



Farabaugh Engineering and Testing Inc.

Project No. T186-20

Report Date: March 31, 2020

No. Pages: 9 (inclusive)

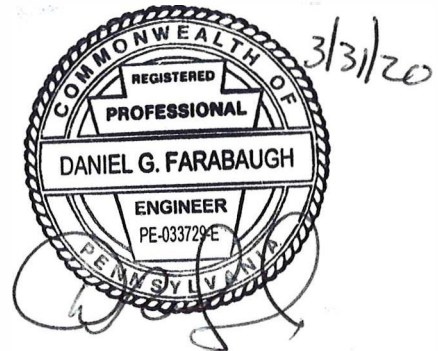
PERFORMANCE TEST REPORT

ASTM E330 UNIFORM LOAD STRUCTURAL TEST

BOX RIB – 2 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



AAMA ACCREDITED LABORATORY



FLORIDA ACCREDITED LABORATORY & ENTITY

Project No. T186-20

**Purpose**

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

**Test Completion Date**

3/26/20

**Test Specimen**

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

*Specimen:*

Box Rib – 2 Panel, 12” wide (Coverage), 24 ga. steel (with Screw leg and with Clip)  
Clip 2 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 DP2 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 – 2 Panel, 12” wide (Coverage), 24 ga. Steel (w/ screw leg length 0.77” long)

**Support Spacing:** 2 spans @ 46.5” o/c

### NEGATIVE TEST PRESSURE

PETERSEN 2 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	0.035	0.098	0.040
20.8	0.087	0.230	0.104
31.2	0.136	0.371	0.194
41.6	0.188	0.496	0.287
52.0	0.248	0.614	0.375
62.4	0.312	0.733	0.456
72.9	0.378	0.865	0.549
83.3	0.446	1.006	0.644
93.7	0.510	1.141	0.727
104.1	0.609	1.433	0.866

**RESULTS:**

@ Test Load 93.7 psf – partial seam disengagement

Maximum Test Load = 110.8 psf (Panel tore thru side at fastener location )

## TEST #2

**Test Specimen:**

Box Rib – 2 Panel, 12” wide (Coverage), 0.032” alum. (w/ screw leg length 0.75” long)

**Support Spacing:** 2 spans @ 46.5” o/c

### NEGATIVE TEST PRESSURE

PETERSEN 2 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
10.4	0.029	0.149	0.039
20.8	0.093	0.360	0.092
31.2	0.169	0.592	0.168
41.6	0.245	0.812	0.262
52.0	0.325	1.024	0.375

**RESULTS:**

Maximum Test Load =53.0 psf (Panel pulled over fastener )

### TEST #3

**Test Specimen:** Box Rib – 2 Panel, 12” wide (Coverage), 24 ga. Steel

(w/clip) **Support Spacing:** 2 spans @ 46.5” o/c

#### NEGATIVE TEST PRESSURE

PETERSEN 2 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	0.050	0.129	0.089
31.2	0.144	0.327	0.247
46.8	0.287	0.584	0.462
62.4	0.416	0.784	0.636
78.1	0.548	0.975	0.805
93.7	0.675	1.181	0.981
109.3	0.782	1.318	1.111
124.9	0.888	1.458	1.243

**RESULTS:**

Maximum Test Load = 157.0 psf (Clip straightened out and seam disengaged from clip)

### TEST #4

**Test Specimen:** Box Rib – 2 Panel, 12” wide (Coverage), 0.032” alum. (w/

clip) **Support Spacing:** 2 spans @ 46.5” o/c

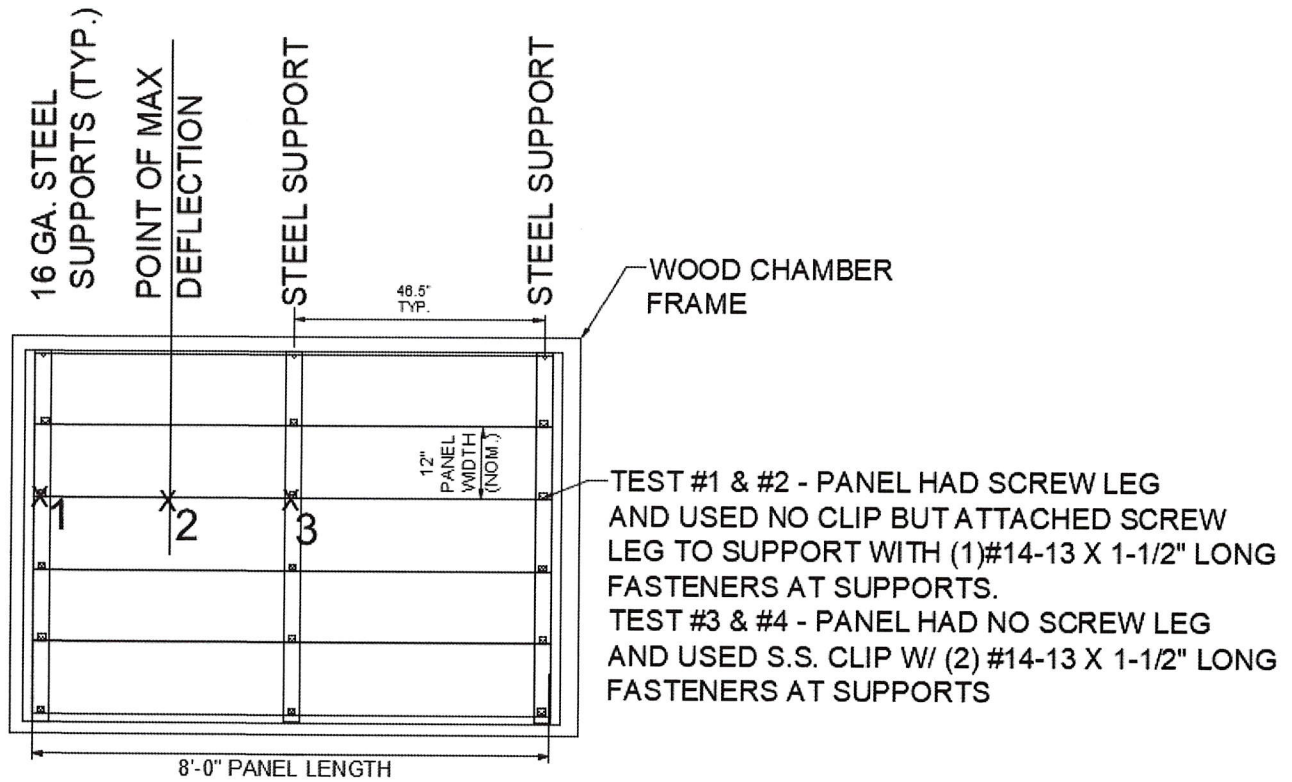
#### NEGATIVE TEST PRESSURE

PETERSEN 2 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	0.095	0.043
20.8	0.109	0.256	0.149
31.2	0.216	0.456	0.263
41.6	0.328	0.652	0.396
52.0	0.408	0.833	0.516
62.4	0.501	0.980	0.621
72.9	0.596	1.126	0.726

**RESULTS:**

Maximum Test Load =122.2 psf (Clip straightened out and seam disengaged from clip)

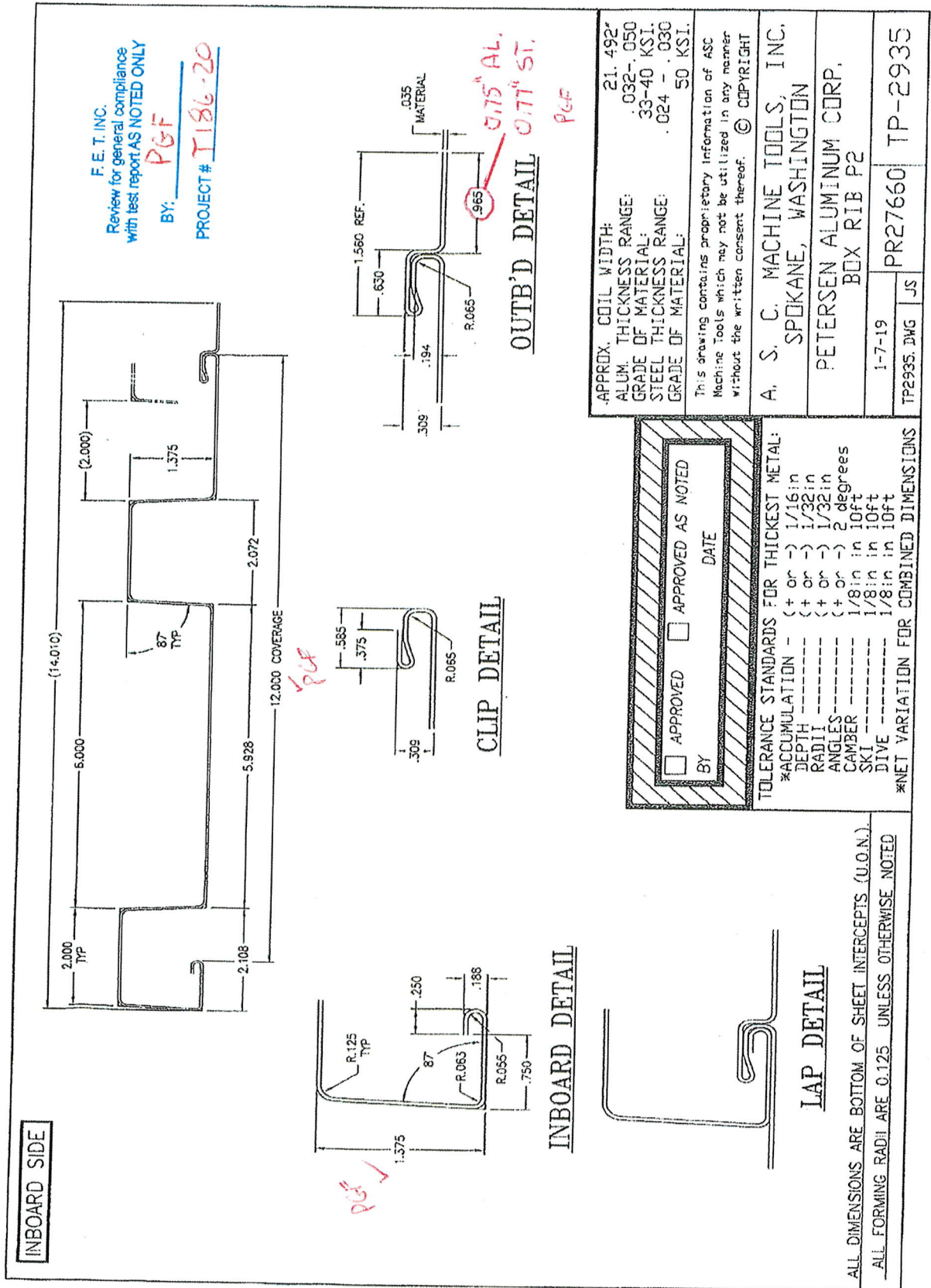
# TEST SET UP



X# - DEFLECTION LOCATION

## PLAN VIEW





F. E. T. INC.  
 Review for general compliance  
 with test report AS NOTED ONLY  
 BY: PGF  
 PROJECT # T186-20

OUTB'D DETAIL  
 0.75" AL.  
 0.77" ST.  
 PGF

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.

This drawing contains proprietary information of ASC  
 Machine Tools which may not be utilized in any manner  
 without the written consent thereof. © COPYRIGHT

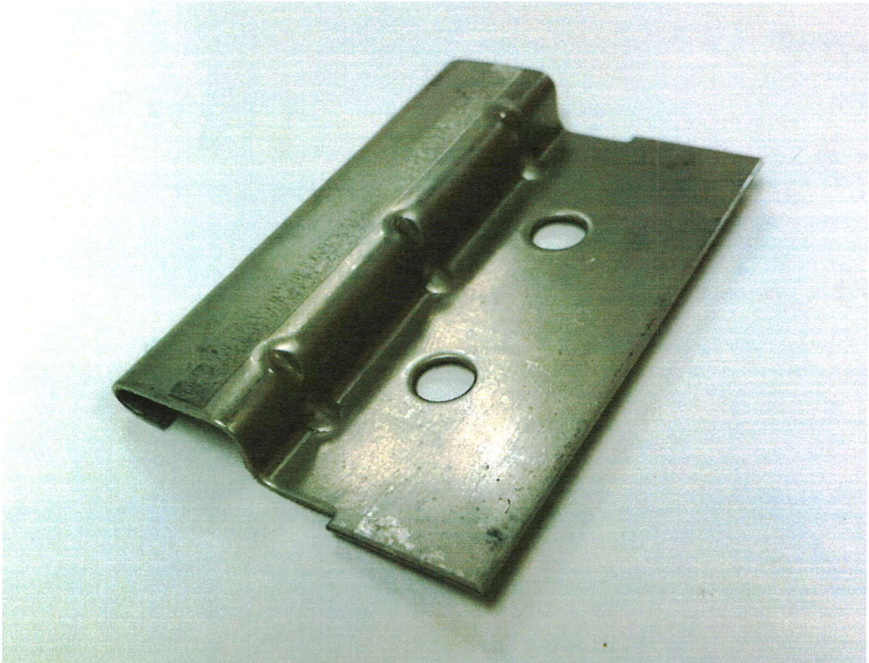
A. S. C. MACHINE TOOLS, INC.  
 SPOKANE, WASHINGTON  
 PETERSEN ALUMINUM CORP.  
 BOX RIB P2

1-7-19  
 TP2935.DWG JS  
 PR27660 TP-2935

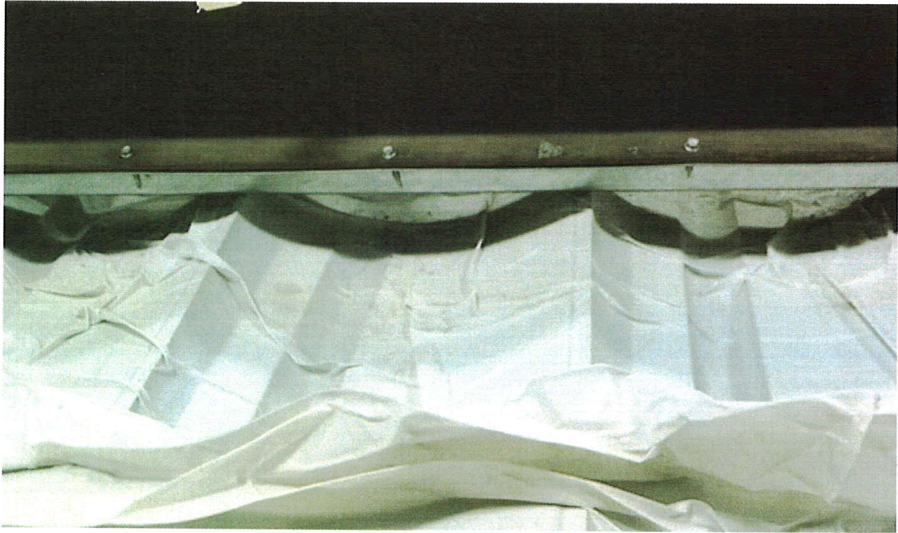
<input type="checkbox"/>	APPROVED	<input type="checkbox"/>	APPROVED AS NOTED
BY		DATE	

TOLERANCE STANDARDS FOR THICKEST METAL:  
 \*ACCUMULATION - (+ or -) 1/16 in  
 DEPTH - (+ or -) 1/32 in  
 RADII - (+ 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

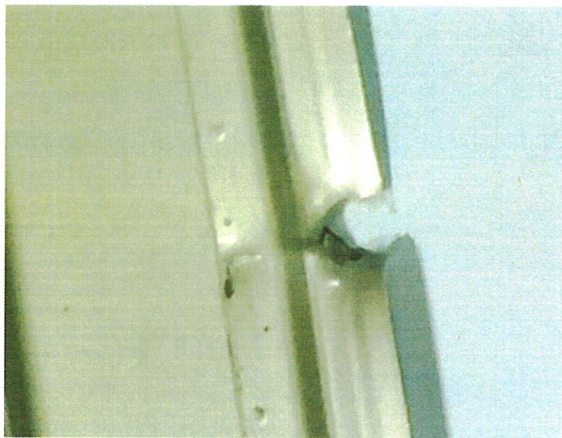


PANEL CLIP

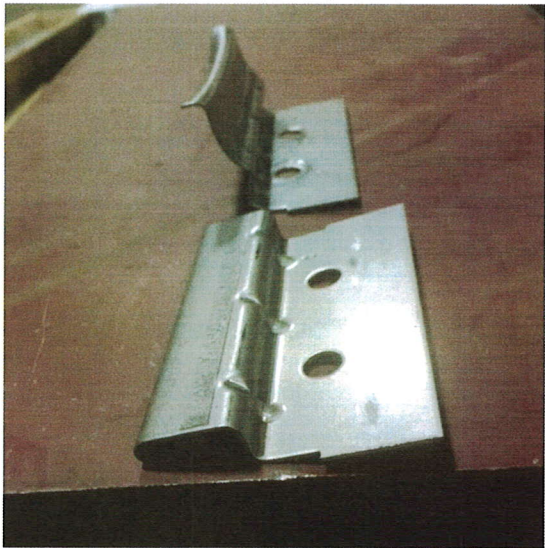


TYP. DEFLECTION OF PANELS DURING STR. LOADING





TYP. PANEL TEAR AT SCREW LEG



TYPICAL CLIP WITH TYPICAL FAILED CLIP



TYP. FAILED DISENGAGEMENT OF PANEL



Project No. T186-20

## TENSILE TEST REPORT

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

Test Date: March 16, 2020 – Sample 20035  
March 30, 2020 – Sample 20055 & 20056  
March, 31, 2020 – Sample 20059

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

Material Description:

Box Rib – 2 Panel, 12” wide (Coverage), 24 ga. steel w/screw leg & clip leg  
Box Rib – 2 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)
20055 Steel w/screw leg	0.504	0.023	628.31	719.83	54,202	62,097	26.3
20056 Aluminum w/screw leg	0.503	0.029	354.79	412.52	24,322	28,283	10.7
20059 Steel w/clip leg	0.499	0.024	626.52	719.63	52,315	60,090	23.4
20035 Aluminum w/clip leg	0.495	0.032	336.98	398.99	21,274	25,189	10.6

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