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ICC-ES Evaluation Report

ESR-2901

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Reissued 09/2018
This report is subject to renewal 09/2019.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 31 16—METAL SHINGLES
SECTION: 07 41 13—METAL ROOF PANELS

REPORT HOLDER:

DECRA ROOFING SYSTEMS, INC.

EVALUATION SUBJECT:

STEEL ROOFING PANELS:

TILE PROFILE: DECRA TILE

SHAKE PROFILE: DECRA SHAKE

SHINGLE PROFILE: DECRA SHINGLE PLUS



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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:

- Fire classification
- Wind resistance
- Weather resistance

1.2 Evaluation to the following green code:

- 2016 California Green Building Standards Code (CALGreen), Title 24, Part 11

Attributes verified:

See Section 3.1

2.0 USES

The DECRA Steel Roofing Panels are metal roof shingles complying with IBC Section 1507.5 and IRC Section R905.4 and are recognized for use as Class A, Class B or Class C roof coverings, as noted in Section 4.3, on new roofs and over existing roofs, when installed in accordance with this report.

3.0 DESCRIPTION

3.1 General:

The steel roofing panels are pressure-formed from

structural-quality sheet steel complying with ASTM A792, Grade 37, with an AZ50 class hot-dip aluminum-zinc alloy coating. The thickness of the coated steel is 0.017 inch (0.43 mm). The overall panel size of the tile and shingle profiles is 16¹/₂ inches by 52 inches (419 mm by 1321 mm), with an installed exposure of 14¹/₂ inches by 50 inches (368 mm by 1270 mm). The overall panel size of the shake profile is 14⁵/₈ inches by 53 inches (371 mm by 1346 mm), with an installed exposure of 12⁵/₈ inches by 51 inches (321 mm by 1295 mm). Side panel laps are 2 inches (51 mm). The Tile profile has pan sections that form tile shapes. The Shake profile has impressions forming irregular shake shapes across the panels. The Shingle Plus profile consists of raised and lowered sections that form a series of rectangular shingle shapes. The panel leading edges are bent down 1 inch (25.4 mm) to provide an overlap for weather protection and nailing purposes. The top back edge of the Tile panel and Shake panel is bent vertically up 1 inch (25.4 mm), then lipped horizontally back from 1 inch (25.4 mm) to 1¹/₂ inches (38 mm). The top back edge of the Shingle Plus panel is bent vertically up ½ inch (12.7 mm), then lipped horizontally back from 2½ inches (63.5 mm). Each panel weighs approximately 6.5 pounds (3 kg). The installed weight of these steel roofing panel systems is approximately 1.5 psf (7.3 kg/m²).

Both sides of the panels are treated with a corrosion-inhibiting coating. An opaque base coat of acrylic resin is applied to exposed surfaces, and this is followed by embedment of colored stone granules. The surface is then spray-finished with clear acrylic over-glaze as the final process.

The attributes of the steel roofing panels 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.

3.2 Underlayment:

Underlayment must comply with IBC Section 1507.5.3; 2015 IRC Section R905.1.1; or 2012, 2009 or 2006 IRC Section R905.4.3, as applicable

3.3 Roof Slope:

The steel panels described in this report must be installed on roofs with minimum slopes of 3:12 (25 percent). For roof slopes between 2:12 (16 percent) and less than 3:12 (25 percent), the panels are considered decorative and

must be installed over a roof-covering system complying with the applicable code, subject to code official approval.

3.4 Battens and Counterbattens:

Wood battens must be nominally 2-by-2 standard-grade Douglas fir–larch or better, having a specific gravity of 0.50 or greater. Steel battens must be hat-, C-, J- or U-shaped sections with a 1¹/₂-inch (38 mm) minimum height, formed from minimum 0.017-inch-thick (0.43 mm) galvanized steel. Wood battens are limited to supports spaced at a maximum of 24 inches (610 mm) on center, and steel battens must be designed to resist the design loads. Counterbattens must be nominally 1-by-4 standard-grade Douglas fir–larch or better, having a specific gravity of 0.50 or greater.

3.5 Fasteners:

All fasteners must be corrosion-resistant. Nails must comply with ASTM F1667. Wood screws must comply with ANSI/ASME Standard B18.6.1. Sheet metal screws must comply with ANSI/ASME Standard B18.6.4.

4.0 DESIGN AND INSTALLATION

4.1 Installation—New Construction:

Battens must be installed 14¹/₂ inches (368 mm) on center for Tile and Shingle Plus profiles, or 12⁵/₈ inches (321 mm) on center for Shake profiles. The battens must be attached to a roof deck consisting of solid or closely fitted wood structural panels or lumber sheathing complying with the code.

Wood battens must be fastened to the supporting framing members with one 16d, 0.162-inch-diameter (4.12 mm) common nail or equivalent per intersection in the field of the roof, and two corrosion-resistant 16d common nails per intersection on roof perimeter areas. Steel battens must be fastened to framing with one No. 8 by 1.5-inch-long (38 mm), corrosion-resistant wood screw in the field of the roof and two wood screws on the perimeters. The field and perimeter areas of the roof are defined in ASCE 7. Measurements for batten placement must be made from the face of the fascia board up to the face of succeeding battens. The final panel width, adjacent to the ridge board, is adjusted by cutting and bending the panel vertically in the field. All ridges and hips are provided with either two nominally 2-by-2 boards or one nominally 2-by-4 board. Valleys must be flashed in accordance with 2015, 2012 or 2009 IBC Section 1507.5.7, 2006 IBC Section 1507.5.6 or IRC Section R905.4.6, as applicable.

Panels are fastened to wood battens with a minimum of four 8d, corrosion-resistant box nails, or equivalent, in the field of the roof, and five nails on the perimeter roof areas. Panels are fastened to steel battens with a minimum of four No. 8, 0.164-inch-diameter-by-1-inch-long (4.16 mm by 25.4 mm), corrosion-resistant steel sheet metal screws or equivalent. One fastener is placed near the bottom on the downturn of the panel, approximately 1 inch (25.4 mm) from the overlapped edge of the adjoining panel. The remaining fasteners must be evenly spaced across the panel at the same location as the first fastener. Gable rakes must be provided with a continuous gable cap piece or barge cover made and finished with the same materials as the roofing panels. Ridges and hips have the panels fastened to the side of the ridge or hip boards after mitering and bending, and must be capped with hip/ridge caps made and finished with the same materials as the roofing panels. Openings in the roof covering must be flashed in accordance with IBC Section 1503.2 or IRC Section R903.2. Openings through the panels for vents, etc., must be adequately weatherproofed and supported by

additional blocking or roof framing as necessary. The manufacturer's published installation instructions must be followed and a copy must be available upon request.

4.2 Installation—Reroofing:

When the old roof covering is completely removed, all conditions noted in Sections 3.1 through 4.1 must apply. If the old roof covering was installed on spaced sheathing, the gaps must be filled to provide closely fitted decking having joints spaced approximately 1/8 inch (3.2 mm) for classified roof covering systems. For nonclassified roof covering systems, additional structural sheathing boards must be attached to the roof framing as required to accommodate all batten fastening locations.

DECRA steel roofing panels may also be installed over existing wood shake, wood shingle, asphalt shingle, or built-up roofs, provided the roof slope complies with Section 3.3 and the requirements of 2015 IBC Section 1511, 2012, 2009 or 2006 IBC Section 1510 or 2015 IRC Section R908, 2012, 2009 or 2006 IRC Section R907 are met. When installation is over wood shingle or wood shake roofs, the entire existing roof surface must be covered with material in accordance with 2015 IBC Section 1511.4, 2012, 2009 or 2006 IBC Section 1510.4 or 2015 IRC Section R908.4, 2012, 2009 or 2006 IRC Section 907.4 prior to installation of counterbattens.

For installation over existing asphalt shingles, ridge and hip caps must be removed and the existing roof covering cut back flush with the fascia or barge cover. Battens must be spaced 14¹/₂ inches (368 mm) on center for tile and shingle profiles, or 12⁵/₈ inches (321 mm) on center for shake profiles, and must be fastened to the deck using 16d common nails at 12 inches (305 mm) on center. The panels are fastened to the battens in the same manner as described in Section 4.1.

For installation over existing wood shingle and wood shake roofs, ridge and hip caps must be removed and the existing roof covering cut back flush with the fascia or barge cover. Counterbattens must be installed over the existing roof covering parallel to the framing (perpendicular to the eaves) at a maximum 24-inch (610 mm) spacing. Counterbattens must be securely fastened to the framing members or to spaced sheathing using minimum 16d common nails or equivalent in the field of the roof and No. 10 by 3¹/₂-inch-long (89 mm) wood screws on the perimeters. Nails and screws must be of sufficient length to penetrate 1 inch (25.4 mm) into the framing member. Maximum fastener spacing is 7 inches (178 mm) on center, and edge fasteners must be within 6 inches (152 mm) of counter-batten ends. Care must be taken to avoid splitting the battens and counterbattens. Battens are spaced 14¹/₂ inches (368 mm) on center for tile and shingle profiles, or 12⁵/₈ inches (321 mm) on center for shake profiles, and must be fastened to the counterbattens using two 16d common nails or equivalent per intersection in the field of the roof and two No. 10 by 3¹/₂-inch-long (89 mm) wood screws on the roof perimeter areas. The panels are fastened to the battens in the same manner as described in Section 4.1. New flashings must be installed over and around all existing valleys, vents and chimneys in accordance with the applicable code requirements. Valleys must be flashed in accordance with 2015, 2012 or 2009 IBC Section 1507.5.7, 2006 IBC Section 1507.5.6 or IRC Section R905.4.6, as applicable.

Over existing built-up roof coverings, all loose gravel and debris must be swept off. Blisters in the plies must be cut and nailed flat. Raised perimeters, such as gravel stops, must be covered by the steel panel roofing system. The system may be installed over integral gutters, provided

there is a fascia board, nailed to the rafters, installed outside the gutter. The battens and counterbattens must be fastened in accordance with this section (Section 4.2).

4.3 Fire Classification:

The roof covering assemblies described in Table 1, when installed in accordance with this report, have the fire classifications noted in the table.

4.4 Wind Resistance:

DECRA steel roofing panels installed on battens as described in this report are acceptable for uplift loads up to 33 psf (1580 N/m²) in the field of the roof and 75 psf (3591 N/m²) on the roof perimeter areas when the design wind pressure is determined in accordance with ASCE 7 (IBC) or IRC Section R301.2.1, as applicable. Positive loads are limited to the adequacy of the structural framing and sheathing.

Battens and counterbattens (if used) and their attachment to framing must be designed for the applied wind loads.

Special inspections must be conducted when required by 2015 IBC Sections 1705.11 and 1705.11.3, 2012 IBC Sections 1705.10 and 1705.10.3, 2009 IBC Sections 1706.1 and 1706.4 and 2006 IBC Sections 1705.4 and 1705.4.2.

4.5 Live Loads:

The DECRA (Tile, Shake and Shingle Plus) Steel Roofing Panels have an allowable load of 100 psf when applied to 2-inch-by-2-inch standard-grade Douglas fir-larch, having a specific gravity of 0.50 or greater, spaced at a maximum of 14¹/₂ inches (369 mm) on center.

5.0 CONDITIONS OF USE

The DECRA Steel Roofing Panels 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 panels must be manufactured, identified and installed in accordance with this report, the applicable code and the manufacturer’s published installation instructions. In the event of a conflict between this report and the manufacturer’s installation instructions, this report governs.

5.2 Printed installation instructions must be provided for the steel roofing panels listed in this report.

5.3 Special inspections must be conducted when required by 2015 IBC Sections 1705.11 and 1705.11.3, 2012 IBC Sections 1705.10 and 1705.10.3, 2009 IBC Sections 1706.1 and 1706.4 and 2006 IBC Sections 1705.4 and 1705.4.2, as set forth in Section 4.4 of this report.

5.4 The roofing panels are manufactured in Corona, California, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Metal Roof Coverings (AC166), dated October 2012 (editorially revised June 2015).

7.0 IDENTIFICATION

7.1 A label bearing the manufacturer’s name (DECRA Roofing Systems, Inc.) and address, the product name and the evaluation report number (ESR-2901) must be affixed to each pallet or bundle.

7.2 The report holder’s contact information is the following:

DECRA ROOFING SYSTEMS, INC.
1230 RAILROAD STREET
CORONA, CALIFORNIA 92882
(951) 272-8180
www.decra.com
marketing@decra.com

TABLE 1—FIRE CLASSIFICATION ASSEMBLIES^{1,2,3}

SYSTEM NO.	ROOF CLASS	SUBSTRATE	MAX. ROOF SLOPE	INSULATION	UNDERLAYMENT	BATTENS AND COUNTERBATTENS	ROOF PANEL
1	A	Minimum ¹⁵ / ₃₂ -inch-thick plywood	Unlimited	None	One layer of GAF VersaShield® Fire-Resistant Roof Deck Protection, as recognized in ESR-2053	Wood or steel battens on wood counterbattens	DECRA Shake, DECRA Tile, or DECRA Shingle Plus
2	B	Existing wood shingle or shake	Unlimited	1 ¹ / ₂ -inch-thick foil-faced fiberglass blanket	---	2-by-2 wood battens on 1-by-4 wood counterbattens	DECRA Shake, DECRA Tile, or DECRA Shingle Plus
3	C	Minimum ¹⁵ / ₃₂ -inch-thick plywood	Unlimited	None	Any UL-classified underlayment	Wood or steel battens on wood counterbattens	DECRA Shake, DECRA Tile, or DECRA Shingle Plus

For SI: 1 inch = 25.4 mm.

¹For Systems 1 and 3, see Section 4.1 for additional installation details.

²For System 2, see Section 4.2 for additional installation details.

³For Systems 1, 2 and 3, see Section 3.4 for additional details for battens and counterbattens.



DECRA Shingle Plus

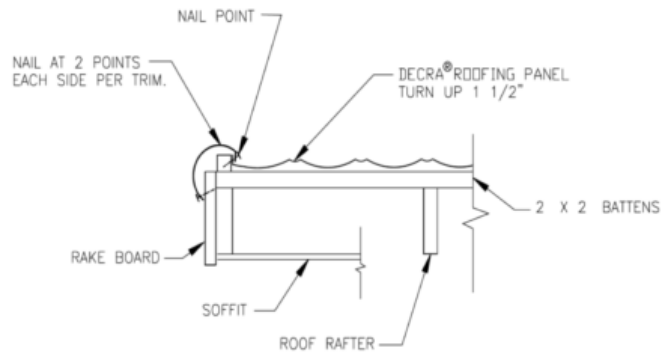


DECRA Shake



DECRA Tile

FIGURE 1—TYPICAL PANEL PROFILES



NOTE: BOX BARGE COVER MAY BE USED AS AN ALTERNATIVE TO THE TRIM CAP.

RAKE DETAIL WITH PANEL TURN UP

FIGURE 2-C

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ESR-2901 CBC and CRC Supplement

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STEEL ROOFING PANELS:

TILE PROFILE: DECRA TILE

SHAKE PROFILE: DECRA SHAKE

SHINGLE PROFILE: DECRA SHINGLE PLUS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Decra Roofing Systems, Inc., steel roofing panels, recognized in ICC-ES master evaluation report ESR-2901, have also been evaluated for compliance with the codes noted below:

Applicable code editions:

- 2016 *California Building Code* (CBC)
- 2016 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The DECRA steel roofing panels described in the master evaluation report, ESR-2901, 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 is in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the master report, as applicable.

The roofing panels 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 in accordance with the 2015 *International Building Code*® (IBC) provisions noted in the master report and the additional requirements of Sections 701A.3 and 705A of the CBC.

2.2 CRC

The DECRA steel roofing panels described in the master evaluation report, ESR-2901, 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 Section R902.1.3 is required, provided installation is in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the master report and the additional requirements of Section R905.4 of the CRC.

The roofing panels may be used in the construction of new buildings located in any Wildland–Urban Interface Fire Area, provided installation is in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the master report and the additional requirements of Sections R337.1.3.1 and R337.5 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 master report, reissued September 2018.