Architectural Testing

ASTM E1680 & ASTM E 1646
TEST REPORT

Report No.: C9079.04-450-44

Rendered to:

SHEFFIELD METALS INTERNATIONAL
Sheffield Village, Ohio

PRODUCT TYPE: Standing Seam Roof System (24 Ga. Steel)
SERIES/MODEL: SMI 2.0 SCH Mechanical Seam Over Plywood

Title	Summary of Results
Air Infiltration @ 75 Pa (1.57 psf)	<0.01 cfm/ft²
Air Exfiltration @ 75 Pa (1.57 psf)	0.02 cfm/ft²
Water Penetration Resistance Test Pressure	12.0 psf

2014.02.19 15:45:35 -05'00'

Reference must be made to Report No. C9079.04-450-44, dated 02/19/14 for complete test specimen description and detailed test results.

1.0 Report Issued To: Sheffield Metals International
5467 Evergreen Parkway
Sheffield Village, Ohio 44054
Voice: 904.413.7425
Contact: Jim Mitchell

2.0 Test Laboratory: Architectural Testing, Inc.
2658 Electronics Way
West Palm Beach, Florida 33407
561.881.0020

3.0 Project Summary:

3.1 Product Type: Standing Seam Roof System

3.2 Series/Model: SMI 2.0 SCH Mechanical Seam Over Plywood

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods. Test specimen description and results are reported herein.

3.4 Test Date: 12/19/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until December 19, 2017.

3.6 Test Location: Architectural Testing, Inc. test facility in West Palm Beach, Florida.

3.7 Test Sample Source: The test specimen was provided by the client. Representative samples of the test specimens will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix A. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

Name	Company
Vinu Abraham, P.E.	Architectural Testing, Inc.
Jeff McGovern	Architectural Testing, Inc.
Kristin Nolan	Architectural Testing, Inc.
Alan Rule	Architectural Testing, Inc.
Kris Conte	Architectural Testing, Inc.
Steve Grala	Architectural Testing, Inc.

4.0 Test Method(s):

ASTM E 1646-95 (Reapproved 2011), *Test Method for Water Penetration for Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.*

ASTM E 1680-11, *Test Method for Air Leakage Through Exterior Metal Roof Panel Systems.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Test Specimen #1A:

Overall Area: 48.9 ft²	**Width (inches)**	**Length (inches)**
Overall size	64	110
Full panel size (3)	18 3/4	110
Partial panel size (1)	7 3/4	110

5.2 Frame Construction: The 5' 4" wide by 9' 2" long test frame was fabricated from 2x12 Southern Yellow Pine lumber. Six intermediate members were utilized and were located 16" on center. 1/2" (15/32" min) thick 4–ply CDX plywood sheathing was utilized on the top of the test frame. The plywood was secured using 8d coat ring shank nails, spaced 6" on center in the field and 4" on center at the perimeter and seams.

5.0 Test Specimen Description: (Continued)

5.3 Roof System:

Components	Details	Attachment Method
30# Asphalt saturated organic paper (ASTM D 226) meeting type II requirements.	A single layer of felt paper, lapped 4 inches, attached to the plywood substrate.	The felt paper was secured using nails with tin tabs spaced 16" on center at the seams with two staggered rows spaced 36" on center for each sheet.
SMI 2.0 SCH Mechanical Seam roof panel	The panels were constructed from 24 gauge steel. One partial width panel and three full width panels were tested. (3 seams were tested).	The roof panels were secured to the plywood utilizing 2" Float Clips. The panels overlapped each other and were seamed using a hand seamer to 90° (stage one) and then using a mechanical seamer to 180° (stage two). The perimeter of the roof deck was not secured with fasteners.
Clips	The G-90 galvanized 2" Float Clips measured 2.4" high by 4.3" wide and consisted of a 16 Ga. base and a 22 Ga. tab.	Each clip was attached using two #10 x 1" pancake screws. A clip was used at each panel end and 24" on center thereafter
Perimeter Sealant	Grace Perm-A-Barrier and silicon sealant	The exterior of the specimen was sealed to the test deck to prevent extraneous leakage. No sealant was used in the panel seams.

6.0 Test Results: The temperature during testing was 75°F. The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Preload +31.75 psf / -31.75 psf	No Damage	No Damage	1
Air Leakage, Infiltration per ASTM E 1680 at 1.57 psf	<0.01 cfm/ft²	Report Only	2
Air Leakage, Exfiltration per ASTM E 1680 at 1.57 psf	0.02 cfm/ft²	Report Only	2
Water Penetration, per ASTM E 1646 at 12.0 psf	No leakage	No leakage	2, 3, 4

Note 1: Pre-loads were held for 10 seconds with a 2 minute recovery period after removal of each pre-load. The pre-load cycle was performed 3 times.

Note 2: Air infiltration and water penetration testing was performed at a 0° slope.

Note 3: Water penetration testing was performed for 15 minute duration.

Note 4: Panel surface temperature prior to and during testing was 75°F. The ponded water depth during testing was 1/2 inches.

General Notes:

- *All testing was performed in accordance with the referenced standards.*

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Digitally Signed by: Alan Rule

Alan Rule
Project Manager

Digitally Signed by: Vinu Abraham

Vinu J. Abraham, P.E.
Vice President – Southeast Region

Revision Log

Rev. #	Date	Page(s)	Revision(s)
1	02/11/14	Page 1, Section 3.9	Added Vinu Abraham, P.E.