DESCRIPTION OF SAMPLE

Model Designation: Series: Tite-Loc Plus (TLP)
Sample A-1
The roof deck system consisted of eight full width panels. The panels measured 18" wide by 0.040" thick by 288" long. The side of the panel at the clips utilized a 2 1/8" high upright bend. The deck system was fastened to the steel purlins using one two piece deck clip with **18 gauge base and **22 gauge top each deck clip spaced every 12" on center. Deck clips were fastened to the steel purlins using two No. 14-13 by 1 1/2" pancake head with drill point per clip. The first two outer rows of panels were fastened to the steel purlins with a single row of No. 14-13 by 1 1/2" pancake head with drill point located 48" on center.

Test Frame: The test apparatus frame utilized 3" by 12" by 24' long Douglas fir wood. The steel purlins were bolted to the inside of the test apparatus. Purlins were spaced every 12" on center and were bolted to the test apparatus.

Test Results and Observations

Deflection table is included on page 2 of 15 for Sample A-1. Please reference appendix A for location of deflection measurements.

Sample A-1 ultimate test load and observations made during testing: achieved load 405.0 PSF. No failure occurred during testing. Test was stopped at 405.0 PSF at client’s request.

Test Summary:
The test specimen area measuring 18" by 288" long, was tested in accordance with ASTM E 1592-05, Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference. The purpose of this test is to evaluate the comparative resistance of the roof deck assembly to negative pressures.
## OFFICIAL TEST REPORT

**Sample A-1**

<table>
<thead>
<tr>
<th>Temperature: 72.4</th>
<th>Barometric Reading: 30.24</th>
</tr>
</thead>
</table>

Negative Pressure: Each load was held for sixty seconds

<table>
<thead>
<tr>
<th>Loads (PSF)</th>
<th>D-1</th>
<th>D-2</th>
<th>D-3</th>
<th>D-4</th>
<th>D-5</th>
<th>D-6</th>
<th>D-7</th>
<th>D-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 PSF</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>67.5 PSF</td>
<td>0.021&quot;</td>
<td>0.028&quot;</td>
<td>0.020&quot;</td>
<td>0.029&quot;</td>
<td>0.003&quot;</td>
<td>0.024&quot;</td>
<td>0.004&quot;</td>
<td>0.022&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.001&quot;</td>
<td>0.002&quot;</td>
<td>0.001&quot;</td>
<td>0.002&quot;</td>
<td>0</td>
<td>0.002&quot;</td>
<td>0</td>
<td>0.001&quot;</td>
</tr>
<tr>
<td>135.0 PSF</td>
<td>0.238&quot;</td>
<td>0.246&quot;</td>
<td>0.236&quot;</td>
<td>0.244&quot;</td>
<td>0.208&quot;</td>
<td>0.241&quot;</td>
<td>0.209&quot;</td>
<td>0.241&quot;</td>
</tr>
<tr>
<td>135.0 PSF</td>
<td>0.022&quot;</td>
<td>0.023&quot;</td>
<td>0.022&quot;</td>
<td>0.023&quot;</td>
<td>0.010&quot;</td>
<td>0.024&quot;</td>
<td>0.021&quot;</td>
<td>0.023&quot;</td>
</tr>
<tr>
<td>202.5 PSF</td>
<td>0.381&quot;</td>
<td>0.392&quot;</td>
<td>0.378&quot;</td>
<td>0.391&quot;</td>
<td>0.321&quot;</td>
<td>0.384&quot;</td>
<td>0.323&quot;</td>
<td>0.384&quot;</td>
</tr>
<tr>
<td>202.5 PSF</td>
<td>0.041&quot;</td>
<td>0.046&quot;</td>
<td>0.049&quot;</td>
<td>0.045&quot;</td>
<td>0.044&quot;</td>
<td>0.048&quot;</td>
<td>0.046&quot;</td>
<td>0.045&quot;</td>
</tr>
<tr>
<td>270.0 PSF</td>
<td>0.411&quot;</td>
<td>0.427&quot;</td>
<td>0.408&quot;</td>
<td>0.421&quot;</td>
<td>0.356&quot;</td>
<td>0.414&quot;</td>
<td>0.353&quot;</td>
<td>0.414&quot;</td>
</tr>
<tr>
<td>270.0 PSF</td>
<td>0.079&quot;</td>
<td>0.078&quot;</td>
<td>0.077&quot;</td>
<td>0.080&quot;</td>
<td>0.069&quot;</td>
<td>0.081&quot;</td>
<td>0.076&quot;</td>
<td>0.081&quot;</td>
</tr>
<tr>
<td>337.5 PSF</td>
<td>0.446&quot;</td>
<td>0.460&quot;</td>
<td>0.443&quot;</td>
<td>0.278&quot;</td>
<td>0.387&quot;</td>
<td>0.444&quot;</td>
<td>0.388&quot;</td>
<td>0.445&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.099&quot;</td>
<td>0.098&quot;</td>
<td>0.096&quot;</td>
<td>0.101&quot;</td>
<td>0.094&quot;</td>
<td>0.098&quot;</td>
<td>0.096&quot;</td>
<td>0.095&quot;</td>
</tr>
<tr>
<td>405.0</td>
<td>0.506&quot;</td>
<td>0.495&quot;</td>
<td>0.474&quot;</td>
<td>0.305&quot;</td>
<td>0.422&quot;</td>
<td>0.484&quot;</td>
<td>0.427&quot;</td>
<td>0.485&quot;</td>
</tr>
</tbody>
</table>

**NOTES:** The ultimate load achieved was 405.0 PSF.

1.0 PSF represents the zero load condition.
Test load (PSF)

0.00  0.05  0.10  0.15  0.20  0.25  0.30  0.35  0.40  0.45  0.50

67.5  135  202.5  270  337.5  405

Panel Deflection and Set

Average deflection in inches
Average permanent set in inches
DESCRIPTION OF SAMPLE

Model Designation: Series: Tite-Loc Plus (TLP)
Sample B-1
The roof deck system consisted of eight full width panels. The panels measured 18" wide by 0.040" thick by 288" long. The side of the panel at the clips utilized a 2 1/8" high upright bend. The deck system was fastened to the steel purlins using one two piece deck clip with **18 gauge base and **22 gauge top each deck clip spaced every 60" on center. Deck clips were fastened to the steel purlins using two No. 14-13 by 1 1/2" pancake head with drill point per clip. The first two outer rows of panels were fastened to the steel purlins with a single row of No. 14-13 by 1 1/2" pancake head with drill point located 60" on center.

Test Frame: The test apparatus frame utilized 3" by 12" by 24' long Douglas fir wood. The steel purlins were bolted to the inside of the test apparatus. Purlins were spaced every 60" on center and were bolted to the test apparatus.

Test Results and Observations

Deflection table is included on pages 5 of 15 for Sample B-1. Please reference appendix B for location of deflection measurements.

Sample B-1 ultimate test load and observations made during testing: achieved load 112.0 PSF. Failure occurred at 114.0 PSF when the clips at mid span of sample, on purlin number 1, number 2, number 3 and number 4 sheared.

Test Summary:
The test specimen area measuring 18" by 288" long, was tested in accordance with ASTM E 1592-05, Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference. The purpose of this test is to evaluate the comparative resistance of the roof deck assembly to negative pressures.
<table>
<thead>
<tr>
<th>Sample B-1</th>
<th>Temperature: 73.1</th>
<th>Barometric Reading: 30.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Pressure: Each load was held for sixty seconds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Loads (PSF)</th>
<th>D-1</th>
<th>D-2</th>
<th>D-3</th>
<th>D-4</th>
<th>D-5</th>
<th>D-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 PSF</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18.6 PSF</td>
<td>0.174&quot;</td>
<td>0.019&quot;</td>
<td>0.120&quot;</td>
<td>0.021&quot;</td>
<td>0.015&quot;</td>
<td>0.149&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.019&quot;</td>
<td>0.001&quot;</td>
<td>0.027&quot;</td>
<td>0.001&quot;</td>
<td>0</td>
<td>0.017&quot;</td>
</tr>
<tr>
<td>37.2 PSF</td>
<td>0.204&quot;</td>
<td>0.039&quot;</td>
<td>0.326&quot;</td>
<td>0.038&quot;</td>
<td>0.039&quot;</td>
<td>0.176&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.039&quot;</td>
<td>0.005&quot;</td>
<td>0.051&quot;</td>
<td>0.004 &quot;</td>
<td>0</td>
<td>0.037&quot;</td>
</tr>
<tr>
<td>55.8 PSF</td>
<td>0.378&quot;</td>
<td>0.079&quot;</td>
<td>0.463&quot;</td>
<td>0.091&quot;</td>
<td>0.051&quot;</td>
<td>0.341&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.061&quot;</td>
<td>0.011&quot;</td>
<td>0.078&quot;</td>
<td>0.012&quot;</td>
<td>0</td>
<td>0.042&quot;</td>
</tr>
<tr>
<td>74.4 PSF</td>
<td>0.501&quot;</td>
<td>0.102&quot;</td>
<td>0.601&quot;</td>
<td>0.109&quot;</td>
<td>0.069&quot;</td>
<td>0.498&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.099&quot;</td>
<td>0.022&quot;</td>
<td>0.107&quot;</td>
<td>0.023&quot;</td>
<td>0.001&quot;</td>
<td>0.071&quot;</td>
</tr>
<tr>
<td>93.0 PSF</td>
<td>0.637&quot;</td>
<td>0.127&quot;</td>
<td>0.729&quot;</td>
<td>0.130&quot;</td>
<td>0.081&quot;</td>
<td>0.611&quot;</td>
</tr>
<tr>
<td>1.0 PSF</td>
<td>0.110&quot;</td>
<td>0.034&quot;</td>
<td>0.124&quot;</td>
<td>0.037&quot;</td>
<td>0.003&quot;</td>
<td>0.084&quot;</td>
</tr>
<tr>
<td>112.0</td>
<td>0.755&quot;</td>
<td>0.145&quot;</td>
<td>0.899&quot;</td>
<td>0.146&quot;</td>
<td>0.094&quot;</td>
<td>0.729&quot;</td>
</tr>
</tbody>
</table>

NOTES: The ultimate load achieved was 112.0 PSF. System failed at 114.0 PSF. 1.0 PSF represents the zero load condition.
OFFICIAL TEST REPORT

Panel Deflection and Set

- Average deflection in inches
- Average permanent set in inches

Test load (PSF)

<table>
<thead>
<tr>
<th>Test load (PSF)</th>
<th>Deflection</th>
<th>Permanent Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.6</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>37.2</td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td>55.8</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>74.4</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>93</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>112</td>
<td>0.30</td>
<td>0.30</td>
</tr>
</tbody>
</table>
### OFFICIAL TEST REPORT

#### Tensile Test Report

**Material Designation:** Aluminum  
**Specimen Type:** Flat Reduced Section  
**Laboratory Comment:** Tested as per ASTM E A370-05

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Thickness (in.)</th>
<th>Width (in)</th>
<th>Area (sq.in.)</th>
<th>Ultimate Load (lbs.)</th>
<th>Yield Load (lbs.)</th>
<th>Ultimate Stress (psi)</th>
<th>Yield Stress (psi)</th>
<th>Elongation % in 2 in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.040&quot;</td>
<td>0.500&quot;</td>
<td>0.020&quot;</td>
<td>513</td>
<td>453</td>
<td>25,665</td>
<td>22,640</td>
<td>2.80%</td>
</tr>
<tr>
<td>2</td>
<td>0.040&quot;</td>
<td>0.500&quot;</td>
<td>0.020&quot;</td>
<td>515</td>
<td>459</td>
<td>25,765</td>
<td>22,928</td>
<td>3.20%</td>
</tr>
<tr>
<td>3</td>
<td>0.040&quot;</td>
<td>0.500&quot;</td>
<td>0.020&quot;</td>
<td>497</td>
<td>436</td>
<td>24,835</td>
<td>21,815</td>
<td>4.30%</td>
</tr>
</tbody>
</table>
Certificate Number: TST1657  
Report Date: 5/1/2013  
Completion Date: 4/12/2013  
Expiration Date: 4/12/2023  
File Number: 13-792  
Lab Number: 7279  
Project Number: 13-4494

OFFICIAL TEST REPORT

Tite-Lock Plus (TLP)  
18" wide by 0.040" thick

<table>
<thead>
<tr>
<th>Purlin Span</th>
<th>Loads (psf)</th>
<th>Test</th>
<th>Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft</td>
<td>in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>12</td>
<td>405</td>
<td>245</td>
</tr>
<tr>
<td>2.00</td>
<td>24</td>
<td></td>
<td>201</td>
</tr>
<tr>
<td>2.50</td>
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<td></td>
<td>90</td>
</tr>
<tr>
<td>5.00</td>
<td>60</td>
<td>112</td>
<td>60</td>
</tr>
</tbody>
</table>

Design Load Safety Factor of 1.65

NOTES:  
1. Tested in accordance with ASTM E 1592-05 Air Bag testing, negative uplift.  
2. Intermediate values based on linear interpolation from tested values.  
3. Actual testing conducted at 1'-0" and 5'-0" spacing.

Tite-Lock Plus (TLP)  
18" wide by 0.040" thick

<table>
<thead>
<tr>
<th>Purlin Span</th>
<th>Loads (psf)</th>
<th>Test</th>
<th>Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft</td>
<td>in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>12</td>
<td>405</td>
<td>203</td>
</tr>
<tr>
<td>2.00</td>
<td>24</td>
<td></td>
<td>140</td>
</tr>
<tr>
<td>2.50</td>
<td>30</td>
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<td>112</td>
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<tr>
<td>3.00</td>
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<td></td>
<td>62</td>
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<tr>
<td>5.00</td>
<td>60</td>
<td>112</td>
<td>56</td>
</tr>
</tbody>
</table>

Design Load Safety Factor of 2.0

NOTES:  
4. Tested in accordance with ASTM E 1592-05 Air Bag testing, negative uplift.  
5. Intermediate values based on linear interpolation from tested values.  
6. Actual testing conducted at 1'-0" and 5'-0" spacing.
OFFICIAL TEST REPORT

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description</th>
<th>Author</th>
<th>Effective Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Initial Release</td>
<td>Ms. Iliana Sanchez</td>
<td>5/1/2013</td>
</tr>
</tbody>
</table>

Notes

** as per manufacturer

Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Test results obtained represent the actual value of the tested specimens and do not constitute opinion, endorsement or certification by this laboratory.

This test report is considered the exclusive property of the client named herein and is applicable to the sample tested. This report may not be reproduced without the approval of Fenestration Testing Laboratory, Inc.

4.0 mil plastic sheeting air bag was used to seal from air leakage when load test were performed, however this had no effect on above results.

Remarks

Detailed drawings and digital video disc of testing will be retained by Fenestration Testing Laboratory for a period of five years from the original test date, and test report for a period of ten years.

Two assemblies (Sample A-1 and Sample B-1) were tested in accordance with the ASTM E1592-05.

This material was tested in accordance with ASTM A370-05.

Testing was conducted as per instructions received from your company representative.

Witnessed by:
Mr. Marlin D. Brinson, P.E.
Mr. Sal Delfino, Petersen Aluminum Corp.

Technician: Mr. Manny Sanchez
Mr. Harold Anacona
Mr. Roque Zavala

Chief Executive Officer

Attachments:
Appendix A-Deflection Measurement Locations for Sample A-1
Appendix B-Deflection Measurement Locations for Sample B-1
Appendix C-Sample A-1 and B-1 Pictures
Appendix D-Sample B-1 Pictures of Failure
Appendix E-Tensile Test Pictures
Appendix F-Manufacturer Drawings
APPENDIX A
Deflection Measurement Locations for Sample A-1
OFFICIAL TEST REPORT

APPENDIX B

Deflection Measurement Locations for Sample B-1

SPECIMEN "B" TEST SETUP
OFFICIAL TEST REPORT

APPENDIX C-Sample A-1 and B-1 Photos

Sample A-1

Sample B-1
Certificate Number: TST1657
Report Date: 5/1/2013
Completion Date: 4/12/2013
Expiration Date: 4/12/2023
File Number: 13-792
Lab Number: 7279
Project Number: 13-4494

OFFICIAL TEST REPORT

APPENDIX D
Sample B-1 Photos of Failure
Certificate Number: TST1657
Report Date: 5/1/2013
Completion Date: 4/12/2013
Expiration Date: 4/12/2023
File Number: 13-792
Lab Number: 7279
Project Number: 13-4494

OFFICIAL TEST REPORT

APPENDIX E-Tensile Test Pictures
TITE-LOC PLUS

PRODUCT FEATURES
- 20 year non-prorated finish warranty
- Available in 4 variations - see profile drawings to right. Check local factory for panel condition availability.
- Maximum panel length of 64' - check local factory for longer lengths
- Mechanically seamed in the field to 180 degrees
- Weathertightness Warranty Available

MATERIALS
- 37 stocked colors (24 gauge steel)
- 13 stocked colors (22 gauge steel)
- 36 stocked colors (.032 aluminum)
- 20 stocked colors (.040 aluminum)
- Galvalume Plus available

UL CLASSIFICATION
- UL-580 Class 90 rated up to 18" O.C.
- UL-1897 wind uplift
- UL-790 Class A fire rated
- UL-263 fire resistance rated
- UL-2218 impact resistance rated

ASTM TESTS
- ASTM E1592
- ASTM E331/1634
- ASTM E283/1680

FLORIDA BUILDING PRODUCT APPROVALS
- 24 GA & .032 Aluminum (Open Purlins):
  FL Prod. Approv. SS62-R4
- .040 Aluminum: FL Approv. 10879-R1
- 24 GA & .032 Aluminum: FL Prod. Approv. 13487-R2
- 24 GA & .032 Aluminum: FL Prod. Approv. 16142

MIAMI-DADE PRODUCT APPROVALS
- .032 Aluminum (Plywood Deck):
  NOA No. 12-0921.11
- 24 GA Steel (Plywood Deck):
  NOA No. 12-0829.08
- .032 Aluminum (Steel Deck):
  NOA No. 12-1011.17
- 24 GA Steel (Steel Deck) NOA No. 12-0710.05

TESTS
- 24 ga. Steel SSTD Missile Impact Tested - Passed
- .032 Aluminum SSTD Missile Impact Tested - Passed

SPECS: 12", 16" OR 18" O.C.
2" HIGH
Note: Panel conditions vary by manufacturing facility. Please check local plant for availability.

Only items checked in red have been verified by laboratory.

FENESTRATION TESTING LAB, INC
Sample A-1  &  B-1
LAB # 7279
DATE 5-3-13
DRAWING VERIFIED BY: 4S

PAC-CLAD
Petersen Aluminum
www.pac-clad.com | 800-PAC-CLAD
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