



**Farabaugh Engineering and Testing Inc.**

---

Project No. T277-08

Report Date: October 21, 2008

Total Pages (inclusive): 18

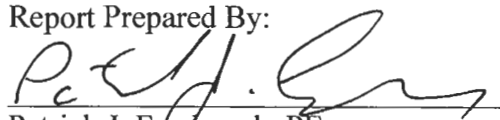
**ASTM E 1592**  
STANDARD TEST METHOD FOR  
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING  
SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

**7.2 ROOF PANEL**  
**36" WIDE X 24 GA**

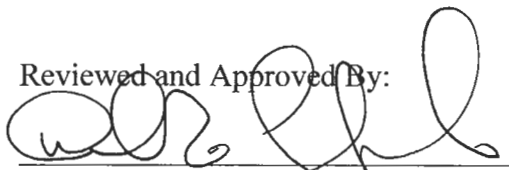
FOR

PETERSEN ALUMINUM CORP.  
1005 TONNE RD.  
ELK GROVE VILLAGE, IL 60007

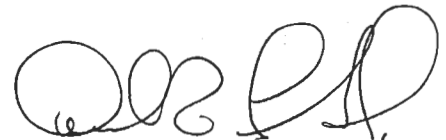
Report Prepared By:

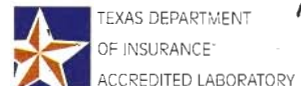
  
Patrick J. Farabaugh, PE

Reviewed and Approved By:

  
Daniel G. Farabaugh, PE

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





10/24/08

Project No. T277-08

**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**

Test #1 (Specimen "A") – 10/13/08

Test #2 (Specimen "B") – 10/20/08

**Test Specimen**

*Manufacturer:* Petersen Aluminum Corp.  
1005 Tonne Rd.  
Elk Grove Village, IL 60007

*Panel:* 7.2 Roof Panel, 36" wide (coverage), 24 ga steel

*Panel Length:* as shown

**Testing Apparatus**

*Test Chamber:* Vacuum Chamber Composed of Wood

*Mounting Frame:* Hat Shape Subgirts fastened to W6 X 15 Wide Flange Beams

*Pressure Indicator:* Digital Pressure Indicator from Micro-Pneumatic Logic, Inc.

*Caliper:* Mitutoyo Digital Caliper, Model No. CD-12" CP

### **Installation**

- The panels were installed on to 16 ga supports using ¼"-14 X 1-1/4" long hex head self drill fasteners with 5/8" seal washer located at every low cell of the panel. The panel side-joints were overlapping using #12-14 X 1" long hex head self drill fasteners with 5/8" seal washer located at 18" o.c. .
- 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.

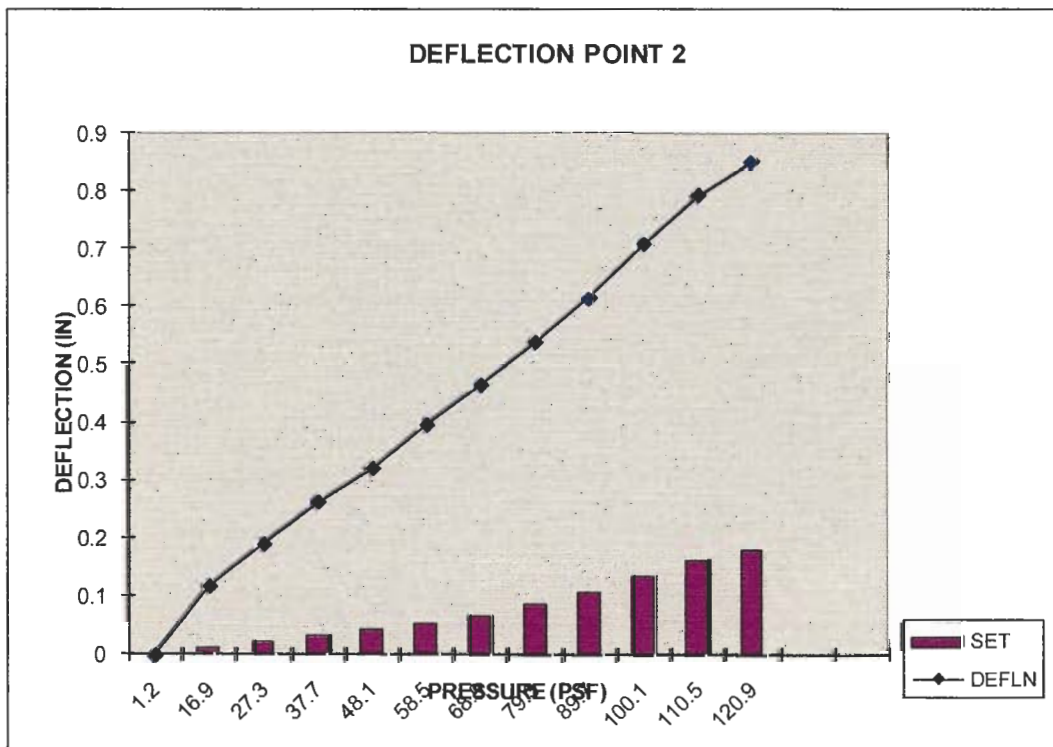
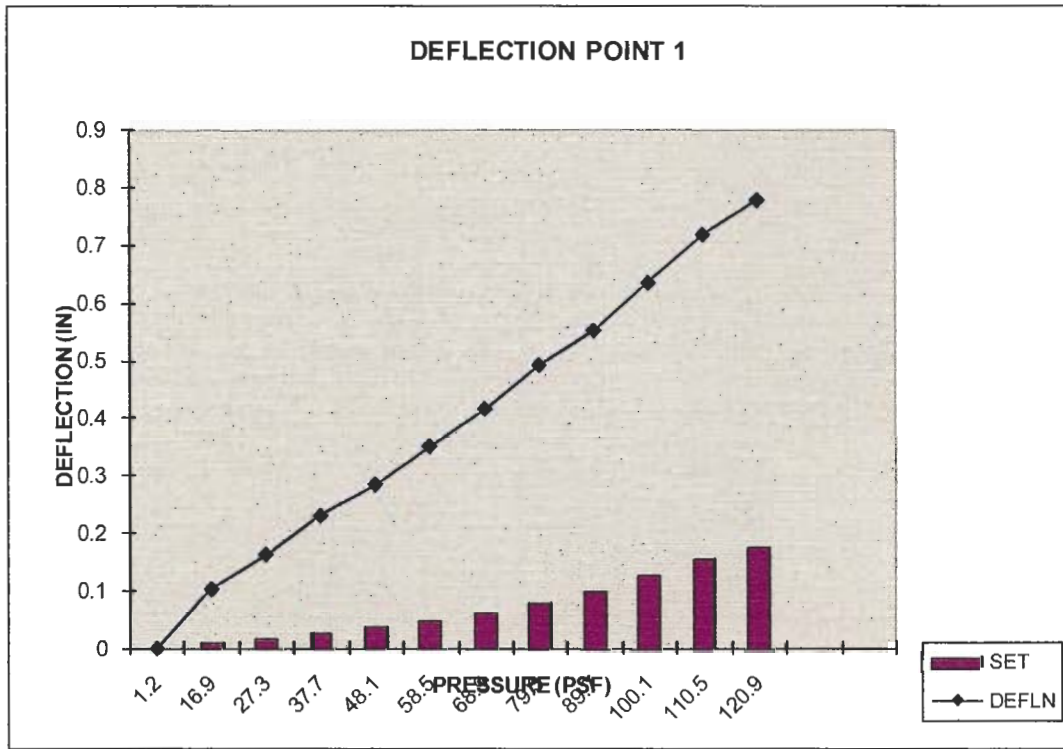
**TEST #1**

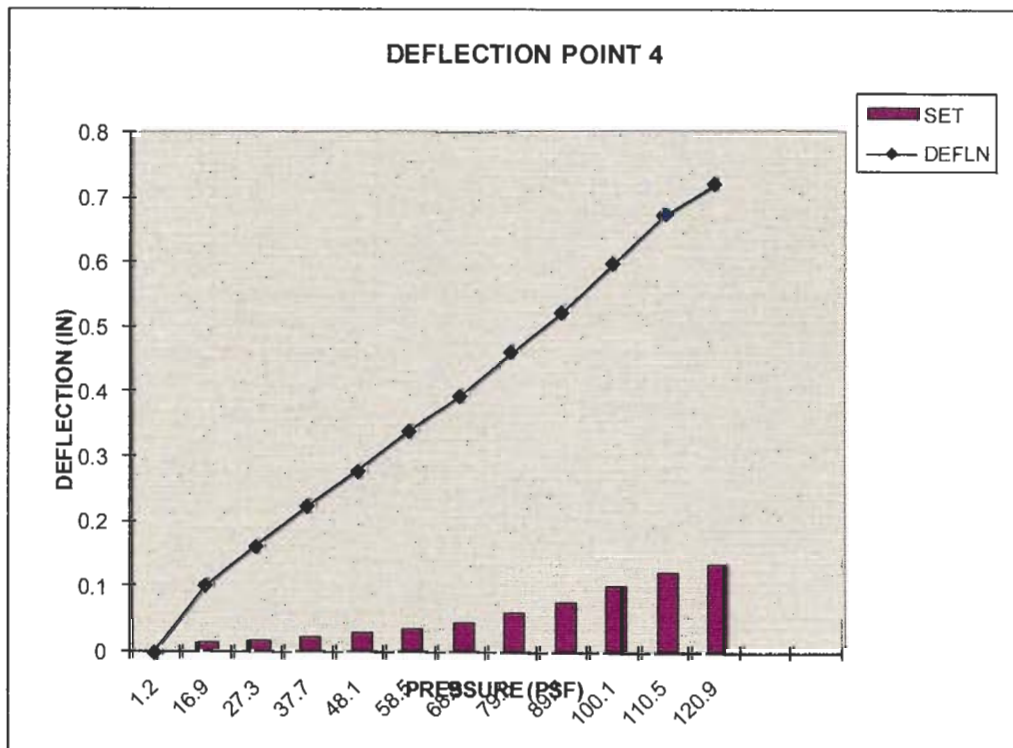
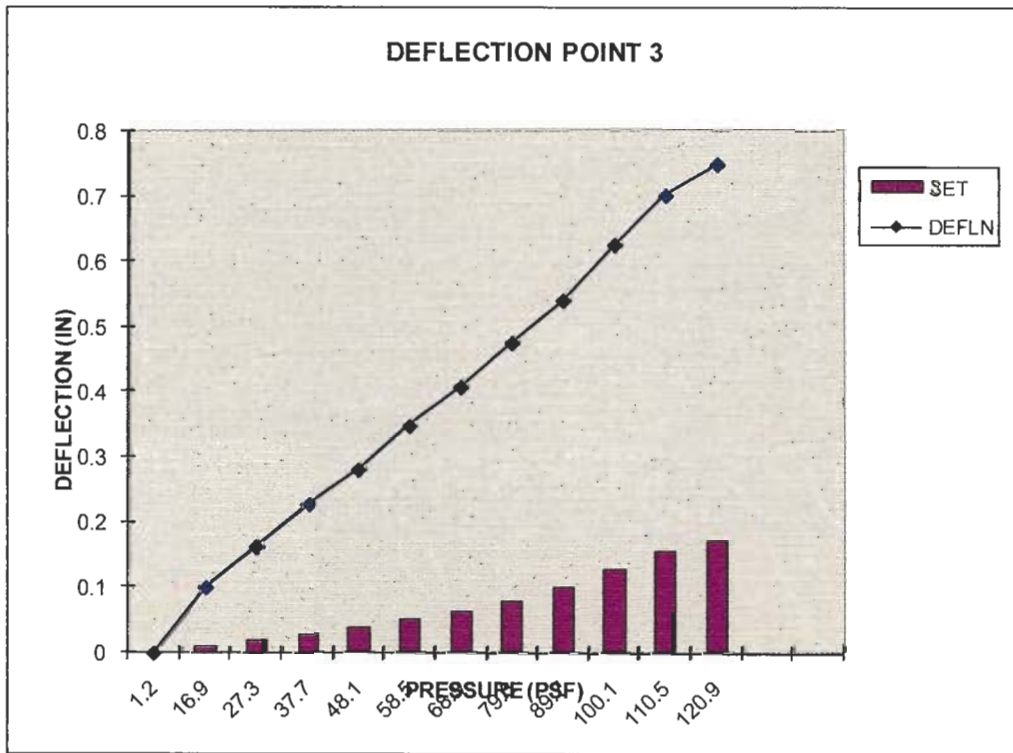
**NEGATIVE (UPLIFT) PRESSURE**

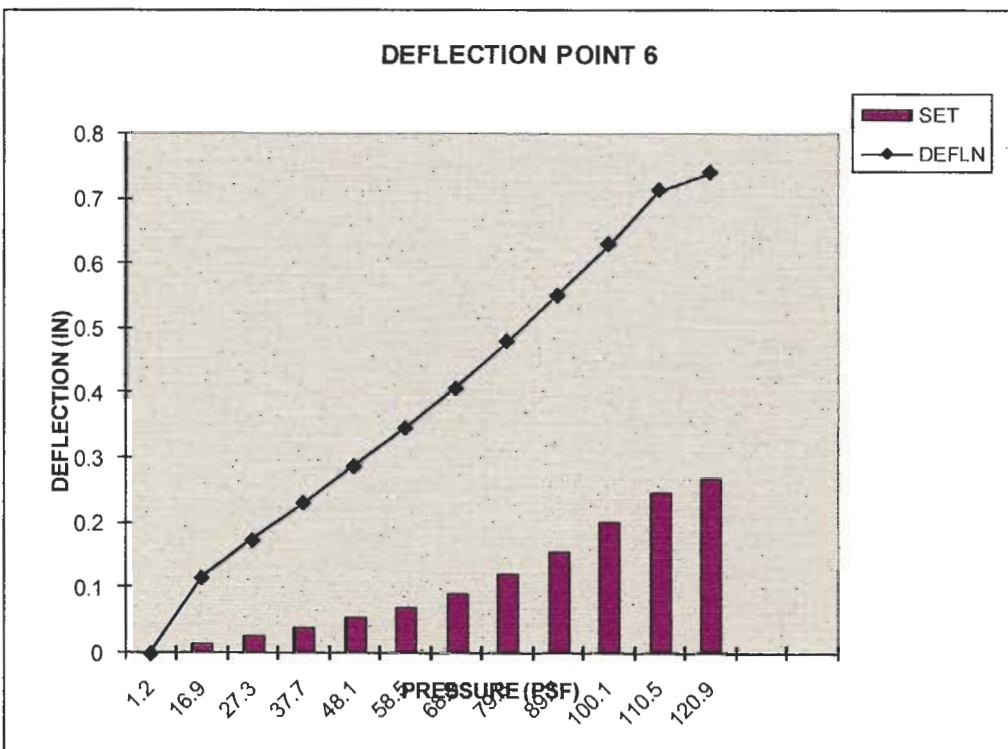
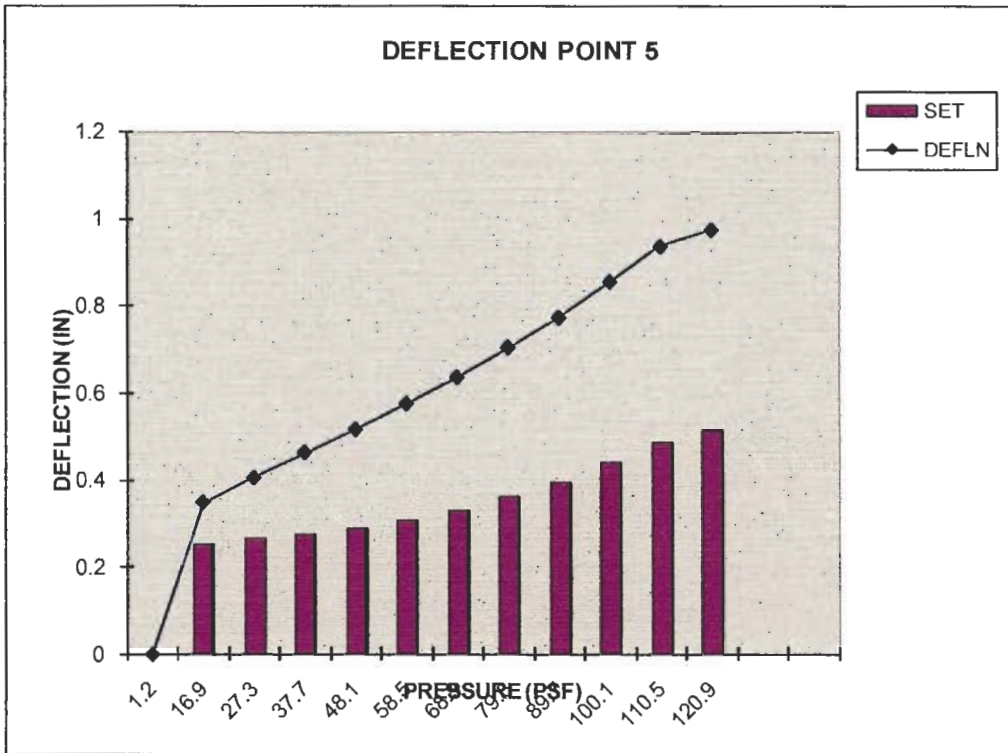
PAC 7.2 ROOF PANEL , 36" W X 24 GA (SPECIMEN A) 3 SPANS @ 5'-0" oc									
DEFLECTION DIAL READINGS (INCHES)									
LOAD (PSF)	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	REMARKS
1.2	0	0	0	0	0	0	0	0	0 PANEL WT.
16.9	0.103	0.118	0.101	0.103	0.349	0.116	0.055	0.069	
1.2	0.01	0.012	0.01	0.011	0.253	0.011	0.008	0.009	PANEL WT.
27.3	0.163	0.19	0.163	0.163	0.405	0.174	0.09	0.112	
1.2	0.019	0.022	0.019	0.016	0.264	0.024	0.015	0.016	PANEL WT.
37.7	0.23	0.263	0.228	0.225	0.463	0.232	0.124	0.149	
1.2	0.029	0.032	0.027	0.022	0.276	0.037	0.021	0.021	PANEL WT.
48.1	0.284	0.321	0.281	0.279	0.516	0.288	0.156	0.187	
1.2	0.038	0.041	0.038	0.028	0.29	0.051	0.025	0.025	PANEL WT.
58.5	0.35	0.396	0.348	0.341	0.575	0.347	0.186	0.22	
1.2	0.049	0.051	0.048	0.035	0.308	0.068	0.03	0.03	PANEL WT.
68.9	0.415	0.465	0.408	0.395	0.636	0.408	0.218	0.254	
1.2	0.062	0.065	0.06	0.043	0.331	0.09	0.036	0.035	PANEL WT.
79.3	0.491	0.539	0.476	0.463	0.704	0.481	0.254	0.294	
1.2	0.081	0.085	0.078	0.058	0.362	0.12	0.043	0.043	PANEL WT.
89.7	0.551	0.616	0.541	0.524	0.772	0.552	0.288	0.33	
1.2	0.102	0.106	0.099	0.074	0.395	0.154	0.052	0.052	PANEL WT.
100.1	0.633	0.709	0.626	0.6	0.854	0.631	0.325	0.37	
1.2	0.129	0.135	0.127	0.098	0.44	0.199	0.064	0.065	PANEL WT.
110.5	0.716	0.793	0.701	0.675	0.934	0.714	0.362	0.41	
1.2	0.156	0.162	0.154	0.12	0.484	0.244	0.074	0.077	PANEL WT.
120.9	0.776	0.851	0.748	0.723	0.972	0.741	0.396	0.443	
1.2	0.177	0.18	0.169	0.132	0.512	0.267	0.086	0.087	PANEL WT.

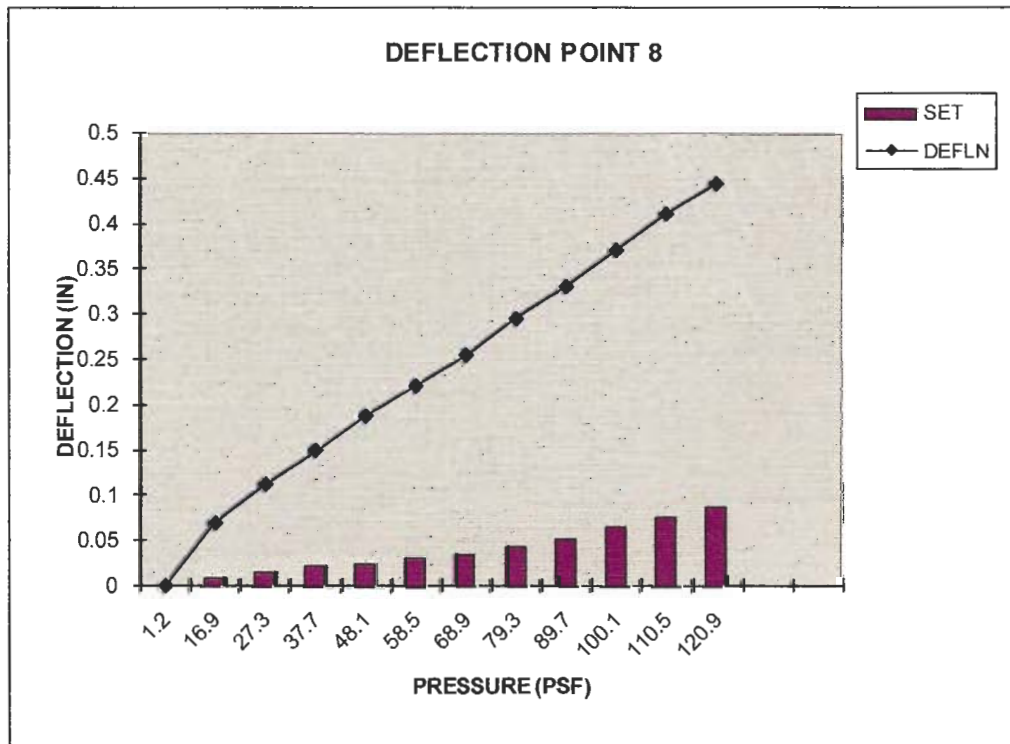
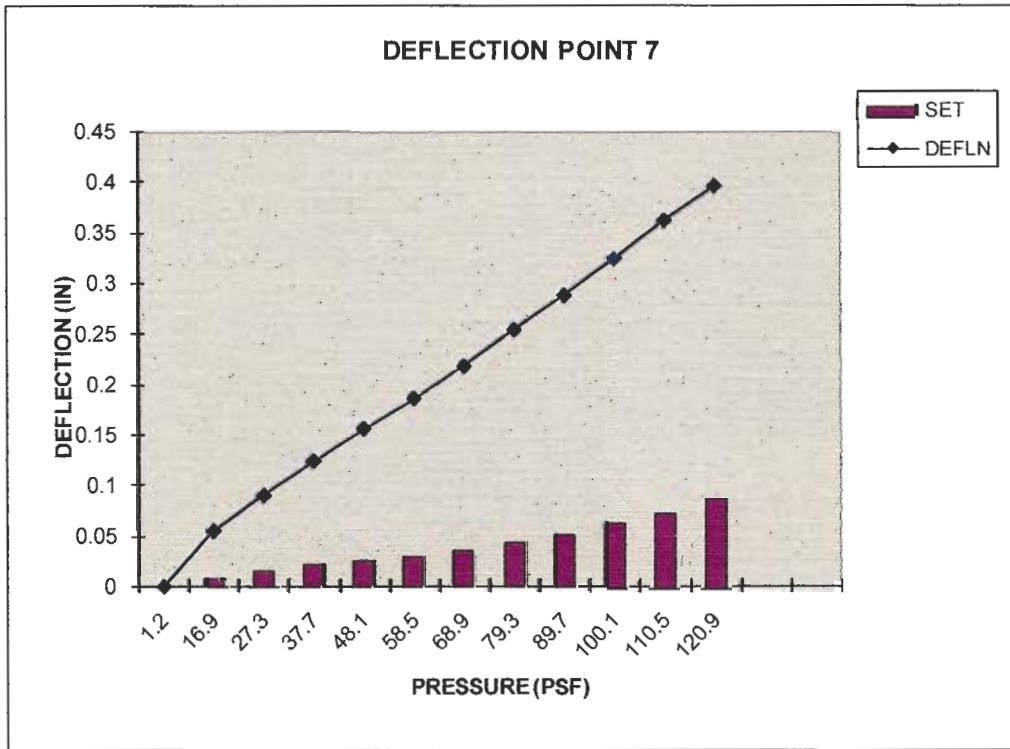
**RESULTS:**

ULTIMATE TEST LOAD = 157.7 PSF  
 (PANEL FASTENERS PULLED OUT OF 16 GA SUPPORTS)











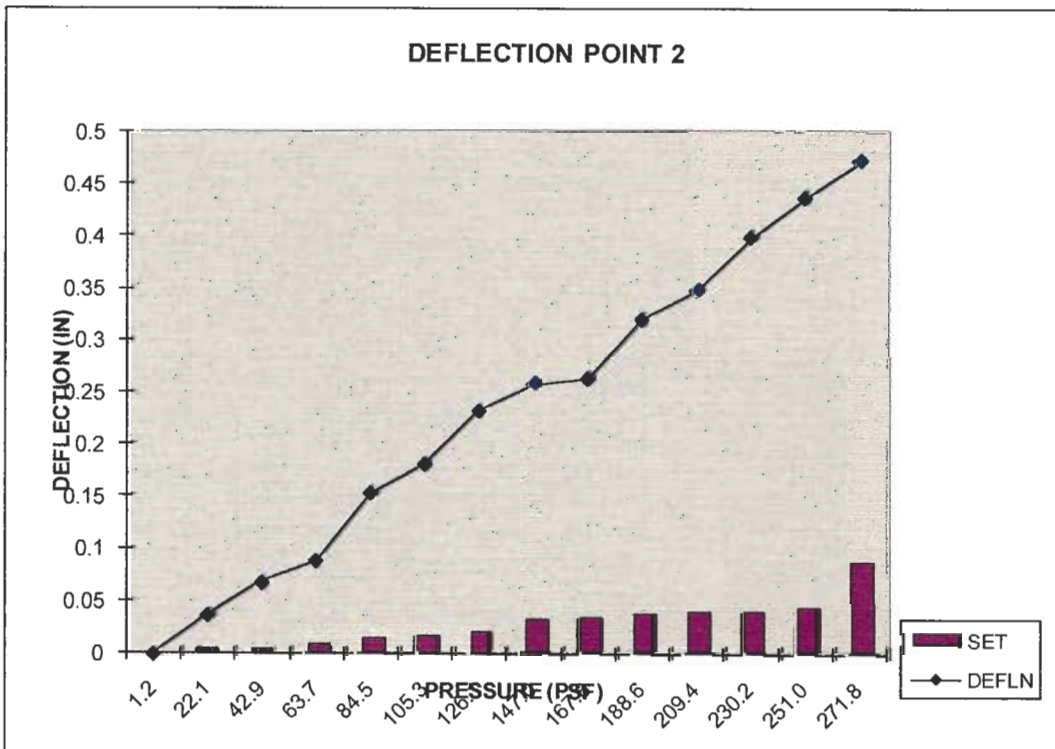
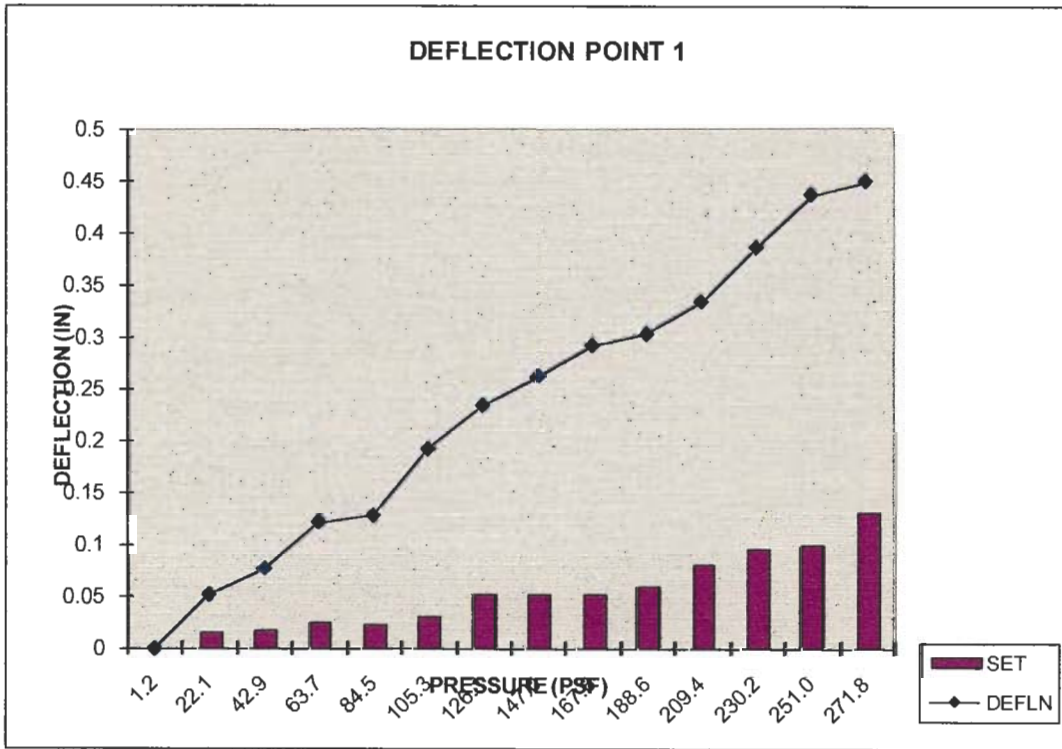
**TEST #2**

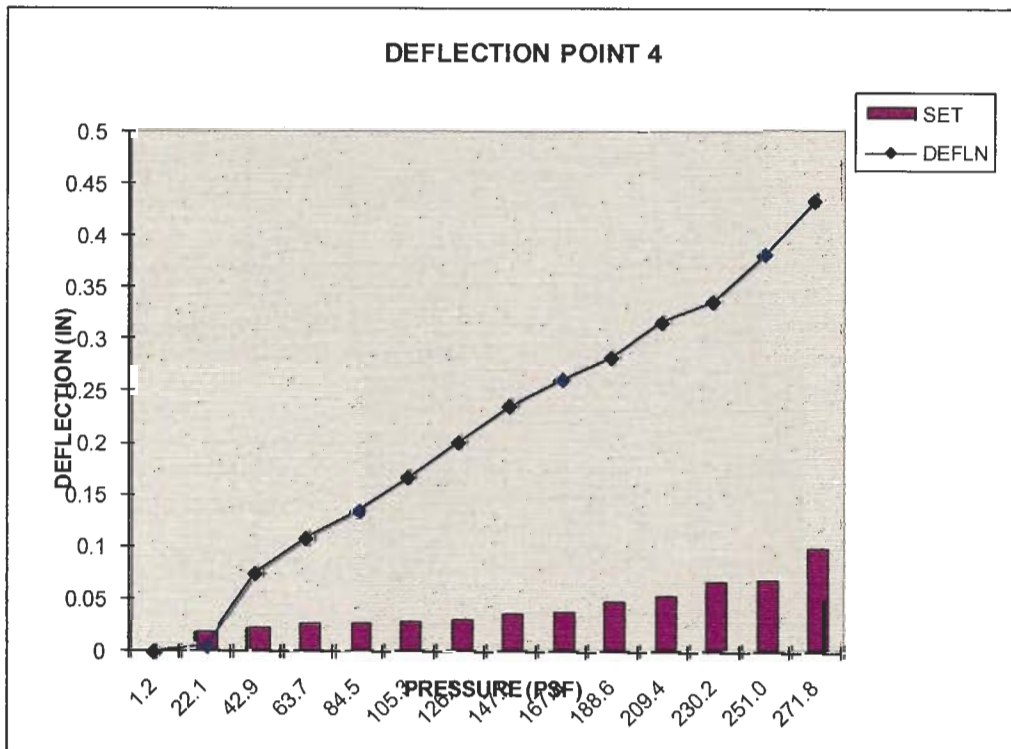
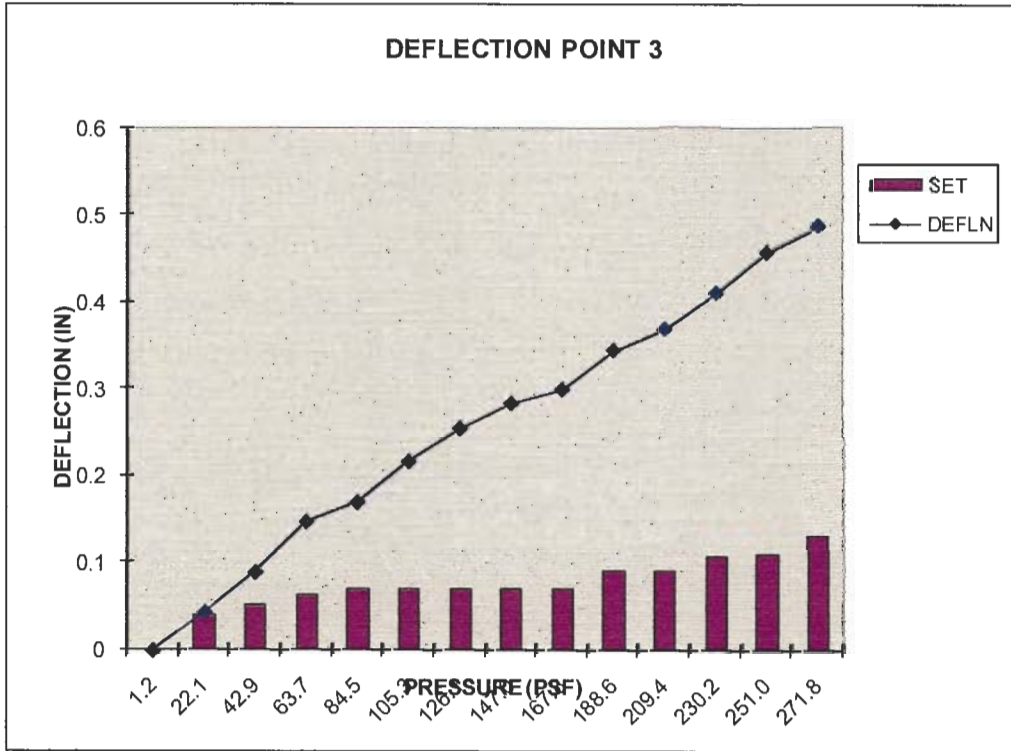
**NEGATIVE (UPLIFT) PRESSURE**

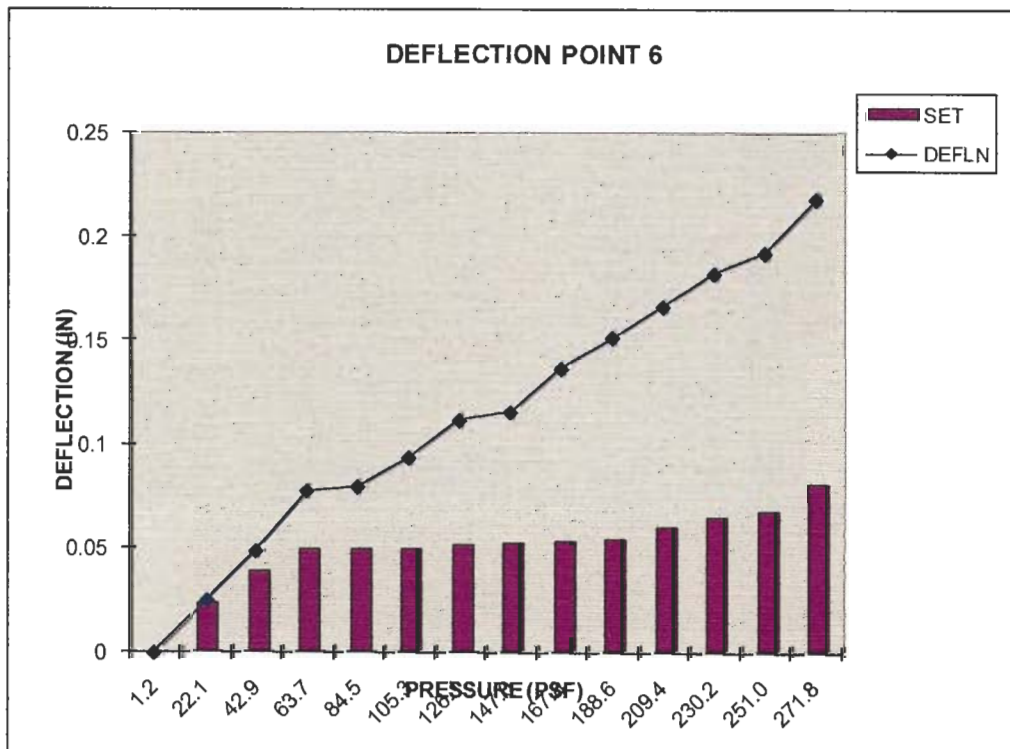
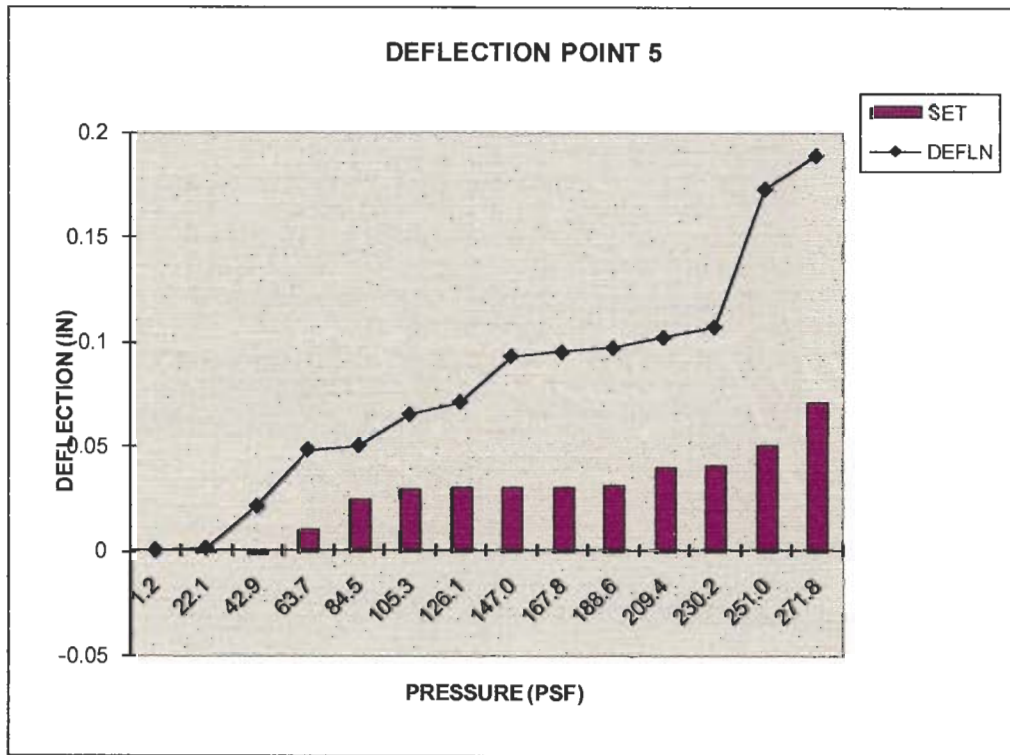
PAC 7.2 ROOF PANEL, 36" W X 24 GA (SPECIMEN B) 6 SPANS @ 2'-0" oc									
DEFLECTION DIAL READINGS (INCHES)									
LOAD (PSF)	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	REMARKS
1.2	0	0	0	0	0	0	0	0	PANEL WT.
22.1	0.052	0.037	0.044	0.005	0.001	0.025	0.071	0.028	
1.2	0.015	0.004	0.04	0.017	0.001	0.023	0.049	0.021	PANEL WT.
42.9	0.077	0.068	0.09	0.075	0.021	0.049	0.081	0.032	
1.2	0.017	0.004	0.05	0.022	-0.001	0.038	0.054	0.021	PANEL WT.
63.7	0.122	0.089	0.148	0.109	0.048	0.078	0.119	0.043	
1.2	0.025	0.008	0.063	0.025	0.01	0.049	0.06	0.021	PANEL WT.
84.5	0.128	0.154	0.17	0.135	0.05	0.08	0.121	0.079	
1.2	0.024	0.014	0.07	0.024	0.024	0.049	0.065	0.034	PANEL WT.
105.3	0.192	0.182	0.217	0.168	0.065	0.094	0.139	0.137	
1.2	0.03	0.015	0.068	0.027	0.029	0.049	0.066	0.034	PANEL WT.
126.1	0.234	0.233	0.255	0.202	0.071	0.112	0.153	0.156	
1.2	0.052	0.019	0.069	0.028	0.03	0.051	0.066	0.035	PANEL WT.
147.0	0.261	0.259	0.284	0.237	0.093	0.116	0.155	0.158	
1.2	0.052	0.031	0.069	0.035	0.03	0.052	0.066	0.036	PANEL WT.
167.8	0.292	0.264	0.3	0.262	0.095	0.137	0.162	0.16	
1.2	0.052	0.032	0.069	0.036	0.03	0.053	0.079	0.036	PANEL WT.
188.6	0.303	0.321	0.345	0.284	0.097	0.152	0.185	0.174	
1.2	0.06	0.037	0.089	0.046	0.031	0.054	0.086	0.037	PANEL WT.
209.4	0.334	0.349	0.369	0.318	0.102	0.167	0.205	0.185	
1.2	0.08	0.038	0.09	0.051	0.04	0.059	0.089	0.044	PANEL WT.
230.2	0.386	0.4	0.41	0.338	0.107	0.183	0.212	0.186	
1.2	0.094	0.039	0.106	0.066	0.041	0.064	0.092	0.055	PANEL WT.
251.0	0.437	0.438	0.457	0.383	0.173	0.193	0.223	0.218	
1.2	0.098	0.042	0.108	0.068	0.05	0.067	0.076	0.059	PANEL WT.
271.8	0.45	0.473	0.487	0.436	0.189	0.219	0.244	0.24	
1.2	0.128	0.086	0.128	0.097	0.071	0.08	0.112	0.065	PANEL WT.

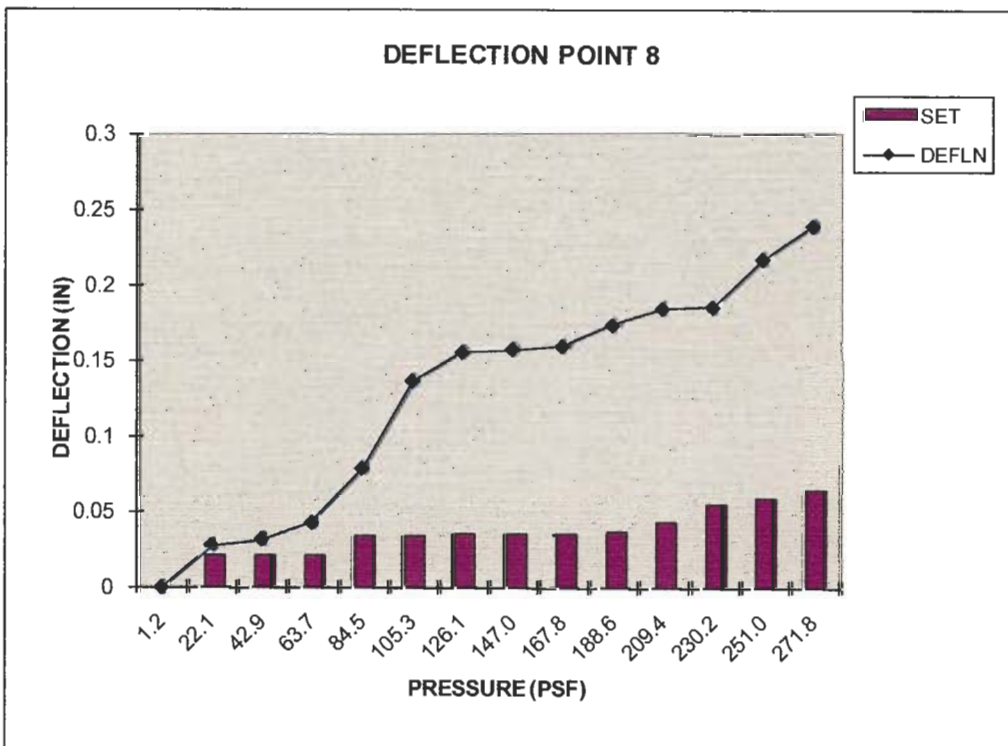
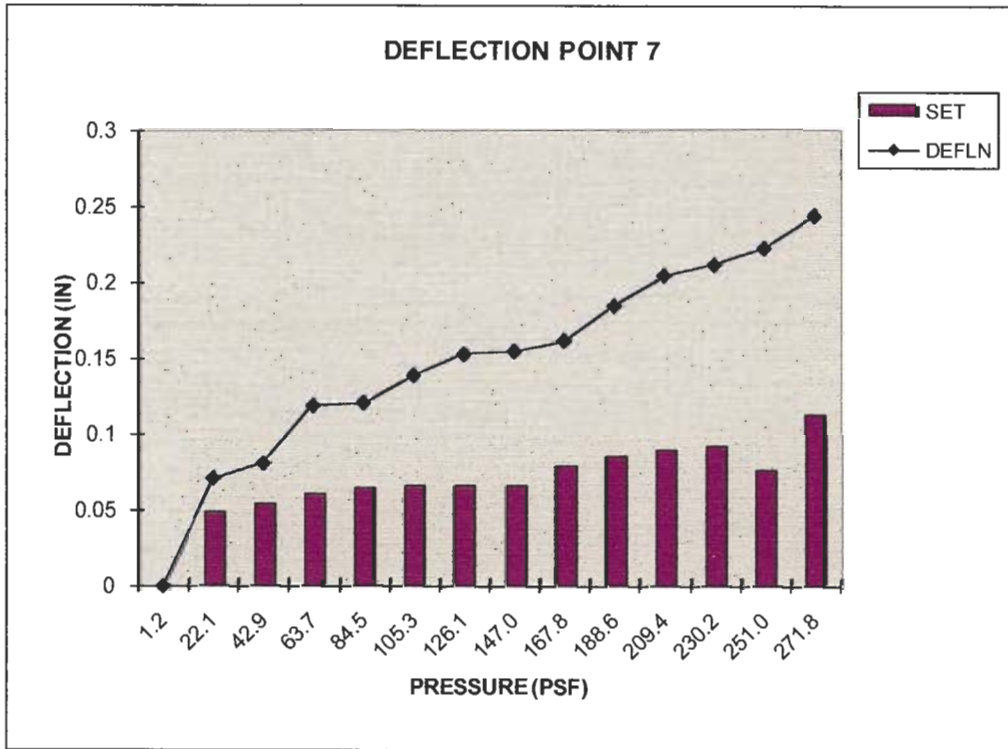
RESULTS:

ULTIMATE TEST LOAD = 319.4 PSF (NO FAILURE)

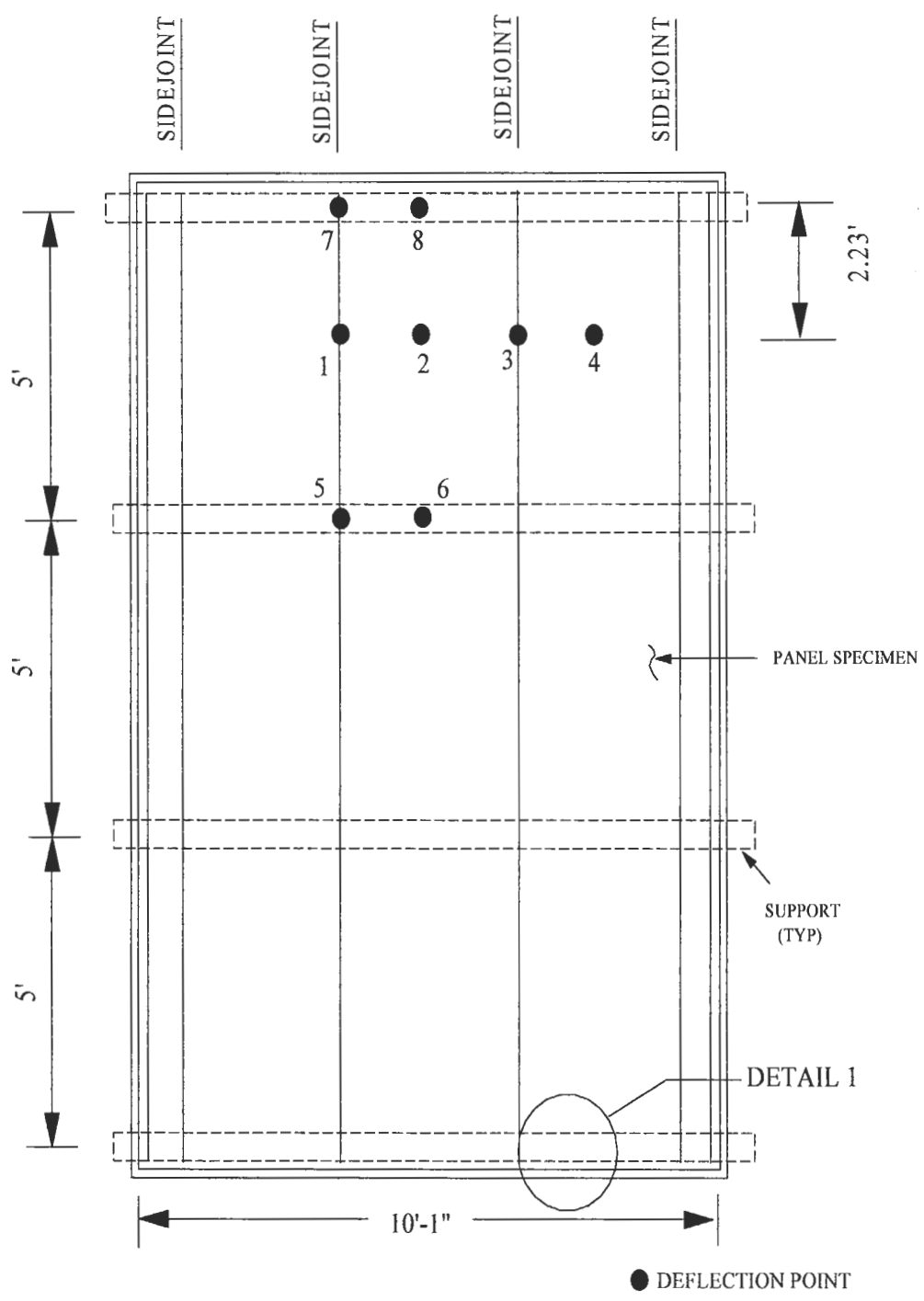






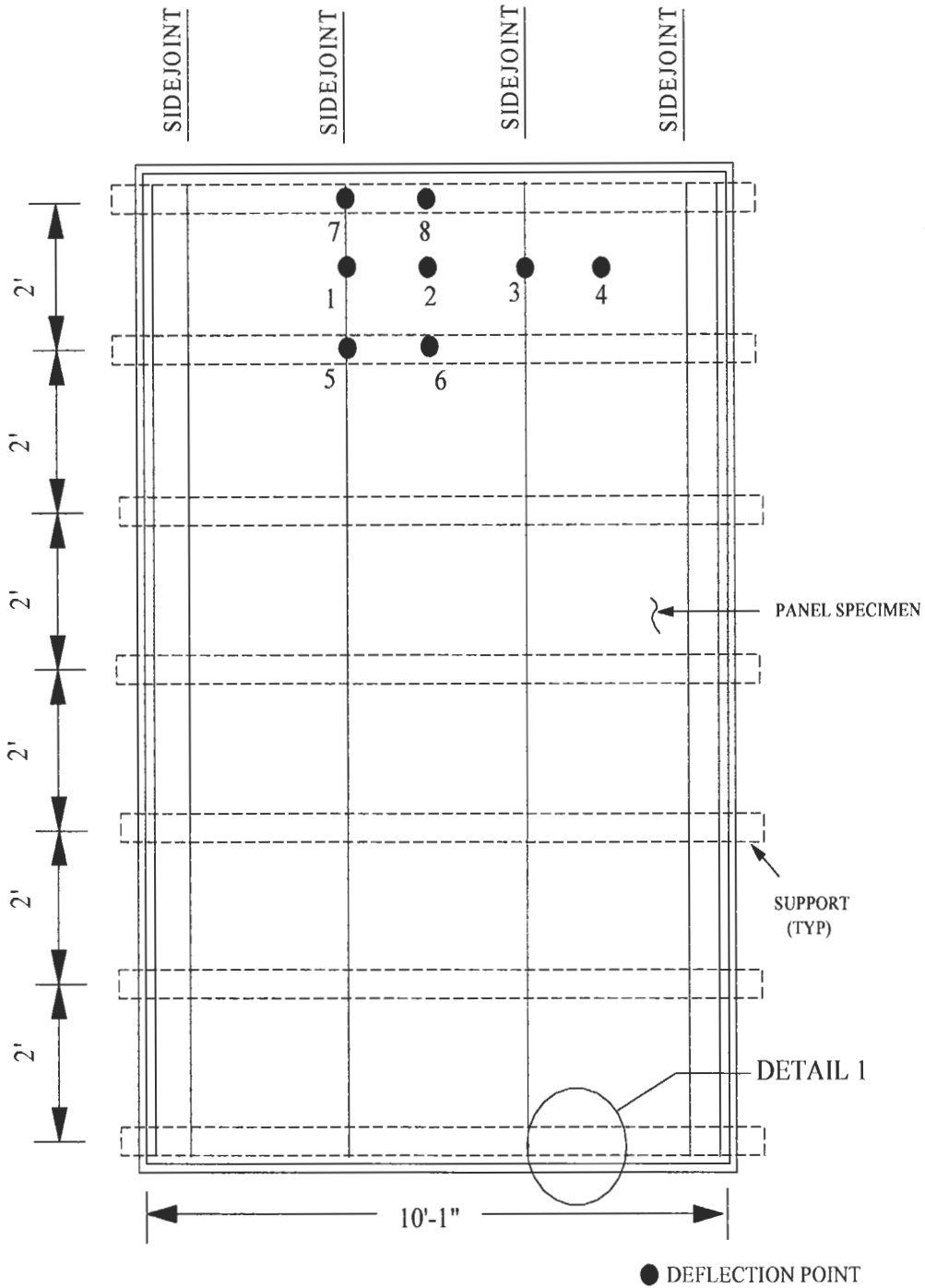


# TEST #1

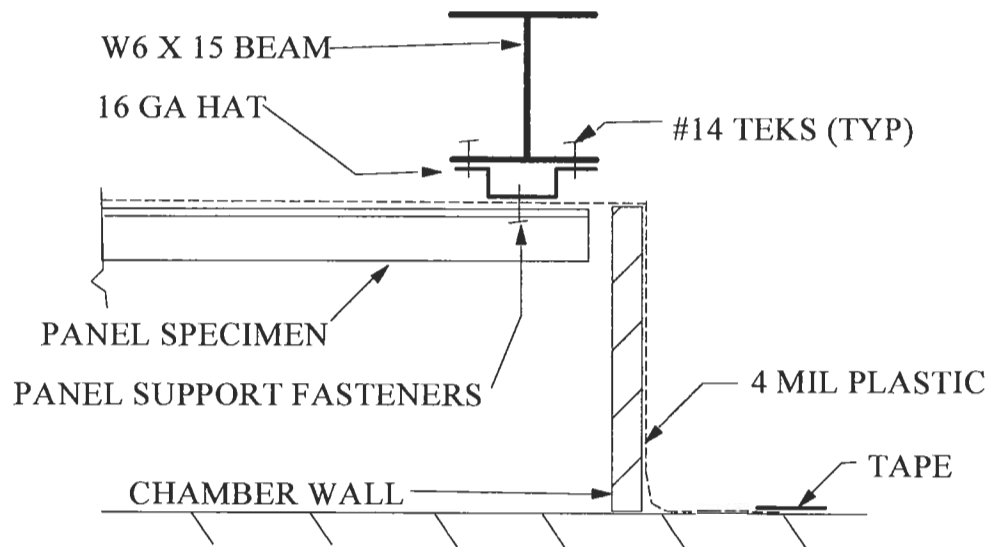


PLAN VIEW

# TEST #2



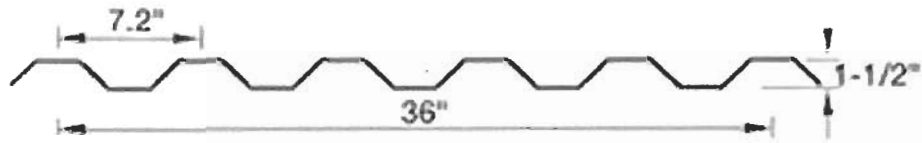
PLAN VIEW



DETAIL 1



Project No. T277-08



## 7.2 ROOF PANEL

# West Penn Material Evaluation

1010 Industrial Blvd, New Kensington, PA 15068  
 Voice: (724)334-1900 Fax:(724)334-9785

Date: 24-Oct-08  
 Page No.: 1 of 1

## Summary Page: Tensile Strength Testing

Client: Farabaugh Engineering & Machining

PIN #	Dimensions (in.) Width x Thickness	Area (sq.- in.)	Yield Point (lbs.)	Tensile Strength (lbs.)	Yield Strength (psi.)	Tensile Strength (psi.)	Elongation (% in 2 in.)	n-Value
Peterson AlumZ2 Rib Panel 24 ga.	0.4979 x 0.0228	0.0114	553	637	48500	55900	30.2	

Test Method: WPME Q2300.04, ASTM E-8 (Yield Point by 0.2 % offset)  
 Equipment Used: Satco Vertex/60 HLV #1602, Extensometer # SE2-12.5/12  
 Test Performed by: S. Baughman

This test report shall not be reproduced except in full, without the written approval of WPME.  
 The recording of false, fictitious, or fraudulent statements or entries on this report may be punished as a  
 felony under Federal Law.

Respectfully Submitted,



Technical Manager

WEST PENN MATERIAL EVALUATION