

ICC-ES Evaluation Report

ESR-2778 Reissued July 2020 This report is subject to renewal July 2022.

www.icc-es.org | (800) 423-6587 | (562) 699-0543

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 32 16—Concrete Roof Tiles

REPORT HOLDER:

BARTILE ROOFS, INC.

EVALUATION SUBJECT:

BARTILE EXTRUDED CONCRETE ROOF TILES

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2015, 2012, 2009 and 2006 *International Building Code*[®] (IBC)
- 2015, 2012, 2009 and 2006 International Residential Code[®] (IRC)
- 2013 Abu Dhabi International Building Code (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Roof covering
- Fire classification
- Wind resistance

1.2 Evaluation to the following green code:

 2019 California Green Building Standards Code (CALGreen), Title 24, Part 11

Attributes verified:

See Section 3.0

2.0 USES

The Bartile extruded concrete roof tiles comply with ASTM C1492, and when installed in accordance with this report, may be used as a Class A roof covering.

3.0 DESCRIPTION

Bartile extruded concrete roof tiles are available in European, Mission "S", Flat and Legendary styles. Flat tiles are available in shake and slate designs. The European, Mission "S" and Flat tiles are $15^{1/4}$ inches long by $10^{1/2}$ inches wide (387 mm by 267 mm) and have $1^{1/8}$ -inch to $1^{1/4}$ -inch (28 mm to 32 mm) interlocking double tongue-and-groove side laps. The tiles also have anchor lugs at the bottom intended for installation over wood furring strips. The lugs are typically 1/2 inch (13 mm) deep,

A Subsidiary of the International Code Council®

 $1^{1}/_{2}$ inches (38 mm) wide and $5^{1}/_{8}$ inch (16 mm) thick. The tile thickness varies from $1^{1}/_{2}$ inch (13 mm) to 1 inch (25.4 mm) at the ribs.

The Legendary tiles are 16 inches long by 16 inches wide (406 mm by 406 mm) and have a 1-inch (25.4 mm) interlocking side lap. The tiles have an overall height of 1^{3} /₈ inches (44.4 mm). The tiles have anchor lugs and midpoint knubs to provide additional support for installation directly to deck.

Accessory tiles in each style are available for rakes, ridges and hips.

The tiles are available in both standard-weight and lightweight varieties for each style. They vary only in weight due to the lightweight tiles being produced using crushed lightweight shale in place of sand.

When installed with a standard 3-inch (76 mm) head lap, the following are the approximate installed weights:

| DESCRIPTION | INSTALLED WEIGHT (pounds per square foot) | |
|------------------------|--|----------------------|
| | Standard-weight Tiles | Lightweight Tiles |
| European | 9.5 | 7.5 |
| Mission "S" | 9.5 | 7.5 |
| Flat (Shake and Slate) | 10.25 | 8.0 |
| Legendary | 10.4 | 8.9 |

See Figure 1 for details.

The attributes of the roof tiles have been verified as conforming to the provisions of CALGreen Section A5.406.1.2 for reduced maintenance. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

4.0 INSTALLATION

4.1 General:

Except as otherwise noted in this report, installation of the Bartile roof tiles must be in accordance with the Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions, dated March 2010, published by the Tile Roofing Institute and Western States Roofing Contractors Association. In the case of a conflict between the installation manual and this report, this report governs.

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



This report and the TRI/WSRCA installation manual must be available at the jobsite at all times during installation. The roof tiles must be installed on a minimum roof slope of $2^{1}/_{2}$:12 (20.8% slope). Care must be taken during field installation to ensure that horizontal joints are kept parallel to the eave, and vertical joints are at right angles to the eave, in order to ensure uniform contact between the tiles and proper fit and appearance. All cracked and broken tiles must be replaced. Plastic battens recognized in a current ICC-ES evaluation report may be used in lieu of wood battens, provided the battens are installed in accordance with their evaluation report, the tile installation is subject to the limitations in the evaluation report on the battens, and nails attaching the roof tiles are of sufficient length to penetrate through the sheathing.

4.2 Lightweight Tiles:

Lightweight tiles are installed in the same manner as standard-weight tiles, except that each tile is attached with No. 11 gage, corrosion-resistant roofing nails.

4.3 Wind Resistance:

4.3.1 2015 IBC, 2015 IRC and 2012 IBC: For ultimate design wind speeds of 130 mph (209 km/h) or less and mean roof heights of 60 feet (18.3 m) for the IBC) and mean roof heights of 40 feet (12.2 m) for the IRC, tiles must be installed in accordance with the prescriptive parameters of IBC Table 1507.3.7 or IRC Section R905.3.7.

4.3.2 2012 IRC: For basic wind speeds of 100 mph (161 km/h)] or less and mean roof heights of 40 feet (12.2 m) or less, tiles must be installed in accordance with the prescriptive parameters of Section R905.3.7 of the IRC, as applicable.

4.3.3 2009 IBC, 2006 IBC, 2009 IRC and 2006 IBC: For basic wind speeds [3-second gust of 100 mph (161 km/h)] or less and mean roof heights of 60 feet (18288 mm) or less for the IBC and 40 feet (12192 mm) or less for the IRC, tiles must be installed in accordance with the prescriptive parameters of Table 1507.3.7 of the IBC or Section R905.3.7 of the IRC, as applicable. For application beyond these prescriptive parameters, the tiles and the fastening systems must be designed to withstand the aerodynamic wind uplift moment in accordance with the section on Design Considerations for High Wind Applications in Appendix B of the TRI/WRSCA installation manual. The generic required aerodynamic uplift moment, determined in accordance with Tables 5A through 6D of the TRI/WRSCA installation manual, must be multiplied by the tile factor ratio in Table 2 to obtain the required aerodynamic uplift moment for the specific Bartile roof tile being installed. The allowable aerodynamic uplift moment for the roof tile fastening system selected from Table 7 of the TRI/WRSCA installation manual, must be equal to or greater than the required aerodynamic uplift moment for the specific Bartile roof tile being installed.

4.4 Fire Classification:

4.4.1 New Construction: When installed in accordance with this report, the tiles are Class A roof coverings in accordance with the exception to Section 1505.2 of the IBC and with Section R902.1 of the IRC.

4.4.2 Reroofing Applications: The existing roof coverings must be removed and the new roof installed in accordance with the requirements of 2015 IBC Section 1511, 2012, 2009 or 2006 IBC Section 1510 or 2015 IRC

Section R908, 2012, 2009 and 2006 IRC Section R907 as applicable. The roof classification is as noted in Section 4.4.1.

4.5 Roof Slope Limitation:

Tile must be installed on roof slopes of between $2^{1}/_{2}$:12 (21% slope) and 24:12 (200% slope). Tile may be installed at a roof slope greater than 21:12 when the bottom edge of each tile is secured with a roof tile clip or nail in accordance with the TRI/WRSCA installation manual. On roof slopes of less than 3:12 (25% slope), the tiles are only considered as decorative and must be applied over a roof covering approved by the building official.

4.6 Tile Replacement:

Damaged tile must be completely removed. Existing fasteners must be removed and the resulting hole must be cleaned and patched with a sealant specified by the manufacturer. The replacement tile must be set into place while maintaining the required head and side lap. The new tile must be secured using a roof tile adhesive recognized in a current ICC-ES evaluation report, applied to the bottom half of the replacement tile.

5.0 CONDITIONS OF USE

The Bartile extruded concrete roof tiles described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- **5.1** The tiles are manufactured, identified, and installed in accordance with this report, the manufacturer's instructions, and the applicable code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.
- **5.2** The roof sheathing and roof framing system must be designed for the appropriate loads determined in accordance with the applicable code, subject to the approval of the code official.
- **5.3** The tiles are manufactured in Centerville, Utah, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Clay and Concrete Roof Tiles (AC180), dated February 2012 (editorially revised April 2015).

7.0 IDENTIFICATION

- 7.1 The shipping pallets have labels bearing the name "Bartile," the style and color of the tile, the production date, the installed weight, and the evaluation report number (ESR-2778). The lightweight tile labels also bear the words "LT. WT. Bartile."
- **7.2** The report holder's contact information is the following:

BARTILE ROOFS, INC. 725 NORTH 1000 WEST CENTERVILLE, UTAH 84014 (801) 295-3443 <u>www.bartile.com</u> lew@bartile.com







FIGURE 2



ICC-ES Evaluation Report

ESR-2778 CBC and CRC Supplement

Reissued July 2020 This report is subject to renewal July 2022.

www.icc-es.org | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 32 16—Concrete Roof Tiles

REPORT HOLDER:

BARTILE ROOFS, INC.

EVALUATION SUBJECT:

BARTILE EXTRUDED CONCRETE ROOF TILES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2010 California Building Code (CBC)
- 2010 California Residential Code (CRC)

Properties evaluated:

- Fire classification
- Weather resistance
- Wind-uplift resistance

2.0 California Building Code

The Bartile concrete roof tiles described in the master report ESR-2778 may be used where a Class A roof covering complying with CBC Section 1505.1.1, a Class B roof covering complying with CBC Section 1505.1.2, or a Class C roof covering complying with CBC Section 1505.1.3 is required, provided installation is in accordance with the master report and the additional requirements of Sections 1507.3.10 and 1511 of the CBC.

The roof tiles may be used in the construction of new buildings located in a Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Fire Area, provided installation is also in accordance with the master report and the additional requirements of Sections 701A.3 and 705A of the CBC.

3.0 California Residential Code

The Bartile concrete roof tiles described in the master report ESR-2778 may be used where a Class A roof covering complying with CRC Section R902.1.1, a Class B roof covering complying with CRC Section R902.1.2, or a Class C roof covering complying with CRC Section R902.1.3 is required, provided installation is in accordance with the master report and the additional requirements of Section R905.3 of the CRC.

The roof tiles may be used in the construction of new buildings located in any Wildland–Urban Interface Fire Area, provided installation is also in accordance with the master report and the additional requirements of Sections R327.1.3.1 and R327.5 of the CRC.

The products recognized in this supplement have not been evaluated for compliance with the International Wildland–Urban Interface Code®.

This supplement expires concurrently with the evaluation report, reissued July 2020.





ICC-ES Evaluation Report

ESR-2778 FBC Supplement

Reissued July 2020 This report is subject to renewal July 2022.

www.icc-es.org | (800) 423-6587 | (562) 699-0543

A Subsidiary of the International Code Council®

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION Section: 07 32 16—Concrete Roof Tiles

REPORT HOLDER:

BARTILE ROOFS, INC.

EVALUATION SUBJECT:

BARTILE EXTRUDED CONCRETE ROOF TILES

1.0 REPORT PURPOSE AND SCOPE

The purpose of this evaluation report supplement is to indicate that the Bartile concrete roof tiles, recognized in ICC-ES master report ESR-2778, have also been evaluated for compliance with the codes noted below:

Applicable code editions:

- 2010 Florida Building Code—Building
- 2010 Florida Building Code—Residential

2.0 CONCLUSIONS

The concrete roof tiles described in Sections 2.0 through 7.0 of the master evaluation report, ESR-2778, comply with the 2010 *Florida Building Code—Building* and the 2010 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code* provisions noted in the master report, and with these additional conditions:

The roof tiles must be installed in accordance with Section 1609 of the 2010 *Florida Building Code—Building* or with FRSA/TRI 07320, where the nominal design wind speed, V_{asd} , is determined in accordance with Section 1609.3 of the 2010 *Florida Building Code—Building*.

Use of the concrete roof tiles described in the master evaluation report for compliance with the High-Velocity Hurricane Zone provisions of the 2010 Florida Building Code—Building, and the 2010 Florida Building Code—Residential has not been evaluated, and is outside the scope of this supplement.

For products falling under Florida Rule 9N-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued July 2020.

