



### BORAL ROOFING

### CONCRETE ROOF TILES

#### CSI Section:

07 32 16 Concrete Roof Tiles

#### 1.0 RECOGNITION

The Boral Roof Tiles described in this report were evaluated for use as concrete tile roof coverings. The weather resistance, wind uplift resistance and fire classification properties of the roof tiles were evaluated for compliance with the following codes:

- 2015, 2012, 2009, 2006 International Building Code® (IBC)
- 2015, 2012, 2009, 2006 International Residential Code® (IRC)
- 2016 and 2013 California Building Code (CBC)– See attached Supplement
- 2016 and 2013 California Residential Code (CRC)- See attached Supplement
- 2014 Florida Building Code, Building (FBC-Building)-See attached Supplement
- 2014 Florida Building Code, Residential (FBC, Residential)-See attached Supplement

#### 2.0 LIMITATIONS

Use of the Boral Roof Tiles recognized in this report is subject to the following limitations:

**2.1** The roof tiles shall be manufactured, identified and installed in accordance with this report, the applicable code and the Roof Tile Installation Manual. In the event of a conflict this report governs.

**2.2** Boral Roofing “concrete roof tile shall be installed on roof slopes of 2½ units vertical in 12 units horizontal (21-percent slope) or greater.” 2015 IBC Section 1507.3.2

**2.3** The supporting structure shall be designed to support the loads and is beyond the scope of this report.

#### 3.0 PRODUCT USE

**3.1 General:** Boral’s Concrete Roof Tiles recognized in this report are identified in Tables 2A through 2I. These tiles:

- Satisfy the requirements of ASTM C1492;
- Provide a Class A Fire Classification when tested on combustible decks in accordance with ASTM E 108.

**3.2 Anchoring:** Boral Concrete Roof tile may be anchored by mortar or adhesively attached in accordance with each respective manufacturer’s research report.

**3.3** Wind uplift resistance is addressed in Section 4.0 of this report.

#### 4.0 PRODUCT DESCRIPTION

**4.1 General:** Boral Concrete Roof Tile installation shall be in accordance with the applicable code, the Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions, dated August 2015, published by the Tile Roofing Institute and the Western States Roofing Contractors Association, and this report. In the event of a conflict provisions of this report govern. The TRI manual is available for download attached to ER-2015 from the UES website at [www.uniform-es.org](http://www.uniform-es.org).

**4.2 Attachment:** Tile shall be attached to the roof structure based the applicable code as noted in Table1 below:

Table 1 Attachment Design		
Applicable Code	Criteria for Applicability	Design Information Location
2015 or 2012 IBC	Ultimate Design Wind Speeds (V <sub>ult</sub> ) ≤ 130 MPH and Mean Roof Height ≤ 60 feet	Roof Tile Installation Manual & Table 1507.3.7 of the applicable IBC
2009 or 2006 IBC	Basic Wind Speed (3 sec gust) ≤ 100 mph and Mean Roof Height ≤ 60 feet	
2015, 2012, 2009 or 2006 IRC	Mean Roof Height ≤ 40 feet	Roof Tile Installation Manual & Section R905.3.7

**4.3 Fire Classification:** Boral Roofing concrete roof tiles, installed in accordance with this evaluation report, are Class A fire-retardant roof coverings in accordance with Section 1505.2 of the IBC and Section R902.1 of the IRC, as applicable. Roof classifications for adhesively attached systems shall be in accordance with the adhesive manufacturer’s approved research report.

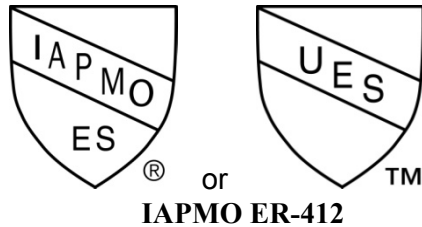
#### 5.0 IDENTIFICATION

Shipping pallets are identified with the report holder’s name (Boral Roofing), manufacturing address, product name, installed weight, approved inspection agency (RI Ogawa & Associates, Inc.), the UES Mark of conformity and evaluation report number (ER-412). The Cedarlite 600, Madera 700 and Madera 900 tiles are imprinted on the top side of each tile





with an “M”, all other filed tiles are imprinted with the name “Boral”, “Boral Lifetile”, “MonierLifetile”, or the Boral Roofing, or Monierlifetile or “Vostile” or logo. Either UES Mark of Conformity may be used as shown below:



### 6.0 SUBSTANTIATING DATA

Data in accordance with ICC-ES AC180, dated February 2012 (editorially revised April 2015), manufacturer’s descriptive literature and installation instructions. Test results are from laboratories in compliance with ISO/IEC 17025.

Boral Roofing concrete roof tiles are manufactured in the facilities specified in Table 1 of this report, under a quality control program administered by RI Ogawa & Associates, Inc.

### 7.0 CONTACT INFORMATION

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### 8.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research carried out by IAPMO Uniform Evaluation Service on Boral’s Concrete Roof Tiles to assess its conformance to the codes and standards shown in Section 1.0 of this report and documents the product’s certification.

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Table 2A - Tiles Manufactured at Denver				
Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemnsions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Saxony – Country Slate	9.6	17 X 13	1.407	1
Saxony – Impact	10.5	17 X 13	1.407	1
Saxony – Shake	9.6	17 X 13	1.407	1
Saxony – Slate	9.6	17 X 13	1.407	1
Saxony – Split Old English Thatch	9.6	17 X 13	1.407	1
Villa 900	9	17 X 13	1.525	1.084
Villa 900 - Impact	10.1	17 X 13	1.525	1.084

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

Table 2B - Tiles Manufactured at Henderson				
Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemnsions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Espana / Barcelona	9	17 X 12 <sup>3</sup> / <sub>8</sub>	1.525	1.084
Saxony 900 – Country Slate	9.1	17 X 13	1.407	1
Saxony 900 – Shake	9.1	17 X 13	1.407	1
Saxony 900 – Slate	9.1	17 X 13	1.407	1

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

Table 2C - Tiles Manufactured at Katy				
Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemnsions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Barcelona- Impact	10.3	16½ X 13	1.525	1.084
Saxony – Country Shake	10.3	16½ X 13	1.407	1
Saxony – Country Slate	10.3	16½ X 13	1.407	1
Saxony – Country Split Shake	10.3	16½ X 13	1.407	1
Saxony – English Thatch	10.3	16½ X 13	1.407	1
Saxony – Impact	10.5	16½ X 13	1.407	1
Saxony – Shake	10.3	16½ X 13	1.407	1
Saxony – Slate	10.3	16½ X 13	1.407	1
Tejas Espana / Barcelona	9	16½ X 13	1.407	1
Villa	9	16½ X 13	1.407	1

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

<sup>1</sup>Used on a 3-inch headlap

<sup>2</sup>Nominal dimension



**Table 2D - Tiles Manufactured at Lake Wales**

Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Barcelona- 900	9.5	17 X 13	1.525	1.084
Capri	10.1	17 X 12 <sup>3</sup> / <sub>8</sub>	1.407	1
Espana / Barcelona	8.5	17 X 12 <sup>3</sup> / <sub>8</sub>	1.525	1.084
Saxony – English Thatch	10.4	17 X 12 <sup>3</sup> / <sub>8</sub>	1.407	1
Saxony – Shake	10.4	17 X 12 <sup>3</sup> / <sub>8</sub>	1.407	1
Saxony – Slate	10.4	17 X 12 <sup>3</sup> / <sub>8</sub>	1.407	1
Saxony – Split Shake	10.4	17 X 12 <sup>3</sup> / <sub>8</sub>	1.407	1
Saxony – Split Slate	10.4	17 X 12 <sup>3</sup> / <sub>8</sub>	1.407	1
Saxony 900 – Country Slate	9.5	17 X 13	1.407	1
Saxony 900 – Shake	9.5	17 X 13	1.407	1
Saxony 900 – Slate	9.5	17 X 10 <sup>3</sup> / <sub>8</sub>	1.407	1
Saxony 900 – Split Shake	9.5	17 X 13	1.407	1
Spanish “S” Nuevo	9.9	17 X 9 <sup>3</sup> / <sub>4</sub>	1.144	0.813
Villa 900	9.2	17 X 13	1.525	1.084

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

**Table 2E - Tiles Manufactured at Lathrop**

Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Barcelona- 900	9.3	17 X 13	1.525	1.084
Espana / Barcelona	9	17 X 12 <sup>3</sup> / <sub>8</sub>	1.525	1.084
Saxony 900 – Shake	9.1	17 X 13	1.407	1
Saxony 900 – Slate	9.1	17 X 13	1.407	1

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

**Table 2F - Tiles Manufactured at Phoenix**

Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Mission S / Barcelona	10.3	16½ X 13	1.407	1
Saxony – Shake	9.5	16½ X 13	1.407	1
Saxony – Slate	9.5	16½ X 13	1.407	1
Villa	9.6	16½ X 13	1.407	1

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

<sup>1</sup>Used on a 3-inch headlap

<sup>2</sup>Nominal dimension



**Table 2G - Tiles Manufactured at Pompano**

Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimensions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Atlantis- Slate	10.4	16 1/8 X 10 1/8	1.013	0.72
Atlantis- Textured	10.4	16 1/8 X 10 1/8	1.013	0.72
Spanish "S"	9.5	18 X 10	1.265	0.899
Vanguard Roll	8.4	16 1/2 X 13	1.407	1

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

**Table 2H - Tiles Manufactured at Rialto**

Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimensions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Espana / Barcelona	9	17 X 12 3/8	1.525	1.084
Espana 600 / Barcelona 600	5.9	17 X 12 3/8	1.525	1.084
Saxony – Country Shake	10.3	17 X 12 3/8	1.407	1
Saxony – Country Slate	10.3	17 X 12 3/8	1.407	1
Saxony – English Thatch	10.3	17 X 12 3/8	1.407	1
Saxony – Shake	10.3	17 X 12 3/8	1.407	1
Saxony – Slate	10.3	17 X 12 3/8	1.407	1
Saxony – Split Shake	10.3	17 X 12 3/8	1.407	1
Saxony – Split Slate	10.3	17 X 12 3/8	1.407	1
Saxony 600	5.9	17 X 13	1.525	1.084
Saxony 700 – Shake	7.1	17 X 13	1.525	1.084
Saxony 700 – Slate	7.1	17 X 13	1.525	1.084
Saxony 700 – Split Shake	7.1	17 X 13	1.525	1.084
Saxony 900	9.3	17 X 13	1.525	1.084
Villa 600	5.8	17 X 13	1.525	1.084
Villa 900	9	17 X 13	1.525	1.084

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

<sup>1</sup>Used on a 3-inch headlap

<sup>2</sup>Nominal dimension



**Table 2I - Tiles Manufactured at Stockton**

Tile	Installed Dry Weight <sup>1</sup> (psf)	Dimemions <sup>2</sup> (inch)	Tile Factor	
		Length X Width	TF (ft <sup>3</sup> )	Ratio <sup>1</sup>
Cedarlite- 600	5.9	13½ X 13		
Madera 700	7.2	13½ X 13		
Madera 900	9.5	13½ X 13		
Saxony 600 – Slate	5.7	17 X 13	1.525	1.084
Saxony 600 – Split Shake	5.7	17 X 13	1.525	1.084
Saxony 600 –Shake	5.7	17 X 13	1.525	1.084
Saxony 700 – Shake	7.2	17 X 13	1.525	1.084
Saxony 700 – Slate	7.2	17 X 13	1.525	1.084
Saxony 700 – Split Shake	7.2	17 X 13	1.525	1.084
Saxony 900 – Hartford Slate	9.1	17 X 13	1.525	1.084
Saxony 900 – Impact	10.4	17 X 13	1.525	1.084
Saxony 900 – Shake	9.1	17 X 13	1.407	1
Saxony 900 – Slate	9.1	17 X 13	1.407	1
Saxony 900 – Split Old English Thatch	9.8	17 X 13	1.525	1.084
Saxony 900- Country Slate	9.1	17 X 13	1.407	1
Villa 600	6	17 X 13	1.525	1.084
Villa 900	9.3	17 X 13	1.525	1.084

For SI: 1 inch = 25.4 mm, 1 psf = 4.88 kg/m<sup>2</sup>

<sup>1</sup> Used on a 3-inch headlap

<sup>2</sup> Nominal dimension



## CALIFORNIA SUPPLEMENT

### BORAL ROOFING

### CONCRETE ROOF TILES

#### CSI Section:

07 32 16 Concrete Roof Tiles

#### 1.0 RECOGNITION

The Boral Concrete Roof Tiles evaluated in IAPMO UES ER-412 is a satisfactory alternative to the following codes and regulations:

- 2016 and 2013 California Building Code (CBC)
- 2016 and 2013 California Residential Code (CRC)

#### 2.0 PRODUCT USE

**2.1 GENERAL:** The Boral Roofing concrete roof tiles may be used as a Class A, B, or C roof covering systems complying with Sections 1505.1.1 of the CBC or R902.1.1 of the CRC; Sections 1505.1.2 of the CBC or R902.1.2 of the CRC; or Sections 1505.1.3 of the CBC or R902.1.3 of the CRC, respectively.

The design and installation of the Boral Roofing concrete roof tiles shall be in accordance with Sections 1507.3.10 and 1512 of the CBC or Section 905.3 of the CRC, as applicable, and ER-412.

Boral Roofing concrete roof tiles may be used in “new buildings located in any Fire Hazard Severity Zone or any Wildland-Urban Interface Fire Area designated by the enforcing agency constructed after the application date shall comply with the provisions” in accordance with Sections 701A.3 and 705A of the CBC or Sections R327.1.3.1 and R327.5 of the CRC, as applicable, and with the 2012 IBC as presented in ER-412.

Boral Roofing concrete roof tiles used on structures regulated by the Division of the Division of the State Architect or the Office of Statewide Planning and Development are subject to installation provisions in CBC Section 1513.

For additional information about this evaluation report please visit [www.uniform-es.org](http://www.uniform-es.org) or email us at [info@uniform-es.org](mailto:info@uniform-es.org)

## 3.0 CONTACT INFORMATION

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## FLORIDA SUPPLEMENT

## BORAL ROOFING

## CONCRETE ROOF TILES

### CSI Section:

07 32 16 Concrete Roof Tiles

### 1.0 RECOGNITION

The Boral Roofing concrete roof tiles evaluated in IAPMO UES ER-412 is a satisfactory alternative to the following codes and regulations:

- 2014 Florida Building Code, Building (FBC-Building)
- 2014 Florida Building Code, Residential (FBC-Residential)

### 2.0 LIMITATIONS

**2.1** Verification shall be provided that a quality assurance agency audits the manufacturers quality assurance program and audits the production quality of products, in accordance with Section (5)(d) of Florida Rule 61G20-3.008. The quality assurance agency shall be approved by the Commission (or the building official when the report holder does not possess an approval by the Commission).

**2.2** Evaluation to the high-velocity hurricane zone provisions in Section 1409 of the FBC, Building and Chapter 44 of the FBC, Residential is beyond the scope of this report.

### 3.0 PRODUCT USE

The design and installation of the Boral Roofing concrete roof tiles shall be in accordance with the 2012 International Building Code and the 2012 International Residential Code as noted in ER-412. From FBC-Building Section 1507.3 and FBC-Residential Section R905.3 we see that the installation of the Boral Roofing concrete roof tiles “shall be in accordance with the requirements of the FRSA/TRI *Florida High Wind Concrete and Clay Roof Tile Installation Manual*, Fifth Edition where the  $V_{asd}$  is determined in accordance with” FBC-Building Section 1609.3.1, FBC-Residential Section R301.2.1.3, or the recommendations of RAS 118, 119 or 120.

Load combinations shall be in accordance with Sections 1605.2 or 1605.3 of the FBC- Building, as applicable. Design wind loads shall be in accordance with Section

1609.5 of the FBC-Building or Section R301.2.1 of the FBC-Residential, as applicable.

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