

June 4, 2003

Mr. Jamie D. Gascon, Product Control Inspector
Metropolitan Dade County
Building Code Compliance Department
140 West Flagler Street, Suite 1603
Miami, Florida 33130

RE: Laboratory Compliance Letter

Dear Mr. Gascon:

A test of one specimen of 1.5" Snap-Lock Metal Roof System for Metal Forming Inc., reported under Dade County Notification No. ATI 03021, has been performed in full accordance to the requirements of the Florida Building Code, Building 2001 and Protocols TAS 100-95 and ASTM E8-01.

Sincerely yours,
ARCHITECTURAL TESTING, INC.

Joseph A. Reed, P.E.
Director- Engineering Services

JAR: jar

cc: 01-44653.01

Tom Shingler, Metal Forming Inc.

**METRO-DADE COUNTY
PERFORMANCE TEST REPORT**

Rendered to:

METAL FORMING, INC.

**SERIES/MODEL: 1.5" Snap-Lock
TYPE: Metal Roof System**

Report No: 01-44653.01
Report Date: 06/03/03
Expiration Date: 04/02/13
Metro-Dade County Notification No: ATI 03021

METRO-DADE COUNTY PERFORMANCE TEST REPORT

Rendered to:

METAL FORMING, INC.
100 International Drive
Peachtree City, GA 30629

Report No: 01-44653.01
Test Date: 04/16/03
Report Date: 05/02/03
Expiration Date: 04/16/03
Metro-Dade County Notification No: ATI 03021

Series/Model: 1.5" Snap-Lock Roof Panel

Type: Metal Roofing System

Project Summary: Architectural Testing, Inc. (ATI) was contracted by Metal Forming, Inc. to conduct tests on a metal roofing product identified as "1.5"Snap-Lock" steel roof system. The system tested met the performance requirements according to the Metro-Dade County Protocol TAS 100-95. This report includes a complete description of the As-Tested roof assembly, photos, installation guidelines, detailed drawings, and documentations of the test results.

Reference Documents: The test specimen was evaluated in accordance with Metro-Dade County Building Code Compliance Office Protocol TAS 100-95, *Test Procedure of Wind and Wind Driven Rain Resistance of Discontinuous Roof Systems*.

Official Observers: The following representatives witnessed all or part of the testing.

Steve Eveler
Joe Wise
Joseph A. Reed, P.E.
Rodney Holland
Scott Kramer

Architectural Testing, Inc.
Architectural Testing Inc.
Architectural Testing Inc.
Architectural Testing Inc.
Architectural Testing Inc.

PA 100-95 Wind Driven Rain Test

Overall Size: 8' 0" wide by 10' 0" long (with valley condition)

Slope: 2:12

General Description: The 2:12 slope metal roof system test assembly incorporated a valley, eave, and one rake condition. The plywood test deck consisted of four-ply 15/32" thick sheathing installed over 2 by 10 perimeter supports and 2 by 10 intermediate supports spaced on 24" centers. The valley condition was constructed into the test deck and located at the deck's front edge. The roofing underlayment consisted of single ply 30 lb. felt paper.

Roof panels fabricated from 24 gauge (0.025" thick) steel sheeting, that measured 17" wide with a 16-1/2" assembled coverage, were secured to the plywood decking with #10-12 x 1" pancake head wood screws with #2 phillips shot. The fasteners were spaced every 18" on the nail-strip. The hemmed lower panel ends were interlocked into a continuous cleat that was mounted to the decking with #10 12 x 1" pancake head wood screws that were spaced 6" on center. The cleat was seated in a continuous bead of butyl sealant. Panel end closures were sealed with Dow 795 moisture-cure silicone sealant.

The gable, ridge, eave, and valley flashing panels were installed with a butyl tape sealant at the ends and between the trim panel unions. The gable eave and rake flashing perimeters were then fastened with #10-12 by 1" by 1/4" "Woodgrip" screws with Control Seal on 12" centers. The continuous "Z" closure and rake flashing were fastened with 1/8" diameter rivets on 12" centers. See Metal Forming, Inc. drawing Nos. 1 thru 3 (attached) for further installation details.

PA 100-95 Wind Driven Rain Test

Test Procedure:

Interval No.	Wind Speed (mph)	Time (minutes)	Water Spray
1	35	15	On
2	0	10	Off
3	70	15	On
4	0	10	Off
5	90	15	On
6	0	10	Off
7	110	5	On
8	0	10	Off

Calibration: Windstream, rainfall and water distribution were calibrated as required by TAS 100 Section 7 prior to the test. The calibration is documented IN ATI Report No. 01-43798.02

Test Results:

Sample #1

Wind Speed

35 mph
70 mph
90 mph
110 mph

Observations

No leakage
No leakage
No leakage
No leakage

Passed

Reference Photo Nos. 1 through 10

General Note: *There was no damage to the roof system at the conclusion of the test.*

ASTM E8-01

Test Method: The test specimen were evaluated in accordance with ASTM E8-01, *Standard Test Methods for Tensile Testing of Metallic Materials*. The test specimens were machined and sized in compliance with section 6.0 of the standard. The specimens were tested using a Satec 50UD Universal Machine with a cross head speed of 0.2 in/min.

Test Results: The test results are shown on test logs 16858 through 16862 (attached) and summarized in the following table.

Specimen	Yield Strength (psi)	Yield Strain (in/in)	Tensile Load (lbf)	Tensile Strength (psi)	Elongation (%)	Area Reduction (%)
1	42,223	0.0020	673	44,290	24.5	32.9
2	42,337	0.0031	673	44,300	24.7	35.5
3	41,639	0.0039	671	44,174	23.1	38.8
4	40,389	0.0037	673	44,268	26.1	39.5
5	41,688	0.0037	672	44,182	27.2	29.6
6						
Average	41,455	0.0033	672	44,243	25.1	35.3

The average Tangent Modulus for the tested specimens was 23.1×10^6 psi.

Detailed drawings, representative samples of the test specimen and a copy of this report will be retained by ATI for a period of ten years. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specifications. This report does not constitute certification of this product, which may only be granted certification program administrator. This report may not be reproduced except in full without the approval of Architectural Testing.

For ARCHITECTURAL TESTING, INC.:

Scott D. Kramer
Technician

Rodney Holland
Senior Technician

Joseph A. Reed, P.E.
Director- Engineering Services

SDK:baw
01-4451.01

DOCUMENT CONTROL ADDENDUM #01-44451.00

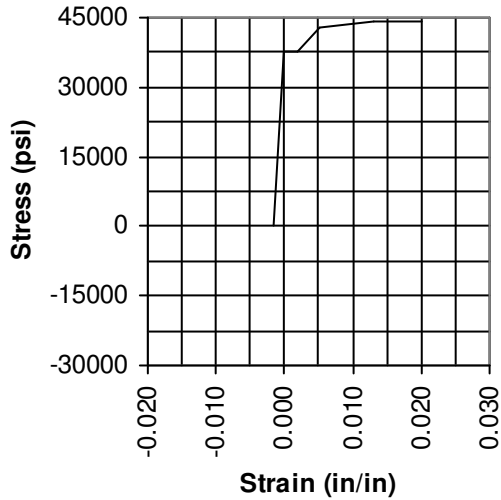
Report No.: 01-44653.01

Requested by: Tom Shingler, Metal Forming, Inc.

Purpose: Metro Dade County TAS 100 wind driven rain test on 1.5" Snap-Lock roofing system.

Issued Date: 06/03/03

Comments:

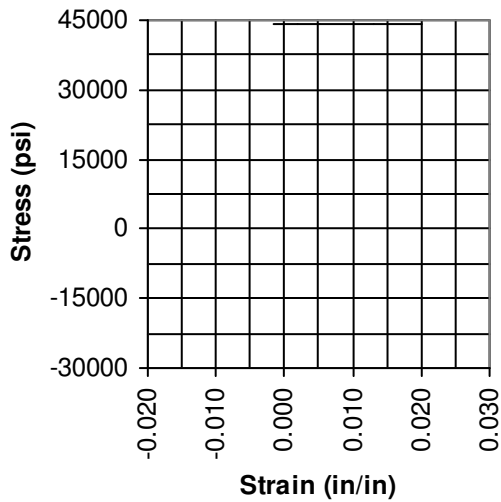


Test Summary

Counter: **16858**
 Elapsed Time: **00:03:29**
 ATI#: **01-44653**
 Client: **Metalforming, Inc**
 Material Type: **Steel**
 Sample #: **1**
 Comments:
 Temperature (F):
 Procedure Name: **ASTM E8-01, Tensile Testing of**
 Start Date: **5/21/03**
 Start Time: **7:45:09 AM**
 End Date: **5/21/03**
 End Time: **7:48:38 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Rodney**

Test Results

Width: **0.4890 in**
 After Test Width: **0.4070 in**
 Thickness: **0.0310 in**
 After Test Thickness: **0.0250 in**
 Area: **0.0152 in²**
 After Test Area: **0.0102 in²**
 Peak Load: **673 lbf**
 Peak Stress: **44290 psi**
 Elongation at Offset: **0.0040 in**
 Stress at Offset: **41222.7600 psi**
 Strain at Offset: **0.0020 in/in**
 Time at Offset: **0.3546 min**
 Position at Offset: **- 0.3353 in**
 Load at Offset: **626.5860 lbf**
 Reduction of Area: **32.9 %**
 Total Elongation: **25.5000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.490 in**
 Tangent Modulus: **22646800 psi**

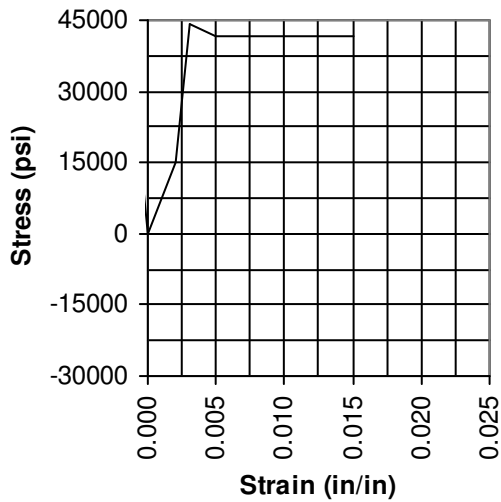


Test Summary

Counter: **16859**
 Elapsed Time: **00:03:27**
 ATI#: **01-44653**
 Client: **Metalforming, Inc**
 Material Type: **Steel**
 Sample #: **2**
 Comments:
 Temperature (F):
 Procedure Name: **ASTM E8-01, Tensile Testing of**
 Start Date: **5/21/03**
 Start Time: **7:56:13 AM**
 End Date: **5/21/03**
 End Time: **7:59:40 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Rodney**

Test Results

Width: **0.4890 in**
 After Test Width: **0.4090 in**
 Thickness: **0.0310 in**
 After Test Thickness: **0.0240 in**
 Area: **0.0152 in²**
 After Test Area: **0.0098 in²**
 Peak Load: **673 lbf**
 Peak Stress: **44300 psi**
 Elongation at Offset: **0.0062 in**
 Stress at Offset: **42336.5600 psi**
 Strain at Offset: **0.0031 in/in**
 Time at Offset: **0.4768 min**
 Position at Offset: **- 0.4121 in**
 Load at Offset: **643.5158 lbf**
 Reduction of Area: **35.5 %**
 Total Elongation: **24.6500 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.493 in**
 Tangent Modulus: **22490400 psi**

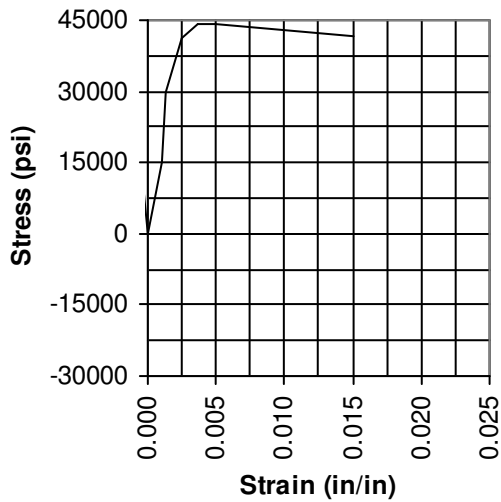


Test Summary

Counter: **16860**
 Elapsed Time: **00:03:14**
 ATI#: **01-44653**
 Client: **Metalforming, Inc**
 Material Type: **Steel**
 Sample #: **3**
 Comments:
 Temperature (F):
 Procedure Name: **ASTM E8-01, Tensile Testing of**
 Start Date: **5/21/03**
 Start Time: **8:07:11 AM**
 End Date: **5/21/03**
 End Time: **8:10:25 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Rodney**

Test Results

Width: **0.4890 in**
 After Test Width: **0.3890 in**
 Thickness: **0.0310 in**
 After Test Thickness: **0.0240 in**
 Area: **0.0152 in²**
 After Test Area: **0.0093 in²**
 Peak Load: **671 lbf**
 Peak Stress: **44174 psi**
 Elongation at Offset: **0.0077 in**
 Stress at Offset: **41638.9200 psi**
 Strain at Offset: **0.0039 in/in**
 Time at Offset: **0.3531 min**
 Position at Offset: **- 0.2449 in**
 Load at Offset: **632.9116 lbf**
 Reduction of Area: **38.8 %**
 Total Elongation: **23.1000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.462 in**
 Tangent Modulus: **23522400 psi**

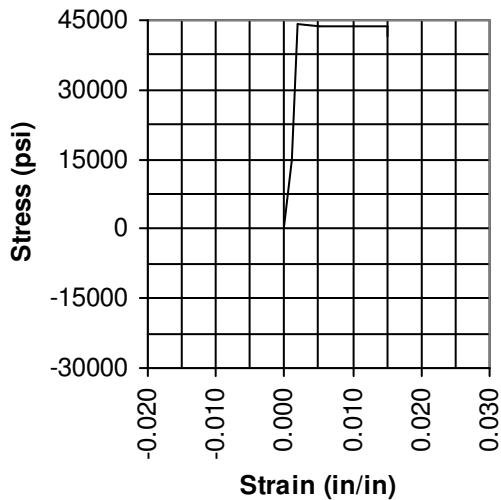


Test Summary

Counter: **16861**
 Elapsed Time: **00:03:39**
 ATI#: **01-44653**
 Client: **Metalforming, Inc**
 Material Type: **Steel**
 Sample #: **4**
 Comments:
 Temperature (F):
 Procedure Name: **ASTM E8-01, Tensile Testing of**
 Start Date: **5/21/03**
 Start Time: **9:00:17 AM**
 End Date: **5/21/03**
 End Time: **9:03:56 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Rodney**

Test Results

Width: **0.4890 in**
 After Test Width: **0.4010 in**
 Thickness: **0.0310 in**
 After Test Thickness: **0.0230 in**
 Area: **0.0152 in²**
 After Test Area: **0.0092 in²**
 Peak Load: **673 lbf**
 Peak Stress: **44268 psi**
 Elongation at Offset: **0.0075 in**
 Stress at Offset: **40389.2800 psi**
 Strain at Offset: **0.0037 in/in**
 Time at Offset: **0.3470 min**
 Position at Offset: **- 0.2225 in**
 Load at Offset: **613.9170 lbf**
 Reduction of Area: **39.5 %**
 Total Elongation: **26.1000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.522 in**
 Tangent Modulus: **23119600 psi**



Test Summary

Counter: **16861**
 Elapsed Time: **00:03:39**
 ATI#: **01-44653**
 Client: **Metalforming, Inc**
 Material Type: **Steel**
 Sample #: **5**
 Comments:
 Temperature (F):
 Procedure Name: **ASTM E8-01, Tensile Testing of**
 Start Date: **5/21/03**
 Start Time: **9:09:46 AM**
 End Date: **5/21/03**
 End Time: **9:13:32 AM**
 Workstation: **Architectural Testing Inc.**
 Tested By: **Rodney**

Test Results

Width: **0.4890 in**
 After Test Width: **0.3690 in**
 Thickness: **0.0310 in**
 After Test Thickness: **0.0270 in**
 Area: **0.0152 in²**
 After Test Area: **0.0107 in²**
 Peak Load: **672 lbf**
 Peak Stress: **44182 psi**
 Elongation at Offset: **0.0074 in**
 Stress at Offset: **41688.3000 psi**
 Strain at Offset: **0.0037 in/in**
 Time at Offset: **0.3927 min**
 Position at Offset: **- 0.4617 in**
 Load at Offset: **633.6622 lbf**
 Reduction of Area: **29.6 %**
 Total Elongation: **27.2000 %**
 Pretest Punch Length: **2.000 in**
 Posttest Punch Length: **2.544 in**
 Tangent Modulus: **23532800 psi**