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

REPORT HOLDER:

LDI COMPOSITES CO.
1518 SOUTH BROADWAY
GREEN BAY, WISCONSIN 54304
www.trimline-products.com

EVALUATION SUBJECT:

COMPOSITE ROOFING TILE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)

Properties evaluated:

- Roof covering
- Roof classification
- Wind resistance

2.0 USES

The Composite Roof Tile is a roof covering designed, installed and maintained in accordance with the provisions of Chapter 15 of the IBC and UBC and Chapter 9 of the IRC, and the manufacturer's installation instructions. When installed in accordance with this report, the roofing tiles are either a Class A or Class C fire-resistant roof covering, and have a wind resistance as noted in Section 4.6 of this report.

3.0 DESCRIPTION

3.1 Materials:

3.1.1 Slate Tile: The roofing tile is a molded mixture of polyethylene polymer and proprietary additives. The tile consists of the exposed surface area, stacking guides on each side, and a head lap for fastening. The tile has a width of $24\frac{3}{8}$ inches (619 mm) and a height of $13\frac{1}{4}$ inches (337 mm). The exposed slate area has a total width of 24 inches (610 mm) and a height of 10 inches (254 mm). The top finishing has a slight ridge down the center, giving the finished appearance of two individual tiles, each having a 12-inch (305 mm) width. The body of the tile is 0.225 inch (5.72 mm) thick, and the nose end is $\frac{3}{4}$ inch (19 mm) thick. Each tile has an approximate weight of 4.1 pounds (1.84 kg), and the tiles' installed weight is 245 pounds per 100 square feet (12.0 kg/m²). Accessories supplied by LDI Composites Co. include hip and ridge caps manufactured from the same materials as the tiles. See Figures 1 and 2 for further details.

3.2 Fasteners:

3.2.1 Tiles: Tiles shall be fastened with No. 10, coarse thread, 0.344-inch-diameter (8.7 mm), corrosion-resistant bugle head screws, with a length of $2\frac{1}{4}$ inches (57 mm) for installation over battens, and $1\frac{3}{4}$ inches (44 mm) for direct deck installation.

3.2.2 Battens: Fasteners for battens shall be 5d, corrosion-resistant nails or No. 16 gage galvanized staples, with sufficient length to penetrate into the sheathing $\frac{3}{4}$ of an inch (19 mm) or through the sheathing, whichever is less.

3.2.3 Underlayment: Fasteners for underlayment shall be 11 gage roofing nails with $\frac{3}{8}$ -inch (10 mm) heads, with sufficient length to penetrate into the sheathing $\frac{3}{4}$ inch (19 mm) or through the sheathing, whichever is less.

3.2.4 Flashing: Flashing shall be fastened with No. 11 gage, ring-shank corrosion-resistant nails compatible with the flashing material, with sufficient length to penetrate the sheathing $\frac{3}{4}$ inch (19 mm) or through the sheathing, whichever is less.

3.2.5 Hip and Ridge Trim: Fasteners for hip and ridge trim shall be No. 10, coarse-thread, 0.344-inch-diameter (8.7 mm), corrosion-resistant bugle head screws, $2\frac{1}{2}$ inches (64 mm) long for ridges and $1\frac{1}{2}$ inches (38 mm) long for hips.

3.3 Underlayment:

3.3.1 Class A Roof Covering System: Underlayment shall consist of one-ply Versa-Shield FB-1S Roofing Underlayment, manufactured by Elk Premium Roofing ([ESR-2053](#)), attached directly to the sheathing and covered with one ply of Duck's Back Roofing Underlayment manufactured by CETCO Building Materials.

3.3.2 Class C Roof Covering System: Underlayment shall consist of one ply of 30-pound asphalt-saturated felt meeting the requirements of ASTM D 226, Type I.

3.4 Severe Climate Underlayment:

Severe climate underlayment shall comply with the ICC-ES Acceptance Criteria for Roof Underlayment for Use in Severe Climate Areas (AC48), and shall be in addition to the underlayment noted in Section 3.3. The underlayment shall be installed in accordance with Chapter 15 of the UBC and IBC or Chapter 9 of the IRC, and Sections 3.2.3 and 4.3 of this report.

3.5 Flashing:

Flashing shall be one of the following: 16- or 20-ounce copper, lead-coated copper, terne-coated stainless steel, No. 24 gage G90 Kynar 500 prefinished colored steel, No. 26-24 gage G90 galvanized sheet steel or aluminum. Flashing shall comply with the applicable code and LDI Composites Co. installation instructions.

3.6 Adhesive:

Adhesive to secure cut pieces of tile along hips, valleys, gables, sidewalls and protrusions, and to install hip and ridge caps, shall be adhesive type RT-600, manufactured by Ohio Sealant Inc.; Titebond Interior/Exterior Construction Adhesive, manufactured by Franklin International; or Geocel 3500 Roof Tile Adhesive/Sealant, manufactured by Geocel Corporation. The adhesive shall be installed in accordance with Ohio Sealant instructions at ambient temperatures between 30°F and 100°F (−1°C and 38°C). The adhesive has a one-year storage life.

3.7 Battens:

Battens shall be nominal 1-inch-by-2-inch-by-8-foot pressure-treated wooden battens with drainage notches or ports 16 inches (406 mm) on center.

4.0 INSTALLATION

4.1 General:

The tiles shall be installed directly to the roof deck, or over battens, in accordance with Section 4 of this report. The tiles are to be installed over code-complying, minimum $1\frac{5}{32}$ -inch-thick (11.9 mm), exterior-grade A-C plywood solid sheathing, at a minimum slope of 3:12.

Underlayment described in Section 3.3 of this report is installed parallel to the roof eave with a 6-inch (152 mm) lap on the ends, a 3-inch (76 mm) side lap and a minimum $\frac{1}{4}$ -inch (6 mm) lap over eaves. The underlayment is fastened with nails as described in Section 3.2.3 of this report, spaced at 6 inches (152 mm) on center at side laps, and 3 inches (76 mm) on center at end laps.

The tiles are secured to the sheathing using four fasteners through the premolded holes. Fasteners used are described in Section 3.2.1 of this report. Maximum exposure of the tile is 24 inches (610 mm) (width) and 10 inches (254 mm) (height). The tiles are installed from right to left such that the right edge of the leftmost tile overlaps the left edge of the rightmost tile to create a water lock. The left edge of each tile in even-numbered courses is aligned with the “half joint alignment guide” of the tile below. This sets the course-to-course offset at 6 inches (152 mm). The first installed tile on each even-numbered row is cut vertically at the “starter guide,” and that cut edge contacts the edge flashing. See Figure 1.

4.2 Roofing Assembly Classification:

4.2.1 Class A: When using the underlayment described in Section 3.3.1 and as otherwise described in this report, the roofing tiles are a Class A roofing assembly in accordance with Chapter 15 of the IBC and UBC, Chapter 9 of the IRC, and ASTM E 108.

4.2.2 Class C: When using the underlayment described in Section 3.3.2 and as otherwise described in this report, the roofing tiles are a Class C roofing assembly in accordance with the Chapter 15 of the IBC, Chapter 9 of the IRC and ASTM E 108.

4.3 Severe Climate Areas:

For 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, or in other areas designated by LDI Composites Co. or the building

official, a severe climate underlayment described in Section 3.4 shall be used. This underlayment shall extend from the eave's edge to a point at least 24 inches (610 mm) inside the exterior wall line of the building.

4.4 Valleys, Hips, and Ridges:

Valleys shall be flashed and hip and ridge trim shall be installed in accordance with the applicable code and the manufacturer's installation instructions. The hip and ridge trim shall be installed with fasteners in accordance with Section 3.2.5 of this report, using the premolded holes indicated in Figure 2 of this report. Laps of hip and ridge trim shall be secured with one $1\frac{1}{2}$ -inch-long (38 mm) screw or an approved adhesive, in accordance with Section 3.2.5 or Section 3.6, respectively, of this report.

4.5 Damaged Slate Tiles:

Broken or damaged tiles shall be removed in accordance with the manufacturer's instructions. Existing fasteners shall be removed, and the holes shall be filled with an approved sealant. Any damage to existing underlayment shall be repaired prior to installation of the replacement tile. A new tile of the same size is inserted into the open space, and the adhesive described in Section 3.6 is applied at the head lap, and in the top 3 inches (76 mm), joining with head and side laps of adjacent tiles.

4.6 Wind Resistance:

When installed in accordance with this report, the slate tiles are limited to areas subject to a maximum basic wind speed of 100 mph (161 km/h) when considering a 3-second gust (IBC, IRC), or 80 mph (129 km/h) when considering the fastest mile (UBC), on structures having a mean roof height of 40 feet (12.2 m) in Exposure B areas.

5.0 CONDITIONS OF USE

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

- 5.1 Tiles shall be manufactured, identified and installed in accordance with this report and the manufacturer's installation instructions.
- 5.2 The tiles are limited to use in those areas described in Section 4.6 of this report.
- 5.3 Tiles are manufactured in Green Bay, Wisconsin, under a quality control program with inspections by Intertek Testing Services NA Ltd. (AA-690).

6.0 EVIDENCE SUBMITTED

- Data in accordance with the ICC-ES Acceptance Criteria for Special Roofing Systems (AC07), dated April 2007.
- A quality control manual.

7.0 IDENTIFICATION

Each roof tile is coded with a date stamp. Each bundle of tiles is labeled with the LDI Composites Co. name, the location of the manufacturing facility, the evaluation report number (ICC-ES ESR-1055), and the name of the inspection agency (Intertek Testing Services NA Ltd.).

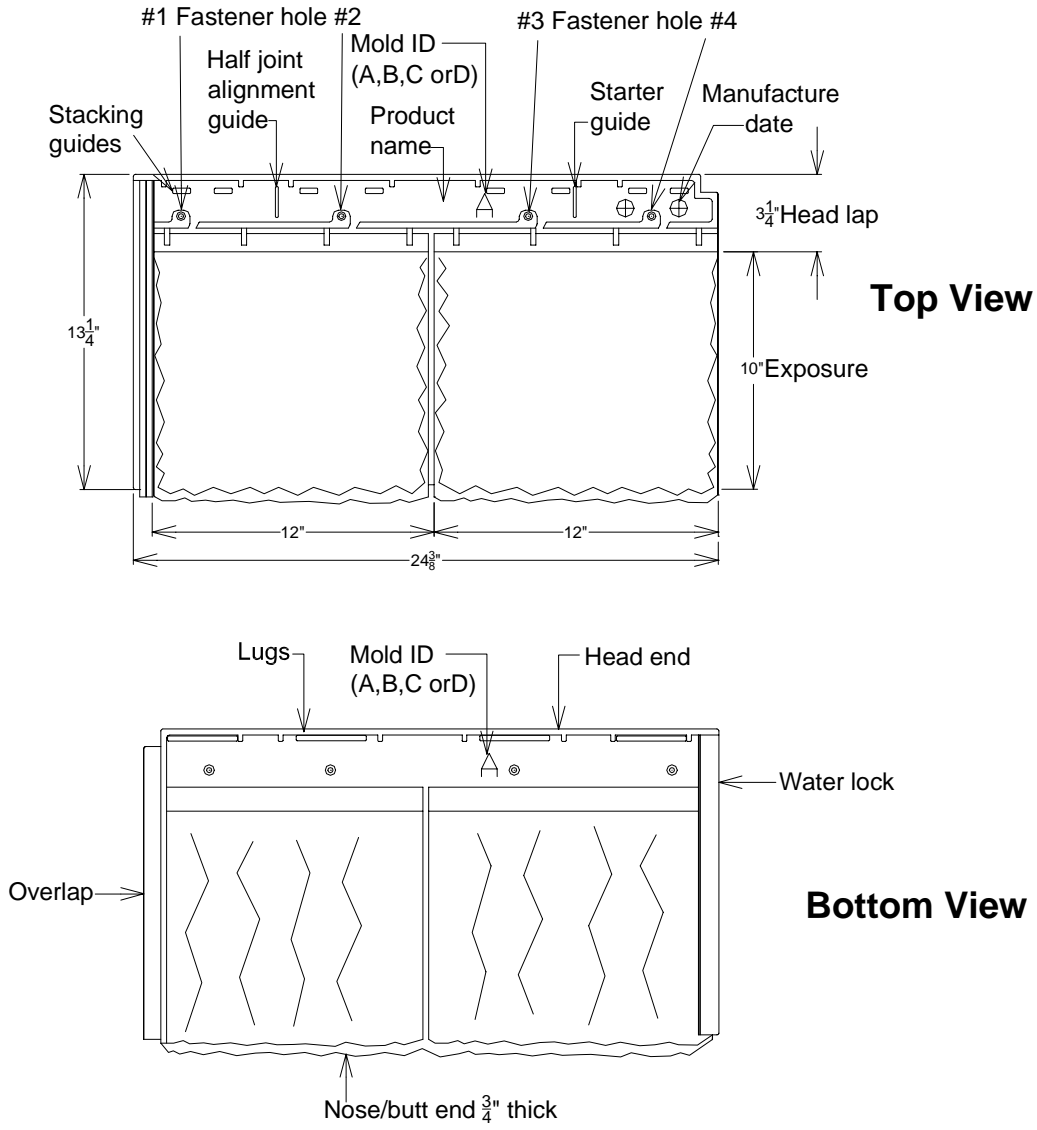
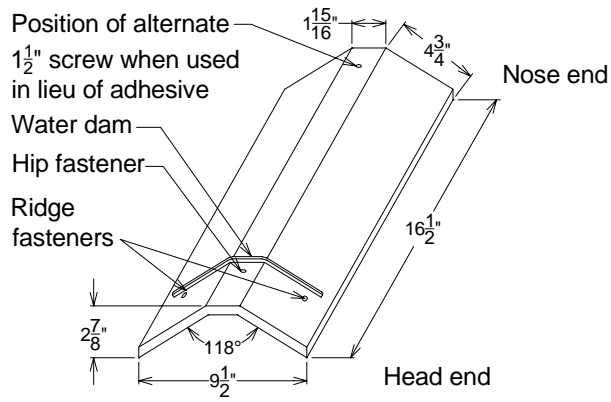
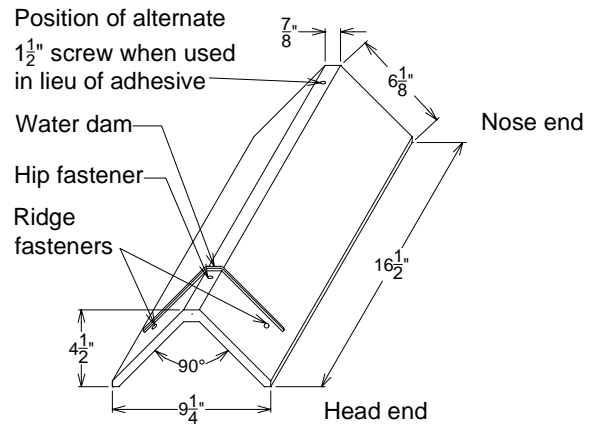


FIGURE 1



Hip/Low Slope Ridge Trim <9:12



Hip/Steep Slope Ridge Trim 9:12 & above

FIGURE 2