



Farabaugh Engineering and Testing Inc.

Project No. T185-20

Report Date: March 31, 2020

No. Pages: 9 (inclusive)

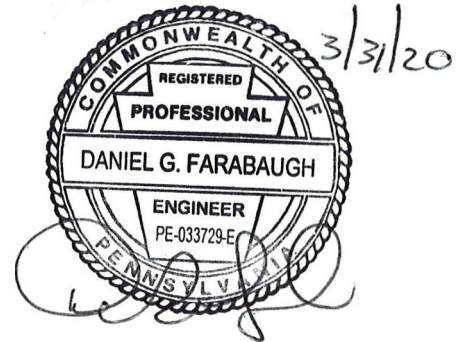
PERFORMANCE TEST REPORT

ASTM E330 UNIFORM LOAD STRUCTURAL TEST

BOX RIB – 1 PANEL 12” WIDE X 24 GA. STEEL/0.032” ALUMINUM WITH SCREW LEG/CLIP

FOR

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



Prepared by:

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Approved by:

Daniel G. Farabaugh



DADE COUNTY
ACCREDITED
LABORATORY



AAMA
ACCREDITED
LABORATORY



TEXAS
ACCREDITED
LABORATORY



FLORIDA
ACCREDITED
LABORATORY
& QC ENTITY

Project No. T185-20

Purpose

The purpose of this test is to establish structural loading on the referenced test specimen in accordance with ASTM E330.

Test Completion Date

3/25/20

Test Specimen

Manufacturer: Petersen Aluminum Corp.
10551 PAC Rd.
Tyler, TX 75707

Specimen:

Box Rib – 1 Panel, 12” wide (Coverage), 24 ga. steel (with Screw leg and with Clip)
1 Panel, 12” wide Coverage), 0.032” aluminum (with Screw Leg and with Clip)

Panel Clip: One Piece Stainless Steel Clip – 2-1/2” Long X 0.034” Thick

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 panels were attached to 16 ga supports with #14-13 X 1-1/2” long DP1 Concealor self-drill fasteners. For Test #1 & #2 the panel had a screw leg and the panel was fastened thru the screw leg into the support with only one screw. For Test #3 & #4 the panel had no screw leg and the panel was fastened with a Stainless Steel clip using two fasteners per clip. See test setup for location of supports and installation of panels. Note: Screw leg length varied from original drawing. See panel drawings for actual screw leg lengths.
- 4 mil Plastic Sheeting was placed over top face of panel for the positive direction testing and then the panel was flipped over with plastic covering the exposed back of the panel and tested in the negative direction.
- See attached drawings showing test set-up and assembly details.

Test Procedure

The tests were conducted in accordance with ASTM E330/E330M-14, “Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference “and as provided herein. Note: Panels were tested in the positive and negative pressure direction.

TEST #1

Test Specimen:

Box Rib – 1 Panel, 12” wide (Coverage), 24 ga. Steel (w/ screw leg length 1.1” long)

Support Spacing: 2 spans @ 46.5” o/c

NEGATIVE TEST PRESSURE

PETERSEN 1 PANEL W/SCREW LEG 12" W X 24 GA.STEEL (2 SPANS @ 46.5")			
DEFLECTION DIAL READINGS (INCHES)			
LOAD (PSF)	D-1	D-2	D-3
0.0	0.000	0.000	0.000
10.4	0.094	0.167	0.096
20.8	0.186	0.305	0.194
31.2	0.207	0.498	0.321
41.6	0.251	0.627	0.381
52.0	0.320	0.865	0.485
62.4	0.377	1.039	0.576

RESULTS:

@ Test Load 62.4 psf – partial seam disengagement at ends

Maximum Test Load = 113.9 psf (Seam disengagement)

TEST #2

Test Specimen:

Box Rib – 1 Panel, 12” wide (Coverage), 0.032” alum. (w/ screw leg length 1.1” long)

Support Spacing: 2 spans @ 46.5” o/c

NEGATIVE TEST PRESSURE

PETERSEN 1 PANEL W/SCREW LEG 12" W X 0.032" ALUM. (2 SPANS @ 46.5")			
DEFLECTION DIAL READINGS (INCHES)			
LOAD (PSF)	D-1	D-2	D-3
0.0	0.000	0.000	0.000
5.2	0.001	0.066	0.001
10.4	0.004	0.154	0.001
15.6	0.006	0.262	0.007
20.8	0.016	0.366	0.017
31.2	0.034	0.596	0.050
41.6	0.074	0.831	0.107
52.0	0.123	1.077	0.209

RESULTS:

Maximum Test Load =57.5 psf (Panel pulled over fastener)

TEST #3

Test Specimen: Box Rib – 1 Panel, 12” wide (Coverage), 24 ga. Steel (w/clip)

Support Spacing: 2 spans @ 46.5” o/c

NEGATIVE TEST PRESSURE

PETERSEN 1 PANEL W/CLIP 12" W X 24 GA. STEEL (2 SPANS @ 46.5")			
DEFLECTION DIAL READINGS (INCHES)			
LOAD (PSF)	D-1	D-2	D-3
0.0	0.000	0.000	0.000
15.6	0.099	0.168	0.190
46.8	0.256	0.411	0.450
46.8	0.431	0.642	0.720
62.4	0.588	0.844	0.948
78.1	0.705	0.993	1.221
78.1	0.717	1.010	0.863
93.7	0.816	1.137	1.002
109.3	0.909	1.248	1.121
124.9	1.015	1.377	1.266

RESULTS:

@ Test Load 88.4 psf – partial seam disengagement at ends

Maximum Test Load = 125.5 psf (Clip straightened out and seam disengaged from clip)

TEST #4

Test Specimen: Box Rib – 1 Panel, 12” wide (Coverage), 0.032” alum. (w/clip)

Support Spacing: 2 spans @ 46.5” o/c

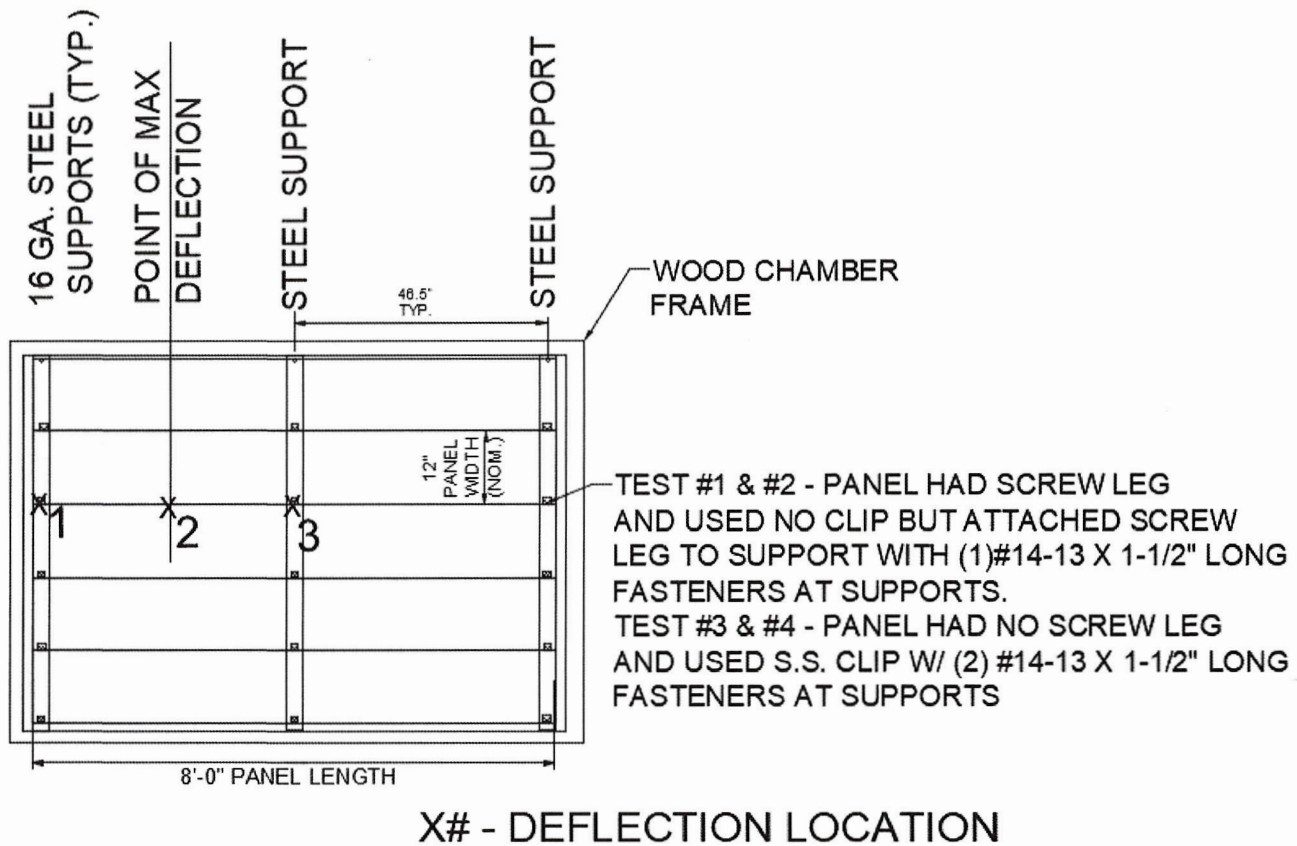
NEGATIVE TEST PRESSURE

PETERSEN 1 PANEL W/CLIP 12" W X 0.032" ALUM. (2 SPANS @ 46.5")			
DEFLECTION DIAL READINGS (INCHES)			
LOAD (PSF)	D-1	D-2	D-3
0.0	0.000	0.000	0.000
10.4	0.030	0.087	0.051
20.8	0.089	0.245	0.145
31.2	0.214	0.460	0.294
41.6	0.352	0.669	0.442
52.0	0.472	0.840	0.561
62.4	0.582	0.991	0.666
72.9	0.687	1.137	0.768

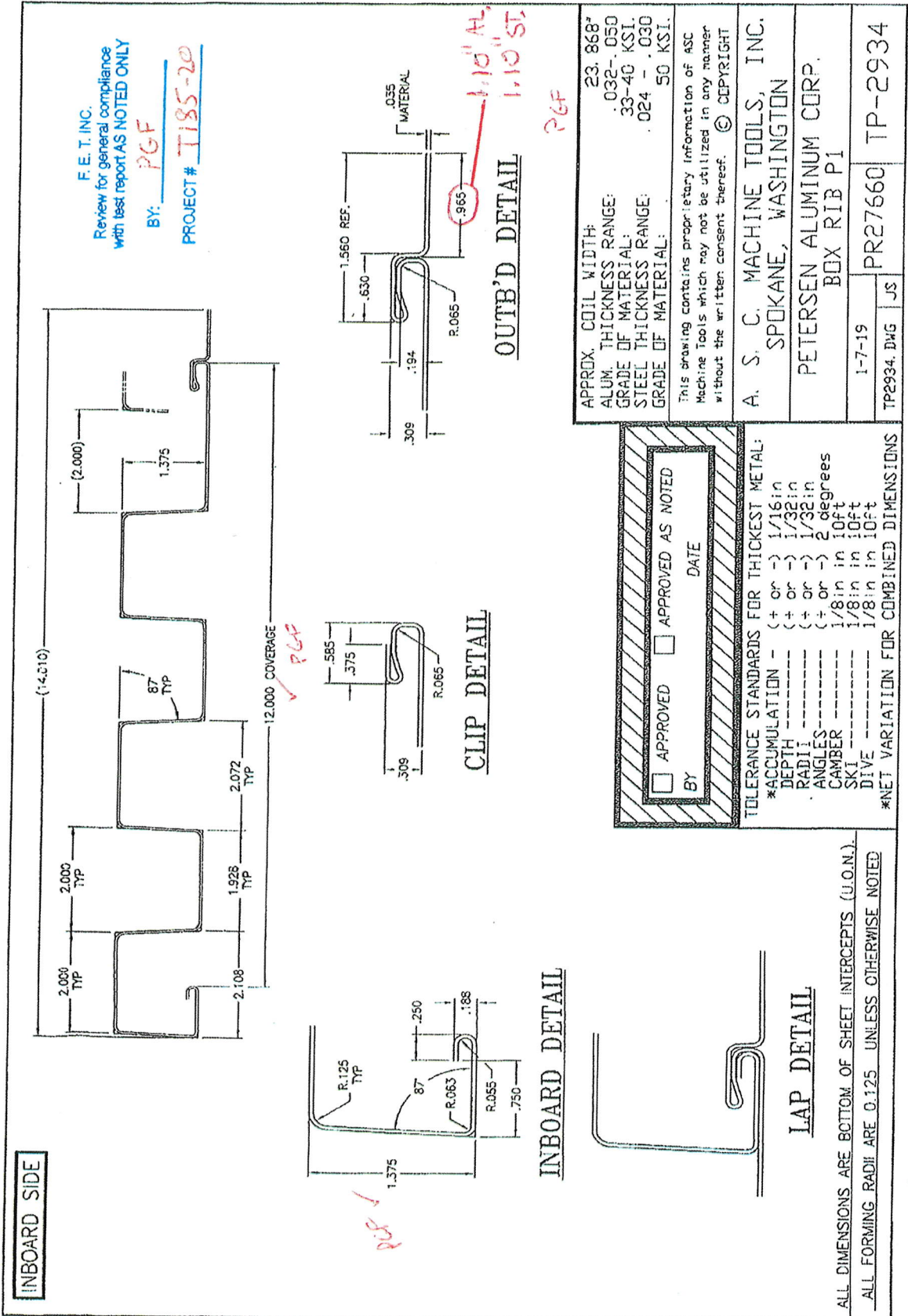
RESULTS:

Maximum Test Load = 82.1 psf (Seam disengagement)

TEST SET UP



PLAN VIEW



F. E. T. INC.
 Review for general compliance
 with test report AS NOTED ONLY
 BY: PGF
 PROJECT # T185-20

APPROX. COIL WIDTH: 23. 868"
 ALUM. THICKNESS RANGE: .032-.050
 GRADE OF MATERIAL: 33-40 KSI.
 STEEL THICKNESS RANGE: .024 - .030
 GRADE OF MATERIAL: 50 KSI.

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 Machine Tools which may not be utilized in any manner
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A. S. C. MACHINE TOOLS, INC.
 SPOKANE, WASHINGTON
 PETERSEN ALUMINUM CORP.
 BOX RIB P1

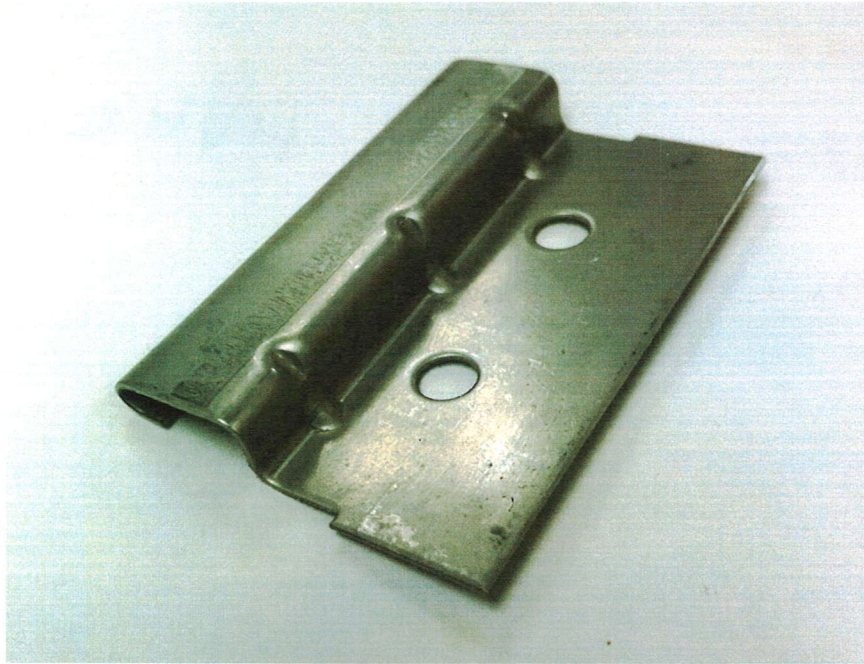
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BY		

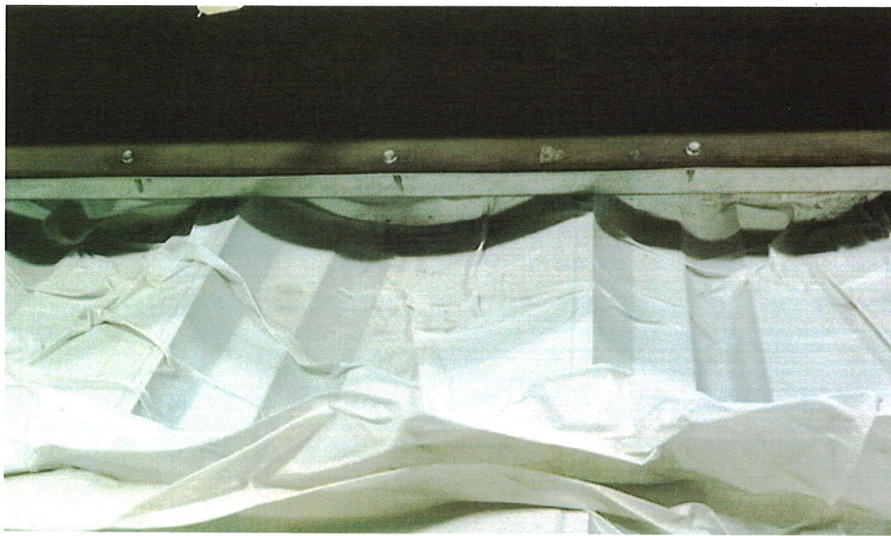
TOLERANCE STANDARDS FOR THICKEST METAL:
 *ACCUMULATION - (+ or -) 1/16in
 DEPTH - (+ or -) 1/32in
 RADII - (+ or -) 1/32in
 ANGLES - (+ or -) 2 degrees
 CAMBER - 1/8in in 10ft
 SKI - 1/8in in 10ft
 DIVE - 1/8in in 10ft
 *NET VARIATION FOR COMBINED DIMENSIONS

ALL DIMENSIONS ARE BOTTOM OF SHEET INTERCEPTS (U.O.N.).
 ALL FORMING RADII ARE 0.125 UNLESS OTHERWISE NOTED

Project No. T185-20



PANEL CLIP



TYP. DEFLECTION OF PANELS DURING STR. LOADING



TYP. FAILED DISENGAGEMENT OF PANEL



TYPICAL CLIP WITH TYPICAL FAILED CLIP

Project No. T185-20

TENSILE TEST REPORT

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

Test Date: March 16, 2020 – Sample 20034
March 26, 2020 – Sample 20049 & 20050
March, 31, 2020 – Sample 20057

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

Material Description:

Box Rib – 1 Panel, 12” wide (Coverage), 24 ga. steel w/screw leg & clip leg
Box Rib – 1 Panel, 12” wide (Coverage), 0.032” aluminum w/screw leg & clip 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)
20049 Steel w/screw leg	0.495	0.024	591.35	645.54	49,777	54,339	26.1
20050 Aluminum w/screw leg	0.500	0.030	346.46	408.99	23,098	27,266	11.7
20057 Steel w/clip leg	0.501	0.024	581.31	679.66	48,362	56,540	34.6
20034 Aluminum w/clip leg	0.509	0.030	361.85	396.03	23,696	25,935	12.3

Equipment Used: Tensile Machine #QT7-061196-020
Caliper #14682489
Extensometer #10311744D
Micrometer #52-222-001