



- Compliance with International Codes
- Compliance with State Codes

ICC-ES Evaluation Report ESR-1188

Reissued May 2021

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This report is subject to renewal May 2023.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 32 19—Metal Roof Tiles

REPORT HOLDER:

WESTLAKE ROYAL ROOFING LLC

EVALUATION SUBJECT:

UNIFIED STEEL STONE COATED ROOFING BRAND:
GRANITE-RIDGE SHINGLE STEEL ROOFING PANELS

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2021, 2018, 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:

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

Attributes verified:

See Section 3.1

2.0 USES

The GRANITE-RIDGE Shingle steel roof panels described in this report are used as roof coverings over new and existing roofs.

3.0 DESCRIPTION

3.1 General:

The GRANITE-RIDGE Shingle steel roofing panels are formed from Galvalume sheet steel having an AZ50 class hot-dip aluminum-zinc coating complying with ASTM A792.

The overall size of each panel is 15⁵/₈ inches by 46¹/₁₆ inches by 0.017 inch thick (397 mm by 1170 mm by 0.43 mm), with an installed exposure of 13¹¹/₁₆ inches by 44 inches (348 mm by 1118 mm). Side panel laps are 2 inches wide (51 mm), with the underlying side having four vertical water channels. The panel has a raised horizontal step in the center running the length of the panel. The bottom edge of the panel is bent twice at 90 degrees downward, forming a “C”. The top edge of the panel has a 1-inch-wide (25.4 mm) fastening apron running the length of the panel. Below the fastening apron is a lock made of formed steel with a ³/₁₆-inch-high (4.8 mm) rise protruding towards the bottom edge of the panel. This protrusion interlocks with the bottom edge of the panel above.

Both sides of the panel are treated with a factory-applied corrosion-inhibiting coating in accordance with ASTM A755. An opaque base coat of acrylic resin is factory-applied to the top exposed surface, with colored stone granules embedded into the base coat. A clear acrylic glaze is factory-applied over the base coat. The installed weight of the steel roofing panel is 1.05 lb/ft² (5.1 kg/m²). Accessory parts for valleys and other flashings as discussed in Section 4.0 are supplied by Westlake Royal Roofing LLC. See Figure 1 for panel detail.

The attributes of the steel roof 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 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:

The panels must be installed in accordance with the applicable code, this report and the manufacturer’s published installation instructions.

The manufacturer’s published installation instructions and this report must be strictly adhered to, and a copy of the manufacturer’s published installation instructions must be available at the jobsite at all times during installation.

4.2 Roof Slope:

The panels must be installed on roofs with slopes of at least 4:12 (33.3%). For roof slopes less than 4:12 (33.3%), the panels are considered decorative and must be installed over a roof covering system complying with the applicable code, subject to code official's approval.

4.3 New Roofing Application:

The panels must be installed directly on solid or closely fitted sheathing complying with the applicable code. A starter strip is installed at the eave. Full panels are placed over the underlayment, starting at the eave. The bottom edge of the panel must interlock with the starter strip. The side laps must be overlapped from left to right. Each panel is fastened to the roof deck using seven, No. 11 gage, ring shank, corrosion-resistant roofing nails having $7/16$ -inch-diameter (11.1 mm) heads, or corrosion-resistant No. 8-14 by $1\frac{1}{4}$ -inch-long (32 mm) wood screws, spaced evenly along the fastening strip. Fasteners must be of sufficient length to penetrate through the sheathing a minimum of $1\frac{1}{2}$ inch (12.7 mm). All successive courses of panels are attached by interlocking the bottom edge to the fold at the top edge of the preceding panel and fastening through the fastening apron. The panels are mitered to fit at hips and valleys.

Valley 5"V" and Valley Center Cap must be used in valleys. The Valley Center Cap is used to conceal the valley cuts. It is installed by aligning the center of the cap over the center of the valley and is fastened to the Valley 5"V" with two rows of $3/4$ -inch-long (19.1 mm), No. 8, hex-head, self-tapping screws spaced a maximum of 24 inches (610 mm) on center along the length of the valley. Mitered cuts at the hip are fastened 1 inch (25.4 mm) to the right and left of the mitered cut, every 8 inches (203 mm) along the length of the hip. Hip and ridge flashing is used to cover the hip by interlocking the bottom end of the cap with the starter strip and fastening into the apron at the top of the cap on the right and left side of the hip.

On rake or gable ends, the panels must be cut and inserted into a rake/roof-to-wall flashing, with the cuts concealed and water allowed to flow from the rake or gable ends to the eave. Chimneys, skylights and roof-to-wall areas are flashed using rake/roof-to-wall and a Z-bar attachment. See Figure 1.

Roof penetrations are flashed using a Pipe Jack Tray. A circular hole having the same diameter as the pipe jack is cut into the tray, and the tray is placed over the pipe. A pipe jack is then placed over the pipe and on top of the pipe jack tray. A panel is then installed over the pipe jack and tray, by cutting a hole in the panel matching the dimensions of the cone. A bead of non-acidic sealant is applied to the base of the cone. See Figure 2.

At ridges, panels are cut flush with the ridge line and fastened along the ridge line with seven fasteners per panel. A water stop is to be formed to protect against wind driven rain. The ridge is covered with a hip and ridge cap beginning at the rake and ridge intersection, the bottom end of the cap being attached with two $1/2$ -inch-long (12.7 mm) stitch screws to the top of the Rake/Roof wall accessory. See Figure 2. The cap is then fastened with two fasteners along the fastening apron located at the top of the cap. Each succeeding cap is attached by interlocking the bottom edge of the cap with the top edge of the preceding cap. Other flashing must comply with IBC Section 1503.2 or IRC Section R903.2.

4.4 Reroofing Application:

With the old roof covering removed, all conditions noted in Section 4.0 apply. The panels may be installed over existing spaced sheathing provided the space between boards is filled with lumber as necessary to provide a base

for fastening. The fill lumber must be of the same thickness as the existing spaced sheathing. The steel roofing panels are also permitted to be installed over existing Class A or Class C asphalt shingles, or Class A built-up roof coverings, provided the roof slope complies with Section 4.2 of this report.

The panels are fastened through the existing roof covering to the roof sheathing in the same manner as described in Section 4.3, with nails or screws of sufficient length to penetrate through the sheathing a minimum of $1/2$ inch (12.7 mm). New flashing is installed over and around all existing flashing, vents, valleys and chimneys in accordance with this report and the code. Over existing built-up roof coverings, all loose gravel and debris must be removed. 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 is permitted to be installed over integral gutters, provided there is a fascia board nailed to the rafters and installed outside the gutter.

4.5 Wind Resistance:

Under the 2021, 2018, 2015 and 2012 IBC, when installed in accordance with Section 4.3 of this report, the steel roofing panels are limited to areas subject to a maximum ultimate design speed (V_{ult}) of 130 mph (209 km/h) in accordance with 2021, 2018 and 2015 IBC Figures 1609.3(1), 1609.3(2) or 1609.3 (3) or 2012 IBC Figures 1609A, 1609B or 1609C, on structures having a maximum mean roof height of 40 feet (12.2 m) or less in Exposure B areas.

Under the 2009 and 2006 IBC, when installed in accordance with Section 4.3 of this report, the steel roofing panels are limited to areas subject to a maximum 3-second gust basic wind speed (V_{3s}) of 100 mph (161 km/h) in accordance with 2009 and 2006 IBC Figure 1609, on structures having a maximum mean roof height of 40 feet (12.2 m) or less in Exposure B areas.

Under the 2021, 2018 and 2015 IRC, when installed in accordance with Section 4.3 of this report, the steel roofing panels are limited to a maximum ultimate design speed (V_{ult}) of 130 mph (209 km/h) in accordance with 2021 IRC Figure R301.2(2) or 2018 IRC Figure R301.2(5)A or 2015 IRC Figure R301.2(4)A, as applicable, on structures with a maximum mean roof height of 40 feet (12.2 m) in Exposure B areas.

Under the 2012, 2009 and 2006 IRC, when installed in accordance with Section 4.3 of this report, the steel roofing panels are limited to a maximum 3-second gust basic wind speed of 100 mph (161 km/h) in accordance with 2012 IRC Figure R301.2(4)A, or 2009 or 2006 IRC Figure R301.2(4), as applicable, on structures with a maximum mean roof height of 40 feet (12.2 m) in Exposure B areas.

When installed in accordance with Section 4.3 with seven, No.8-14 by $1\frac{1}{4}$ -inch-long (32 mm), corrosion-resistant wood screws, and when the sheathing is a minimum of nominally $15/32$ -inch-thick (11.1 mm) plywood, the GRANITE-RIDGE Shingle steel panels are acceptable on any portion of a roof having a design uplift pressure of 95 lbf/ft² (4548 Pa) as determined in accordance with IBC Section 1609.5.1.

When the roof panels are installed in accordance with Section 4.3 of this report, with the exceptions that eight, No. 11 gage, ring-shank roofing nails having a length sufficient to penetrate the sheathing are used, and the sheathing is a minimum of nominally $19/32$ -inch-thick (15.1 mm) plywood, the GRANITE-RIDGE Shingle steel panels are acceptable on any portion of a roof having a design uplift pressure of 52 psf (2490 Pa) as determined in accordance with IBC Section 1609.5.1.

4.6 Underlayment and Ice Barrier:

Underlayment must comply with, and be installed in accordance with, 2021 and 2018 IBC Sections 1507.1.1 and 1507.5.3, 2015, 2012, 2009 and 2006 IBC Section 1507.5.3, or 2021, 2018 and 2015 IRC Sections R905.1.1 and R905.4.3, as applicable. For fire classified roof coverings, one layer of GAF VersaShield® Fire-Resistant Roof Deck Protection ([ESR-2053](#)) may be installed in accordance with Section 4.7.

In jurisdictions adopting the IBC or IRC, an ice barrier is required in accordance with 2021 and 2018 IBC Sections 1507.1.2 and 1507.5.4, 2015, 2012 and 2009 IBC Section 1507.5.4, 2006 IBC Section 1507.5.3, 2018 and 2015 IRC Sections R905.1.2 and R905.4.3.1 or 2012, 2009 and 2006 IRC Section R905.4.3, as applicable.

4.7 Fire Classification:

4.7.1 New Construction:

4.7.1.1 Class A (Assembly 1): The steel roofing panels installed directly on minimum ¹⁵/₃₂-inch-thick (11.9 mm) solid or closely-fitted sheathing complying with the applicable code, covered with one layer of GAF VersaShield® Fire-Resistant Roof Deck Protection recognized in ICC-ES evaluation report [ESR-2053](#).

4.7.1.2 Class B (Assembly 1): The steel roofing panels installed directly on minimum ¹⁵/₃₂-inch-thick (11.9 mm) solid or closely fitted sheathing complying with the applicable code, covered with one layer of 72-pound cap sheet and one layer of ASTM D226, Type II (No. 30), underlayment or one layer of GAF VersaShield® Fire-Resistant Roof Deck Protection recognized in ICC-ES evaluation report [ESR-2053](#).

4.7.2 Reroofing:

The steel roofing panels installed in accordance with Section 4.4 of this report over existing roofing will maintain the roof classification of the existing roofing.

5.0 CONDITIONS OF USE

The Unified Steel Stone Coated brand 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 roof panels are manufactured, identified and installed in accordance with this report and the manufacturer's published installation instructions. If there is a conflict between the manufacturer's published installation instructions and this report, this report governs.
- 5.2 Prior to reroofing with the panels, the existing roof must be inspected and approved by the code official, as required by the applicable code.
- 5.3 Unified Steel Stone Coated brand roofing panels are manufactured in Oceanside, California, under a quality-control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Metal Roof Coverings (AC166), dated February 2021.

7.0 IDENTIFICATION

- 7.1 Pallets of Unified Steel Stone Coated brand roofing panels must bear a label indicating the manufacturer's name (Westlake Royal Roofing LLC), brand name (Unified Steel Stone Coated Roofing) and address, the product name, and the evaluation report number (ESR-1188).
- 7.2 The report holder's contact information is the following:

WESTLAKE ROYAL ROOFING LLC
7575 IRVINE CENTER DRIVE, SUITE 100
IRVINE, CALIFORNIA 92618
(801) 380-6091
www.WestlakeRoyalRoofing.com

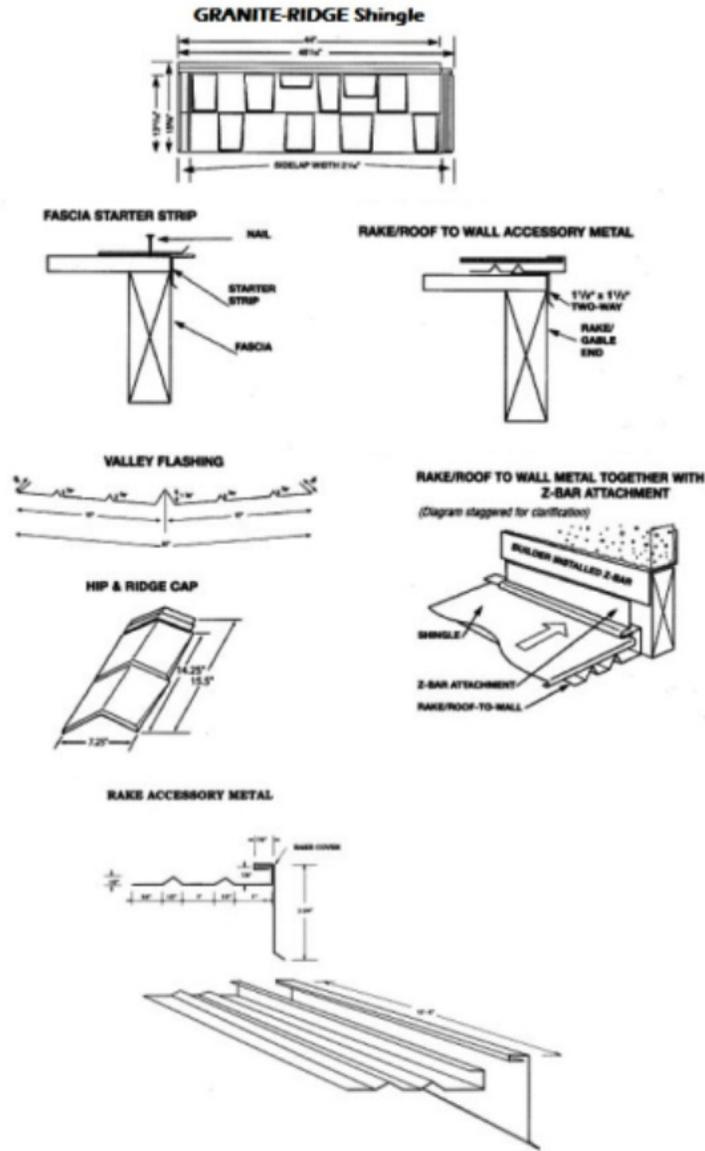


FIGURE 1—PANELS AND FLASHING

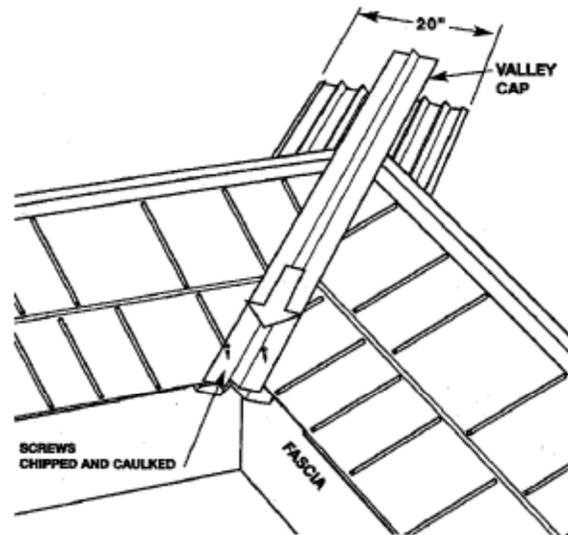
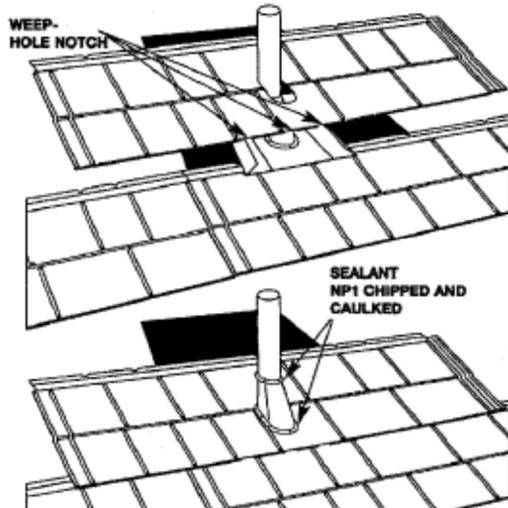
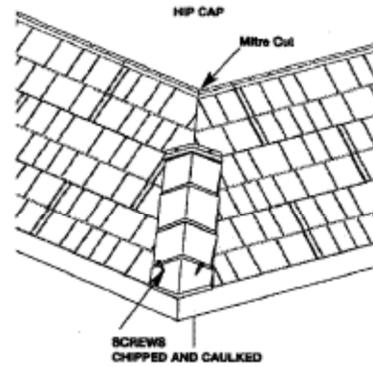
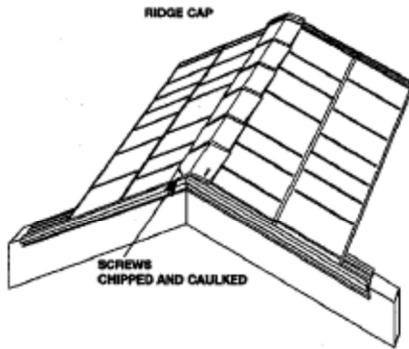
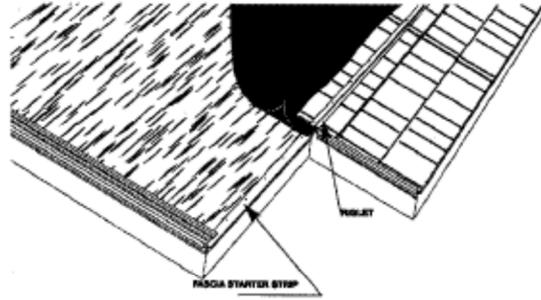
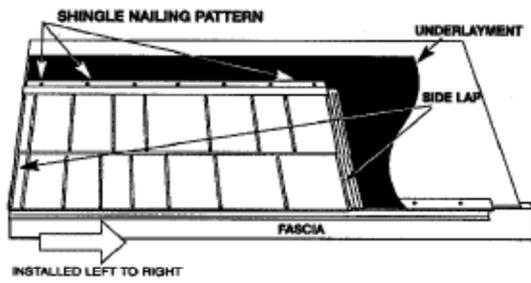


FIGURE 2—TYPICAL INSTALLATION DETAILS

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1.0 EVALUATION SCOPE

The purpose of this evaluation report supplement is to indicate that the Westlake Royal Roofing LLC steel roofing panels, described in ICC-ES evaluation report ESR-1188, have also been evaluated for compliance the codes noted below.

Applicable code editions:

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

2.0 CBC

The Westlake Royal Roofing panels described in evaluation report ESR-1188 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 evaluation report.

3.0 CRC

The Westlake Royal Roofing panels described in evaluation report ESR-1188 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, provided installation is in accordance with the 2015 *International Residential Code*® (IRC) provisions noted in the evaluation report.

This supplement expires concurrently with the evaluation report, reissued May 2021 and revised April 2022.