



# ICC-ES Evaluation Report

## ESR-2111

Reissued July 2023

This report is subject to renewal July 2025.

### DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

### Section: 07 32 13—Clay Roof Tiles

#### REPORT HOLDER:

TEJAS BORJA S.A.U.

#### EVALUATION SUBJECT:

MISSION C-50.21 CELLER, MISSION C-40.19, TB-10 TECH, TB-12, FLAT-5XL AND FLAT-10 CLAY ROOF TILES

## 1.0 EVALUATION SCOPE

#### Compliance with the following codes:

- 2018, 2015, and 2012 *International Building Code*® (IBC)
- 2018, 2015, and 2012 *International Residential Code*® (IRC)

#### Properties evaluated:

- Roof covering
- Fire classification
- Wind resistance

## 2.0 USES

The clay roof tiles are used as Class A roof coverings when installed in accordance with Section 4.4 of this report.

## 3.0 DESCRIPTION

### 3.1 General:

The clay tiles, classified as Type I (high profile) or Type III (flat), Grade 1 or Grade 3, and are in compliance with ASTM C1167.

### 3.2 Mission C-50.21 Celler:

The Mission C-50.21 Celler is a Type I / Grade 1 clay barrel tile 19<sup>11</sup>/<sub>16</sub> inches long (500 mm) with a width tapering from 8<sup>1</sup>/<sub>4</sub> inches to 6<sup>11</sup>/<sub>16</sub> inches (210 mm to 170 mm), a nominal thickness of <sup>13</sup>/<sub>32</sub> inch (10 mm) and a weight of approximately 5.3 pounds (2.4 kg) each. The tiles have an installed weight of approximately 8.1 pounds per square foot (39.58 kg/m<sup>2</sup>) when installed with a 3 inch (76 mm) headlap. See Figure 1 for additional details.

### 3.3 Mission C-40.19:

The Mission C-40.19 is a Type I / Grade 3 clay barrel tile 16<sup>1</sup>/<sub>16</sub> inches long (408 mm) with a width tapering from 7<sup>1</sup>/<sub>16</sub> inches to 5<sup>1</sup>/<sub>2</sub> inches (180 mm to 140 mm), a nominal thickness of <sup>13</sup>/<sub>32</sub> inch (10 mm) and a weight of approximately 3.5 pounds (1.6 kg) each. The tiles have an installed weight of approximately 7.2 pounds per square foot (35.1 kg/m<sup>2</sup>) when installed with a 3-inch (76 mm) headlap. See Figure 1 for additional details.

### 3.4 TB-10 Tech:

The TB-10 Tech is a Type III / Grade 1 clay high-profile Spanish “S” tile 18<sup>3</sup>/<sub>4</sub> inches long (475 mm) with a width of 11<sup>1</sup>/<sub>8</sub> inches (282 mm), an exposed width of 9<sup>1</sup>/<sub>8</sub> inches (232 mm), a nominal thickness of <sup>13</sup>/<sub>32</sub> inch (10 mm) and a weight of approximately 7.6 pounds (3.45 kg) each. The tiles have an installed weight of approximately 7.6 pounds per square foot (37.1 kg/m<sup>2</sup>) when installed with a 76 mm (3 inch) headlap. See Figure 1 for additional details.

### 3.5 TB-12:

The TB-12 is a Type I / Grade 3 interlocking clay high-profile Spanish “S” tile 17<sup>1</sup>/<sub>4</sub> inches long (439 mm) with a width of 10<sup>1</sup>/<sub>4</sub> inches (260 mm), an exposed width of 8<sup>1</sup>/<sub>16</sub> inches (205 mm), a nominal thickness of <sup>13</sup>/<sub>32</sub> inch (10 mm) and a weight of approximately 6.7 pounds (3.1kg) each. The tiles have an installed weight of approximately 8.2 pounds per square foot (40.2 kg/m<sup>2</sup>) when installed with a 2<sup>11</sup>/<sub>16</sub> inch (69 mm) headlap. See Figure 1 for additional details.

### 3.6 FLAT-5XL:

The Flat-5XL tile is Type III / Grade 1 interlocking clay flat-profile tile 18 inches long (457 mm) with a width of 20<sup>1</sup>/<sub>16</sub> inches (510 mm), an exposed width of 18<sup>11</sup>/<sub>16</sub> inches (74 mm), a nominal thickness of <sup>1</sup>/<sub>2</sub> inch (12 mm) and a weight of approximately 14.6 pounds (6.6 kg) each. The tiles have an installed weight of approximately 7.3 pounds per square foot (35.6 kg/m<sup>2</sup>) when installed with a 2<sup>1</sup>/<sub>2</sub> inch (64 mm) headlap. See Figure 1 for additional details.

### 3.7 FLAT-10:

The Flat-10 tile is a Type III / Grade 1 interlocking clay flat-profile tile 18<sup>3</sup>/<sub>4</sub> inches long (475 mm) with a width of 11<sup>1</sup>/<sub>4</sub> inches (285 mm), an exposed width of 9<sup>5</sup>/<sub>8</sub> inches (245 mm), a nominal thickness of <sup>1</sup>/<sub>2</sub> inch (12 mm) and a weight of approximately 7.7 pounds (35 kg) each. The tiles

have an installed weight of approximately 7.8 pounds per square foot (38.1kg/m<sup>2</sup>) when installed with a 3-inch (76 mm) headlap and an installed weight of approximately 39.1 kg/m<sup>2</sup> (8.0 pounds per square foot) when installed with a 4<sup>5</sup>/<sub>16</sub> inch (110 mm) headlap. See Figure 1 for additional details.

## 4.0 INSTALLATION

### 4.1 General:

Installation of the roof tiles must be in accordance with IBC Section 1507.3 and IRC Section R905.3, as applicable, and the Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions, dated March 2010, published by the Tile Roofing Institute Inc. and the Western States Roofing Contractors Association (hereinafter referred to as the TRI/WSRCA installation manual), except as noted in this report. This report and the TRI/WSRCA installation manual must be available at the jobsite at all times during installation.

Flashing must be installed in accordance with IBC Sections 1503.2 and 1507.3.9, or IRC Sections R903.2 and R905.3.8, as applicable.

### 4.2 Roof Slope Limitations:

Mission C-40.19, Mission C-50.21 Celler, Flat-10 and TB-10 Tech tiles must be installed on roofs having a minimum roof slope of 2<sup>1</sup>/<sub>2</sub> to 12 (21 percent) in accordance with IBC Section 1507.3.2 and IRC Section R905.3.2 and a maximum roof slope of 21 to 12 (175 percent).

TB-12 and Flat-5 XL tiles are interlocking tiles limiting the headlap to 2<sup>1</sup>/<sub>2</sub> inches (64 mm) and 2.7 inches (69 mm), respectively. The tiles must be installed on a minimum roof slope of 3 to 12 (25 percent) and a maximum roof slope of 21 to 12 (175 percent).

### 4.3 Underlayment:

Underlayment must comply with, and be installed in accordance with, 2018 IBC Sections 1507.1.1 and 1507.3.3 (2015 and 2012 IBC Section 1507.3.3), 2018 and 2015 IRC Sections R905.1.1 and R905.3.3 (2012 IRC Section R905.3.3, as applicable). In areas where the average daily temperature in January is 25°F (-4°C) or less, or where there is a possibility of ice forming along the eaves and causing a backup of water, an ice barrier consisting of at least two layers of underlayment, complying with ASTM D226, cemented together with an approved cementing material, or a self-adhered membrane complying with ASTM D1970 or an ice barrier that is the subject of a current ICC-ES evaluation report must be installed. The ice barrier must extend from the edge of the eave to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

### 4.4 Fire Classification:

**4.4.1 New Construction:** The clay roof tiles installed in accordance with this report are Class A roof coverings in accordance with the exception 2 to IBC Section 1505.2 and IRC Section R902.1, as applicable.

### 4.5 Reroofing Applications:

When installation is over existing roofs, the existing roof covering and underlayment must be completely removed and the tiles and new underlayment must be installed in accordance with Section 4.0. The roof classification is as noted in Section 4.4.1.

### 4.6 Tile Replacements:

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

maintaining the required head and side lap. The new tile must be secured using a roof tile adhesive listed in a current ICC-ES evaluation report, applied to the bottom half of the replacement tile.

### 4.7 Wind Uplift Resistance:

**4.7.1 2018 IBC:** When installed in accordance with this report, the tiles are limited to areas subject to a maximum basic design wind speed (V) of 130 mph (209 km/h) on structures having a maximum mean roof height of 60 feet (18.3 m).

**4.7.2 2018 IRC, 2015 IBC, 2015 IRC and 2012 IBC:** When installed in accordance with this report, the tiles are limited to areas subject to a maximum ultimate design wind speed (Vult) of 130 mph (209 km/h) on structures having a maximum mean roof height of 40 feet (12.2 m) for the IBC and a maximum mean roof height of 40 (12.2 m) feet for the IRC.

**4.7.3 2012 IRC:** When installed in accordance with this report, the tiles are limited to areas subject to a maximum basic wind speed of 100 mph (161 km/h) on structures having a maximum mean roof height of 40 feet (12.2 m).

## 5.0 CONDITIONS OF USE

The clay 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 roof tiles are manufactured, identified and installed in accordance with this report, the TRI/WSRCA installation manual, dated March 2010, and the applicable code. If there is a conflict between this report and the TRI/WSRCA installation manual, 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 limited to use in those areas described in Section 4.7 of this report.
- 5.4** Tiles classified as Grade 3 are limited to use in locations with a weathering index of less than 50 in accordance with ASTM C1167.

## 6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Clay and Concrete Tiles (AC180), dated February 2012, revised March 2018.

## 7.0 IDENTIFICATION

- 7.1** Each clay tile is embossed with the words "Tejas Borja." In addition, each pallet or package is identified with the manufacturer's name (Tejas Borja), the product name, the manufacturing location (Valencia plant), the installed weight and the evaluation report number (ESR-2111).
- 7.2** The report holder's contact information is the following:

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C-40.19



C-50.21 Celler®



FLAT-5XL®



FLAT-10



TB-10 Tech



TB-12®



FIGURE 1 – TILE ILLUSTRATIONS

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## 1.0 REPORT PURPOSE AND SCOPE

## Purpose:

The purpose of this evaluation report supplement is to indicate that Mission C-50.21 Celler, Mission C-40.19, TB-10 Tech, TB-12, Flat-5XL and Flat-10 Clay roof tiles, described in ICC-ES evaluation report ESR-2111, have also been evaluated for compliance with the codes noted below.

## Applicable code editions:

- 2020 *Florida Building Code—Building*
- 2020 *Florida Building Code—Residential*

## 2.0 CONCLUSIONS

The Mission C-50.21 Celler, Mission C-40.19, TB-10 Tech, TB-12, Flat-5XL and Flat-10 Clay roof tiles, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-2111, comply with the 2020 *Florida Building Code—Building* and the 2020 *Florida Building Code—Residential*. The design requirements shall be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-2111 for the 2018 *International Building Code*® meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable, with the following conditions:

Use of the Mission C-50.21 Celler, Mission C-40.19, TB-10 Tech, TB-12, Flat-5XL and Flat-10 Clay roof tiles for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* has not been evaluated, and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, 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 2023.