



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

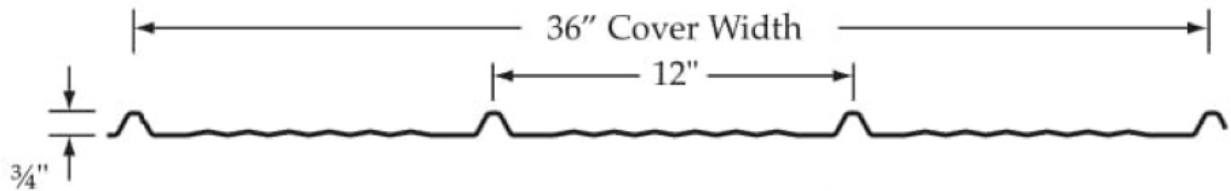
Category: Roofing
Subcategory: Metal Roofing
Code Sections: 1504.3
Properties: Wind Resistance

REFERENCES

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

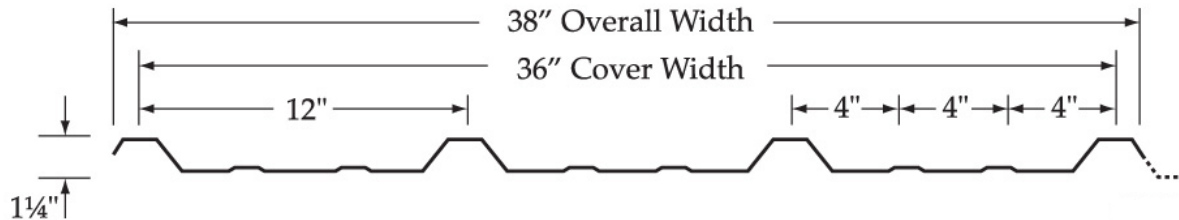
PRODUCT DESCRIPTION

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



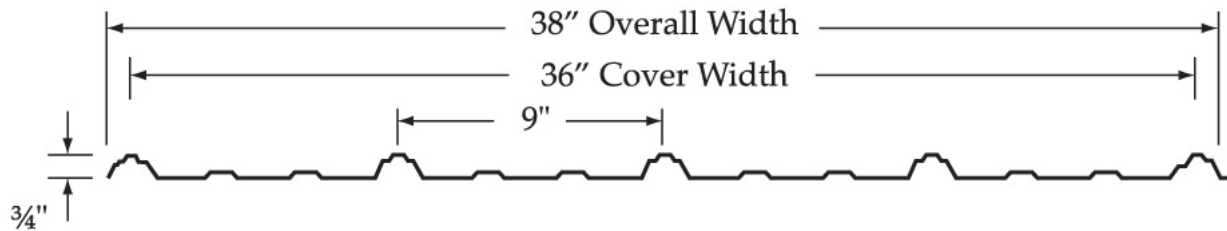
Apex Dimensions

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 ($F_y = \text{min. } 80 \text{ ksi}$);
 24 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A755 steel ($F_y = \text{min. } 50 \text{ ksi}$);
 Shall conform with FBC Section 1507.4.3



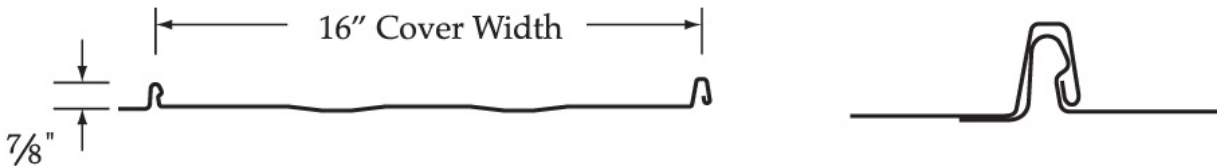
R-Panel Dimensions

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 ($F_y = \text{min. } 80 \text{ ksi}$);
 26 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A 755 steel ($F_y = \text{min. } 50 \text{ ksi}$);
 Shall conform with FBC Section 1507.4.3



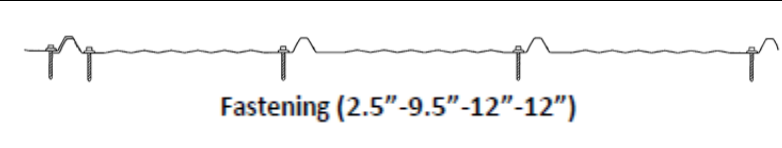
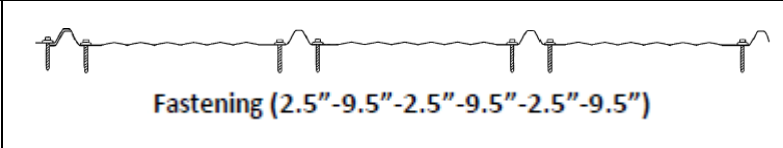
Low Rib Dimensions

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 ($F_y = \text{min. } 50 \text{ ksi}$);
 24 ga. ASTM A792 AZ55, ASTM A653 G90, or ASTM A 755 steel ($F_y = \text{min. } 50 \text{ ksi}$);
 Shall conform with FBC Section 1507.4.3

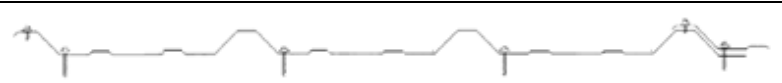
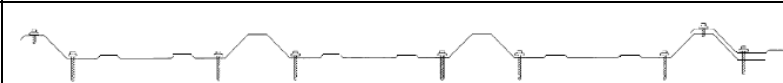




Snap Lock Dimensions

APPROVED ASSEMBLIES

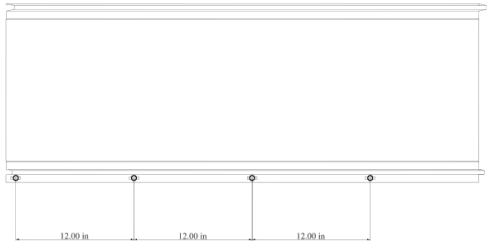
Apex	System A-1:	System A-2:																		
Slope:	Shall be in accordance with FBC Section 1507.4.2.	Shall be in accordance with FBC Section 1507.4.2.																		
Roof Deck:	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.																		
Underlayment:	Installed in accordance with FBC requirements.	Installed in accordance with FBC requirements.																		
Attachment:	#10-16 x minimum 1-inch HWH wood screws with 0.5-inch diameter sealing washers spaced maximum 24-inches o.c. along the panel length with the fastening pattern shown below.	#10-16 x minimum 1-inch HWH wood screws with 0.5-inch diameter sealing washers spaced maximum 24-inches o.c. along the panel length with the fastening pattern shown below.																		
Maximum Design Pressures:	-30 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>	-67.5 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>																		
Fastening across panel width:	 Fastening (2.5"-9.5"-12"-12")	 Fastening (2.5"-9.5"-2.5"-9.5"-2.5"-9.5")																		
	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																		
Exposure	Basic Wind Speed (mph)										Basic Wind Speed (mph)									
	120	130	140	150	160	170	180	190	200	120	130	140	150	160	170	180	190	200		
	Zone 1										Zone 1									
B	35 ft	20 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		
C	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	60 ft	42 ft	22 ft	NA	NA	NA	NA		
D	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	37 ft	17 ft	NA	NA	NA	NA	NA		
	Zone 2 (includes 2e, 2n, and 2r) – Perimeter										Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	54 ft	33 ft	21 ft	NA	NA	NA	NA		
C	NA	NA	NA	NA	NA	NA	NA	NA	NA	58 ft	27 ft	NA	NA	NA	NA	NA	NA	NA		
D	NA	NA	NA	NA	NA	NA	NA	NA	NA	25 ft	NA	NA	NA	NA	NA	NA	NA	NA		
	Zone 3 (includes 3e and 3r) – Corner										Zone 3 (includes 3e and 3r) – Corner									
B	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	49 ft	29 ft	18 ft	NA	NA	NA	NA	NA		
C	NA	NA	NA	NA	NA	NA	NA	NA	NA	25 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		

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.

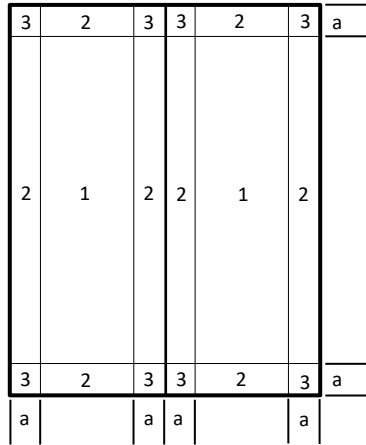
R-Panel	System B-1:	System B-2:
Slope:	Shall be in accordance with FBC Section 1507.4.2.	Shall be in accordance with FBC Section 1507.4.2.
Roof Deck:	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.	Minimum 15/32-inch APA span rated plywood sheathing or wood plank.
Underlayment:	Installed 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 diameter sealing washers spaced maximum 24-inches o.c. along the panel length with the fastening pattern shown below.	#10-16 x minimum 1.5-inch HWH wood screws with 0.5-inch diameter sealing washers spaced maximum 24-inches o.c. along the panel length with the fastening pattern shown below.
Maximum Design Pressures:	-30 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>	-52.5 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>
Fastening across panel width:	 Fastening (12"-12"-12")	 Fastening (3"-9"-3"-9"-3"-9")
	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
Exposure	Basic Wind Speed (mph)	Basic Wind Speed (mph)
	120 130 140 150 160 170 180 190 200	120 130 140 150 160 170 180 190 200
	Zone 1	Zone 1
B	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
C	NA 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 NA	52 ft 20 ft NA NA NA NA NA NA NA NA
	Zone 2 (includes 2e, 2n, and 2r) – Perimeter	Zone 2 (includes 2e, 2n, and 2r) – Perimeter
B	NA NA NA NA NA NA NA NA NA NA	60 ft 37 ft 22 ft NA NA NA NA NA NA
C	NA NA NA NA NA NA NA NA NA NA	17 ft 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 NA NA
	Zone 3 (includes 3e and 3r) – Corner	Zone 3 (includes 3e and 3r) – Corner
B	NA NA NA NA NA NA NA NA NA NA	36 ft 20 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 NA NA NA
D	NA NA NA 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} √0.6 per 1609.3.1.		

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 diameter sealing washers spaced maximum 24-inches o.c. along the panel length with the fastening pattern shown below.	#10-16 x minimum 1.5-inch HWH wood screws with 0.5-inch diameter sealing washers spaced maximum 24-inches o.c. along the panel length with the fastening pattern shown below.																		
Maximum Design Pressures:	-37.5 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>	-97.5 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>																		
Fastening across panel width:	 Fastening (9"-9"-9"-9")	 Fastening (2.5"-6.5"-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																		
Exposure	Basic Wind Speed (mph)										Basic Wind Speed (mph)									
	120	130	140	150	160	170	180	190	200	120	130	140	150	160	170	180	190	200		
	Zone 1										Zone 1									
B	60 ft	43 ft	26 ft	16 ft	NA	NA	NA	NA	NA	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft		
C	21 ft	NA	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	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									
B	20 ft	NA	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		
C	NA	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	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									
B	NA	NA	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	60 ft	60 ft	42 ft	27 ft	18 ft	NA	NA		
C	NA	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		

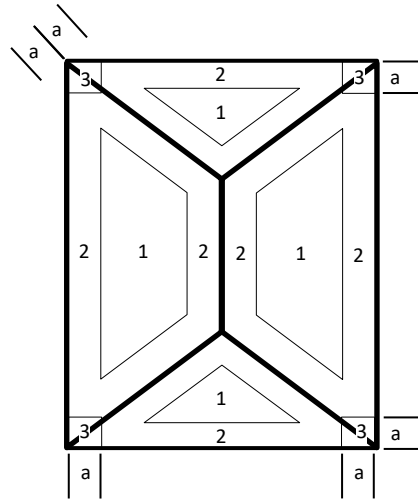
Notes: 1) Exposure category for the structure location shall be as defined in the Florida Building Code 2) Limitations are based on an effective wind area of 10ft² or less 3) Topographic factors such as escarpments or hills are not included in the above assessment 4) Applicable for Enclosed Buildings 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.

Snap Lock	System D-1:	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 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:	#10-8 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.	#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 Pressures:	-30 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>	-45 psf <i>Pressure calculated using 2:1 margin of safety per 1504.9</i>																
Fastening across panel width:																		
	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																
Exposure	Basic Wind Speed (mph)									Basic Wind Speed (mph)								
	120	130	140	150	160	170	180	190	200	120	130	140	150	160	170	180	190	200
	Zone 1									Zone 1								
B	35 ft	20 ft	NA	NA	NA	NA	NA	NA	NA	60 ft	60 ft	49 ft	30 ft	19 ft	NA	NA	NA	NA
C	NA	NA	NA	NA	NA	NA	NA	NA	NA	51 ft	23 ft	NA	NA	NA	NA	NA	NA	NA
D	NA	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									Zone 2 (includes 2e, 2n, and 2r) – Perimeter								
B	NA	NA	NA	NA	NA	NA	NA	NA	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	NA
D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Zone 3 (includes 3e and 3r) – Corner									Zone 3 (includes 3e and 3r) – Corner								
B	NA	NA	NA	NA	NA	NA	NA	NA	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	NA	NA
D	NA	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.															

Gable



Hip



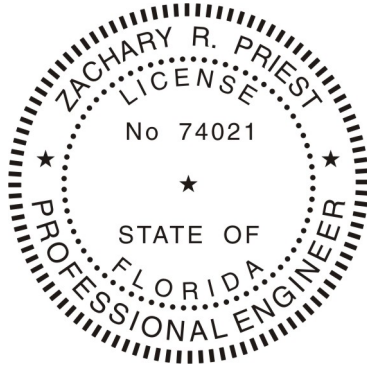
Dimension "a" shall be 10% of the least horizontal dimension or (0.4 x Mean Roof Height), whichever is smaller, but not less than either 4% of the least horizontal dimension or 3ft.

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