



**EXTERIOR RESEARCH & DESIGN, LLC.**

*Certificate of Authorization #9503*

353 CHRISTIAN STREET, UNIT #13

OXFORD, CT 06478

(203) 262-9245

**EVALUATION REPORT**

**Eagle Roofing Products Florida LLC.**

1575 East Country Road 470

Sumterville, FL 33585

**(800) 400-3245**

**Evaluation Report 15625.08.17**

**FL22854**

**Date of Issuance: 08/14/2017**

**SCOPE:**

This Evaluation Report is issued under **Rule 61G20-3** and the applicable rules and regulations governing the use of construction materials in the State of Florida. The documentation submitted has been reviewed by Robert Nieminen, P.E. for use of the product under the Florida Building Code and Florida Building Code, Residential Volume. The products described herein have been evaluated for compliance with the **6<sup>th</sup> Edition (2017) Florida Building Code (HVHZ)** sections noted herein.

**DESCRIPTION: Eagle Roof Tiles**

**LABELING:** Labeling shall be in accordance with the requirements the Accredited Quality Assurance Agency noted herein.

**CONTINUED COMPLIANCE:** This Evaluation Report is valid until such time as the named product(s) changes, the referenced Quality Assurance documentation changes, or provisions of the Code that relate to the product change. Acceptance of this Evaluation Report by the named client constitutes agreement to notify Robert Nieminen, P.E. if the product changes or the referenced Quality Assurance documentation changes. Trinity|ERD requires a complete review of this Evaluation Report relative to updated Code requirements with each Code Cycle.

**ADVERTISEMENT:** The Evaluation Report number preceded by the words "Evaluated by Robert Nieminen, P.E." may be displayed in advertising literature. If any portion of the Evaluation Report is displayed, then it shall be done in its entirety.

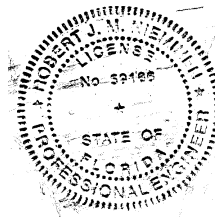
**INSPECTION:** Upon request, a copy of this entire Evaluation Report shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This Evaluation Report consists of pages 1 through 7.

**Prepared by:**

**Robert J.M. Nieminen, P.E.**

*Florida Registration No. 59166, Florida DCA ANE1983*



The facsimile seal appearing was authorized by Robert Nieminen, P.E. on 08/14/2017. This does not serve as an electronically signed document. Signed, sealed hardcopies have been transmitted to the Product Approval Administrator and to the named client

**CERTIFICATION OF INDEPENDENCE:**

1. Trinity|ERD does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products it evaluates.
2. Trinity|ERD is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.
3. Robert Nieminen, P.E. does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the evaluation reports are being issued.
4. Robert Nieminen, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.
5. This is a building code evaluation. Neither Trinity|ERD nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.

**ROOFING SYSTEM EVALUATION:**

**1. SCOPE:**

**Product Category:** Roofing  
**Sub-Category:** Roofing Tiles

**Compliance Statement:** Eagle Roof Tiles, as produced by Eagle Roofing Products Florida LLC, have demonstrated compliance with the following sections of the 6<sup>th</sup> Edition (2017) Florida Building Code (HVHZ) through testing in accordance with the following Standards. Compliance is subject to the Installation Requirements and Limitations / Conditions of Use set forth herein.

**2. STANDARDS:**

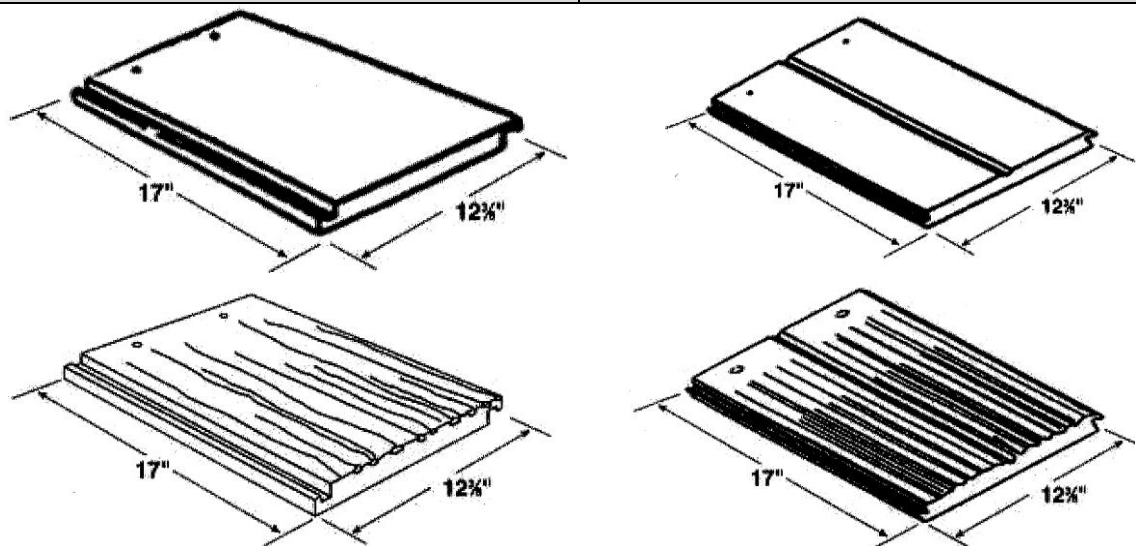
<u>Section</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1523.6.5.2	Physical Properties	TAS 112	1995
1523.6.5.2	Wind Driven Rain	TAS 100	1995
1523.6.5.2.2	Static Uplift Resistance	TAS 101	1995
1523.6.5.2.3	Static Uplift Resistance	TAS 102	1995
1523.6.5.2.3	Static Uplift Resistance	TAS 102(A)	1995

**3. REFERENCES:**

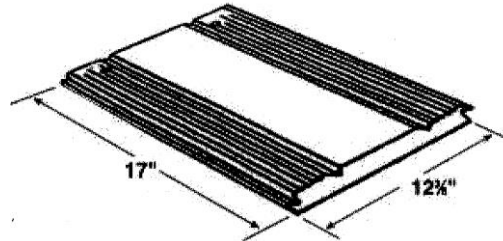
<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ATL (TST 3782)	Physical Properties	RT0310.01-17	03/15/2017
ATL (TST 3782)	Physical Properties	RT0310.02-17	03/15/2017
ATL (TST 3782)	Physical Properties	RT0310.03-17	03/15/2017
Miami-Dade (CER1592)	HVHZ certification	16-0314.06	06/16/2016
Miami-Dade (CER1592)	HVHZ certification	16-0314.07	06/16/2016
Miami-Dade (CER1592)	HVHZ certification	16-0314.08	06/16/2016
Tile Roof Institute	TAS 100, TAS 101, 102, 102(A)	Membership Letter	11/29/2005
ATI (QUA 1844)	Quality Assurance	Inspection Report	06/07/2017

**4. PRODUCT DESCRIPTION:**

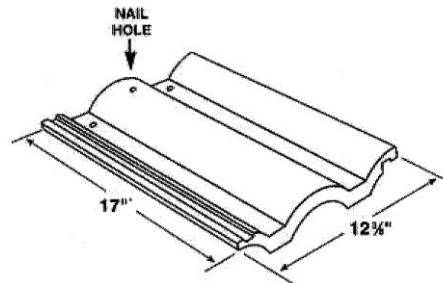
4.1	<b>TAS 112, Type 3a (Other, Flat Tile), Class III:</b>	<b>BEL AIR</b>
-----	--	----------------



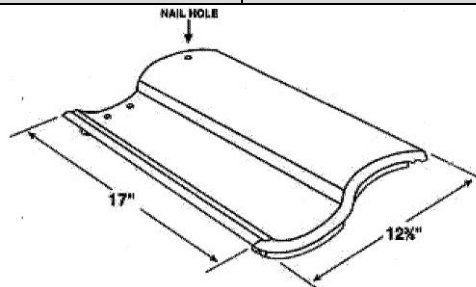
TAS 112, Type 3a (Other, Flat Tile), Class III:	BEL AIR (CONTINUED)
---	---------------------



4.2	TAS 112, Type 1b (Interlock, Low Profile), Class III:	MALIBU
-----	---	--------



4.3	TAS 112, Type 1a (Interlock, High Profile), Class III:	CAPISTRANO
-----	--	------------



## 5. LIMITATIONS:

- 5.1 This is a building code evaluation. Neither Trinity|ERD nor Robert Nieminen, P.E. are, in any way, the Designer of Record for any project on which this Evaluation Report, or previous versions thereof, is/was used for permitting or design guidance unless retained specifically for that purpose.
- 5.2 This Evaluation Report is for use in **FBC HVHZ** jurisdictions or other jurisdictions adopting **FBC HVHZ** requirements.
- 5.3 Fire classification is not part of this evaluation; refer to **FBC 1516** or listing by an approved testing agency for fire rating of this product.
- 5.4 Reference is made to **FBC 1512.4.2.4** regarding field testing of completed tile roof installations.
- 5.5 Applicant shall retain the services of an FBC listed, accredited laboratory to perform quarterly tests in accordance with **TAS 112, Appendix 'A'**.
- 5.6 Minimum underlayment shall comply with the **RAS 118, RAS 119** or **RAS 120**, as applicable. Underlayment products shall hold current Florida Statewide Product Approval or Local Approval for use in tile roof assemblies in **FBC HVHZ** jurisdictions.
- 5.7 Minimum roof deck requirements shall be in accordance with applicable **FBC HVHZ** requirements.
- 5.8 All products in the roof assembly shall have quality assurance audit in accordance with the **F.A.C. Rule 61G20-3**.

**6. INSTALLATION:**

- 6.1 **Eagle Roof Tiles** may be mechanically fastened, mortar-set or adhesive-set. Installation shall comply with manufacturer’s current published instructions, but not less than the requirements of **RAS 118, RAS 119 or RAS 120**, as applicable.
- 6.2 Underlayment shall be installed in accordance with **RAS 118, RAS 119 or RAS 120**, as applicable, or the underlayment manufacturer’s current **FBC HVHZ** Product Approval.
- 6.3 Attachment Calculations: **Eagle Roof Tiles** shall be evaluated as a ‘**Moment-Based System**’ in accordance with **Roofing Application Standard RAS 127-11** using the data outlined herein.

TABLE 1: AERODYNAMIC MULTIPLIERS – $\lambda$ (FT <sup>3</sup> )		
Tile	Batten Application	Direct-Deck Application
Bel Air	0.301	0.278
Malibu	0.305	0.282
Capistrano	0.300	0.277

TABLE 2: RESTORING MOMENT DUE TO GRAVITY – $M_g$ (FT-LBF)										
Tile	Roof Slope ( $\theta$ )									
	3:12 $\leq \theta <$ 4:12		4:12 $\leq \theta <$ 5:12		5:12 $\leq \theta <$ 6:12		6:12 $\leq \theta <$ 7:12		$\theta \geq$ 7:12	
	Battens	Direct	Battens	Direct	Battens	Direct	Battens	Direct	Battens	Direct
Bel Air	7.48	7.71	7.37	7.59	7.22	7.44	7.05	7.27	6.86	7.07
Malibu	6.30	6.65	6.21	6.54	6.08	6.41	2.93	6.25	5.77	6.08
Capistrano	6.68	6.99	6.57	6.88	6.44	6.73	6.28	6.56	6.10	6.38

TABLE 3: ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT – $M_f$ (FT-LBF)								
MECHANICALLY ATTACHED SYSTEMS								
Tile	Fastener					Direct-Deck (min. 15/32” plywood)	Direct-Deck (min. 19/32” plywood)	Battens
	Type	#	Size	Shank	Clip			
Bel Air	Nail	One (1) <sup>2</sup>	10d	Smooth or Screw	N/A	7.3	9.8	4.9
	Nail	Two (2)	10d	Smooth or Screw	N/A	14.0	18.8	7.4
	Nail	One (1) <sup>2</sup>	10d	Smooth or Screw	Eave	19.0	19.0	22.1
	Nail	One (1) <sup>2</sup>	10d	Smooth or Screw	Field	24.3	24.3	24.2
	Nail	Two (2)	10d	Smooth or Screw	Eave	31.9	31.9	32.2
	Nail	Two (2)	10d	Smooth or Screw	Field	35.5	35.5	34.8
	Nail	Two (2)	10d	Ring	N/A	30.9	38.1	17.2
	Nail <sup>1</sup>	Two (2) <sup>1</sup>	10d <sup>1</sup>	Ring <sup>1</sup>	N/A	50.3	65.5	48.3
	Screw	One (1) <sup>2</sup>	#8	N/A	N/A	30.8	30.8	18.2
	Screw	Two (2)	#8	N/A	N/A	51.7	51.7	24.4
<sup>1</sup> Installation with a 4-inch tile headlap and fasteners located min. 2½-inch from head of tile.								
<sup>2</sup> For one (1) fastener installations, utilize hole that is closest to the interlocking edge.								

**TABLE 3: ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT – Mf (FT-LBF)  
MECHANICALLY ATTACHED SYSTEMS**

Tile	Fastener					Direct-Deck (min. 15/32" plywood)	Direct-Deck (min. 19/32" plywood)	Battens
	Type	#	Size	Shank	Clip			
Malibu	Nail	One (1) <sup>2</sup>	10d	Smooth or Screw	N/A	8.8	11.8	4.1
	Nail	Two (2)	10d	Smooth or Screw	N/A	16.4	21.9	7.1
	Nail	One (1) <sup>2</sup>	10d	Smooth or Screw	Eave	19.0	19.0	22.1
	Nail	One (1) <sup>2</sup>	10d	Smooth or Screw	Field	24.3	24.3	24.2
	Nail	Two (2)	10d	Smooth or Screw	Eave	31.9	31.9	32.2
	Nail	Two (2)	10d	Smooth or Screw	Field	35.5	35.5	34.8
	Nail	Two (2)	10d	Ring	N/A	27.8	37.4	28.8
	Nail <sup>1</sup>	Two (2) <sup>1</sup>	10d <sup>1</sup>	Ring <sup>1</sup>	N/A	43.0	67.5	50.9
	Screw	One (1) <sup>2</sup>	#8	N/A	N/A	25.8	25.8	22.9
	Screw	Two (2)	#8	N/A	N/A	47.1	47.1	49.1
	<sup>1</sup> Installation with a 4-inch tile headlap and fasteners located min. 2½-inch from head of tile. <sup>2</sup> For one (1) fastener installations, utilize hole that is closest to the interlocking edge.							
Capistrano	Nail	One (1)	10d	Smooth or Screw	N/A	5.1	6.8	2.8
	Nail	Two (2)	10d	Smooth or Screw	N/A	6.9	9.2	7.3
	Nail	One (1)	10d	Smooth or Screw	Field	23.1	23.1	19.0
	Nail	One (1)	10d	Smooth or Screw	Eave	29.3	29.3	24.0
	Nail	Two (2)	10d	Smooth or Screw	Field	27.6	27.6	38.6
	Nail	Two (2)	10d	Smooth or Screw	Eave	38.1	38.1	41.8
	Nail	Two (2)	10d	Ring	N/A	28.6	41.2	19.4
	Nail <sup>1</sup>	Two (2) <sup>1</sup>	10d <sup>1</sup>	Ring <sup>1</sup>	N/A	33.1	48.1	45.2
	Screw	One (1)	#8	N/A	N/A	20.7	20.7	18.1
	Screw	Two (2)	#8	N/A	N/A	43.2	43.2	29.8
<sup>1</sup> Installation with a 4-inch tile headlap and fasteners located min. 2½-inch from head of tile.								

**TABLE 4: ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT – Mf (FT-LBF)  
MORTAR AND ADHESIVE SET SYSTEMS**

**Note from Eagle Roofing Products of Florida, LLC.:** The performance data listed in Table 4 are based on the respective adhesive manufacturers' test reports and Miami-Dade NOAs. **Eagle Roofing Products of Florida, LLC.** relies upon the adhesive manufacturers to provide these values for our inclusion in this FBC HVHZ Evaluation Report. Please consult the individual adhesive manufacturer for information on product approvals, limitations, revisions or other information for determining wind load and overturning moment performance.

Tile	Tile Adhesive			Mf (ft-lbf)
	Product	Product Approval	Placement	
Bel Air	"TILE-TITE" by Premix Mabletite	NOA 16-0920.10	Independent (10" mason trowel)	44
	"Polyset® AH-160" by ICP Adhesives & Sealants, Inc.	NOA 17-0322.03	Interdependent (2-paddy)	43
			Independent (medium paddy, ~30 g)	52
			Independent (large paddy, ~45 g)	93
	"TILE BOND™" by Dow Chemical	NOA 16-0222.01	Interdependent (2-paddy)	65
	"Touch N' Seal Storm Bond" by DAP Foam, Inc.	NOA 16-0421.03	Interdependent (2-paddy)	76
	"Touch N' Seal Storm Bond 2" by DAP Foam, Inc.	NOA 16-0811.06	Interdependent (2-paddy)	56
			Independent (medium paddy, ~24 g)	62
Independent (large paddy, ~45 g)			94	

**TABLE 4 (CONTINUED): ATTACHMENT RESISTANCE EXPRESSED AS A MOMENT – M<sub>F</sub> (FT-LBF)  
MORTAR AND ADHESIVE SET SYSTEMS**

**Note from Eagle Roofing Products of Florida, LLC.:** The performance data listed in Table 4 are based on the respective adhesive manufacturers' test reports and Miami-Dade NOAs. **Eagle Roofing Products of Florida, LLC.** relies upon the adhesive manufacturers to provide these values for our inclusion in this FBC HVHZ Evaluation Report. Please consult the individual adhesive manufacturer for information on product approvals, limitations, revisions or other information for determining wind load and overturning moment performance.

Tile	Tile Adhesive			M <sub>f</sub> (ft-lbf)
	Product	Product Approval	Placement	
Malibu	"TILE-TITE" by Premix Mabletite	NOA 16-0920.10	Independent (10" mason trowel)	21
	"Polyset® AH-160" by ICP Adhesives & Sealants, Inc.	NOA 17-0322.03	Interdependent (2-paddy)	52
			Independent (medium paddy, ~30 g)	38
			Independent (large paddy, ~54 g)	66
	"TILE BOND™" by Dow Chemical	NOA 16-0222.01	Interdependent (2-paddy)	83
	"Touch N' Seal Storm Bond" by DAP Foam, Inc.	NOA 16-0421.03	Interdependent (2-paddy)	41
	"Touch N' Seal Storm Bond 2" by DAP Foam, Inc.	NOA 16-0811.06	Interdependent (2-paddy)	53
			Independent (medium paddy, ~30 g)	41
			Independent (large paddy, ~60 g)	71
	Capistrano	"TILE-TITE" by Premix Mabletite	NOA 16-0920.10	Independent (10" mason trowel)
"Polyset® AH-160" by ICP Adhesives & Sealants, Inc.		NOA 17-0322.03	Interdependent (2-paddy)	30
			Independent (medium paddy, ~30 g)	49
			Independent (large paddy, ~63 g)	94
"TILE BOND™" by Dow Chemical		NOA 16-0222.01	Interdependent (2-paddy)	24
"Touch N' Seal Storm Bond" by DAP Foam, Inc.		NOA 16-0421.03	Interdependent (2-paddy)	51
"Touch N' Seal Storm Bond 2" by DAP Foam, Inc.		NOA 16-0811.06	Interdependent (2-paddy)	61
			Independent (medium paddy, ~30 g)	61
			Independent (large paddy, ~60 g)	79

**7. LABELING:**

7.1 Each unit shall bear the imprint or identifiable marking of the manufacturer's name or logo. Tile lots shall be labeled in accordance with the requirements of the Accredited Quality Assurance Agency noted herein.



**FLORIDA**

(LOCATED ON UNDERSIDE OF TILE)

**EAGLE FL**

(LOCATED ON FRONTSIDE OF TILE)



**8. BUILDING PERMIT REQUIREMENTS:**

As required by the Building Official or Authority Having Jurisdiction in order to properly evaluate the installation of this product.

**9. MANUFACTURING PLANTS:**

Sumterville, FL

**10. QUALITY ASSURANCE ENTITY:**

Architectural Testing, Inc. – QUA1844; (717) 764-7700

**- END OF EVALUATION REPORT -**