Farabaugh Engineering and Testing, Inc.

Project No. T259-02

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

TITE-LOC STEEL ROOF PANEL

18" WIDE / 24 GA THK

FOR

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

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ASTM 1592-01
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

9-25-02 (3 Spans @ 5' oc.)
10-2-02 (7 Spans @ 2' oc)

Test Specimen

Manufacturer: Petersen Aluminum Corp.
1005 Tonne Rd.
Elk Grove Village, IL 60007
Panel: Tite-Loc Steel Roof Panel, 24 ga, 18" Wide
Clip: Tite-Loc Two Piece Low Floating Clip
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 Indicators from Micro-Pneumatic Logic, Inc.

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

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Installation

- The panels were installed with clips onto 16 ga hat shape subgirts using (2) #12-14 self drilling fasteners per clip. The side joints were seamed with a mechanical seamer. Continuity fasteners were located at the top of the sidelap joints at panel ends.

- The system was inverted and attached to the steel beams with #14 tek fasteners.

- 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 DATA FOR 18" TITE-LOC PANEL, 24 GA STEEL 3 SPANS @ 5 '-0" oc						
	DEFLECTION POINT READINGS (INCHES)						
LOAD (PSF)	D1	D2	D3	D4	D5	D6	REMARKS
1.2	0	0	0	0	0	0	PANEL WT.
6.4	0.082	1.071	0.09	0.9	0.03	1.045	
1.2	0.001	0.037	0.012	0.042	0.005	0.052	PANEL WT.
11.6	0.602	3.081	0.611	2.986	0.223	2.724	
1.2	0.029	0.19	0.004	0.01	0.016	0.117	PANEL WT.
16.8	1.089	3.899	1.037	3.891	0.441	3.47	
1.2	0.113	0.392	0.054	-0.071	0.027	0.187	PANEL WT.
22.0	1.387	4.514	1.412	4.494	0.706	3.971	
1.2	0.238	1.658	0.756	3.414	-0.083	0.982	PANEL WT.
27.2	1.791	5.073	1.906	5.215	1.004	4.527	
1.2	0.695	2.938	0.948	3.671	0.008	1.617	PANEL WT.
32.4	2.398	5.659	2.327	5.72	1.59	5.13	
1.2	1.325	4.193	1.129	3.844	0.636	3.496	PANEL WT.

ULTIMATE TEST LOAD = 36.5 PSF (SIDEJOINT DISENGAGEMENT)

NOTE: SEE SKETCH 1 FOR LOCATION OF SIDEJOINT DISENGAGEMENT.

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	TEST DATA FOR 18" TITE-LOC PANEL, 24 GA STEEL, 7 SPANS @ 2 '-0" oc						
	DEFLECTION POINT READINGS (INCHES)						
LOAD (PSF)	D1	D2	D3	D4	D5	D6	REMARKS
1.2	0	0	0	0	0	0	PANEL WT.
11.6	0.18	1.964	0.22	2.097	0.2	2.106	
1.2	0.003	0.092	0.007	-0.067	0.005	0.069	PANEL WT.
16.8	0.461	2.974	0.548	2.918	0.517	3.069	
1.2	0.007	-0.01	0.007	-0.098	0.006	0.159	PANEL WT.
22.0	0.83	3.68	0.892	3.744	0.869	3.822	
1.2	0.013	-0.132	0.021	-0.081	0.014	-0.117	PANEL WT.
27.2	1.027	4.064	1.1	4.127	1.063	4.161	
1.2	0.032	-0.549	0.036	0.387	0.012	-0.541	PANEL WT.
32.4	1.206	4.408	1.308	4.493	1.325	4.544	
1.2	0.665	-0.677	0.648	2.599	0.104	-0.597	PANEL WT.
37.6	1.542	4.7	1.499	4.757	1.527	4.82	
1.2	1	3.685	1.036	3.755	1.04	3.844	PANEL WT.
42.8	1.652	4.94	1.85	5.02	1.716	5.079	
1.2	1.046	3.761	1.056	3.819	1.137	3.83	PANEL WT.

ULTIMATE TEST LOAD = 42.8 PSF (SIDEJOINT DISENGAGEMENT)

NOTE: SEE SKETCH 2 FOR LOCATION OF SIDEJOINT DISENGAGEMENT.