



NEMO|etc.

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ENGINEER

EVALUATE

TEST

CONSULT

EVALUATION REPORT

Eagle Roofing Products, LLC
1575 East Country Road 470
Sumterville, FL 33585
(800) 400-3245

Evaluation Report 15625.08.17-R1
FL22854-R1
Date of Issuance: 08/14/2017
Revision 1: 10/16/2020

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. The product described herein has been evaluated for compliance with the **7th Edition (2020) Florida Building Code (HVHZ)** sections noted herein.

DESCRIPTION: Eagle Roof Tiles

LABELING: Labeling shall be in accordance with the requirements of 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 or production facility location(s) changes, or Code provisions that relate to the product(s) change. Acceptance of our Evaluation Reports by the named client constitutes agreement to notify NEMO ETC, LLC of any changes to the product(s), the Quality Assurance or the production facility location(s). NEMO ETC, LLC requires a complete review of its Evaluation Report relative to updated Code requirements with each Code Cycle.

ADVERTISEMENT: The Florida Product Approval Number (FL#) preceded by the words "NEMO|etc. Evaluated" 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 10/16/2020. This does not serve as an electronically signed document.

CERTIFICATION OF INDEPENDENCE:

1. NEMO ETC, LLC 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. NEMO ETC, LLC 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 NEMO ETC, LLC 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, LLC, have demonstrated compliance with the following sections of the 7th Edition (2020) 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:

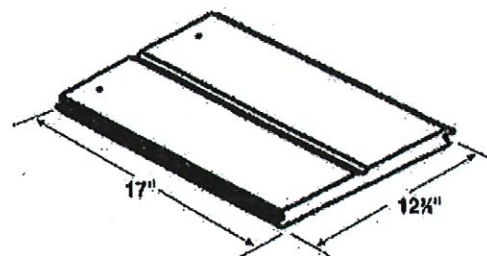
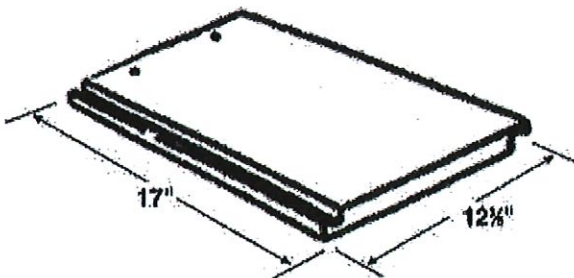
<u>Section</u>	<u>Property</u>	<u>Standard</u>	<u>Year</u>
1523.6.5.2	Material standard	TAS 112	1995
1523.6.5.2	Wind Driven Rain	TAS 100	1995
1523.6.5.2.2	Static Uplift Resistance	TAS 101	1995
1523.6.5.2.3	Static Uplift Resistance	TAS 102	1995
1523.6.5.2.3	Static Uplift Resistance	TAS 102(A)	1995

3. REFERENCES:

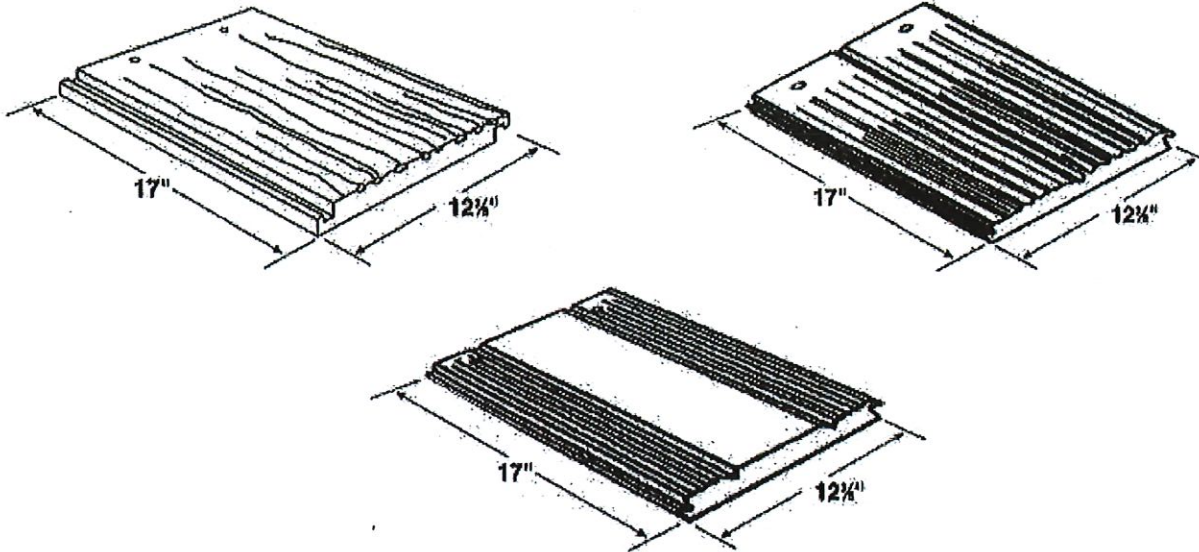
<u>Entity</u>	<u>Examination</u>	<u>Reference</u>	<u>Date</u>
ATL (TST3782)	TAS 112	RT0908.01-20	09/11/2020
ATL (TST3782)	TAS 112	RT0908.02-20	09/11/2020
ATL (TST3782)	TAS 112	RT0908.03-20	09/11/2020
ERD (TST6049)	TAS 101	P39740.02.12	02/21/2012
Miami-Dade (CER1592)	HVHZ certification (adhesive)	17-0322.03	04/27/2017
Miami-Dade (CER1592)	HVHZ certification (tile)	18-0509.19	06/14/2018
Miami-Dade (CER1592)	HVHZ certification (adhesive)	18-0131.02	07/12/2018
Miami-Dade (CER1592)	HVHZ certification (tile)	18-0829.04	10/04/2018
Miami-Dade (CER1592)	HVHZ certification (tile)	18-0829.05	10/04/2018
NEMO	HVHZ evaluation (adhesive)	15755.06.17-R3	05/15/2018
NEMO (TST6049)	TAS 101	4-ICP-18-001.05.18-2	05/15/2018
NEMO (TST6049)	TAS 101	4S-ICP-18-001.10.18-2	10/04/2018
NEMO (TST6049)	TAS 101	4c-DPBS-20-LSOTM-01	09/30/2020
Tile Roof Institute	TAS 100, TAS 101, 102, 102(A)	Membership Letter	11/29/2005
Tile Roof Industry Alliance	Membership confirmation	tileroofing.org	Current
Intertek/ATI (QUA1844)	Quality Assurance	Inspection Report	05/28/2020
Intertek/ATI (QUA1844)	Quality Assurance	Florida BCIS	Current

4. PRODUCT DESCRIPTION:

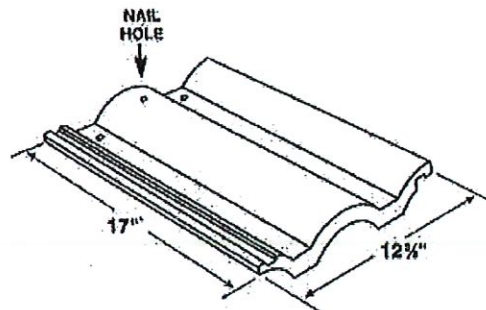
	<u>Product</u>	<u>Material Standard</u>	<u>Plant(s)</u>
4.1	Low Profile Concrete Tile	TAS 112, Type 3a, Class III	Sumterville, FL



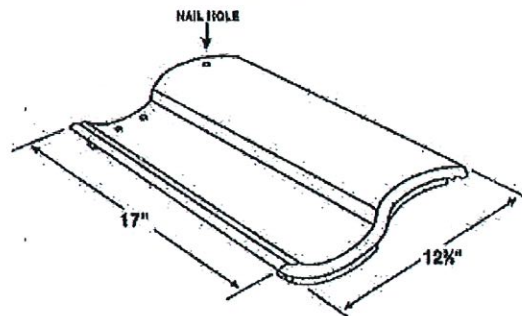
Product	Material Standard	Plant(s)
4.1 Low Profile Concrete Tile	TAS 112, Type 3a, Class III	Sumterville, FL



4.2 Medium Profile Concrete Tile	TAS 112, Type 1b, Class III	Sumterville, FL
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4.3 High Profile Concrete Tile	TAS 112, Type 1a, Class III	Sumterville, FL
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5. LIMITATIONS:

- 5.1 This is a building code evaluation. Neither NEMO ETC, LLC 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 High Velocity Hurricane Zone jurisdictions only (i.e., Broward and Miami-Dade Counties), or other jurisdictions having formally adopted FBC HVHZ requirements.
- 5.3 This Evaluation Report pertains to above-deck roof components. Roof decks and structural members shall be in accordance with FBC HVHZ requirements to the satisfaction of the Authority Having Jurisdiction.
- 5.4 This Evaluation Report does not include evaluation of fire classification. Refer to **FBC 1516** for requirements and limitations regarding roof assembly fire classification. Refer to **FBC 2603** for requirements and limitations concerning the use of foam plastic insulation.
- 5.5 This Evaluation Report does not include evaluation of roof edge termination.
- 5.6 Refer to **FBC 1521** for requirements and limitations regarding recover installations.
- 5.6.1 For mechanically attached components over existing roof decks, fasteners shall be tested in the existing deck for withdrawal resistance. A qualified design professional shall review the data for comparison to the minimum requirements for the system. Testing shall be in accordance with **Testing Application Standard TAS 105**.
- 5.7 Reference is made to **FBC 1512.4.2.4** regarding field testing of completed tile roof installations.
- 5.8 All components in the roof assembly shall have quality assurance audit in accordance with **F.A.C. Rule 61G20-3**.
- 5.8.1 Applicant shall retain the services of an FBC listed, accredited laboratory to perform quarterly tests in accordance with **TAS 112, Appendix 'A'**.

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 118-20, RAS 119-20 or RAS 120-20**, as applicable.
- 6.2 Minimum underlayment shall comply with the **RAS 118-20, RAS 119-20 or RAS 120-20**, as applicable. Underlayment products shall hold current Florida Statewide Product Approval or Local Approval for use in tile roof assemblies in **FBC HVHZ** jurisdictions.
- 6.3 **Attachment Calculations:** **Eagle Roof Tiles** shall be evaluated as a '**Moment-Based System**' in accordance with **Roofing Application Standard RAS 127-20** using the data outlined herein.

TABLE 1: AERODYNAMIC MULTIPLIERS – λ (FT³)

Tile	Batten Application	Direct-Deck Application
Low Profile Concrete Tile	0.301	0.278
Medium Profile Concrete Tile	0.305	0.282
High Profile Concrete Tile	0.300	0.277

TABLE 2: RESTORING MOMENT DUE TO GRAVITY – M_e (FT-LBF)

Tile	Roof Slope (θ)									
	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
Low Profile Concrete Tile	7.48	7.71	7.37	7.59	7.22	7.44	7.05	7.27	6.86	7.07
Medium Profile Concrete Tile	6.30	6.65	6.21	6.54	6.08	6.41	2.93	6.25	5.77	6.08
High Profile Concrete Tile	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 – 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			
Low Profile Concrete Tile	Nail	One (1) ²	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) ²	10d	Smooth or Screw	Eave	19.0	19.0	22.1
	Nail	One (1) ²	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 ¹	Two (2) ¹	10d ¹	Ring ¹	N/A	50.3	65.5	48.3
	Screw	One (1) ²	#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

¹ Installation with a 4-inch tile headlap and fasteners located min. 2½-inch from head of tile.
² 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			
Medium Profile Concrete Tile	Nail	One (1) ²	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) ²	10d	Smooth or Screw	Eave	19.0	19.0	22.1
	Nail	One (1) ²	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 ¹	Two (2) ¹	10d ¹	Ring ¹	N/A	43.0	67.5	50.9
	Screw	One (1) ²	#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

¹ Installation with a 4-inch tile headlap and fasteners located min. 2½-inch from head of tile.
² For one (1) fastener installations, utilize hole that is closest to the interlocking edge.

High Profile Concrete Tile	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 ¹	Two (2) ¹	10d ¹	Ring ¹	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

¹ 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)
	Manufacturer	Product	Product Approval	Placement	
Low Profile Concrete Tile	ICP Adhesives & Sealants, Inc.	"Polyset® AH-160"	NOA 17-0322.03	Interdependent (2-paddy)	43
				Independent (medium paddy, ~30 g)	52
				Independent (large paddy, ~45 g)	93
	ICP Adhesives & Sealants, Inc.	"Polyset® RTA-1"	NOA 18-0131.02	Interdependent (2-paddy)	50
				Interdependent (2-screws at tail & 1-paddy at headlap)	60
	DuPont de Nemours, Inc.	"TILE BOND™ Roof Tile Adhesive"	FL22525	Interdependent (2-pads)	61
Independent (2 pads @ 2x2x4-inch)				64	
Medium Profile Concrete Tile	ICP Adhesives & Sealants, Inc.	"Polyset® AH-160"	NOA 17-0322.03	Interdependent (2-paddy)	52
				Independent (medium paddy, ~30 g)	38
				Independent (large paddy, ~54 g)	66
	ICP Adhesives & Sealants, Inc.	"Polyset® RTA-1"	NOA 18-0131.02	Interdependent (2-paddy)	44
				Interdependent (2-screws at tail & 1-paddy at headlap)	65
	DuPont de Nemours, Inc.	"TILE BOND™ Roof Tile Adhesive"	FL22525	Independent (2 pads @ 2x2x4-inch)	44
High Profile Concrete Tile	ICP Adhesives & Sealants, Inc.	"Polyset® AH-160"	NOA 17-0322.03	Interdependent (2-paddy)	30
				Independent (medium paddy, ~30 g)	49
				Independent (large paddy, ~63 g)	94
	ICP Adhesives & Sealants, Inc.	"Polyset® RTA-1"	NOA 18-0131.02	Interdependent (2-paddy)	33
				Interdependent (2-screws at tail & 1-paddy at headlap)	52
	DuPont de Nemours, Inc.	"TILE BOND™ Roof Tile Adhesive"	FL22525	Independent (2 pads @ 1x1x10-inch)	32

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 to properly evaluate the installation of this product.

9. MANUFACTURING PLANTS:

Contact the named QA entity for manufacturing facilities covered by F.A.C. Rule 61G20-3 QA requirements. Refer to Section 4 herein for products and production locations having met codified material standards.

10. QUALITY ASSURANCE ENTITY:

Architectural Testing, Inc., an Intertek Company – QUA1844; (847) 718-6307; naura.alcheikh@intertek.com

- END OF EVALUATION REPORT -