PRI Construction Materials Technologies LLC

6412 Badger Drive
Tampa, FL 33610
813.621.5777
https://www.pri-group.com/

Laboratory Test Report

Report for:	Jeff Hock Sheffield Metals International 5467 Evergreen Parkway Sheffield Village, OH 44054
Product Name:	24ga. SMI 1.5 MS
Project No.:	1802T0006
Dates Tested:	Dec. 09, 2024 - Jan. 10, 2025
Test Methods:	TAS 125-03 UL 580-06 UL 1897-12
Results Summary:	Specimen No. 1: 16" o.c. w/#10s, 15/32 plywood: -142psf, UL 580 Class 90 Specimen No. 2: 16" o.c. w/#10s, 15/32 plywood: -157psf, UL 580 Class 90 Specimen No. 3: 8" o.c. w/#10s w/ Sealant, 15/32 plywood: -217psf, UL 580 Class 90

Purpose: Determine the uplift resistance in accordance with **Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) 125-03: Standard Requirements for Metal Roofing Systems, Section 8: UL 580 (as modified for the *Florida Building Code, Building),* UL 580-06 *Test for Uplift Resistance of Roof Assemblies*** and **UL 1897-12 *Uplift Tests for Roof Covering* Systems**

Test Methods: Testing was completed as described in Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) 125-03: Standard Requirements for Metal Roofing Systems, Section 8: UL 580 (as modified for the *Florida Building Code, Building),* UL 580-06 *Test for Uplift Resistance of Roof Assemblies* and UL 1897-12 *Uplift Tests for Roof Covering* Systems. Specimens were tested to the loading schedule as described in UL 580, and where applicable, incrementally loaded in accordance with UL 1897 until failure.

Sampling: The following materials were received by PRI.

Product	Source	Date	Sampling
24ga steel SMI 1.5 MS	Clearwater, FL	Nov. 15, 2024	Metal Roofing Systems
26ga. galvanized steel clip	Clearwater, FL	Nov. 15, 2024	Metal Roofing Systems
#10-13 x 1" PH Screw	Pinellas Park, FL	Nov. 01, 2024	Metal Roofing Systems

All other roofing components were procured by PRI Construction Materials Technologies LLC through local distribution.

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report

Product Description:	24ga. SMI 1.5 MS:	24ga. ASTM A792 AZ50 Grade 50 steel; 1.5" rib; 16" wide coverage.
	#10-13 x 1 screws:	#10-13 x 1" GP Concealor Pancake Head screw; Gimlet point.
	26ga. Clip:	26ga 2in. galvanized steel clip.
	Novaflex Sealant:	ASTM C957 translucent sealant. Only for specimen 3.
Deck Description:	Underlayment:	ASTM D 226 Type II felt
	Deck 1 & 2:	CAT 15/32 PS 1-19 APA span rated, CDX 4-ply plywood sheathing installed over No. 2 lumber supports spaced 24" o.c. Decking attached with 0.113" x 2-3/8" ring shank nails spaced 6" o.c. along the perimeter and intermediate supports.
	Deck 3:	CAT 15/32 PS 1-19 APA span rated, CDX 4-ply plywood sheathing installed over No. 2 lumber supports spaced 24" o.c. Decking attached with 0.113" x 2-3/8" ring shank nails spaced **3" o.c.** along the perimeter and intermediate supports.
	Specimen Sealing:	Polyethylene film placed under the metal roof panels; tape[1]

[1]It is the judgment of the test engineer that the film and tape used to seal the specimen against air leakage did not influence the results of the test.

Results: Test data are contained in Appendix A. Photographs after testing are shown in Appendix C.

Table 1. Summary of Test Results

Specimen No.	Panel	Attachment	Passing Uplift Pressure (psf)	Failure Mode
1	24ga. SMI 1.5 MS	26ga 1-5/8" galvanized clip placed at 16" o.c down the length of the male rib and fastened using #10-13 X 1" GP Concealor pancake screw into the 2 pre alotted slots. Panels bent to 90 degrees.	142	Panel disengaged
2	24ga. SMI 1.5 MS	26ga 1-5/8" galvanized clip placed at 16" o.c down the length of the male rib and fastened using #10-13 X 1" GP Concealor pancake screw into the 2 pre alotted slots. Panels bent to 90 degrees.	157	Panel disengaged
3	24ga. SMI 1.5 MS	26ga 1-5/8" galvanized clip placed at 8" o.c down the length of the male rib and fastened using #10-13 X 1" GP Concealor pancake screw into the 2 pre alotted slots. Panels bent to 90 degrees and 3/8" bead of Novaflex sealant placed down the female rib of the panel.	217	Panel disengaged

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM ITS SUTECHNICAL DEPT.

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

Classification:

Specimen Nos. 1-3 installed as described herein meet ***Class 90*** requirements.

Statement of Attestation:

Testing was conducted in accordance with **Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) 125-03: Standard Requirements for Metal Roofing Systems, Section 8: UL 580 (as modified for the *Florida Building Code, Building*), UL 580-06 *Test for Uplift Resistance of Roof Assemblies* and UL 1897-12 *Uplift Tests for Roof Covering Systems*.** The test results and interpretations presented herein are representative of the materials supplied by the client.

Signed: Bill Hinkle
Bill Hinkle
Manager

Date: Feb. 05, 2025

Signed: Zachary R. Priest
Florida Registered Professional Engineer
P.E. Number 74021

Date: 02/07/2025

ZACHARY R. PRIEST LICENSE No 74021 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM PRI TECHNICAL DEPT.

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	Feb. 05, 2025	11	NA

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

Specimen No. 1 (UL 580 Load Schedule)

Class 30 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	16.2	0.101	0.101	0.050	0.000	Pass
5	13.8	16.2	0.151	0.151	0.151	0.050	Pass
60	13.8	8.1-27.7[1]	0.202	0.202	0.202	0.101	Pass
5	0.0	24.2	0.151	0.151	0.151	0.050	Pass
5	20.8	24.2	0.202	0.202	0.202	0.050	Pass
		Permanent Set	0.050	0.050	0.050	0.101	Pass

Class 60 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	32.3	0.151	0.151	0.151	0.050	Pass
5	27.7	32.3	0.252	0.252	0.252	0.101	Pass
60	27.7	16.2-55.4[1]	0.353	0.404	0.404	0.202	Pass
5	0.0	40.4	0.252	0.303	0.252	0.151	Pass
5	34.6	40.4	0.353	0.404	0.353	0.202	Pass
		Permanent Set	0.050	0.000	0.050	0.101	Pass

Class 90 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	48.5	0.252	0.303	0.252	0.151	Pass
5	41.5	48.5	0.404	0.404	0.404	0.252	Pass
60	41.5	24.2-48.5[1]	0.404	0.454	0.454	0.252	Pass
5	0.0	56.5	0.303	0.404	0.353	0.202	Pass
5	48.5	56.5	0.505	0.555	0.505	0.303	Pass
		Permanent Set	0.050	0.050	0.000	0.050	Pass

Notes: 1) Oscillation frequency is 10±2 sec per cycle

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

Specimen No. 1 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combined Test Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	112	0.505	0.555	0.505	0.303	Pass
1	127	0.606	0.656	0.656	0.404	Pass
1	142	0.656	0.706	0.757	0.454	Pass
0s	157	-	-	-	-	Fail

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

Specimen No. 2 (UL 580 Load Schedule)

Class 30 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	16.2	0.101	0.202	0.050	0.000	Pass
5	13.8	16.2	0.202	0.303	0.151	0.101	Pass
60	13.8	8.1-27.7[1]	0.252	0.353	0.202	0.151	Pass
5	0.0	24.2	0.202	0.252	0.151	0.101	Pass
5	20.8	24.2	0.252	0.353	0.202	0.151	Pass
		Permanent Set	0.050	0.000	0.050	0.101	Pass

Class 60 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	32.3	0.202	0.303	0.151	0.101	Pass
5	27.7	32.3	0.353	0.404	0.252	0.202	Pass
60	27.7	16.2-55.4[1]	0.454	0.555	0.353	0.303	Pass
5	0.0	40.4	0.303	0.353	0.252	0.202	Pass
5	34.6	40.4	0.404	0.505	0.353	0.303	Pass
		Permanent Set	0.050	0.000	0.050	0.050	Pass

Class 90 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	48.5	0.303	0.353	0.202	0.151	Pass
5	41.5	48.5	0.454	0.555	0.353	0.303	Pass
60	41.5	24.2-48.5[1]	0.454	0.555	0.404	0.353	Pass
5	0.0	56.5	0.353	0.454	0.252	0.252	Pass
5	48.5	56.5	0.555	0.606	0.454	0.404	Pass
		Permanent Set	0.050	0.050	0.050	0.050	Pass

Notes: 1) Oscillation frequency is 10±2 sec per cycle

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

Specimen No. 2 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combined Test Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	112	0.606	0.656	0.505	0.454	Pass
1	127	0.757	0.757	0.606	0.555	Pass
1	142	0.858	0.908	0.757	0.656	Pass
1	157	0.959	1.009	0.858	0.706	Pass
0s	172	-	-	-	-	Fail

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

Specimen No. 3 (UL 580 Load Schedule)

Class 30 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	16.2	0.101	0.101	0.101	0.151	Pass
5	13.8	16.2	0.151	0.151	0.151	0.202	Pass
60	13.8	8.1-27.7[1]	0.202	0.202	0.202	0.252	Pass
5	0.0	24.2	0.151	0.151	0.151	0.252	Pass
5	20.8	24.2	0.202	0.202	0.202	0.252	Pass
		Permanent Set	0.050	0.050	0.000	0.050	Pass

Class 60 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	32.3	0.151	0.151	0.151	0.202	Pass
5	27.7	32.3	0.303	0.252	0.252	0.303	Pass
60	27.7	16.2-55.4[1]	0.404	0.353	0.353	0.404	Pass
5	0.0	40.4	0.252	0.202	0.252	0.303	Pass
5	34.6	40.4	0.404	0.303	0.303	0.353	Pass
		Permanent Set	0.000	0.050	0.000	0.050	Pass

Class 90 Loading Sequence (UL 580)							
Duration (min)	Positive Pressure (psf)	Negative Pressure (psf)	Max Deflection Under Load (in.)				Result
			1	2	3	4	
5	0.0	48.5	0.303	0.202	0.252	0.303	Pass
5	41.5	48.5	0.454	0.353	0.353	0.404	Pass
60	41.5	24.2-48.5[1]	0.454	0.404	0.404	0.454	Pass
5	0.0	56.5	0.353	0.303	0.303	0.353	Pass
5	48.5	56.5	0.505	0.454	0.454	0.454	Pass
		Permanent Set	0.000	0.050	0.000	0.050	Pass

Notes: 1) Oscillation frequency is 10±2 sec per cycle

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pri-group.com WebSite: http://www.pri-group.com

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

Specimen No. 3 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combined Test Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	112	0.555	0.505	0.454	0.505	Pass
1	127	0.606	0.505	0.505	0.555	Pass
1	142	0.656	0.606	0.555	0.606	Pass
1	157	0.757	0.656	0.656	0.706	Pass
1	172	0.908	0.757	0.706	0.757	Pass
1	187	1.009	0.858	0.807	0.858	Pass
1	202	1.110	0.959	0.959	0.959	Pass
1	217	1.211	1.060	1.009	1.009	Pass
44s	232	-	-	-	-	Fail

ASTM A370 Tensile Properties of 24ga. steel

Specimen	Width (in)	Thickness (in)	Gage Length (in)	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation at Break (%)
1	0.4970	0.0232	2	56.9	61.4	36.8
2	0.4980	0.0236	2	56.9	61.2	33.4
3	0.4990	0.0236	2	56.9	61.0	33.2
4	0.4990	0.0237	2	56.5	60.7	32.4
5	0.4980	0.0231	2	57.5	61.6	31.3
Average				**56.9**	**61.2**	**33.4**
St.Dev.				**0.4**	**0.3**	**2.0**

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

24ga. Steel SMI 1.5 MS

26ga. Steel Clip

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.

Specimen No. 1 After Testing

Specimen No. 2 After Testing

Specimen No. 3 After Testing

END OF REPORT

THIS REPORT IS NOT TO BE CHANGED, ALTERED OR REPRODUCED IN ANY WAY WITHOUT WRITTEN CONSENT FROM THE SMI TECHNICAL DEPT.

The laboratory test results presented in this report are based on the material(s) supplied and tested. The results, and by extension any statements of conformity, opinions, or interpretations, apply the "simple acceptance" decision rule for measurement uncertainty accounting. This report is for the exclusive use of stated client. Only the client is authorized to permit copying or distribution of this report and then only in its entirety. PRI Construction Materials Technologies LLC assumes no responsibility nor makes a performance or warranty statement for this material or products and processes containing this material in connection with this report.