

Project Number: T173-26

Report Date: April 29, 2026

No. of Pages: 11 (inclusive)

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

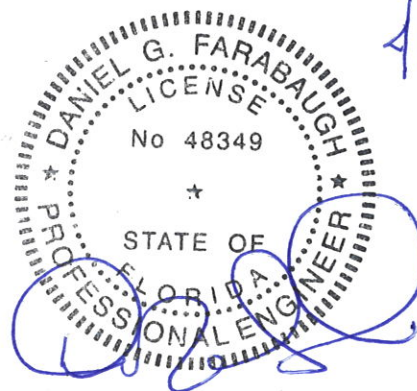
Tested on:
SPARTAN RIB PANEL
36" WIDE X 1-1/2" HIGH X 26 GA. STEEL PANEL
(3 SPANS @ 5'-0")

Tested For: STRUCTURES AMERICA

14369 FM 1314

CONROE, TX. 77302

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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 Specimen

Manufacturer: Structures America
14369 FM 1314
Conroe, TX. 77302

Panel: Spartan Rib Roof Panel, 36" (35.79" coverage) wide x 1-1/2" height x 26 ga. Steel

Test Dates: April 15, 2026

Test Apparatus

A vacuum test chamber was used with two static pressure taps located at diagonally opposite corners. A controlled blower provided a pressure 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 panels were installed on to 12 ga supports with #12-14 X 1" long tek 3, self-drill, hex head fasteners with 5/8" diameter steel sealing washer at supports. The panel sidejoint was lap joint. The screws were attached with a specified spacing pattern across the width of the panel. See fastening pattern for location of fasteners across width of panel at fixed end, open end and interior support locations.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts and in the side joints to create a vacuum seal.

Test 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(2017) and as noted herein. In our opinion the tape and plastic had no influence on the results of the test.

Test Results Summary

TEST #1

Test Specimen: Spartan Rib Roof Panel, 36" wide x 1-1/2" height x 26 ga.

Clip spacing: 5'-0" o.c.

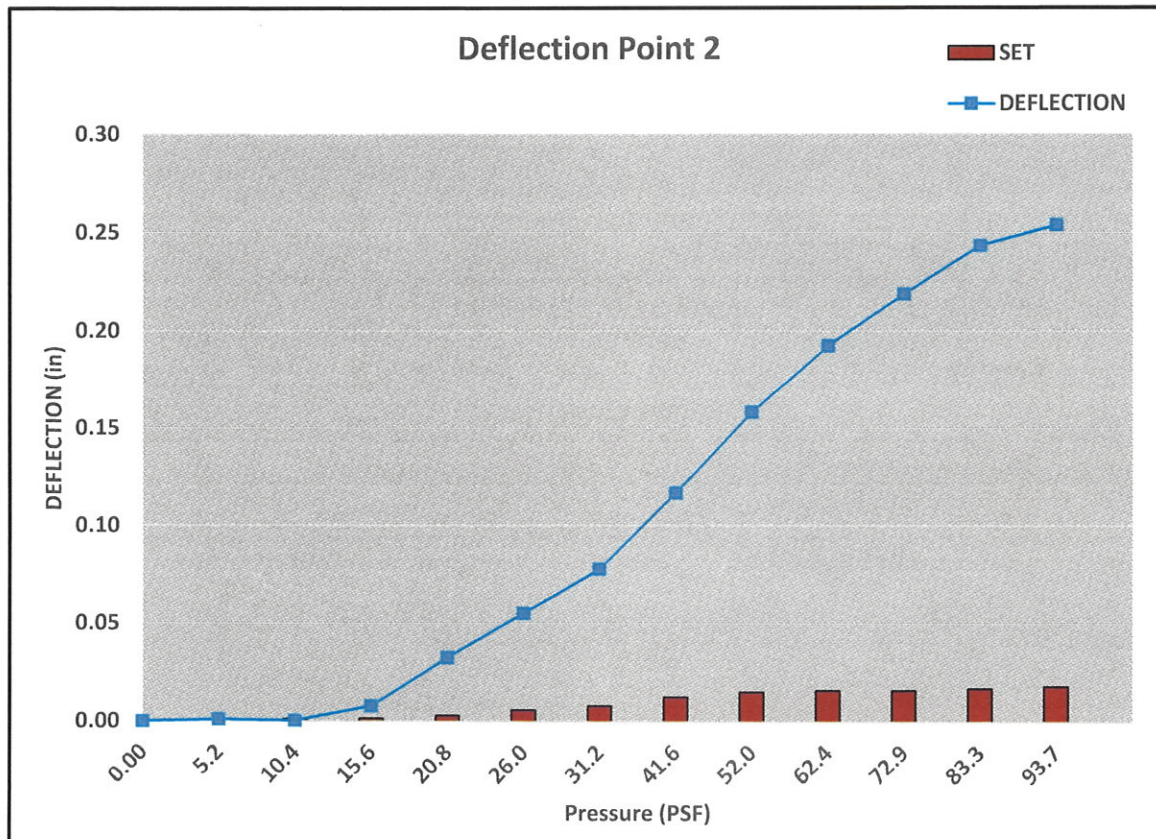
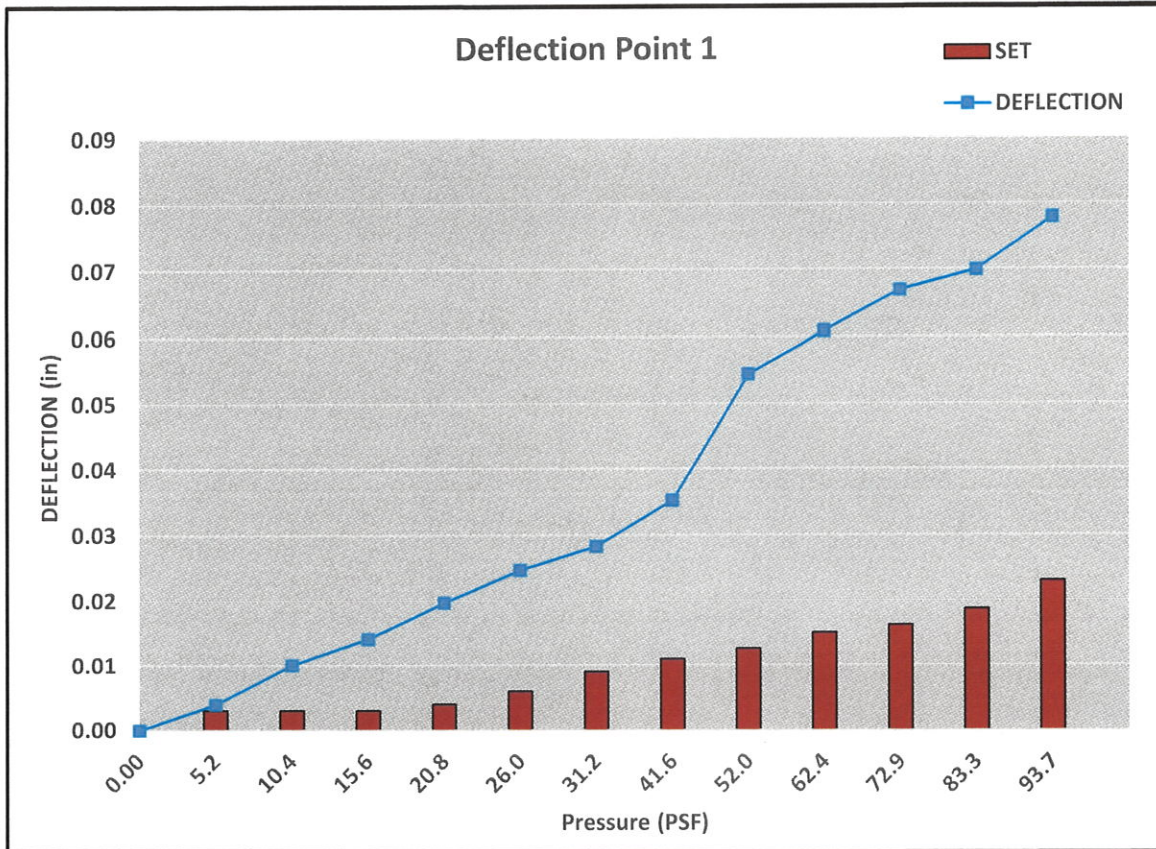
Load Orientation: **NEGATIVE (UPLIFT PRESSURE)**

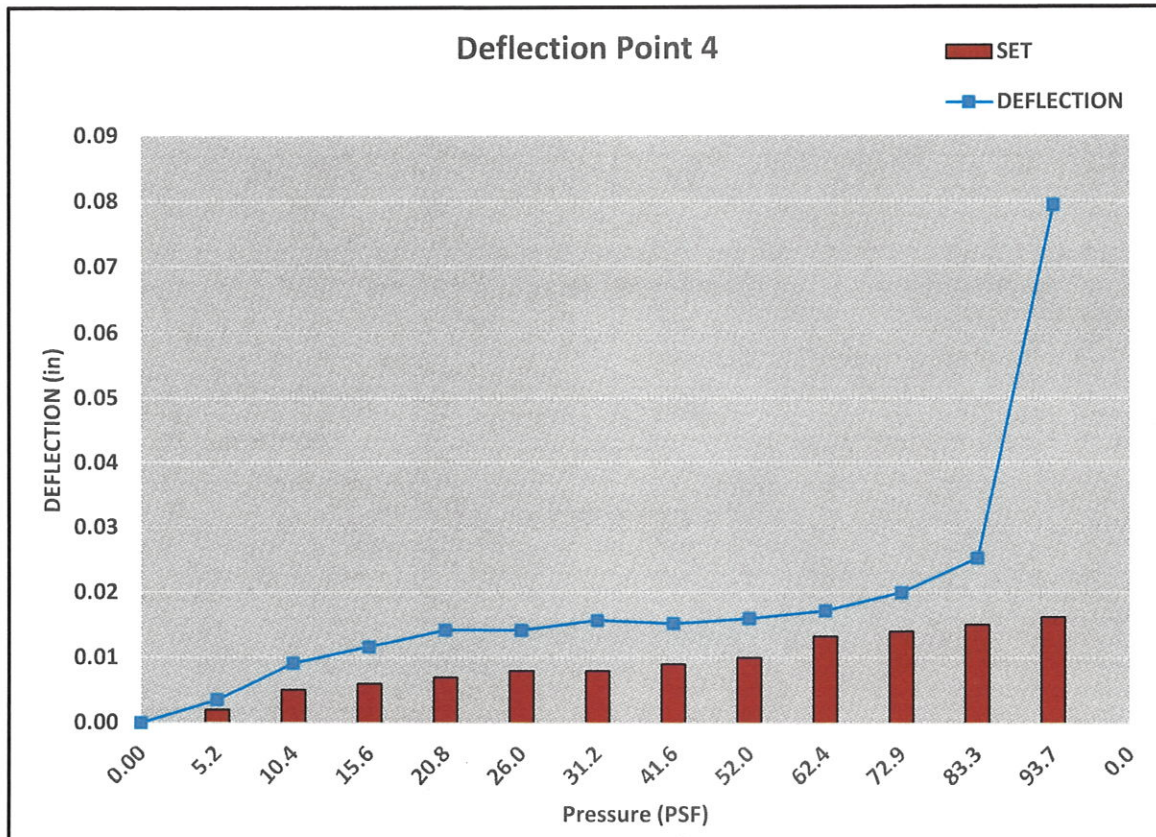
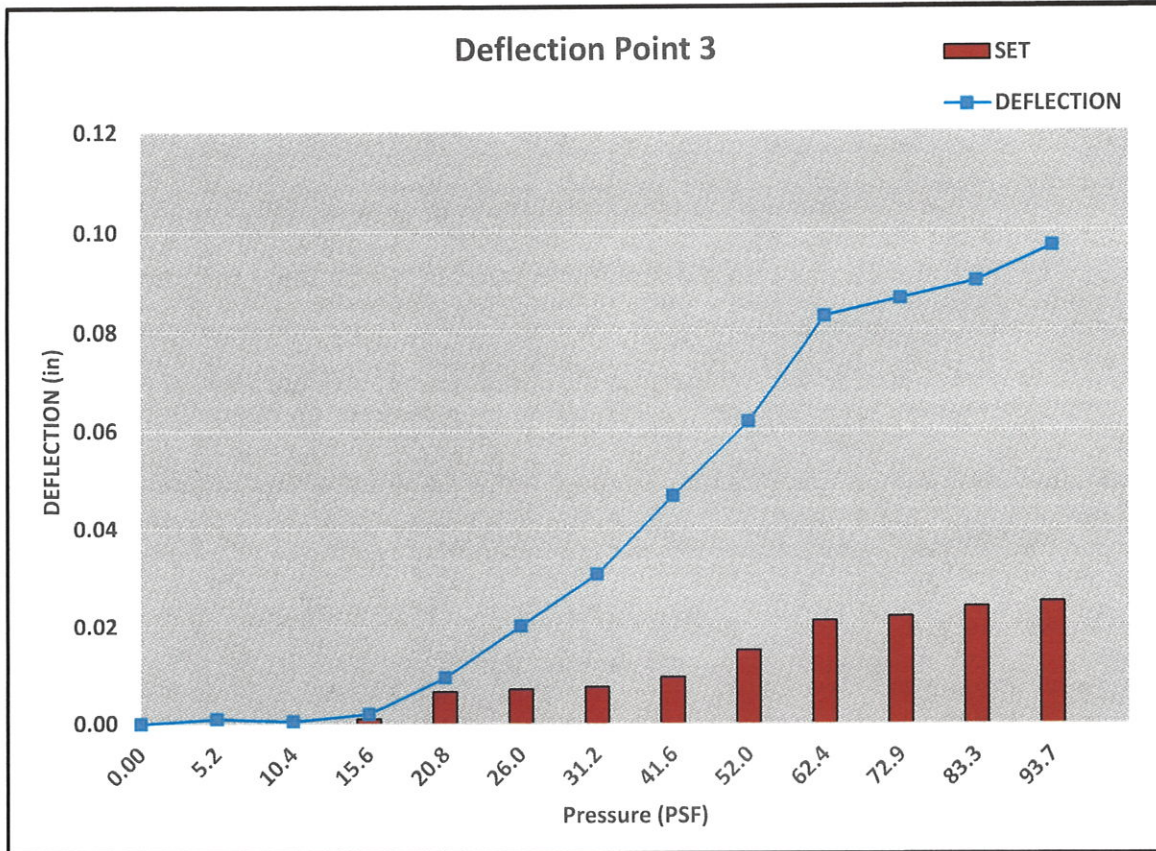
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000
1	5.2	0.004	0.001	0.001	0.004	0.014	0.004
0	0.0	0.003	0.001	0.000	0.002	0.001	0.002
2	10.4	0.010	0.001	0.001	0.009	0.047	0.013
0	0.0	0.003	0.001	0.000	0.005	0.002	0.004
3	15.6	0.014	0.008	0.002	0.012	0.076	0.015
0	0.0	0.003	0.002	0.001	0.006	0.003	0.006
4	20.8	0.020	0.033	0.010	0.014	0.105	0.019
0	0.0	0.004	0.003	0.007	0.007	0.009	0.008
5	26.0	0.025	0.055	0.020	0.014	0.133	0.020
0	0.0	0.006	0.006	0.007	0.008	0.013	0.011
6	31.2	0.028	0.078	0.031	0.016	0.156	0.021
0	0.0	0.009	0.008	0.008	0.008	0.014	0.012
8	41.6	0.035	0.117	0.047	0.015	0.202	0.023
0	0.0	0.011	0.013	0.010	0.009	0.014	0.012
10	52.0	0.055	0.159	0.062	0.016	0.250	0.025
0	0.0	0.013	0.015	0.015	0.010	0.015	0.015
12	62.4	0.061	0.193	0.083	0.017	0.299	0.027
0	0.0	0.015	0.016	0.021	0.013	0.020	0.019
14	72.9	0.067	0.219	0.086	0.020	0.334	0.029
0	0.0	0.016	0.016	0.022	0.014	0.024	0.020
16	83.3	0.070	0.244	0.090	0.025	0.381	0.033
0	0.0	0.019	0.017	0.024	0.015	0.026	0.021
18	93.7	0.078	0.254	0.097	0.079	0.442	0.041
0	0.0	0.023	0.018	0.025	0.016	0.071	0.023

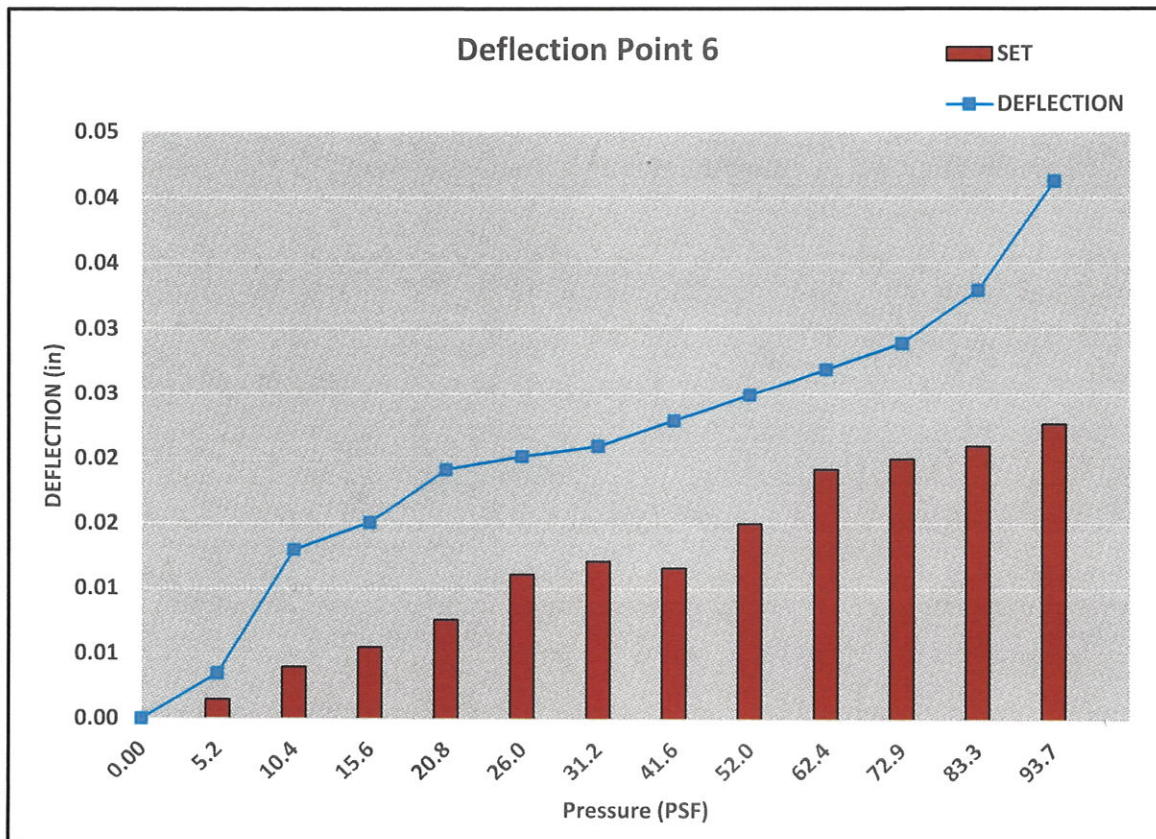
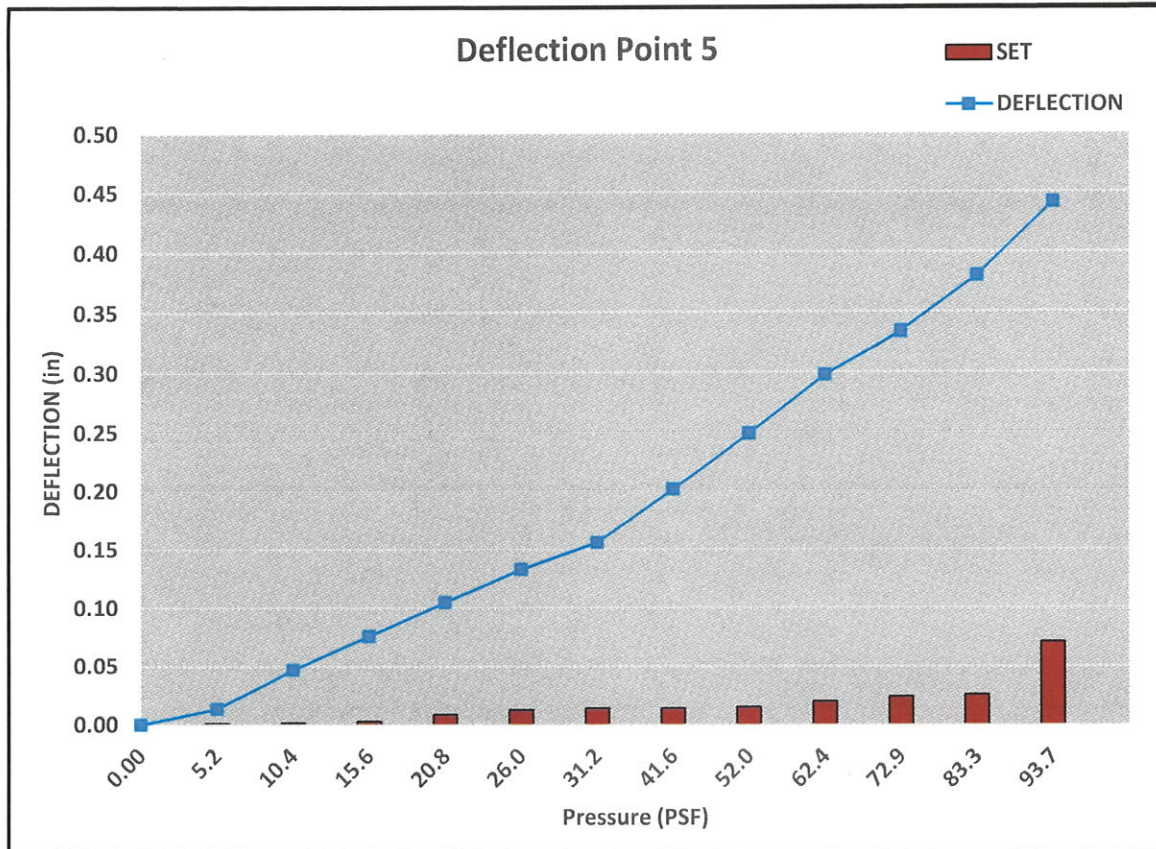
RESULTS:

Load held for 1 minute = 93.7 psf

Maximum Test Load (at failure) = 97.3 (Panel buckling)

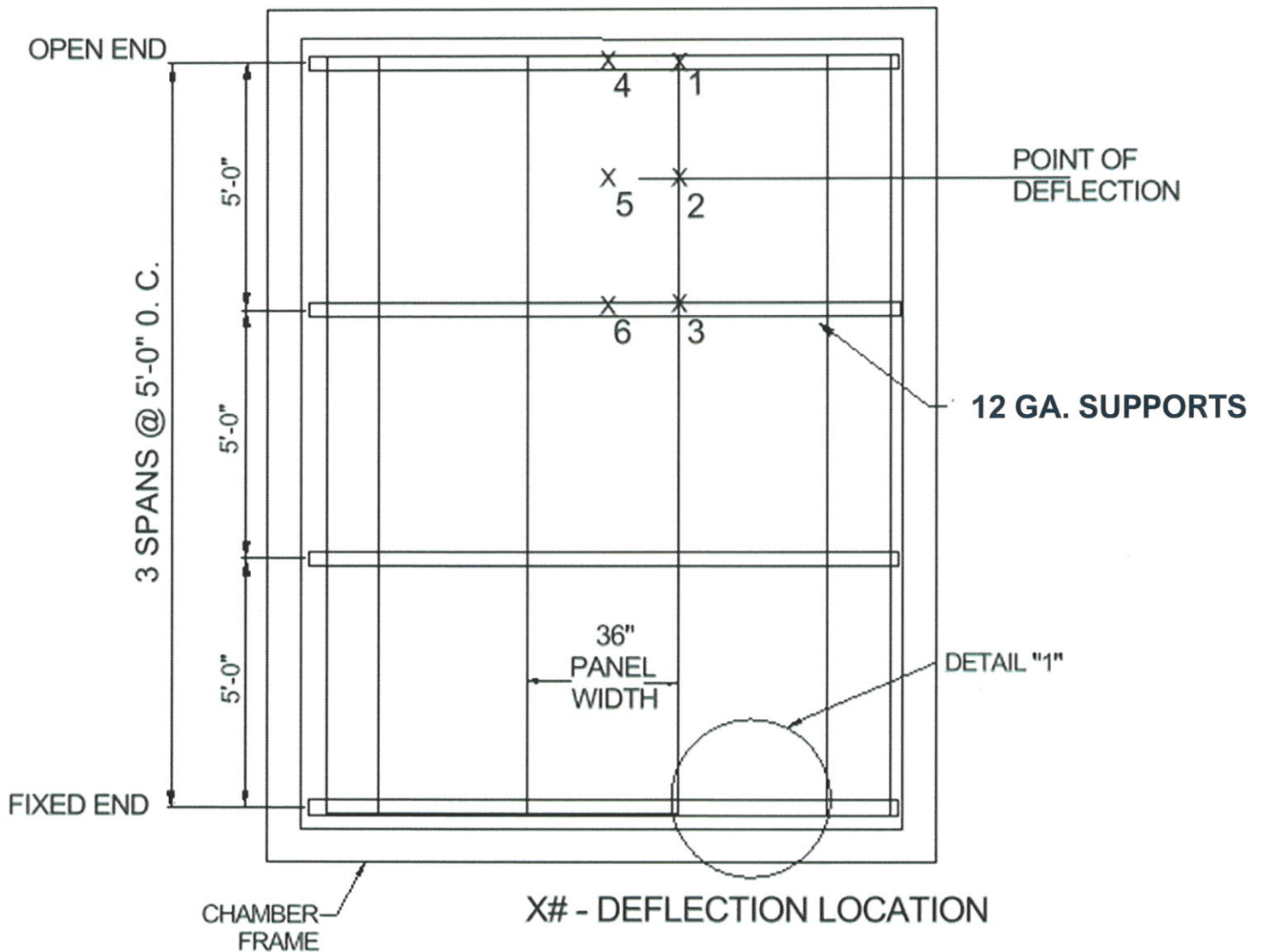






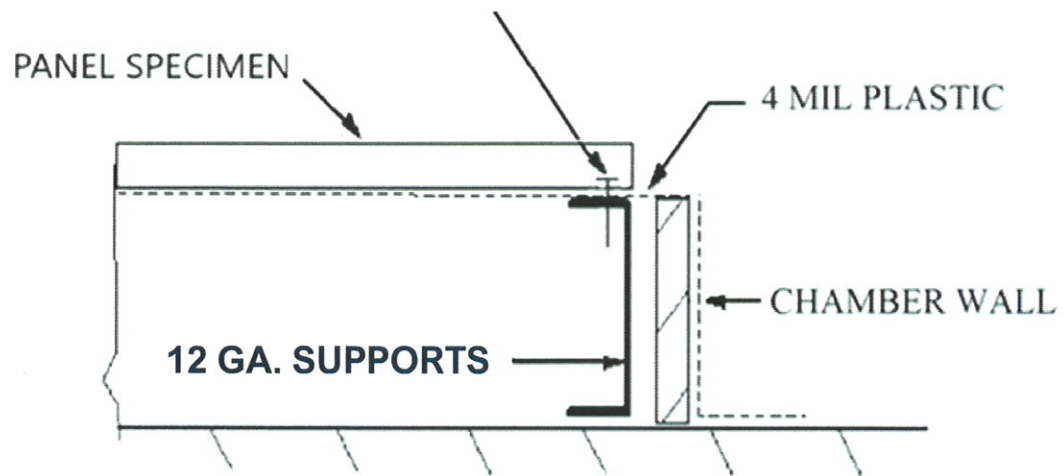
TEST #1

ASTM E1592 NEGATIVE LOAD TEST



PLAN VIEW

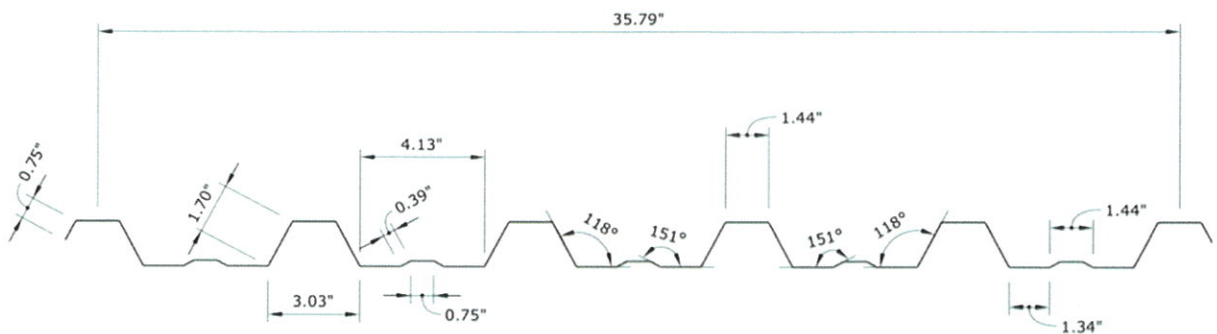
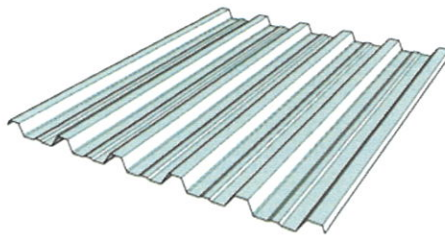
#12 -14 SELF DRILLING FASTENERS
(10 PER PANEL AT FIXED END SUPPORT
(5 PER PANEL AT INT. AND OPEN END SUPPORT))



DETAIL 1
(NEGATIVE PRESSURE)

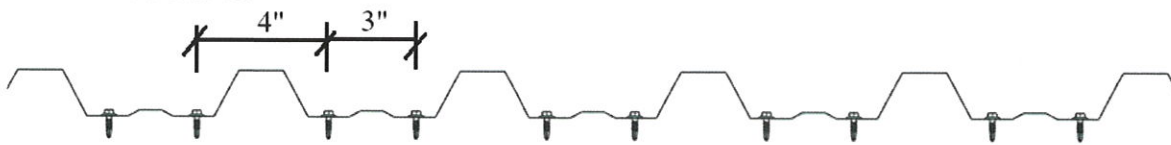


Spartan Rib

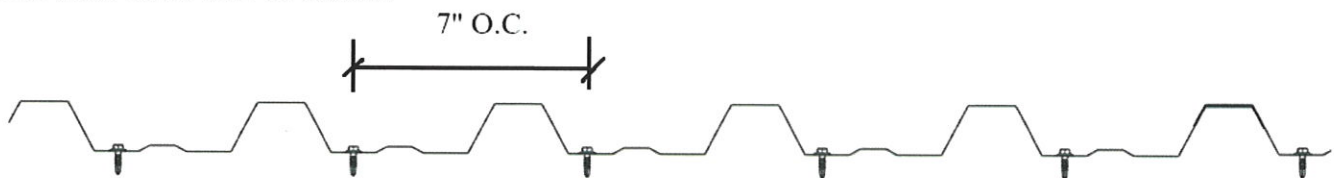


FASTENING PATTERNS

FIXED END OF PANEL



FIELD AND OPEN END OF PANEL



TENSILE TEST REPORT

Client: Structures America
14369 FM 1314
Conroe, TX. 77302

Test Date: 4/29/2026

Test Method: ASTM A370-10

Specimen: Spartan Rib Roof Panel, 36" wide x 1-1/2" height x 26 ga.

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)
26245	0.493	0.017	474.22	536.37	56,583	63,999	24.4

Equipment Used: Tensile Machine #QT7-061196-020
Extensometer #10311744D

Caliper #1074379
Micrometer #110596927

Report Prepared By:



Joseph Falcone

Reviewed and Approved By:



Daniel C. Farabaugh

Revision Log

Rev. #	Date	Page(s)	Revision (s)
0	April 29, 2026	11	Original Report Issue

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