PRI Construction Materials Technologies LLC

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

Laboratory Test Report

Report for:	Matt Ashley A&E Metal Roofing Supply South & Echols Metal LLC 230 Lee Road 430 Smith Station, AL 36877
Product Name:	APEX
Project No.:	2264T0001
Dates Tested:	Mar. 27 – Apr. 1, 2020
Test Methods:	UL 580-06 UL 1897-12
Results Summary:	Specimen No. 1: 29ga.; 24" o.c. (2.5"-9.5-12"-12"); 60psf; Class 30 Specimen No. 2: 29ga.; 24" o.c. (2.5"-9.5-2.5"-9.5"-2.5"-9.5"); 135psf; Class 90

Purpose: Determine the uplift resistance in accordance with **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 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
29ga. APEX panel	Smith Station, AL	Mar. 6, 2020	A&E Metal
#10-16 x 1.5" HWH screws	Smith Station, AL	Mar. 6, 2020	A&E Metal

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

Product Description:

APEX:	29 ga., ASTM A 792 AZ55, Grade 80 steel, through fastened rib panel; 3/4" rib; 36" coverage; Panel drawing shown in Appendix B.
#10-16 x 1.5" HWH:	#10-16 x 1" HWH wood screws with 0.5" O.D. sealing washers

Deck Description:

Underlayment: ASTM D 226 Type II felt installed with minimum 4" side-lap and 6" end-laps and fastened using 12 ga., 1-1/4" ring shank nails and 32 ga., 1-5/8" tin caps spaced 6" o.c. along the laps and two staggered rows 12" o.c. in the field of the roll.

Deck: CAT 15/32 PS 1-09 APA span rated, CDX 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.

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	29ga. APEX	#10-16 x1.5" HWH with sealing washers installed 24" o.c. using a 2.5"-9.5"-12"-12" screw pattern across the width of the panel. The perimeter of the deck was attached using the a 2.5"-9.5"-2.5"-9.5"-2.5"-9.5" pattern at each of the panel ends, and 6" o.c. along the panel length.	60	Fastener withdrawal
2	29ga. APEX	#10-16 x1.5" HWH with sealing washers installed 24" o.c. using a 2.5"-9.5"-2.5"-9.5"-2.5"-9.5" screw pattern across the width of the panel. The perimeter of the deck was attached using the a 2.5"-4.75"-4.75"-2.5"-4.75"-4.75"-2.5"-4.75"-47.5" pattern at each of the panel ends, and 6" o.c. along the panel length.	135	Fastener withdrawal

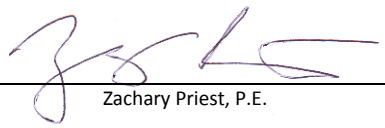
Classification:

Specimen No. 1 installed as described herein meets **Class 30**.

Specimen No. 2 installed as described herein meets **Class 90**.

Statement of Attestation:

Testing was conducted in accordance with **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: 

Zachary Priest, P.E.

Director

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	04/29/2020	9	NA

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	0.307	0.037	0.184	0.076	Pass
5	13.8	16.2	0.477	0.087	0.331	0.168	Pass
60	13.8	8.1-27.7[1]	0.461	0.070	0.316	0.152	Pass
5	0.0	24.2	0.503	0.101	0.365	0.207	Pass
5	20.8	24.2	0.650	0.158	0.492	0.294	Pass
		Permanent Set	0.196	0.049	0.045	0.032	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	0.561	0.117	0.513	0.239	Pass
5	27.7	32.3	0.801	0.247	0.613	0.600	Pass
60	27.7	16.2-55.4[1]	-	-	-	-	Failed at 13min
5	0.0	40.4					
5	34.6	40.4					
		Permanent Set					

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

Specimen No. 2 (UL 1897 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	0.135	0.117	0.082	0.048	Pass
5	13.8	16.2	0.240	0.183	0.161	0.115	Pass
60	13.8	8.1-27.7[1]	0.243	0.190	0.178	0.129	Pass
5	0.0	24.2	0.255	0.207	0.193	0.142	Pass
5	20.8	24.2	0.338	0.266	0.265	0.190	Pass
		Permanent Set	0.103	0.067	0.079	0.071	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	0.281	0.150	0.150	0.130	Pass
5	27.7	32.3	0.405	0.235	0.247	0.192	Pass
60	27.7	16.2-55.4[1]	0.442	0.269	0.283	0.238	Pass
5	0.0	40.4	0.420	0.252	0.269	0.212	Pass
5	34.6	40.4	0.535	0.413	0.464	0.398	Pass
		Permanent Set	0.168	0.135	0.155	0.147	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	0.424	0.267	0.278	0.236	Pass
5	41.5	48.5	0.588	0.441	0.498	0.432	Pass
60	41.5	24.2-48.5[1]	0.503	0.363	0.307	0.670	Pass
5	0.0	56.5	0.479	0.337	0.290	0.273	Pass
5	48.5	56.5	0.673	0.524	0.479	0.514	Pass
		Permanent Set	0.221	0.182	0.220	0.206	Pass

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

Specimen No. 2 (UL 1897 Load Schedule)

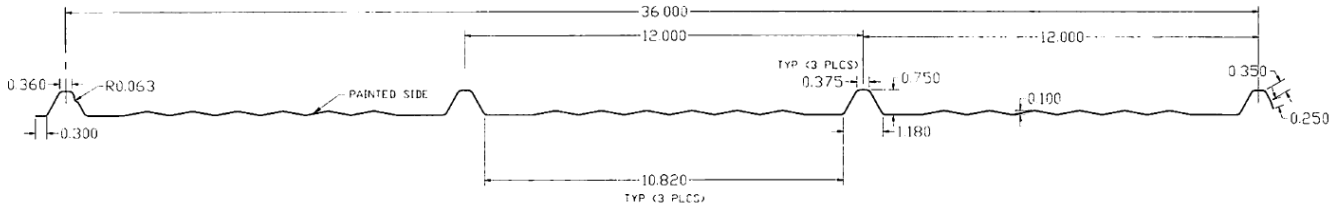
Ultimate Loading Sequence (UL 1897)						
Duration (min)	Combine Test Pressure (psf)	Max Delfection Under Load (in.)				Result
		1	2	3	4	
1	120	0.774	0.697	0.682	0.61	Pass
1	135	0.917	0.818	0.798	0.74	Pass
1	150	-	-	-	-	Failed at 11s

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

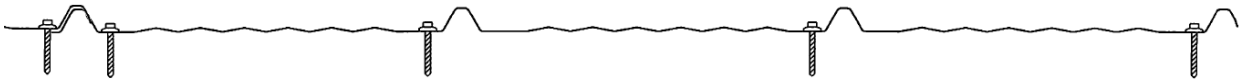
ASTM E 8 Tensile Properties of 26 ga. steel

Specimen	Width (in)	Thickness (in)	Gage Length (in)	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation at Break (%)
1	0.459	0.0125	2.0	124.7	125.5	4.7
2	0.457	0.0125	2.0	127.4	127.5	4.9
3	0.462	0.0125	2.0	124.8	124.8	5.0
4	0.462	0.0125	2.0	123.5	123.6	4.8
5	0.459	0.0125	2.0	124.7	124.9	5.0
Average	**0.460**	**0.0125**	**2.0**	**125.0**	**125.3**	**4.9**
St.Dev.	**0.002**	**0.0000**	**0.0**	**1.4**	**1.4**	**0.1**

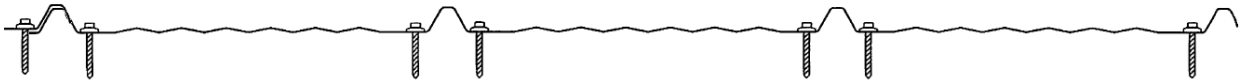
PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pricmt.com WebSite: http://www.pri-group.com



APEX



Specimen No. 1 Fastening (2.5”-9.5”-12”-12”)



Specimen No. 2 Fastening (2.5”-9.5”-2.5”-9.5”-2.5”-9.5”)

Specimen No. 1 After Testing

Specimen No. 2 After Testing

END OF REPORT