CREEK
TECHNICAL SERVICES, LLC

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

EVALUATION REPORT

FLORIDA BUILDING CODE, 6TH EDITION (2017)

Issued June 14, 2018

Manufacturer: BORAL ROOFING, LLC
3093 "A" Industry Street
Oceanside, CA 92054
(760) 435-9842
www.gerardusa.com

Manufacturing: Oceanside, CA

Quality Assurance: UL LLC (QUA9625)

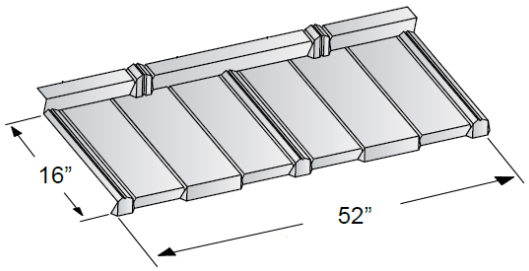
SCOPE

Category: Roofing
Subcategory: Metal Roofing
Code Sections: 1504.3.1, 1504.3.2, 1518.9, 1523.6.5.2.4
Properties: Wind Resistance, Physical Properties

PRODUCT DESCRIPTION

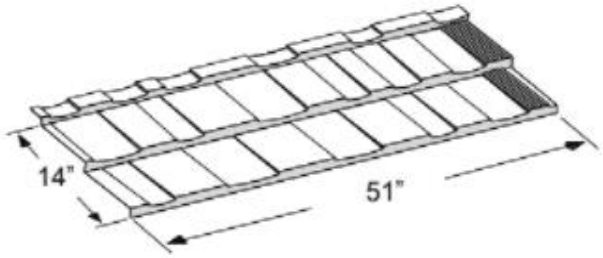
Pine Crest Shake

Profile: 16 in. x 52 in. panel; leading edge is turned down 1 in. and back edge is bent up and horizontally back 1.5 in. Panel side laps are 2 in.
Description: Preformed, fastened, stoned-coated steel panels with No. 14 granule
Material: Min. 26 ga. ASTM A792 AZ50; F_y = min. 40 ksi; Shall conform with FBC Section 1507.4.3



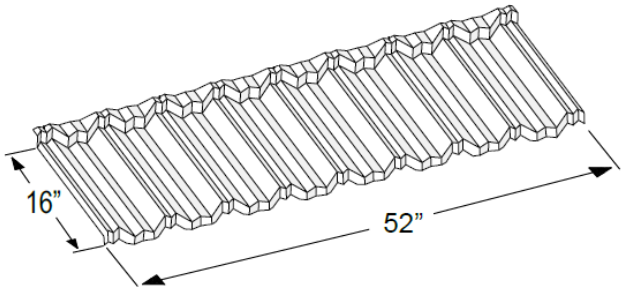
Cottage Shingle

Profile: 14 in. x 51 in. panel; leading edge is turned down 1 in. and back edge is bent up and horizontally back 1.5 in. Panel side laps are 2 in.
Description: Preformed, fastened, stoned-coated steel panels with No. 14 granule
Material: Min. 26 ga. ASTM A792 AZ50; F_y = min. 40 ksi; Shall conform with FBC Section 1507.4.3



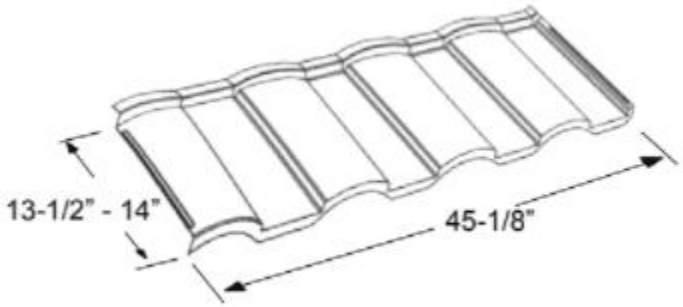
Pacific Tile

Profile: 16 in. x 52 in. panel; leading edge is turned down 1 in. and back edge is bent up and horizontally back 1.5 in. Panel side laps are 2 in.
Description: Preformed, fastened, stoned-coated steel panels with No. 14 granule
Material: Min. 26 ga. ASTM A792 AZ50; F_y = min. 40 ksi; Shall conform with FBC Section 1507.4.3



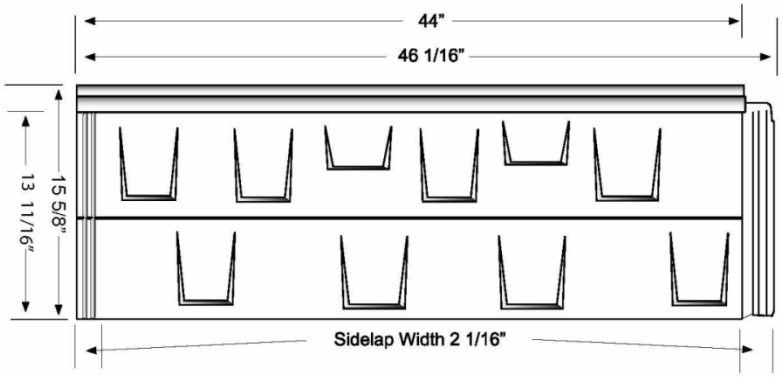
Barrel Vault Tile

Profile: 13-1/2 in. to 14 in. x 45-1/8 in. panel
Description: Preformed, fastened, stoned-coated steel panels with No. 14 granule
Material: Min. 26 ga. ASTM A792 AZ50; F_y = min. 40 ksi; Shall conform with FBC Section 1507.4.3



Granite Ridge Shingle

Profile: Metal shingle with Pittsburgh lock at head lap; 13-11/16 in. x 44 in. coverage
Description: Preformed, fastened, stoned-coated steel panels with No. 14 granule
Material: Min. 26 ga. ASTM A792 AZ50; F_y = min. 40 ksi; Shall conform with FBC Section 1507.4.3

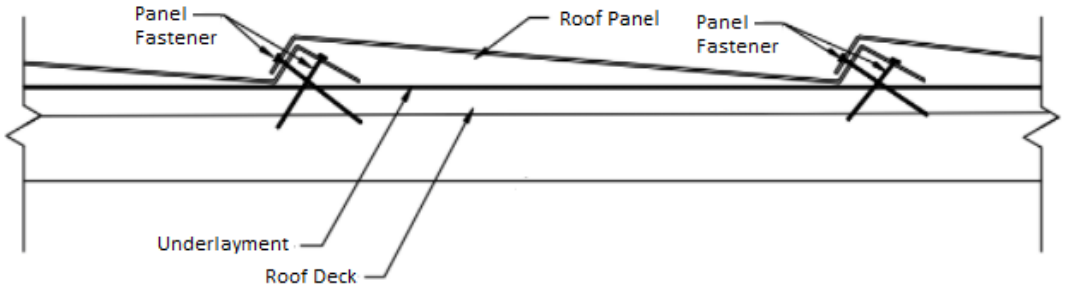


INSTALLATION

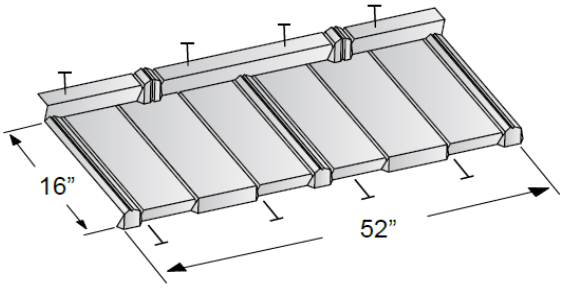
*Note - Refer to the **APPROVED ASSEMBLIES** section of this report for the maximum design pressures of the approved assemblies.*

Unless otherwise specified in this report the following installation details shall be met for the named products:

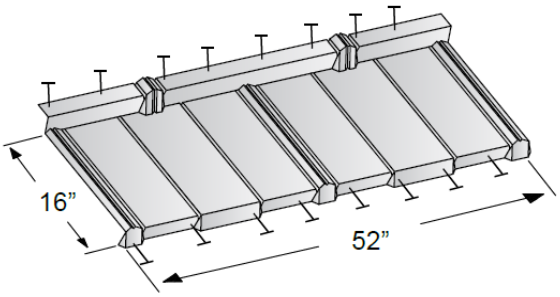
Direct-to-Deck Installation Patterns



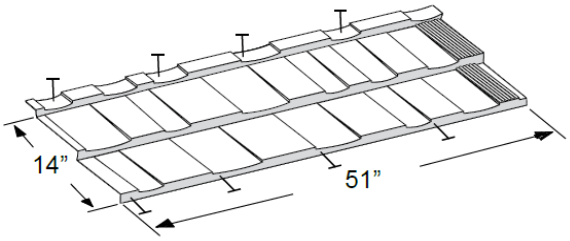
Pine Crest Shake - Direct-to-Deck Pattern 1



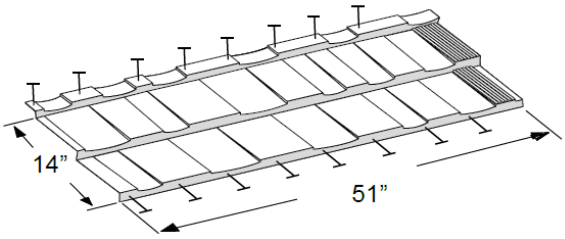
Pine Crest Shake - Direct-to-Deck Pattern 2



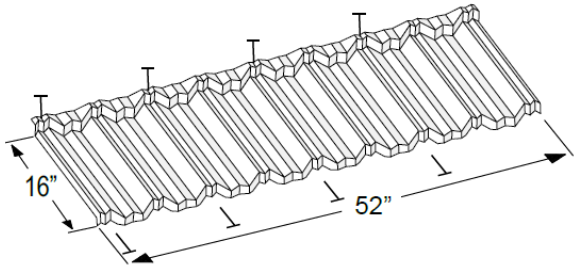
Cottage Shingle - Direct-to-Deck Pattern 1



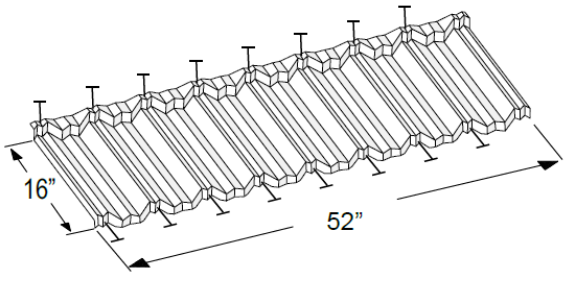
Cottage Shingle - Direct-to-Deck Pattern 2



Pacific Tile - Direct-to-Deck Pattern 1

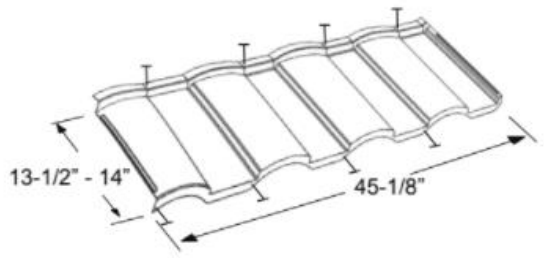


Pacific Tile - Direct-to-Deck Pattern 2

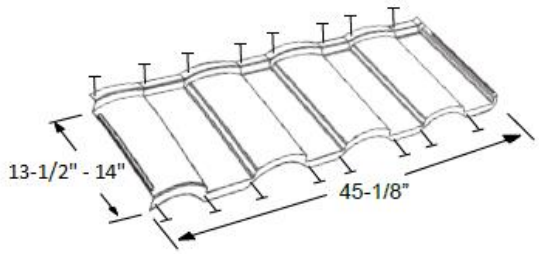


Direct-to-Deck Installation Patterns

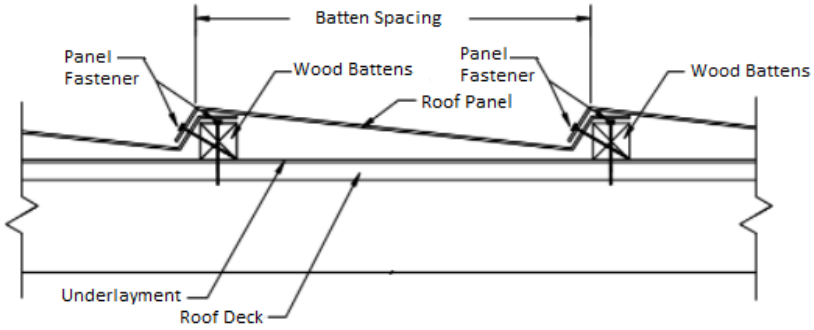
Barrel Vault - Direct-to-Deck Pattern 1



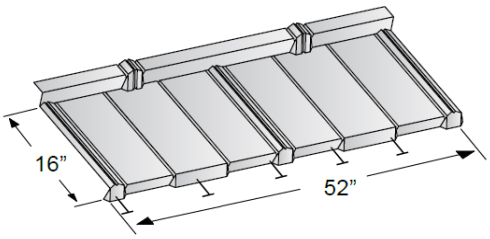
Barrel Vault - Direct-to-Deck Pattern 2



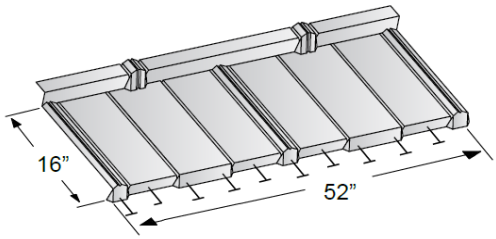
Over Batten Installation Patterns



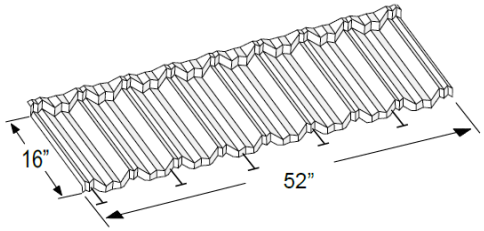
Pine Crest Shake - Batten Pattern 1



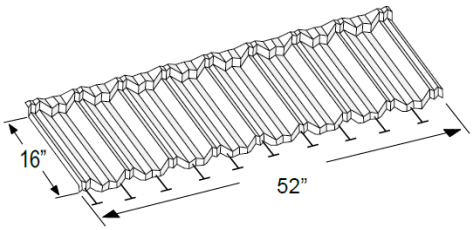
Pine Crest Shake - Batten Pattern 2



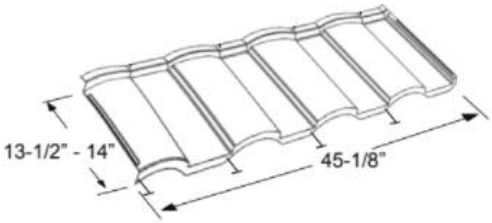
Pacific Tile - Batten Pattern 1



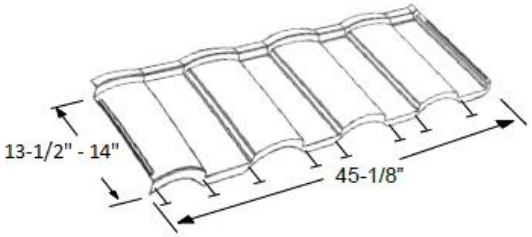
Pacific Tile - Batten Pattern 2



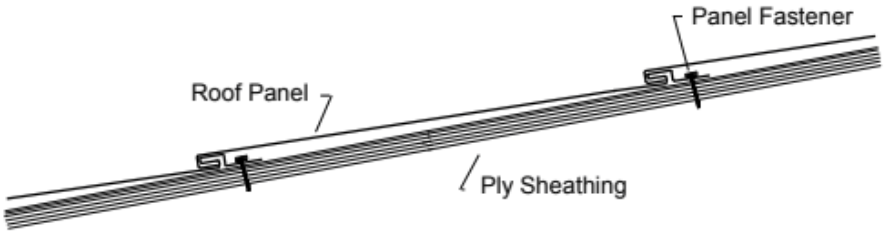
Barrel Vault - Batten Pattern 1



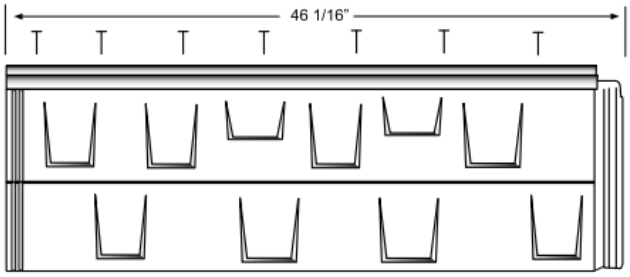
Barrel Vault - Batten Pattern 2



Granite Ridge Installation Patterns



Granite Ridge - Direct-to-Deck



APPROVED ASSEMBLIES

Direct-to-Deck Pattern 1	
Slope:	3:12 or greater
Roof Deck:	Solid or closely fitted min. 15/32 in. plywood sheathing for new and existing construction at max. 24 in. span; In the HVHZ, new construction shall be min. 19/32 in. plywood at max. 24 in. span; Designed by others in accordance with FBC requirements.
Underlayment:	Installed in accordance with FBC requirements. In the HVHZ, the minimum underlayment shall be ASTM D 226, Type II installed in accordance with Section 1518.2 or any approved underlayment for use in the HVHZ.
Attachment:	26 ga. Metal Panel installed as shown in ***INSTALLATION*** with four (4) #10-16 x 2-1/2 in. HWH corrosion resistant wood screws through the vertical leg at the headlap beginning at the center of the side lap and four (4) #10-16 x 2-1/12 in. HWH corrosion resistant wood screws through the horizontal leg at the back of panel beginning at the side lap. Fasteners shall penetrate through the deck a minimum 3/8" and shall comply with section 1506.6 and 1507.4.4.
Maximum Design Pressures:	**-52.5 psf** *Pressure calculated using 2:1 margin of safety*

Maximum Mean Roof Heights for Gable/Hip Roofs
Slopes 2:12 – 12:12

Exposure	[9]Basic Wind Speed (mph)								
	100	110	120	130	140	150	160	170	180
Zone 1 – Field									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	42 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	31 ft	19 ft
Zone 2 – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	55 ft	36 ft	NA
C	60 ft	60 ft	60 ft	60 ft	50 ft	26 ft	NA	NA	NA
D	60 ft	60 ft	60 ft	48 ft	21 ft	NA	NA	NA	NA
Zone 3[A] – Corner									
B	60 ft	60 ft	60 ft	60 ft	35 ft	NA	NA	NA	NA
C	60 ft	60 ft	33 ft	19 ft	NA	NA	NA	NA	NA
D	60 ft	35 ft	NA	NA	NA	NA	NA	NA	NA

Notes: 1) Exposure category for the structure location shall be as defined in the International Building Code 2) Limitations are based on the exposed 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 13 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the above table. Design pressures are calculated using $V_{asd} = V_{ult}\sqrt{0.6}$.

[A]For hip roofs 2:12 to 5.6:12, Zone 3 shall be treated as Zone 2

Direct-to-Deck Pattern 2	
Slope:	3:12 or greater
Roof Deck:	Solid or closely fitted min. 15/32 in. plywood sheathing for new and existing construction at max. 24 in. span; In the HVHZ, new construction shall be min. 19/32 in. plywood at max. 24 in. span; Designed by others in accordance with FBC requirements.
Underlayment:	Installed in accordance with FBC requirements. In the HVHZ, the minimum underlayment shall be ASTM D 226, Type II installed in accordance with Section 1518.2 or any approved underlayment for use in the HVHZ.
Attachment:	26 ga. Metal Panel installed as shown in ***INSTALLATION*** with eight (8) #10-16 x 2-1/2 in. HWH corrosion resistant wood screws through the vertical leg at the headlap beginning at the center of the side lap and eight (8) #10-16 x 2-1/2 in. HWH corrosion resistant wood screws through the horizontal leg at the back of panel beginning at the side lap. Fasteners shall penetrate through the deck a minimum 3/8" and shall comply with section 1506.6 and 1507.4.4.
Maximum Design Pressures:	**-127.5 psf** *Pressure calculated using 2:1 margin of safety*

Maximum Mean Roof Heights for Gable/Hip Roofs
Slopes 2:12 – 12:12

Exposure	[9]Basic Wind Speed (mph)								
	100	110	120	130	140	150	160	170	180
Zone 1 – Field									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
Zone 2 – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
Zone 3[A] – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	48 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	38 ft	20 ft

Notes: 1) Exposure category for the structure location shall be as defined in the International Building Code 2) Limitations are based on the exposed 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 13 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the above table. Design pressures are calculated using $V_{asd} = V_{ult}\sqrt{0.6}$.

[A]For hip roofs 2:12 to 5.6:12, Zone 3 shall be treated as Zone 2

Batten Pattern 1	
Slope:	3:12 or greater
Roof Deck:	Solid or closely fitted min. 15/32 in. plywood sheathing for new and existing construction at max. 24 in. span; In the HVHZ, new construction shall be min. 19/32 in. plywood at max. 24 in. span; Designed by others in accordance with FBC requirements.
Underlayment:	Installed in accordance with FBC requirements. In the HVHZ, the minimum underlayment shall be ASTM D 226, Type II installed in accordance with Section 1518.2 or any approved underlayment for use in the HVHZ.
Battens:	Nominal No. 2 2x2 SYP wood battens spaced 14-1/2 in. o.c. and oriented perpendicular to the wood joists. Battens secured with one (1) #8-11 x 3 in. bugle head wood screw at each rafter/truss intersection. In the Non-HVHZ, If counter batten/batten installation is used, refer to ***COUNTER BATTEN/BATTEN INSTALLATION*** section of this report.
Attachment:	26 ga. Metal Panel installed as shown in ***INSTALLATION*** with five (5) #10-16 x 2 in. HWH corrosion resistant wood screws (four (4) fasteners for Barrel Vault) through the vertical leg at the headlap beginning at the center of the side lap. Fasteners shall comply with section 1506.6 and 1507.4.4.
Maximum Design Pressures:	**-82.5 psf** *Pressure calculated using 2:1 margin of safety*

Maximum Mean Roof Heights for Gable/Hip Roofs
Slopes 2:12 – 6.1:12

Exposure	[9]Basic Wind Speed (mph)								
	100	110	120	130	140	150	160	170	180
Zone 1 – Field									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
Zone 2 – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	38 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	30 ft	19 ft
Zone 3[A] – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	44 ft	30 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	35 ft	19 ft	NA	NA
D	60 ft	60 ft	60 ft	60 ft	30 ft	NA	NA	NA	NA

Notes: 1) Exposure category for the structure location shall be as defined in the International Building Code 2) Limitations are based on the exposed 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 13 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the above table. Design pressures are calculated using $V_{asd} = V_{ult}\sqrt{0.6}$.

[A]For hip roofs 2:12 to 5.6:12, Zone 3 shall be treated as Zone 2

Batten Pattern 2	
Slope:	3:12 or greater
Roof Deck:	Solid or closely fitted min. 15/32 in. plywood sheathing for new and existing construction at max. 24 in. span; In the HVHZ, new construction shall be min. 19/32 in. plywood at max. 24 in. span; Designed by others in accordance with FBC requirements.
Underlayment:	Installed in accordance with FBC requirements. In the HVHZ, the minimum underlayment shall be ASTM D 226, Type II installed in accordance with Section 1518.2 or any approved underlayment for use in the HVHZ.
Battens:	Nominal No. 2 2x2 SYP wood battens spaced 14-1/2 in. o.c. and oriented perpendicular to the wood joists. Battens secured with one (1) #8-11 x 3 in. bugle head wood screw at each rafter/truss intersection. In the Non-HVHZ, If counter batten/batten installation is used, refer to ***COUNTER BATTEN/BATTEN INSTALLATION*** section of this report.
Attachment:	26 ga. Metal Panel installed as shown in ***INSTALLATION*** with ten (10) #10-16 x 2 in. HWH corrosion resistant wood screws (eight (8) fasteners for Barrel Vault) through the vertical leg at the headlap beginning at the center of the side lap. Fasteners shall comply with section 1506.6 and 1507.4.4.
Maximum Design Pressures:	**-150 psf** *Pressure calculated using 2:1 margin of safety*

Maximum Mean Roof Heights for Gable/Hip Roofs
Slopes 2:12 – 6.1:12

Exposure	[9]Basic Wind Speed (mph)								
	100	110	120	130	140	150	160	170	180
Zone 1 – Field									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
Zone 2 – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
Zone 3[A] – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	50 ft

Notes: 1) Exposure category for the structure location shall be as defined in the International Building Code 2) Limitations are based on the exposed 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 13 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the above table. Design pressures are calculated using $V_{asd} = V_{ult}\sqrt{0.6}$.

[A]For hip roofs 2:12 to 5.6:12, Zone 3 shall be treated as Zone 2

Granite Ridge Direct-to-Deck	
Slope:	4:12 or greater
Roof Deck:	Solid or closely fitted min. 15/32 in. plywood sheathing for new and existing construction at max. 24 in. span; In the HVHZ, new construction shall be min. 19/32 in. plywood at max. 24 in. span; Designed by others in accordance with FBC requirements.
Underlayment:	Installed in accordance with FBC requirements. In the HVHZ, the minimum underlayment shall be ASTM D 226, Type II installed in accordance with Section 1518.2 or any approved underlayment for use in the HVHZ.
Attachment:	26 ga. Granite Ridge installed with seven (7) #9-15 x 1-1/2 in. HWH corrosion resistance wood screws along back flange of panel as shown below (max. 6-1/4 in. o.c. fastener spacing). Side laps should be staggered a minimum of 9 inches. Fasteners shall penetrate through the deck a minimum 3/8" and shall comply with section 1506.6 and 1507.4.4.
Maximum Design Pressures:	**-110 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

Maximum Mean Roof Heights for Gable/Hip Roofs
Slopes 2:12 – 6.1:12 and >6.1 – 12:12 (Gable Roofs only)

Exposure	[9]Basic Wind Speed (mph)								
	120	130	140	150	160	170	180	190	200
Zone 1 – Field									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
Zone 2 – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	56 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	44 ft	25 ft
Zone 3[A] – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	57 ft	38 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	40 ft	23 ft	NA	NA
D	60 ft	60 ft	60 ft	60 ft	33 ft	19 ft	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 the exposed 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 13 for details for dimensions and locales of Zone 1, 2, and 3 9) V_{ult} is shown in the above table. Design pressures are calculated using $V_{asd} = V_{ult}\sqrt{0.6}$ per 1609.3.1.

[A]For hip roofs 2:12 to 5.6:12, Zone 3 shall be treated as Zone 2

BATTEN/COUNTER BATTEN INSTALLATION (NON-HVHZ ONLY)

The following tables provide requirements for batten/counter batten installations based on design wind load requirements as defined in Chapter 16 of the FBC. Counter battens shall be minimum No.2 SPF 1x4 dimensional lumber having the minimum specific gravity specified in the tables below. Battens shall be minimum No. 2 SPF 2x2 dimensional lumber having the minimum specific gravity specified in the tables below.

Batten and Counter Batten Spacing and Fastener Requirement for Reroofing with Counterbatten and Rafter of Specific Gravity ≥ 0.36

Ult. Wind Speed (mph)	Type	Roof Type and Slope																			
		Gable Roof Slope 3:12 to 6.1:12[1]												Gable Roof Slope >6.1:12 to 12:12							
		Zone 1				Zone 2				Zone 3				Zone 1				Zone 2 & 3			
	Exposure	B		C		B		C		B		C		B		C		B		C	
	Fastener[2]	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8
≤100	Batten[3]	2	1	2	1	2	1	2	1	2	2	2	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
110	Batten[3]	2	1	2	1	2	2	2	2	3	2	3	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	7	10	7	10	4	7	4	7	14	14	14	14	10	14	10	14
120	Batten[3]	2	1	2	1	2	2	2	2	3	2	3	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	10	14	10	14	7	14	7	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	10	14	10	14	7	10	7	10	4	7	4	7	10	14	10	14	10	14	10	14
130	Batten[3]	2	1	2	1	3	2	3	2	4	3	4	3	2	1	2	1	2	2	2	2
	Counterbatten (p = 1.25")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	7	10	7	10	4	7	4	7	14	14	14	14	10	14	10	14
	Counterbatten (p = 0.75")[4]	10	14	10	14	4	7	4	7	4	4	4	4	10	14	10	14	7	10	7	10
140	Batten[3]	2	1	2	1	3	2	3	2	4	3	4	3	2	2	2	2	2	2	2	2
	Counterbatten (p = 1.25")[4]	14	14	14	14	10	14	10	14	4	10	4	10	14	14	14	14	10	14	10	14
	Counterbatten (p = 1.00")[4]	10	14	10	14	7	10	7	10	4	7	4	7	10	14	10	14	10	14	10	14
	Counterbatten (p = 0.75")[4]	10	14	10	14	4	7	4	7	4	4	4	4	7	10	7	10	7	10	7	10
150	Batten[3]	2	2	2	2	3	2	3	2	5	3	5	3	2	2	2	2	3	2	3	2
	Counterbatten (p = 1.25")[4]	14	14	14	14	7	14	7	14	4	10	4	10	10	14	10	14	10	14	10	14
	Counterbatten (p = 1.00")[4]	10	14	10	14	4	7	4	7	4	4	4	4	10	14	10	14	7	10	7	10
	Counterbatten (p = 0.75")[4]	7	10	7	10	4	7	4	7	NA	4	NA	4	7	10	7	10	7	10	7	10
160	Batten[3]	2	2	2	2	4	3	4	3	5	4	5	4	3	2	3	2	3	2	3	2
	Counterbatten (p = 1.25")[4]	10	14	10	14	7	10	7	10	4	7	4	7	10	14	10	14	10	14	10	14
	Counterbatten (p = 1.00")[4]	10	14	10	14	4	7	4	7	4	4	4	4	7	10	7	10	7	10	7	10
	Counterbatten (p = 0.75")[4]	7	10	7	10	4	4	4	4	NA	4	NA	4	7	10	7	10	4	7	4	7
170	Batten[3]	3	2	3	2	4	3	4	3	6	4	6	4	3	2	3	2	3	2	3	2
	Counterbatten (p = 1.25")[4]	10	14	10	14	4	10	4	10	4	7	4	7	10	14	10	14	7	14	7	14
	Counterbatten (p = 1.00")[4]	7	10	7	10	4	7	4	7	NA	4	NA	4	7	10	7	10	7	10	7	10
	Counterbatten (p = 0.75")[4]	4	10	4	10	4	4	4	4	NA	NA	NA	NA	4	7	4	7	4	7	4	7
180	Batten[3]	3	2	3	2	4	3	4	3	6	5	6	5	3	2	3	2	3	3	3	3
	Counterbatten (p = 1.25")[4]	10	14	10	14	4	10	4	10	4	7	4	7	7	14	7	14	7	14	7	14
	Counterbatten (p = 1.00")[4]	7	10	7	10	4	4	4	4	NA	4	NA	4	7	10	7	10	4	7	4	7
	Counterbatten (p = 0.75")[4]	4	7	4	7	NA	4	NA	4	NA	NA	NA	NA	4	7	4	7	4	7	4	7

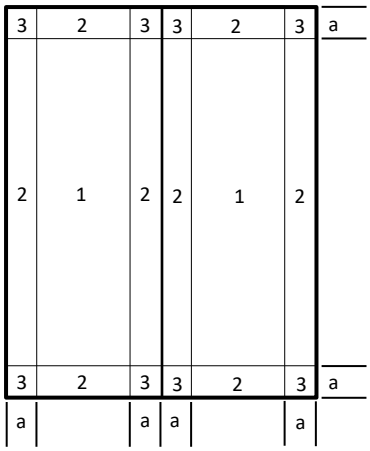
Notes:
1) For hip roofs between 3:12 and 5.6:12 Zone 3 shall be treated as Zone 2
2) The batten and counter batten fasteners shall minimum 16d x 3.5-inch ring shank nails and #8 x 3-inch wood screws
3) For batten to counter batten attachment, the number of fasteners at each intersection are shown for each wind load condition
4) For counter batten to rafter/truss attachment, the fastener spacings along each counterbatten are shown for each wind load condition. The counter batten fastener shall penetrate into the rafter/truss a minimum distance (p) as shown on the table
5) NA = not applicable

Batten and Counter Batten Spacing and Fastener Requirement for Reroofing with Counterbatten and Rafter of Specific Gravity ≥ 0.5

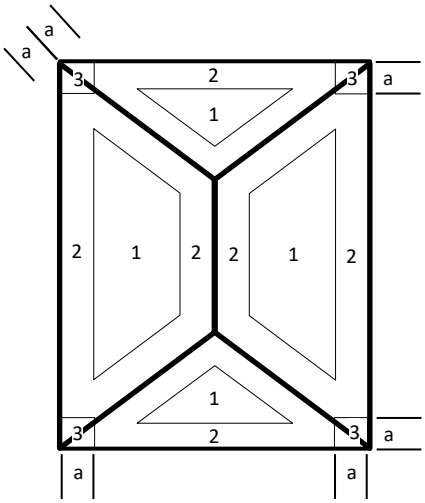
Ult. Wind Speed (mph)	Type	Roof Type and Slope																			
		Gable Roof Slope 3:12 to 6.1:12[1]												Gable Roof Slope >6.1:12 to 12:12							
		Zone 1				Zone 2				Zone 3				Zone 1				Zone 2 & 3			
	Exposure	B		C		B		C		B		C		B		C		B		C	
	Fastener[2]	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8	16d	#8
≤100	Batten[3]	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	10	14	10	14	7	14	7	14	14	14	14	14	14	14	14	14
110	Batten[3]	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
120	Batten[3]	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
130	Batten[3]	2	1	2	1	2	1	2	1	2	2	2	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
140	Batten[3]	2	1	2	1	2	1	2	1	2	2	2	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
150	Batten[3]	2	1	2	1	2	1	2	1	3	2	3	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	10	14	10	14	4	7	4	7	14	14	14	14	14	14	14	14
160	Batten[3]	2	1	2	1	2	2	2	2	3	2	3	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	14	14	14	14	10	14	10	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	14	14	14	14	7	10	7	10	4	7	4	7	14	14	14	14	10	14	10	14
170	Batten[3]	2	1	2	1	2	2	2	2	3	2	3	2	2	1	2	1	2	1	2	1
	Counterbatten (p = 1.25")[4]	14	14	14	14	10	14	10	14	7	14	7	14	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 0.75")[4]	10	14	10	14	7	10	7	10	4	7	4	7	10	14	10	14	10	14	10	14
180	Batten[3]	2	1	2	1	3	2	3	2	3	3	3	3	2	1	2	1	2	2	2	2
	Counterbatten (p = 1.25")[4]	14	14	14	14	10	14	10	14	7	10	7	10	14	14	14	14	14	14	14	14
	Counterbatten (p = 1.00")[4]	14	14	14	14	7	10	7	10	4	7	4	7	14	14	14	14	10	14	10	14
	Counterbatten (p = 0.75")[4]	10	14	10	14	7	10	7	10	4	4	4	4	10	14	10	14	7	10	7	10

Notes:
1) For hip roofs between 3:12 and 5.6:12 Zone 3 shall be treated as Zone 2
2) The batten and counter batten fasteners shall minimum 16d x 3.5-inch ring shank nails and #8 x 3-inch wood screws
3) For batten to counter batten attachment, the number of fasteners at each intersection are shown for each wind load condition
4) For counter batten to rafter attachment, the fastener spacings along each counter batten are shown for each wind load condition. The counter batten fastener shall penetrate into the rafter a minimum distance (p) as shown on the table

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

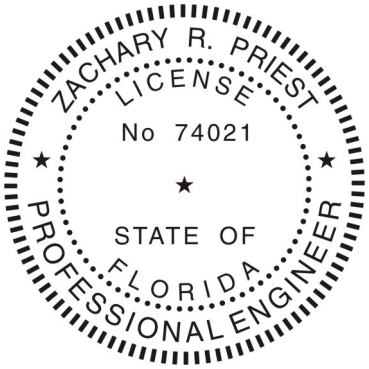
1. Fire classification is not within the scope of this evaluation.
2. The roof deck and the roof deck attachment shall be designed by others to meet the minimum design loads established for components and cladding and in accordance with FBC requirements.
3. Reroofing shall be in accordance with FBC Section 1511 outside the HVHZ or Section 1521 within the HVHZ.
4. Installation of the evaluated products shall comply with this report, the FBC and RAS 133 in the HVHZ, and the manufacturer’s published application instructions. Where discrepancies exist between these sources, the more restrictive and FBC compliant installation detail shall prevail.
5. All products listed in this report shall be manufactured under a quality assurance program in compliance with Rule 61G20-3.

REFERENCES

Entity	Report No.	Standard	Year
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01A	ASTM B 117	2016
		TAS 110	2000
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01B	ASTM G 155	2005a
		TAS 110	2000
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01C	TAS 100	1995
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01D	UL 580	2006
		UL 1897	2012
		TAS 125	2003
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01E	UL 580	2006
		UL 1897	2012
		TAS 125	2003
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01F	ASTM E 8	
PRI Construction Materials Technologies (TST5878)	BORR-099-02-01G	TAS 100	1995
PRI Construction Materials Technologies (TST5878)	GRT-007-02-01	ASTM B 117	2016
		TAS 110	2000
PRI Construction Materials Technologies (TST5878)	GRT-008-02-01	ASTM G 155	2005a
		TAS 110	2000
PRI Construction Materials Technologies (TST5878)	GRT-022-02-01	TAS 100	1995
PRI Construction Materials Technologies (TST5878)	GRT-026-02-01	UL 580	2006
		UL 1897	2012
		TAS 125	2003
CREEK Technical Services, LLC	Anchorage Calculations	ASCE 7 ANSI/AWC NDS	2010 2015

COMPLIANCE STATEMENT

The products evaluated herein by Zachary R. Priest, P.E. have demonstrated compliance with the Florida Building Code, 6th Edition (2017) as evidenced in the referenced documents submitted by the named manufacturer.



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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