



# Farabaugh Engineering and Testing Inc.

Project No. T270-15

Report Date: September 30, 2015

Total Pages (inclusive): 19

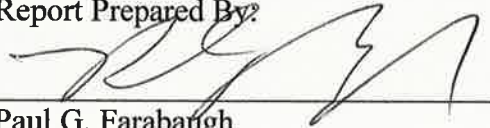
**ASTM E1592**  
**STANDARD TEST METHOD FOR**  
**STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING**  
**SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE**

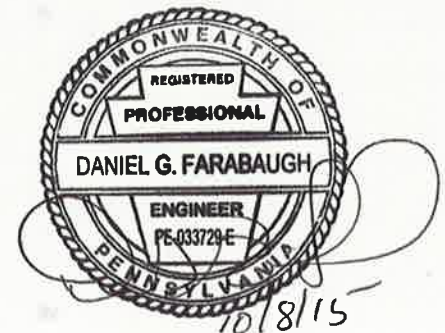
**HWP SERIES PANEL**  
**HWP-12B WALL PANEL**

FOR


PETERSEN ALUMINUM CORP.  
10551 PAC ROAD  
TYLER, TX. 75707

Report Prepared By:

  
Paul G. Farabaugh



Reviewed and Approved By:

  
Daniel G. Farabaugh

DANIEL G. FARABAUGH, P.E.  
255 Saunders Station Rd.  
Trafford, PA 15085  
(412) 373-9238



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**ASTM E1592-01**  
**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 Date**

9/16/15 Test #1 - 9 spans @ 1'-4" o.c.

9/22/15 Test #2 - 3 spans @ 4'-0" o.c

**Test Specimen**

*Manufacturer.*            Petersen Aluminum  
                                  10551 PAC Rd.  
                                  Tyler, TX. 75707

Panel:            HWP-12B Wall Panel, 12"(nominal) Panel Width, 24 Ga. Steel

Panel Clip      20 ga. x 2.5" wide clip.

**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 negative direction to monitor wind uplift on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

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### **Installation**

- The panels were installed on to 16 ga supports with the negative pressure clips using #14 - 13 x 1-1/2" long self drill, flat head, Concealor fasteners (2 fasteners per clip). Continuity fasteners were located at the top of the sidelap joints at panel ends.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts 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-1592-01 and as noted herein. In our opinion the tape and plastic had no influence on the results of the test.

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## TEST #1

Specimen: HWP-12B Wall Panel, 12"(nominal) Panel Width, 24 Ga. Steel

Clip Spacing: 1'- 4" o/c

### NEGATIVE (UPLIFT) TEST PRESSURE

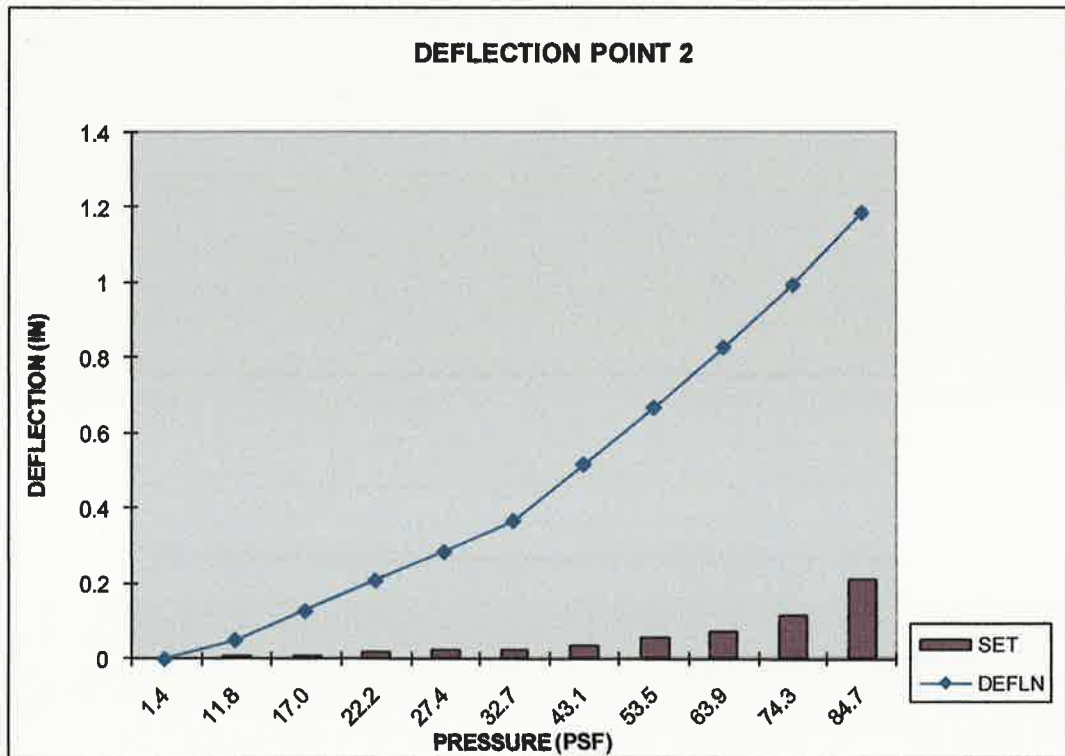
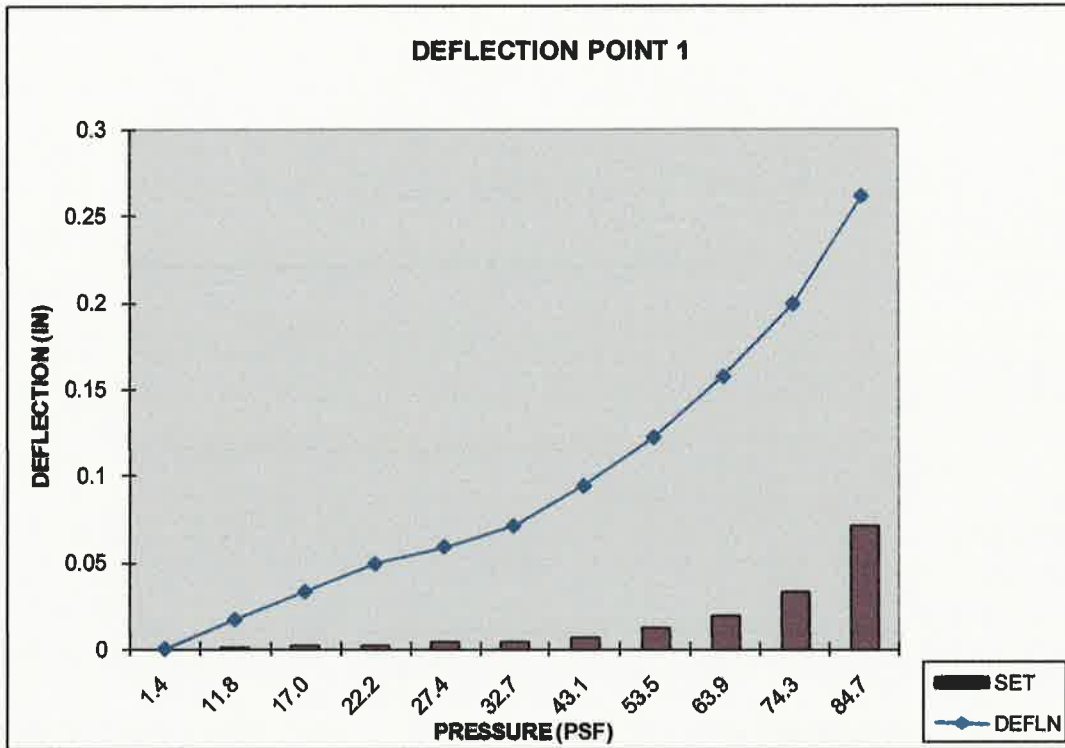
LOAD (PSF)	DEFLECTION DIAL READINGS (INCHES)								REMARKS
	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	
1.4	0	0	0	0	0	0	0	0	PANEL WT.
11.8	0.017	0.05	0.012	0.093	0.018	0.054	0.02	0.042	
1.4	0.001	0.007	0.002	0.008	0	0.007	0.002	0.007	PANEL WT.
17.0	0.033	0.127	0.03	0.178	0.035	0.137	0.039	0.112	
1.4	0.002	0.008	0.002	0.011	0.001	0.008	0.004	-0.033	PANEL WT.
22.2	0.049	0.208	0.051	0.263	0.052	0.226	0.056	0.189	
1.4	0.002	0.014	0.002	0.018	0.002	0.014	0.005	-0.034	PANEL WT.
27.4	0.059	0.284	0.069	0.335	0.069	0.31	0.067	0.267	
1.4	0.004	0.019	0.001	0.024	0.003	0.02	0.006	-0.02	PANEL WT.
32.7	0.071	0.367	0.089	0.414	0.085	0.399	0.081	0.34	
1.4	0.005	0.024	0.001	0.029	0.006	0.026	0.008	-0.055	PANEL WT.
43.1	0.094	0.517	0.129	0.554	0.112	0.547	0.111	0.48	
1.4	0.007	0.034	0.002	0.044	0.01	0.039	0.012	-0.008	PANEL WT.
53.5	0.122	0.668	0.175	0.694	0.144	0.705	0.142	0.616	
1.4	0.013	0.052	0.003	0.068	0.018	0.057	0.019	-0.008	PANEL WT.
63.9	0.157	0.828	0.227	0.841	0.185	0.863	0.183	0.761	
1.4	0.02	0.069	0.02	0.107	0.029	0.078	0.03	0.028	PANEL WT.
74.3	0.199	0.994	0.289	1.006	0.238	1.036	0.228	0.919	
1.4	0.033	0.111	0.036	0.153	0.047	0.117	0.043	-0.047	PANEL WT.
84.7	0.261	1.186	0.375	1.218	0.304	1.182	0.283	1.077	
1.4	0.071	0.206	0.068	0.29	0.086	0.24	0.074	0.204	PANEL WT.

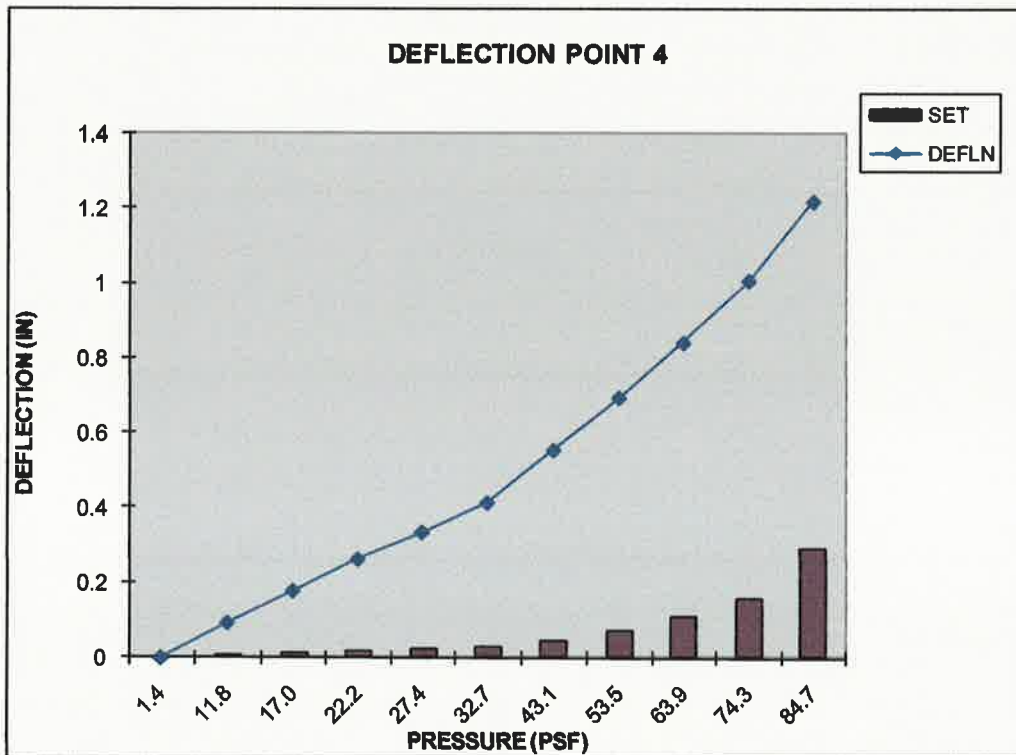
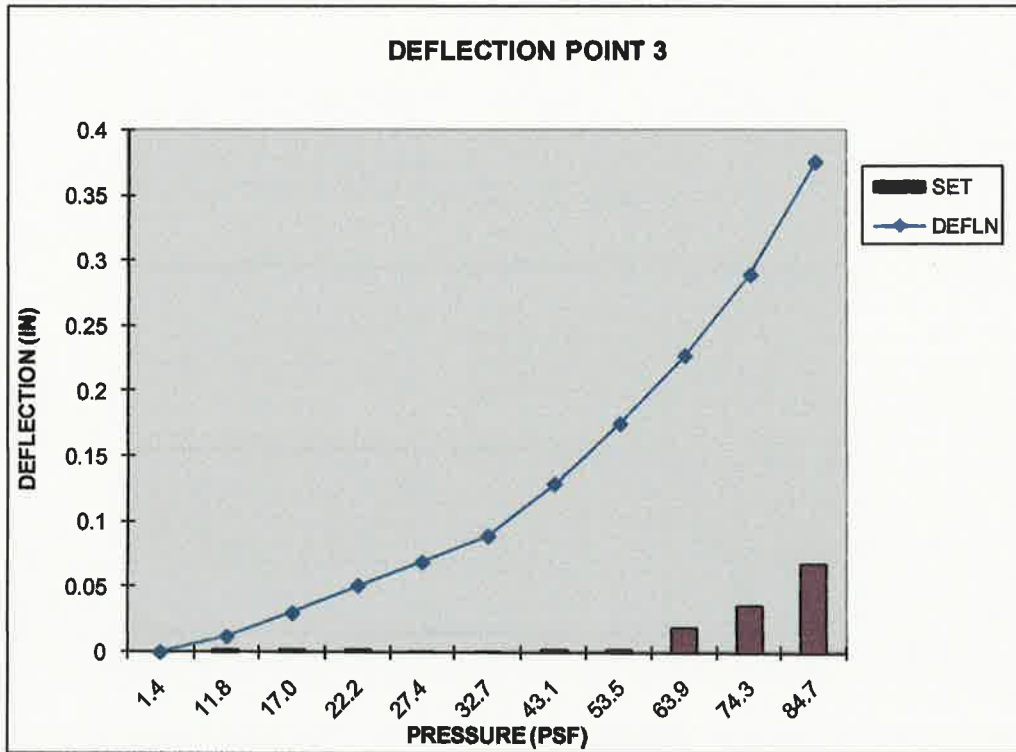
### RESULTS:

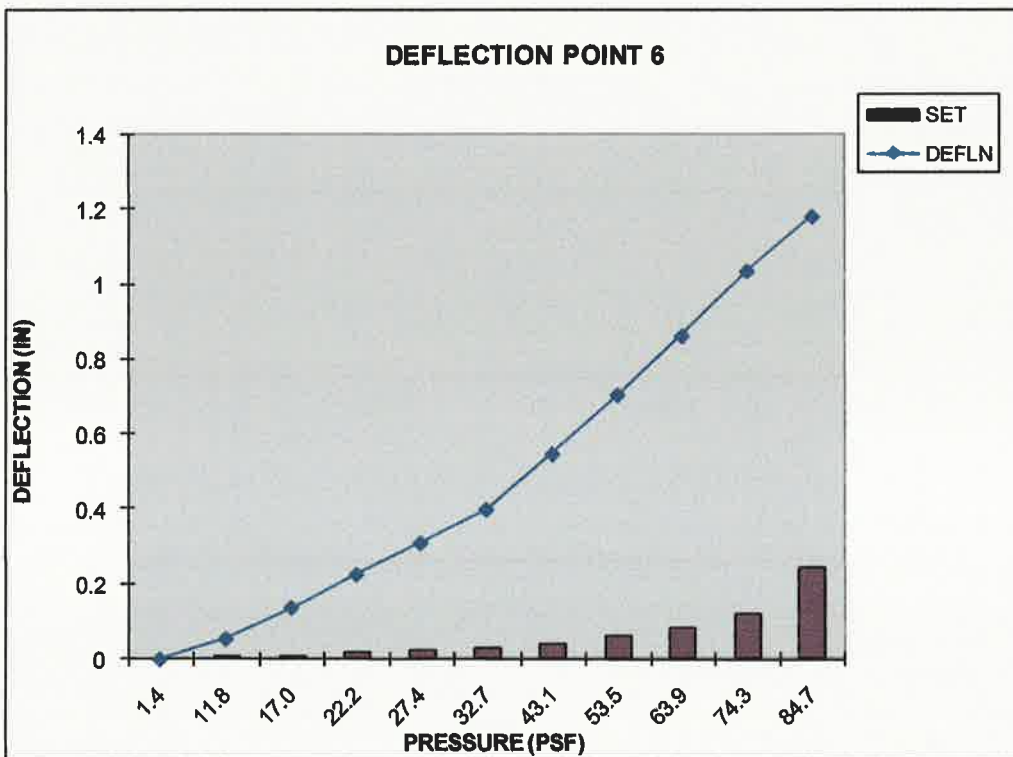
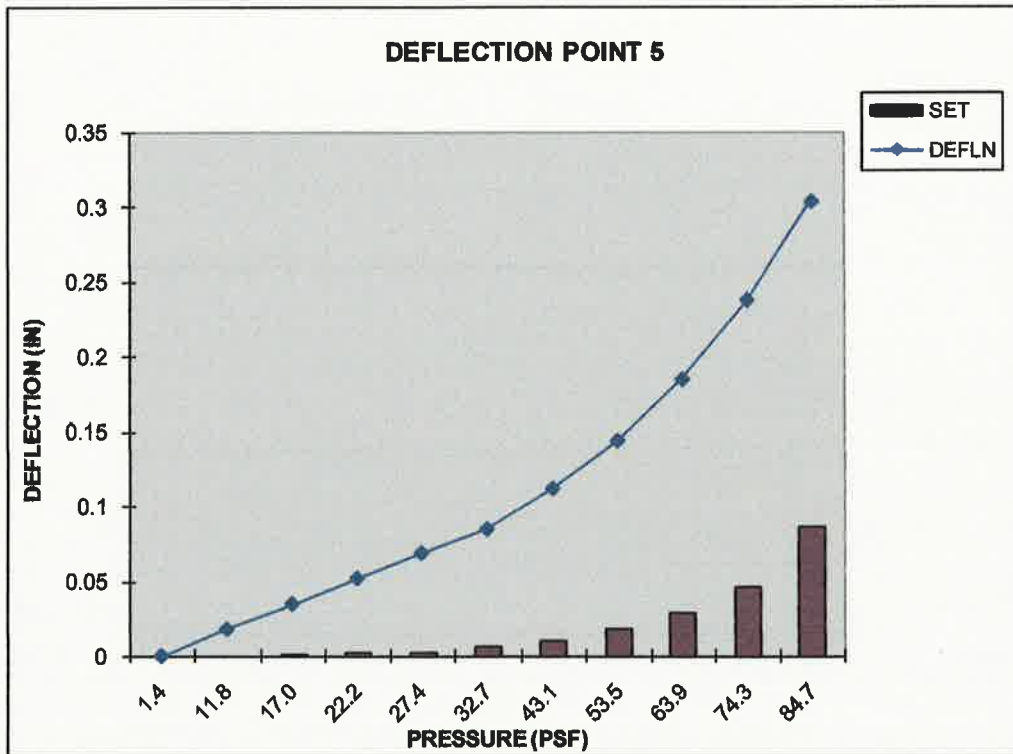
Maximum Test Load (held for 1 min.) = 89.9 psf \* (No Failure)

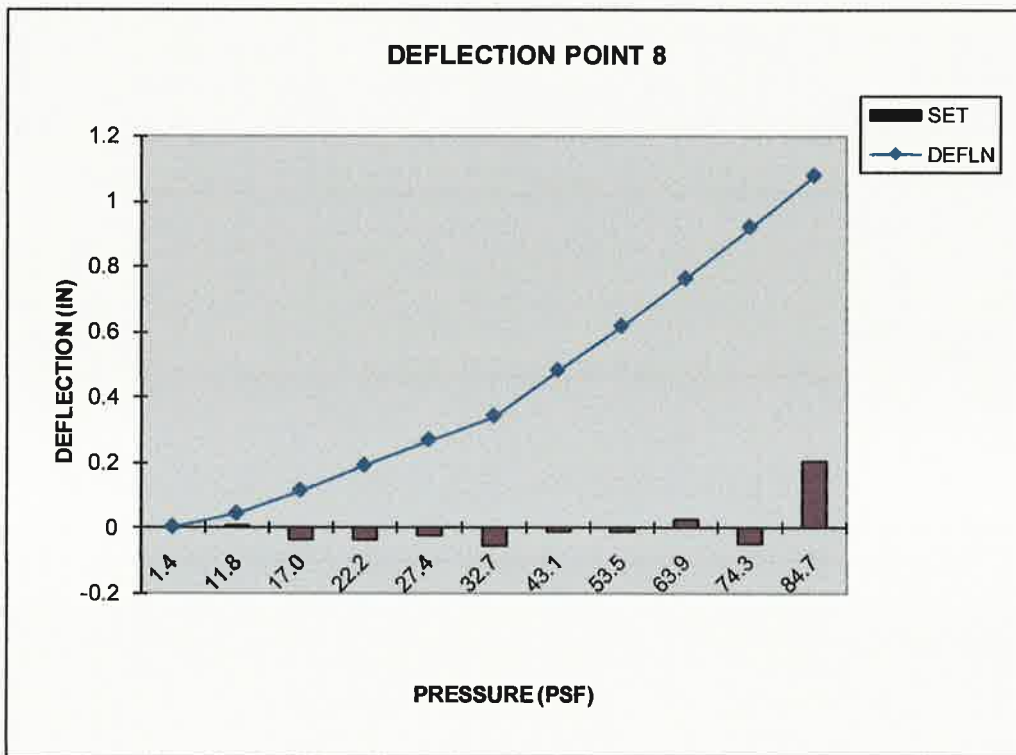
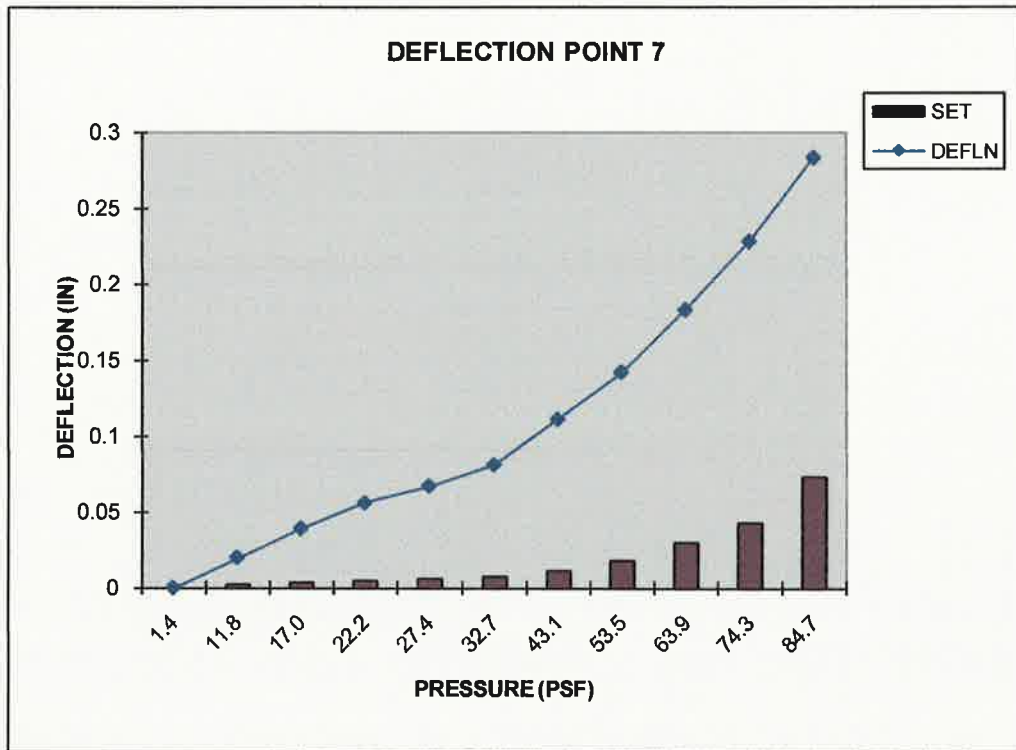
Ultimate Test Load = 93.5 psf \* (Panel Seam Disengagement)

\* Includes panel dead load.



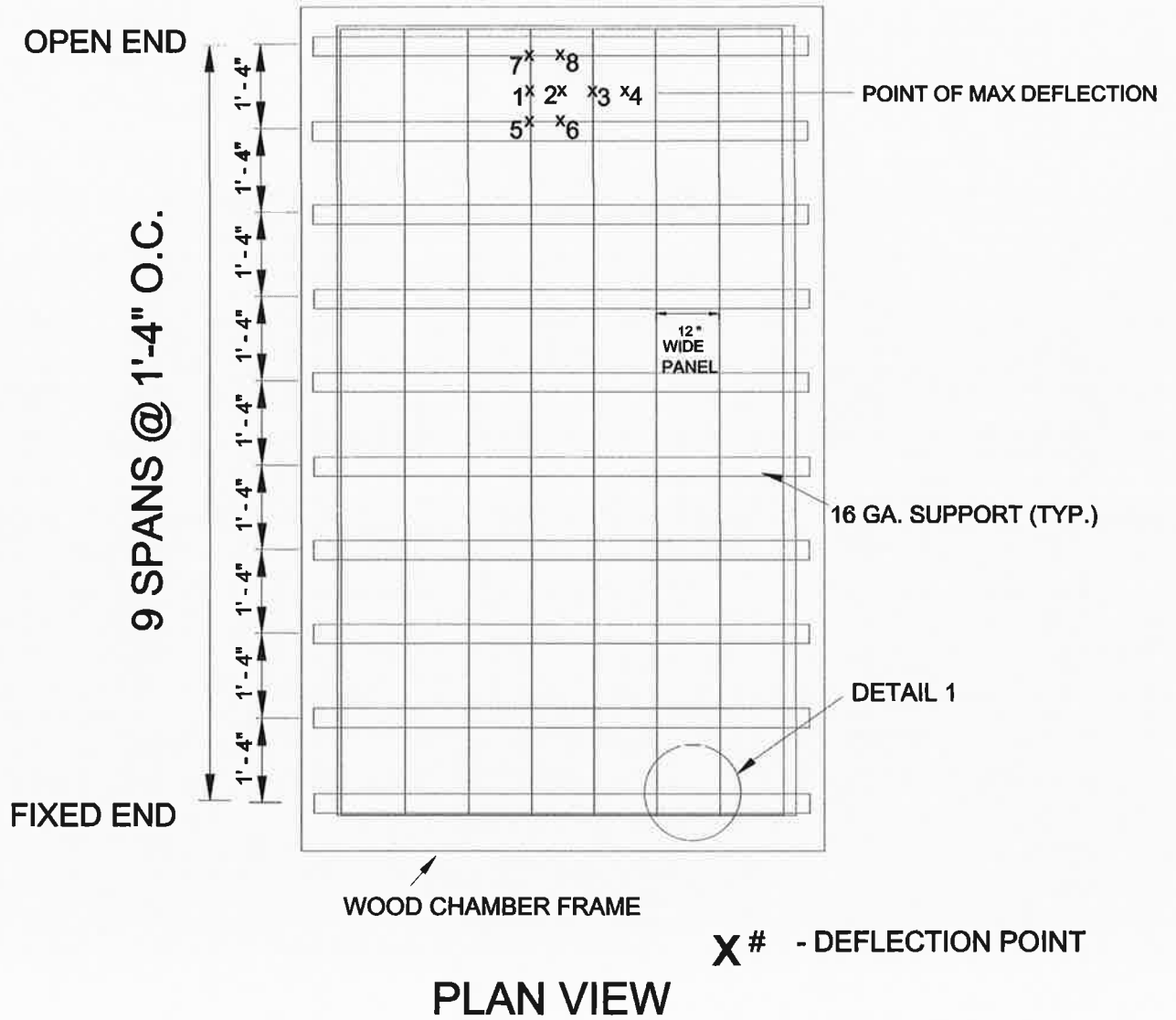








# TEST #1



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## TEST #2

Specimen: HWP-12B Wall Panel, 12"(nominal) Panel Width, 24 Ga. Steel

Clip Spacing: 4 ft o/c

### NEGATIVE (UPLIFT) TEST PRESSURE

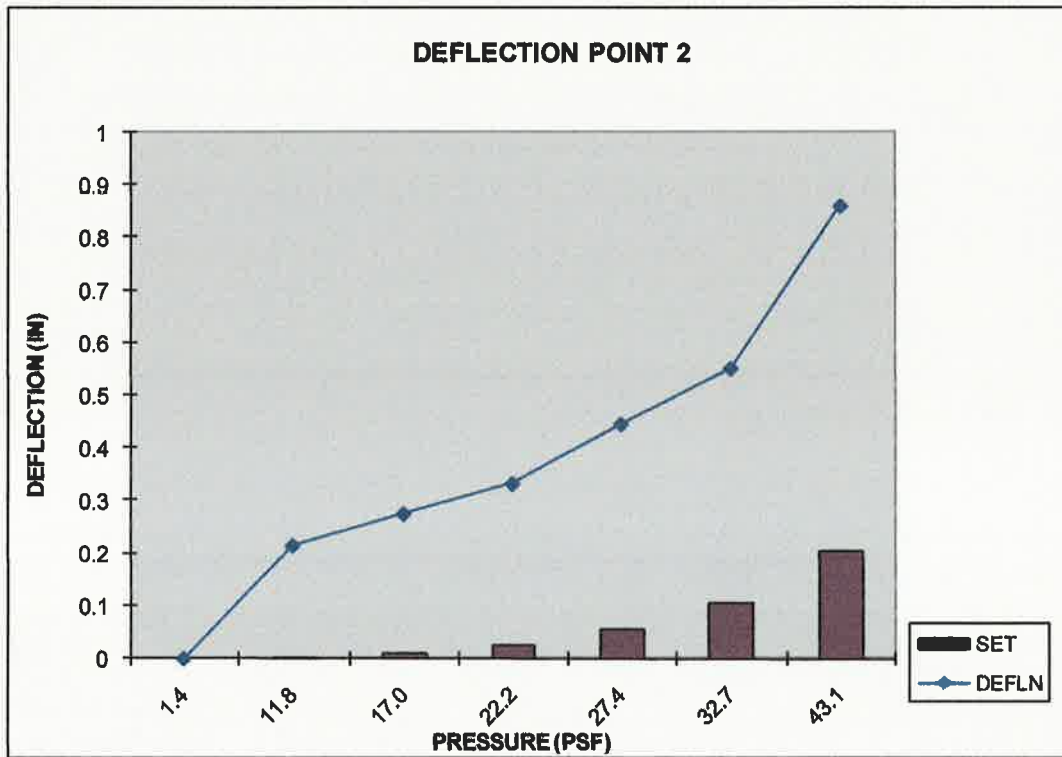
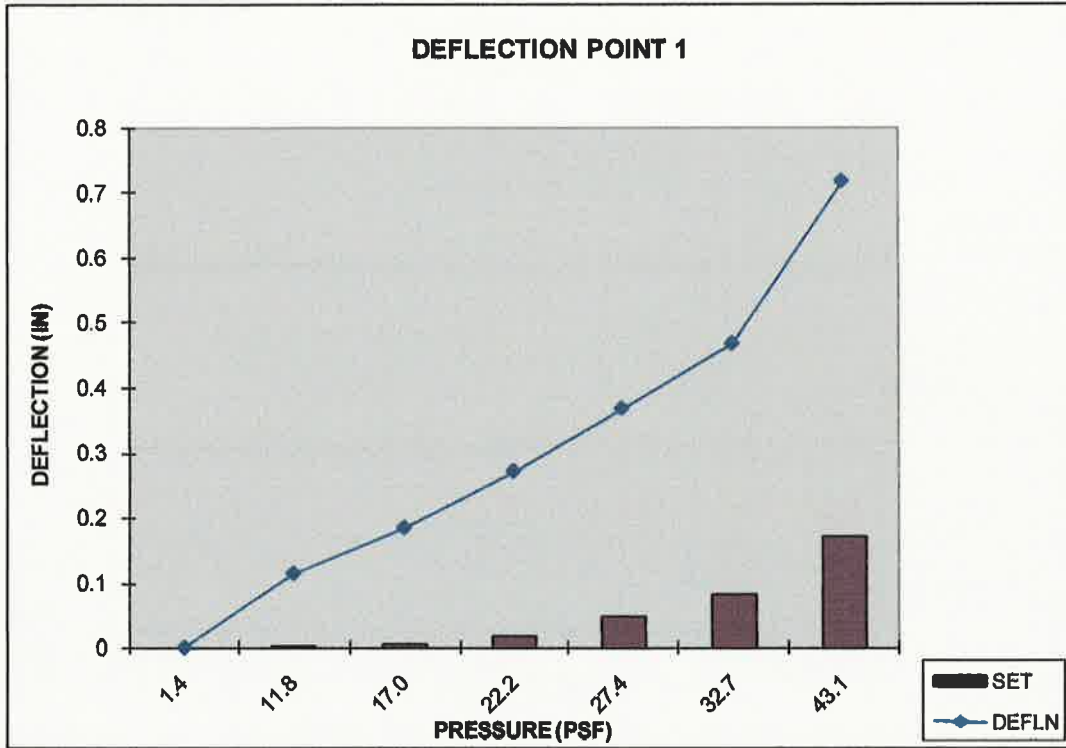
LOAD (PSF)	DEFLECTION DIAL READINGS (INCHES)								REMARKS
	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	
1.4	0	0	0	0	0	0	0	0	PANEL WT.
11.8	0.114	0.215	0.095	0.238	0.065	0.242	0.053	0.211	
1.4	0.002	0.002	0.005	0.01	0.003	0.011	0.002	0.011	PANEL WT.
17.0	0.184	0.275	0.153	0.366	0.111	0.371	0.088	0.331	
1.4	0.005	0.008	0.012	0.026	0.009	0.031	0.007	0.025	PANEL WT.
22.2	0.271	0.332	0.223	0.508	0.178	0.521	0.127	0.453	
1.4	0.016	0.025	0.022	0.048	0.018	0.054	0.014	0.045	PANEL WT.
27.4	0.367	0.445	0.305	0.656	0.261	0.664	0.172	0.587	
1.4	0.047	0.057	0.047	0.085	0.049	0.094	0.024	0.078	PANEL WT.
32.7	0.467	0.551	0.389	0.797	0.355	0.816	0.219	0.703	
1.4	0.083	0.103	0.083	0.129	0.1	0.146	0.038	0.113	PANEL WT.
43.1	0.716	0.86	0.552	1.093	0.497	1.097	0.32	0.966	
1.4	0.172	0.205	0.14	0.209	0.175	0.239	0.067	0.189	PANEL WT.

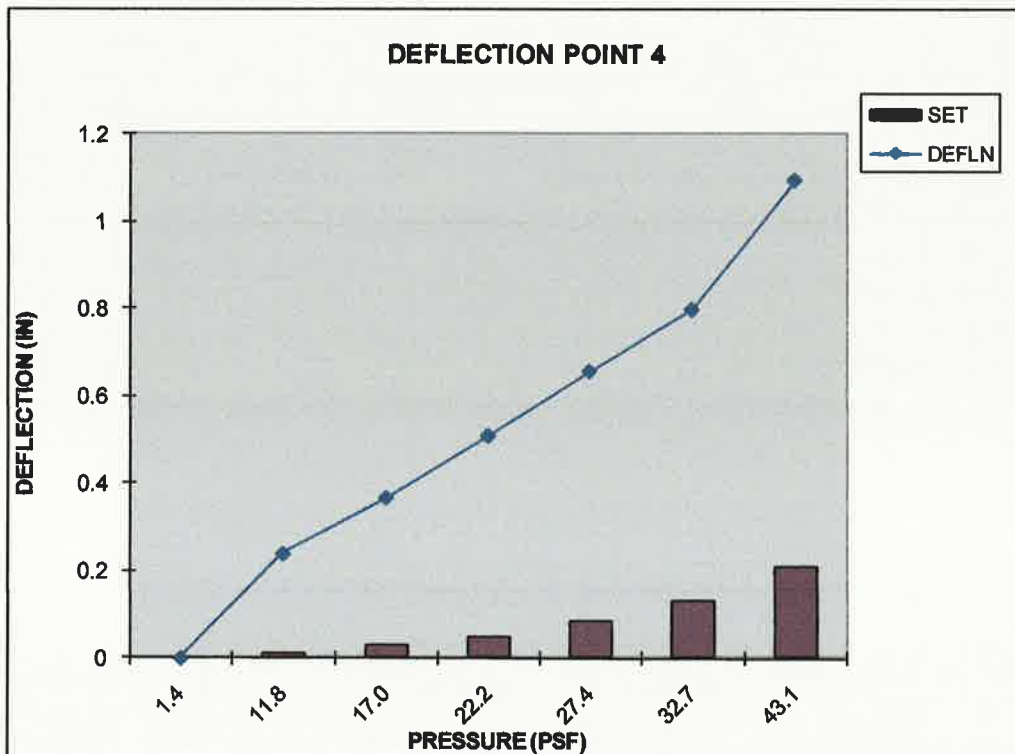
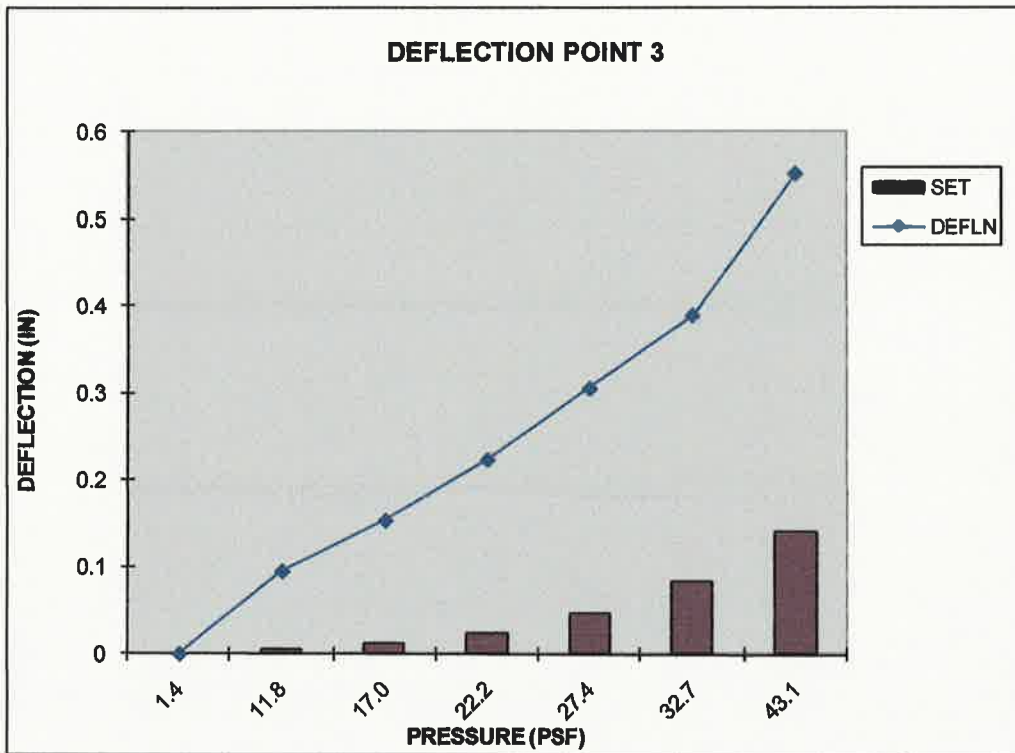
### RESULTS:

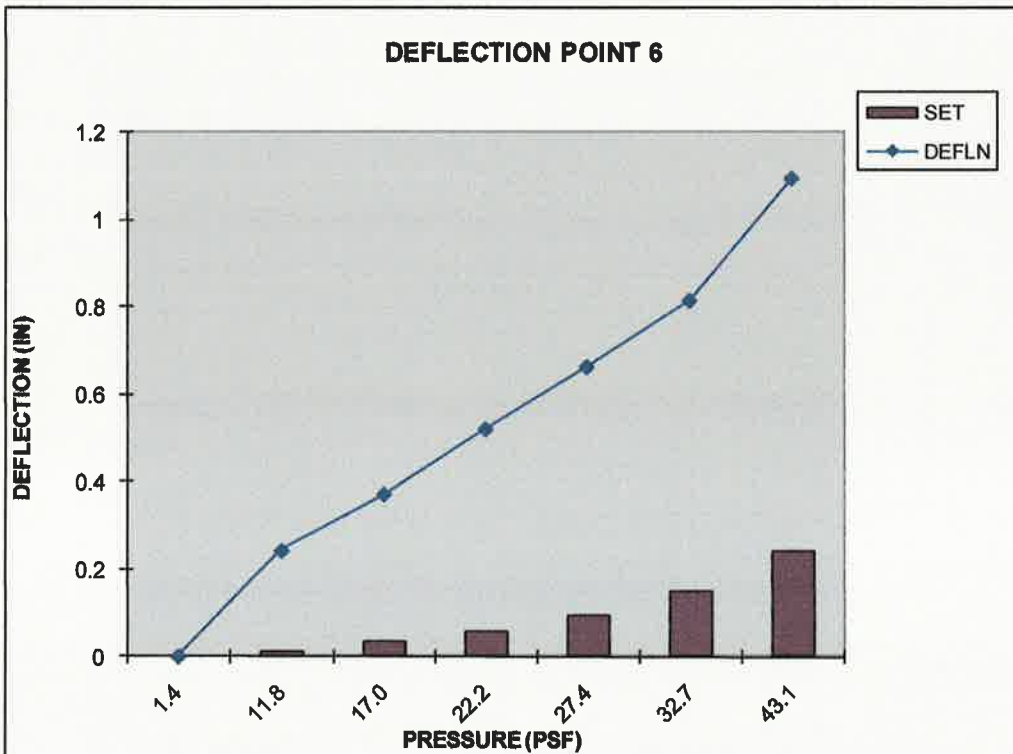
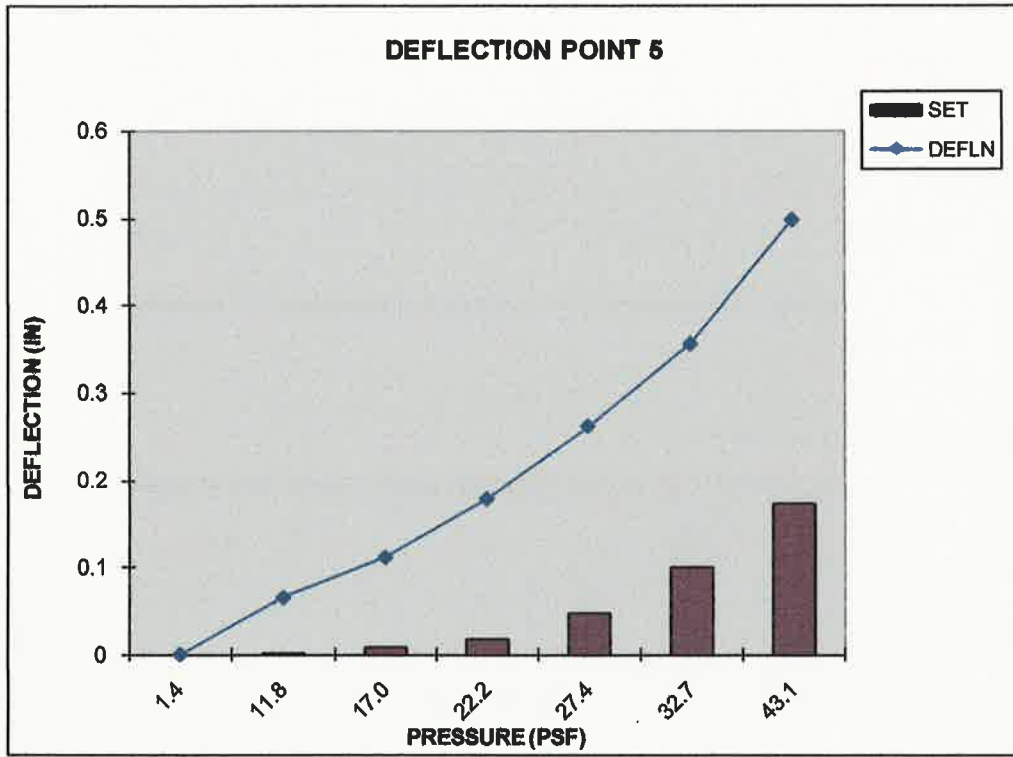
Maximum Test Load (held for 1 min.) = 48.3 psf \* (No Failure)

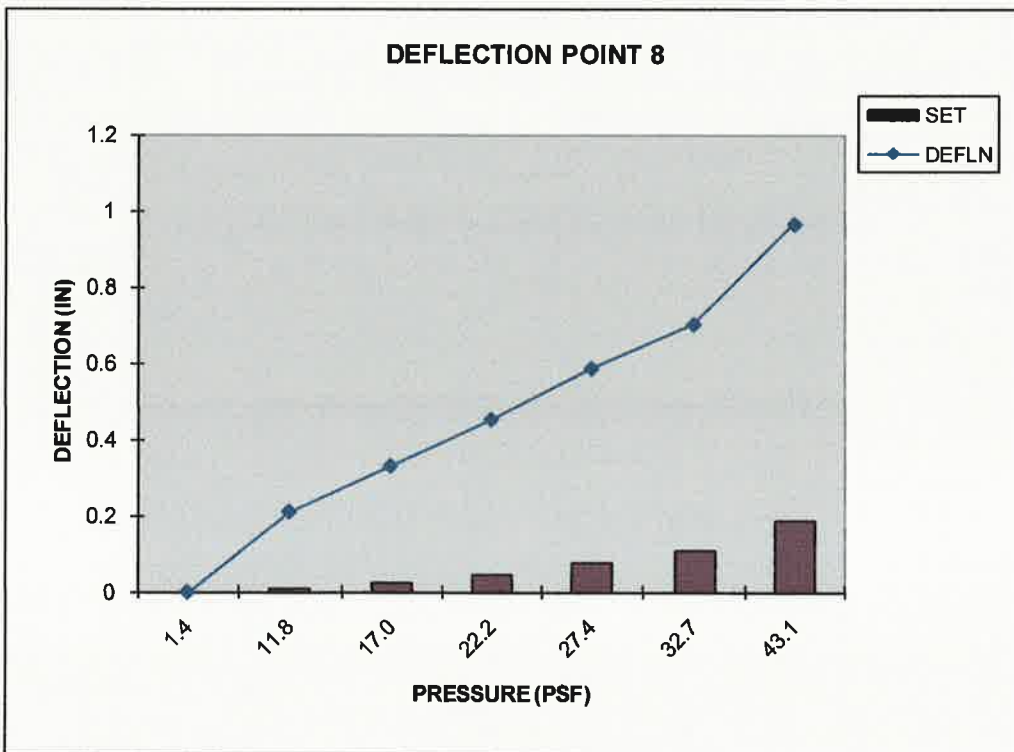
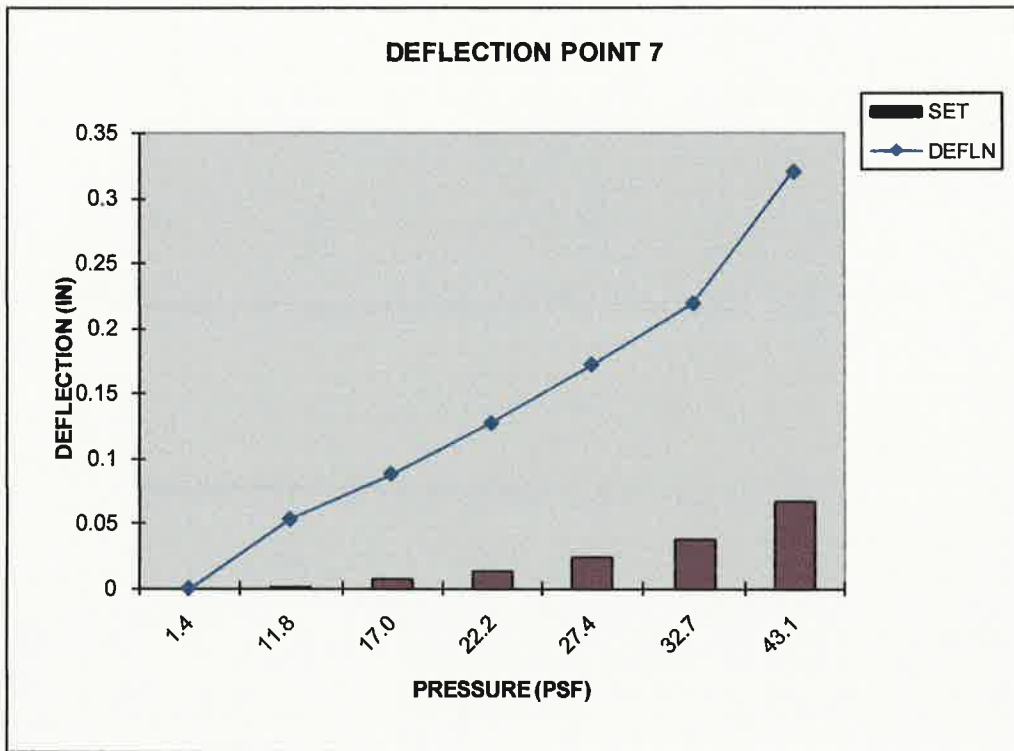
Ultimate Test Load (failure) = 50.1 psf \* ( Panel Seam disengagement)

\* Includes panel dead load.

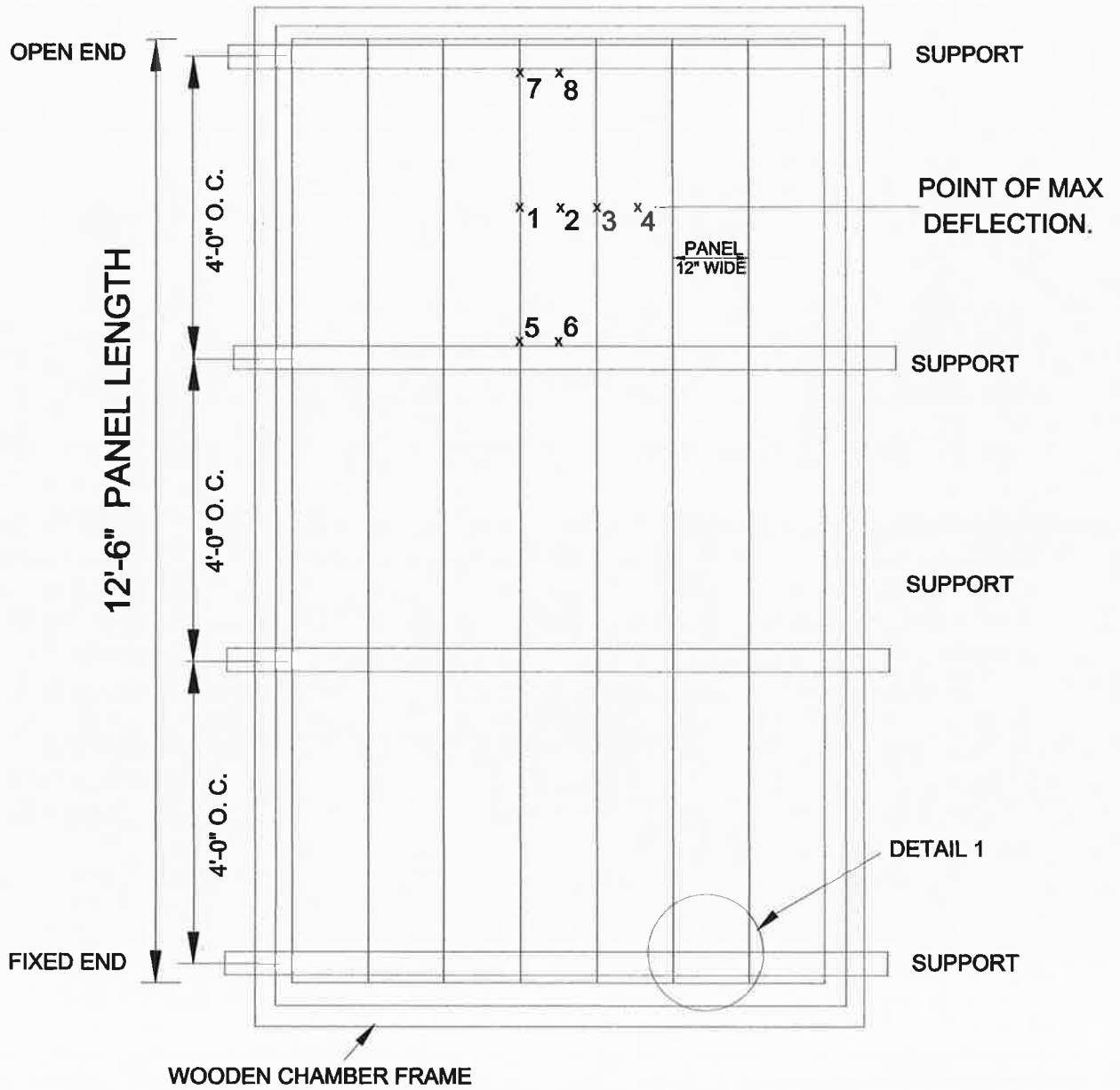








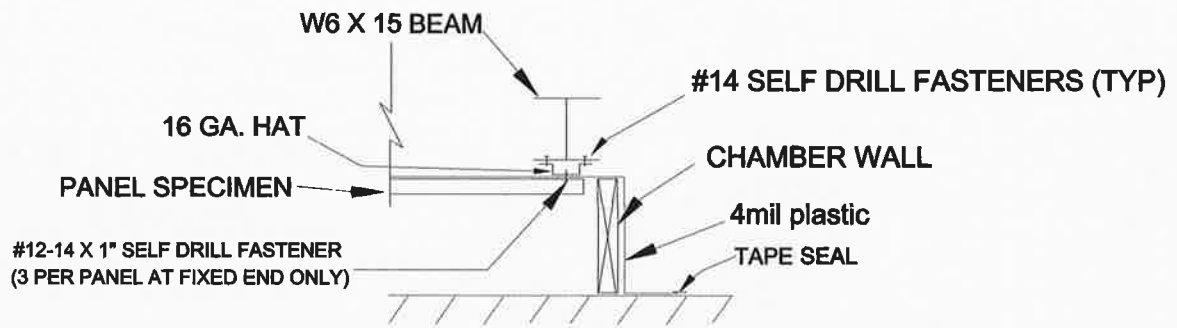
# TEST #2



X# - DEFLECTION POINT

## PLAN VIEW

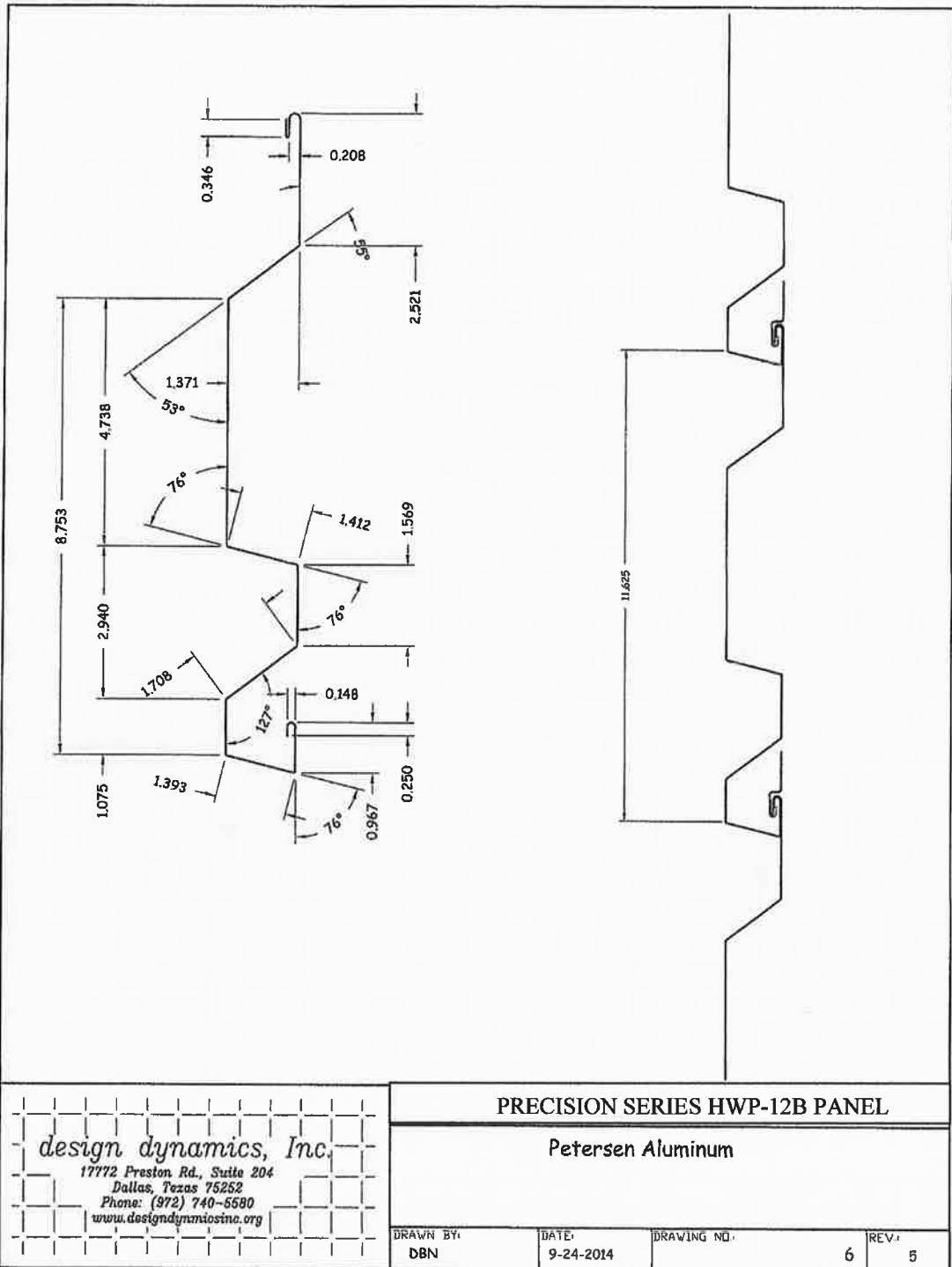
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# DETAIL 1



Project No. T270-15



*design dynamics, Inc.*  
 17772 Preston Rd., Suite 204  
 Dallas, Texas 75252  
 Phone: (972) 740-5580  
 www.designdynamicsinc.org

PRECISION SERIES HWP-12B PANEL

Petersen Aluminum

DRAWN BY: DBN	DATE: 9-24-2014	DRAWING NO.:	6	REV.:	5
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## TENSILE TEST REPORT

Client: Petersen Aluminum  
10551 PAC Rd.  
Tyler, TX. 75707

Test Date: 9-30-15

Test Method: ASTM A370-10

Material Description: HWP-12B Wall Panel, 12"(nominal) Panel Width, 24 Ga. Steel

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)
0094-15	0.502	0.023	646.3	750.5	55,978	65,001	25.0

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