Farabaugh Engineering and Testing Inc.

Project No. T265-21

Report Date: October 30, 2021

No. Pages: 18 pgs (Inclusive)

PERFORMANCE REPORT

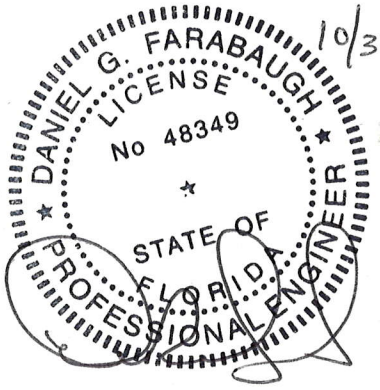
ASTM E330 UNIFORM LOAD TEST

ON

MODULARAL METAL PANEL
3" DEEP X 30" WIDE COVERAGE X 0.080" 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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255 Saunders Station Rd
Trafford, PA 15085
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ISO 17025

MIAMI-DADE COUNTY DADE COUNTY ACCREDITED LABORATORY

AAMA ACCREDITED LABORATORY

TDI TEXAS ACCREDITED LABORATORY

Community Affairs FLORIDA ACCREDITED LABORATORY & QC ENTITY

STRUCTUAL TESTING

Purpose

The purpose of this test is to establish the structural loads on a 8'-0" wide x 8'-0" high wall system.

Test Completion Date

10-28-21

Test Specimen

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

Test Specimen: ModularAL Metal Panel, - 3" Deep x 30" wide coverage x 0.080" alum.
(See Dwg A206 for actual dimension)

Mock-up Size: 96" wide X 96 high (nominal) consisting of 12 panels x 30" (or 18") wide x various lengths of 0.080" thick aluminum panels. All panels are 3" deep.
See page 8 for panel layout

Mock up -Installation

- The test setup consisted of a 96" wide x 96" high mock-up that used 6" x 16 ga. vertical channel studs spaced at 24" o.c that were attached to the top and bottom horizontal 16 ga. channel track.
- 5/8" thick Densglass Gypsum board was attached to the vertical stud supports using #6 x 1" lg. self -drilling fasteners spaced at 10" o.c.
- The panel support consisted of 16 ga. Zee horizontal supports attached thru the gypsum board and into 16 ga. vertical channel supports using #12 x 1-1/2" long wafer-head self -drilling screws. Additional vertical Zee supports were used at the panel clip locations.

- 1" foam board insulation was between all zee supports and entire mock-up was covered with Ice and Water Shield.

- A 16 ga. lower "J" channel was along the bottom and two sides of the mock-up. The "J" channel had predrilled holes thru the top leg and a #12 -14 x 1-1/2" long wafer-head self-drilling screws spaced at 22" o.c. secured the lower "J" channel thru the gypsum board and into the 16 ga. stud/channel track. The lower "J" channel secured the ends of the foam board and zee supports.

- 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 8" o.c. max. spacing.

- The vertical edge of the panel had two (2) clips to attach that edge to the 16 ga. vertical Zee supports using (2) #12 x 1" lg. wafer-head, self-drilling screws at each clip.

- A 0.08" aluminum "J" face trim was along the bottom and sides of the mock-up that sat on top of the lower "J" trim. The face trim was secured thru the lower 16 ga. trim and into stud supports with #14 x 3" lg. wafer-head, self-drilling screw spaced at 24" o.c..

- See installation details for location of fasteners at supports and attachment of each panel.

Test Procedure

The tests were conducted in accordance with the sections as shown in the following:

- ASTM E-330-02, "Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference "

ASTM E330 UNIFORM LOAD TEST

POSITIVE PRESSURE

Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)
0	0.0	0.000	0.000	0.000
3	15.6	0.119	0.343	0.115
0	0.0	0.003	0.002	0.002
6	31.2	0.235	0.558	0.233
0	0.0	0.018	0.017	0.017
9	46.8	0.324	0.704	0.326
0	0.0	0.035	0.034	0.033
12	62.4	0.503	0.980	0.511
0	0.0	0.088	0.082	0.077
15	78.1	0.549	1.047	0.555
0	0.0	0.107	0.100	0.093
18	93.7	0.691	1.305	0.693
0	0.0	0.159	0.151	0.135
21	109.3	0.791	1.538	0.801
0	0.0	0.224	0.221	0.191
24	124.9	0.908	1.721	0.918
0	0.0	0.272	0.265	0.229
27	140.5	1.022	1.880	1.028
0	0.0	0.327	0.316	0.273
30	156.1	1.145	2.068	1.158
0	0.0	0.400	0.395	0.333
33	171.7	1.238	2.252	1.269
0	0.0	0.445	0.449	0.375
38.4	199.8	1.327	2.420	1.394
0	0.0	0.480	0.501	0.416

RESULTS

Upon completion of the testing at the positive pressures noted above there were no noticeable failures of the specimen

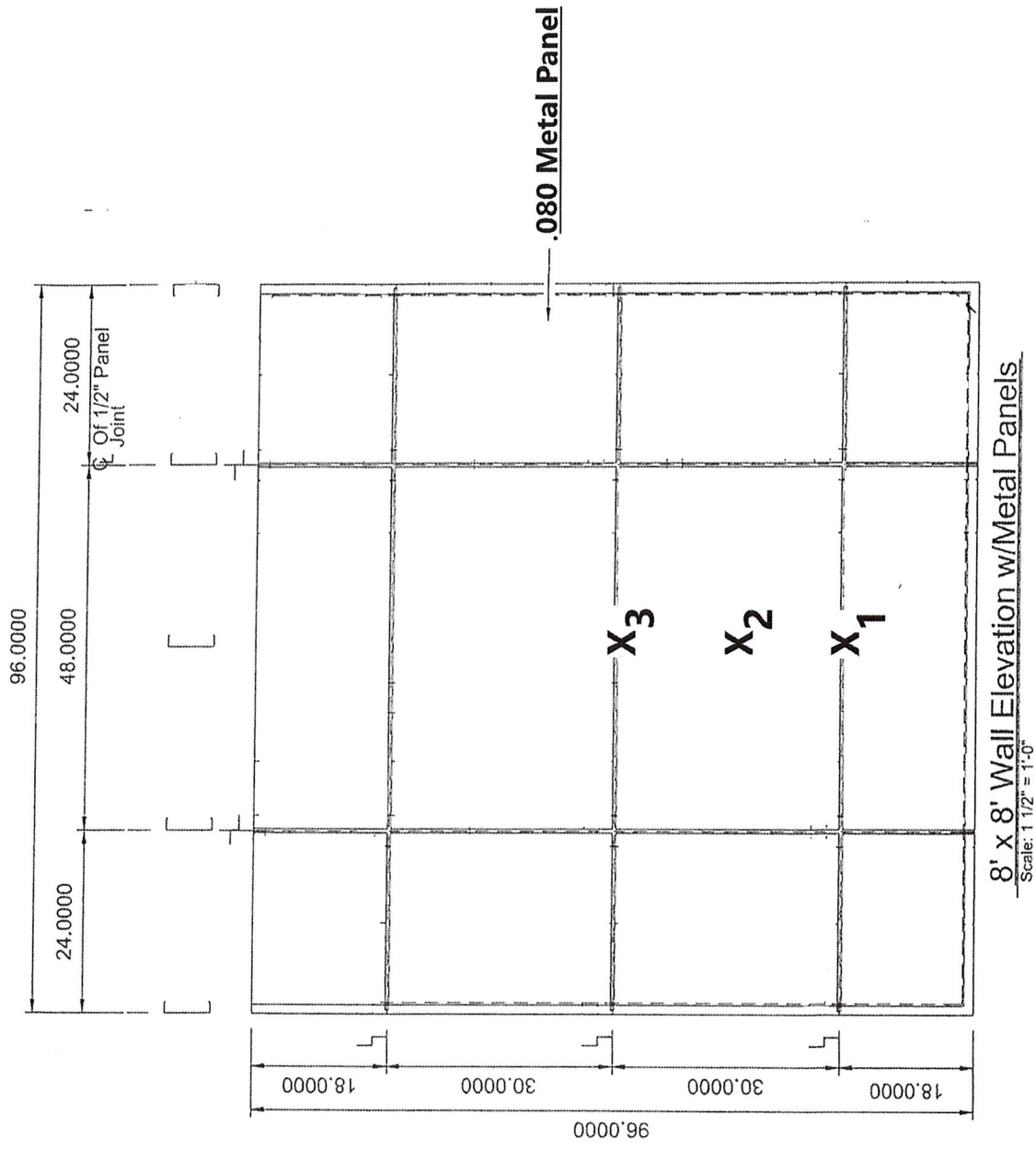
NEGATIVE PRESSURE

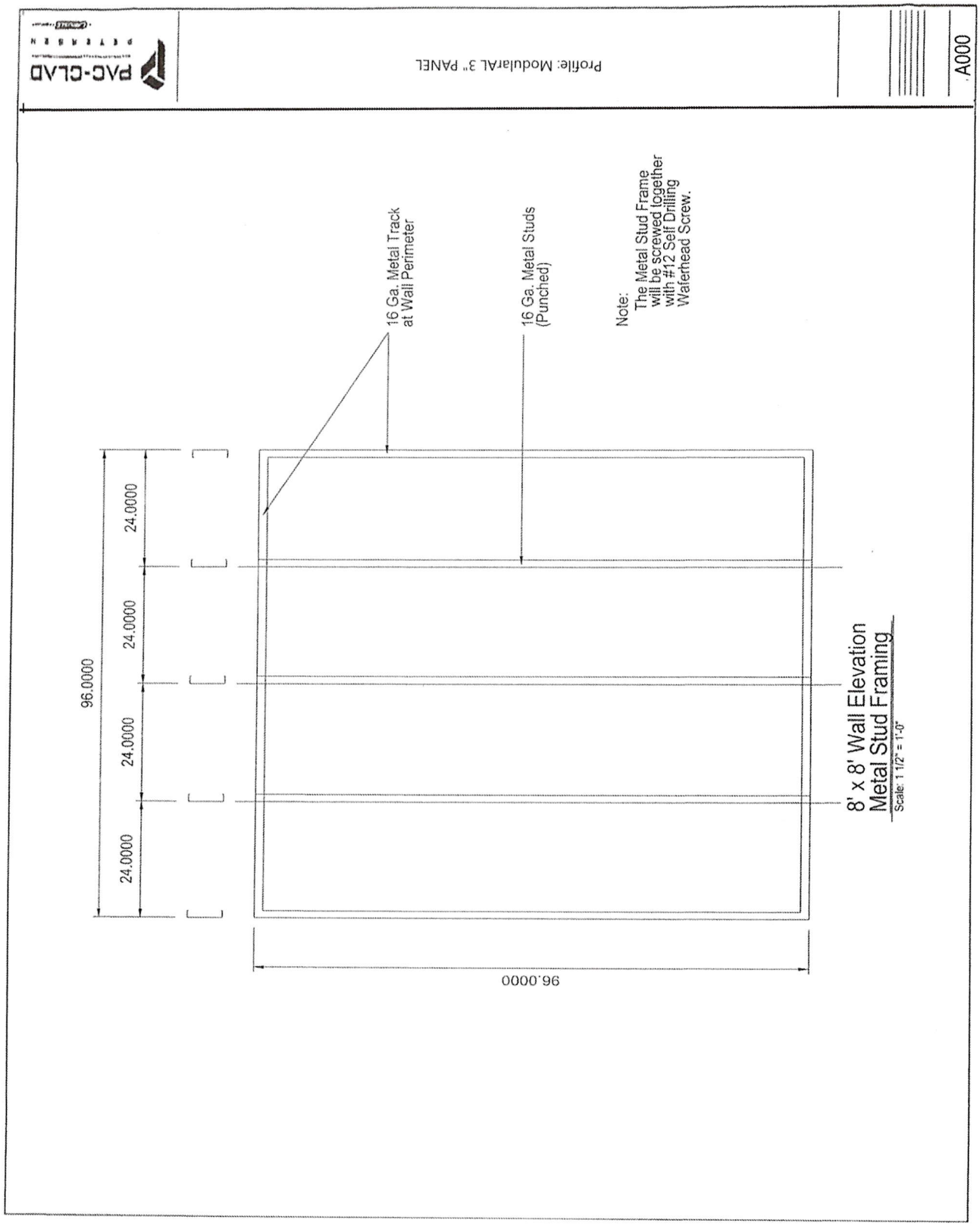
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)
0	0.0	0.000	0.000	0.000
2	10.4	0.029	0.131	0.045
0	0.0	0.001	0.003	0.002
4	20.8	0.065	0.231	0.101
0	0.0	0.006	0.011	0.010
6	31.2	0.117	0.340	0.183
0	0.0	0.014	0.024	0.025
8	41.6	0.164	0.439	0.265
0	0.0	0.021	0.038	0.044
10	52.0	0.224	0.550	0.361
0	0.0	0.032	0.058	0.069
12	62.4	0.287	0.660	0.460
0	0.0	0.046	0.078	0.097
14	72.9	0.352	0.771	0.563
0	0.0	0.071	0.112	0.138
16	83.3	0.417	0.883	0.669
0	0.0	0.094	0.145	0.175
18	93.7	0.482	0.994	0.776
0	0.0	0.116	0.179	0.214
20	104.1	0.568	1.141	0.925
0	0.0	0.143	0.221	0.280

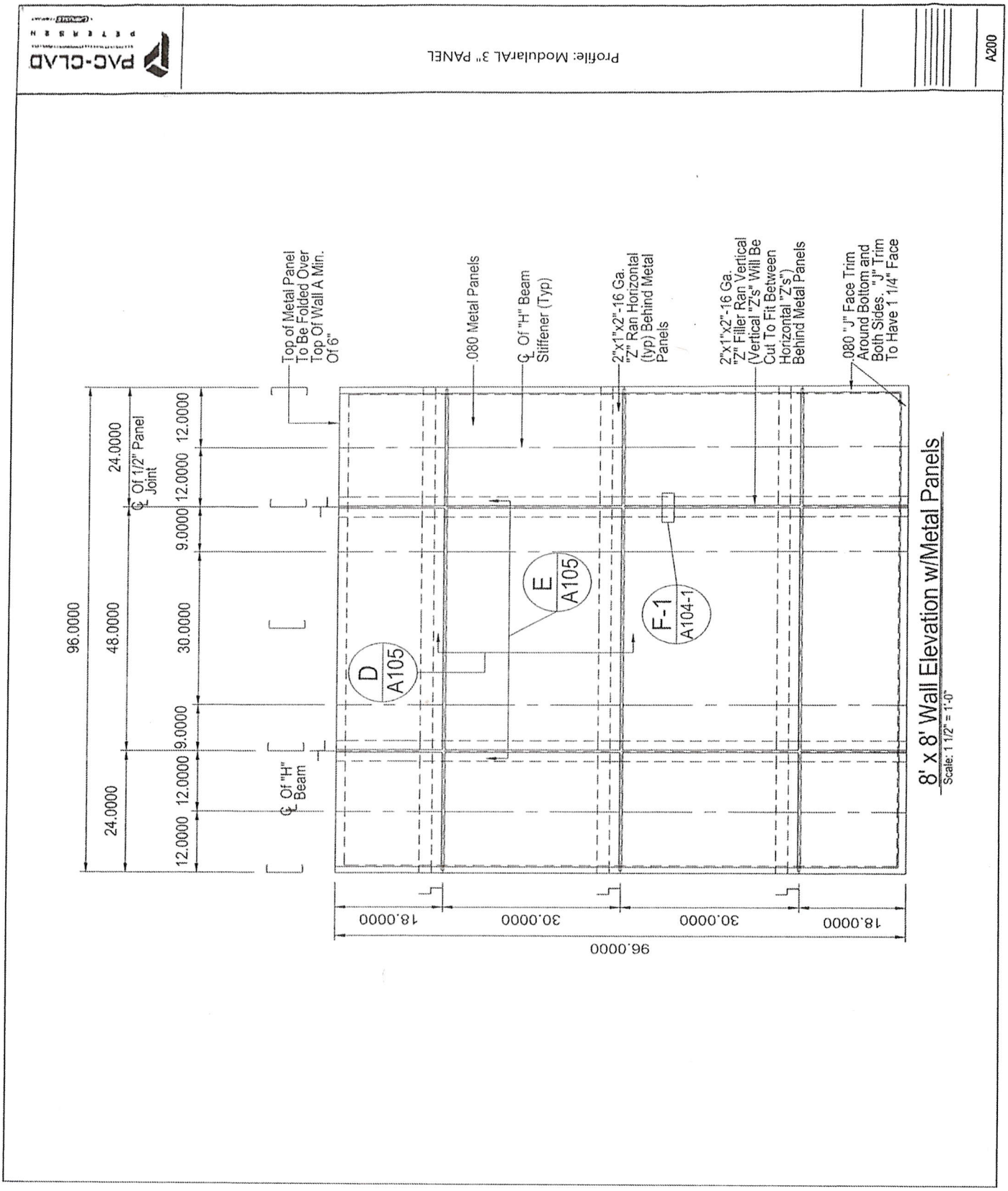
RESULTS:

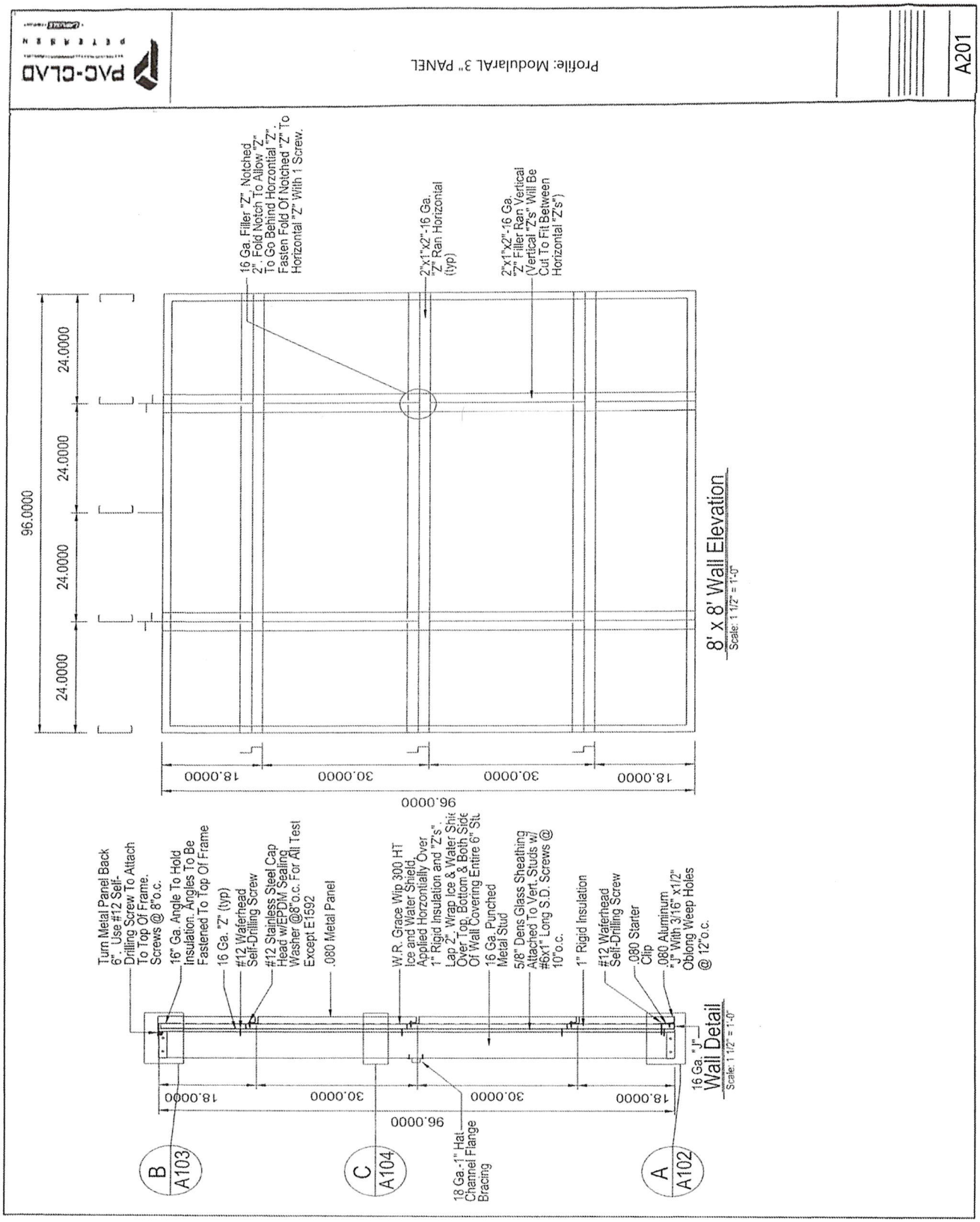
Maximum Test Load = 108.3 psf (Zee support fastener pulled out of 16 ga. metal stud supports)

STRUCTURAL TEST SETUP

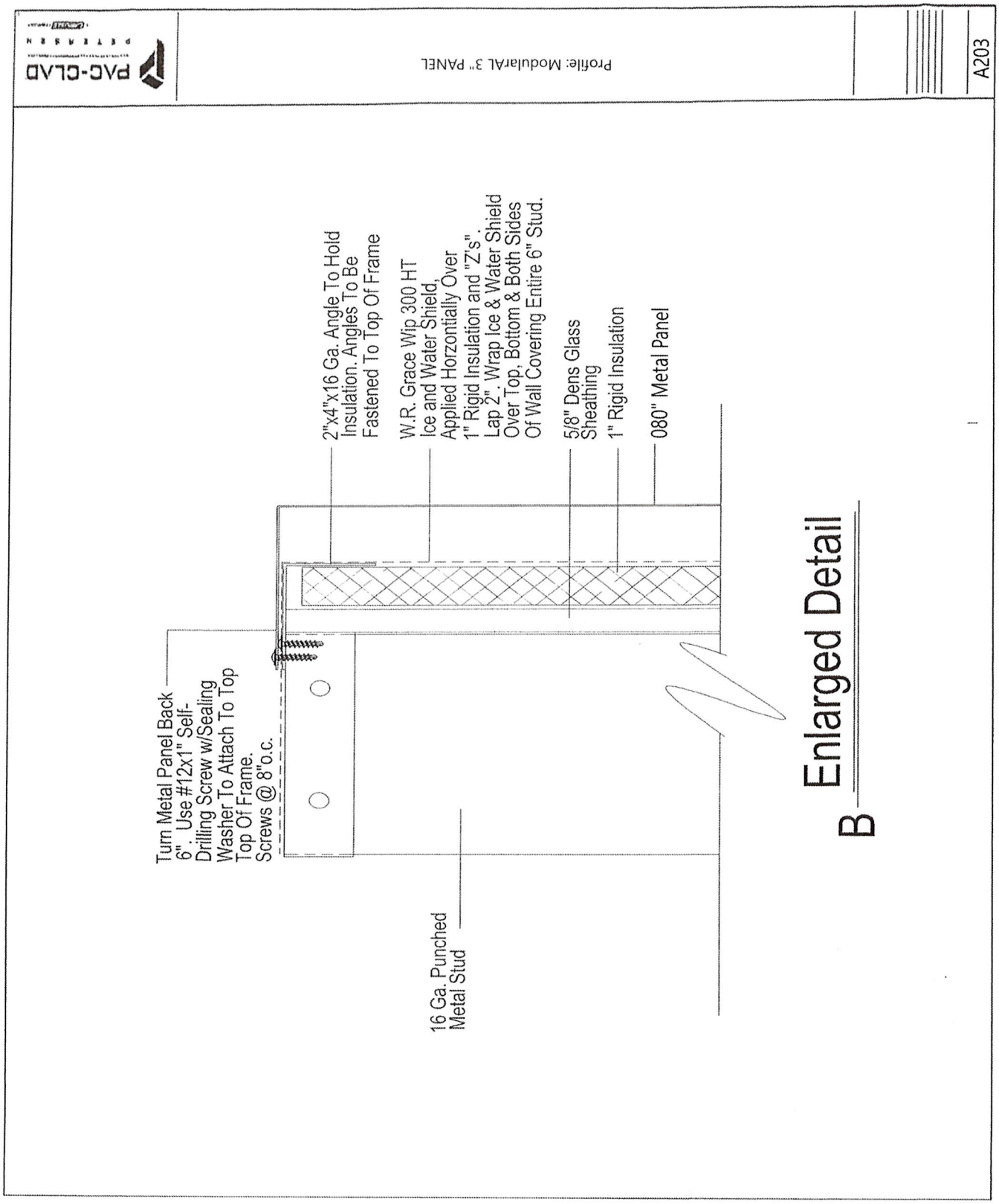



PAC-CLAD
PETERSEN
Profile: Modular AL 3" PANEL
A000
16 Ga. Metal Track
at Wall Perimeter
16 Ga. Metal Studs
(Punched)
Note:
The Metal Stud Frame
will be screwed together
with #12 Self Drilling
Waferhead Screw.
96.0000
24.0000
24.0000
24.0000
24.0000
96.0000
8' x 8' Wall Elevation
Metal Stud Framing
Scale: 1 1/2" = 1'-0"


PAC-CLAD
PETERSEN
Profile: Modular AL 3" PANEL
A200
Top of Metal Panel To Be Folded Over Top Of Wall A Min. Of 6"
.080 Metal Panels
℄ Of "H" Beam Stiffener (Typ)
2"x1"x2"-16 Ga. "Z" Ran Horizontal (typ) Behind Metal Panels
2"x1"x2"-16 Ga. "Z" Filler Ran Vertical (Vertical "Z"s Will Be Cut To Fit Between Horizontal "Z"s") Behind Metal Panels
.080 "J" Face Trim Around Bottom and Both Sides. "J" Trim To Have 1 1/4" Face
℄ Of 1/2" Panel Joint
℄ Of "H" Beam
D A105
E A105
F-1 A104-1
96.0000
24.0000
48.0000
24.0000
12.0000
12.0000
9.0000
30.0000
9.0000
12.0000
12.0000
18.0000
30.0000
30.0000
18.0000
96.0000
8' x 8' Wall Elevation w/Metal Panels
Scale: 1 1/2" = 1'-0"


PAC-CLAD
PETERSEN
A201
Profile: Modular 3" PANEL
16 Ga. Filler "Z". Notched 2". Fold Notch To Allow "Z" To Go Behind Horzontial "Z". Fasten Fold Of Notched "Z" To Horizontal "Z" With 1 Screw.
2"x1"x2" 16 Ga. "Z" Ran Horizontal (typ)
2"x1"x2" 16 Ga. "Z" Filler Ran Vertical (Vertical "Z's" Will Be Cut To Fit Between Horizontal "Z's")
96.0000
24.0000
24.0000
24.0000
24.0000
18.0000
30.0000
30.0000
18.0000
96.0000
8' x 8' Wall Elevation
Scale: 1 1/2" = 1'-0"
Turn Metal Panel Back 6". Use #12 Self-Drilling Screw To Attach To Top Of Frame. Screws @ 8"o.c.
16" Ga. Angle To Hold Insulation. Angles To Be Fastened To Top Of Frame
16 Ga. "Z" (typ)
#12 Waterhead Self-Drilling Screw
#12 Stainless Steel Cap Head w/EPDM Sealing Washer @8"o.c. For All Test Except E1592
.080 Metal Panel
W.R. Grace Wip 300 HT Ice and Water Shield. Applied Horzontially Over 1" Rigid Insulation and "Z's". Lap 2". Wrap Ice & Water Shit Over Top, Bottom & Both Side Of Wall Covering Entire 6" Stu
16 Ga. Punched Metal Stud
5/8" Dens Glass Sheathing Attached To Vert. Studs w/ #6x1" Long S.D. Screws @ 10"o.c.
1" Rigid Insulation
#12 Waterhead Self-Drilling Screw
.080 Starter Clip
.080 Aluminum "J" With 3/16" x1/2" Oblong Weep Holes @ 12"o.c.
16 Ga. "J"
18.0000
30.0000
30.0000
18.0000
96.0000
18 Ga. 1" Hat Channel Flange Bracing
B A103
C A104
A A102
Wall Detail
Scale: 1 1/2" = 1'-0"

PAC-CLAD
PETERSEN
Profile: Modular AL 3" PANEL
A202
W.R. Grace Wip 300 HT
Ice and Water Shield,
Applied Horzontially Over
1" Rigid Insulation and "Z's".
Lap 2". Wrap Ice & Water Shield
Over Top, Bottom & Both Sides
Of Wall Covering Entire 6" Stud.
5/8" Dens Glass
Sheathing
1" Rigid Insulation
#14x3" Long Waferhead
Self-Drilling Screw
@ Each Stud
.080 Starter Clip (Attached w/#12x1"
Waferhead Self-Drilling Screws (2/Clip
Min or 12" o.c.)
.080 MetalPanel
.080 Aluminum "J" Face Trim.
"J" With 3/16" x1/2"
Oblong Weep Holes
@ 12"o.c.
16 Ga. "J" Lower Trim
(Bot. & Both Sides)
(Attached w/#12 x 1 1/2"
Lg. Waferhead S.D. Screws
@22"o.c.
16 Ga. Punched
Metal Stud
#12 x1 1/2" Waferhead Self-
Drilling Screw @12"o.c.
16 Ga. Metal
Track
A
Enlarged Detail


PAC-CLAD
PETERSEN
Profile: Modular AL 3" PANEL
A203
Turn Metal Panel Back 6". Use #12x1" Self-Drilling Screw w/Sealing Washer To Attach To Top Top Of Frame. Screws @ 8"o.c.
16 Ga. Punched Metal Stud
2"x4"x16 Ga. Angle To Hold Insulation. Angles To Be Fastened To Top Of Frame
W.R. Grace Wip 300 HT Ice and Water Shield, Applied Horzontially Over 1" Rigid Insulation and "Z's". Lap 2". Wrap Ice & Water Shield Over Top, Bottom & Both Sides Of Wall Covering Entire 6" Stud.
5/8" Dens Glass Sheathing
1" Rigid Insulation
080" Metal Panel
B Enlarged Detail

PAC-CLAD
PETERSEN
Profile: Modular AL 3" PANEL
A204
Continuous Horzontial "Z"
#14 X 1-1/2" Long
Waterhead Self-
Drilling Screw @24"o.c.
16 Ga. Punched
Metal Stud
5/8" Dens Glass
Sheathing
1" Rigid Insulation
16 Ga. Lower Trim
.080 Aluminum "J"
Face Trim
#14x3" long
Waterhead Self-
Drilling Screw @24"o.c.
.080 Metal
Panel
W.R. Grace Wip 300 HT
Ice and Water Shield,
Applied Horzontially Over
1" Rigid Insulation and "Z's".
Lap 2" Wrap Ice & Water Shield
Over Top, Bottom & Both Sides
Of Wall Covering Entire 6" Stud.
C
Plan View
Enlarged Detail
Scale: 6" = 1'-0"

PAC-CLAD
PETERSEN

Profile: Modular 3" PANEL

A204-1

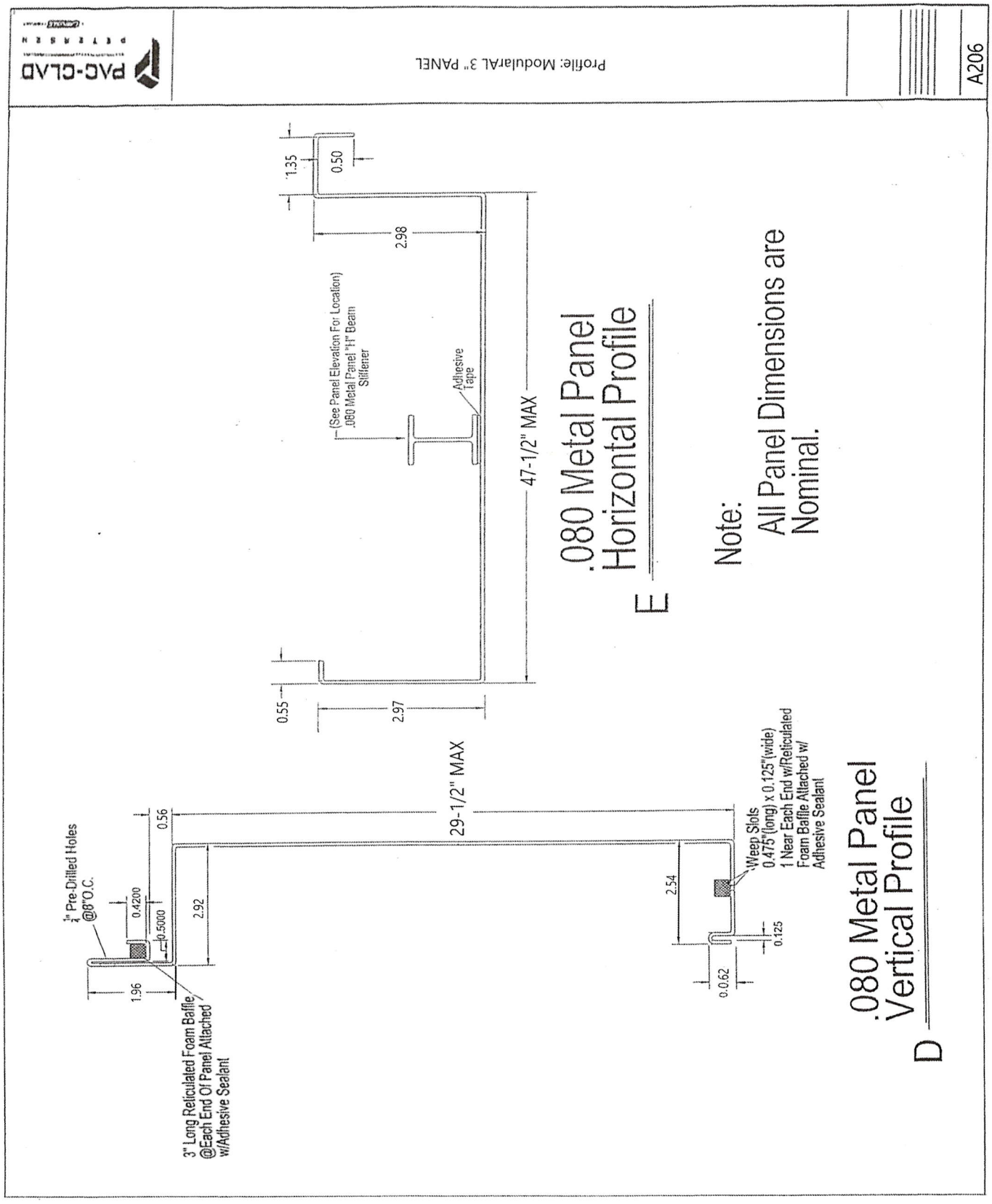
F-1 Enlarged Detail

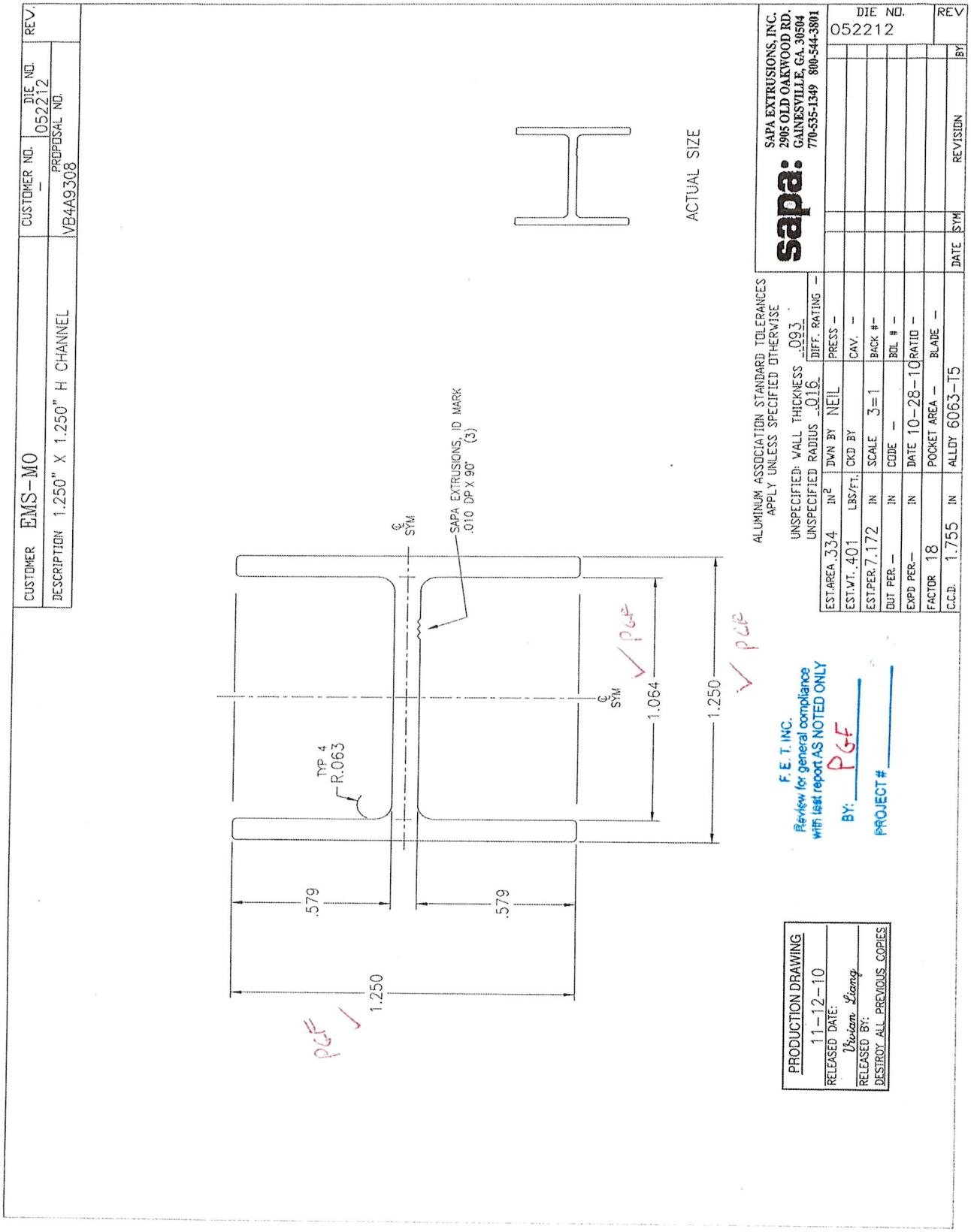
PAC-CLAD
PETERSEN

Profile: Modular/AL 3" PANEL

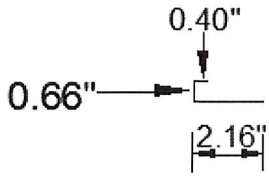
A205

Enlarged Detail

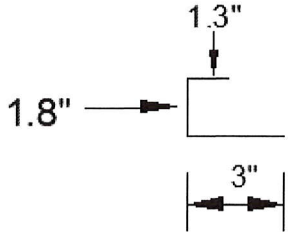

PAC-CLAD
PETERSEN
Profile: Modular/AL 3" PANEL
A206
1.35
0.50
2.98
(See Panel Elevation For Location)
.080 Metal Panel "H" Beam
Stiffener
Adhesive
Tape
47-1/2" MAX
0.55
2.97
.080 Metal Panel
Horizontal Profile
E
Note:
All Panel Dimensions are
Nominal.
29-1/2" MAX
Pre-Drilled Holes
@8"O.C.
0.4200
0.5000
0.56
2.92
1.96
3" Long Reticulated Foam Baffle
@Each End Of Panel Attached
w/Adhesive Sealant
2.54
Weep Slots
0.475"(long) x 0.125"(wide)
1 Near Each End w/Reticulated
Foam Baffle Attached w/
Adhesive Sealant
0.125
0.62
.080 Metal Panel
Vertical Profile
D


CUSTOMER EMS-MO
DESCRIPTION 1.250" X 1.250" H CHANNEL
CUSTOMER NO. –
DIE NO. 052212
PROPOSAL NO. VB4A9308
REV.
ACTUAL SIZE
SAPA EXTRUSIONS, ID MARK .010 DP X 90° (3)
℄ SYM
TYP 4 R.063
.579
.579
1.064
1.250
1.250
PGF
ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS SPECIFIED OTHERWISE
UNSPECIFIED: WALL THICKNESS .093
UNSPECIFIED RADIUS .016
DIFF. RATING –
EST.AREA .334 IN²
EST.WT. .401 LBS/FT.
EST.PER. 7.172 IN
CUT PER. – IN
EXPD PER. – IN
FACTOR 18
C.C.D. 1.755 IN
DWN BY NEIL
CKD BY
SCALE 3=1
CODE –
DATE 10-28-10
POCKET AREA –
ALLOY 6063-T5
PRESS –
CAV. –
BACK #–
BOL # –
RATIO –
BLADE –
sapa:
SAPA EXTRUSIONS, INC.
2905 OLD OAKWOOD RD.
GAINESVILLE, GA. 30504
770-535-1349 800-544-3801
DIE NO. 052212
REV
DATE SYM REVISION BY
PRODUCTION DRAWING
11-12-10
RELEASED DATE:
Vivian Liang
RELEASED BY:
DESTROY ALL PREVIOUS COPIES
F. E. T. INC.
Review for general compliance with last report AS NOTED ONLY
BY: PGF
PROJECT #

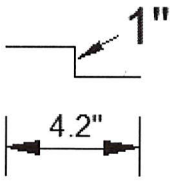
ADDITIONAL SUPPORT AND TRIM EXTRUSIONS



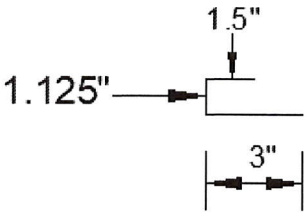
0.080" ALUM.
STARTER CLIP



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



16 GA. ZEE SUPPORT



16 GA. "J" LOWER 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 Engieering & Testing (PO #: Verbal - Pat Farabaugh)

PIN #	Dimensions (in.) Width x Thickness	Area (sq.- in.)	Yield Point (lb.)	Tensile Strength (lb.)	Yield Strength (psi.)	Tensile Strength (psi.)	Elongation (% in 2 in.)	Fracture location
PAC 0.080"	0.4955 x 0.0770	0.0382	797	843	20900	22100	7.3	U/4 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

Respectfully submitted,

Todd A. Ault

Todd A. Ault
Laboratory Manager