CREEK
TECHNICAL SERVICES, LLC

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

EVALUATION REPORT

FLORIDA BUILDING CODE, 7TH EDITION (2020)

Issued August 4, 2020

Manufacturer: ECOSTAR, LLC
42 Edgewood Drive
Holland, NY 14080
(800) 211-7170
www.ecostarllc.com

Manufacturing Plants: Holland, NY

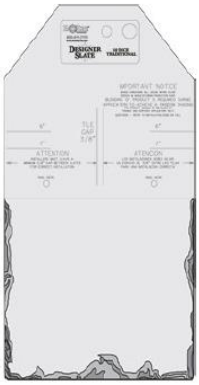
Quality Assurance: Keystone Certifications, Inc. (QUA1824)

SCOPE

Category: Roofing
Subcategory: Products Introduced as a Result of New Technology
Code Edition: Florida Building Code, 7th Edition (2020) including High-Velocity Hurricane Zones (HVHZ)
Code Sections: 1504.3, 1523.1.1, 1523.6.5
Properties: Wind Resistance

PRODUCT DESCRIPTION

Product: **Majestic Slate**
Description: Rubber and plastic-based Class C roof tile with the look of natural stone slate
Material: Formulated using recycled polyolefin polymers
Size: 10- and 12-inches wide, 18-inches long, 1/4-inch thick
Designs: 10” Traditional, 12” Traditional, Chisel Point, Beveled Edge, Beaver Tail

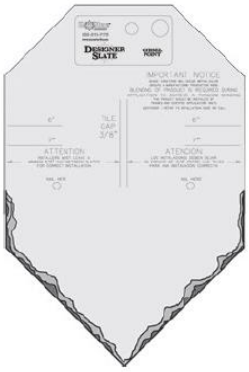


Majestic Slate
10” (254 mm) Traditional

10” x 18” long
(254 mm x 457 mm)

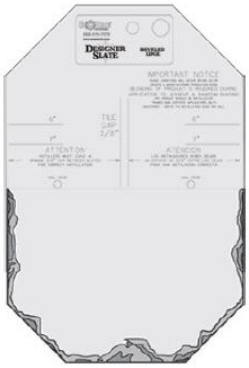
12” (305 mm)Traditional

12” wide x 18” long
(305 mm x 457 mm)



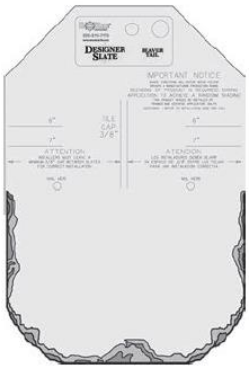
Majestic Slate
Chisel Point

12” wide x 18” long
(305 mm x 457 mm)
6” (152 mm) exposure only



Majestic Slate
Beveled Edge

12” wide x 18” long
(305 mm x 457 mm)



Majestic Slate
Beaver Tail

12” wide x 18” long
(305 mm x 457 mm)

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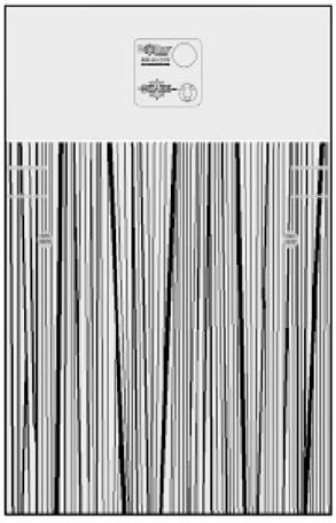
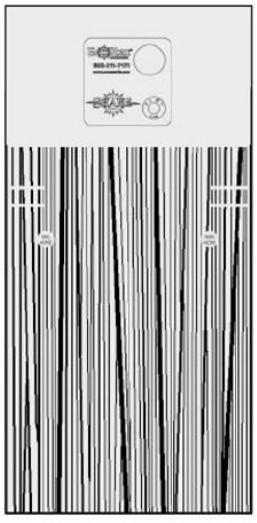
Product: **Majestic Niagara Slate**
Description: Rubber and plastic-based Class C roof tile with the look of natural stone slate
Material: Formulated using recycled polyolefin polymers
Size: 12- and 14 -inches wide, 22-inches long, 5/8-inch thick

Niagara Slate – Traditional
14" wide x 22" long
(356 mm x 559 mm)
or
12" wide x 22" long
(305 mm x 559 mm)

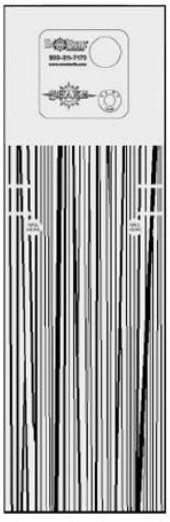
Product: **Seneca Shake**
Description: Rubber and plastic-based Class C roof tile with the look of natural cedar shake
Material: Formulated using recycled polyolefin polymers
Size: 6-, 9- and 12-inches wide, 19-inches long, 3/8-inch thick



Seneca Shake
12" wide x 19" long x ⅜" nominal
(305 mm x 483 mm x 10 mm nominal)



Seneca Shake
9" wide x 19" long x ⅜" nominal
(229 mm x 483 mm x 10 mm nominal)



Seneca Shake
6" wide x 19" long x ⅜" nominal
(152 mm x 483 mm x 10 mm nominal)

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APPROVED ASSEMBLIES

Assembly No. 1: Majestic Slate over Min. 15/32 Plywood Deck (2 nails/tile)	
Roof Tile:	Majestic Slate shall be installed with a maximum 7-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 15/32-inch plywood sheathing for new and existing construction at max. 24-inch span; In the HVHZ, deck shall be limited to existing construction only; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-108.75 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	42 ft	26 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	32 ft	17 ft	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	49 ft	33 ft	23 ft
C	60 ft	60 ft	60 ft	60 ft	36 ft	20 ft	NA	NA	NA
D	60 ft	60 ft	60 ft	30 ft	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	40 ft	27 ft	18 ft	NA
C	60 ft	60 ft	56 ft	29 ft	16 ft	NA	NA	NA	NA
D	60 ft	58 ft	24 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 2: Majestic Slate over Min. 15/32 Plywood Deck (4 nails/tile)	
Roof Tile:	Majestic Slate shall be installed with a maximum 7-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 15/32-inch plywood sheathing for new and existing construction at max. 24-inch span; In the HVHZ, deck shall be limited to existing construction only; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-127.5 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	55 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	43 ft	24 ft
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	59 ft	41 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	43 ft	25 ft	15 ft	NA
D	60 ft	60 ft	60 ft	60 ft	36 ft	17 ft	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	47 ft	32 ft	22 ft
C	60 ft	60 ft	60 ft	60 ft	34 ft	19 ft	NA	NA	NA
D	60 ft	60 ft	60 ft	28 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 3: Majestic Slate over Min. 19/32 Plywood Deck (2 nails/tile)	
Roof Tile:	Majestic Slate shall be installed with a maximum 7-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 19/32-inch plywood sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-101.25 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	50 ft	30 ft	18 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	41 ft	21 ft	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	57 ft	38 ft	26 ft	18 ft
C	60 ft	60 ft	60 ft	47 ft	25 ft	NA	NA	NA	NA
D	60 ft	60 ft	44 ft	20 ft	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	48 ft	31 ft	21 ft	NA	NA
C	60 ft	60 ft	40 ft	21 ft	NA	NA	NA	NA	NA
D	60 ft	38 ft	16 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 4: Majestic Slate over Min. 19/32 Plywood Deck (4 nails/tile)	
Roof Tile:	Majestic Slate shall be installed with a maximum 7-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 19/32-inch plywood sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-172.5 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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 (includes 2e, 2n, and 2r) – 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	39 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	52 ft	28 ft	15 ft
Zone 3 (includes 3e and 3r) – 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	46 ft	28 ft	17 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	37 ft	19 ft	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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 5: Majestic Niagara Slate over Min. 15/32 Plywood Deck (2 nails/tile)	
Roof Tile:	Majestic Niagara Slate shall be installed with a maximum 10-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.75-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 15/32-inch plywood sheathing for new and existing construction at max. 24-inch span; In the HVHZ, deck shall be limited to existing construction only; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-71.25 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	42 ft	28 ft	20 ft
C	60 ft	60 ft	60 ft	54 ft	29 ft	16 ft	NA	NA	NA
D	60 ft	60 ft	51 ft	23 ft	NA	NA	NA	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	40 ft	25 ft	16 ft	NA	NA	NA
C	60 ft	35 ft	17 ft	NA	NA	NA	NA	NA	NA
D	34 ft	NA	NA	NA	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	35 ft	22 ft	NA	NA	NA	NA	NA
C	33 ft	15 ft	NA	NA	NA	NA	NA	NA	NA
D	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Assembly No. 6: Majestic Niagara Slate over Min. 15/32 Plywood Deck (4 nails/tile)	
Roof Tile:	Majestic Niagara Slate shall be installed with a maximum 10-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.75-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 15/32-inch plywood sheathing for new and existing construction at max. 24-inch span; In the HVHZ, deck shall be limited to existing construction only; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-142.5 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	46 ft
Zone 2 (includes 2e, 2n, and 2r) – 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	42 ft	25 ft	15 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	34 ft	17 ft	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	47 ft	33 ft
C	60 ft	60 ft	60 ft	60 ft	57 ft	32 ft	18 ft	NA	NA
D	60 ft	60 ft	60 ft	53 ft	25 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 7: Majestic Niagara Slate over Min. 19/32 Plywood Deck (2 nails/tile)	
Roof Tile:	Majestic Niagara Slate shall be installed with a maximum 10-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.75-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 19/32-inch plywood sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-101.25 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	50 ft	30 ft	18 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	41 ft	21 ft	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	57 ft	38 ft	26 ft	18 ft
C	60 ft	60 ft	60 ft	47 ft	25 ft	NA	NA	NA	NA
D	60 ft	60 ft	44 ft	20 ft	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	48 ft	31 ft	21 ft	NA	NA
C	60 ft	60 ft	40 ft	21 ft	NA	NA	NA	NA	NA
D	60 ft	38 ft	16 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 8: Majestic Niagara Slate over Min. 19/32 Plywood Deck (4 nails/tile)	
Roof Tile:	Majestic Niagara Slate shall be installed with a maximum 10-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.75-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 19/32-inch plywood sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-120 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	41 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	57 ft	30 ft	17 ft
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	47 ft	33 ft
C	60 ft	60 ft	60 ft	60 ft	58 ft	32 ft	19 ft	NA	NA
D	60 ft	60 ft	60 ft	53 ft	25 ft	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	56 ft	38 ft	26 ft	18 ft
C	60 ft	60 ft	60 ft	47 ft	25 ft	NA	NA	NA	NA
D	60 ft	60 ft	43 ft	19 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 9: Majestic Niagara Slate over 7/16 OSB (2 nails/tile) – non-HVHZ ONLY	
Roof Tile:	Majestic Niagara Slate shall be installed with a maximum 10-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.75-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
Underlayment:	Installed in accordance with FBC requirements. .
Deck:	Solid or closely fitted min. 7/16 OSB sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-45 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

Exposure	[9]Basic Wind Speed (mph)								
	120	130	140	150	160	170	180	190	200
Zone 1 – Field									
B	60 ft	60 ft	49 ft	30 ft	19 ft	NA	NA	NA	NA
C	51 ft	23 ft	NA	NA	NA	NA	NA	NA	NA
D	21 ft	NA	NA	NA	NA	NA	NA	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	38 ft	22 ft	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	NA	NA	NA	NA	NA	NA
D	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	21 ft	NA	NA	NA	NA	NA	NA	NA	NA
C	NA	NA	NA	NA	NA	NA	NA	NA	NA
D	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 10: Majestic Niagara Slate over 7/16 OSB (4 nails/tile)- non-HVHZ ONLY	
Roof Tile:	Majestic Niagara Slate shall be installed with a maximum 10-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.75-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
Underlayment:	Installed in accordance with FBC requirements.
Deck:	Solid or closely fitted min. 7/16 OSB sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-90 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	45 ft
C	60 ft	60 ft	60 ft	60 ft	60 ft	50 ft	29 ft	17 ft	NA
D	60 ft	60 ft	60 ft	60 ft	42 ft	21 ft	NA	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	58 ft	38 ft	25 ft	17 ft	NA
C	60 ft	60 ft	52 ft	27 ft	NA	NA	NA	NA	NA
D	60 ft	52 ft	22 ft	NA	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	50 ft	31 ft	20 ft	NA	NA	NA
C	60 ft	46 ft	23 ft	NA	NA	NA	NA	NA	NA
D	49 ft	19 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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 11: Seneca Shake over Min. 15/32 Plywood Deck (2 nails/tile)	
Roof Tile:	Seneca Shake shall be installed with a maximum 8-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 15/32-inch plywood sheathing for new and existing construction at max. 24-inch span; In the HVHZ, deck shall be limited to existing construction only; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-82.5 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	48 ft	33 ft
C	60 ft	60 ft	60 ft	60 ft	59 ft	33 ft	19 ft	NA	NA
D	60 ft	60 ft	60 ft	54 ft	25 ft	NA	NA	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	42 ft	28 ft	18 ft	NA	NA
C	60 ft	60 ft	34 ft	18 ft	NA	NA	NA	NA	NA
D	60 ft	32 ft	NA	NA	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	59 ft	36 ft	23 ft	15 ft	NA	NA	NA
C	60 ft	31 ft	15 ft	NA	NA	NA	NA	NA	NA
D	29 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 12: Seneca Shake over Min. 15/32 Plywood Deck (4 nails/tile)	
Roof Tile:	Seneca Shake shall be installed with a maximum 8-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 15/32-inch plywood sheathing for new and existing construction at max. 24-inch span; In the HVHZ, deck shall be limited to existing construction only; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-112.5 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	50 ft	30 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	39 ft	21 ft	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	55 ft	38 ft	26 ft
C	60 ft	60 ft	60 ft	60 ft	42 ft	24 ft	NA	NA	NA
D	60 ft	60 ft	60 ft	36 ft	17 ft	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	60 ft	45 ft	30 ft	20 ft	15 ft
C	60 ft	60 ft	60 ft	34 ft	18 ft	NA	NA	NA	NA
D	60 ft	60 ft	30 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 13: Seneca Shake over Min. 19/32 Plywood Deck (2 nails/tile)	
Roof Tile:	Seneca Shake shall be installed with a maximum 8-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **two (2) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 19/32-inch plywood sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-105 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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	36 ft	22 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	51 ft	26 ft	NA	NA
Zone 2 (includes 2e, 2n, and 2r) – Perimeter									
B	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	43 ft	30 ft	20 ft
C	60 ft	60 ft	60 ft	56 ft	30 ft	17 ft	NA	NA	NA
D	60 ft	60 ft	54 ft	24 ft	NA	NA	NA	NA	NA
Zone 3 (includes 3e and 3r) – Corner									
B	60 ft	60 ft	60 ft	60 ft	54 ft	35 ft	23 ft	16 ft	NA
C	60 ft	60 ft	48 ft	25 ft	NA	NA	NA	NA	NA
D	60 ft	47 ft	20 ft	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 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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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Assembly No. 14: Seneca Shake over Min. 19/32 Plywood Deck (4 nails/tile)	
Roof Tile:	Seneca Shake shall be installed with a maximum 8-inch exposure in courses with 3/8-inch gap at side joint ensuring no keyway on keyway or "staircase" patterns; Side joints staggered between courses shall be offset by one-half a tile
Fasteners:	Fasten with **four (4) 0.120-inch x 1.5-inch stainless steel, ring shank roofing nails** per shingle at the pre-marked locations, two (2) nails per location spaced 1-inch apart. The fastener length shall be sufficient to penetrate through the deck a minimum of 3/8-inch.
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. In the HVHZ, Glacier Guard shall be applied at the eave, rake, and valley in accordance with manufacturer's application instructions.
Deck:	Solid or closely fitted min. 19/32-inch plywood sheathing for new and existing construction at max. 24-inch span; Designed by others in accordance with FBC requirements.
Slope:	2:12 or greater
Allowable Pressure:	**-180 psf** *Pressure calculated using 2:1 margin of safety per 1504.9*

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

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 (includes 2e, 2n, and 2r) – 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	47 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	60 ft	36 ft	20 ft
Zone 3 (includes 3e and 3r) – 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	57 ft	34 ft	21 ft
D	60 ft	60 ft	60 ft	60 ft	60 ft	48 ft	24 ft	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 **17** 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 $V_{asd} = V_{ult}\sqrt{0.6}$.

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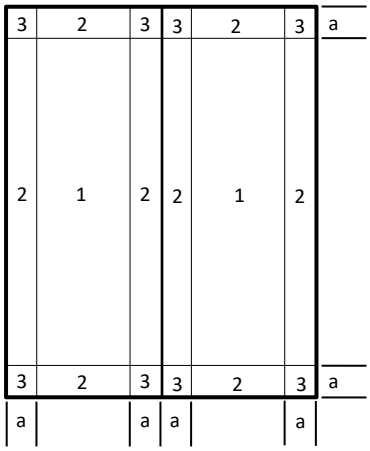
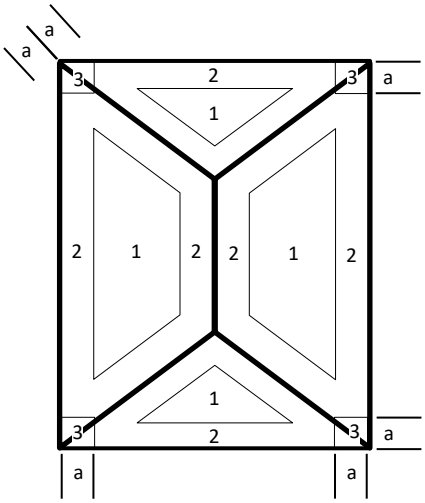
Gable



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.

REFERENCES

Entity	Report No.	Standard	Year
Intertek – York (ATI) (TST1558)	D0569.01-109-18	TAS 100[1]	1995
PRI Construction Materials Technologies (TST5878)	ESTR-003-02-01	ASTM D 635[1]	2010
		ASTM D 1929[1]	2012
		ASTM D 2843[1]	2010
PRI Construction Materials Technologies (TST5878)	ESTR-003-02-03	ASTM G 155[1]	2013
PRI Construction Materials Technologies (TST5878)	1611T0001	UL 580	2006
		UL1897	2012
		TAS125[1]	2003
PRI Construction Materials Technologies (TST5878)	1611T0002	UL 580	2006
		UL1897	2012
		TAS125[1]	2003
PRI Construction Materials Technologies (TST5878)	1611T0003	UL 580	2006
		UL1897	2012
		TAS125[1]	2003
PRI Construction Materials Technologies (TST5878)	1611T0004	UL 580	2006
		UL1897	2012
		TAS125[1]	2003
PRI Construction Materials Technologies (TST5878)	1611T0005	UL 580	2006
		UL1897	2012
		TAS125[1]	2003
PRI Construction Materials Technologies (TST5878)	1993T0006	UL 580	2006
		UL1897	2012
		TAS125[1]	2003
PRI Construction Materials Technologies (TST5878)	1993T0007	TAS 100[1]	1995
PRI Construction Materials Technologies (TST5878)	1993T0008	UL 580	2006
		UL1897	2012

[1]The submitted testing fulfills the requirements of TAS 110-2000

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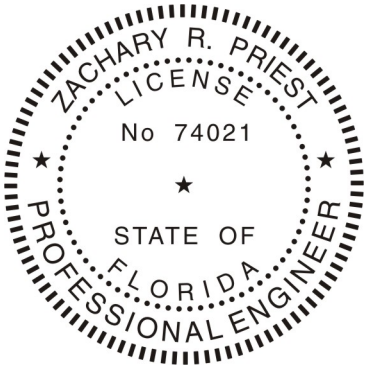
LIMITATIONS

1. Fire classification is not within the scope of this evaluation.
2. The roof deck and the roof deck attachment information are provided based on testing. FBC requirements for the rational design of the roof deck, including the attachment, are not within the scope of this evaluation.
3. Installation of the evaluated products shall comply with this report and the manufacturer's published application instructions. See manufacturer's instructions for flashing and drip edge considerations. This report shall govern in the event of conflict with the manufacturer's installation instructions.
4. All nails shall comply with FBC Section 1506.5.
5. This product should not be installed over existing roofing.
6. 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) including High-Velocity Hurricane Zones (HVHZ) 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

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END OF REPORT

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