Project No. T114-17

Report Date: January 23, 2017

No. Pages: 8 (inclusive)

ASTM E-283 AIR LEAKAGE TEST
ASTM E331 WATER PENETRATION TEST
ASTM E330 UNIFORM LOAD STRUCTURAL TEST
AAMA 501.1 DYNAMIC WATER PENETRATION TEST

ON

LARGE PRECISION TILE PANEL
14-1/2" WIDE X 0.032" ALUMINUM

FOR

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

Prepared by:

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Paul G. Farabaugh

Approved by:

[Signature]
Daniel G. Farabaugh
Project No. T114-17

**Purpose**

The purpose of this test is to establish the air, water and dynamic water infiltration rates and structural loading on the test specimen mock-up in accordance with the referenced test standards and as provided herein.

**Referenced Test Standards**


2. ASTM E 331-00 “Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference”


**Test Completion Date**

1/18/17

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

**Product Identification**

*Specimen:* Large Precision Tile Panel, 14-1/2” wide, 0.032” aluminum

*Substrate:* 5/8” plywood decking / W. R. Grace Ice & Water Shield roof underlayment membrane
Test Specimen Assembly

The test mock-up was a 8' wide X 8' high (nominal) Large Precision Tile System mock-up. The mock-up frame was a wood frame comprised of 2 x 10 perimeter supports with intermediate 2 x 10 supports at 2'-0" o.c. 5/8" plywood was attached to 2 x 10 wood structural framing supports using 8d x 2-1/2" long ring shank nails. The nail pattern is 6" o.c. in the field and 6" o.c. around the perimeter. A layer of Self Adhering Waterproof Membrane was on top of the plywood sheathing substrate and wrapped around the perimeter sides of the wood buck. The Large Precision Tile Panels were attached thru the top layer of underlayment membrane and into the plywood substrate using (2) #10 -13 x 1" long GP Concealer screws. Fasteners were located at the pre-punched fasteners holes spaced at 12-7/8" o.c. on the top nail flange for each panel. Additional screws were added around perimeter of the mock-up at top and bottom of panel when needed to secure perimeter panels to plywood. All fasteners for the panel were the #10-13 x 1" long GP Concealer screws.

- NOTE: For Structural Test only - A plastic barrier was located between the panels and the underlying substrate.

Test Procedure

The tests were conducted using the test procedures per the referenced test standards. Tests were performed at the given test pressures and test data was recorded as shown on the attached data sheets.
TEST RESULTS

Date: 1/18/17

Ambient Temperature = 57 deg. F  Barometric Pressure = 30.02"Hg

ASTM E-283
AIR INFILTRATION LEAKAGE TEST

<table>
<thead>
<tr>
<th>TEST PRESSURE (PSF)</th>
<th>TOTAL AIR LEAKAGE RATE (CFM)</th>
<th>AIR INFILTRATION RATE (CFM/SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>0.69</td>
<td>0.010</td>
</tr>
<tr>
<td>12</td>
<td>0.55</td>
<td>0.008</td>
</tr>
<tr>
<td>6.24</td>
<td>0.28</td>
<td>0.004</td>
</tr>
</tbody>
</table>

Based on 64 sq.ft.

ASTM E-331
WATER PENETRATION TEST

<table>
<thead>
<tr>
<th>TEST PRESSURE (PSF)</th>
<th>WATER SPRAY RATE (GAL/SF/HR)</th>
<th>TEST DURATION (MIN)</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.00</td>
<td>5</td>
<td>15</td>
<td>PASS - NO VISIBLE LEAKAGE</td>
</tr>
</tbody>
</table>

AAMA 501.1
DYNAMIC WATER TEST

POSITIVE PRESSURE (INFILTRATION)

<table>
<thead>
<tr>
<th>Test Pressure (psf)</th>
<th>Water Spray Rate (gal/sf/hr)</th>
<th>Time Duration (min)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5</td>
<td>15</td>
<td>No Leakage</td>
</tr>
</tbody>
</table>

Results:
As a result of the test pressure and water spray for the specified time duration, there was no water leakage on the interior side of the specimen assembly.
ASTM E330 UNIFORM LOAD TEST

Specimen: Large Precision Tile Panel, 14-1/2" wide, 0.032" aluminum

Panel Fastener Spacing on Nail flange: 12.875" o.c

NEGATIVE PRESSURE

<table>
<thead>
<tr>
<th>PRESSURE (PSF)</th>
<th>NET DEFLECTION (INCHES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.000</td>
</tr>
<tr>
<td>37.5</td>
<td>0.250</td>
</tr>
<tr>
<td>0</td>
<td>0.000</td>
</tr>
<tr>
<td>75</td>
<td>0.438</td>
</tr>
<tr>
<td>0</td>
<td>0.063</td>
</tr>
<tr>
<td>112.5</td>
<td>0.563</td>
</tr>
<tr>
<td>0</td>
<td>0.063</td>
</tr>
</tbody>
</table>

RESULTS
Upon completion of the testing at the negative pressures noted above there were no noticeable failures of the specimen
Left End

CONCEALED "2" LOCK NAIL FLANGE
3/8" PROFILE WEATHER EDGE

Right End

ANTI-CAPILLARY RIDGE

PRE-PUNCHED FASTENER HOLES

SELF-ALIGNMENT TAB

CONCEALED "2" LOCK NAIL FLANGE

FEMALE TAPERED INTERLOCK CHANNEL

MALE TAPERED INTERLOCK CHANNEL

3/8" PROFILE WEATHER EDGE

ANTI-CAPILLARY RIDGE

COVERAGE 14-1/2" +/- 1/16"
TEST SETUP

WOOD CHAMBER FRAME

PANEL SPECIMEN OVER ADHESIVE MEMBRANE & 5/8" PLYWOOD. (NOTE: PLASTIC BETWEEN PANEL AND MEMBRANE FOR STRUCTURAL TEST ONLY)

TOP

8'-0"

BOTTOM

8'-0"

1

2x

3

X# - DEFLECTION POINTS FOR STRUCTURAL TEST ONLY

PLAN VIEW OF PANELS
# TENSILE TEST REPORT

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

**Test Date:** January 16, 2017  
**Test Method:** ASTM B557-10

**Material Description:** Large Precision Tile Panel, 14-1/2” wide, 0.032” aluminum

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Width (in)</th>
<th>Thickness (in)</th>
<th>Yield Load (lb)</th>
<th>Max. Load (lb)</th>
<th>0.2% Offset Yield Strength (psi)</th>
<th>Tensile Strength (psi)</th>
<th>Elongation (% in 2 inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0003-17</td>
<td>0.500</td>
<td>0.029</td>
<td>379.6</td>
<td>382.8</td>
<td>26,184</td>
<td>26,406</td>
<td>2.47</td>
</tr>
</tbody>
</table>

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