



## Farabaugh Engineering and Testing Inc.

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Project No. T299-11

Report Date: October 6, 2011

Total Pages (inclusive): 9

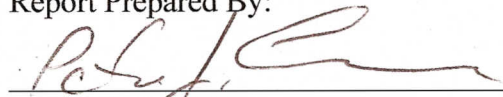
### ASTM E330 STRUCTURAL PERFORMANCE TESTING

16" SIDING PANEL W/ NAIL GROOVE  
0.032" ALUMINUM

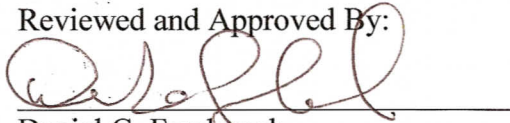
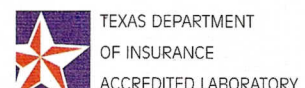
FOR

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

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Patrick J. Farabaugh

Reviewed and Approved By:

  
Daniel G. Farabaugh

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**Purpose**

This test method covers the evaluation of structural performance of the referenced test specimen per ASTM E330-02, "Standard Test Method of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference" and as provided herein.

**Test Dates**

9-29-11 to 10-3-11

**Test Specimen**

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

*Panel:* 16" Siding Panel w/ Nail Groove, 0.032" Aluminum (nominal)

**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 using #10-16 X 1" long pancake head self drill fasteners located on the panel nail groove. The panel side-joints were a tongue and groove type as shown on the attached detail.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts and in the side joints to create a vacuum seal.

### **Procedure**

- The test assembly was subjected to negative pressures to form an outward pressure at the values and time duration as shown in the attached table.
- Each pressure increment was held for at least 1 minute.
- Deflection movement of the assembly during the tests was recorded.
- Successive increments were achieved as above until failure or ultimate load was reached.

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## TEST "A"

Specimen: 16" Siding Panel w/ Nail Groove, 0.032" Aluminum

Support Spacing: 4 ft o/c

Panel Attachment to Support: #10-16 X 1" Self Drill Fasteners (2 per support)

### NEGATIVE LOAD TEST

LOAD (PSF)	DEFLECTION READINGS (INCHES)					
	D-1	D-2	D-3	D-4	D-5	D-6
0.0	0	0	0	0	0	0
5.2	0.048	0.144	0.051	0.389	0.426	0.495
0.0	0	0.002	0	0	0	0
10.4	0.109	0.291	0.078	0.665	0.757	0.783
0.0	-0.003	0.016	0	0.012	0.023	0.001
15.6	0.12	0.403	0.1	0.888	1.025	1.027
0.0	0.024	0.023	0	0.076	0.093	0.034
20.8	0.168	0.499	0.16	1.077	1.22	1.233
0.0	0.024	0.024	0	0.076	0.093	0.034
26.0	0.22	0.613	0.167	1.293	1.425	1.425
0.0	0.024	0.04	0.002	0.1	0.096	0.041
31.2	0.287	0.732	0.186	1.511	1.631	1.661
0.0	0.059	0.106	0.028	0.242	0.216	0.115
36.4	0.349	0.876	0.281	1.74	1.874	1.858
0.0	0.152	0.22	0.079	0.531	0.468	0.314
46.8	0.449	1.133	0.344	2.146	2.303	2.319
0.0	0.176	0.376	0.15	0.634	0.641	0.573

### RESULTS:

Maximum Test Load = 48.3 psf (Panel pulled over fasteners)

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## TEST "B"

Specimen: 16" Siding Panel w/ Nail Groove, 0.032" Aluminum

Support Spacing: 1 ft o/c

Panel Attachment to Support: #10-16 X 1" Self Drill Fasteners (1 per support)

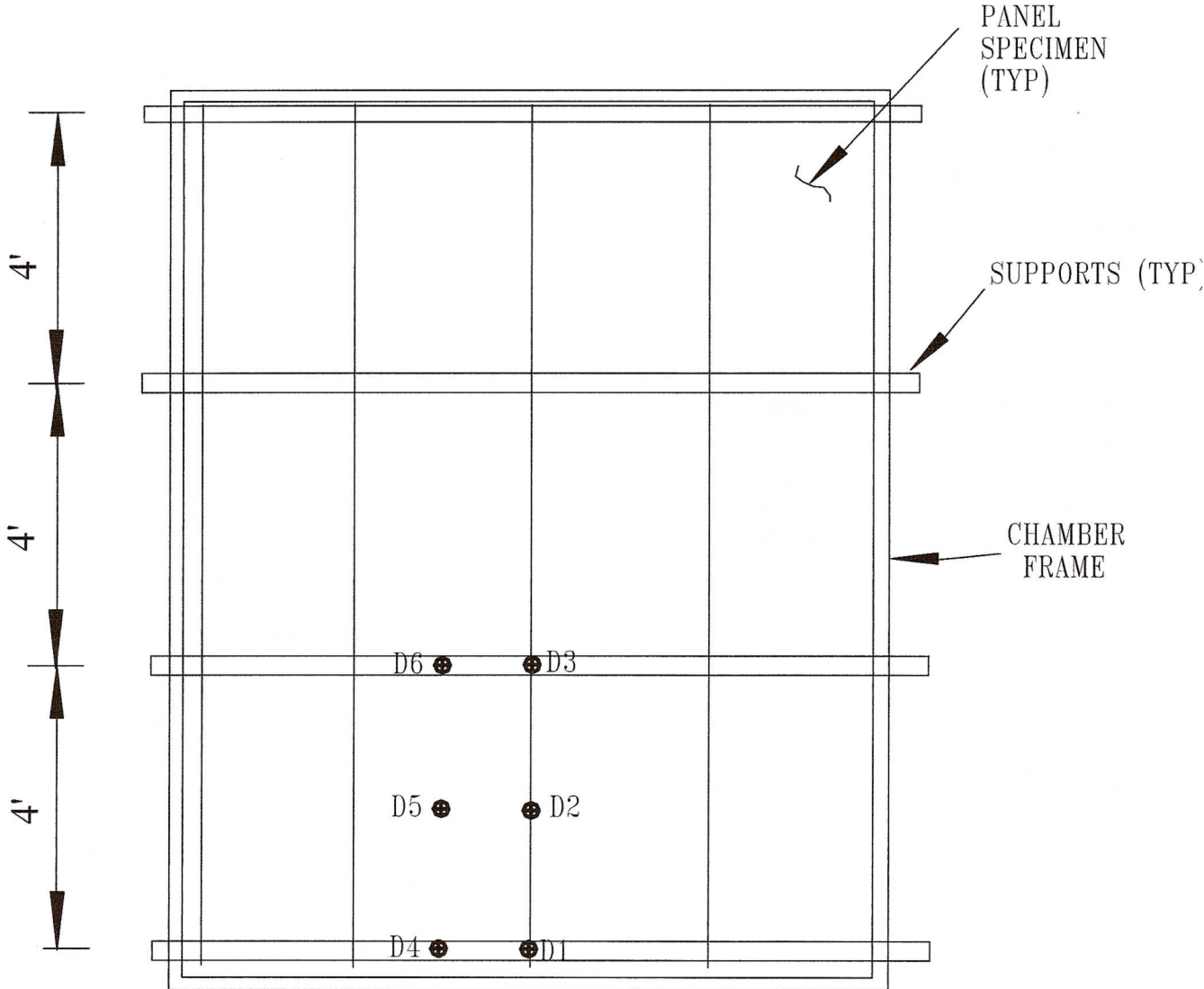
### NEGATIVE LOAD TEST

LOAD (PSF)	DEFLECTION READINGS (INCHES)					
	D-1	D-2	D-3	D-4	D-5	D-6
0.0	0	0	0	0	0	0
10.4	0.038	0.059	0.074	0.587	0.619	0.618
0.0	-0.01	0.021	0	0	0.044	0.005
20.8	0.086	0.101	0.079	1.004	1.073	1.056
0.0	0.013	0.027	0	0.011	0.052	0.026
26.0	0.118	0.142	0.104	1.17	1.237	1.209
0.0	0.023	0.033	0.017	0.045	0.09	0.061
36.4	0.173	0.203	0.156	1.513	1.569	1.568
0.0	0.066	0.077	0.09	0.169	0.208	0.196
52.0	0.278	0.303	0.256	2.102	2.167	2.178
0.0	0.135	0.154	0.153	0.595	0.632	0.626
72.9	0.44	0.478	0.408	2.909	2.975	2.968

### RESULTS:

Maximum Test Load = 74.8 psf (Panel sidejoint disengagement)

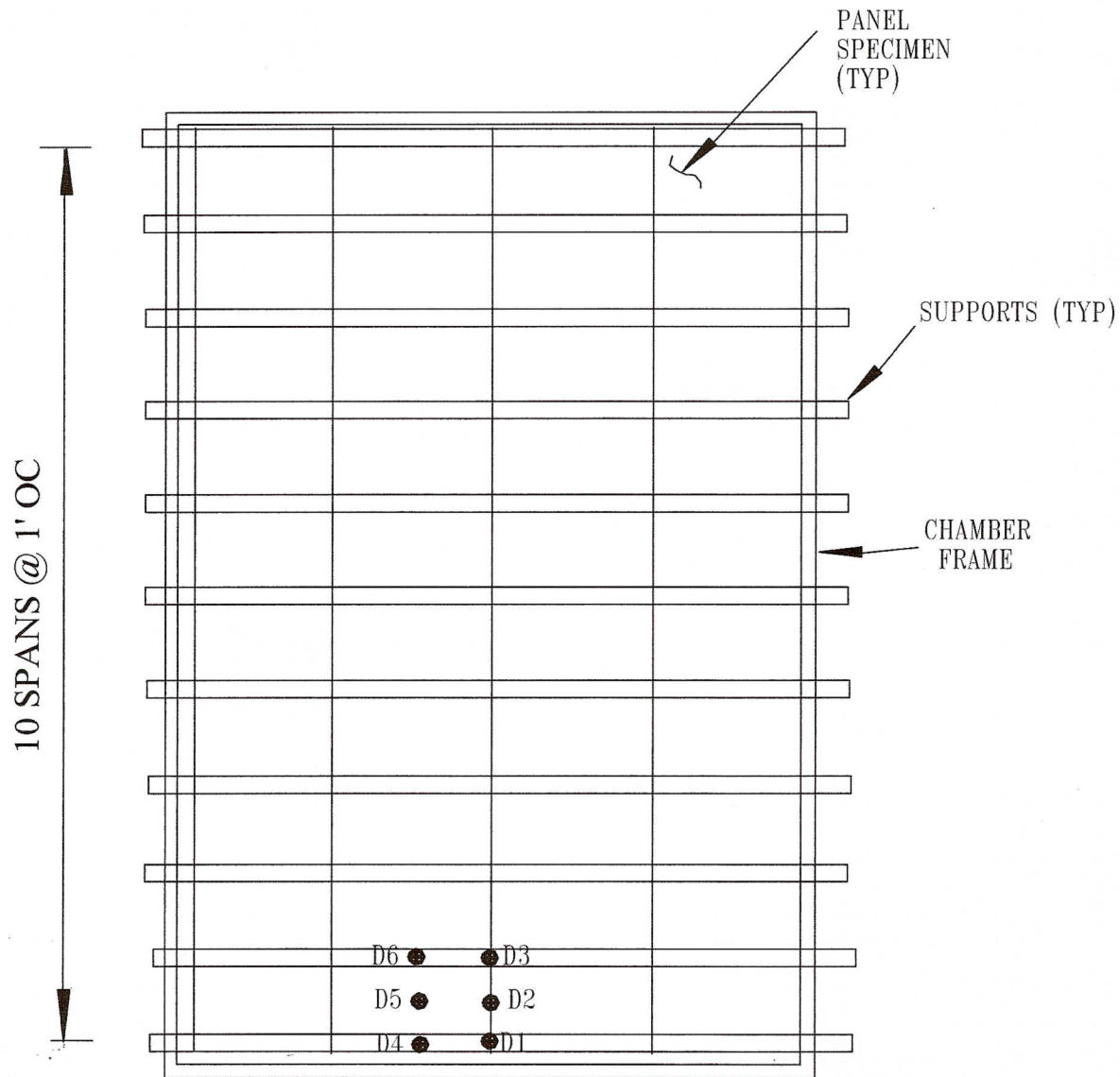
# TEST "A"



● DEFLECTION POINT

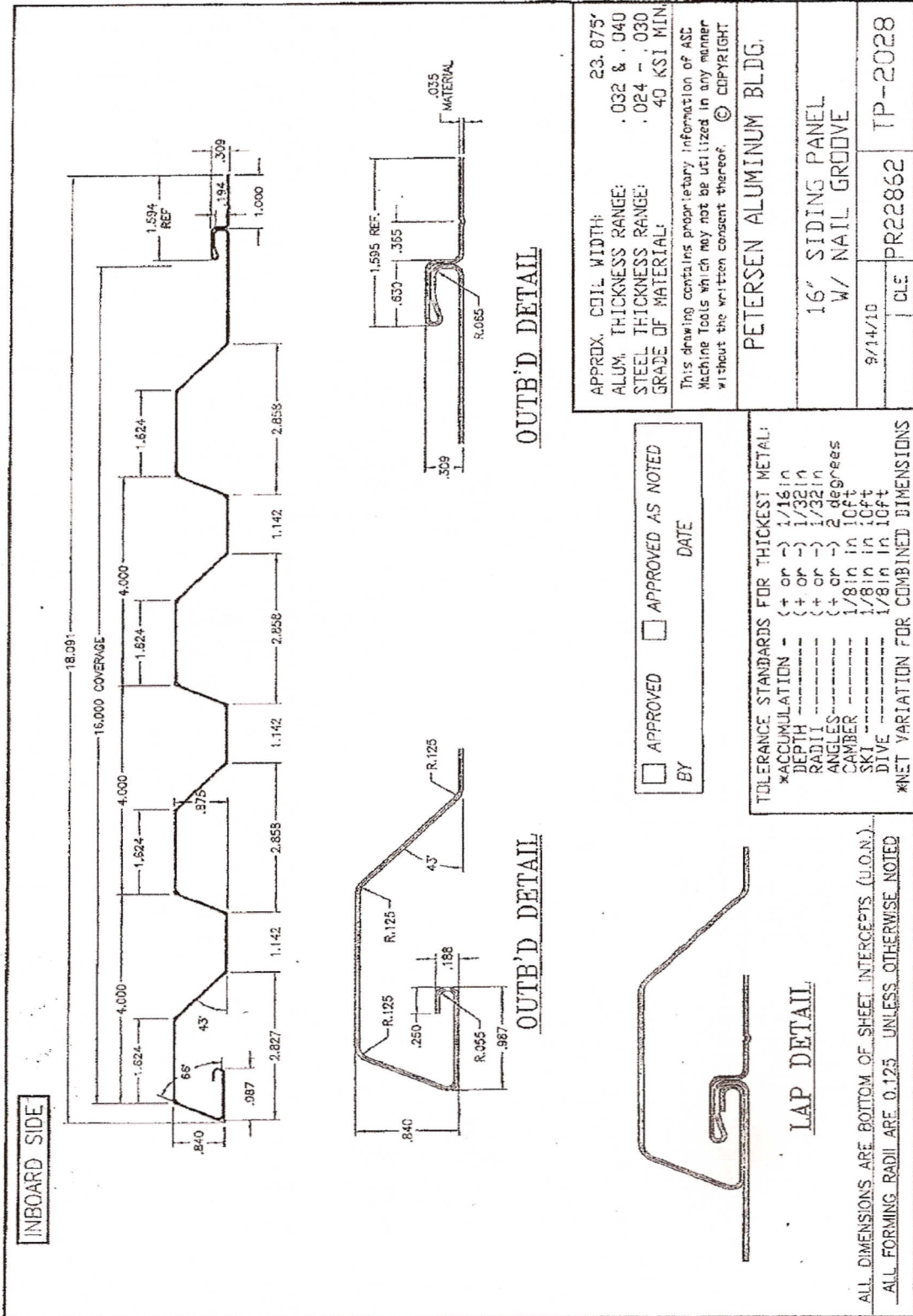
# TEST ASSEMBLY

# TEST "B"



● DEFLECTION POINT

## TEST ASSEMBLY





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## TENSILE TEST REPORT

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

Test Date: October 6, 2011

Test Method: ASTM B557-10

Material Description: 16" Siding Panel w/ Nail Groove, 0.032" Aluminum

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)
0072-11	0.499	0.032	303.2	344.2	18,988	21,556	3.5

Equipment Used: Tensile Machine #QT7-061196-020  
Caliper #081410113-1  
Extensometer #10311744D  
Micrometer #52-222-001