Project No. T162-19

Report Date: April 11, 2019

No. Pages: 8 (inclusive)

ASTM E283 AIR LEAKAGE TEST
ASTM E331 WATER PENETRATION TEST

ON

T-PANEL - METAL ROOF PANEL
16” WIDE X 24 GA. STEEL
WITH INTERMITTENT CLIPS

FOR

PETERSEN ALUMINUM CORP
10551 PAC ROAD
TYLER, TX. 75707

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AIR LEAKAGE AND WATER PENETRATION TESTING

**Purpose**
The purpose of this test is to establish air and water infiltration rates on the Petersen Aluminum Roof Panel System.

**Test Date**
4/10/19

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

Panel: T-PANEL - Metal Roof Panel, 16” wide x 24 ga. steel with 24 ga. steel cap

Intermittent Clip: 6” wide x 16 ga. galvanized steel clip

**Testing Apparatus**
A vacuum test chamber was used with static pressure taps. A controlled blower provided uniform pressure to the specimen mock-up. Calibrated manometers were used to measure the pressure at each pressure tap.

**Installation**
The panels were installed on to 16 ga supports with using (2) #14-13 X 1-1/2” long, DP1, Concealer, self-drill fasteners per intermittent clips at supports. The panel sidejoints used a 24 ga. seam cap and were seamed with a mechanical seamer. The seam cap used 2 beads of factory sealant, one bead on each side of cap corners. The panel ends were fastened with (3) 1/4-14 x 1-1/2 long, self-drill, hex head fasteners with washer. The panels were attached and sealed to the perimeter frame. Test was done with panels in horizontal position (no slope).

**Test Procedure**
The tests were conducted in accordance with the sections as shown in the following:
- ASTM E 283-04 “Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen”,
- ASTM E-531-00,” Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference”
Ambient Temp. = 60 deg.F
Barometric Pressure = 29.91” Hg

ASTM E283
AIR LEAKAGE TEST

POSITIVE PRESSURE
(INFILTRATION)

<table>
<thead>
<tr>
<th>STATIC PRESSURE DIFFERENTIAL (PSF)</th>
<th>AIR LEAKAGE RATE (CFM/SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+6.24</td>
<td>0.017</td>
</tr>
<tr>
<td>+15.0</td>
<td>0.022</td>
</tr>
</tbody>
</table>

NEGATIVE PRESSURE
(EXFILTRATION)

<table>
<thead>
<tr>
<th>STATIC PRESSURE DIFFERENTIAL (PSF)</th>
<th>AIR LEAKAGE RATE (CFM/SF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+6.24</td>
<td>0.020</td>
</tr>
<tr>
<td>+15.0</td>
<td>0.030</td>
</tr>
</tbody>
</table>

Results:

As a result of the test pressures, the test specimen exhibited air leakage rates as shown on the above table.
ASTM E331
WATER PENETRATION TEST

Panel Surface Temperature Prior To Test: 57 deg. F
Panel Surface Temperature During Test: 53 deg. F

POSITIVE PRESSURE
(INFILTRATION)

<table>
<thead>
<tr>
<th>STATIC PRESSURE DIFFERENTIAL (PSF)</th>
<th>WATER SPRAY RATE (GAL/HR/SF)</th>
<th>TEST DURATION (MIN)</th>
<th>WATER INFILTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>+15.0</td>
<td>5</td>
<td>15</td>
<td>None</td>
</tr>
<tr>
<td>+20.0</td>
<td>5</td>
<td>15</td>
<td>None</td>
</tr>
<tr>
<td>+30.0</td>
<td>5</td>
<td>15</td>
<td>None</td>
</tr>
</tbody>
</table>

Results:

As a result of the test pressures, the test specimen exhibited no water penetration as shown on the above table.
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16" T PANEL

COMPRESSED HOT-DIPPED GALVANIZED BOLTS TO BE APPLIED AT A MINIMUM DISTANCE OF 6"

STUDY AT SIDE JOINT W/ CLIP CAP (AFTER SEAMING)

ENLARGED SIDE JOINT DETAIL
TEST SET-UP

PLAN VIEW