ICC-ES Evaluation Report

ESR-1483

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DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07320—Roof Tiles

REPORT HOLDER:

DECRA ROOFING SYSTEMS, INC.
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EVALUATION SUBJECT:

DECRA SHINGLE STEEL ROOFING PANELS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- ~~2006 *International Residential Code*® (IRC)~~ *
- ~~1997 *Uniform Building Code*™ (UBC)~~

Properties evaluated:

- Fire classification
- Wind resistance
- Weather resistance

2.0 USES

DECRA Shingle steel roofing panels are metal roof shingles complying with IBC Section 1507.5, ~~IRC Section R905.4 and UBC Section 1507.9,~~ * and are recognized as Class A roof coverings on new roofs and over existing roofs.

3.0 DESCRIPTION

3.1 Materials:

The DECRA Shingle steel roofing panels are stone-coated steel panels formed from structural-quality sheet steel complying with ASTM A 792, Grade 37, with an AZ50 class hot-dip aluminum-zinc alloy coating. The thickness of the coated steel is 0.0170 inch (0.43 mm), and the base-metal thickness is 0.0159 inch (0.40 mm). The panels are 21 inches (533 mm) by 52 inches (1321 mm), and the installed exposure is $19^{3}/_{4}$ inches (501 mm) by 49 inches (1244 mm). Side panel laps are 3 inches (76 mm). The DECRA Shingle panels have three vertical ribs forming three flat steps, each of which has raised and lowered pan sections that form a shingle profile. The panels' leading edges are bent to form a front clip which locks into the clip formed at the top back edge of each panel as illustrated in Figure 1. The installed weight of the DECRA Shingle steel roofing panels is approximately 1.0 psf (4.2 kg/m^2). Hip and ridge shingles are as illustrated in Figure 3.

Both sides of the panels are treated with a corrosion-inhibiting coating. An opaque base coat of acrylic resin is applied to the top exposed surfaces, followed by embedment of colored stone granules. A clear acrylic glaze is then applied.

3.2 Underlayment:

Underlayment shall comply with Section 1507.5.3 of the IBC ~~or Section R905.4.3 of the IRC, as applicable. In jurisdictions adopting the UBC, the panels shall be installed over underlayment consisting of two layers of Type 15 or one layer of Type 30 organic fiber felt.~~ *

3.3 Fire Classification:

DECRA Shingle steel roofing panels installed in accordance with Section 4.2 or 4.3 of this report are recognized as Class A roof assemblies under IBC Section 1505.2 ~~and IRC Section R902.1~~.

~~DECRA Shingle steel roofing panels installed in accordance with Section 4.2 of this report are recognized as noncombustible roof coverings in accordance with Section 1504.2 of the UBC. Noncombustible roof coverings as defined in Section 1504.2 of the UBC are permitted in Section 1503 of the UBC to be applied in lieu of a Class A fire-retardant roofing assembly, when the installation is in accordance with the manufacturer's requirements and this report.~~ *

4.0 INSTALLATION

4.1 Roof Slope:

The panels shall be installed over roofs with slopes of at least 3:12 (25% slope). The panels may be installed on roofs with slopes less than 3:12 (25% slope), but in this case the panels shall be considered decorative only and shall be installed over a roof-covering system complying with the applicable code, subject to approval by the code official.

4.2 Installation—New Construction:

The panels must be installed on solid sheathing complying with the applicable code. Full panels must be placed over the underlayment and fastened starting at the eave. The rear of the panel must be fastened to the decking at each lap and intermediate third points with a minimum of four, corrosion-resistant, No. 8 hexhead screws, of sufficient length to penetrate through the sheathing a minimum of $^{1}/_{2}$ inch (12.7 mm). At areas of discontinuities, such as eaves, rakes and ridges, eight screws must be used per panel. In high-wind applications, a No. 24 gage metal stiffening channel must be used. See Section 4.4 of this report for additional fastening details.

* Deleted by the City of Los Angeles

The front of the panel is attached to the rear of the panel beneath by inserting and locking the front clip into the rear clip on the lower panel. The front of panels in the first course is locked into the edge clip or short course clip as illustrated in Figure 2. On rakes, panels are fitted into the gable channel. Where shingles fit into a gable channel, 2 inches (51 mm) are removed from the front and back clip locks for proper drainage. For roof-to-wall joints, panel edges are cut and inserted into the roof-to-wall channel. Where shingles fit into the roof-to-wall channel, 2 inches (51 mm) are removed from the front and back clip locks for proper drainage. Panels are cut and slotted into either side of the T-Top valley flashing as illustrated in Figure 4 of this report. Where shingles fit into the valley flashing, 2 inches (51 mm) are removed from the front and back clip locks for proper drainage. Additionally, on the first panel on each side of the bottom of the valley, a 1 inch (25 mm) notch is cut 4 inches (102 mm) from the cut edge. Shingle Hip and Ridge pieces are clip-locked together and fastened at the back of each Shingle Hip and Ridge, along the ridges and hips, with minimum No. 8 hexhead, 1-inch-long (25.4 mm), corrosion-resistant screws. Shingle panels are overlapped at hips/ridges, and a cut is made along a parallel line beyond the crest of the hip or ridge that provides adequate protection. Valley flashings must comply with Section 1507.5.6 of the IBC, ~~or Section R905.4.6 of the IRC, or Section 1508.3 of the UBC.~~ * Other flashing must comply with Section 1503.2.1 of the IBC, ~~or Section R903.2.1 of the IRC, or Section 1509 of the UBC~~ *.

Penetrations through the roof covering must be flashed by installing standard roof jacks over a corrosion-resistant underpan which drains over the panel immediately below the penetration. The lower lip of the front clip of the panel containing the jack must have a 2-inch-wide (51 mm) notch cut out to allow water drainage from the jack and underpan to the top of the panel below.

4.3 Installation—Reroofing:

The existing roof covering must be completely removed and the panels installed in accordance with Section 4.2 of this report except over asphalt shingle and built-up roofs as described in this section. 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 DECRA Shingle steel roofing panels may also be installed over existing asphalt shingle roofs and built-up roofs, provided the roof slope complies with Section 4.1 of this report and the requirements of IBC Section 1510, ~~IRC Section R907, or UBC Appendix Section 1518 are met.~~ * The panels must be fastened through the existing roof covering to the roof sheathing in the same manner as described in Section 4.2 of this report, with screws or nails of sufficient length to penetrate through the sheathing a minimum of $^1/_2$ inch (12.7 mm). New flashing must be installed over and around all existing flashing, vents, valleys and chimneys in accordance with this report and the applicable code. 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 DECRA Shingle steel panel roofing system. The system may be installed over integral gutters, provided there is a fascia board nailed to the rafters and installed outside the gutter.

4.4 Wind Resistance:

DECRA Shingle steel roofing panels installed in accordance with Section 4.2 or 4.3 of this report, using No. 8 hexhead screws, are acceptable on any portion of a roof having a maximum height of 40 feet (12 192 mm), in areas identified as Exposure C as defined in IBC Section 1609.4, ~~or IRC Section R301.2.1.4 or UBC Section 1616~~, * with a maximum basic wind speed of 100 mph (161 km/h) (3-second gust) or 85 miles per hour (137 km/h) (fastest mile).

DECRA Shingle steel roofing panels installed in accordance with Section 4.2 or 4.3 of this report, using 0.120-inch-diameter (3 mm), ring-shank, steel roofing nails, are acceptable on any portion of a roof having a maximum height of 30 feet (9144 mm), ~~in areas identified as Exposure C as defined in Section 1616 of the UBC, with a maximum basic wind speed of 100 mph (161 km/h) (3-second gust) or 80 miles per hour (129 km/h) (fastest mile).~~ * *

DECRA Shingle steel roofing panels, when installed as described in this report, over minimum $^{15}/_{32}$-inch-thick (11.9 mm), Grade B-C plywood, are acceptable for maximum uplift loads of 37.5 psf (1795.5 N/m^2) when fastened with four No. 12-by-$1^1/_2$-inch-long (12.7 mm) hexhead screws per panel, and for maximum uplift loads of 87.5 psf (4189 N/m^2) when fastened with eight No.12-by-$1^1/_2$-inch-long (12.7 mm) screws and a No. 24 gage metal stiffening channel per panel. The design wind pressure is determined in accordance with IBC Section 1609.5, ~~and IRC Section R301.2.1, and UBC Section 1620~~. * *

Positive loads must be limited to adequacy of the structural framing and sheathing.

4.5 Severe Climate Areas:

An ice barrier must be provided in accordance with IBC Section 1507.5.3 ~~or IRC Section R905.4.3~~. *

~~In jurisdictions enforcing the UBC~~, in areas subject to wind-driven snow, ice buildup, or wind-driven dust or sand, or in other areas designated by the code official, both of the following shall be provided:

1. Solid sheathing with two layers of Type 15 felt or one layer of Type 30 felt for the field of the roof.
2. Solid sheathing with two layers of Type 15 underlayment cemented together with approved cementing material between the plies, or a self-adhering polymer modified bitumen sheet recognized in a current ICC-ES evaluation report, shall be used in lieu of standard underlayment around the perimeter of the roof and shall extend from the roof edge to a point at least 36 inches (914 mm) inside the exterior wall line of the building. Use of the bitumen sheet shall be limited to new construction, and reroofing shall be limited to nonrated construction.

5.0 CONDITIONS OF USE

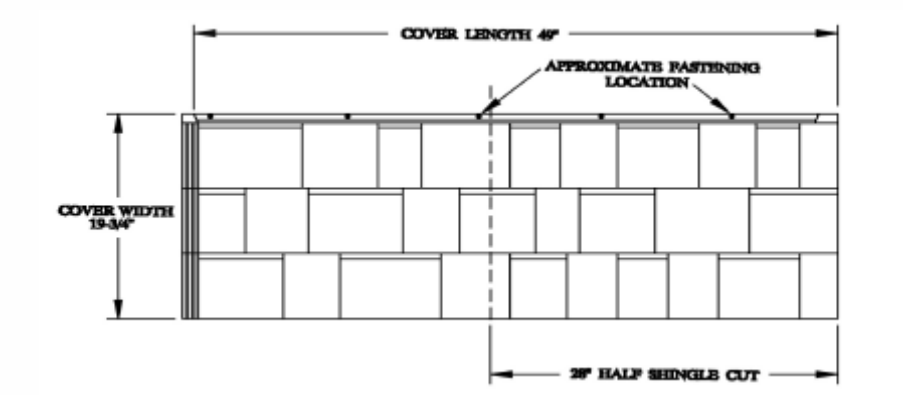
The DECRA Shingle steel roofing panels described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the panels' being manufactured, identified and installed in accordance with this report and the manufacturer's instructions.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Metal Roof Coverings (AC166), dated May 2008.

7.0 IDENTIFICATION

Each pallet of panels must be labeled with the DECRA Roofing Systems, Inc., name and address, the product name and the evaluation report number (ESR-1483).



DECRA Shingle

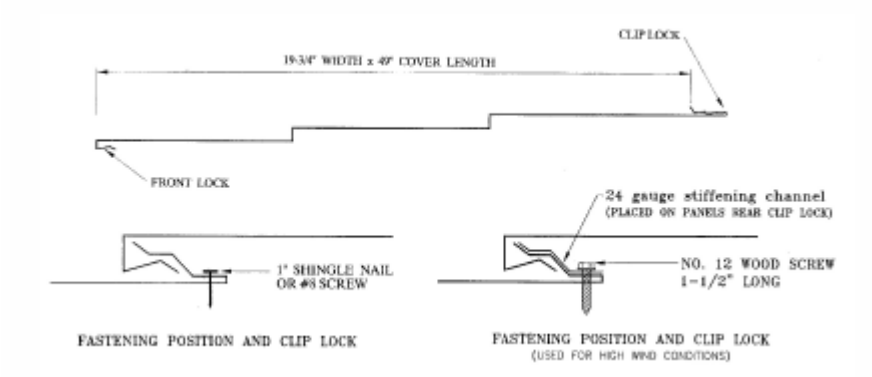


FIGURE 1

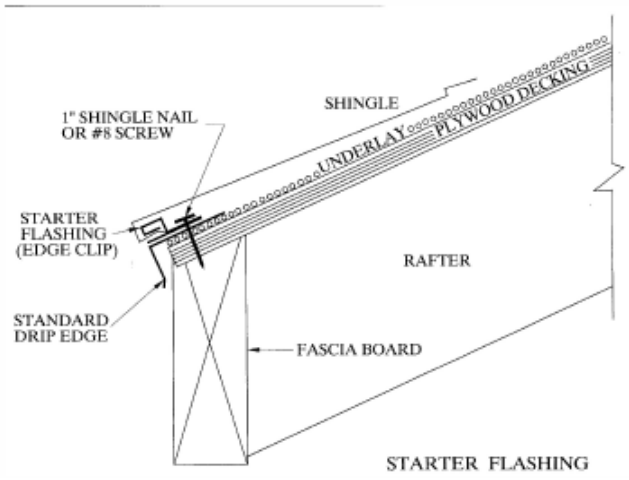


FIGURE 2

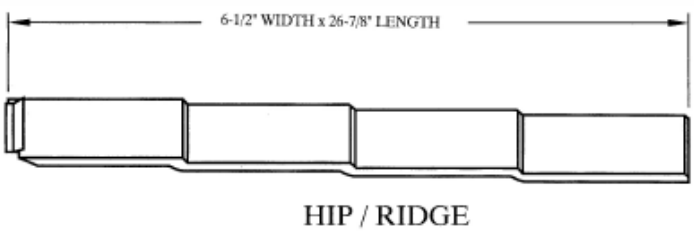
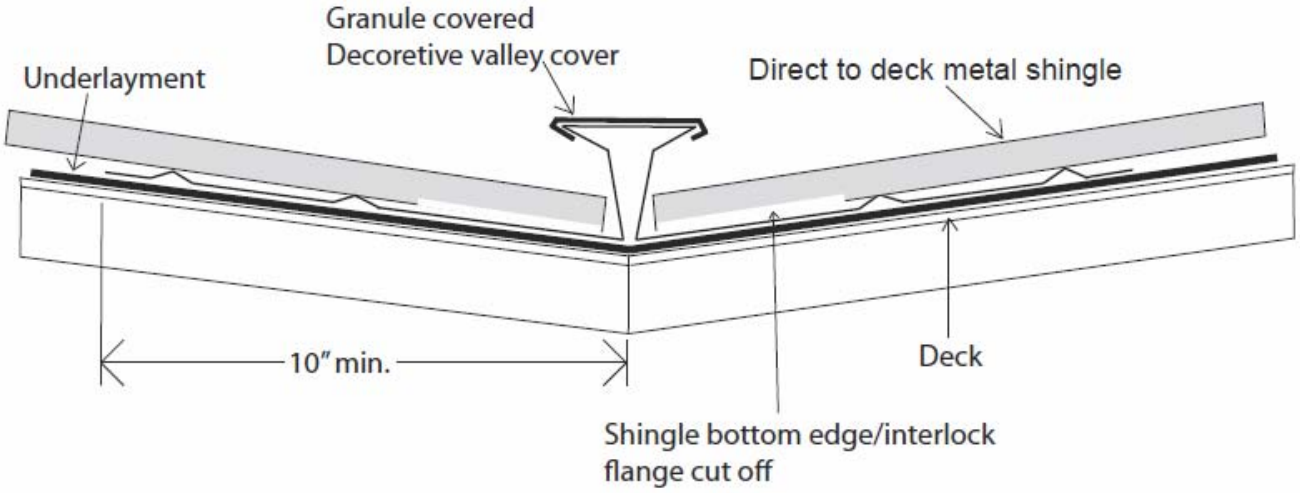


FIGURE 3



T-TOP VALLEY

FIGURE 4