Farabaugh Engineering and Testing Inc.

Project No. T305-24

Report Date: November 15, 2024

No. Pages: 14 (inclusive)

PERFORMANCE TEST REPORT

ASTM E330 UNIFORM LOAD STRUCTURAL TEST

ELITE RIB PANEL
36" WIDE COVERAGE X 29 GA.
(6 SPAN @ 2'-0" O.C. USING 18 GA. HAT CHANNEL SUPPORTS)

FOR

ELITE METAL MANUFACTURING, LLC.
10121 88TH TRACE
LIVE OAK, FL. 32064

Prepared by:

Paul G. Farabaugh

Approved by:

Daniel G. Farabaugh

DANIEL G. FARABAUGH LICENSE No 48349 STATE OF FLORIDA PROFESSIONAL ENGINEER

11/15/24

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

Test Completion Date
11/4/2024

Test Specimen
Manufacturer: Elite Metal Manufacturing LLC.
10121 88th Trace
Live Oak, FL. 32064

Test Specimen: Elite Rib Metal Panel 36" wide coverage x 29 ga.

Supports: 3" wide X 1.5" high X 18 ga. (with 1-1/2" bearing) hat channel supports

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 positive and negative direction to monitor pressures on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

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.

Installation

- The panel were installed onto 18 ga. Hat channel supports using #12-14 X 1" long, hex head, self-drilling fasteners with sealing washers at supports. The panel joint was a overlap for the panel lap. See fastening pattern for location of fasteners at ends supports and interior supports.

- 4 mil Plastic Sheeting was placed over top face of panel for the positive direction testing and then the panel had the plastic covering between the supports and the exposed back of the panel and tested in the negative direction

- See attached drawings showing test set-up and assembly details

TEST #1

Test Specimen: Elite Rib Metal Panel 36” wide coverage x 29 ga.

Support & Support Spacing: 18 ga. hat channels. 6 spans @ 2’ o/c

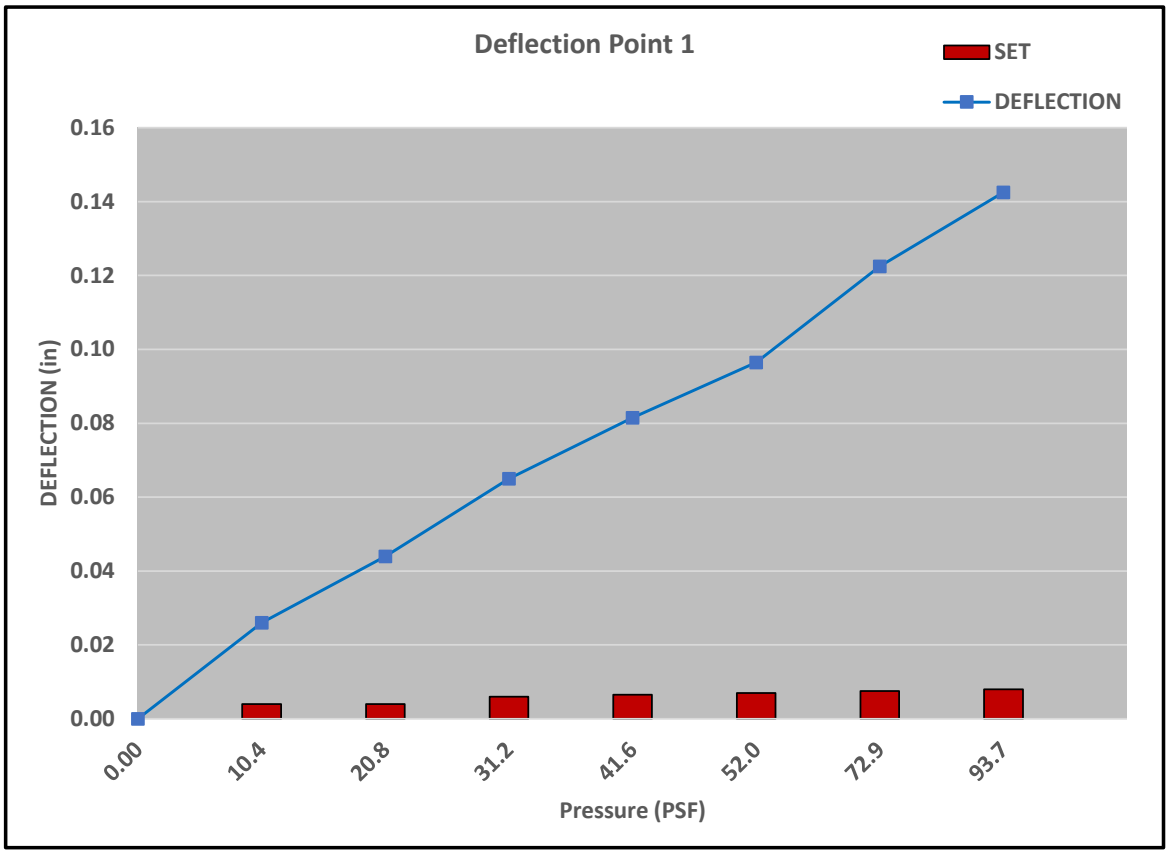
POSITIVE (DOWNWARD) PRESSURE

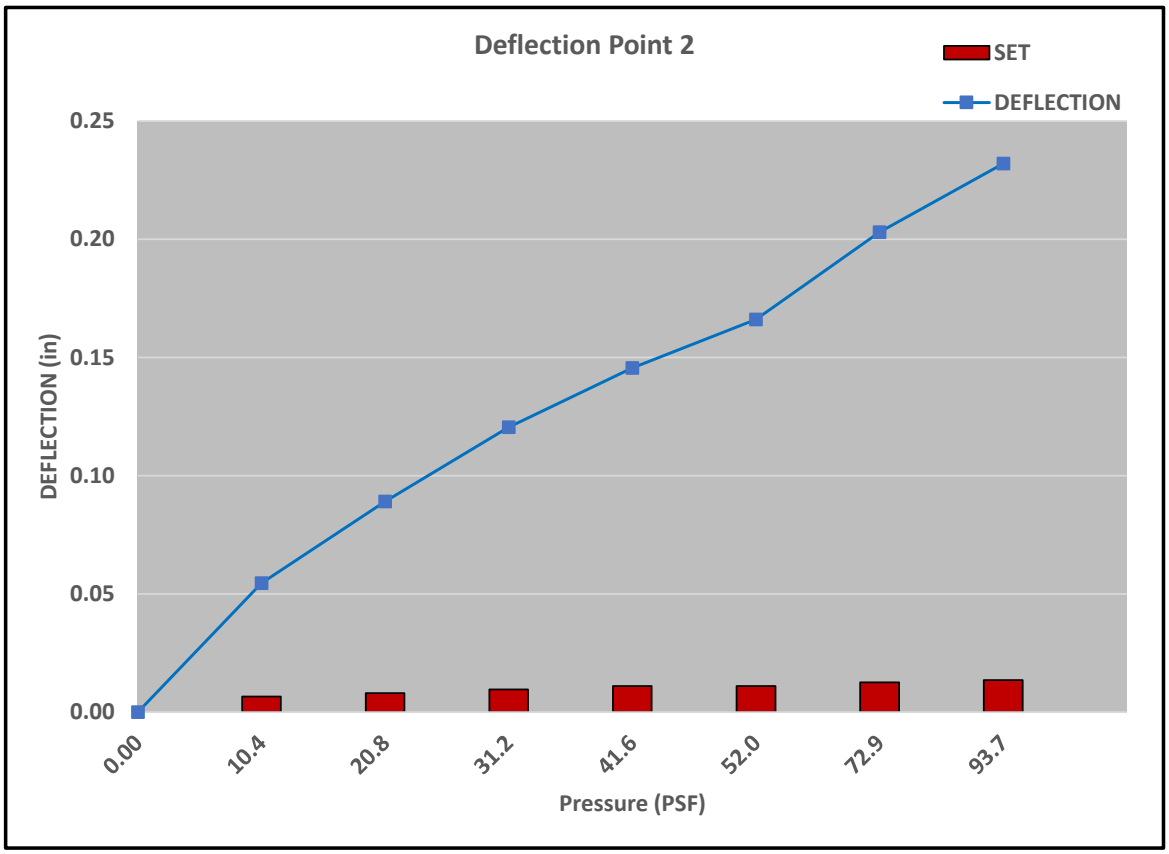
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)
0	**0.0**	0.000	0.000	0.000	0.000	0.000	0.000
2	**10.4**	0.026	0.055	0.042	0.076	0.013	0.059
0	**0.0**	0.004	0.007	0.004	0.005	0.003	0.002
4	**20.8**	0.044	0.089	0.070	0.118	0.021	0.069
0	**0.0**	0.004	0.008	0.005	0.007	0.005	0.003
6	**31.2**	0.065	0.121	0.097	0.156	0.030	0.076
0	**0.0**	0.006	0.010	0.006	0.008	0.005	0.004
8	**41.6**	0.082	0.146	0.119	0.184	0.035	0.081
0	**0.0**	0.007	0.011	0.007	0.009	0.006	0.004
10	**52.0**	0.097	0.166	0.138	0.208	0.040	0.084
0	**0.0**	0.007	0.011	0.007	0.009	0.006	0.004
14	**72.9**	0.123	0.203	0.173	0.249	0.049	0.090
0	**0.0**	0.008	0.013	0.008	0.010	0.006	0.005
18	**93.7**	0.143	0.232	0.201	0.282	0.057	0.092
0	**0.0**	0.008	0.014	0.010	0.010	0.006	0.005

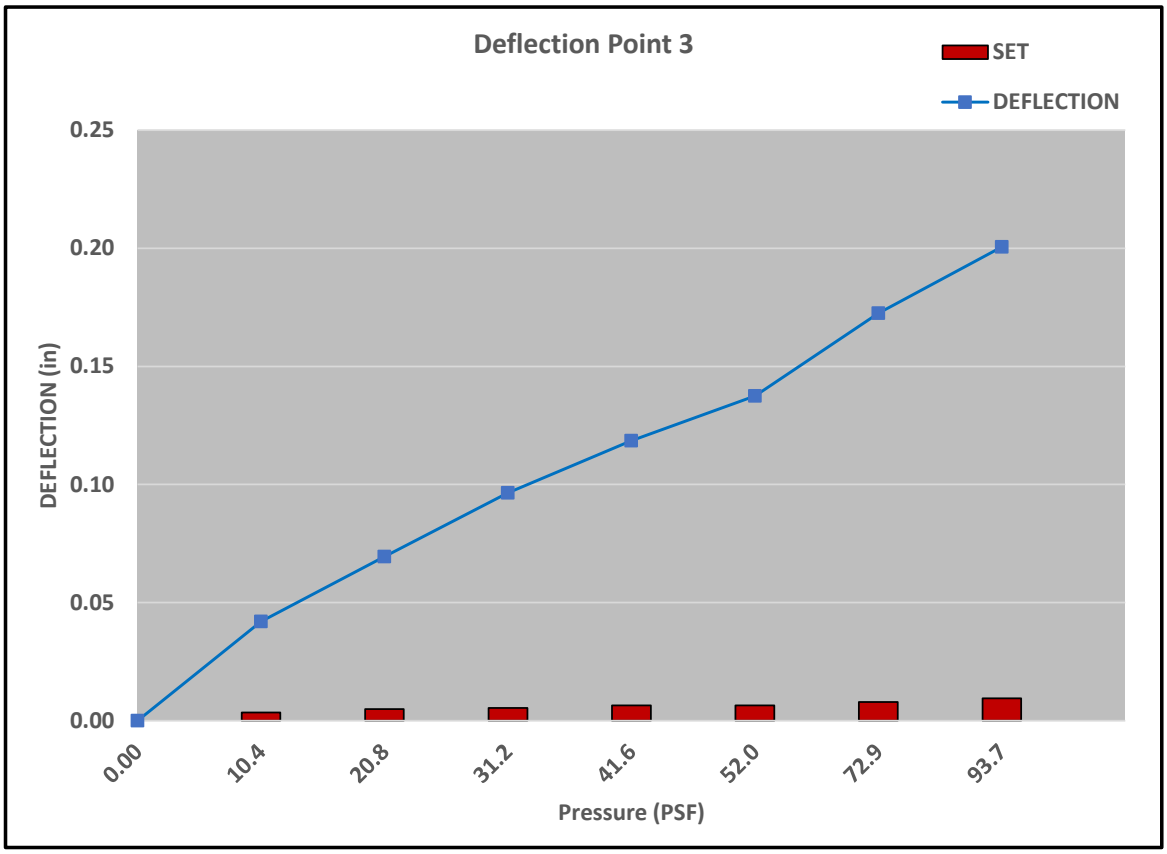
RESULTS:

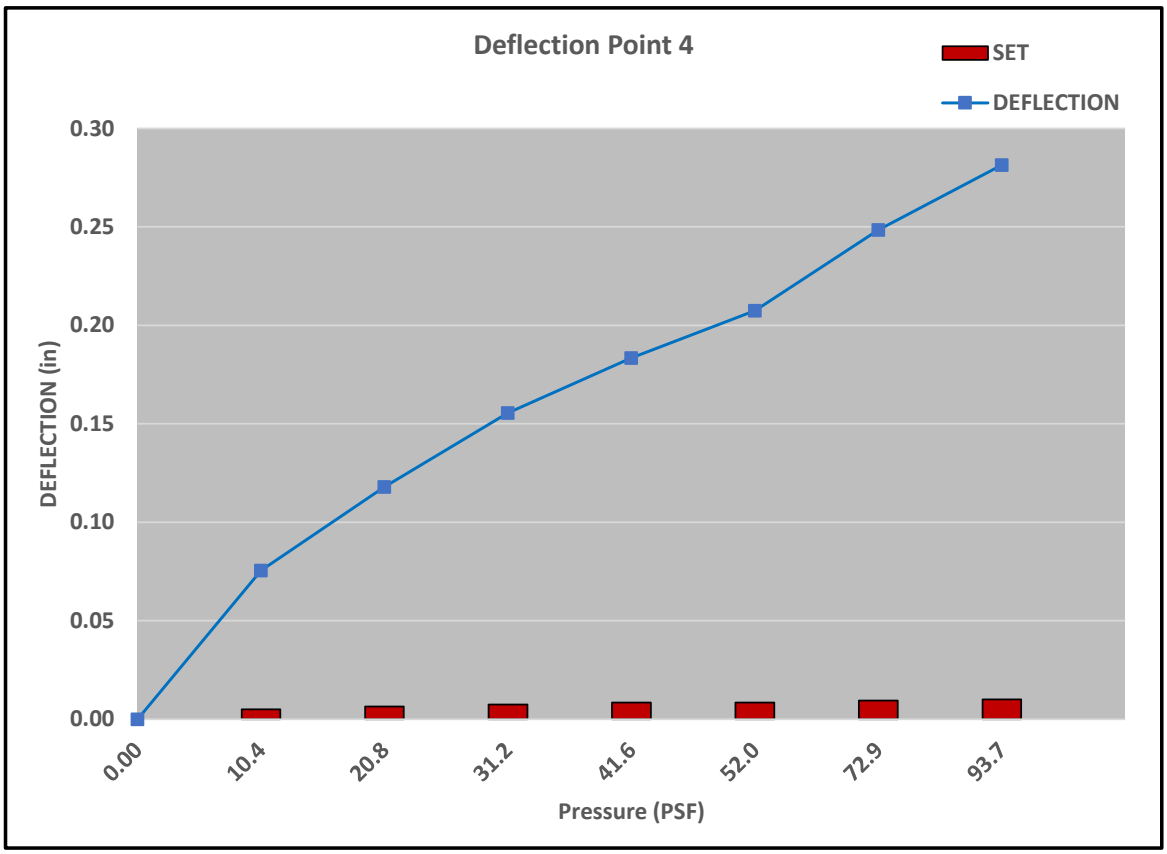
Maximum Load held for 1 minute = 395.5 psf

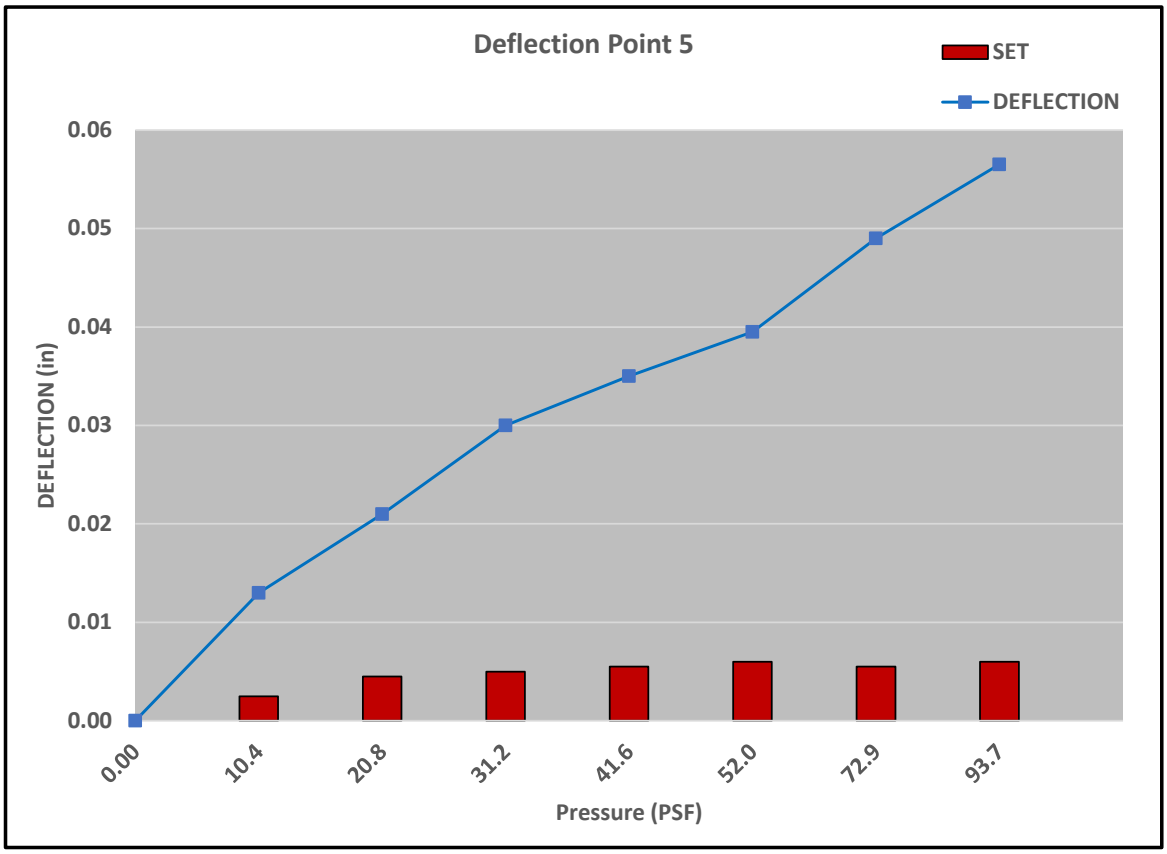
Maximum Test Load at Failure= 401.2 psf (Panel buckling at end span)

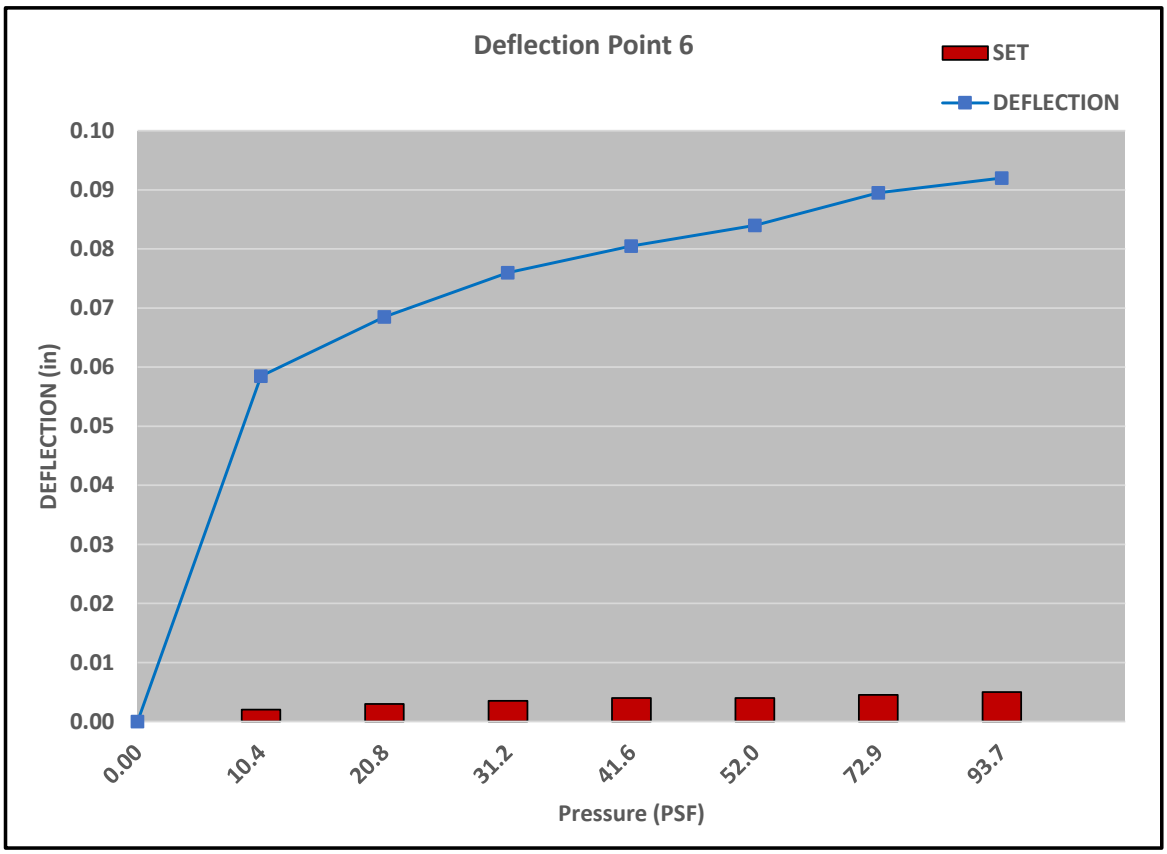

Deflection Point 1
SET
DEFLECTION
DEFLECTION (in)
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 2
SET
DEFLECTION
DEFLECTION (in)
0.25
0.20
0.15
0.10
0.05
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 3
SET
DEFLECTION
0.25
0.20
0.15
0.10
0.05
0.00
DEFLECTION (in)
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 4
SET
DEFLECTION
0.30
0.25
0.20
0.15
0.10
0.05
0.00
DEFLECTION (in)
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 5
SET
DEFLECTION
DEFLECTION (in)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 6
SET
DEFLECTION
DEFLECTION (in)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)

TEST #2

Test Specimen: Elite Rib Metal Panel 36” wide coverage x 29 ga.

Support & Support Spacing: 18 ga. hat channels. 6 spans @ 2’ o/c

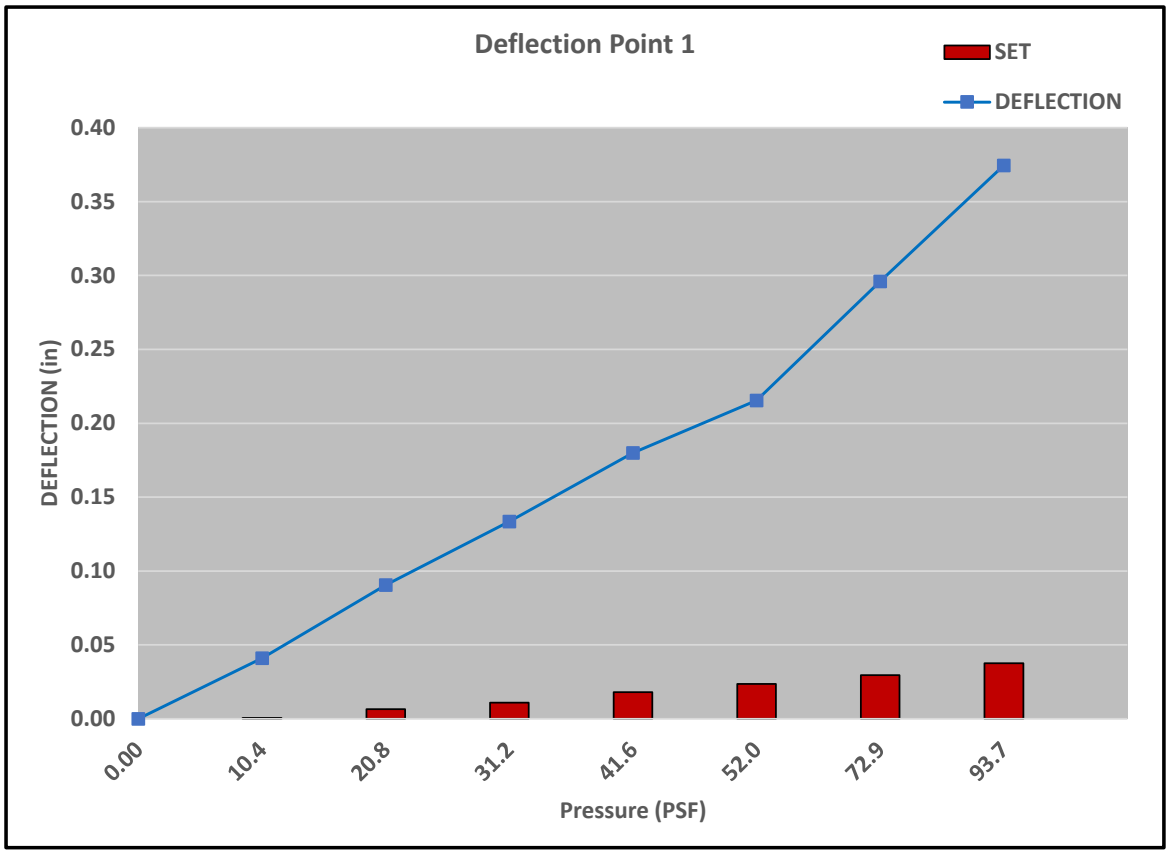
NEGATIVE (UPLIFT) PRESSURE

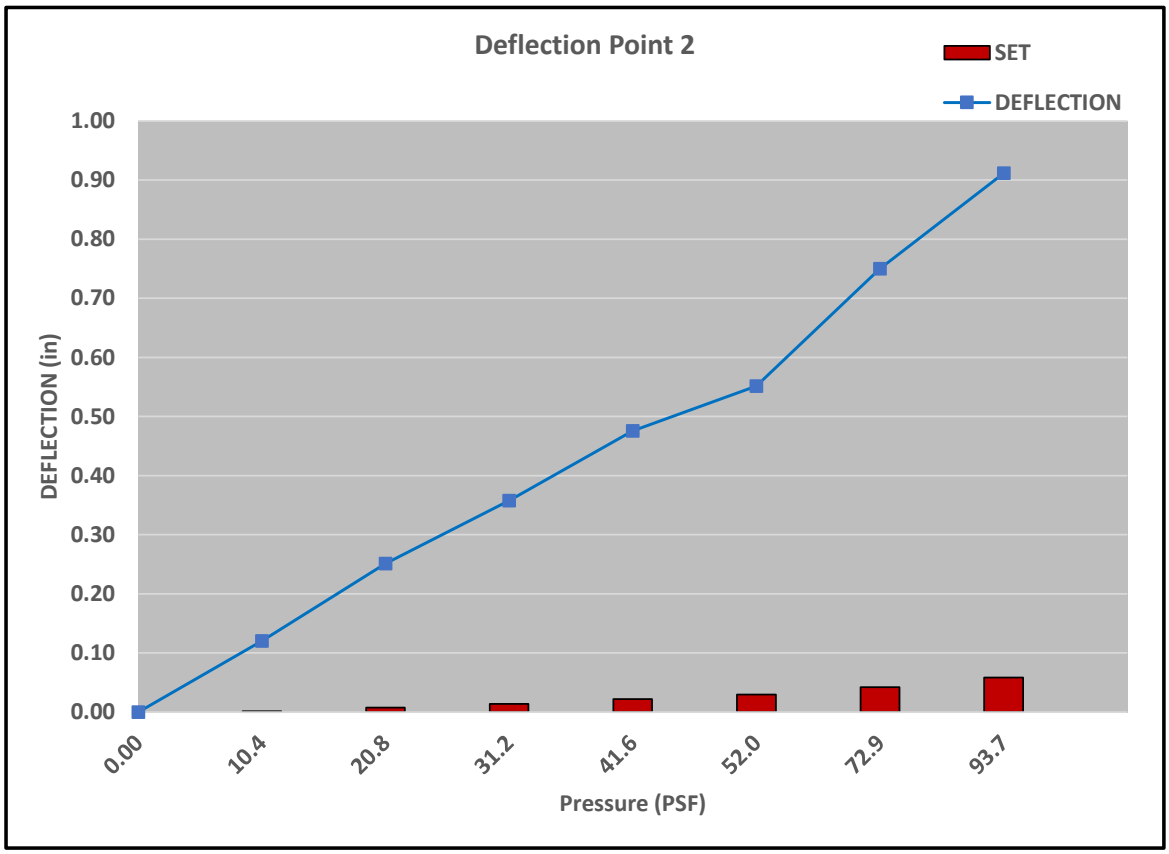
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)
0	**0.0**	0.000	0.000	0.000	0.000	0.000	0.000
2	**10.4**	0.041	0.120	0.046	0.049	0.050	0.154
0	**0.0**	0.001	0.001	0.001	0.002	0.002	0.003
4	**20.8**	0.091	0.251	0.098	0.104	0.102	0.317
0	**0.0**	0.007	0.008	0.004	0.005	0.007	0.010
6	**31.2**	0.134	0.358	0.136	0.147	0.144	0.448
0	**0.0**	0.011	0.014	0.006	0.009	0.011	0.017
8	**41.6**	0.180	0.476	0.179	0.194	0.194	0.596
0	**0.0**	0.018	0.022	0.010	0.013	0.017	0.026
10	**52.0**	0.216	0.552	0.207	0.227	0.218	0.681
0	**0.0**	0.024	0.030	0.013	0.018	0.021	0.035
14	**72.9**	0.296	0.750	0.287	0.316	0.317	0.942
0	**0.0**	0.030	0.042	0.017	0.025	0.027	0.051
18	**93.7**	0.375	0.912	0.364	0.395	0.396	1.125
0	**0.0**	0.038	0.059	0.023	0.033	0.033	0.072

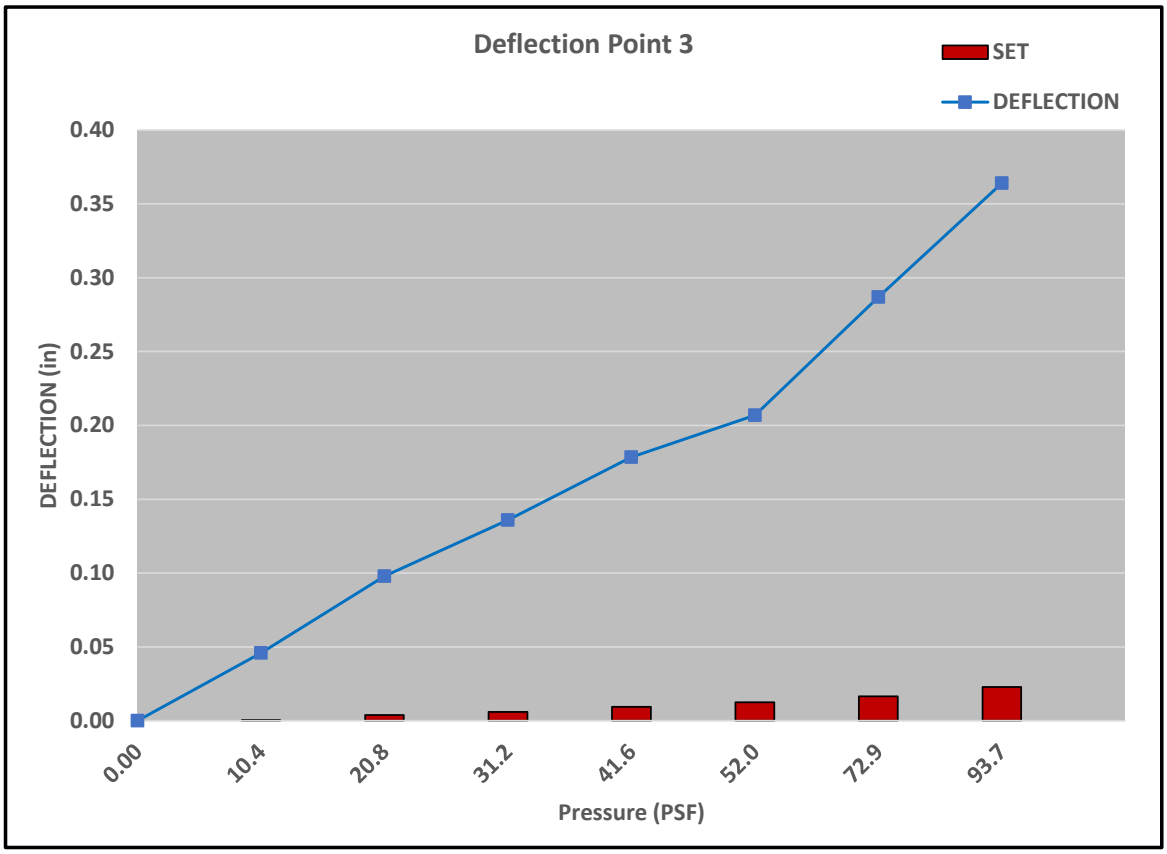
RESULTS:

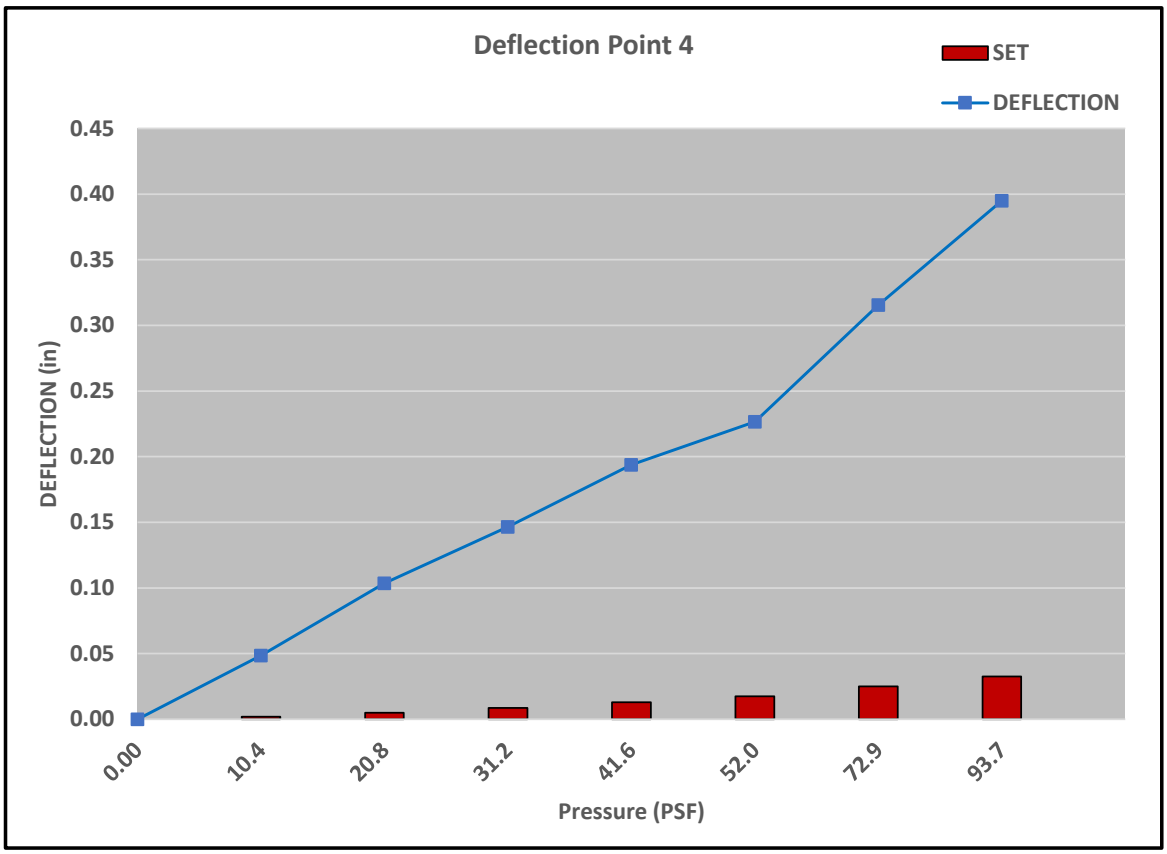
Maximum Load held for 1 minute = 187.2 psf

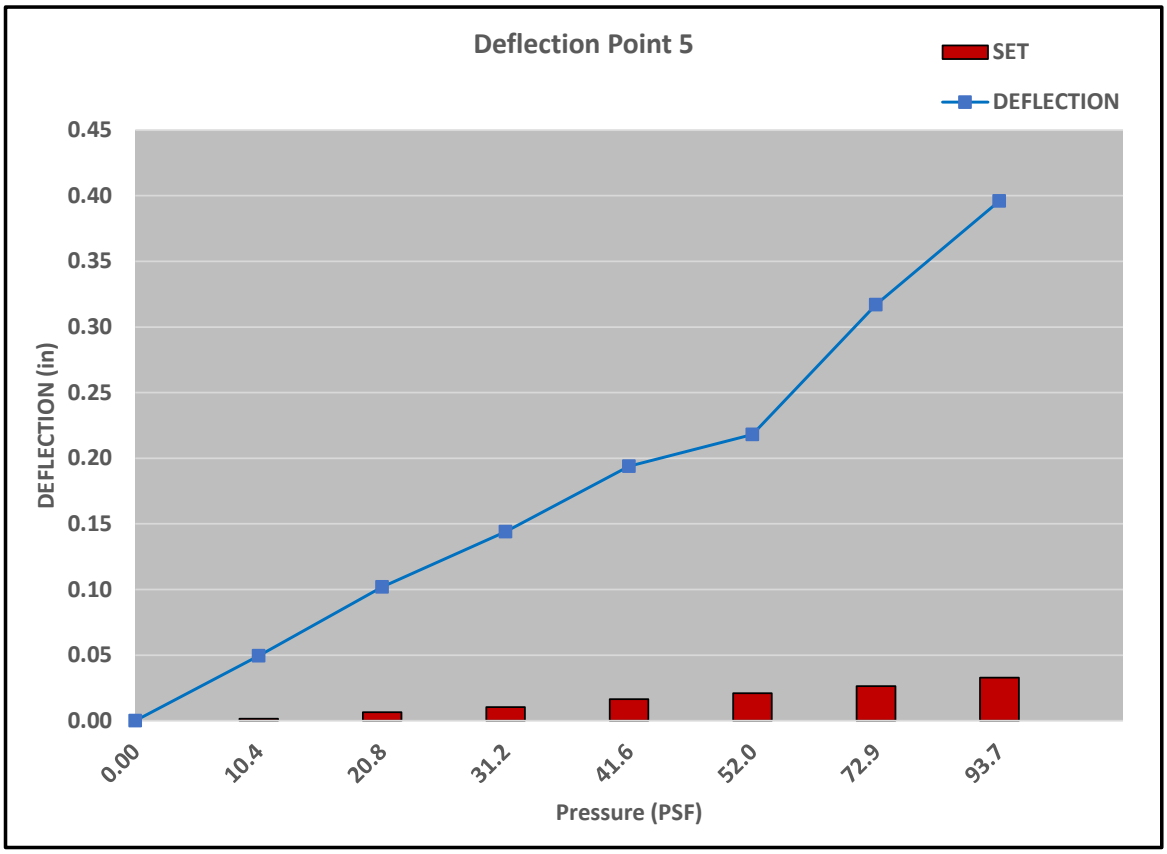
Maximum Test Load at Failure= 189.3 psf (Panel fastener pulled out of support)

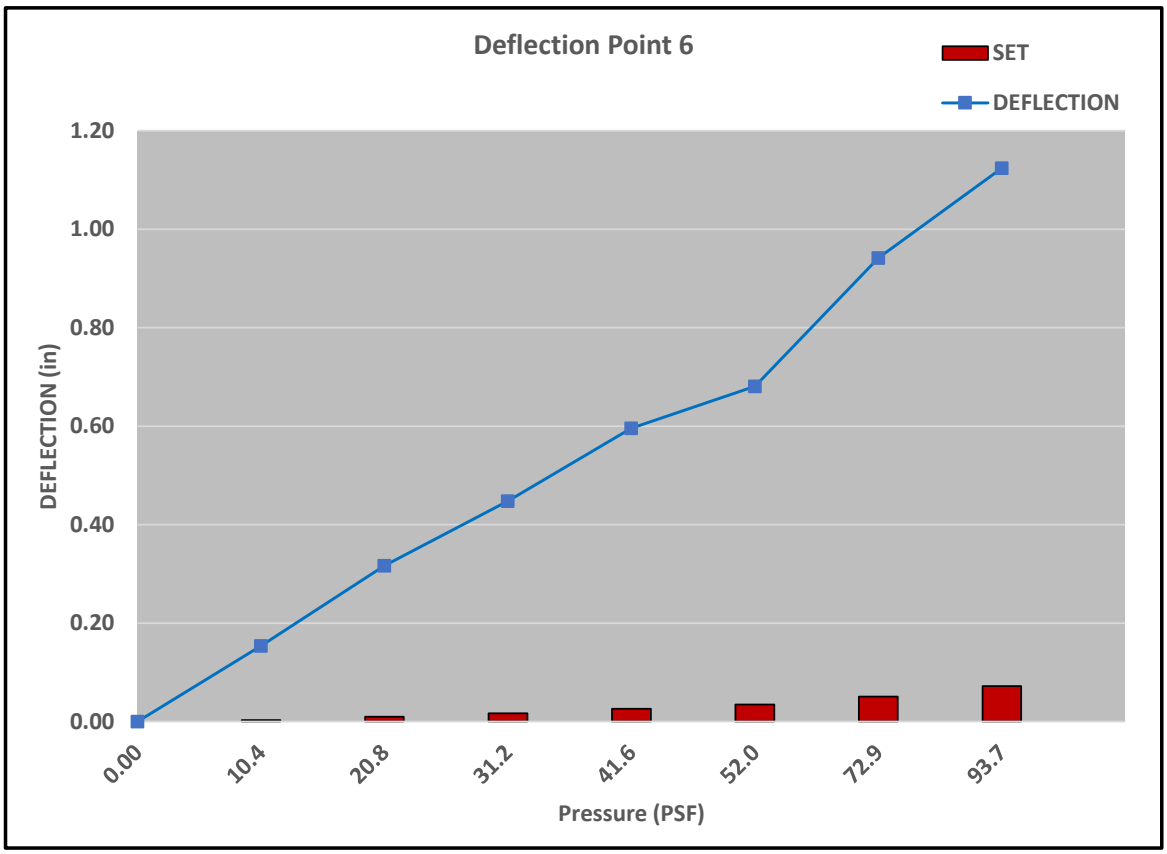

Deflection Point 1
SET
DEFLECTION
DEFLECTION (in)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 2
SET
DEFLECTION
DEFLECTION (in)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)

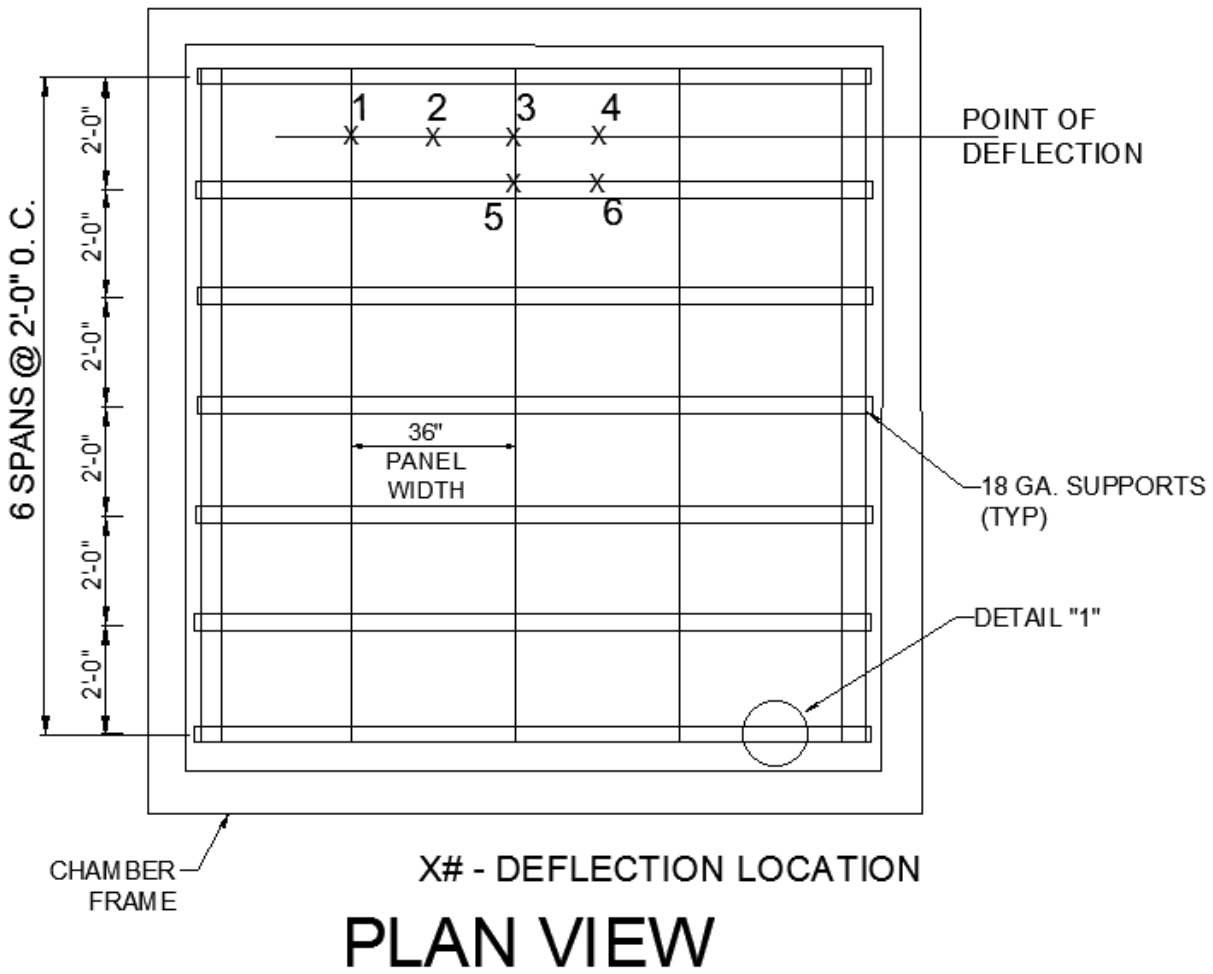

Deflection Point 3
SET
DEFLECTION
DEFLECTION (in)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)

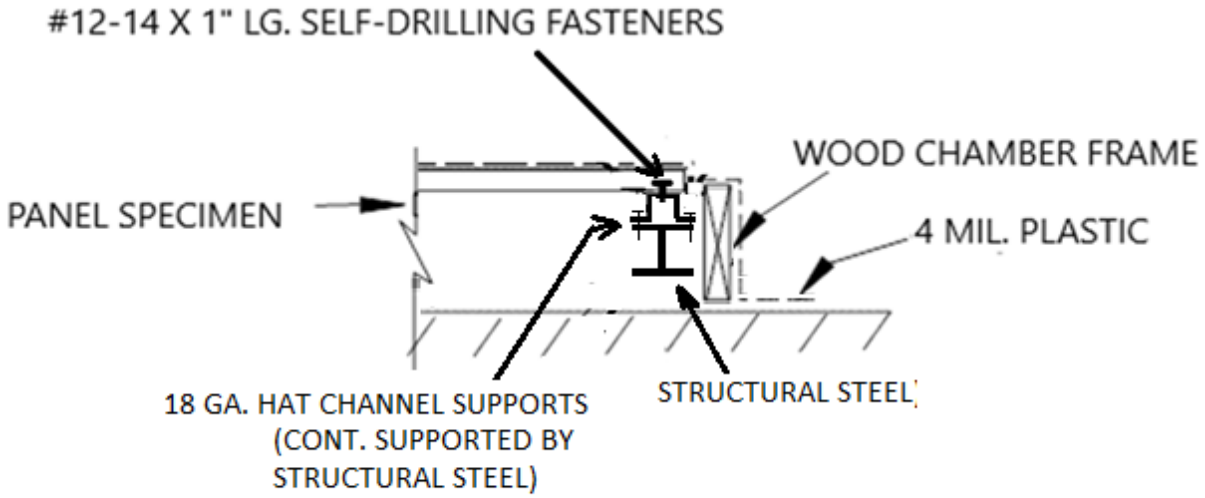

Deflection Point 4
SET
DEFLECTION
DEFLECTION (in)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 5
SET
DEFLECTION
DEFLECTION (in)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)


Deflection Point 6
SET
DEFLECTION
DEFLECTION (in)
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
10.4
20.8
31.2
41.6
52.0
72.9
93.7
Pressure (PSF)

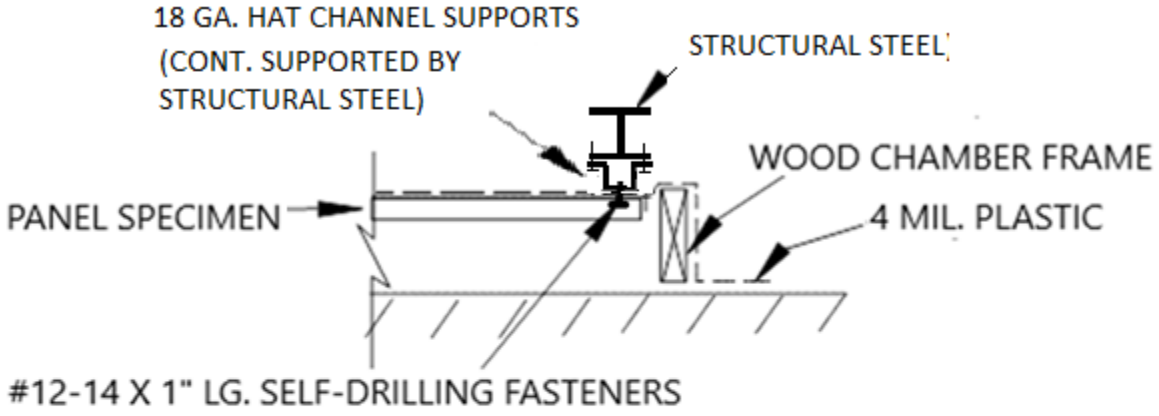
TEST SETUP


1
2
3
4
5
6
POINT OF DEFLECTION
6 SPANS @ 2'-0" 0. C.
2'-0"
2'-0"
2'-0"
2'-0"
2'-0"
2'-0"
36" PANEL WIDTH
18 GA. SUPPORTS (TYP)
DETAIL "1"
CHAMBER FRAME
X# - DEFLECTION LOCATION
PLAN VIEW



DETAIL "1"

(POSITIVE PRESSURE)

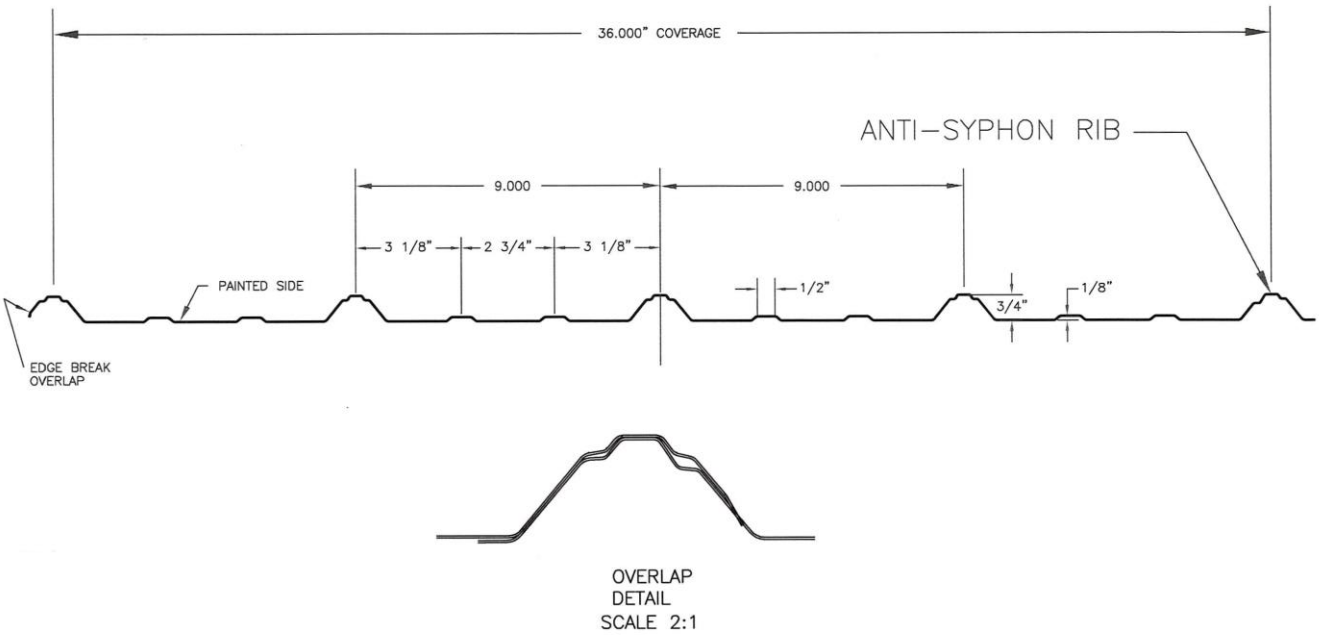


DETAIL "1"

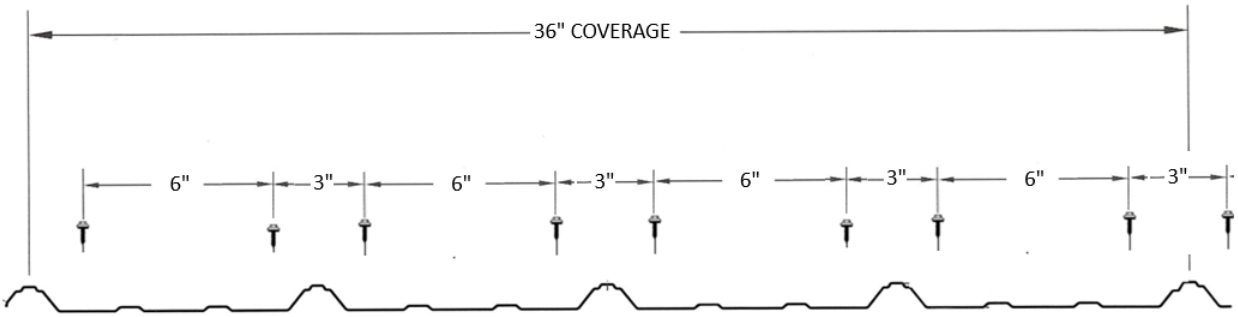
(NEGATIVE PRESSURE)

ELITE RIB PANEL

STRIP WIDTH = 40.875



ELITE RIB PANEL



6-3-6-3-6-3-6-3 PATTERN AT ALL SUPPORTS

TENSILE TEST REPORT

Manufacturer: Elite Metal Manufacturing LLC.
10121 88th Trace
Live Oak, FL. 32064

Test Specimen: Elite Rib Metal Panel 36” wide coverage x 29 ga.

Test Date: November 7, 2024

Test Method: ASTM A370-10

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)
24123	0.498	0.013	684.68	696.64	105,758	107,606	1.0

Equipment Used: Tensile Machine #QT7-061196-020
Caliper #1074379
Extensometer #10311744D
Micrometer #110596927

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	11/15/24	N/A	Original report issue.