



Farabaugh Engineering and Testing Inc.

Project No. T230-24

Report Date: July 29, 2024

Total Pages: 10 (inclusive)

ASTM E 1592
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEMS
BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

ON

GEORGIA RIB ROOF PANEL
36" WIDE X 29 GA STEEL
(WITH WOOD PURLINS @ 5 SPANS @ 2')

FOR

GEORGIA METALS, INC.
539 GENERAL DANIELS AVE. NORTH
DANIELSVILLE, GA 30633

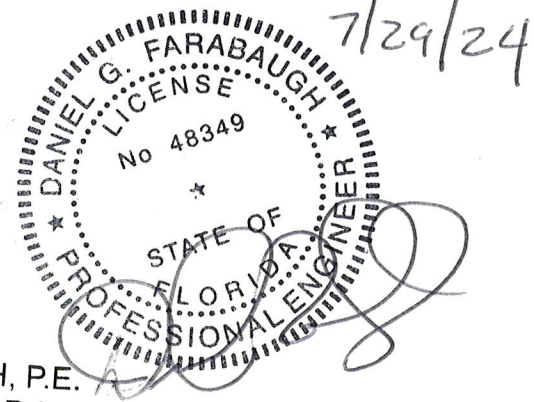
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ASTM E1592-05(2017)
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEMS
BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

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 Completion Date

6/25/24

Test Specimen

Manufacturer: Georgia Metals, Inc.
539 General Daniels Ave. N.
Danielsville, GA 30633

Specimen: Georgia Rib Metal Roof Panel, 36" wide (Coverage), 29 ga steel

Supports: 2 X 6 wood supports (#2 SYP.)

Testing 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 metal roof panels were attached into the wood supports using #10 -15 X 1-1/2" long, HWH, Hi-Lo Woodgrip screws, with 1/2" dia. seal washer spaced as shown on the attached drawings. The panels were attached to the perimeter wood supports using the same wood screws with 1/2" dia. seal washer (8 per panel at panel fixed ends, 5 per panel at panel open end & interior supports and 6" on center at longitudinal sides). See fastener pattern for location of fasteners.
- Plastic (4 mil thick) was employed loosely between the panels and wood supports 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(2017) and as noted herein. In our opinion the tape and plastic had no influence on the results of the test.

TEST #1

Specimen: Georgia Rib Metal Roof Panel, 36" wide (Coverage), 29 ga steel

Support Spacing: 5 spans @ 2 ft o/c

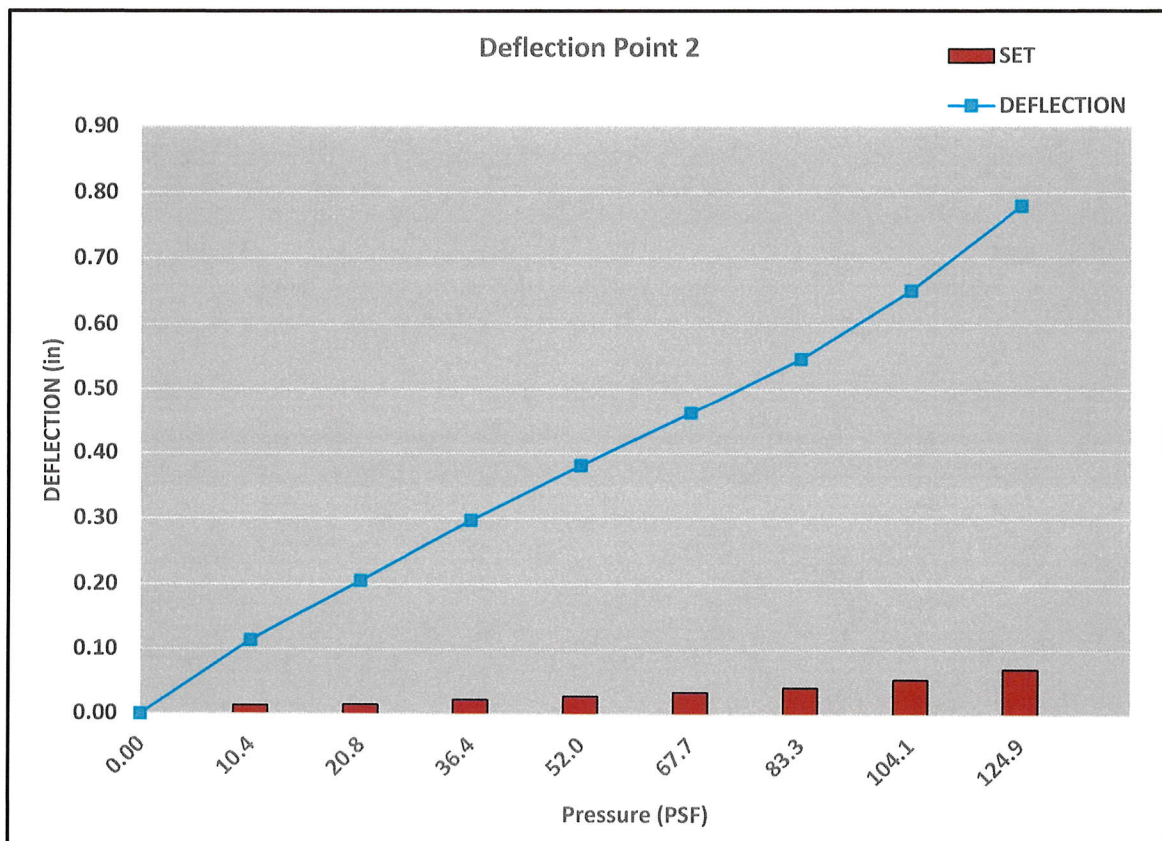
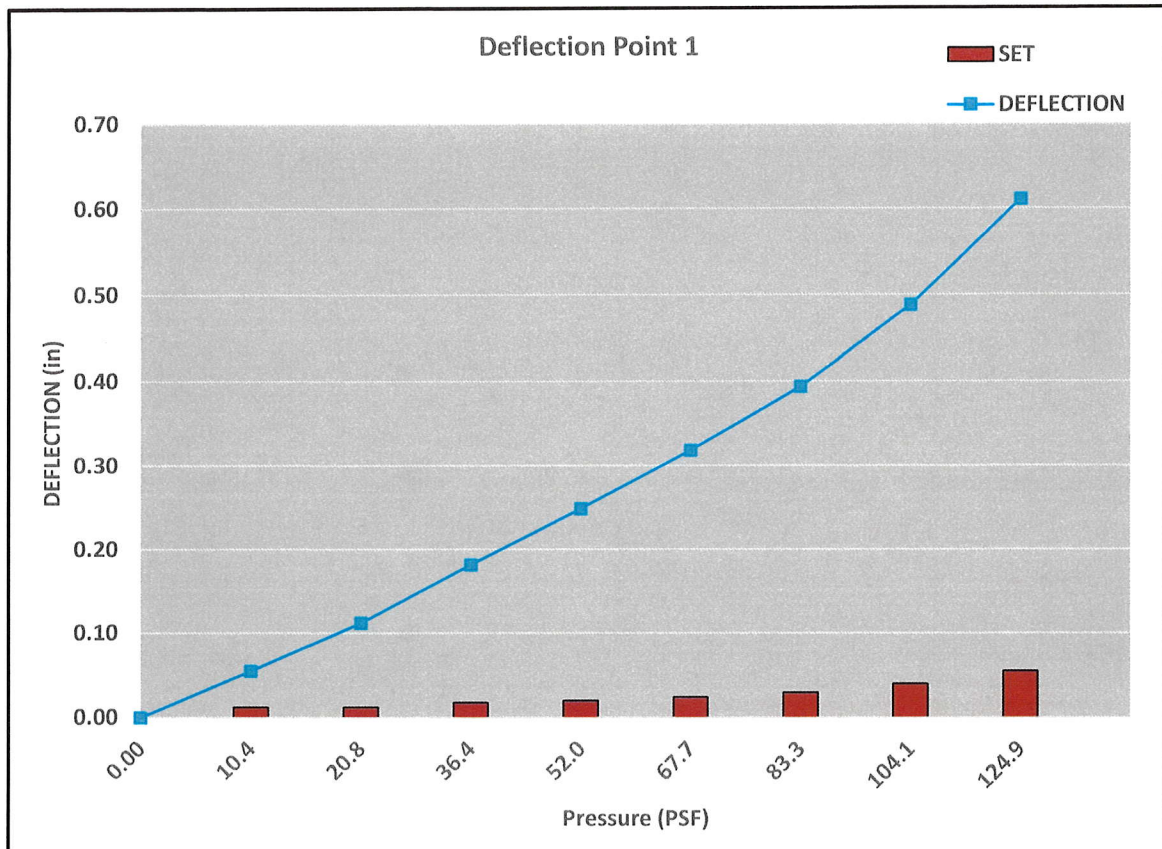
NEGATIVE (UPLIFT) PRESSURE

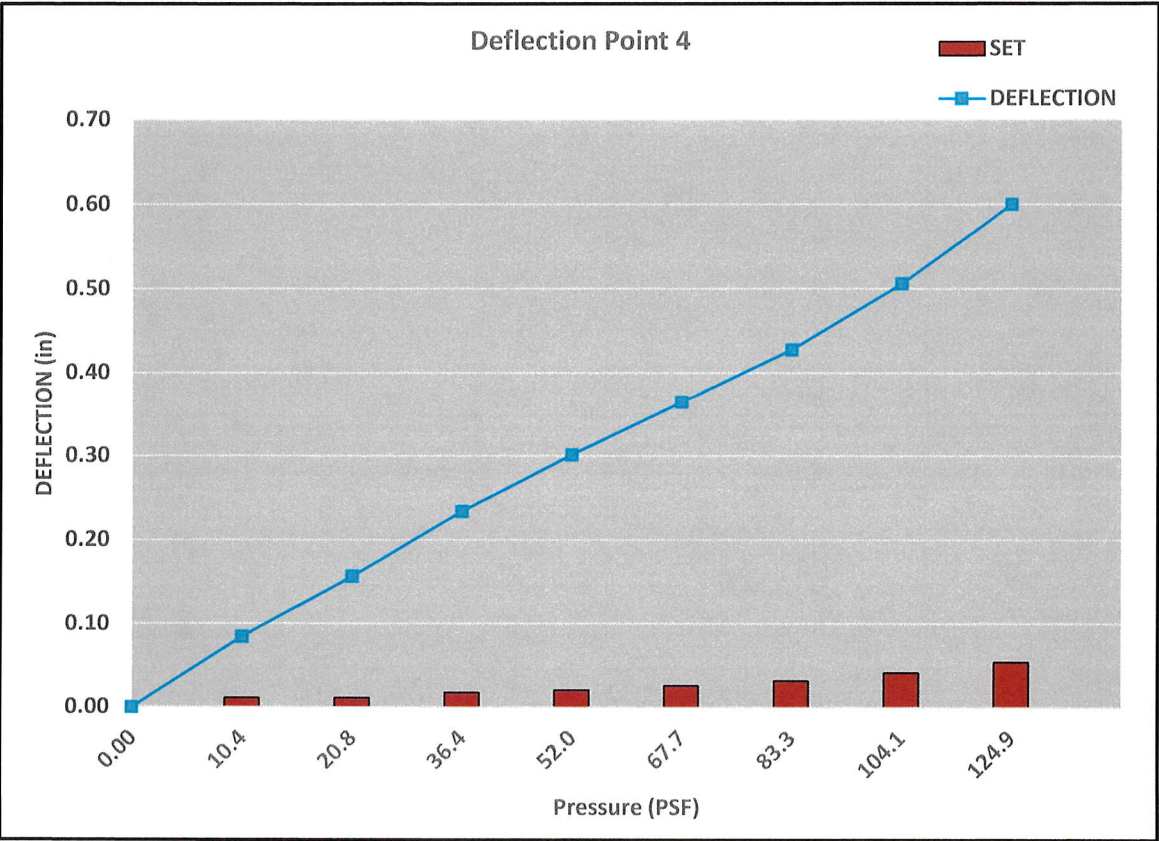
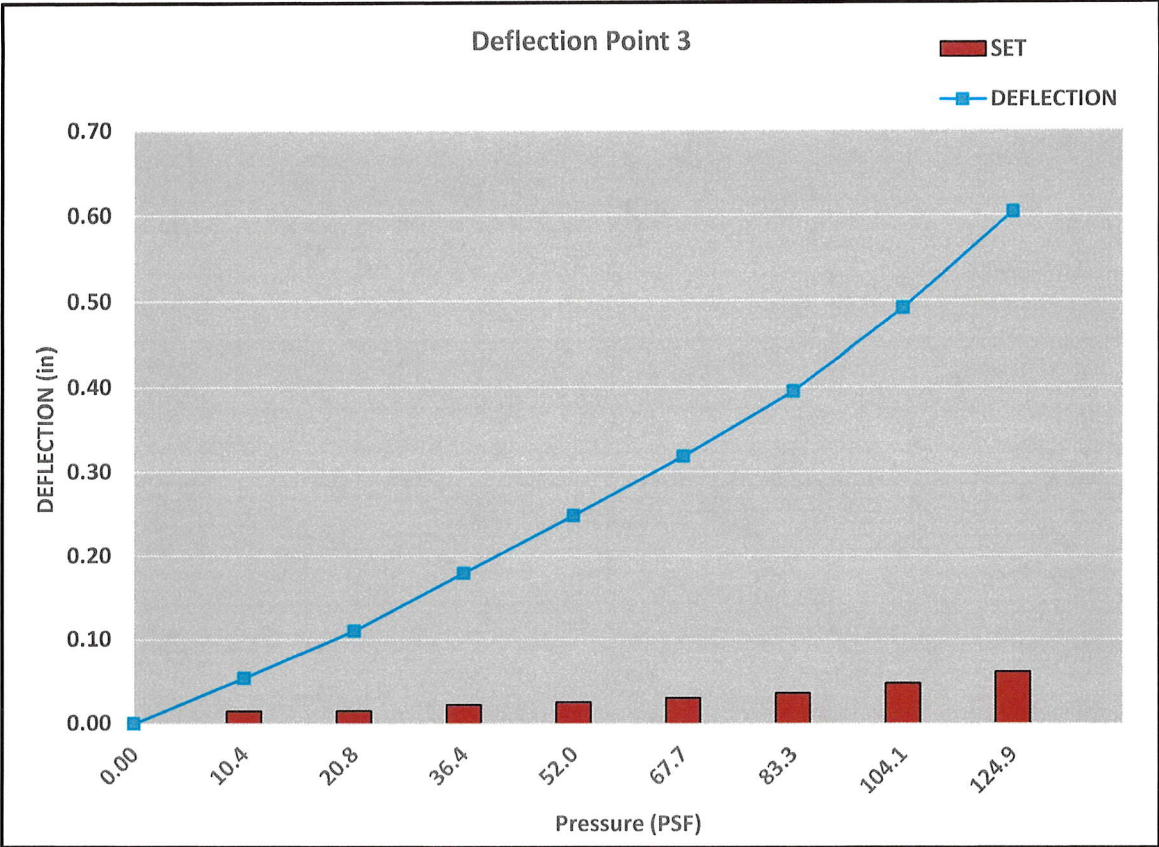
Load Pressure (in-h20)	Load Pressure (psf)	Deflection #1 (in)	Deflection #2 (in)	Deflection #3 (in)	Deflection #4 (in)	Deflection #5 (in)	Deflection #6 (in)
0	0.0	0.000	0.000	0.000	0.000	0.000	0.000
2	10.4	0.056	0.114	0.054	0.085	0.003	0.082
0	0.0	0.013	0.014	0.015	0.011	0.002	0.056
4	20.8	0.113	0.206	0.111	0.157	0.008	0.192
0	0.0	0.013	0.015	0.015	0.011	0.005	0.065
7	36.4	0.182	0.298	0.180	0.235	0.025	0.270
0	0.0	0.018	0.023	0.022	0.018	0.015	0.078
10	52.0	0.249	0.382	0.248	0.302	0.056	0.344
0	0.0	0.020	0.028	0.025	0.021	0.038	0.101
13	67.7	0.319	0.463	0.319	0.365	0.091	0.425
0	0.0	0.025	0.034	0.030	0.026	0.043	0.116
16	83.3	0.394	0.548	0.395	0.428	0.143	0.501
0	0.0	0.030	0.042	0.036	0.032	0.069	0.125
20	104.1	0.488	0.652	0.492	0.507	0.209	0.581
0	0.0	0.040	0.055	0.048	0.042	0.089	0.138
24	124.9	0.611	0.781	0.604	0.601	0.287	0.669
0	0.0	0.055	0.071	0.061	0.055	0.093	0.151

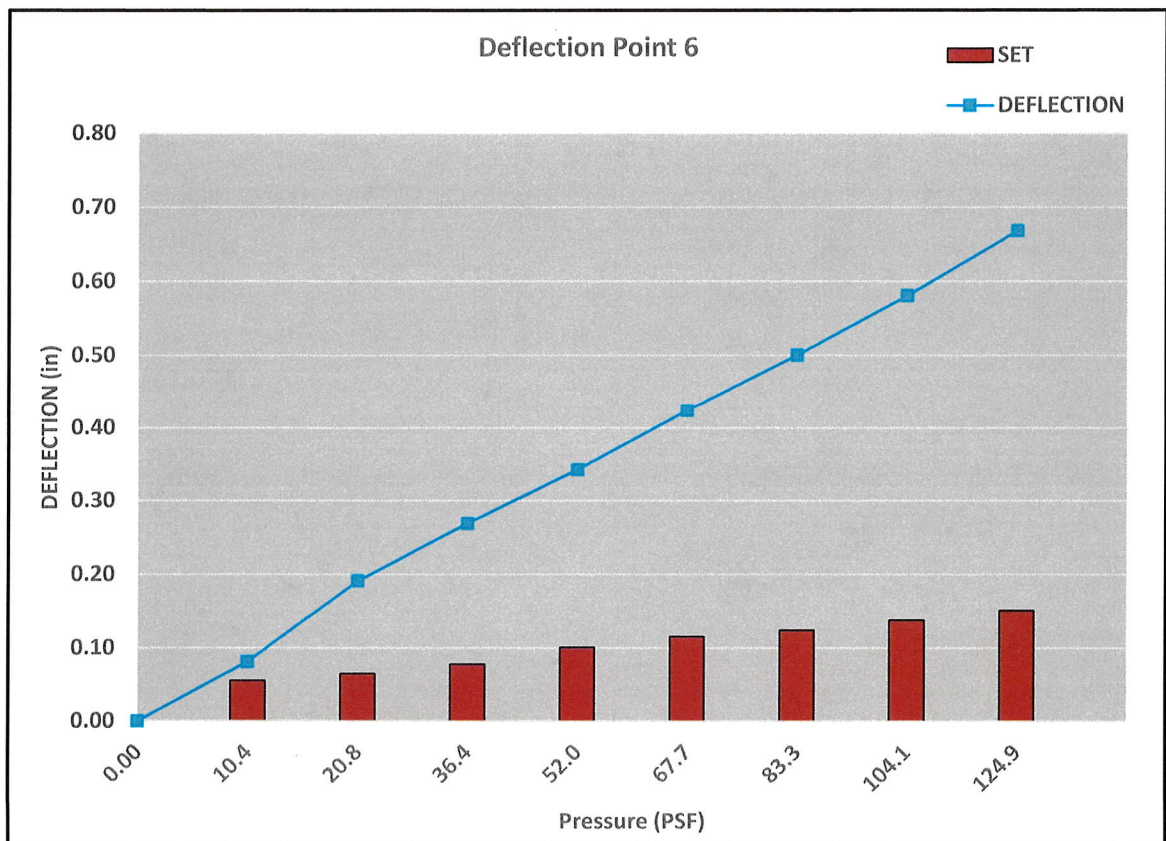
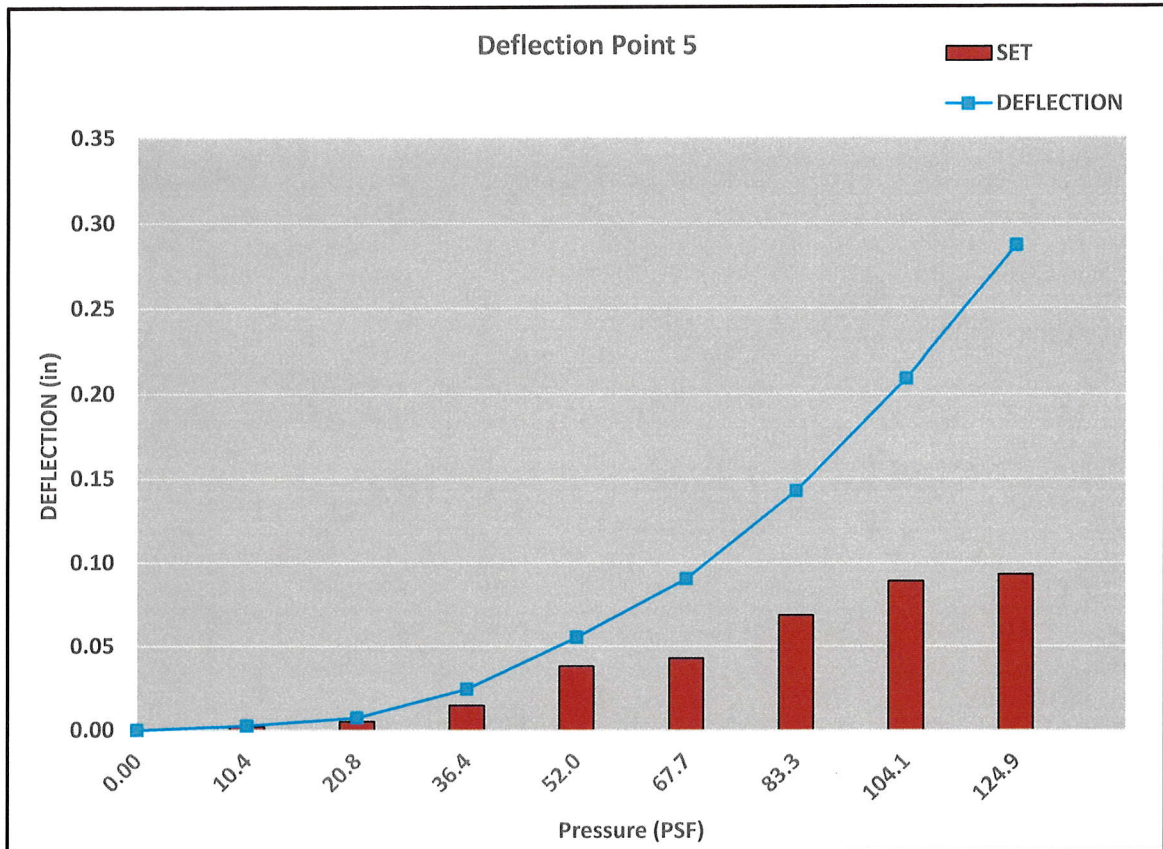
RESULTS:

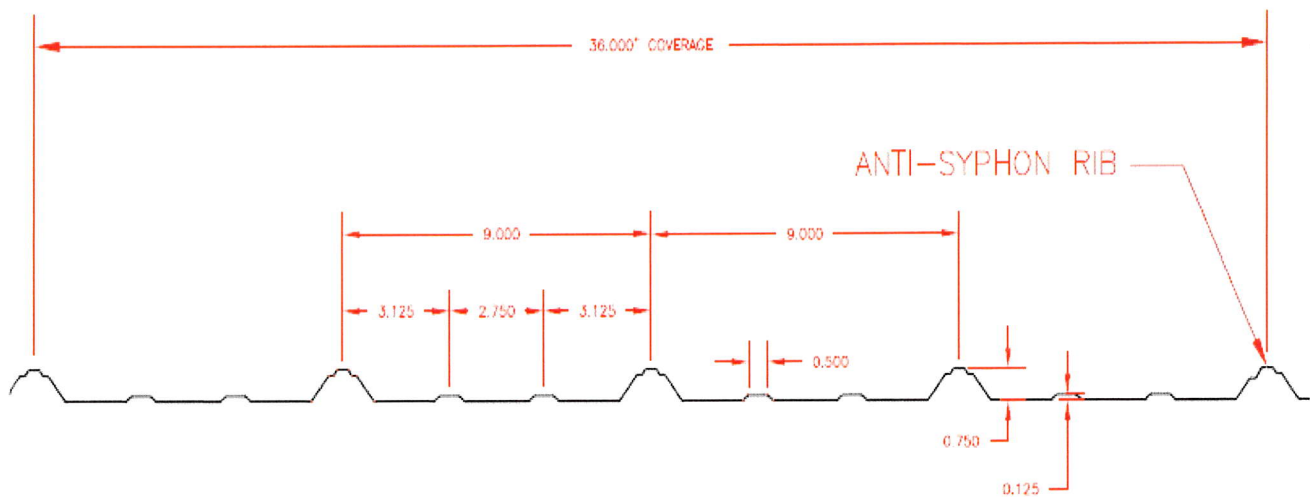
Load held for 1 minute = 166.4 psf

Maximum Test Load (Failure load) = 171.7 psf (Panel fasteners pulled out and panel pulled over fastener head and panel seam disengaged.)

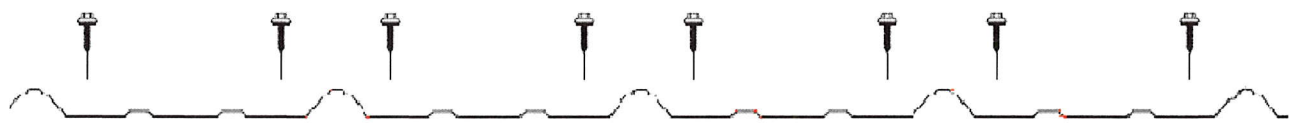




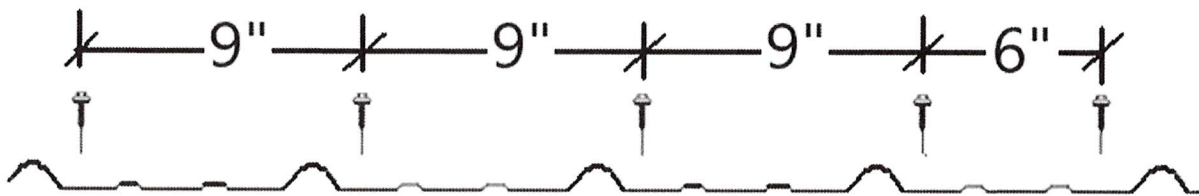




PANEL DETAIL



FASTENING DETAIL AT
FIXED END INTO WOOD SUPPORT



FASTENING DETAIL AT
INTERIOR SUPPORTS AND OPEN END SUPPORT

Project No. T230-24

TENSILE TEST REPORT

Manufacturer: Georgia Metals, Inc.
539 General Daniels Ave. N.
Danielsville, GA 30633

Panel: Georgia Rib Metal Roof Panel, 36" wide (Coverage), 29 ga steel

Test Date: July 15, 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)
24055	0.503	0.012	720.8	740.87	119,417	122,743	1.5

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

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	7/29/24	N/A	Original report issue.