DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 32 00—ROOF TILES

REPORT HOLDER:
TESLA, INC.

EVALUATION SUBJECT:
TESLA SOLAR ROOF SYSTEM
1.0 EVALUATION SCOPE

Compliance with the following codes:


Properties evaluated:

- Fire Classification
- Wind Resistance
- Weather resistance

2.0 USES

The Tesla Solar Roof System is a building-integrated photovoltaic (BIPV) roof covering system that generates electricity from the sun. The system is recognized for use where Class A, B or C roof coverings are required by IBC 1505 and IRC R902.1, and is a classified roof covering when installed as described in Section 4.5 of this report.

3.0 DESCRIPTION

3.1 General: The Tesla Solar Roof System is composed of two types of roof tiles; electrically-active roof covering with integral photovoltaics (BIPV roof tiles) and inactive roof covering without integral photovoltaics (non-BIPV roof tiles). The roof tiles are available in textured glass and smooth glass finish. In addition to the roof tiles, the system also includes accessory components such as those described in Section 3.1.3, 3.1.4 and 3.1.5.

3.1.1 BIPV Roof Tiles: The BIPV roof tiles generate electricity from the sun and include the photovoltaic modules. The BIPV roof tiles come in a three tile version and are designated as Model Nos. SR24T3-2 and SR24S3-2. These tiles have an overall dimension of 42.4 inches (1078 mm) in length by 8.7 inches (220 mm) in width by 0.25-inch-thick (6.3 mm).

3.1.2 Non-BIPV Roof Tiles: The non-BIPV roof tiles are similar to the BIPV tiles, except that they do not include photovoltaic cells and therefore do not generate electricity. These tiles come in single-tile and three-tile versions. The three-tile versions are designated as Model Nos. SRNFT3-2 and SRNFS3-2, and measure 42.4 inches (1076 mm) in length by 8.7 inches (220 mm) in width by 0.24-inch-thick (6 mm). The single-tile versions are designated as Model Nos. SRNFT1-2 and SRNFS1-2 and measure 14.0 inches (356 mm) in length by 8.7 inches (220 mm) in width by 0.24-inch-thick (6 mm).

3.1.3 Flashing Covers: In addition to the roof tiles, flashing covers come in a single tile version and are designated as Model Nos. SRFT-1 and SRFS-1. The covers measure 14.0 inches (356 mm) in length by 8.7 inches (220 mm) in width by 0.24-inch-thick (6 mm). The flashing covers can be field-cut to accommodate roof dimensions.

3.1.4 Sidelap and Module Foot: The sidelap (Part No. 1457099-00-B) and module foot (Part No. 1457100-00-A) are used during installation of BIPV and nonBIPV roof tiles and flashing covers. The Sidelap has an overall dimension of 255 mm long by 120 mm wide by 28 mm thick (10-inch-long by 4.7-inch-wide by 1.1-inch-thick).

3.1.5 Accessory electrical components: Accessory electrical components to electrically connect the BIPV roof tiles are supplied by Tesla, Inc.

3.2 Underlayment:

3.2.1 Self-adhered Roof Underlayment: The self-adhered roof underlayment Firestone Building Products Company, LLC Clad-Gard™ SA-FR underlayment recognized in ESR-3979. Two layers of this self-adhered underlayment must be used when installed as components of the Class A roof covering. One layer of this self-adhered underlayment may be used as an alternative to one layer of mechanically-attached roof underlayment when installed as a component of the Class C roof covering. See Section 4.5 of this report for additional installation details for classified roof coverings.

3.2.2 Mechanically-attached Roof Underlayment: The mechanically-attached roof underlayment must be any UL-classified roof underlayment complying with ASTM D226, Type II. With the exception of when one layer of self-adhered underlayment is used, this mechanically-attached roof underlayment must be used when installed as a
component of the Class C roof covering. See Section 4.5 of this report for additional installation details for classified roof coverings.

3.3 Fasteners: Fasteners for attachment of module foot to roof deck must be corrosion-resistant ring-shank roofing nails, minimum 11 gage [0.120-inch (3.05 mm)] with a minimum head diameter of 5/16-inch (7.9 mm) complying with ASTM F1667; or minimum No. 8 corrosion-resistant screws. Fasteners must be of sufficient length to penetrate the deck not less than ¾-inch (19 mm) or through the thickness of the deck, whichever is less.

4.0 INSTALLATION

4.1 General:
The Tesla Solar Roof System must be installed in accordance with this report, the report holder's installation instructions, and the applicable code. The installation instructions must be available on the jobsite at all times.

4.2 Roof Slope and Roof Deck:
The Tesla Solar Roof System must be installed on roofs having a minimum slope of 2:12 (17 percent slope) under the IRC or 3:12 (25 percent slope) under the IBC and a maximum slope of 20:12 (167 percent slope) under the IRC or 3:12 (25 percent slope) under the IBC and IRC.

4.2.1 For Installation as a Class A roof classified:

4.2.1.1 Minimum 15/32-inch (11.9 mm) plywood complying with U.S. DOC PS-1, APA span-rated plywood roof sheathing.

4.2.1.2 Minimum 7/16-inch-thick (11.1 mm) nonveneer APA-rated oriented strand board (OSB) sheathing complying with U.S. DOC PS-2.

4.2.1.3 Minimum ¼-inch-thick (19 mm) closely-fitted roof sheathing boards.

4.2.2 For Installation as a Class C roof classified:

4.2.2.1 Minimum 3/8-inch-thick (9.5 mm) plywood complying with U.S. DOC PS-1, APA span-rated roof sheathing.

4.2.2.2 Minimum 7/16-inch-thick (11.1 mm) nonveneer APA-rated oriented strand board (OSB) sheathing complying with U.S. DOC PS-2.

4.3 Underlayment:
The roof deck must be covered with underlayment, as described in Section 3.2 and this section:

4.3.1 For Installation as a Class A roof classified covering: The roof deck must be covered with a minimum of two layers of the self-adhered Firestone Building Products Company, LLC Clad-Gard™ SA-FR underlayment, as described in Section 3.2.1, applied in accordance with the requirements of the applicable code and ESR-3979.

4.3.2 For Installation as a Class C roof classified covering: The roof deck must be covered with a minimum of one layer of mechanically-attached roof underlayment, as described in Section 3.2.2, applied in accordance with the requirements of the applicable code. As an alternative to mechanically-attached roof underlayment, one layer of the self-adhered roof underlayment described in Section 3.2.1 may be applied when installed in accordance with ESR-3979.

4.4 Tesla Solar Roof System Installation:
The roof system must be installed over underlayment as described in Section 4.3. The BIPV and non-BIPV tiles are connected to the roof deck using the module foot. The maximum spacing of the module foot along each course must not exceed 14 inches (356 mm). The module foot must be attached to the roof deck using two fasteners as described in Section 3.3. Adjacent courses must be located such that the maximum tile exposure does not exceed 7.5 inches (191 mm). Flashing covers must be installed in accordance with the report holder's published installation instructions. The Tesla Solar Roof System must be installed with underlayment, flashing, mounting means, mechanical fasteners, ridge and hip tiles in accordance with this report and report holder's published installation instructions.

4.5 Roof Classification:
The Tesla Solar Roof System installed in accordance with Section 4.0 of this report is recognized for use where Class A, B or C roof coverings are required in accordance with IBC Section 1505 or IRC Section R902.1. See Sections 3.2 and 4.3 for additional roof underlayment installation details. See Section 4.2 for additional roof slope and roof deck installation details.

4.6 Wind Resistance:
The Tesla Solar Roof System installed in accordance with this report have been tested for wind resistance, in accordance with UL 1897, and have an allowable wind uplift resistance of 32.5 psf (1556 Pa).

5.0 CONDITIONS OF USE

The Tesla Solar Roof System described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Tesla Solar Roof System must be manufactured, identified and installed in accordance with this report, the report holder’s published installation instructions and the applicable code. If there are any conflicts between the published installation instructions and this report, this report governs.

5.2 Recognition of the Tesla Solar Roof System is limited to their use as a roof covering; the electrical safety requirements and solar energy performance of this product are outside the scope of this report.

5.3 The Tesla Solar Roof System, 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.

5.4 Under the 2015 and 2012 IBC, installation must comply with the applicable requirements in Section 605.11 of the International Fire Code® (IFC).

5.5 Under the 2015 IRC, installation must comply with the applicable requirements in Section R324.

5.6 The Tesla Solar Roof System is manufactured under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

7.0 IDENTIFICATION

7.1 Tesla Solar Roof System bear a product label that includes the Tesla, Inc. name, the manufacturing location, the product name and model number, the lot number, roof fire classification, compliance with UL1897 and the ICC-ES evaluation report number (ESR-4074).

7.2 The report holder’s contact information is the following:
TESLA, INC.
3500 DEER CREEK ROAD
PALO ALTO, CALIFORNIA  94304
(415) 915-4961
www.tesla.com/energy
1.0 REPORT PURPOSE AND SCOPE

Purpose:
The purpose of this evaluation report supplement is to indicate that the Tesla Solar Roof System, recognized in ICC-ES master evaluation report ESR-4074, has also been evaluated for compliance with Chapter 15 of the CBC, Chapter 6 of the CFC and Chapter 3 and 9 of the CRC of the codes noted below.

Applicable code edition(s):
- 2016 California Building Code (CBC)
- 2016 California Fire Code (CFC)
- 2016 California Residential Code (CRC)

2.0 CONCLUSIONS

2.1 CBC:
The Tesla Solar Roof System, described in Sections 2.0 through 7.0 of the master evaluation report ESR-4074, complies with CBC Chapter 15, provided the design and installation are in accordance with the 2015 International Building Code® (IBC) provisions noted in the master report and the additional requirements of CBC Chapter 15 and CFC Section 605.11, as applicable. The Tesla Roof System recognized in the master report as a Class A classified roof covering may be used where the CBC requires 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, provided installation complies with the 2015 IBC noted in the master report. The Tesla Roof System recognized in the master report as a Class C classified roof covering may be used where the CBC requires a Class C roof covering complying with CBC Section 1505.1.3, provided installation complies with the 2015 IBC noted in the master report.

The Tesla Solar Roof System may be used in the construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Area where a Class A classified roof covering is recognized in the master report, provided installation is in accordance with the 2015 IBC provisions noted in the master report and the additional requirements of Sections 701A.3 and 705A of the CBC.

2.2 CRC:
The Tesla Solar Roof System, described in Sections 2.0 through 7.0 of the master evaluation report ESR-4074, complies with CRC Chapter 9, provided the design and installation are in accordance with the 2015 International Residential Code® (IRC) provisions noted in the master report and the additional requirements of CRC Chapter 9 and CRC Section R324. The Tesla Roof System recognized in the master report as a Class A classified roof covering may be used where the CRC requires 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 R902.1.3, provided installation complies with the 2015 IRC noted in the master report. The Tesla Roof System recognized in the master report as a Class C classified roof covering may be used where the CRC requires a Class C roof covering complying with CRC Section R902.1.3, provided installation complies with the 2015 IRC noted in the master report.
The Tesla Solar Roof System may be used in the construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Area where a Class A classified roof covering is recognized in the master report, provided installation is in accordance with the 2015 IRC provisions noted in the master report and the additional requirements of Sections R337.1.3 and R337.7 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 master report issued June 2019.