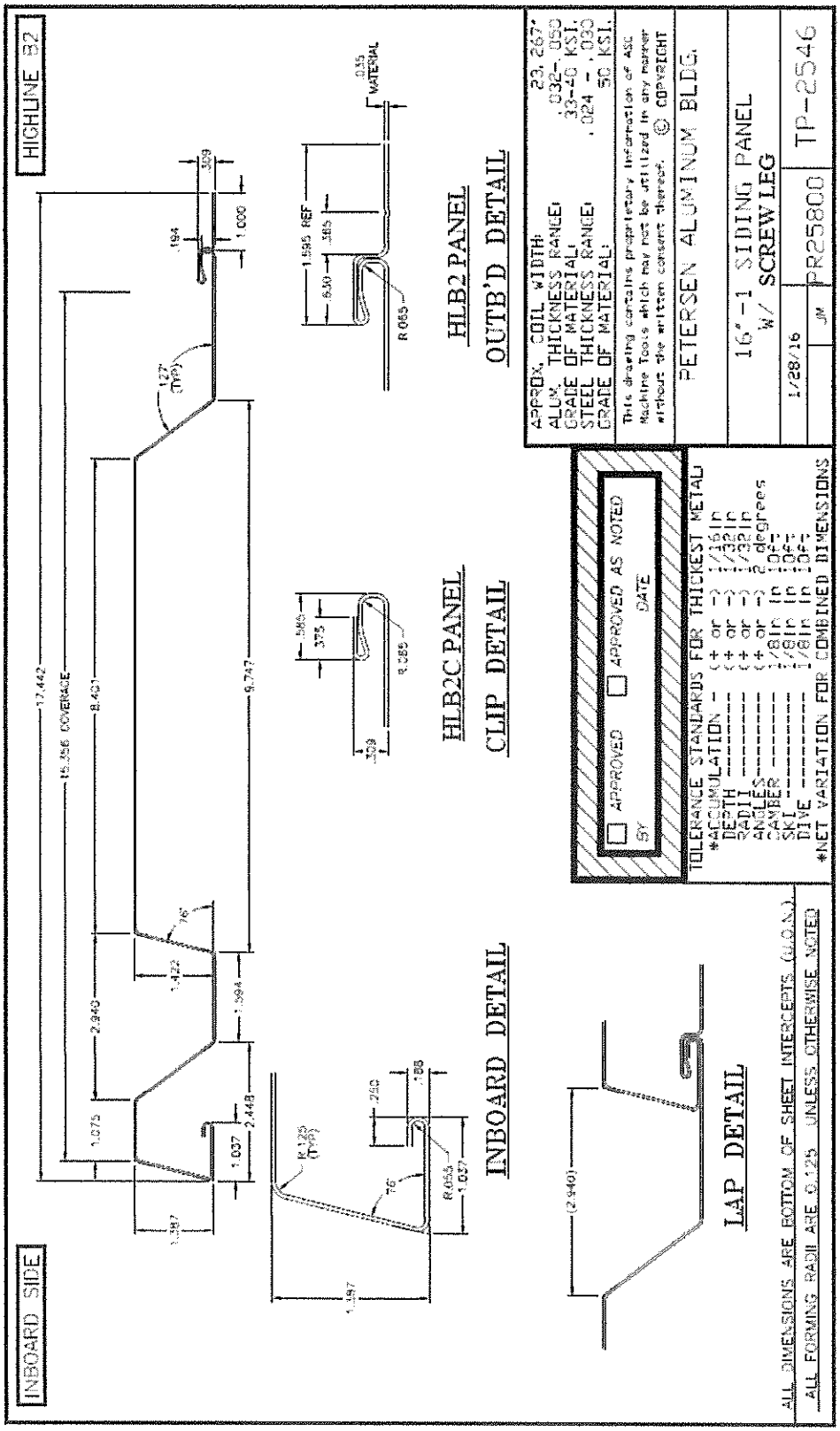
Note: *- Panel weight included

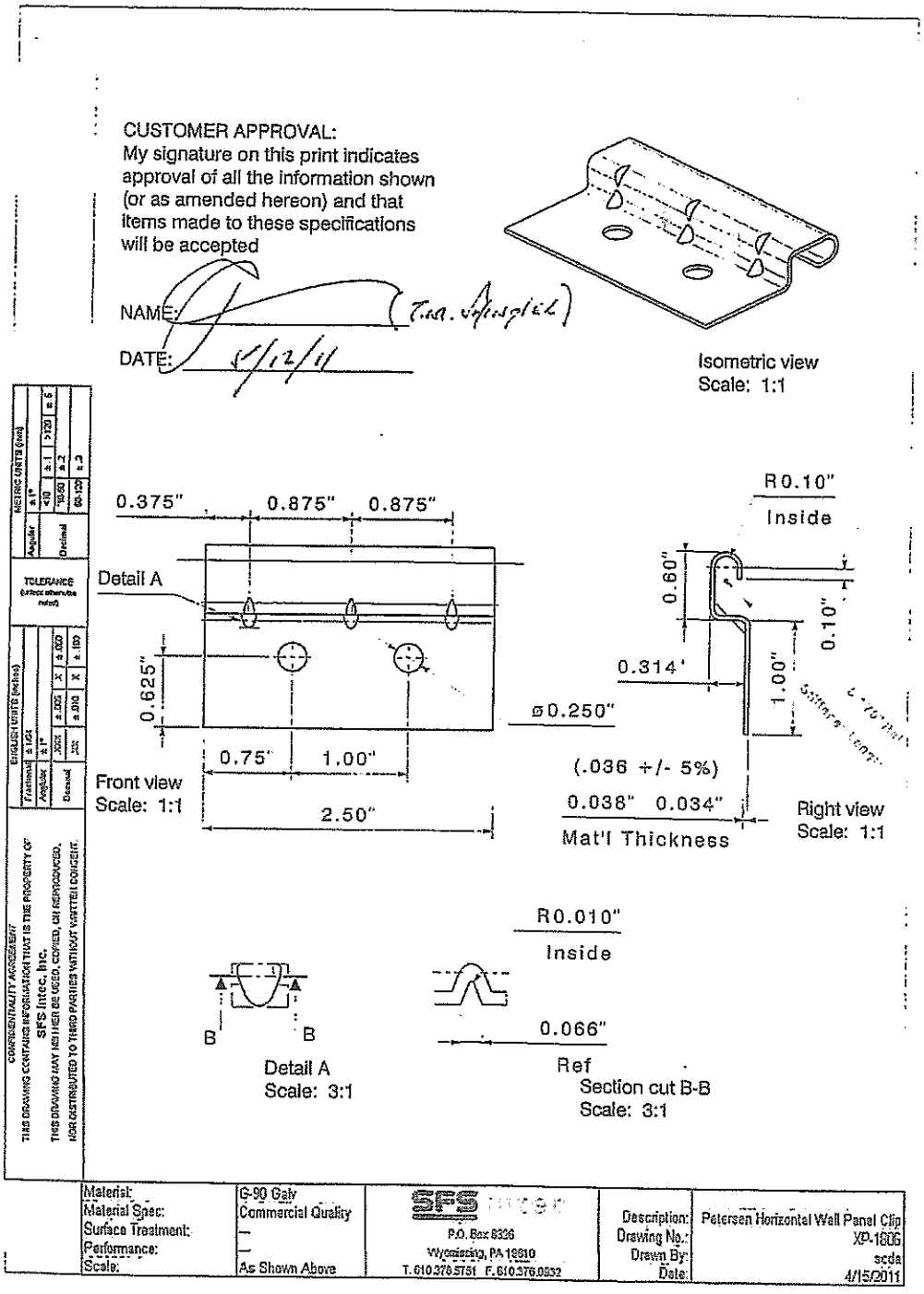
TEST SETUP



PLAN VIEW

Project No. T130-17




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:
DATE: 4/12/11
Isometric view
Scale: 1:1
0.375"
0.875"
0.875"
Detail A
0.625"
0.75"
1.00"
2.50"
Front view
Scale: 1:1
R0.10"
Inside
0.60"
0.10"
0.314"
1.00"
ø0.250"
(.036 +/- 5%)
0.038" 0.034"
Mat'l Thickness
Right view
Scale: 1:1
R0.010"
Inside
B
B
Detail A
Scale: 3:1
0.066"
Ref
Section cut B-B
Scale: 3:1
CONFIDENTIALITY AGREEMENT
THIS DRAWING CONTAINS INFORMATION THAT IS THE PROPERTY OF SFS Intec, Inc.
THIS DRAWING MAY NEITHER BE USED, COPIED, OR REPRODUCED, NOR DISTRIBUTED TO THIRD PARTIES WITHOUT WRITTEN CONSENT.
ENGLISH UNITS (inches)
Fractional ± 1/64
Angular ± 1°
X.XX ± .005
X.XXX ± .002
Decimal .XX ± .010
X ± .060
X ± .100
METRIC UNITS (mm)
Angular ± 1°
Decimal
<10 ± 1
10-50 ± 2
50-120 ± 3
>120 ± 5
TOLERANCE (unless otherwise noted)
Material: G-90 Galv
Material Spec: Commercial Quality
Surface Treatment: —
Performance: —
Scale: As Shown Above
SFS intec
P.O. Box 8336
Wyomissing, PA 19610
T. 610.376.5751 F. 610.376.0832
Description: Petersen Horizontal Wall Panel Clip
Drawing No.: XP-1805
Drawn By: scda
Date: 4/15/2011

Project No. T130-17

TENSILE TEST REPORT

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

Test Date: 3/24/16 & 2/15/17

Test Method: ASTM A370-10- Steel
ASTM B557-10 - Aluminum

Material Description:
Sample #0021-17 - HLB2C Wall Panel, 16"(nominal) width x 0.032" Alum. with clip leg
Sample #0024-17 - HLB2 Wall Panel, 16"(nominal) width x 0.032" Alum. with screw leg
Sample #0015-16 - HLB2C Wall Panel, 16"(nominal) width x 24 Ga. Steel with clip leg
Sample #0020-17 - HLB2 Wall Panel, 16"(nominal) width x 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)
0021-17	0.501	0.031	366.1	385.1	23,570	24,797	11.5
0024-17	0.504	0.030	354.8	384.9	23,468	25,457	13.7
0015-16	0.504	0.023	528.5	684.4	45,596	59,039	29.66
0020-17	0.499	0.023	607.2	700.6	52,908	61,047	26.5

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