

SMITH-BUILT METAL ROOFS & BUILDINGS TEST REPORT

SCOPE OF WORK

STRUCTURAL LOADS TESTING ON 26 GA PBR WALL AND ROOF PANELS

REPORT NUMBER

P2827.01-450-44 R0

TEST DATE(S)

10/10/22 – 10/11/22

ISSUE DATE

10/13/22

RECORD RETENTION END DATE

10/11/26

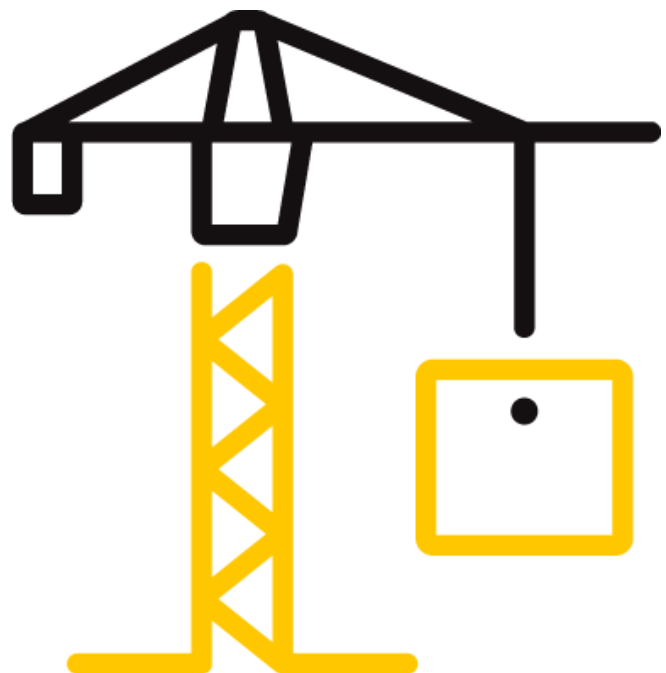
PAGES

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DOCUMENT CONTROL NUMBER

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TEST REPORT FOR SMITH-BUILT METAL ROOFS & BUILDINGS

Report No.: P2827.01-450-44 R0

Date: 10/13/22

REPORT ISSUED TO

SMITH-BUILT METAL ROOFS & BUILDINGS

6945 Albany Hwy
Suite 2110
Dawson, GA 39842

SECTION 1

SCOPE

Architectural Testing, Inc. (an Intertek company) dba Intertek Building & Construction (B&C) was contracted by Smith-Built Metal Roofs & Buildings to perform testing in accordance with ASTM E1592 and TAS 202 on their 26 Ga PBR Roof and Wall Panels. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek B&C test facility in West Palm Beach, FL.

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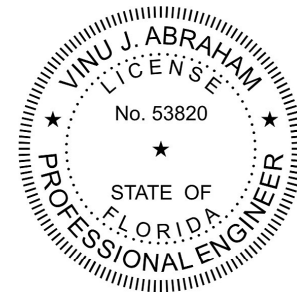
SECTION 2

SUMMARY OF TEST RESULTS

Product Type: Metal Roof Panels

Series/Model: DM Class 2000

Ultimate Test Load Achieved: +67.5 psf /-65.0 psf



2022.10.14 09:21:43 -04'00'

For INTERTEK B&C:

COMPLETED BY: Melissa Nuttall

TITLE: Project Manager

SIGNATURE:

Melissa M. Nuttall
Digitally Signed by: Melissa Nuttall

DATE: 10/13/22

MMN:bbb

REVIEWED BY: Vinu Abraham, P.E.

TITLE: Vice President - Products

SIGNATURE:

V. Abraham
Digitally Signed by: Vinu Abraham

DATE: 10/13/22

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SECTION 3

TEST METHOD(S)

The specimens were evaluated in accordance with the following:

ASTM E1592-05(17), *Standard Test Method for structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.*

The specimens were evaluated in general accordance with the following:

TAS 202-94, *Criteria for Testing Impact & Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure* – Only structural loads were performed. Loads were held for 60 seconds. Ramp loads were performed for negative.

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date. Installation of the tested product was performed by Intertek B&C.

SECTION 5

EQUIPMENT

Static Load Mechanism: Computer controlled centrifugal blowers with electronic pressure measuring device

Deflection Measuring Device: Linear Transducers

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Seth Allen	Intertek B&C

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SECTION 7

TEST SPECIMEN DESCRIPTION

Product Type: Metal Roof and Wall Panels

Series/Model: 26 Ga PBR

Product Size:

OVERALL AREA:	LENGTH		WIDTH	
	millimeters	inches	millimeters	inches
26.8 m ² (288 ft ²)				
Overall Size	7315	288	3658	144
Panel Coverage	7315	288	914	36

Test Frame Construction:

The 24' 0" long by 12' 0" wide by 1' 3" deep test frame was fabricated from C15 by 33.9 steel channels. The test frame utilized five intermediate purlins constructed from steel W4 I-beam, spaced 24" from each end and 60" on center thereafter, and two purlins constructed from 4" x 4" steel angle at each end. The W4 I-beam purlins were secured to the test frame at each end using two 1/2" x 3" long bolts with washers and nuts through an 8" long, 2" by 4" by 1/8" steel angle with pre-drilled fastener locations. The angle purlins at each end were welded to the frame. 16 Ga steel was attached to each purlin using a row of #14 x 1-1/2" self-drilling HWH screws spaced 9" on center.

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Roof System

COMPONENTS	DETAILS	ATTACHMENT METHOD
PBR Panels	The panels were constructed from 26 Ga steel and had a 36" coverage width. 4 full width panels were tested.	The panels were secured to the purlins (spaced 60" on center) with 1/4" x 1-1/4" self-drilling HWH screws with weather seal washer next to each rib. The seams were secured with 1/4" x 7/8" self-drilling HWH screws with weather seal washer spaced 20" on center through the top of the ribs. 3/8" wide x 3/32" thick sealant tape was used in the seams at the top of the male leg. The ends of the panels were secured with 1/4" x 1-1/4" self-drilling HWH screws with weather seal washer on each side of each rib. The sides of the panels at the perimeter were secured with two of the same screws at each purlin.

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SECTION 8

TEST RESULTS

The temperature during testing was 66°F – 77°F. The results are tabulated as follows:

Specimen 1

PRESSURE (psf)	DURATION	MEASURED DATA	RESULTS
+33.3	60 Seconds	Table No. 1	PASSED
+45.0			PASSED
+67.5			PASSED
-10.0		Table No. 2	PASSED
-20.0			PASSED
-30.0			PASSED
-40.0			PASSED
-45.0			PASSED
-50.0			PASSED
-55.0			PASSED
-60.0			PASSED
-65.0			PASSED
-70.0		FAILED	

Reference Sketch No. 1 for location of deflection measurement devices

DEFLECTION IN INCHES								
LOAD (PSF)	#1	#2	#3	#4	#5	#6	#7	#8
33.8	0.04	0.05	0.04	0.04	0.02	0.05	0.03	0.06
45.0	0.04	0.09	0.05	0.05	0.17	0.04	0.06	0.02
67.5	0.07	0.11	0.08	0.05	0.22	0.04	0.07	0.06
PERMANENT SET IN INCHES								
LOAD (PSF)	#1	#2	#3	#4	#5	#6	#7	#8
33.8	0.010	-0.060	-0.020	-0.020	-0.100	0.010	-0.030	-0.010
45.0	0.020	0.070	0.040	0.030	0.100	0.010	0.020	0.010
67.5	0.040	0.090	0.060	0.040	0.150	0.010	0.030	0.020

TABLE NO. 1

Deflection and Permanent Set Measurements – Positive Loads

Note 1: Gauges were zeroed after 33.3psf load.

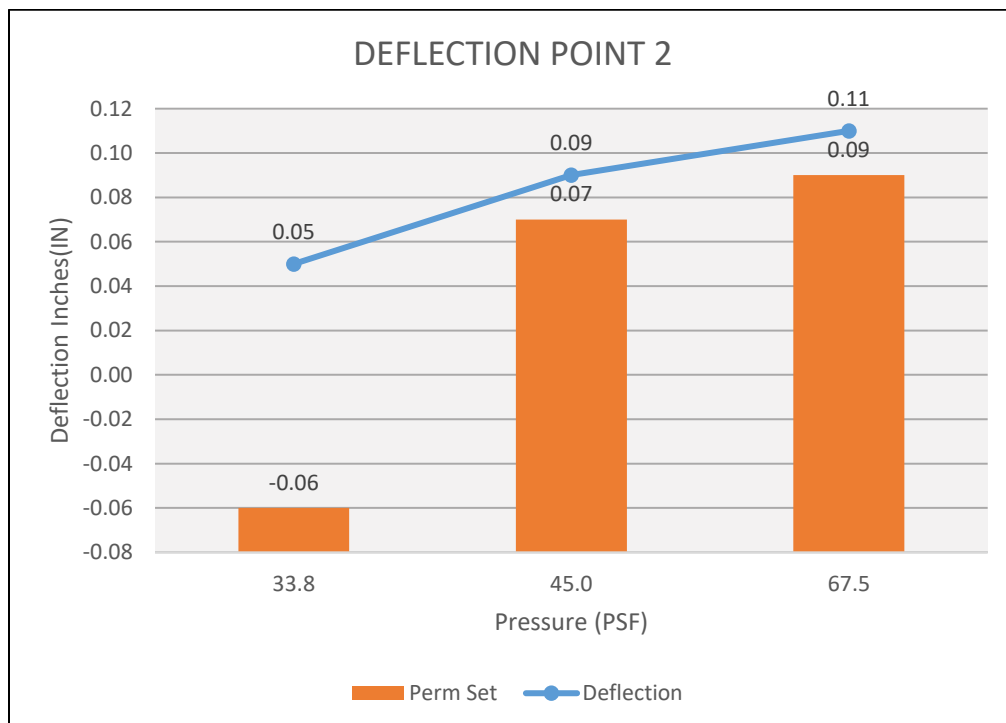
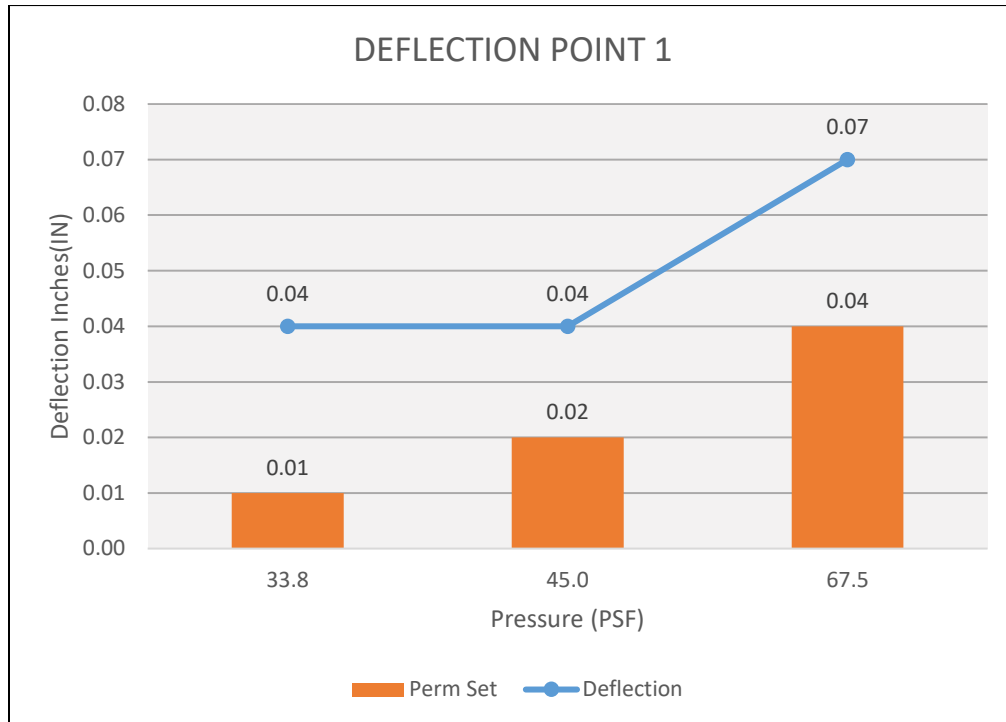
Note 2: Reference Sketch No. 1 for location of deflection measurement devices.

Note 3: A loose-fitting, pleated 4-mil plastic film was utilized to assist in obtaining uniform pressure on the roof system. The plastic film was located between the roof panels and joists/angle below to facilitate testing. In our opinion, this did not influence test results.

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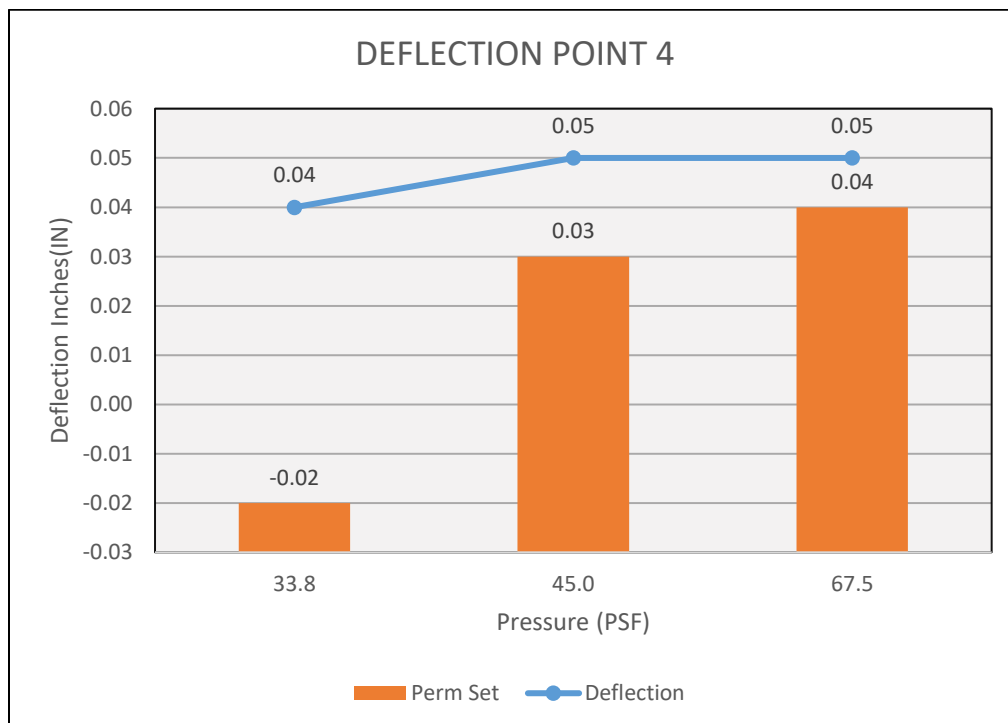
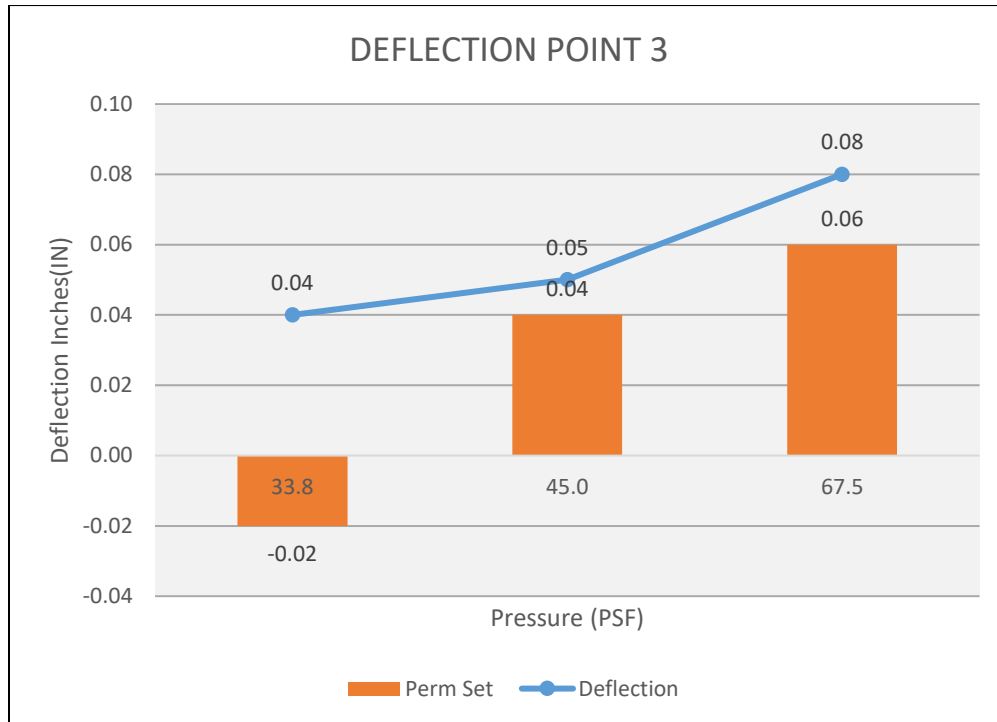
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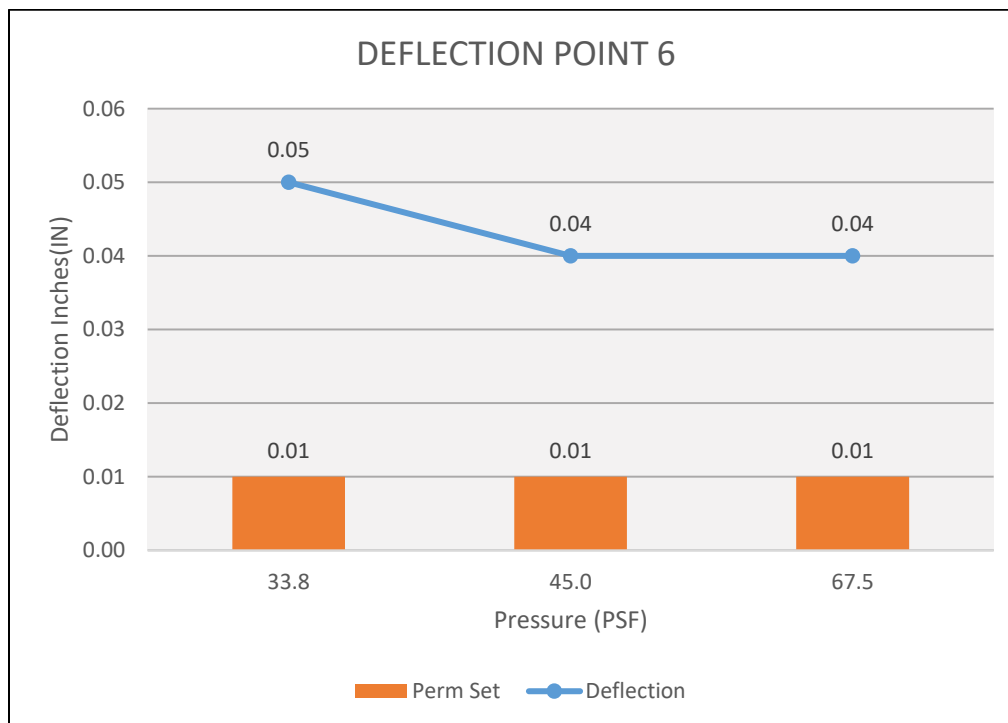
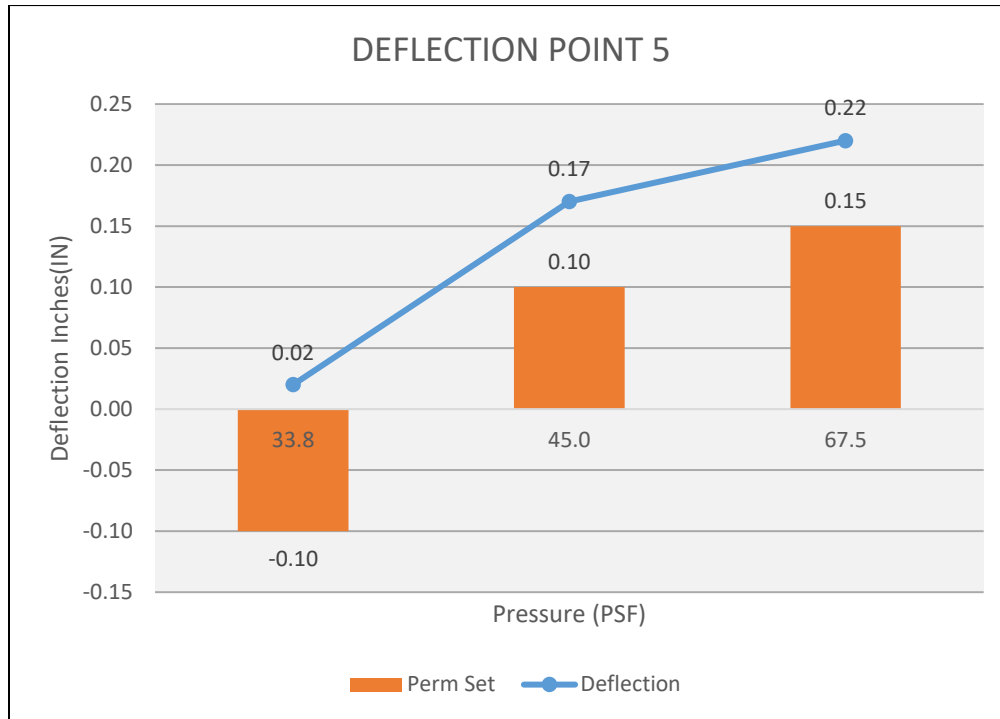
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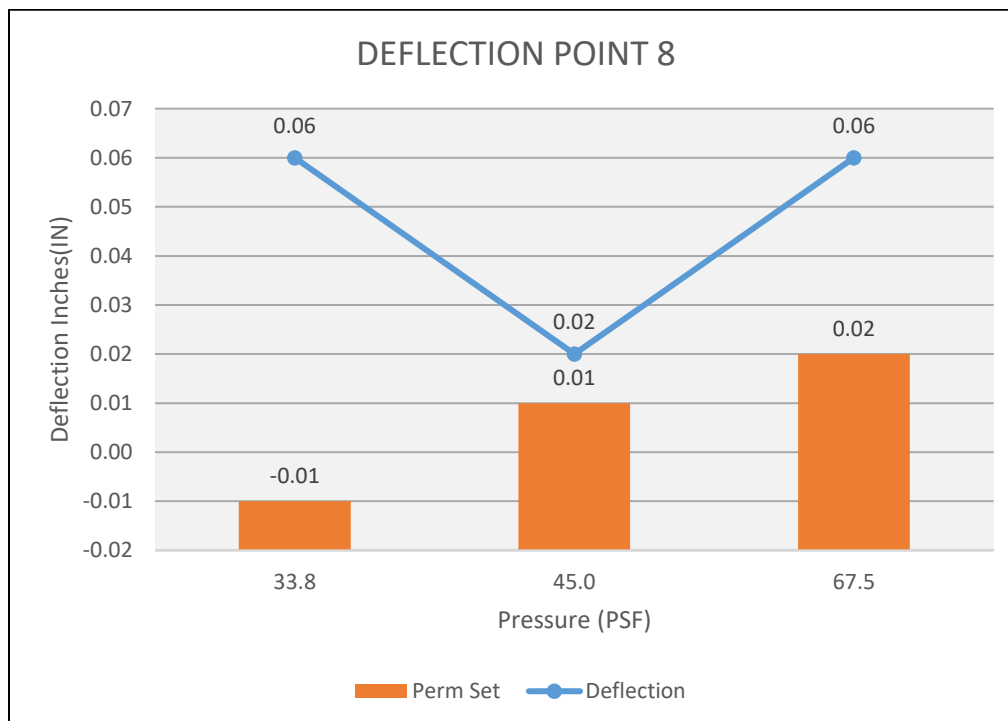
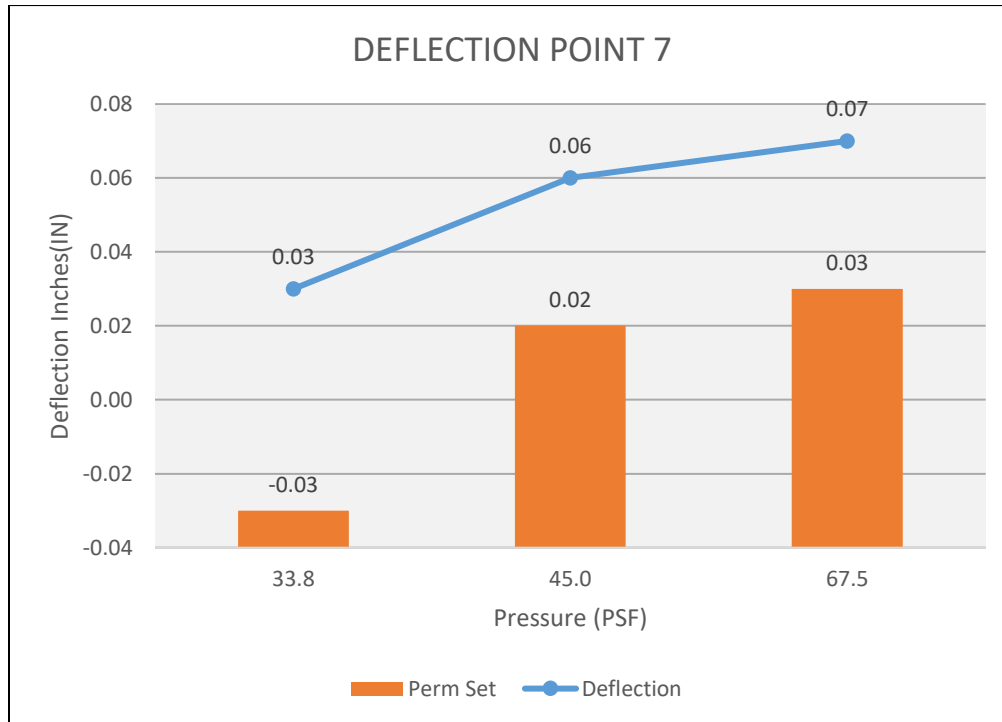
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DEFLECTION IN INCHES								
LOAD (PSF)	#1	#2	#3	#4	#5	#6	#7	#8
10.0	0.02	0.19	0.07	0.25	0.20	0.11	0.43	0.32
20.0	0.02	0.43	0.20	0.51	0.48	0.22	0.70	0.57
30.0	0.04	0.62	0.42	0.68	0.95	0.33	0.89	0.72
40.0	0.06	0.72	0.50	0.82	1.73	0.38	1.01	0.84
45.0	0.09	0.81	0.56	0.90	Error	0.44	1.08	0.90
50.0	0.09	0.81	0.56	0.93	Error	0.56	1.20	1.10
55.0	0.16	0.40	0.17	0.56	0.81	0.29	1.15	0.95
60.0	0.34	0.58	0.23	0.80	1.03	0.36	1.37	1.15
65.0	0.39	0.65	0.23	0.87	1.10	0.46	1.43	1.21
PERMANENT SET IN INCHES								
LOAD (PSF)	#1	#2	#3	#4	#5	#6	#7	#8
10.0	0.01	0.13	0.05	0.05	0.06	0.01	0.04	0.01
20.0	0.02	0.26	0.19	0.08	0.16	0.11	0.08	0.04
30.0	0.03	0.36	0.32	0.10	0.74	0.16	0.13	0.07
40.0	0.05	0.41	0.38	0.12	1.28	0.17	0.16	0.08
45.0	0.07	0.19	0.37	0.02	Error	0.17	0.20	0.09
50.0	0.07	0.45	0.30	0.13	Error	0.27	0.29	0.22
55.0	0.06	0.05	0.05	0.09	0.06	0.02	0.06	0.03
60.0	0.22	0.18	0.07	0.26	0.16	0.06	0.18	0.14
65.0	0.27	0.21	0.07	0.32	0.20	0.12	0.23	0.17

TABLE NO. 2

Deflection and Permanent Set Measurements – Negative Loads

Note 4: Gauges were zeroed after 50.0psf load.

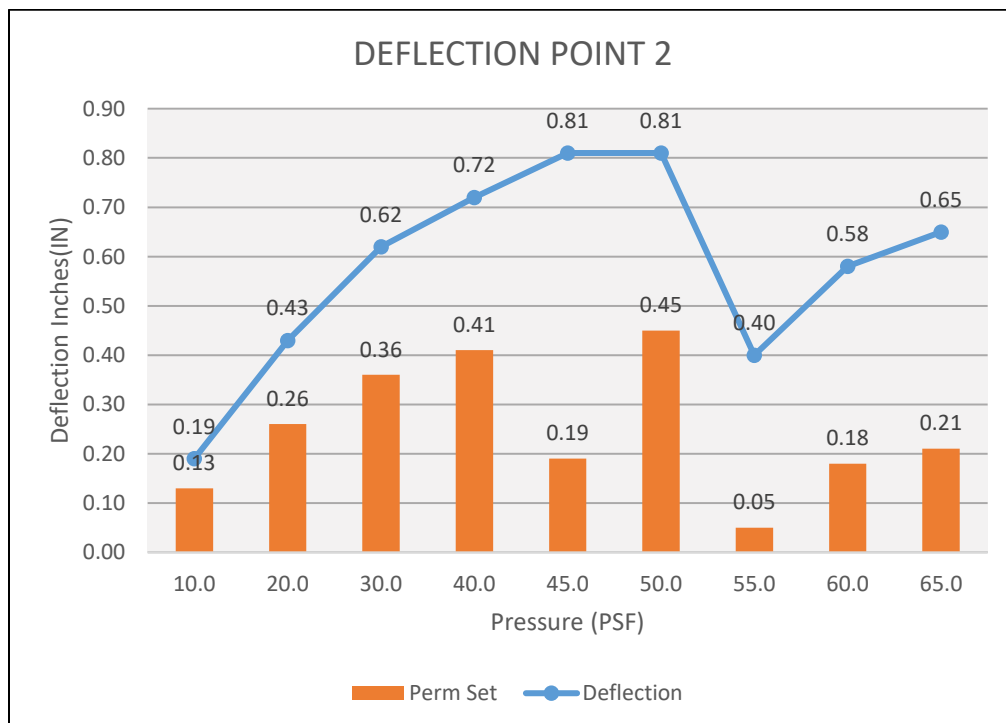
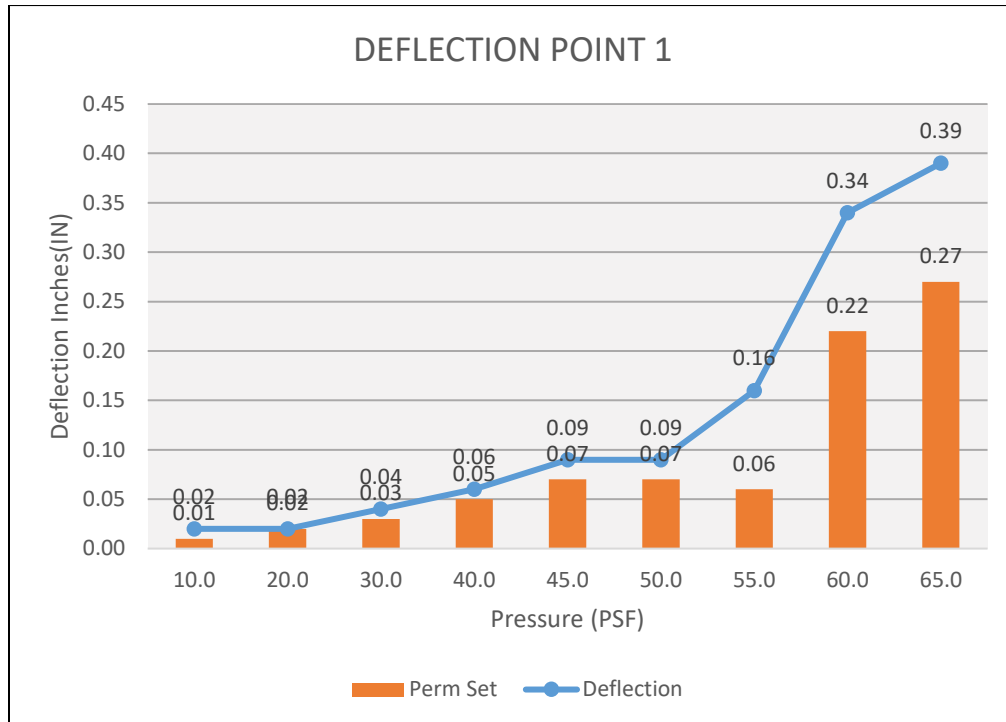
Note 5: Reference Sketch No. 1 for location of deflection measurement devices.

Note 6: A loose-fitting, pleated 4-mil plastic film was utilized to assist in obtaining uniform pressure on the roof system. The plastic film was located between the roof panels and joists/angle below to facilitate testing. In our opinion, this did not influence test results.

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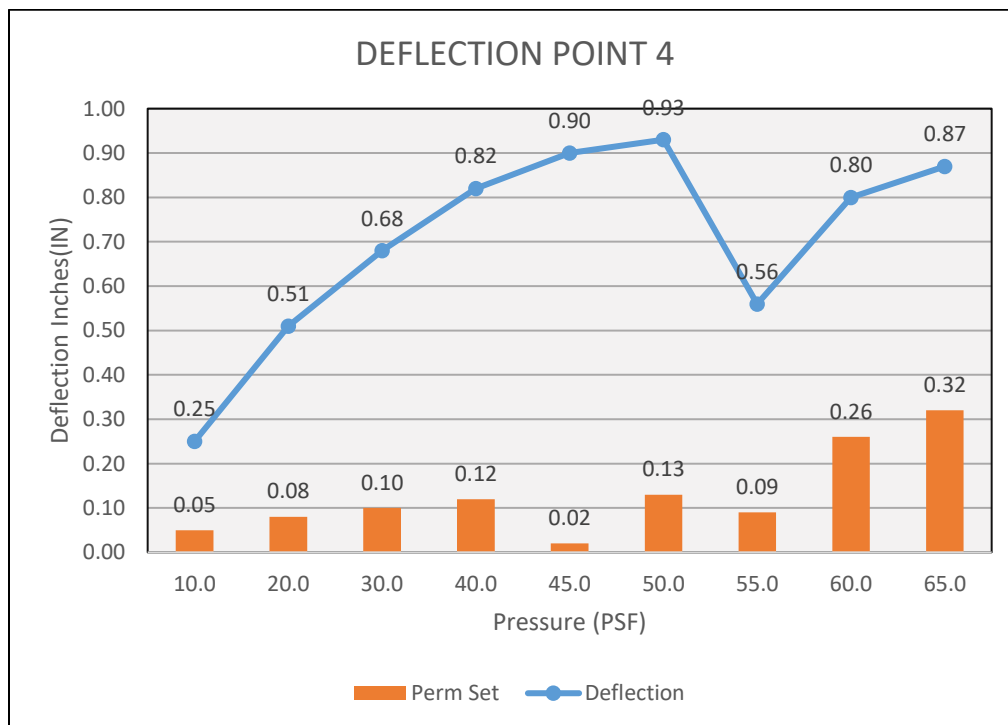
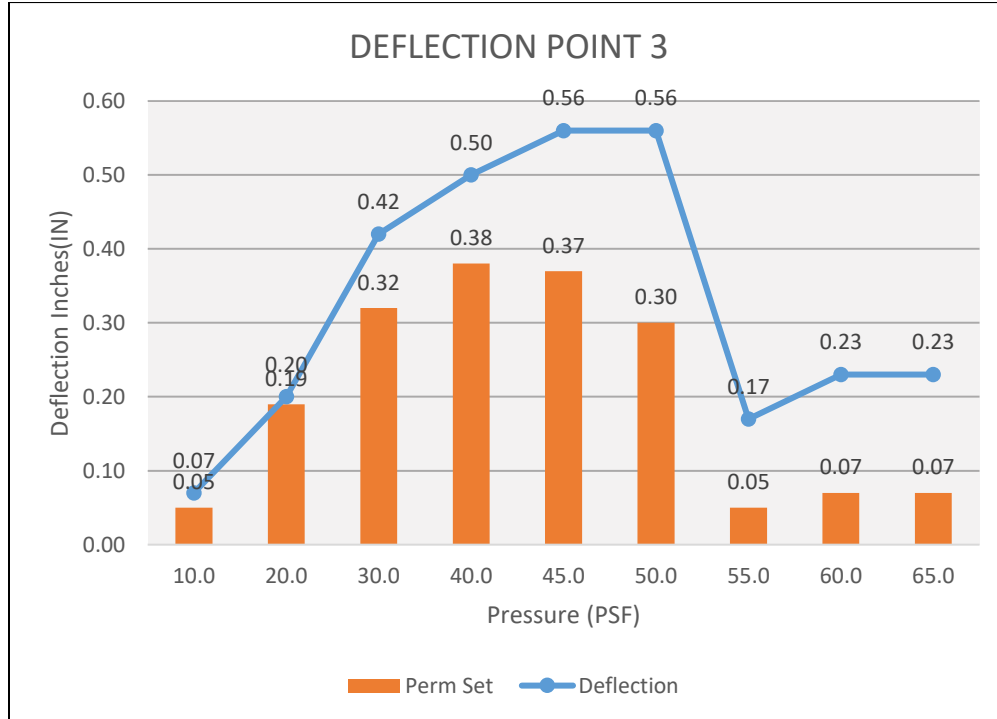
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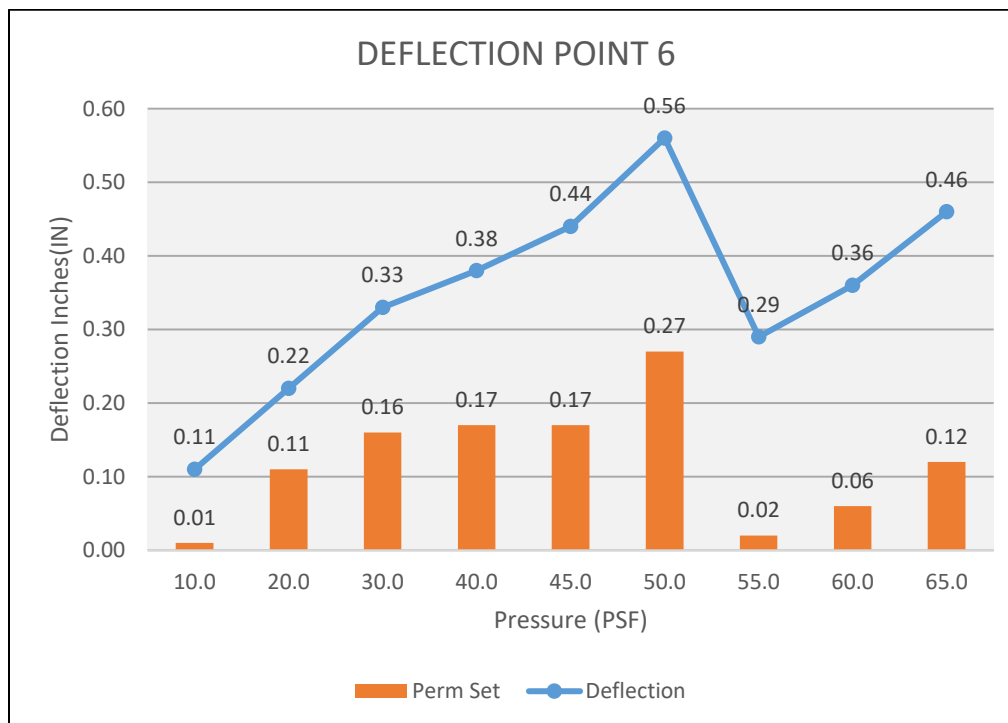
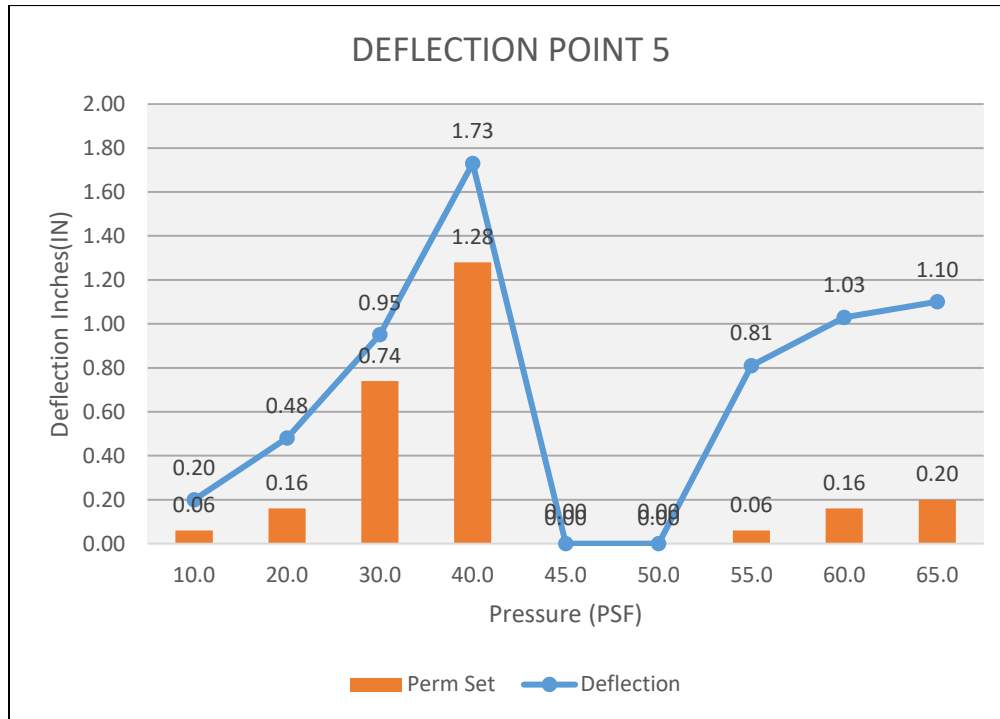
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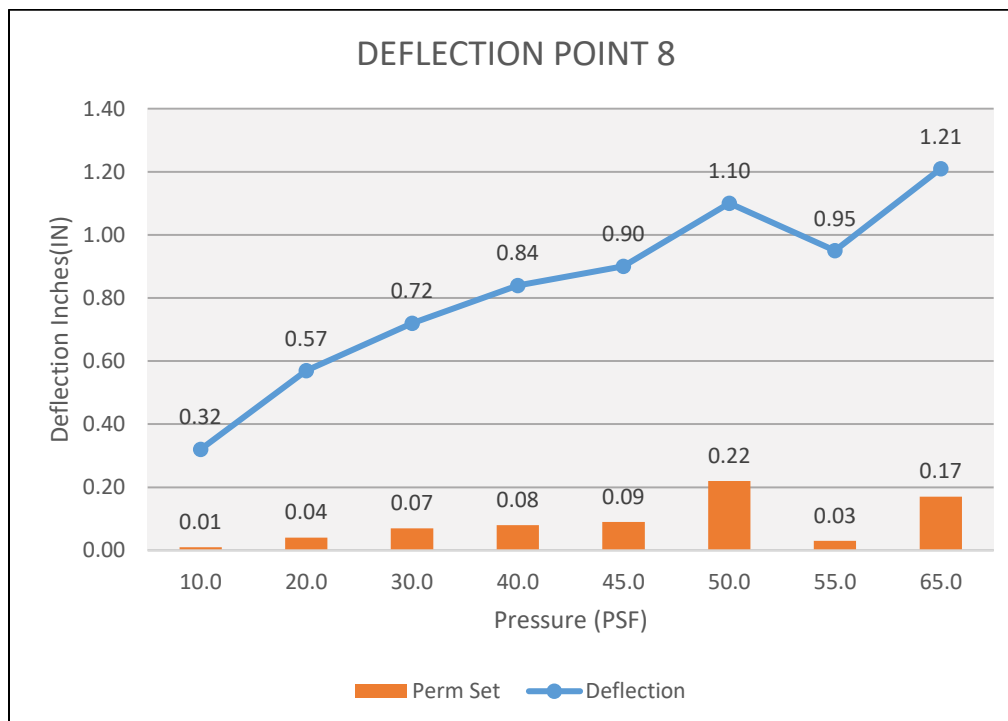
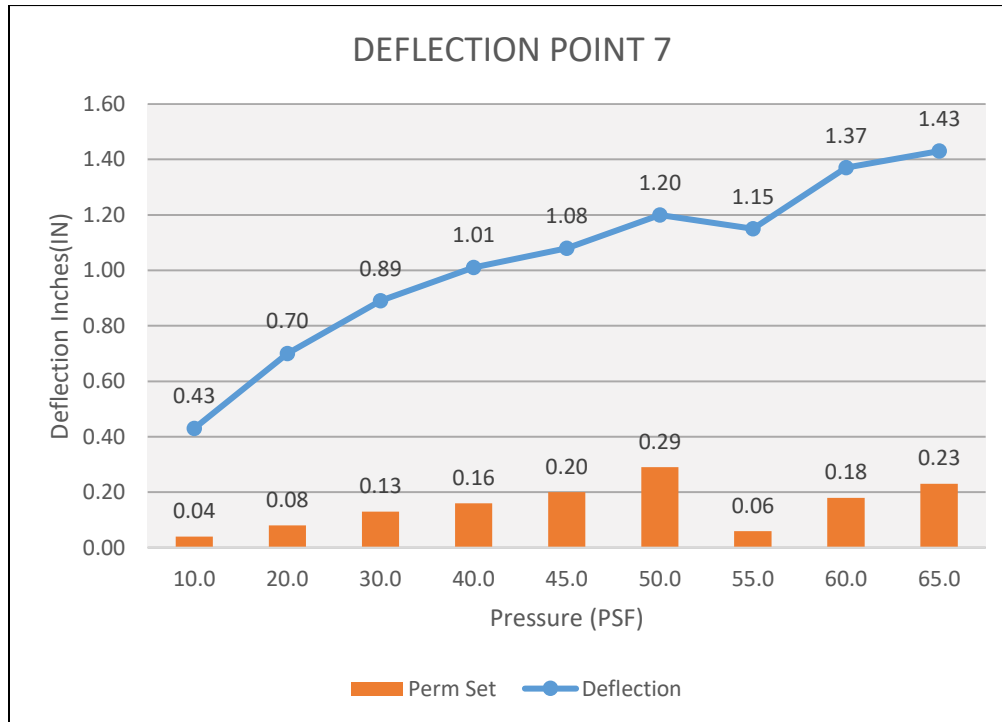
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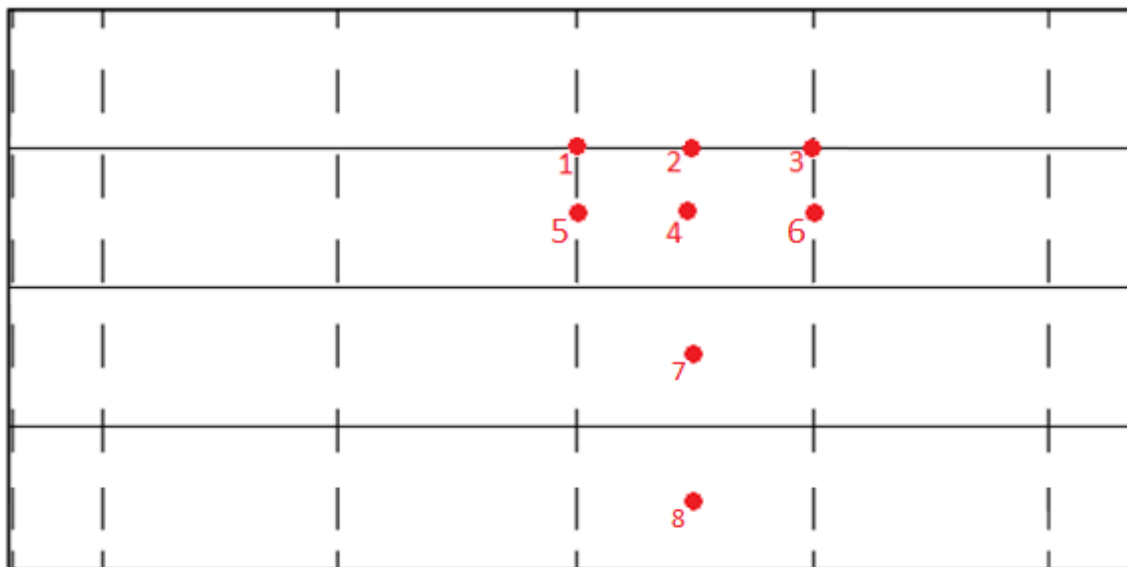
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SECTION 9

SKETCHES



Sketch No. 1
Indicator Locations

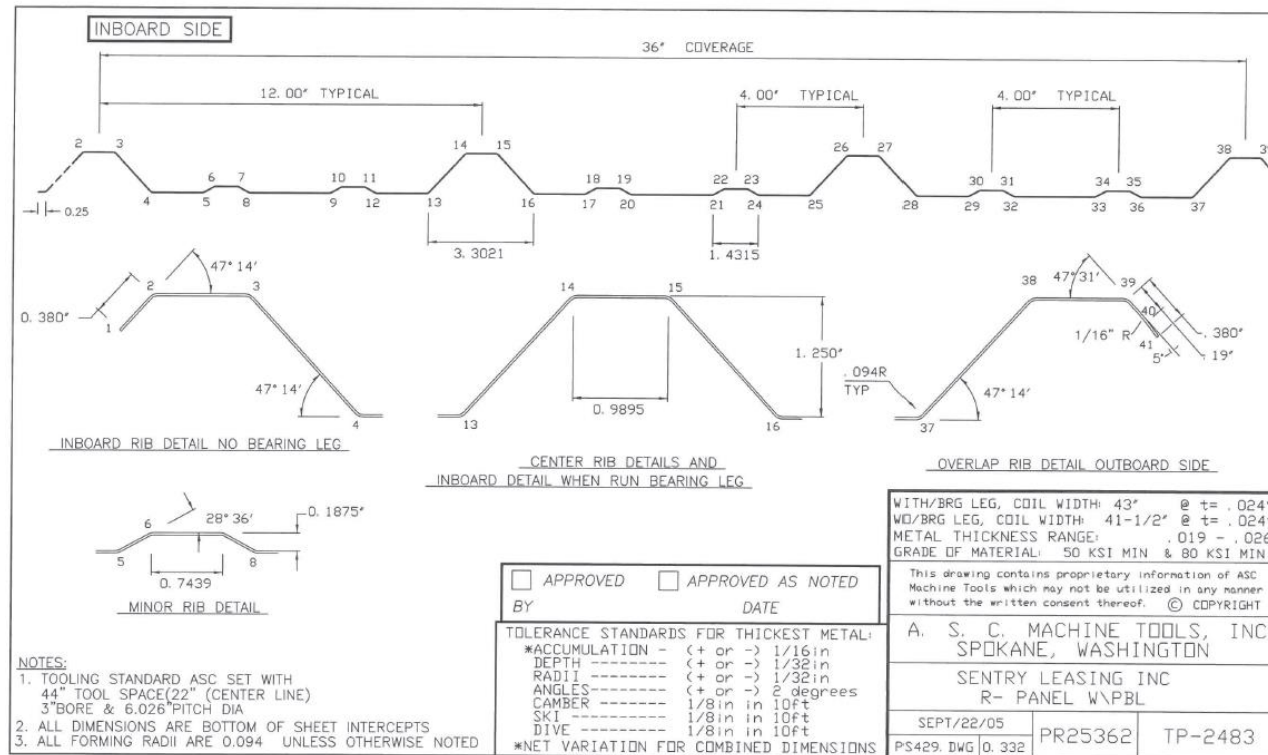
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SECTION 10 DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

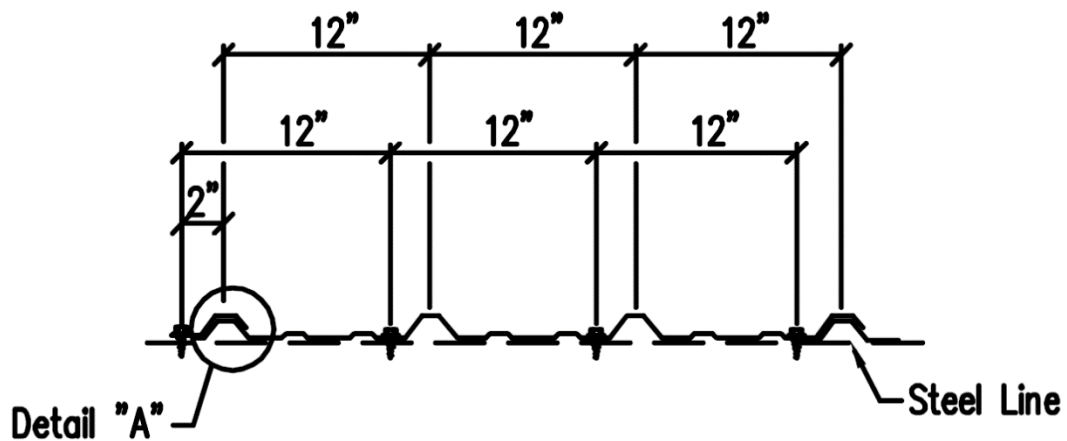


**Drawing No. 1
Panel Profile**

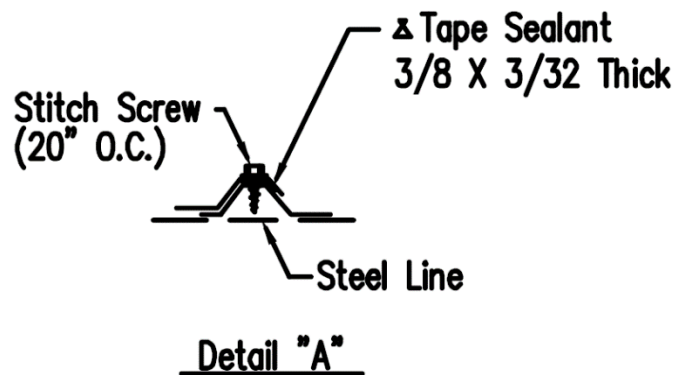
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Drawing No. 2
Fastener Pattern



Drawing No. 3
Seam Details



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2658 Electronics Way
West Palm Beach, Florida 33407

Telephone: 561-881-0020
Facsimile: 717-764-4129
www.intertek.com/building

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SECTION 11

REVISION LOG

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