



Farabaugh Engineering and Testing Inc.

Project No. T268-21

Report Date: November 5, 2021

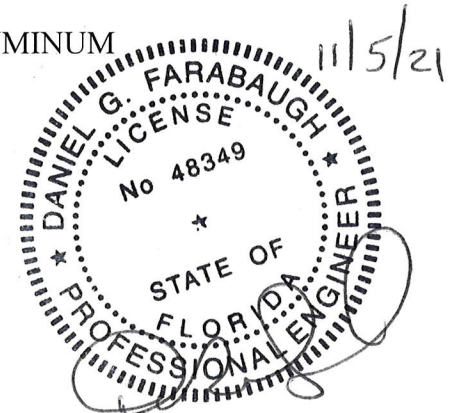
No. Pages: 18 (inclusive)

ASTM E1592
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEMS
BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

MODULARAL METAL PANEL
3" DEEP X 24" WIDE COVERAGE X 0.050" ALUMINUM

FOR

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



Prepared by:

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Approved by:

Daniel G. Farabaugh

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ASTM E1592-05(2012)
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEMS
BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

Purpose

This test method covers the evaluation of the structural performance of Sheet Metal Panels and Anchor to Panel Attachments for roof or siding systems under uniform static air pressure difference.

Test Date

10/27/21 Span @ 24" o.c.

Test Specimen

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

Test Specimen: ModularAL Metal Panel, - 3" Deep x 24" wide coverage x 0.050" alum.
 (See Dwg A206 for actual dimension)

Testing Apparatus

A vacuum test chamber was used with two static pressure taps located at diagonally opposite corners. A controlled blower provided a vacuum to uniformly 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 to monitor wind uplift on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

Installation

- The panel support consisted of 16 ga. Zee supports attached to 16 ga. channel supports using #12 x 1" long wafer-head self-drilling screws. The channel supports were located at 24" o.c.
- A starter clip was attached to the Zee support using #12 x 1" lg. wafer-head, self-drilling screws. A minimum of two fasteners per starter clip or 12" o.c max. spacing per clip based on length of clip.
- The starter panel engaged into a starter clip and was top-fastened with #12 x 1" lg. Stainless Steel Cap head w/EPDM Sealing washer fasteners at the predrilled holes spaced at 12" o.c.
- The vertical edge of the panel had two (2) clips to attach that edge to the 16 ga. horizontal Zee supports using (1) #12 x 1" lg. wafer-head, self-drilling screws at each clip.
- See installation details for location of fasteners at supports and attachment of each panel.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts and in the side joints to create a vacuum seal.

Procedure

- The specimen was checked for proper adjustment and all vents closed in the pressure measuring lines.
- The required deflection measuring apparatus were installed at their specified locations.
- A nominal initial pressure was applied equal to at least four times but not more than ten times the dead weight of the specimen. This nominal pressure was used as the reference zero and initial deflection readings were recorded.
- At each load increment, pressure was maintained for a period of not less than 60 seconds and until the deflection gages indicated no further increase in deflections.
- Successive increments were achieved as above until failure or ultimate load was reached.

The test was conducted according to the procedure in ASTM E-1592-05(2012) and as noted herein. In our opinion the tape and plastic had no influence on the results of the test.

TEST #1

Test Specimen:

ModularAL Metal Panel - 3" Deep x 24" wide coverage x 0.050" aluminum

Support Spacing: 24" o/c

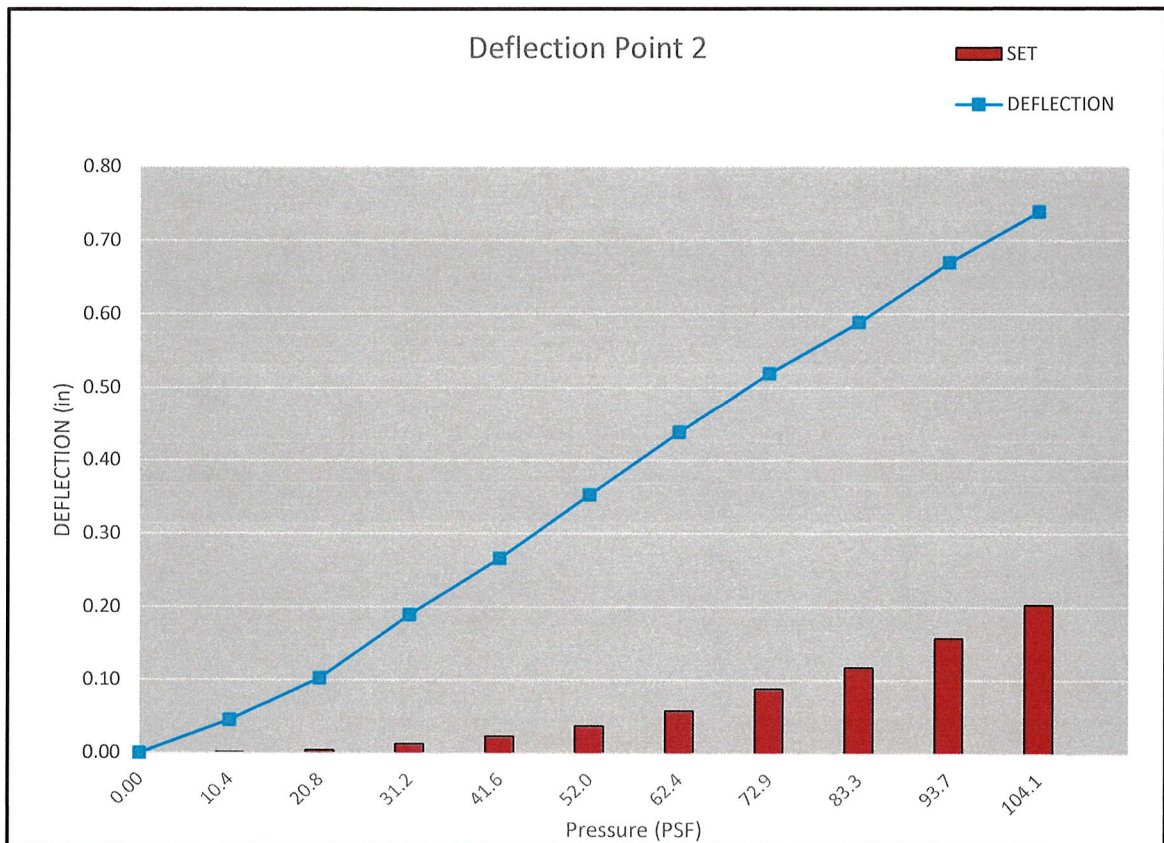
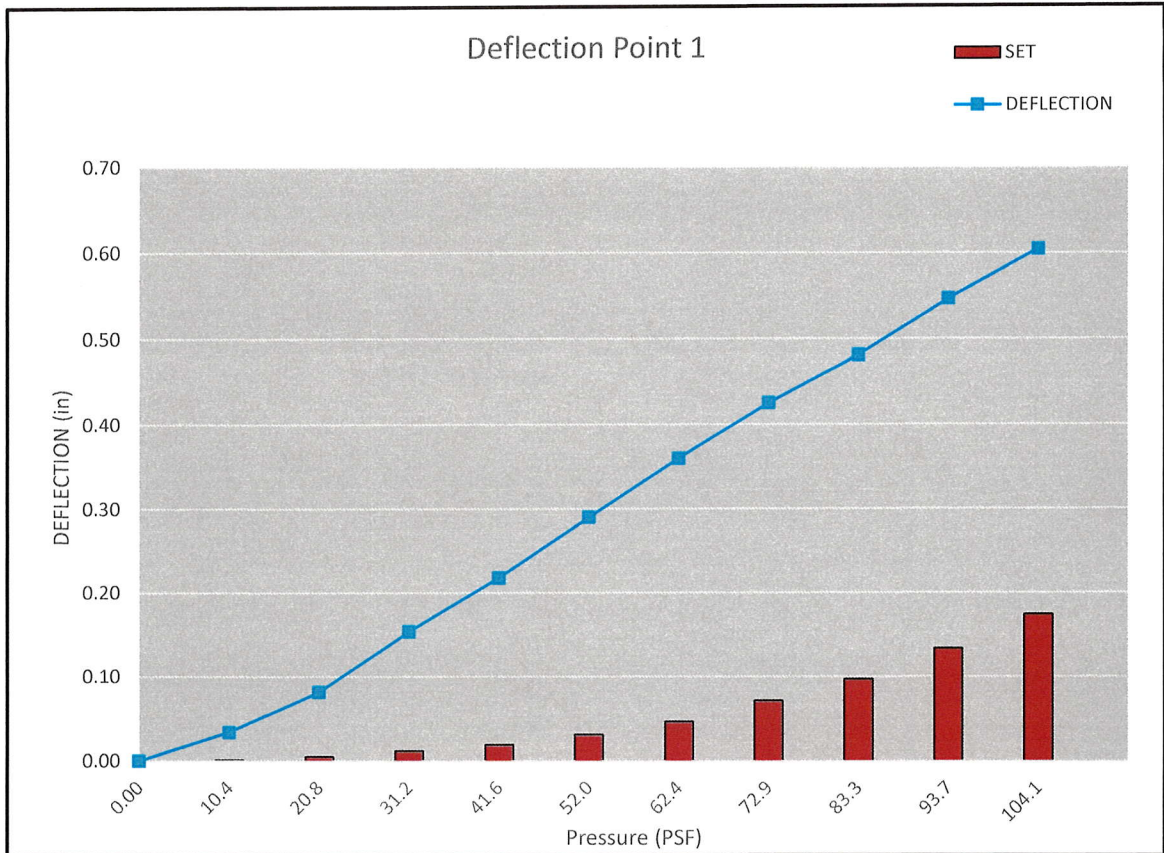
NEGATIVE (UPLIFT) PRESSURE

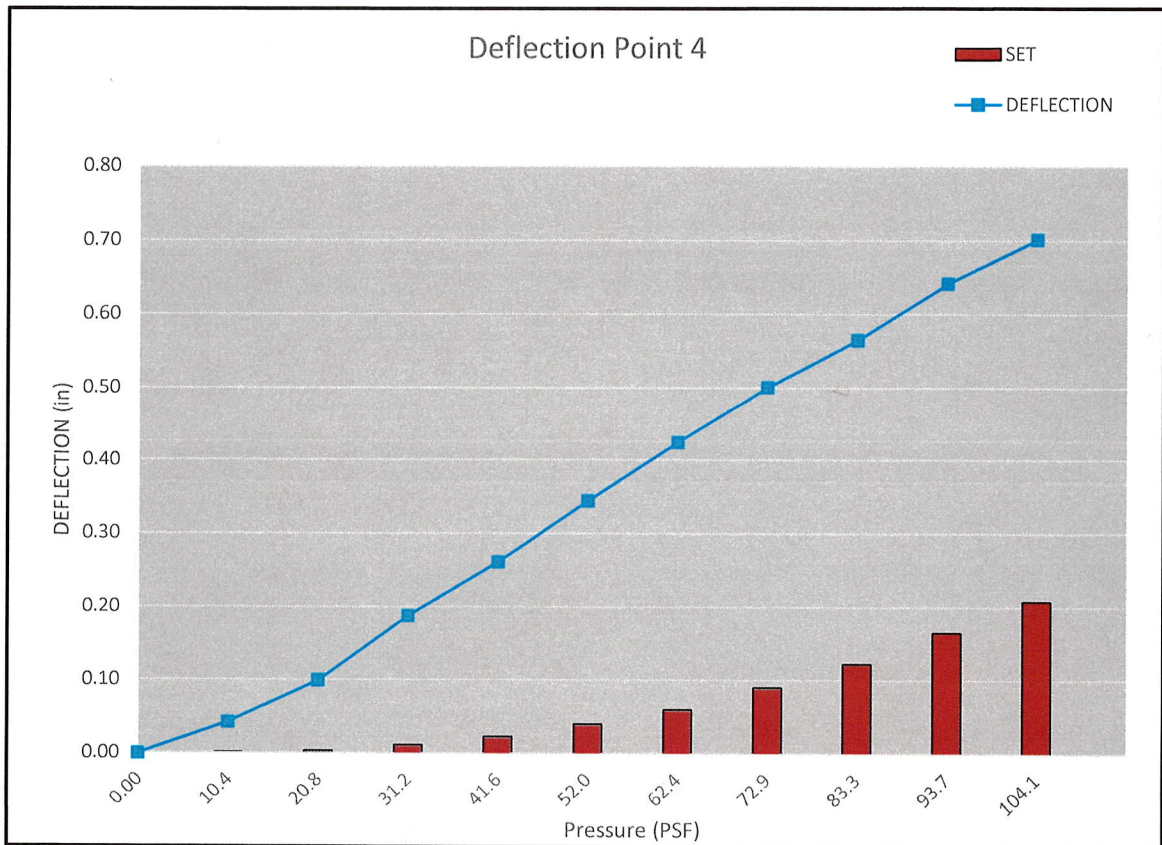
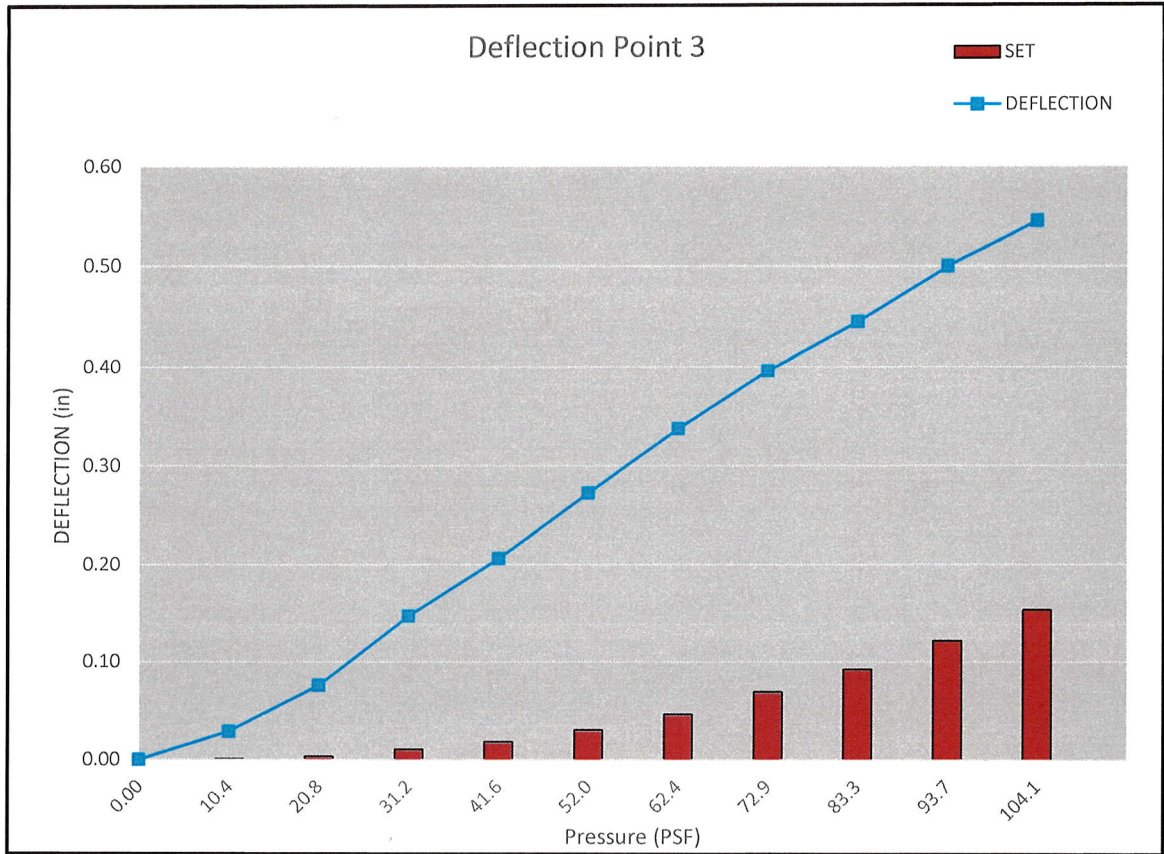
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000
2	10.4	0.034	0.045	0.029	0.043	0.034	0.034
0	0.0	0.001	0.001	0.001	0.001	0.001	0.000
4	20.8	0.082	0.102	0.076	0.100	0.079	0.081
0	0.0	0.005	0.004	0.003	0.003	0.005	0.004
6	31.2	0.154	0.190	0.147	0.188	0.160	0.169
0	0.0	0.012	0.013	0.010	0.011	0.021	0.021
8	41.6	0.218	0.267	0.206	0.261	0.239	0.252
0	0.0	0.019	0.023	0.018	0.023	0.039	0.037
10	52.0	0.290	0.353	0.273	0.344	0.327	0.343
0	0.0	0.031	0.037	0.030	0.040	0.058	0.057
12	62.4	0.360	0.439	0.338	0.425	0.417	0.445
0	0.0	0.047	0.058	0.046	0.060	0.088	0.090
14	72.9	0.426	0.520	0.396	0.501	0.493	0.533
0	0.0	0.071	0.088	0.069	0.090	0.120	0.123
16	83.3	0.482	0.589	0.445	0.565	0.556	0.607
0	0.0	0.097	0.117	0.092	0.122	0.158	0.159
18	93.7	0.547	0.669	0.500	0.642	0.637	0.702
0	0.0	0.133	0.158	0.121	0.165	0.209	0.212
20	104.1	0.605	0.738	0.545	0.701	0.702	0.783
0	0.0	0.174	0.203	0.153	0.207	0.256	0.263

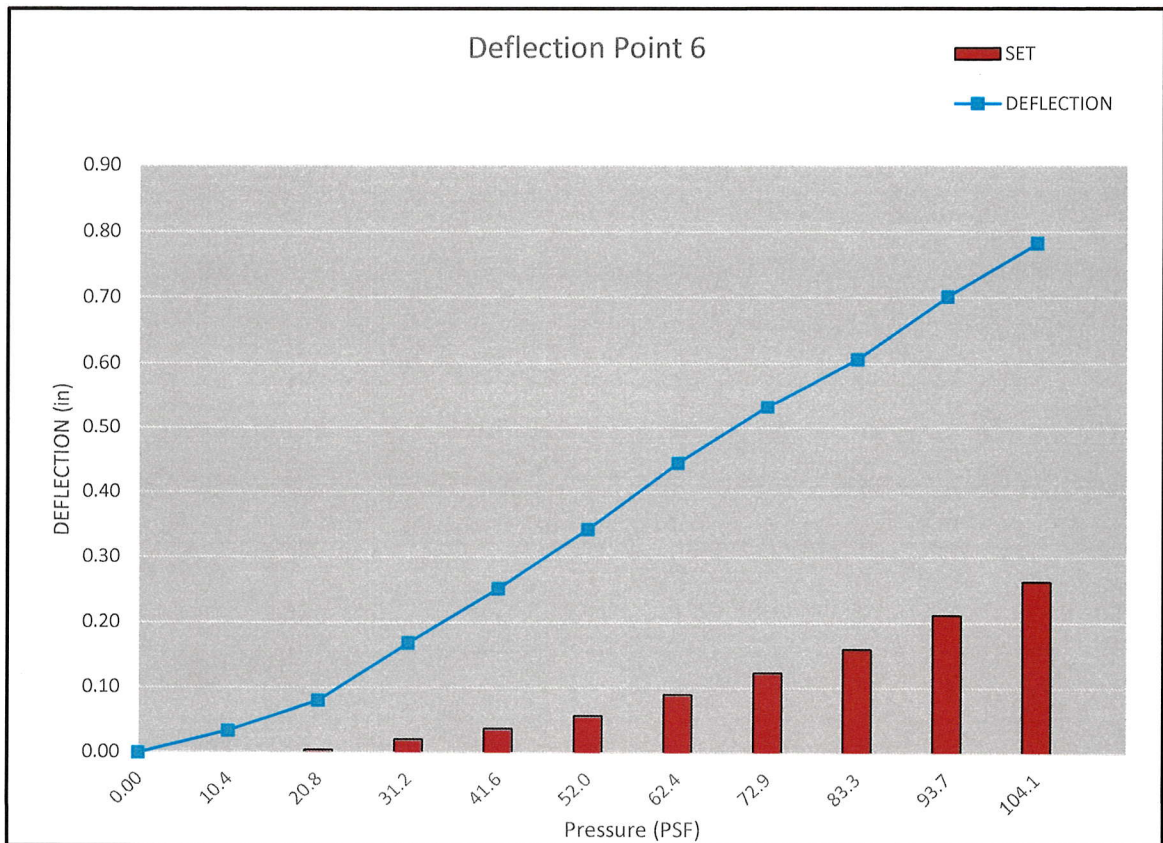
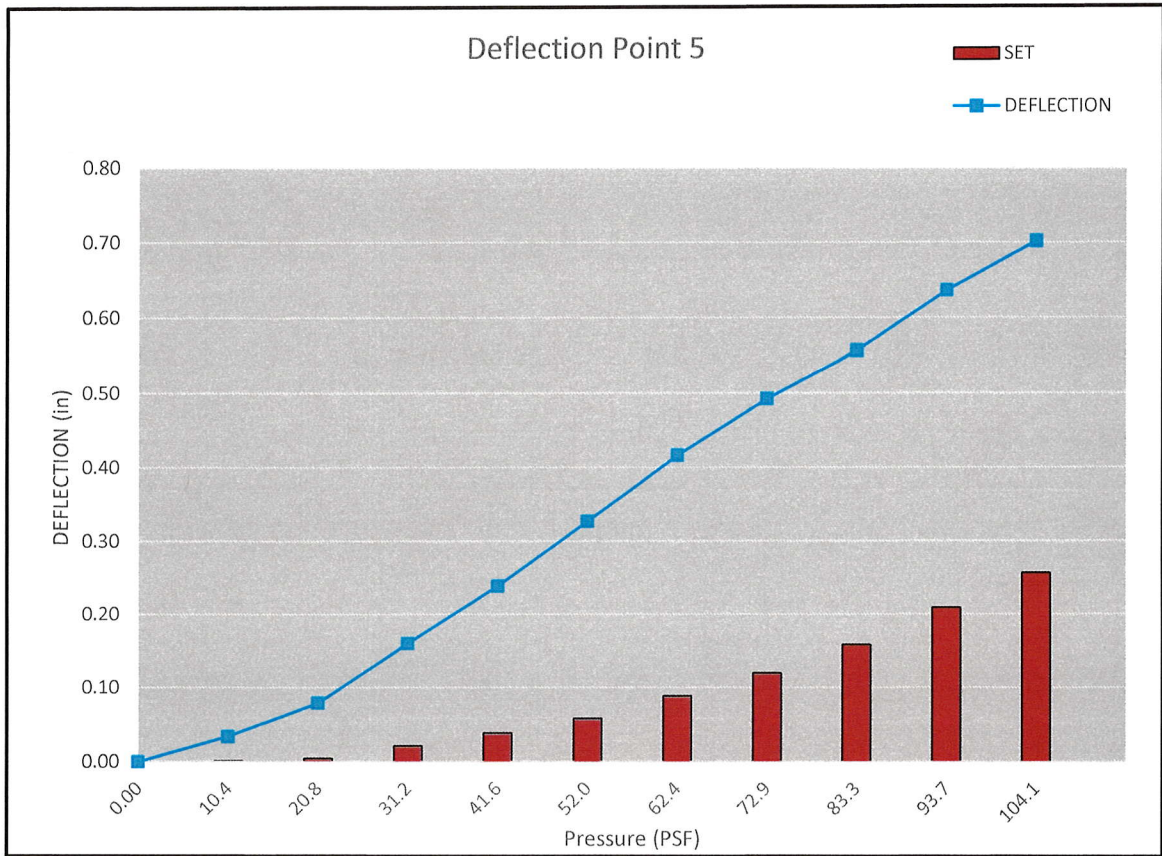
RESULTS:

Load held for 1 minute = 114.4 psf

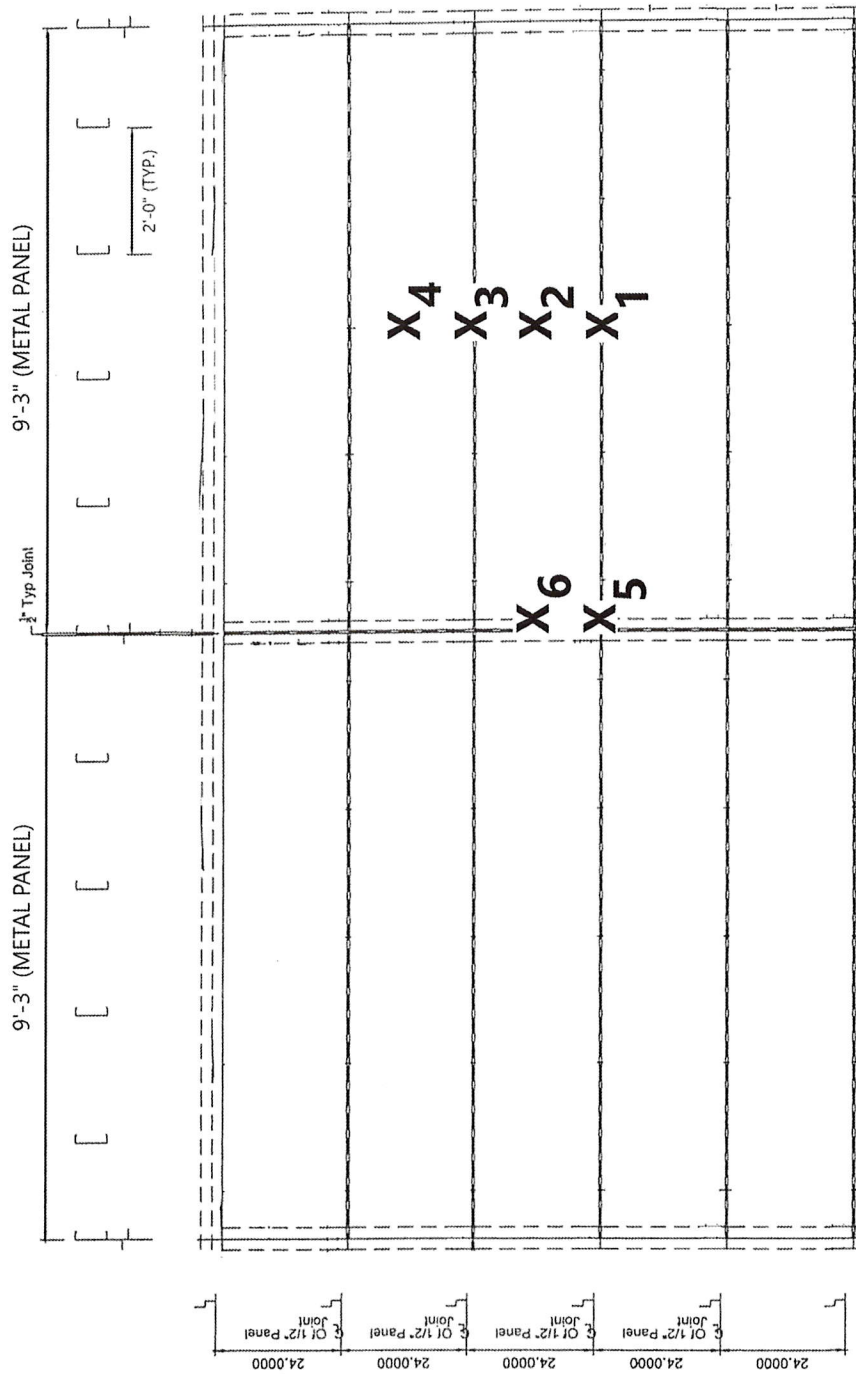
Maximum Test Load = 119.6 psf (Zee support fastener pulled out of 16 ga. lower supports)





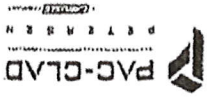


TEST #1



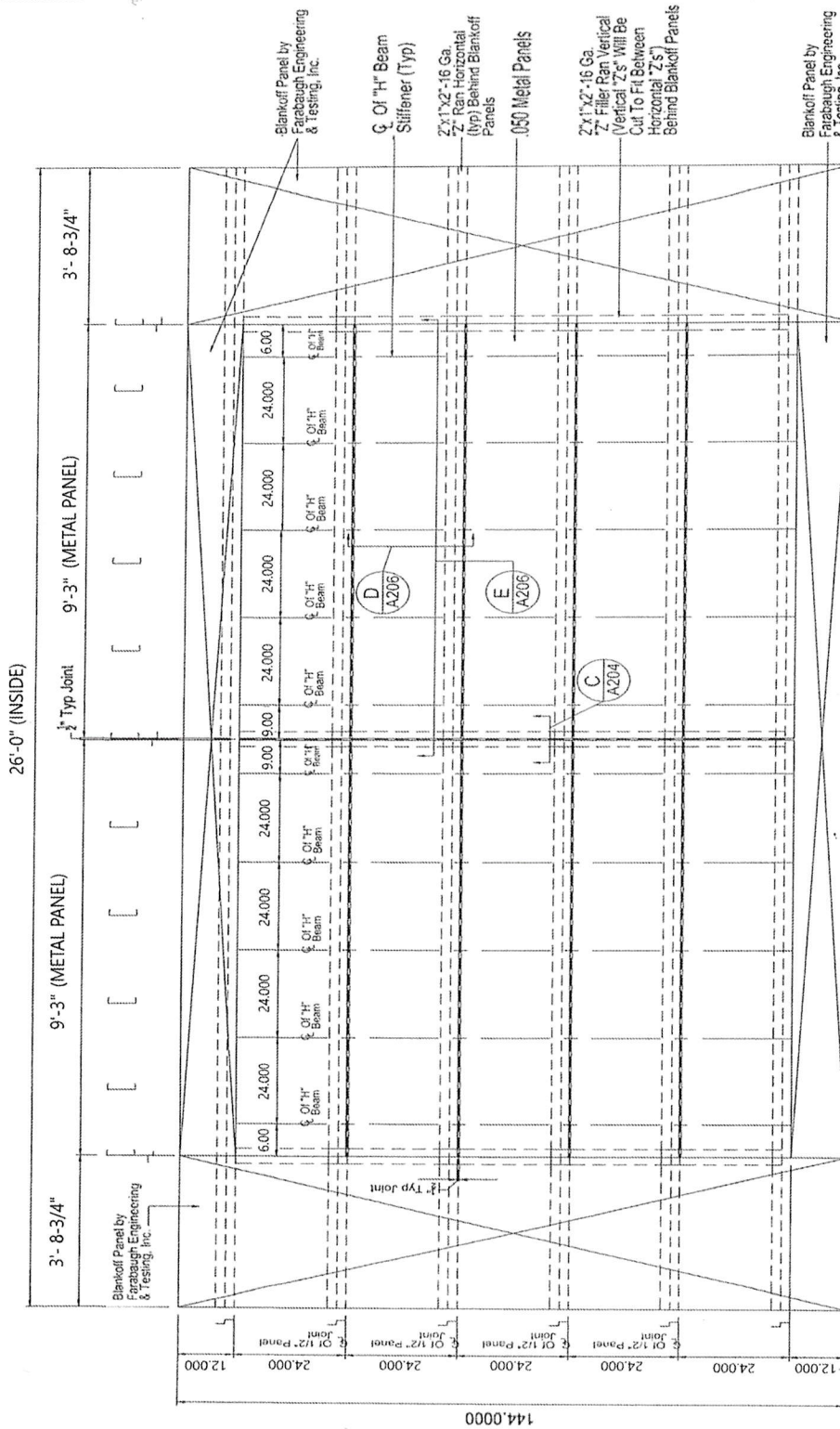
E1592 Test Chamber Layout - .050 Metal Panel
Scale: 1" = 1'-0"

X# - DEFLECTION
LOCATION



Profile: ModularAL 3" PANEL

A200



E1592 Test Chamber Layout - .050 Metal Panel

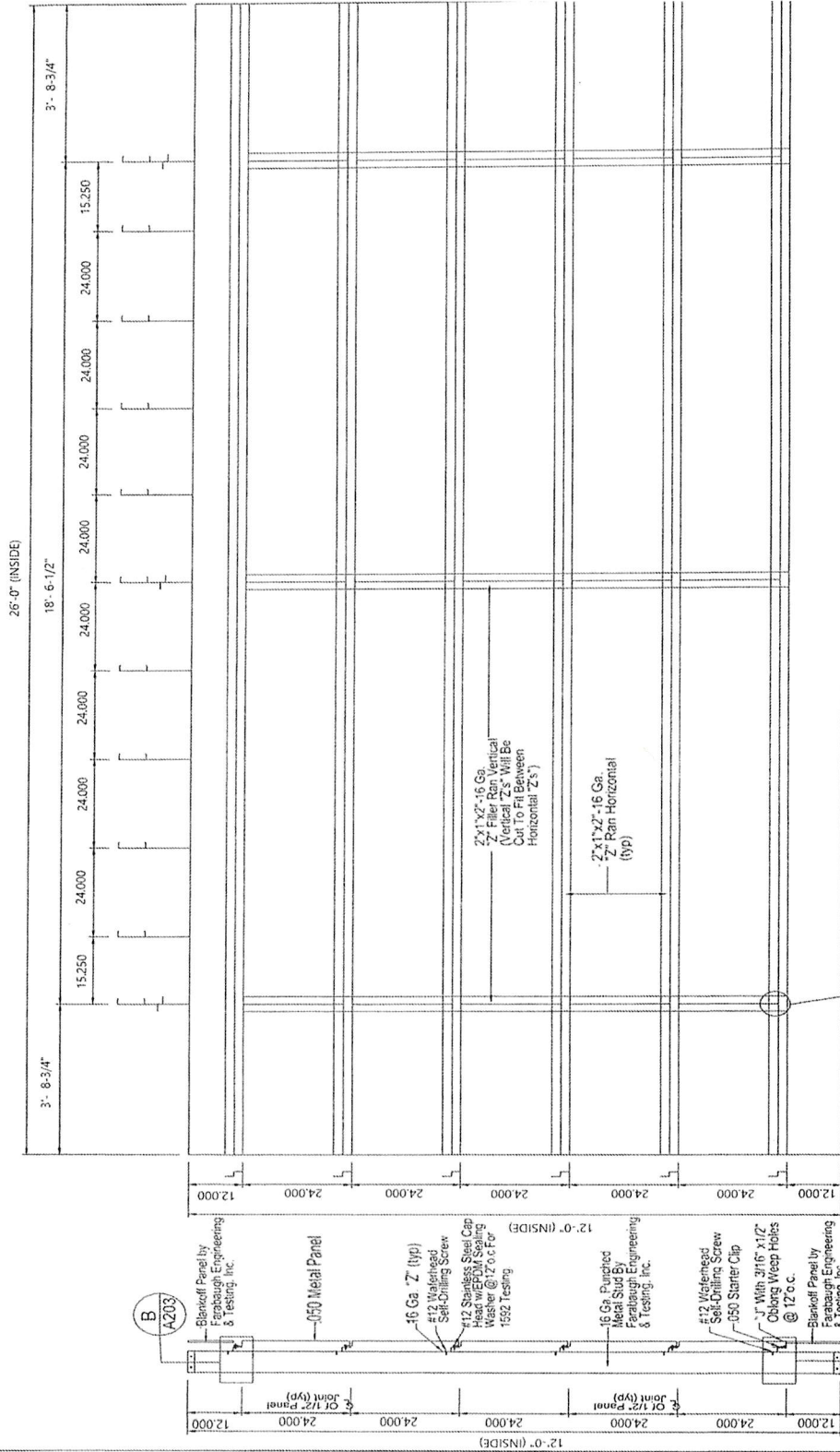
SCALE: 1/4" = 1'-0"

144.0000



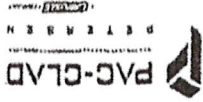
Profile: ModularAL 3" PANEL

A201



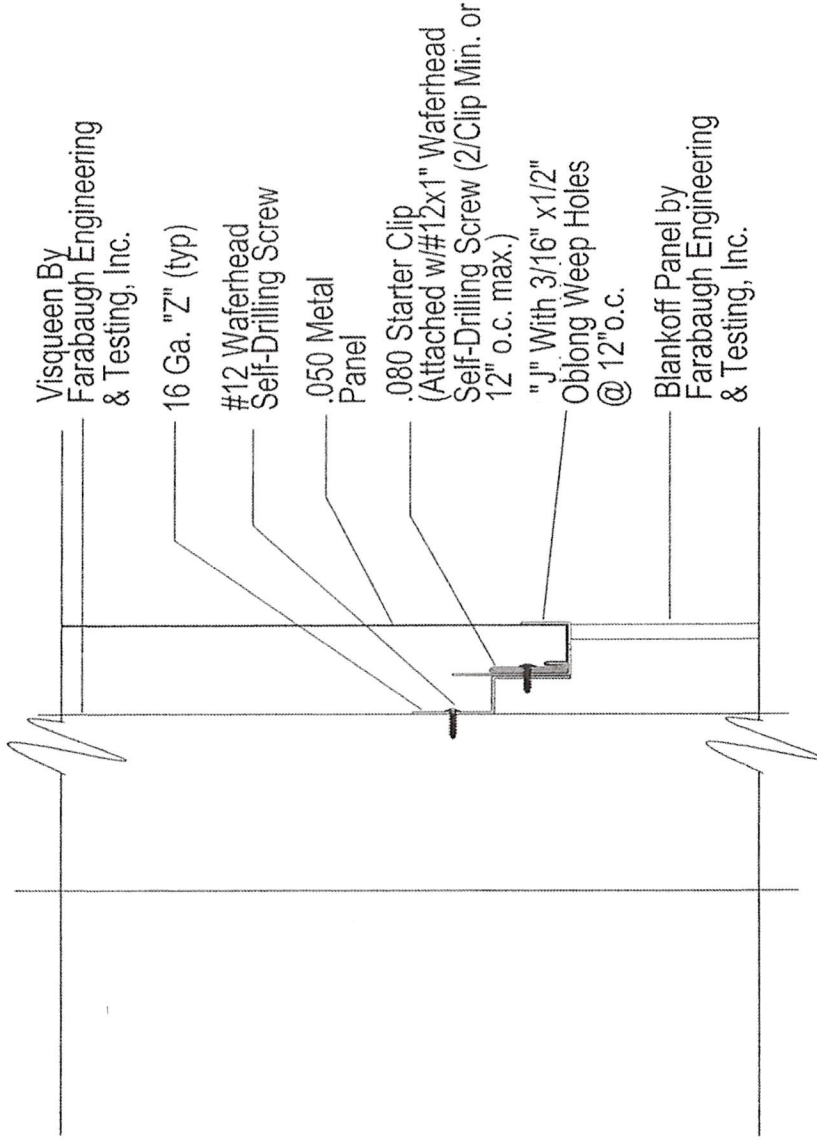
E 1592 Test Chamber Layout - 16 Ga. Z" Layout
Scale: 1" = 1'-0"

16 Ga. Filler Z", Notched Z", Fold Notch To Allow Z" To Go Behind Horizontal Z". Fasten Fold Of Notched Z" To Horizontal Z" With 1 Screw.



Profile: ModularAL 3" PANEL

A202



Visqueen By
Farabaugh Engineering
& Testing, Inc.

16 Ga. "Z" (typ)

#12 Waferhead
Self-Drilling Screw

.050 Metal
Panel

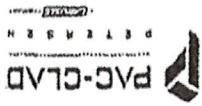
.080 Starter Clip
(Attached w/#12x1" Waferhead
Self-Drilling Screw (2/Clip Min. or
12" o.c. max.)

"J" With 3/16" x1/2"
Oblong Weep Holes
@ 12" o.c.

Blankoff Panel by
Farabaugh Engineering
& Testing, Inc.

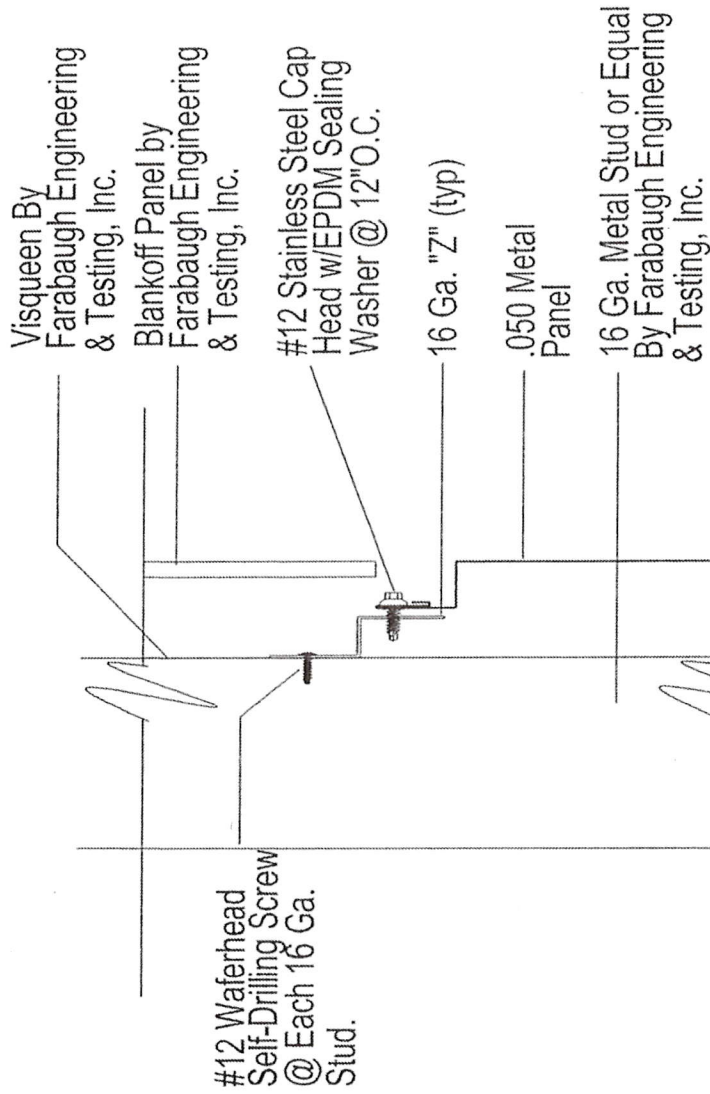
Enlarged Detail

A



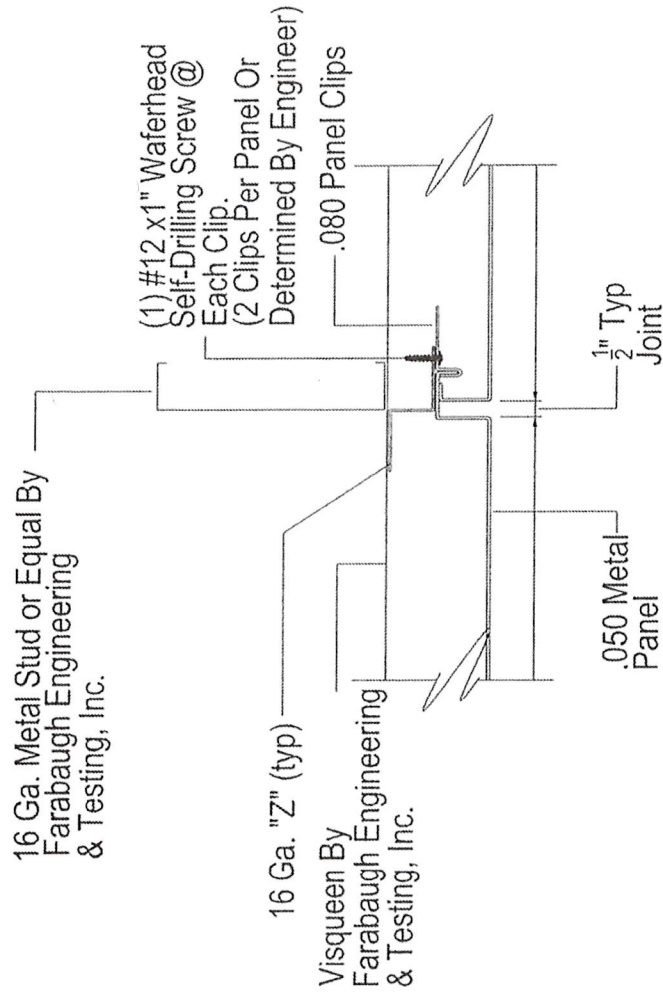
Profile: ModularAL 3" PANEL

A203

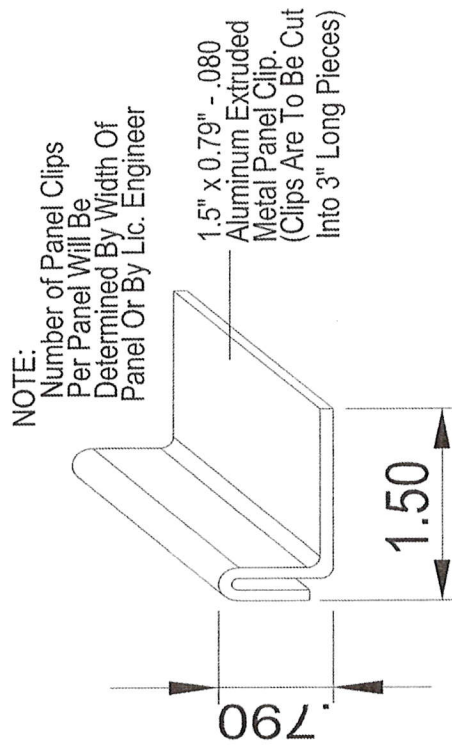


B

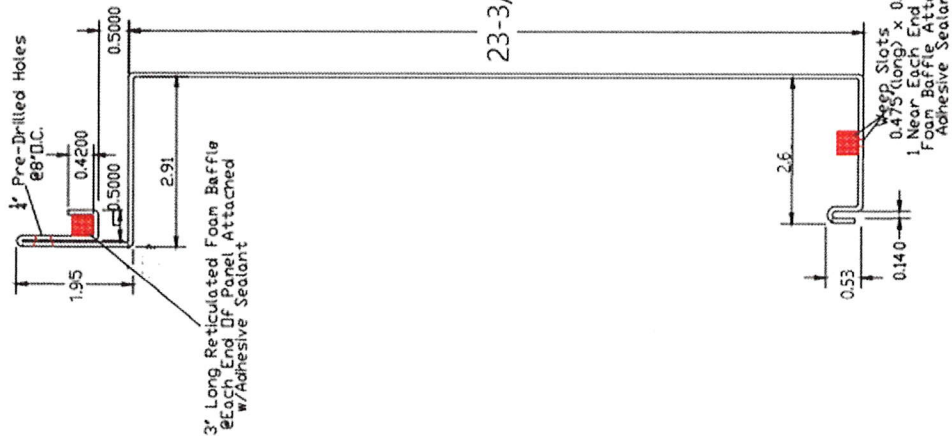
Enlarged Detail



C Enlarged Detail



Enlarged Detail

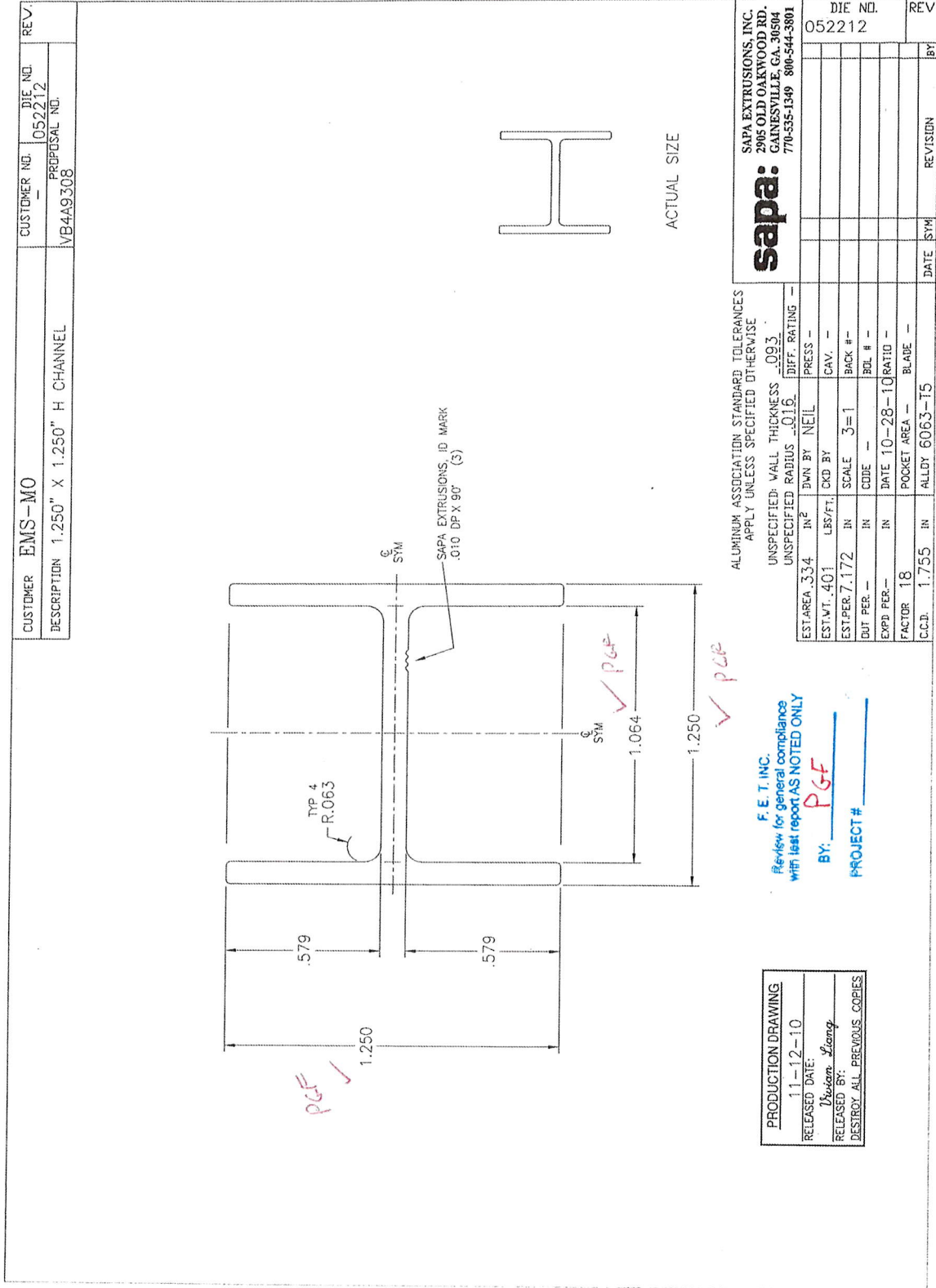


**0.050 Metal Panel
E Horizontal Profile**

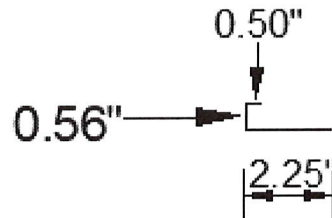
Note: All Panel Dimensions are Nominal

**0.050 Metal Panel
D Vertical Profile**

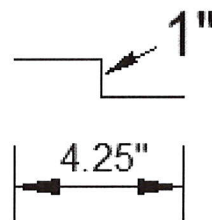
D



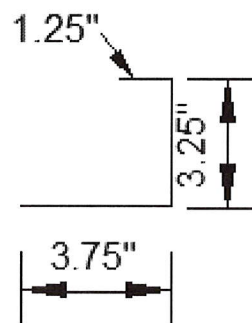
ADDITIONAL SUPPORT AND TRIM EXTRUSIONS



0.080" ALUM.
STARTER CLIP



16 GA. ZEE SUPPORT



0.080" ALUM. "J" TRIM
(TESTING PURPOSES ONLY)

Spectrochemical Laboratories-Material Evaluation, Inc.

155 Prominence Drive, New Kensington, PA. 15068

Phone: (724) 334-4140 Fax: (724) 334-4143

Date: 05-Nov-21

Page No.: 1 of 1

Report of Tensile Testing

Client: Farabaugh Engineering & Testing (PO #: Verbal - Pat Farabaugh)

PIN #	Dimensions (in.)	Area (sq. in.)	Yield Point (lb.)	Tensile Strength (lb.)	Yield Strength (psi.)	Tensile Strength (psi.)	Elongation (% in 2 in.)	Fracture location
PAC 0.050"	0.4959 x 0.0475	0.0236	461	500	19600	21200	7.6	M/2 Break

Test Method: Q2300.04 rev.14 (ASTM A370-20, E8-21, or E646-16 : Yld. by 0.2% offset, Elong. after fracture)

Equipment Used: Instron 5900R60HVL (s/n: 1602) w/ Extensometer (s/n: E93054)

Performed By: T. Ault

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Please send your comments and concerns to us at feedback@spectrochemicalinc.com

For more information call: 724-334-4140

Respectfully submitted,



Todd A. Ault

Laboratory Manager