

Certificate of Authorization No. 29824 17520 Edinburgh Drive Tampa, FL 33647 (813) 480-3421

EVALUATION REPORT

FLORIDA BUILDING CODE 7TH EDITION (2020)

Manufacturer: ECHOLS METAL

Issued September 4, 2020

2276 Hartsferry Road Ohatchee, AL 36271 (256) 892-0081 www.echolsmetal.com

Manufacturing: Smiths Station, AL

Quality Assurance: PRI Construction Materials Technologies (QUA9110)

SCOPE

Category: Roofing
Subcategory: Metal Roofing
Code Sections: 1504.3

Properties: Wind Resistance

REFERENCES

Entity	Report No.	Standard	<u>Year</u>
PRI Construction Materials Technologies (TST5878)	2264T0001	UL 1897	2012
		UL 580	2006
PRI Construction Materials Technologies (TST5878)	2264T0003	UL 1897	2012
		UL 580	2006
PRI Construction Materials Technologies (TST5878)	2264T0005	UL 1897	2012
		UL 580	2006
PRI Construction Materials Technologies (TST5878)	2264T0007	UL 1897	2012
,		UL 580	2006

PRODUCT DESCRIPTION

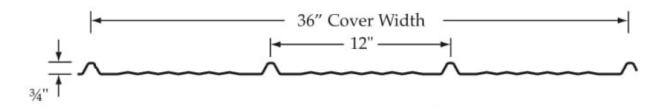
Panel: Apex

Description: Preformed panel; 0.75-inch rib; Maximum 36-inch coverage

Material: 29 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A755 steel ($F_y = min. 80 ksi$);

26 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A755 steel (F_y = min. 50 ksi);

Shall conform with FBC Section 1507.4.3



Apex Dimensions



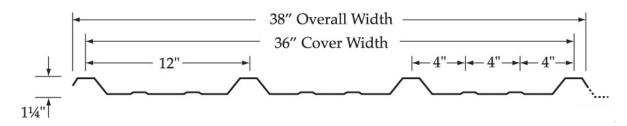
Panel: R-Panel

Description: Preformed panel; 1.25-inch rib; Maximum 36-inch coverage

Material: 26 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A755 steel (F_y = min. 80 ksi);

24 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A755 steel (F_y = min. 50 ksi);

Shall conform with FBC Section 1507.4.3



R-Panel Dimensions

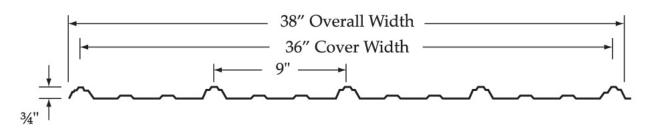
Panel: Low Rib

Description: Preformed panel; 0.75-inch rib; Maximum 36-inch coverage

Material: 29 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A 755 steel (F_y = min. 80 ksi);

26 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A 755 steel ($F_y = min. 50 ksi$);

Shall conform with FBC Section 1507.4.3



Low Rib Dimensions

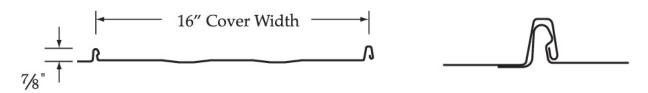
Panel: Snap Lock

Description: Preformed panel; 7/8-inch rib; Maximum 16-inch coverage

Material: 26 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A 755 steel ($F_y = min. 50 ksi$);

24 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A 755 steel (F_y = min. 50 ksi);

Shall conform with FBC Section 1507.4.3



Snap Lock Dimensions



APPROVED ASSEMBLIES

Apex	System /	A-1:								Syste	m A-2:							
Slope:	Shall be in accordance with FBC Section 1507.4.2.						Shall be in accordance with FBC Section 1507.4.2.											
Roof Deck:	Minimum 1	5/32-ii	nch APA	√ span r	ated plyv	wood sh	eathing o	r wood p	olank.	Minimur	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.							
Underlayment:	Installed in													requirer				
	#10-16 x n	ninim	um 1-in	ıch HW	H wood	screws	with 0.	5-inch c	liameter	#10-16	x minim	num 1-ir	nch HWI	H wood	screws	with 0.	5-inch d	liameter
Attachment:	sealing wa	ashers	s space	d maxim	num 24-i	nches o	.c. along	the pan	el length	sealing washers spaced maximum 24-inches o.c. along the panel length								
	with the fas	stening	g patterr	า shown	below.						with the fastening pattern shown below.							
Maximum Design	-30 psf									-67.5 ps								
Pressures:	Pressure cal	lculated	d using 2	:1 margir	n of safety	/ per 150	4.9			Pressure	e calculate	ed using 2	2:1 margin	of safety	per 1504	.9		
Fastening across panel width:	Fastening (2.5"-9.5"-12")							Fastening (2.5"-9.5"-2.5"-9.5")										
	Maximum Mean Roof Heights for Gable/Hip Roofs							Maximum Mean Roof Heights for Gable/Hip Roofs										
				Slope	es 2:12 -	- 12:12				Slopes 2:12 – 12:12								
Exposure				Basic W	/ind Spe	ed (mph)			Basic Wind Speed (mph)								
Exposure	120 1	30	140	150	160	170	180	190	200	120	130	140	150	160	170	180	190	200
					Zone 1					Zone 1								
В		:0 ft	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	60 ft	60 ft	60 ft	52 ft	35 ft	23 ft	16 ft
С		NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	60 ft	42 ft	22 ft	NA	NA	NA	NA
D	NA N	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	37 ft	17 ft	NA	NA	NA	NA	NA
							Perimete			Zone 2 (includes 2e, 2n, and 2r) – Perimeter								
В		NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	54 ft	33 ft	21 ft	NA	NA	NA	NA
С		NA	NA	NA	NA	NA	NA	NA	NA	58 ft	27 ft	NA	NA	NA	NA	NA	NA	NA
D	NA N	NA	NA	NA	NA	NA	NA	NA	NA	25 ft	NA	NA	NA	NA	NA	NA	NA	NA
				3 (includ						Zone 3 (includes 3e and 3r) – Corner								
В		NA .	NA	NA	NA	NA	NA	NA	NA	60 ft	49 ft	29 ft	18 ft	NA	NA	NA	NA	NA
С	NA N	NA	NA	NA	NA	NA	NA	NA	NA	25 ft	NA	NA	NA	NA	NA	NA	NA	NA
D	NA N	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes: 1) Exposure category for the structure location shall be as defined in the Florida Building Code 2) Limitations are based on an effective wind area of $10ft^2$ or less 3) Topographic factors such as escarpments or hills are not included in the above assessment 4) Applicable for Enclosed Buildings without overhangs 5) NA = "Not Allowed" 6) $K_d = 0.85$ 7) Projects with mean roof heights of greater than 60 ft shall be evaluated by a licensed design professional 8) See page 6 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the tables above. Design wind loads are calculated using $V_{asd} = V_{ult} \sqrt{0.6}$ per 1609.3.1.

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R-Panel	Syste	m B-1:								Syste	n B-2:							
Slope:	Shall be in accordance with FBC Section 1507.4.2.						Shall be in accordance with FBC Section 1507.4.2.											
Roof Deck:	Minimur	m 15/32-	inch AP	A span ra	ated plyv	wood sh	eathing o	r wood p	olank.	Minimur	n 15/32-	inch AP	A span ra	ated plyv	vood she	athing o	r wood p	lank.
Underlayment:	Installed	d in acco	rdance v	with FBC	require	ments.		•		Installed	l in acco	rdance v	with FBC	requirer	nents.		•	
-	#10-16	x minim	num 1.5-	inch HV	VH wood	dscrew	s with 0.	5-inch d	liameter	#10-16	x minim	um 1.5-	inch HV	/H wood	screws	with 0.	5-inch d	liameter
Attachment:						nches o	.c. along	the pane	el length	sealing washers spaced maximum 24-inches o.c. along the panel length								
	with the	fastenir	ng patteri	n shown	below.					with the	fastenin	g patteri	n shown	below.				
Maximum Design	-30 psf									-52.5 ps								
Pressures:	Pressure	e calculate	ed using 2	2:1 margir	n of safety	/ per 150	4.9			Pressure	calculate	ed using 2	2:1 margir	of safety	per 1504	1.9		
Fastening across panel width:	Fastening (12"-12")							Fastening (3"-9"-3"-9")										
	Maximum Mean Roof Heights for Gable/Hip Roofs							Maximum Mean Roof Heights for Gable/Hip Roofs										
	Slopes 2:12 – 12:12							Slopes 2:12 – 12:12										
F. 100 a a 1 1 100				Basic W	/ind Spe	ed (mph)			Basic Wind Speed (mph)								
Exposure	120	130	140	150	160	170	180	190	200	120	130	140	150	160	170	180	190	200
					Zone 1					Zone 1								
В	35 ft	20 ft	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	60 ft	52 ft	33 ft	21 ft	NA	NA	NA
С	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	49 ft	24 ft	NA	NA	NA	NA	NA	NA
D	NA	NA	NA	NA	NA	NA	NA	NA	NA	52 ft	20 ft	NA	NA	NA	NA	NA	NA	NA
		Z	Zone 2 (i	ncludes :	2e, 2n, a	and 2r) –	Perimete	er		Zone 2 (includes 2e, 2n, and 2r) – Perimeter								
В	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	37 ft	22 ft	NA	NA	NA	NA	NA	NA
С	NA	NA	NA	NA	NA	NA	NA	NA	NA	17 ft	NA	NA	NA	NA	NA	NA	NA	NA
D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			Zone	3 (includ	les 3e ar	nd 3r) –	Corner			Zone 3 (includes 3e and 3r) – Corner								
В	NA	NA	NA	NA	NA	NA	NA	NA	NA	36 ft	20 ft	NA	NA	NA	NA	NA	NA	NA
С	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Low Rib	System C-1:	System C-2:							
Slope:	Shall be in accordance with FBC Section 1507.4.2.	Shall be in accordance with FBC Section 1507.4.2.							
Roof Deck:	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.							
Underlayment:	Installed in accordance with FBC requirements.	Installed in accordance with FBC requirements.							
Attachment:	#10-16 x minimum 1.5-inch HWH wood screws with 0.5-inch diamete sealing washers spaced maximum 24-inches o.c. along the panel lengt with the fastening pattern shown below.	#10-16 x minimum 1.5-inch HWH wood screws with 0.5-inch diameter							
Maximum Design Pressures:	-37.5 psf Pressure calculated using 2:1 margin of safety per 1504.9	-97.5 psf Pressure calculated using 2:1 margin of safety per 1504.9							
Fastening across panel width:	Fastening (9"-9"-9")	Fastening (2.5"-6.5"-2.5"-6.5"-2.5"-6.5")							
	Maximum Mean Roof Heights for Gable/Hip Roofs Slopes 2:12 – 12:12	Maximum Mean Roof Heights for Gable/Hip Roofs Slopes 2:12 – 12:12							
F	Basic Wind Speed (mph)	Basic Wind Speed (mph)							
Exposure	120 130 140 150 160 170 180 190 200	120 130 140 150 160 170 180 190 200							
	Zone 1	Zone 1							
В	60 ft 43 ft 26 ft 16 ft NA NA NA NA NA	60 ft							
С	21 ft NA NA NA NA NA NA NA	60 ft 60 ft 60 ft 60 ft 60 ft 60 ft 42 ft 25 ft 15 ft							
D	NA NA NA NA NA NA NA NA	60 ft 60 ft 60 ft 60 ft 60 ft 33 ft 17 ft NA NA							
	Zone 2 (includes 2e, 2n, and 2r) – Perimeter	Zone 2 (includes 2e, 2n, and 2r) – Perimeter							
В	20 ft NA NA NA NA NA NA NA	60 ft 60 ft 60 ft 60 ft 60 ft 50 ft 33 ft 23 ft 16 ft							
С	NA NA NA NA NA NA NA NA	60 ft 60 ft 60 ft 40 ft 21 ft NA NA NA NA							
D	NA NA NA NA NA NA NA NA	60 ft 60 ft 35 ft 16 ft NA NA NA NA NA							
	Zone 3 (includes 3e and 3r) – Corner	Zone 3 (includes 3e and 3r) – Corner							
В	NA NA NA NA NA NA NA NA	60 ft 60 ft 60 ft 60 ft 42 ft 27 ft 18 ft NA NA							
С	NA NA NA NA NA NA NA NA	60 ft 60 ft 33 ft 17 ft NA NA NA NA NA							
D	NA NA NA NA NA NA NA NA NA	60 ft 31 ft NA NA NA NA NA NA NA							

Notes: 1) Exposure category for the structure location shall be as defined in the Florida Building Code 2) Limitations are based on an effective wind area of $10ft^2$ or less 3) Topographic factors such as escarpments or hills are not included in the above assessment 4) Applicable for Enclosed Buildings without overhangs 5) NA = "Not Allowed" 6) $K_d = 0.85$ 7) Projects with mean roof heights of greater than 60 ft shall be evaluated by a licensed design professional 8) See page 6 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the tables above. Design wind loads are calculated using $V_{asd} = V_{ult} \sqrt{0.6}$ per 1609.3.1.

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Snap Lock	System D-1:	5	System D-2:							
Slope:	Shall be in accordance with FBC Section 1507.4.2.	Shall be in accordance with FBC Section 1507.4.2.								
Roof Deck:	Minimum 15/32-inch APA span rated plywood sheathing or wo	od plank. N	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.							
Underlayment:	Installed in accordance with FBC requirements.	- Ir	Installed in accordance with FBC requirements.							
Attachment:	#10-8 x minimum 1-inch pan head wood screws spaced m inches o.c. along the nail strip of the male lock in the pre-pu as shown below.	#10-8 x minimum 1-inch pan head wood screws spaced maximum 12-inches o.c. along the nail strip of the male lock in the pre-punched holes as shown below. Bostik 915 sealant shall be applied over the screws along the nail strip in a 1/4-inch wide continuous bead prior to engaging the female lock.								
Maximum Design	-30 psf		-45 psf							
Pressures:	Pressure calculated using 2:1 margin of safety per 1504.9	F	Pressure calculated using 2:1 margin of safety per 1504.9							
Fastening across panel width:	Maximum Maan Baaf Haighta fay Cable Hin Baaf	0 0 1200 in	12.00 in Maximum Maan Boof Heighto for Cable/Hin Boofe							
	Maximum Mean Roof Heights for Gable/Hip Roof Slopes 2:12 – 12:12	s	Maximum Mean Roof Heights for Gable/Hip Roofs Slopes 2:12 – 12:12							
	Basic Wind Speed (mph)		Basic Wind Speed (mph)							
Exposure	120 130 140 150 160 170 180 19	90 200	120 130 140 150 160 170 180 190 200							
	Zone 1	10 200	Zone 1							
В	35 ft 20 ft NA NA NA NA NA N	A NA	60 ft 60 ft 49 ft 30 ft 19 ft NA NA NA NA							
C	NA N		51 ft 23 ft NA NA NA NA NA NA NA							
D	NA NA NA NA NA NA NA NA		21 ft NA NA NA NA NA NA NA NA							
	Zone 2 (includes 2e, 2n, and 2r) – Perimeter	14/1	Zone 2 (includes 2e, 2n, and 2r) – Perimeter							
В	NA N	A NA	38 ft 22 ft NA NA NA NA NA NA NA							
C	NA NA NA NA NA NA NA NA		NA NA NA NA NA NA NA NA NA							
D	NA NA NA NA NA NA NA NA		NA NA NA NA NA NA NA NA NA							
_	Zone 3 (includes 3e and 3r) – Corner	- 1	Zone 3 (includes 3e and 3r) – Corner							
В	NA NA NA NA NA NA NA NA	A NA	21 ft NA NA NA NA NA NA NA NA							
C	NA NA NA NA NA NA NA NA		NA NA NA NA NA NA NA NA							
D	NA NA NA NA NA NA NA		NA NA NA NA NA NA NA NA							

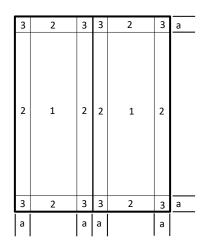
Notes: 1) Exposure category for the structure location shall be as defined in the Florida Building Code 2) Limitations are based on an effective wind area of 10ft² or less 3) Topographic factors such as escarpments or hills are not included in the above assessment 4) Applicable for Enclosed Buildings without overhangs 5) NA = "Not Allowed" 6) $K_d = 0.85$ 7) Projects with mean roof heights of greater than 60 ft shall be evaluated by a licensed design professional 8) See page 6 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the tables above. Design wind loads are calculated using $V_{asd} = V_{ult} \sqrt{0.6}$ per 1609.3.1.

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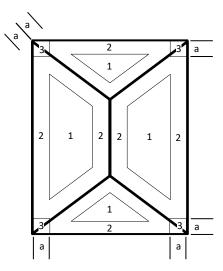
This evaluation report is provided for State of Florida product approval under Rule 61G20-3. The manufacturer shall notify CREEK Technical Services, LLC of any product changes or quality assurance changes throughout the duration for which this report is valid. This evaluation report does not express nor imply warranty, installation, recommended use, or other product attributes that are not specifically addressed herein.



Gable



Hip



Dimension "a" shall be 10% of the least horizontal dimension or (0.4 x *Mean Roof Height*), whichever is smaller, but not less than either 4% of the least horizontal dimension or 3ft.

LIMITATIONS

- 1. Fire classification is not within the scope of this evaluation.
- 2. This report is not for use in the HVHZ.
- 3. The roof deck and the roof deck attachment shall be designed by others to meet the minimum design loads established for components and cladding and in accordance with FBC requirements.
- 4. Fasteners shall penetrate through the deck a minimum 3/8-inch and shall conform to FBC section 1507.4.4 and 1506.6.
- 5. Roof systems are evaluated for wind resistance as non-structural roof cladding only. Where structural applications are desired, Chapter 16 structural load evaluations shall be provided by a licensed design professional to the satisfaction of the Authority Having Jurisdiction.
- 6. Reroofing shall be in accordance with FBC Section 1511.
- 7. Installation of the evaluated products shall comply with this report, the FBC and the manufacturer's published application instructions. Where discrepancies exist between these sources, the more restrictive and FBC compliant installation detail shall prevail.
- 8. All products listed in this report shall be manufactured under a quality assurance program in compliance with Rule 61G20-3.



COMPLIANCE STATEMENT

The products evaluated herein by Zachary R. Priest, P.E. have demonstrated compliance with the Florida Building Code, 7th Edition (2020) as evidenced in the referenced documents submitted by the named manufacturer.



Zachary R. Priest, P.E. Florida Registration No. 74021 Organization No. ANE9641

CERTIFICATION OF INDEPENDENCE

CREEK Technical Services, LLC does not have, nor will it acquire, a financial interest in any company manufacturing or distributing products under this evaluation.

CREEK Technical Services, LLC is not owned, operated, or controlled by any company manufacturing or distributing products under this evaluation.

Zachary R. Priest, P.E. does not have, nor will acquire, a financial interest in any company manufacturing or distributing products under this evaluation.

Zachary R. Priest, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

END OF REPORT