

# ICC-ES Evaluation Report

**ESR-3181**

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**DIVISION: 04 00 00—MASONRY**
**Section: 04 73 00—Manufactured Stone Masonry**
**REPORT HOLDER:**

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**EVALUATION SUBJECT:**
**HORIZON STONE MANUFACTURED STONE VENEER**
**1.0 EVALUATION SCOPE**
**Compliance with the following codes:**

- 2009 *International Building Code*® (IBC)
- 2009 *International Residential Code*® (IRC)

**Properties evaluated:**

Veneer strength and durability

**2.0 USES**

Horizon Stone Manufactured Stone Veneer is used as an adhered, non-load-bearing exterior veneer on non-fire-resistance-rated wood framed or light-gage steel stud walls, concrete walls and concrete block masonry walls.

**3.0 DESCRIPTION**

Horizon Stone Manufactured Stone Veneer is a lightweight, architectural, non-load-bearing, thin veneer product that is manufactured from a mixture of portland cement, lightweight aggregate, pigments, admixtures and water. The veneer units are made to resemble natural stone, and are molded and cured at the manufacturing plant. The average saturated weight of the installed veneer units does not exceed 15 pounds per square foot (73.2 kg/m<sup>2</sup>). The veneer units are 1 inch to 2<sup>1</sup>/<sub>2</sub> inches (25.4 mm to 63.5 mm) thick. Recognized patterns of veneer are listed in Table 1.

**4.0 INSTALLATION**
**4.1 General:**

Installation of Horizon Stone Manufactured Stone Veneer units must comply with this report, the manufacturer's published installation instructions, and the applicable code. The manufacturer's published installation instructions must

be available at the jobsite at all times during installation. The veneer units may be applied over backings of cement plaster, concrete or concrete masonry.

**4.2 Preparation of Backing:**

**4.2.1 Cement Plaster Backing:** Cement plaster backings (scratch coat) may be applied over structurally sound wall surfaces of exterior sheathing supported by wood or light-gage steel studs; over open studs; over concrete walls; and over concrete masonry walls, when installed as described in Section 4.2.1.1 through 4.2.1.3.

**4.2.1.1 Installation over Sheathing:** A cement plaster backing must be installed over two layers of a water-resistive barrier complying with IBC Sections 1404.2 and 2510.6 or IRC Sections R703.2 and R703.6.3, as applicable.

Also, flashing must be installed as required by IBC Section 1405.4 or IRC Section R703.8, as applicable, and weep screeds must be installed in accordance with IBC Section 2512.1.2 or IRC Section R703.6.2.1, as applicable. In addition, the weep screeds must have holes with a minimum diameter <sup>3</sup>/<sub>16</sub> inch (4.8 mm) spaced at a maximum of 33 inches (838 mm) on center, as required by Section 6.1.6.2 of TMS 402/ ACI 530/ASCE 5, which is referenced in IBC Section 1405.10.

Studs must be spaced no more than 16 inches (406 mm) on center. A self-furring, corrosion-resistant, 2.5-pound-per-square-yard (1.4 kg/m<sup>2</sup>), or galvanized, expanded diamond mesh metal lath, or 3.4 lb/yd<sup>2</sup> (1.8 kg/m<sup>2</sup>), <sup>3</sup>/<sub>8</sub>-inch (9.5 mm) rib lath complying with ASTM C 847, must be installed in accordance with the applicable code over the water-resistive barrier. Lath must be installed with a minimum 2-inch (51 mm) overlap on horizontal seams and a 6-inch (152 mm) overlap on vertical joints. The lath must be fastened to each of the wall studs at 6 inches (152 mm) on center vertically, and in accordance with the minimum requirements of Section 7.10 of ASTM C 1063, or IRC Section R703.6.1, as applicable. Lath must be wrapped around inside and outside corners with attachment every 6 inches (152 mm) at the next stud, allowing up to a 16-inch (406 mm) overlap. For wood studs, fasteners must be minimum 0.120-inch-shank-diameter (3.05 mm) galvanized nails, complying with ASTM F 1667, of sufficient length to penetrate the studs a minimum of 1 inch (25.4 mm). For steel studs, fasteners must be minimum No. 8 gage, Type S, galvanized self-tapping screws complying with ASTM C 1002, of sufficient length to penetrate the studs a minimum of <sup>1</sup>/<sub>2</sub> inch (12.7 mm). Fasteners must not penetrate exterior sheathing between the studs.

A scratch coat of Type S mortar (cement plaster) complying with ASTM C 926 must be applied over the lath to a minimum thickness of  $\frac{1}{2}$  inch (12.7 mm). The scratch coat must be scored horizontally in accordance with the manufacturer’s published installation instructions, and must be allowed to cure in accordance with IBC Section 2512.6, prior to the application of the veneer units.

**4.2.1.2 Installation over Open Studs:** The cement plaster backing must be installed over a water-resistive barrier, flashing and weep screeds as described in Section 4.2.1.1. Studs must be spaced no more than 16 inches (406 mm) on center. Lath must be a corrosion-resistant, 3.4 lb/yd<sup>2</sup> (1.8 kg.m<sup>2</sup>),  $\frac{3}{8}$ -inch (9.5 m) rib lath complying with ASTM C 847. The lath must be fastened to wall framing, and the scratch coat must be applied as described in Section 4.2.1.1.

**4.2.1.3 Installation over Concrete and Masonry:** The veneer units may be applied to clean, untreated concrete and concrete masonry wall surfaces without the use of metal lath, provided the wall surface is clean. Where lath is used, it must be corrosion-resistant metal lath complying with ASTM C 847, or 1.4 lb/yd<sup>2</sup> (0.7650 kg/m<sup>2</sup>), corrosion-resistant, woven wire plaster base complying with ASTM C 1032. The lath must be fastened to the wall in accordance with Section 7.10 of ASTM C 1063, and IRC Section R703.6.1, as applicable. The fasteners must be spaced a maximum of 6 inches (152 mm) on center vertically and 16 inches (406 mm) on center horizontally. The gravity load (shear) capacity and negative wind load (pull-out) capacity of the proprietary fasteners must be justified to the satisfaction of the code official. The scratch coat must be applied as described in Section 4.2.1.1.

**4.2.2 Installation over Concrete and Concrete Masonry Backing:** Concrete and concrete masonry wall surfaces must be prepared in accordance with Section 5.2 of ASTM C 926 and IBC Section 2510.7, as applicable. Alternatively, a cement plaster backing may be installed as described in Section 4.2.1.

**4.3 Application of Veneer Units:**

Prior to application of the veneer units, the mortar scratch coat must be dampened so that the surface appears wet but without freestanding water. The entire back surface of each veneer unit is buttered with a nominally  $\frac{1}{2}$ -inch-thick (12.7 mm) setting bed of Type S mortar complying with ASTM C 270. The veneer units are applied to the scratch coat with the mortar setting bed applied to the back of each veneer unit.

**5.0 CONDITIONS OF USE**

The Horizon Stone Manufactured Stone Veneer 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** Installation must comply with this report, the manufacturer’s published installation instructions, and the applicable code. In the event of a conflict between the manufacturer’s published installation instructions and this report, this report governs.
- 5.2** Use of the precast stone veneer is limited to installations on walls with cement plaster, concrete or concrete masonry backing.
- 5.3** Expansion or control joints, used to limit the effect of differential movement of supports on the veneer system, are to be specified by the architect, designer or veneer manufacturer, in that order. Consideration must also be given to movement caused by temperature change, shrinkage, creep and deflection.
- 5.4** In jurisdictions adopting the IBC, the supporting wall must be designed to support the installed weight of the veneer system, including veneer, setting bed and cement plaster backing, as applicable. At wall openings, the supporting members must be designed to limit deflection to  $\frac{1}{600}$  of the span of the supporting members.
- 5.5** In jurisdictions adopting the IRC, where the seismic provisions of IRC Section R301.2.2 apply, the average weight of the wall supporting the precast stone veneer, including the weight of the veneer system, must be determined. When this weight exceeds the applicable limits of IRC Section R301.2.2.1, an engineered design of the wall construction must be performed in accordance with IRC Section R301.1.3.

**6.0 EVIDENCE SUBMITTED**

Data in accordance with the ICC-ES Acceptance Criteria for Precast Stone Veneer (AC51), dated February 2008 (editorially revised September 2010).

**7.0 IDENTIFICATION**

Packaged precast stone veneer units are identified with the manufacturer’s name (Horizon Stone, LLC), the pattern name, the manufacturing date and location, and the evaluation report number (ESR-3181).

**TABLE 1—RECOGNIZED PATTERNS**

PRODUCT	PATTERNS
Horizon Stone Manufactured Stone Veneer	Ledgestone, Handcrafted, 19 <sup>th</sup> Century, Castlestone, Fieldstone