

36" x 24 ga. R-Panel w/ 1" PremiR + EVO 70 spray insulation

				SECTION PROPERTIES						ALLOWABLE UNIFORM LOADS, psf For various fastener spacings (i.e. span values)
Width, in.	Gauge	Yield ksi	Weight psf	Top in Compression			Bottom in Compression			Negative Load
				I_{xx} in ⁴ /ft.	I_{xx} (eff) in ⁴ /ft.	S_{xx} in ³ /ft	I_{xx} in ⁴ /ft.	I_{xx} (eff) in ⁴ /ft.	S_{xx} in ³ /ft	5.00'
36	24	50	1.65	0.083	0.083	0.086	0.083	0.083	0.313	110.0

- Theoretical section properties for steel panels have been calculated per AISI S100 Specification for the Design of Cold-Formed Steel Structural Members.
- The addition of the spray foam does not allow for "bowing" of the broad flat under negative pressure. Therefore, the I_{xx} (eff) values are Full Section Properties for stiffness due to the application of 1" PremiR + EVO 70 spray insulation.
- S_{xx} values are to be used for flexural (bending) stress determination for downward (positive) pressure values only.
- Charted Load/Span values are based on ANSI/FM 4474 (2011) Appendix D and Florida Building Code test protocols for High Velocity Hurricane Zones (HVHZ) TAS 114-95 Appendix J.
- Charted Load/Span values above are based on Allowable Stress Design (ASD)... Load Resistance Factor Design (LRFD) technique not recommended for charted values.
- Charted Allowable Uniform Loads are based on the Ultimate Uniform Load divided by a 2.00 Factor-of-Safety.
- Charted Allowable Uniform Loads do not consider panel weight (Dead Load) or clip-to-substrate (structure) fastener connection strength.
- Panel-to-substrate (structure) fastener evaluation and analysis should be performed by a licensed structural engineer.
- Minimum recommended substrate (structure) recommendations:
 - Open-framing (i.e. purlins) - 16 ga. (design thickness = 0.0566")
 - Plywood/OSB - 15/32" or thicker is recommended to assure an effective degree of fastener thread engagement
 - Metal deck - 22 ga. (design thickness = 0.0283")
- Deflection limit consideration for positive (downward) loading is limited to a deflection ratio of L/180 of the span....where "L" is the span in inches.
- Charted Allowable Uniform Loads cannot be increased by 1/3.

This item has been electronically signed and sealed by Robert V Nangia PE/SE using a Digital Signature and data. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies



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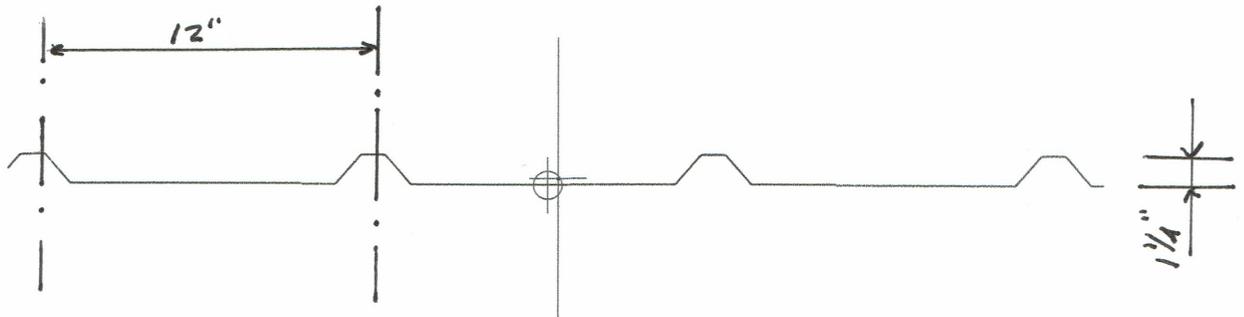
Section: R-Panel with Spray Foam x 24 ga..cfss
R-Panel with Spray Foam x 24 ga.
Petersen Aluminum Corp.
Rev. Date: 1/27/2025 1:58:18 PM
By: Jeffrey T. Shingler
Printed: 1/27/2025 1:58:41 PM

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1333 W. McDermott Dr. Suite 200
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$$\frac{I_x}{FT} = \frac{0.25 \text{ in}^4}{3'} = 0.0833 \text{ in}^4/FT$$

$$\frac{S_x}{FT} = \frac{0.259 \text{ in}^3}{3'} = 0.0863 \text{ in}^3/FT$$

$$\frac{S_y}{FT} = \frac{0.970 \text{ in}^3}{3'} = 0.3133 \text{ in}^3/FT$$



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 Petersen Aluminum Corp.
 Rev. Date: 1/27/2025 1:58:18 PM
 By: Jeffrey T. Shingler
 Printed: 1/27/2025 1:58:42 PM

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Section Inputs

Material: A653 SS Grade 50/1
 Apply cold work of forming strength increase.
 No inelastic reserve strength increase.
 Modulus of Elasticity, E 29500 ksi
 Yield Strength, Fy 50 ksi
 Tensile Strength, Fu 65 ksi
 Min Elongation in 2 inches 12 %
 Torsion Constant Override, J 0 in⁴
 Warping Constant Override, Cw 0 in⁶

Part 1, Thickness 0.0283 in (27 mil)

Placement of Part from Origin:

X to center of gravity 0 in
 Y to center of gravity 0 in

Outside dimensions, Open shape

	Length (in)	Angle (deg)	Radius (in)	Web	k Coef.	Hole Size (in)	Distance (in)
1	0.750	50.000	0.12500	None	0.000	0.000	0.375
2	1.000	0.000	0.12500	None	0.000	0.000	0.500
3	1.617	-50.000	0.12500	Single	0.000	0.000	0.809
4	10.624	0.000	0.12500	None	0.000	0.000	5.312
5	1.617	50.000	0.12500	Single	0.000	0.000	0.809
6	1.000	0.000	0.12500	None	0.000	0.000	0.500
7	1.617	-50.000	0.12500	Single	0.000	0.000	0.809
8	10.624	0.000	0.12500	None	0.000	0.000	5.312
9	1.617	50.000	0.12500	Single	0.000	0.000	0.809
10	1.000	0.000	0.12500	None	0.000	0.000	0.500
11	1.617	-50.000	0.12500	Single	0.000	0.000	0.809
12	10.624	0.000	0.12500	None	0.000	0.000	5.312
13	1.617	50.000	0.12500	Single	0.000	0.000	0.809
14	1.000	0.000	0.12500	None	0.000	0.000	0.500
15	1.617	-50.000	0.12500	Single	0.000	0.000	0.809
16	0.500	0.000	0.12500	None	0.000	0.000	0.250

Full Section Properties

Area	1.3617 in ²	Wt.	0.0046299 k/ft	Flat	48.118 in
Ix	0.25 in ⁴	rx	0.433 in	Ixy	-0.04 in ⁴
Sx(t)	0.259 in ³	y(t)	0.986 in	α	89.990 deg
Sx(b)	0.940 in ³	y(b)	0.271 in		
Zx	0.355 in ³	Height	1.257 in		
Iy	225.78 in ⁴	ry	12.877 in	x _o	-0.418 in
Sy(l)	10.224 in ³	x(l)	22.084 in	y _o	-0.260 in
Sy(r)	10.313 in ³	x(r)	21.894 in	jx	0.395 in
Zy	15.208 in ³	Width	43.978 in	jy	43.319 in
I ₁	225.78 in ⁴	r ₁	12.877 in	Cw	51.569 in ⁶
I ₂	0.25 in ⁴	r ₂	0.433 in	J	0.0003635 in ⁴
Ic	226.04 in ⁴	rc	12.884 in		
I _o	226.37 in ⁴	r _o	12.893 in		



PRI Construction Materials Technologies LLC

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Laboratory Test Report

Report for: Jodi Thomas
Henry® A Carlisle Company
9801 Chartwell Drive
Garland, TX 75243

Product Name(s): PremiR+ EVO 70 (over recover deck)

Project No.: 447T0171

Date(s) Tested: Dec. 16, 2024

Test Methods: ANSI/FM 4474(2011) Appendix D
TAS 114-95 Appendix J

Results Summary: 210psf passing uplift

Purpose: Determine the simulated wind uplift pressure in accordance with **ANSI/FM 4474 Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures** and Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 114.

Test Methods: The Uplift Resistance was tested in accordance with ANSI/FM 4474 *Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures* (2011), Appendix D: *12x24 Simulated Wind Uplift Pressure Test Procedure* and Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 114-95, Appendix J: *Test Procedure for 12 Foot by 24 Foot Simulated Uplift Pressure Resistance of Roof System Assemblies* using a 12ft x 24ft negative pressure chamber mounted over the test specimen.

Sampling: The following materials were received by PRI.

<u>Product</u>	<u>Source</u>	<u>Date</u>	<u>Sampling</u>
PremiR+ EVO 70 (B-side)	Carlisle, PA	Sep. 4, 2024	Carlisle Roof Foam & Coatings
Polyurethane Foam (A-side)	Carlisle, PA	Sep. 4, 2024	Carlisle Roof Foam & Coatings

All other materials were procured through local sources of distribution.

Conditioning: Samples were conditioned less than 28d prior to testing.

447T0171

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.

Results: Testing was performed at ambient conditions. Test pressures were increased by 15psf increments and maintained at each interval for 1 minute. Results are shown below. Installation details are contained in Appendix A. Photographs are attached in Appendix B.

Table 1. Uplift Results

Assembly No.	Test Specimen Details			Results				
	Component	Description	Attachment Detail	Passing Uplift	Failing Uplift	Time of Failure	Failure Mode	Load per Fastener
1	Existing Metal Roof Panel	24ga. galvalume steel, 1-1/4" rib; through-fastened roof panel; 36" exposure;	Installed over 5ft o.c. structural supports; Attached beginning adjacent to the major rib with #12 HWH SD screws in a 5"-3.5"-3.5" repeating patten; Side laps stitched 12" o.c. with #14 HWH SD screws	210psf	225psf	7s	Metal roof failure	N/A
	SPUF	PremiR+ EVO 70	Spray-applied to a 1" depth					

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Laboratory Test Report

Report for: Jodi Thomas
Henry® A Carlisle Company
9801 Chartwell Drive
Garland, TX 75243

Product Name(s): PremiR+ EVO 70 (over recover deck)

Project No.: 447T0171

Date(s) Tested: Dec. 16, 2024

Test Methods: ANSI/FM 4474(2011) Appendix D
TAS 114-95 Appendix J

Results Summary: 210psf passing uplift

Purpose: Determine the simulated wind uplift pressure in accordance with **ANSI/FM 4474 Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures** and Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 114.

Test Methods: The Uplift Resistance was tested in accordance with ANSI/FM 4474 *Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures* (2011), Appendix D: *12x24 Simulated Wind Uplift Pressure Test Procedure* and Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 114-95, Appendix J: *Test Procedure for 12 Foot by 24 Foot Simulated Uplift Pressure Resistance of Roof System Assemblies* using a 12ft x 24ft negative pressure chamber mounted over the test specimen.

Sampling: The following materials were received by PRI.

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Results: Testing was performed at ambient conditions. Test pressures were increased by 15psf increments and maintained at each interval for 1 minute. Results are shown below. Installation details are contained in Appendix A. Photographs are attached in Appendix B.

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	SPUF	PremiR+ EVO 70	Spray-applied to a 1" depth					

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Statement of Compliance:

The laboratory test results presented in this report are representative of the material supplied and test specimens constructed. Testing was conducted in accordance with ANSI/FM 4474 *Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures* and Florida Building Code Test Protocols for the High Velocity Hurricane Zone (HVHZ) Testing Application Standard (TAS) No. 114.

Signed: _____


Zachary R. Priest, P.E.
Director

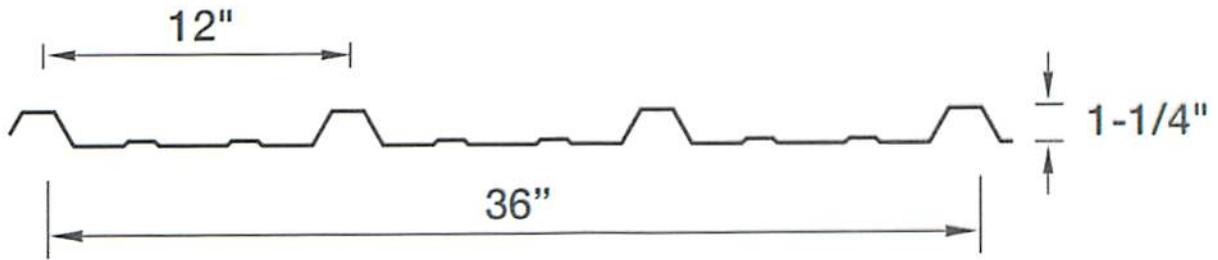

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	12/17/2024	6	NA

447T0171

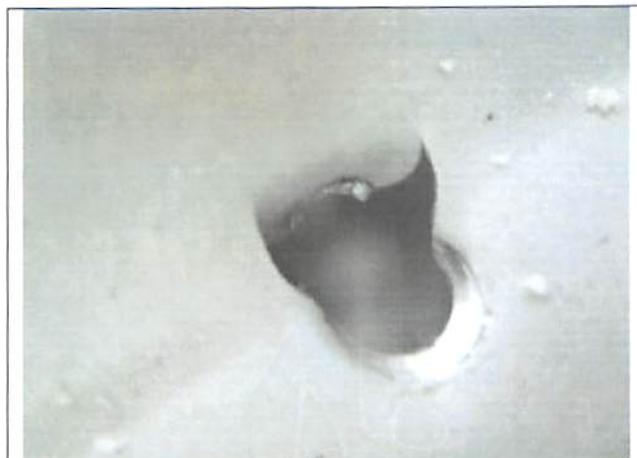
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Existing Metal Roof Panel



447T0171

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Assembly No. 1

447T0171

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ASTM E8 Tensile Properties of 24 ga. steel Metal Roof Panel

Specimen	Width (in)	Thickness (in)	Gage Length (in)	Yield Strength (ksi)	Tensile Strength (ksi)	Elongation at Break (%)
1	0.499	0.0236	2	51.1	56.0	35.9
2	0.497	0.0241	2	50.2	54.8	35.9
3	0.499	0.0238	2	50.6	55.8	37.8
4	0.498	0.0236	2	51.0	56.2	38.1
5	0.497	0.0240	2	50.0	55.1	36.2
Average	0.498	0.0238	2	50.6	55.6	36.8
St.Dev.	0.001	0.0002	0	0.5	0.6	1.1

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