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ICC-ES Evaluation Report

ESR-3566

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DIVISION: 04 00 00—MASONRY
Section: 04 73 00—Manufactured Stone Masonry

REPORT HOLDER:

NORSE BUILDING PRODUCTS, INC.
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EVALUATION SUBJECT:

CAST NATURAL STONE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012 *International Building Code*® (2012 IBC)
- 2012 *International Residential Code*® (2012 IRC)
- Other Codes (see Section 8.0)

Properties evaluated:

Veneer strength and durability

2.0 USES

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

3.0 DESCRIPTION

Cast Natural Stone is a precast concrete products made to resemble natural stone in color and in texture. The concrete is composed of cement, aggregate, water, admixtures and coloring. The veneer units are molded and cured at the plant. The average saturated weight of the installed veneer units does not exceed 15 pounds per square foot (73.2 kg/m^2). Recognized patterns of veneer are listed in Table 1.

4.0 INSTALLATION

4.1 General:

Installation of Cast Natural Stone 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 has been evaluated for application over backings of cement plaster.

4.2 Preparation of Backing:

Cement plaster backings may be applied over plywood, OSB or gypsum sheathing, supported by wood or steel studs; over open wood or steel studs; and over concrete or masonry walls, when installed as described in Sections 4.2.1 and 4.2.2.

4.2.1 Installation over Studs: For exterior installations, the cement plaster backing must be installed over 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 Sections 1405.4 and 1405.10.1.2 or IRC Sections R703.8 and R703.12.2, as applicable, and weep screeds must be installed at the bottom of the stone veneer. The weep screeds must comply with, and be installed in accordance with, IBC Section 1405.10.1.2 or IRC Section R703.12.2, as applicable. In addition, the weep screeds must have holes with a minimum diameter of $^3/_{16}$ 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. The veneer must be installed with the clearances required by IBC Section 1405.10.1.3 or IRC Section R703.12.1, as applicable.

Studs must be spaced no more than 16 inches (406 mm) on center. Lath must be a 2.5 lb/yd^2 (1.4 kg/m^2) diamond mesh metal lath conforming to ASTM C847; a 3.4 lb/yd^2 (1.8 kg/m^2), $^3/_8$-inch thick ribbed lath conforming to ASTM C847; or a 1.4 lb/yd^2 (0.760 kg/m^2) galvanized woven wire mesh conforming to ASTM C1032. Lath may be self-furred or non-furred, provided furring or furring fasteners are used. When the cement plaster backing is installed over open studs, a paper back lath must be used. All lath must be installed over the water-resistive barriers by following lath manufacturer's installation guidelines and recommendations. Lath or mesh must be fastened to each of the wall studs as required by ASTM C1063 and IRC section R703.6.1. Fasteners must be spaced a maximum of 6 inches (153 mm) on center.

For attaching lath to wood studs, fasteners must be galvanized nails having a minimum shank diameter of 0.120-inch, a minimum head diameter of $^7/_{16}$-inch (11.1 mm) and sufficient length to penetrate the studs a minimum of $^3/_4$-inch (19.1 mm). Wood studs must have a minimum specific gravity of 0.42. For attaching lath to steel studs, fasteners must be a minimum of #8 corrosion resistant self-drilling, tapping screws complying with ASTM C954 and having sufficient length to protrude a minimum of $^3/_8$ inch (9.5 mm) through the stud. Steel studs must be a minimum of 33 mils thick.

A scratch coat of Type S mortar (cement plaster) complying with ASTM C926 must be applied over the lath to a thickness of $^1/_2$ inch to $^3/_4$ inch (12.7 to 19.1 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.

4.2.2 Installation over Concrete and Masonry: The veneer units may be applied over a concrete or masonry backing, provided lath and a cement plaster scratch coat are used. The lath must be corrosion-resistant metal lath complying with ASTM C847, or 1.4 lb/yd^2 (0.760 kg/m^2), corrosion-resistant, woven wire plaster base complying with ASTM C1032. The lath must be fastened to the wall in accordance with Section 7.10 of ASTM C1063, 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.

4.3 Application of Veneer Units:

Prior to the application of the veneer units, the scratch coat or other backing and the back of the veneer units must be moistened in accordance with the manufacturer's instructions. A minimum $^1/_2$-inch-thick (12.7 mm) setting bed of Type S mortar must be applied to the back of the veneer units, and the veneer units must be pressed firmly in place, squeezing the mortar out around all veneer unit edges. For grouted patterns, joints between veneer units must be grouted and tooled in accordance with the veneer manufacturer's published installation instructions.

5.0 CONDITIONS OF USE

The precast 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 The use of the precast stone veneer has been evaluated for installation on walls with cement plaster.

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 $^1/_{600}$ 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 R301.2.2.2.1, 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 April 2012).

7.0 IDENTIFICATION

Boxes of precast stone veneer units are identified with the manufacturer's name (Norse Building Products), the product name (Cast Natural Stone); the pattern name, the manufacturing date, and the evaluation report number (ESR-3566).

8.0 OTHER CODES

8.1 Evaluation Scope:

In addition to the codes referenced in Section 1.0, the products described in this report were evaluated for compliance with the following codes:

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

The Cast Natural Stone products described in this report comply with, or are suitable alternatives to what is specified in, the codes listed above, subject to the provisions of Sections 8.2 through 8.7.

8.2 Uses:

See Section 2.0.

8.3 Description:

See Section 3.0.

8.4 Installation:

8.4.1 General: See Section 4.1.

8.4.2 Preparation of Backing: See Section 4.2

8.4.2.1 Installation over Sheathing or Open Studs: Replace the 1st paragraph of Section 4.2.1 with the following: For exterior installations, the cement plaster backing must be installed over a water-resistive barrier complying with 2009 IBC Sections 1404.2 and 2510.6 or 2009 IRC Sections R703.2 and R703.6.3, as applicable. Also, flashing must be installed as required by 2009 IBC Section 1405.4 or 2009 IRC Section R703.8, as applicable, and weep screeds must be installed at the bottom of the stone veneer. The weep screeds must comply with, and be installed in accordance with, 2009 IBC Section 2512.1.2 or 2009 IRC Section R703.6.2.1, as applicable. In addition, the weep screeds must have holes with a minimum diameter of $^3/_{16}$ inch (4.8 mm) spaced at a maximum of 33 inches (838 mm) on center, as required by Section 6.1.5.2 of TMS 402/ACI 530/ASCE 5, which is referenced in 2009 IBC Section 1405.10.

For additional requirements, see the remainder of Section 4.2.1.

8.4.2.2 Concrete and Masonry Backing: See Section 4.2.2.

8.4.3 Application of Veneer Units: See Section 4.3.

8.5 Conditions of Use:

See Section 5.0.

8.6 Evidence Submitted:

See Section 6.0.

8.7 Identification:

See Section 7.0.

TABLE 1—RECOGNIZED PATTERNS

PRODUCT	PATTERNS
Cast Natural Stone	River Rock, Weatheredge, Ledgestone, Limestone, Fieldstone, Split Rock, Castle Rock