



Farabaugh Engineering and Testing Inc.

Project No. T126-09

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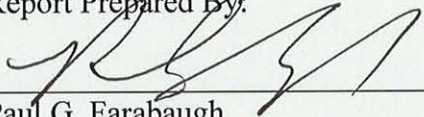
ASTM E 1592
STANDARD TEST METHOD FOR
STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING
SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE

7/8" CORRUGATED ROOF PANEL
0.032" ALUMINUM

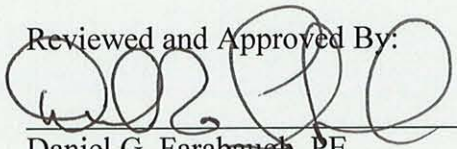
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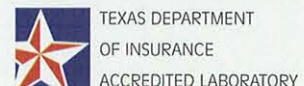
PETERSEN ALUMINUM CORP.
1005 TONNE RD.
ELK GROVE VILLAGE, IL 60007

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Project No. T126-09

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

2/18/09 – 5 SPANS @ 2'-0" (SPECIMEN "B")

2/20/09 – 3 SPANS @ 5'-0" (SPECIMEN "A")

Test Specimen

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

Panel: 7/8" Roof Panel, 0.032 ga. Aluminum

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.

Deflection Devices: Digital Potentiometers 0-6" range

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Installation

- The panels were installed on to 16 ga supports using 1/4"-14 X 1-1/4" long hex head self drill fasteners with 5/8" seal washer located at every other low cell of the panel as shown on the fastener pattern details. The fixed end used fasteners 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 12" 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.

SPECIMEN "A" TEST RESULTS

NEGATIVE (UPLIFT) PRESSURE

PAC 7/8" CORRUGATED PANEL X 0.032" ALUMINUM (SPECIMEN A) 3 SPANS @ 5'-0" oc									
LOAD (PSF)	DEFLECTION DIAL READINGS (INCHES)								REMARKS
	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	
0.6	0	0	0	0	0	0	0	0	PANEL WT.
11.0	0.158	0.233	0.197	0.233	0.091	0.114	0.061	0.126	
0.6	0.013	0.015	0.012	0.015	0.007	0.009	0.004	0.014	PANEL WT.
16.2	0.262	0.382	0.316	0.367	0.139	0.17	0.096	0.196	
0.6	0.023	0.026	0.022	0.027	0.012	0.016	0.007	0.018	PANEL WT.
26.6	0.457	0.652	0.54	0.604	0.216	0.259	0.164	0.336	
0.6	0.037	0.047	0.04	0.047	0.02	0.025	0.015	0.032	PANEL WT.
37.0	0.691	0.905	0.761	0.827	0.285	0.336	0.232	0.466	
0.6	0.053	0.071	0.06	0.061	0.029	0.035	0.023	0.049	PANEL WT.
47.4	0.89	1.172	0.993	0.987	0.355	0.411	0.314	0.605	
0.6	0.072	0.106	0.081	0.079	0.04	0.049	0.031	0.065	PANEL WT.
57.8	1.111	1.437	1.229	1.266	0.422	0.481	0.393	0.733	
0.6	0.101	0.162	0.113	0.108	0.054	0.067	0.043	0.082	PANEL WT.
68.2	1.374	1.731	1.503	1.51	0.497	0.558	0.475	0.863	
0.6	0.14	0.244	0.16	0.147	0.075	0.092	0.055	0.12	PANEL WT.
78.6	1.655	2.048	1.799	1.769	0.579	0.645	0.566	1.005	
0.6	0.217	0.381	0.252	0.218	0.104	0.127	0.075	0.17	PANEL WT.

RESULTS:

ULTIMATE TEST LOAD = 94.2 PSF
 (PANEL PULLED OVER FASTENERS AND PANEL TEARED AT SUPPORT)

SPECIMEN "B" TEST RESULTS

NEGATIVE (UPLIFT) PRESSURE

PAC 7/8" CORRUGATED PANEL X 0.032" ALUMINUM (SPECIMEN B) 5 SPANS @ 2'-0" oc									
LOAD (PSF)	DEFLECTION DIAL READINGS (INCHES)								REMARKS
	D-1	D-2	D-3	D-4	D-5	D-6	D-7	D-8	
0.6	0	0	0	0	0	0	0	0	PANEL WT.
16.2	0.046	0.057	0.052	0.067	0.035	0.083	0.04	0.07	
0.6	0.007	0.006	0.003	0.006	0.01	0.008	0.007	0.002	PANEL WT.
31.8	0.101	0.123	0.116	0.137	0.07	0.15	0.089	0.153	
0.6	0.012	0.009	0.008	0.012	0.014	0.012	0.009	0.01	PANEL WT.
47.4	0.145	0.172	0.156	0.184	0.106	0.198	0.127	0.214	
0.6	0.018	0.013	0.014	0.017	0.019	0.017	0.015	0.019	PANEL WT.
63.0	0.178	0.211	0.188	0.219	0.143	0.235	0.153	0.268	
0.6	0.021	0.015	0.015	0.02	0.021	0.019	0.018	0.026	PANEL WT.
78.6	0.207	0.244	0.218	0.249	0.179	0.266	0.18	0.308	
0.6	0.023	0.017	0.016	0.021	0.022	0.021	0.018	0.03	PANEL WT.
94.2	0.236	0.273	0.243	0.275	0.209	0.292	0.197	0.346	
0.6	0.028	0.02	0.018	0.024	0.024	0.025	0.026	0.037	PANEL WT.
109.8	0.264	0.304	0.271	0.304	0.238	0.321	0.217	0.386	
0.6	0.028	0.021	0.018	0.025	0.028	0.027	0.026	0.04	PANEL WT.
125.5	0.296	0.333	0.3	0.332	0.271	0.352	0.254	0.424	
0.6	0.028	0.021	0.018	0.026	0.028	0.029	0.028	0.045	PANEL WT.
141.1	0.327	0.365	0.33	0.361	0.299	0.381	0.276	0.463	
0.6	0.032	0.025	0.02	0.029	0.028	0.032	0.031	0.05	PANEL WT.
156.7	0.352	0.39	0.354	0.384	0.323	0.405	0.298	0.496	
0.6	0.032	0.025	0.02	0.03	0.029	0.035	0.031	0.055	PANEL WT.
182.7	0.399	0.44	0.401	0.431	0.367	0.453	0.339	0.556	
0.6	0.038	0.033	0.026	0.034	0.033	0.04	0.033	0.062	PANEL WT.

RESULTS:

ULTIMATE TEST LOAD = 312.8 PSF (NO FAILURE)