



Farabaugh Engineering and Testing Inc.

Project No. T187-20

Report Date: March 31, 2020

No. Pages: 9 (inclusive)

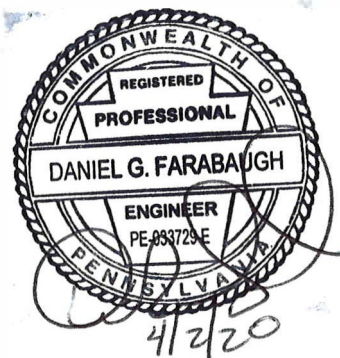
PERFORMANCE TEST REPORT

ASTM E330 UNIFORM LOAD STRUCTURAL TEST

BOX RIB – 3 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:

Paul G. Farabaugh

Approved by:

Daniel G. Farabaugh



DADE COUNTY
ACCREDITED
LABORATORY



AAMA
ACCREDITED
LABORATORY



TEXAS
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LABORATORY



FLORIDA
ACCREDITED
LABORATORY
& QC ENTITY

Project No. T187-20

Purpose

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

Test Completion Date

3/27/20

Test Specimen

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

Specimen:

Box Rib – 3 Panel, 12” wide (Coverage), 24 ga. steel (with Screw leg and with Clip)
3 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 DP3 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 – 3 Panel, 12” wide (Coverage), 24 ga. Steel (w/ screw leg length 0.58” long)

Support Spacing: 2 spans @ 46.5” o/c

NEGATIVE TEST PRESSURE

PETERSEN 3 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	0.032	0.102	0.041
20.8	0.073	0.235	0.088
31.2	0.133	0.400	0.177
41.6	0.200	0.545	0.273
52.0	0.260	0.668	0.362
62.4	0.369	0.897	0.518
72.9	0.441	1.046	0.602
83.3	0.530	1.209	0.681

RESULTS:

@ Test Load 72.9 psf – partial seam disengagement

Maximum Test Load = 100.9 psf (Panel tore thru side at fastener location)

TEST #2

Test Specimen:

Box Rib – 3 Panel, 12” wide (Coverage), 0.032” alum. (w/ screw leg length 0.58” long)

Support Spacing: 2 spans @ 46.5” o/c

NEGATIVE TEST PRESSURE

PETERSEN BOX RIB-3 PANEL 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	0.051	0.149	0.015
20.8	0.094	0.251	0.033
31.2	0.157	0.389	0.060
41.6	0.229	0.562	0.108

RESULTS:

Maximum Test Load =47.3 psf (Panel pulled over fastener)

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TEST #3

Test Specimen: Box Rib – 3 Panel, 12” wide (Coverage), 24 ga. Steel (w/clip)

Support Spacing: 2 spans @ 46.5” o/c

NEGATIVE TEST PRESSURE

PETERSEN 3 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	0.067	0.167	0.085
31.2	0.158	0.390	0.240
46.8	0.274	0.646	0.431
62.4	0.394	0.858	0.575
78.1	0.510	1.038	0.711
93.7	0.602	1.177	0.832
109.3	0.703	1.326	0.956
124.9	0.773	1.437	1.057

RESULTS:

Maximum Test Load = 137.8 psf (Clip straightened out and seam disengaged from clip)

TEST #4

Test Specimen: Box Rib – 3 Panel, 12” wide (Coverage), 0.032” alum. (w/clip)

Support Spacing: 2 spans @ 46.5” o/c

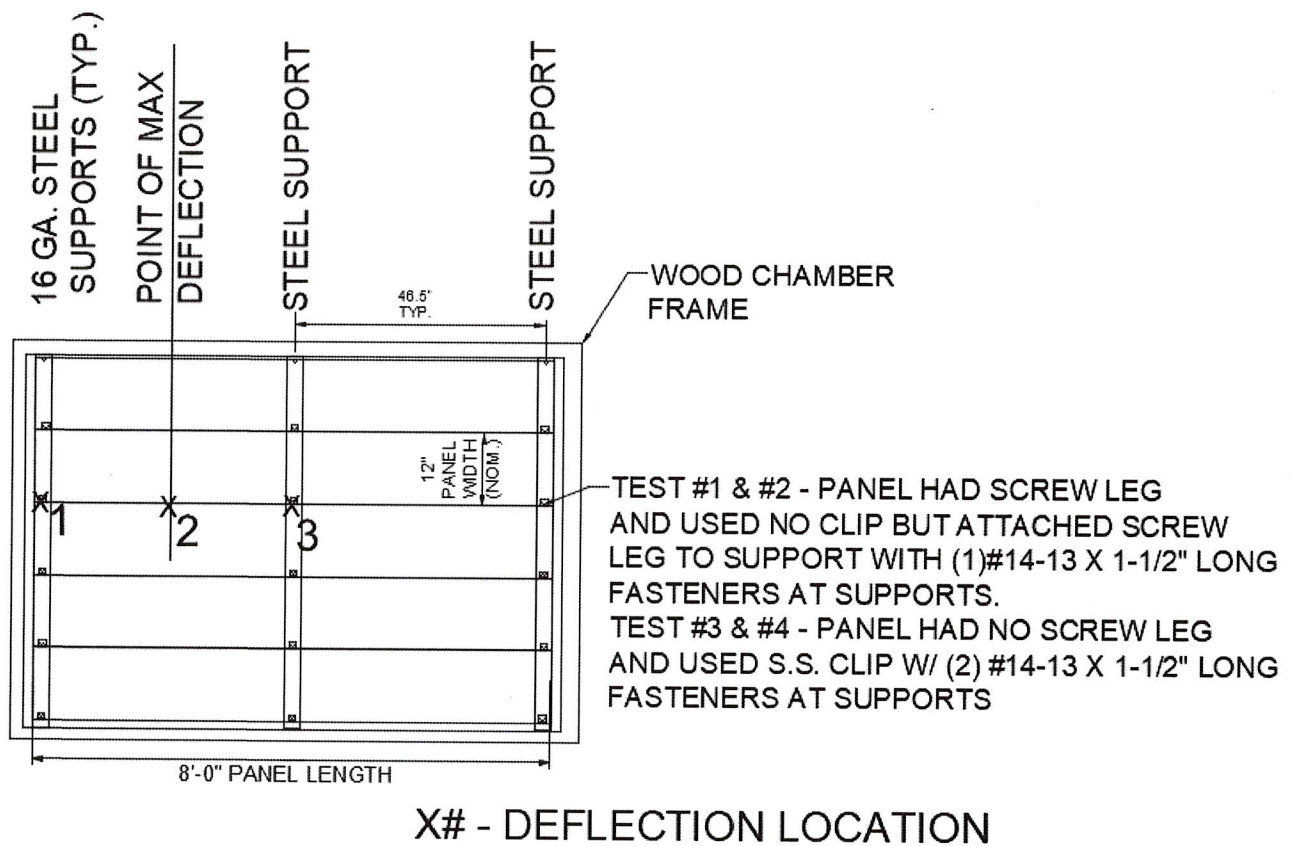
NEGATIVE TEST PRESSURE

PETERSEN 3 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	0.036	0.141	0.053
20.8	0.100	0.320	0.142
31.2	0.191	0.534	0.259
41.6	0.283	0.738	0.395
52.0	0.373	0.910	0.511
62.4	0.454	1.054	0.609
72.9	0.530	1.202	0.697

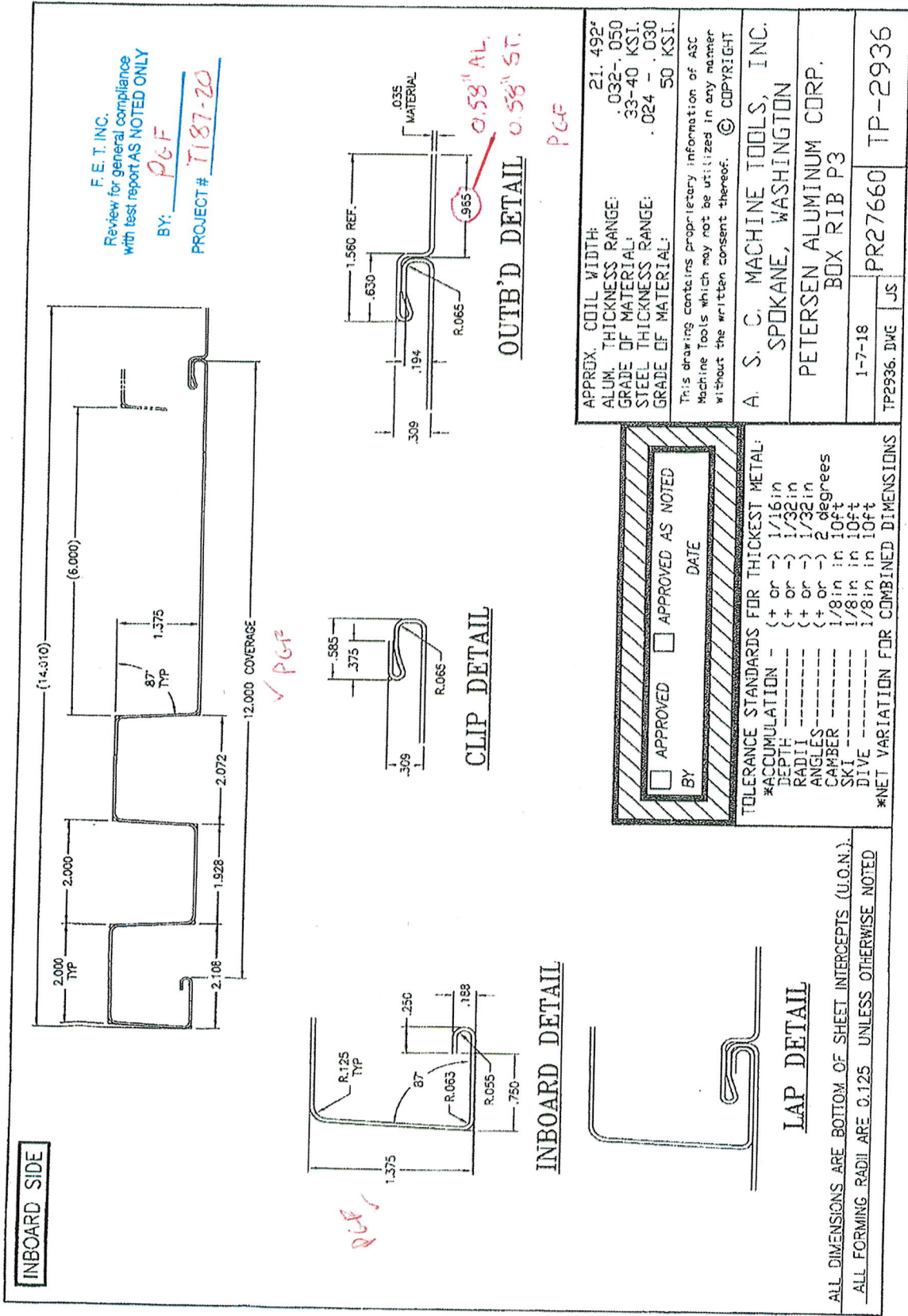
RESULTS:

Maximum Test Load =92.6 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 # T187-20

OUTB'D DETAIL

CLIP DETAIL

INBOARD DETAIL

LAP DETAIL

APPROX. COIL WIDTH: 21.492"
 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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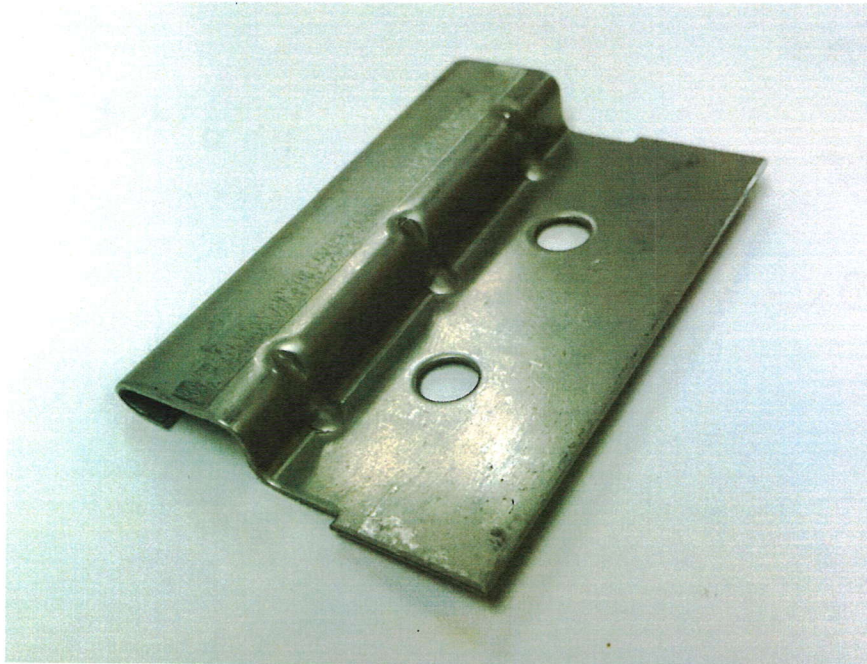
A. S. C. MACHINE TOOLS, INC.
 SPOKANE, WASHINGTON
 PETERSEN ALUMINUM CORP.
 BOX RIB P3

1-7-18
 PR27660 JS
 TP2936.DWG
 TP-2936

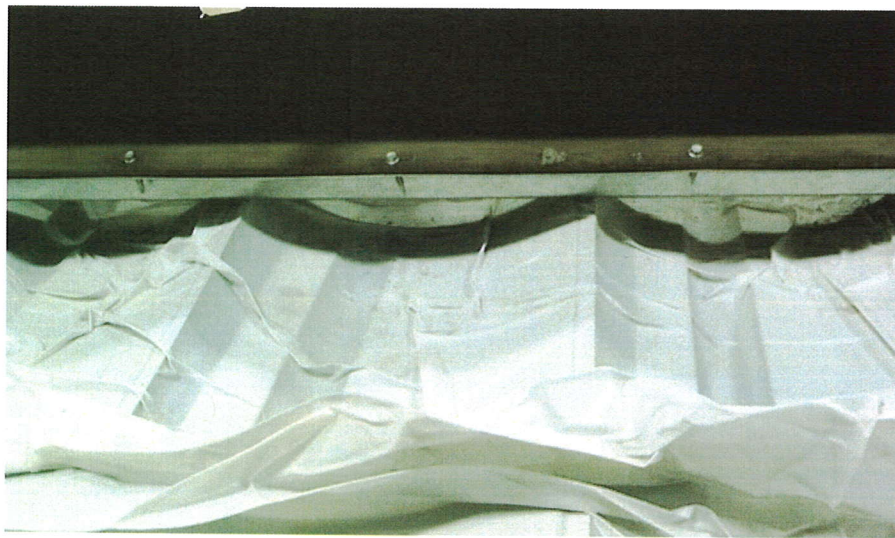
APPROVED APPROVED AS NOTED
 BY _____ DATE _____

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



PANEL CLIP



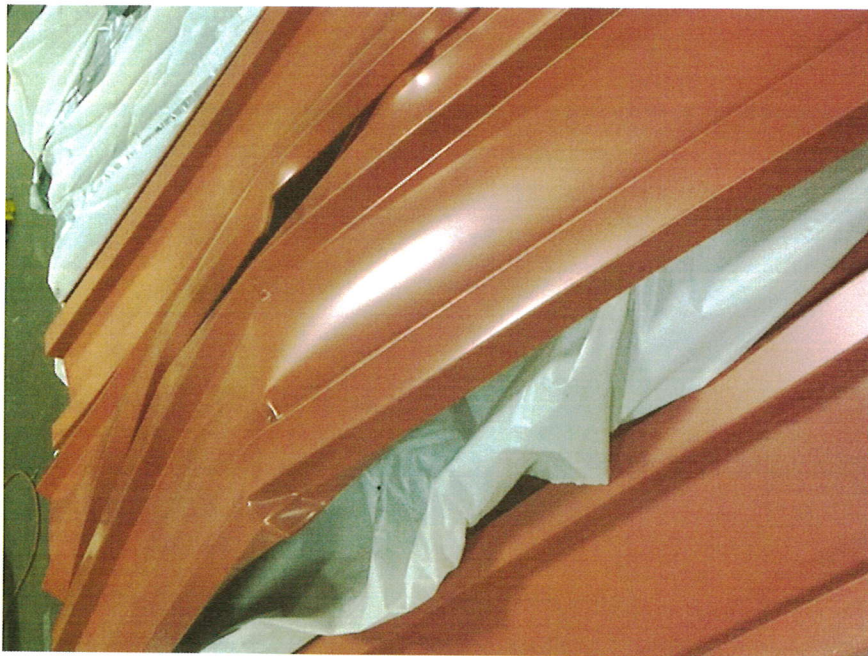
TYP. DEFLECTION OF PANELS DURING STR. LOADING



TYP. PANEL TEAR AT SCREW LEG



TYPICAL CLIP WITH TYPICAL FAILED CLIP



TYP. FAILED DISENGAGEMENT OF PANEL

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TENSILE TEST REPORT

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

Test Date: March 26, 2020 – Sample 20051 & 20052
March, 31, 2020 – Sample 20058 & 20063

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

Material Description:

Box Rib – 3Panel, 12” wide (Coverage), 24 ga. steel w/screw leg & clip leg
Box Rib – 3 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)
20051 Steel w/screw leg	0.498	0.024	641.53	713.67	53,676	59,712	24.0
20052 Aluminum w/screw leg	0.500	0.030	328.16	403.67	21,878	26,912	8.4
20063 Steel w/clip leg	0.490	0.023	638.47	729.10	56,652	64,694	25.9
20058 Aluminum w/clip leg	0.501	0.030	351.70	393.46	23,400	26,179	10.2

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