



# PRI Construction Materials Technologies LLC

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## 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:** LOW RIB

**Project No.:** 2264T0005

**Dates Tested:** Apr. 14<sup>th</sup> – 17<sup>th</sup>, 2020

**Test Methods:** UL 580-06  
UL 1897-12

**Results Summary:** Specimen No. 1: 29ga.; 24" o.c. (9"-9"-9"-9"); 75psf; Class 60  
Specimen No. 2: 29ga.; 24" o.c. (2.5"-7.5"-2.5"-7.5"-2.5"-7.5"); 195psf; 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.

<u>Product</u>	<u>Source</u>	<u>Date</u>	<u>Sampling</u>
29ga. LOW RIB 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:** LOW RIB: 29ga., 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

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**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<sup>1</sup>

<sup>1</sup>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. Low Rib	#10-16 x1.5" HWH wood screws with sealing washers installed 24" o.c. using a 9"-9"-9"-9" screw pattern across the width of the panel. The perimeter of the deck was attached using the a 2.5"-7.5"-2.5"-7.5"-2.5"-7.5"-2.5"-7.5" pattern at each of the panel ends, and 6" o.c. along the panel length.	75	Fastener Withdrawal
2	29ga. Low Rib	#10-16 x1.5" HWH wood screws with sealing washers installed 24" o.c. using a 2.5"-7.5"-2.5"-7.5"-2.5"-7.5"-2.5"-7.5" screw pattern across the width of the panel. The perimeter of the deck was attached using the a 2.5"-3.75"-3.75"-2.5"-3.75"-3.75"-2.5"-3.75"-3.75" pattern at each of the panel ends, and 4" o.c. along the panel length.	195	Fastener Withdrawal

**Classification:**

Specimen No. 1 installed as described herein meets **Class 60**.

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

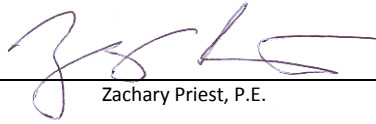
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**Statement of Attestation:**

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	05/01/2020	9	NA

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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	0.014	0.090	0.032	0.115	Pass
5	13.8	16.2	0.043	0.179	0.066	0.250	Pass
60	13.8	8.1-27.7 <sup>1</sup>	0.058	0.180	0.070	0.266	Pass
5	0.0	24.2	0.059	0.182	0.092	0.285	Pass
5	20.8	24.2	0.087	0.273	0.170	0.399	Pass
Permanent Set			0.027	0.066	0.060	0.080	

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	0.070	0.220	0.080	0.300	Pass
5	27.7	32.3	0.135	0.350	0.120	0.514	Pass
60	27.7	16.2-55.4 <sup>1</sup>	0.221	0.419	0.199	0.518	Pass
5	0.0	40.4	0.224	0.423	0.240	0.525	Pass
5	34.6	40.4	0.275	0.529	0.523	0.538	Pass
Permanent Set			0.149	0.221	0.110	0.171	

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	-	-	-	-	Failed at 3min 12s
5	41.5	48.5					
60	41.5	24.2-48.5 <sup>1</sup>					
5	0.0	56.5					
5	48.5	56.5					
Permanent Set							

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

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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	0.052	0.015	0.024	0.035	Pass
5	13.8	16.2	0.114	0.036	0.066	0.088	Pass
60	13.8	8.1-27.7 <sup>1</sup>	0.134	0.045	0.078	0.094	Pass
5	0.0	24.2	0.137	0.046	0.081	0.099	Pass
5	20.8	24.2	0.186	0.065	0.122	0.120	Pass
Permanent Set			0.063	0.035	0.057	0.064	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	0.148	0.053	0.090	0.106	Pass
5	27.7	32.3	0.288	0.144	0.221	0.306	Pass
60	27.7	16.2-55.4 <sup>1</sup>	0.438	0.259	0.363	0.394	Pass
5	0.0	40.4	0.428	0.253	0.372	0.411	Pass
5	34.6	40.4	0.497	0.286	0.432	0.563	Pass
Permanent Set			0.279	0.204	0.273	0.286	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	0.413	0.250	0.411	0.537	Pass
5	41.5	48.5	0.536	0.310	0.459	0.599	Pass
60	41.5	24.2-48.5 <sup>1</sup>	0.503	0.291	0.444	0.579	Pass
5	0.0	56.5	0.470	0.280	0.428	0.542	Pass
5	48.5	56.5	0.614	0.362	0.532	0.698	Pass
Permanent Set			0.332	0.236	0.302	0.322	Pass

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

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Specimen No. 2 (UL 1897 Load Schedule)

Ultimate Loading Sequence (UL 1897)						
Duration (min)	Positive Pressure (psf)	Max Deflection Under Load (in.)				Result
		1	2	3	4	
1	120	0.671	0.392	0.592	0.772	Pass
1	135	0.737	0.436	0.665	0.860	Pass
1	150	0.796	0.476	0.724	0.941	Pass
1	165	0.881	0.521	0.800	1.036	Pass
1	180	0.921	0.558	0.847	1.090	Pass
1	195	0.987	0.596	0.921	1.174	Pass
1	210	-	-	-	-	Failed at 5s

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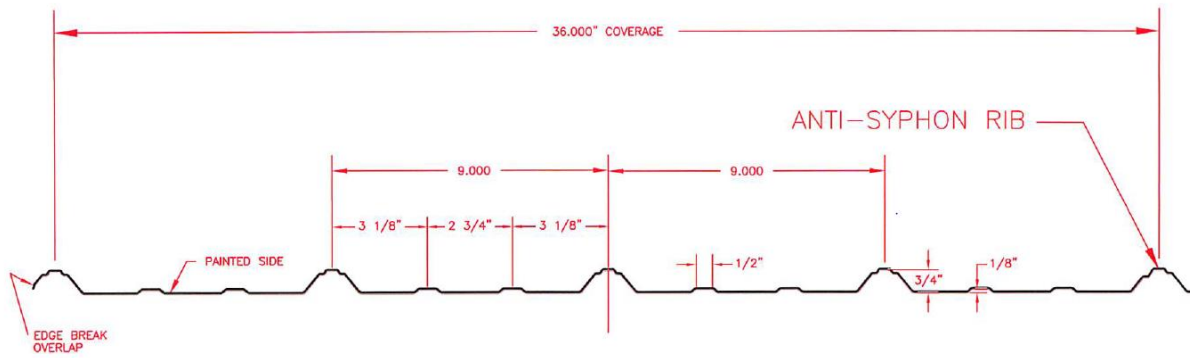
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ASTM E 8 Tensile Properties of 26 ga. steel

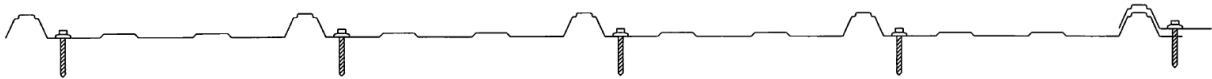
Specimen	Width (in)	Thickness (in)	Gage Length (in)	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation at Break (%)
1	0.458	0.018	2.0	91.0	90.6	4.3
2	0.461	0.017	2.0	92.9	95.8	3.6
3	0.461	0.018	2.0	89.3	91.5	3.5
4	0.461	0.018	2.0	89.7	90.9	3.5
5	0.457	0.017	2.0	94.6	95.2	4.4
<b>Average</b>	<b>0.460</b>	<b>0.018</b>	<b>2.0</b>	<b>91.5</b>	<b>92.8</b>	<b>3.9</b>
<b>St.Dev.</b>	<b>0.002</b>	<b>0.001</b>	<b>0.0</b>	<b>2.2</b>	<b>2.5</b>	<b>0.5</b>

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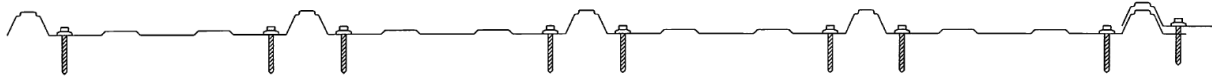
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**LOW RIB**



**Specimen No. 1 Fastening (9"-9"-9"-9")**



**Specimen No. 2 Fastening (2.5"-7.5"-2.5"-7.5"-2.5"-7.5"-2.5"-7.5")**

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**Specimen No. 1 After Testing**



**Specimen No. 2 After Testing**

**END OF REPORT**

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