Project No. T207-21

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PERFORMANCE REPORT

AAMA 508-07
RAIN SCREEN SYSTEM TESTING
ON
MODULAR METAL PANEL
24” WIDE COVERAGE X 0.050” ALUMINUM

FOR

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

Prepared by:

Paul G. Farabaugh

Approved by:

Daniel G. Farabaugh

RAIN SCREEN SYSTEM TESTING

Farabaugh Engineering and Testing, Inc. 401 Wide Drive, McKeesport, PA 15135
WWW.FETLABS.com
**Purpose**
The purpose of this test is to establish Air and Water Infiltration Rates and the Pressure Equalization Behavior on the referenced Pressure Equalized Rain Screen Wall Cladding System in general accordance with AAMA 508-07 “Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems”.

**Test Completion Date**
May 19, 2021

**Test Specimen**
Manufacturer: Petersen Aluminum Corp.
10551 Pac Rd.
Tyler, TX. 75707

Panel Specimen: ModularAL Metal Panel 24” wide coverage x 0.050” Aluminum
(See Dwg. A105 for panel construction.)

Mock-up Size: 96” wide X 96 high (nominal) consisting of 12 panels x 24” wide x various lengths of 0.050” thick aluminum panels.

**Mock up -Installation**
- The test setup consisted of a 96” wide x 96” high mock-up that used 6” x 16 ga. vertical channel studs spaced at 24” o.c that were attached to the top and bottom horizontal 16 ga. channel track.

- 1/4” thick polycarbonate panel was supported by the vertical stud supports.

- The aluminum panel support consisted of 16 ga. Zee horizontal supports attached thru the polycarbonate panel and into 16 ga. vertical channel supports using #12 x 1” long wafer-head self-drilling screws. Additional vertical Zee supports were used at the panel clip locations.

- A 16 ga. lower “J” channel was along the bottom and two sides of the mock-up. The “J” channel had predrilled holes thru the top leg and a #12 -14 x 1-1/2” long wafer-head self-drilling screws spaced at 22” o.c. secured the lower “J” channel into the 16 ga. stud/channel track. The lower “J” channel secured the ends of the zee supports.

- A starter clip was attached to the Zee support using #12 x 1” lg. wafer-head, self-drilling screws. A minimum of two fasteners per starter clip or 12” o.c max. spacing per clip based on length of clip.

- The starter panel engaged into a starter clip and was top-fastened with #12 x 1” lg. Stainless Steel Cap head w/EPDM Sealing washer fasteners at the predrilled holes spaced at 8” o.c. max. spacing.
• The vertical edge of the panel had two (2) clips to attach that edge to the 16 ga. vertical Zee supports using (2) #12 x 1” lg. wafer-head, self-drilling screws at each clip.

• A 0.08” aluminum “J” face trim was along the bottom and sides of the mock-up that sat on top of the lower “J” trim. The face trim was secured thru the lower 16 ga. trim and into stud supports with #14 x 3” lg. wafer-head, self-drilling screw spaced at 24” o.c.

• See installation details for location of fasteners at supports and attachment of each panel.

**Air Barrier System**

• The test setup consisted of a 96” wide by 96” high metal stud wall system with metal panels attached to the face of system with horizontal Zee supports for the panel system.

• Between the wall panels and the metal studs a 1/4” thick polycarbonate sheeting was attached to the supporting metal studs with Zee supporting fasteners. The 16 ga. metal studs spaced at 24" o.c to support the 1/4” polycarbonate. The stud wall with the polycarbonate panel is to simulate an air/water barrier.

• The perimeter of the polycarbonate was sealed with flashing tape to the exterior perimeter of the buck.

• A multiple number of 1/8” diameter holes were equally distributed on the air/water barrier in a uniform horizontal pattern located at 6” above each horizontal seam and 6" above the base of the mock-up. The polycarbonate wall was then calibrated to a pre-determined air leakage rate.

• The panel system was then mounted to the wood buck and sealed around the exterior perimeter of the specimen to the wood buck. Silicone sealant was along the sides and top of specimen and the bottom sat on foam tap at lower “J” trim location.

• Pressure taps were placed in the upper and bottom half of the chamber. See installation drawings for attachment of panels to air barrier system.

**Test Procedure**

The tests were conducted in accordance with AAMA 508-07 as shown in the following:

• ASTM E 283 “Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen”,


• ASTM E 331,” Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference”


  - - All tests are as modified by AAMA 508-07 - -

“This report is not intended as a comprehensive evaluation of the system regarding performance and application to specific buildings.”
ASTM E-283
AIR LEAKAGE TEST (On Air/Water Barrier)

Test Specimen: ModularAL Metal Panel
Manufacturer: Petersen Aluminum Corp.
Air/Water Barrier = 64 sf
Specimen Area = 64 sf

<table>
<thead>
<tr>
<th>Static Pressure Differential (psf)</th>
<th>Air Infiltration Rate (cfm/sf)</th>
<th>Allowable Air Leakage (cfm/sf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.57</td>
<td>0.11</td>
<td>0.108 (MIN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.132 (MAX)</td>
</tr>
</tbody>
</table>

Note: The calibrated air leakage was achieved with forty-two 1/8" diameter holes drilled thru the 3/16" polycarbonate.

ASTM E1233
PRESSURE CYCLIC TEST

<table>
<thead>
<tr>
<th>Min. Test Pressure (psf)</th>
<th>Max Test Pressure (psf)</th>
<th>Cyclic Period (sec)</th>
<th>Total Cycles</th>
<th>Peak Pressure Time Shift ≤ 0.08 sec ?</th>
<th>Peak Pressure Differentials &lt;50 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>25</td>
<td>3</td>
<td>100</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

See Pressure Cycling Graph

ASTM E-331
STATIC WATER PENETRATION TEST

<table>
<thead>
<tr>
<th>Static Pressure Differential (psf)</th>
<th>Spray Rate (gal/hr/sf)</th>
<th>% Water Droplets on Air/Water Barrier</th>
<th>Allowable % of Water Droplets on Air/Water Barrier</th>
<th>Location of any Streaming Water on Air/Water Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.24</td>
<td>5</td>
<td>&lt; 5</td>
<td>5.0</td>
<td>None</td>
</tr>
</tbody>
</table>

AAMA 501.1
DYNAMIC WATER PENETRATION TEST

<table>
<thead>
<tr>
<th>Static Pressure Differential (psf)</th>
<th>Spray Rate (gal/hr/sf)</th>
<th>% Water Droplets on Air/Water Barrier</th>
<th>Allowable % of Water Droplets on Air/Water Barrier</th>
<th>Location of any Streaming Water on Air/Water Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.24</td>
<td>5</td>
<td>&lt; 5</td>
<td>5.0</td>
<td>None</td>
</tr>
</tbody>
</table>

Results: As a result of the test data shown above, the test specimen meets the performance requirements of the AAMA 508-07 Test Standard.
ASTM E1233

Pressure (psf)

< 0.08 sec

0.7 psf

0.6 psf

Time Interval (= 0.08 sec)

Exterior Pressure
Interior Pressure Vertical Cavity
Interior Pressure Horizontal Cavity
8' x 8' Wall Elevation w/Metal Panels

AAMA 508 Pressure Equalized Rain Screen Test

Scale 1 in. = 1'-0"
Enlarged Detail

16 Ga. Punched Metal Stud

#14 x 3" Long Waferhead Self-Drilling Screw @ Each Stud

#12 x 1 1/2" Waferhead Self-Drilling Screw @ 12" o.c.

16 Ga. Metal Track
Flashing Tape
Foam Tape
2x12 Wood Block

1/4" Polycarbonate Panel (Simulated Air/Water Barrier For Testing Purpose Only) (By Forabough Engineering)

050 Metal Panel

0.080 Starter Clip (Attached w/#12 x 1"
Waferhead Self-Drilling Screws @ Clip Min or 12" o.c.)

#12 x 1" Waferhead Self-Drilling Screw @ 12" o.c.

16 Ga. "J" Lower Trim (Bot. & Both Sides)
(Attached w/#12 x 1 1/2"
Lg. Waferhead S.D. Screws @ 2" o.c.)

.080 Aluminum "J" Face Trim
"J" With 3/16" x 1/2"
Oblong Weep Holes @ 12" o.c.
Turn Metal Panel Back 6". Use #12x1" Self-Drilling Screw w/Sealing Washer To Attach To Top Top Of Frame. Screws @ 8" o.c.

Silicone Sealant

1/4" Polycarbonate Panel (Simulated Air/Water Barrier For Testing Purpose Only) (By Farabaugh Engineering)

"Z" Support

050 Metal Panel

2x12 Wood Block

16 Ga. Punched Metal Stud

Flashing Tape

Enlarged Detail B
Enlarged Detail

NOTE:
Number of Panel Clips Per Panel Will Be Determined By Width Of Panel Or By Lic. Engineer

1.5" x 0.79" - .080 Aluminum Extruded Metal Panel Clip.
(Clips Are To Be Cut Into 3" Long Pieces)
ADDITIONAL SUPPORT AND TRIM EXTRUSIONS

0.40"  
0.66"  
2.16"  

0.080" ALUM. STARTER CLIP

1.8"  
3"  

0.080" ALUM. "J" FACE TRIM
(TESTING PURPOSES ONLY)

1.125"  
3"

16 GA. "J" LOWER TRIM
(TESTING PURPOSES ONLY)

1"  
4.2"

16 GA. ZEE SUPPORT