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DIVISION: 04 00 00—MASONRY
Section: 04 71 00—Manufactured Brick Masonry
Section: 04 73 00—Manufactured Stone Masonry

REPORT HOLDER:
PLY GEM STONE
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ESR-3170
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EVALUATION SUBJECT

PLY GEM STONE

1 1.0 EVALUATION SCOPE

2 Compliance with the following codes:

- 3** ▪ 2009 and 2006 *International Building Code*[®] (IBC)
- 4** ▪ 2009 and 2006 *International Residential Code*[®] (IRC)

5 Properties evaluated:

6 Veneer strength and durability

7 2.0 USES

8 Ply Gem Stone is used as precast stone veneer adhered with mortar to the exterior
9 face of exterior walls on non-fire-resistance-rated wood-framed or light gage steel
10 stud walls, concrete walls or brick masonry walls.

11 3.0 DESCRIPTION

12 The veneer is a precast concrete product made to resemble natural stone in color
13 and texture. The veneer is composed of portland cement complying with ASTM C

14 150, aggregates, coloring pigments, admixtures, and water. The veneer units are
15 molded and cured at the manufacturing facility.

16
17 The veneer units are of various thicknesses ranging from 1 inch to $2\frac{5}{8}$ inches (25.4
18 mm to 67 mm). The maximum saturated weight of the installed veneer units is less
19 than 15 pounds per square foot (73.2 kg/m²).

20
21 Recognized veneer types and patterns are Cobblestone, Cut Cobblestone,
22 Fieldstone, Tuscan Fieldstone, Ledgestone, Shadow Ledgestone, Ridgestone,
23 Riverstone, and Brick.

24 **4.0 DESIGN AND INSTALLATION**

25 **4.1 General:**

26 Installation of the veneer units must comply with this report, the manufacturer's published
27 installation instructions, and IBC Section 1404.4 or IRC Section R703.7, as applicable. The
28 manufacturer's published installation instructions must be available at the jobsite at all times
29 during installation. The veneer may be applied over backings of cement plaster, concrete or
30 brick masonry.

31 **4.1.1 Preparation of Backing:**

32 **4.1.2 Cement Plaster Backing:** The cement plaster backing (scratch coat) may be
33 applied over structurally sound wall surfaces of cement plaster; exterior sheathing on wood
34 framed or light-gage steel framed walls; or concrete or brick masonry walls.

35 **4.1.3 Installation over Sheathing:** A cement plaster backing must be installed over a
36 water-resistive barrier complying with IBC Sections 1404.2 and 2510.6 or IRC Sections
37 R703.2 and R703.6.3, as applicable. The water-resistive barrier must consist of a minimum

38 of two separate layers of No. 15 asphalt felt complying with ASTM D 226 for Type 1 felt, or
39 Grade D paper as described in IBC Section 2510.6 and IRC Section R703.6.3, or one layer
40 of house wrap recognized in an ICC-ES evaluation report as complying with the ICC-ES
41 Acceptance Criteria for Water-resistive Barriers (AC38) and one layer of No. 15 asphalt felt
42 or Grade D paper.

43
44 Also, flashing must be installed as required by 2009 IBC Section 1405.4 (2006 IBC Section
45 1405.3) or IRC Section R703.8, as applicable, and weep screeds must be installed at the
46 bottom of the veneer. The weep screeds must comply with, and be installed in accordance
47 with, IBC Section 2512.1.2 or IRC Section R703.6.2.1, as applicable. In addition, the weep
48 screeds must have holes with a minimum diameter of $\frac{3}{16}$ inch (4.8 mm) spaced at a
49 maximum of 33 inches (838 mm) on center, as required by Section 6.1.6.2 of TMS 402/ACI
50 530/ASCE 5 (Section 6.1.5.2 of ACI 530/ASCE 5/TMS 402), which is referenced in 2009 IBC
51 Section 1405.10 (2006 IBC Section 1405.9).

52
53 Studs must be spaced no more than 16 inches (406 mm) on center. A self-furring, corrosion-
54 resistant, 2.5-pound-per-square-yard (1.4 kg/m^2), galvanized, expanded diamond mesh
55 metal lath, or 3.4 lb/yd^2 (1.8 kg.m^2), $\frac{3}{8}$ -inch (9.5 mm) rib lath complying with ASTM C 847,
56 must be installed in accordance with the applicable code over the water-resistive barrier.
57 Lath must be installed with a minimum 2-inch (51 mm) overlap on horizontal seams and a 6-
58 inch (152 mm) overlap on vertical joints. The lath must be fastened to each of the wall studs
59 at 6 inches (152 mm) on center vertically, in accordance with the minimum requirements of
60 Section 7.10 of ASTM C 1063, or IRC Section R703.6.1, as applicable. Lath shall be
61 wrapped around inside and outside corners with attachment every 6 inches (152 mm) at the
62 next stud allowing up to a 16-inch (406 mm) overlap. For wood studs, fasteners must be
63 minimum 0.120-inch-shank-diameter (3.05 mm) galvanized nails, complying with ASTM F

64 1667, of sufficient length to penetrate the studs a minimum of 1 inch (25.4 mm). For steel
65 studs, fasteners must be minimum No. 8 gage, Type S, galvanized self-tapping screws
66 complying with ASTM C 1002, of sufficient length to penetrate the studs a minimum of $\frac{1}{2}$
67 inch (12.7 mm). Fasteners must not penetrate exterior sheathing between the studs.

68
69 A coat of Type S mortar is applied to the metal lath as a scratch coat. The coat of mortar
70 must be a minimum of $\frac{1}{2}$ inch (12.7 mm) and a maximum of $\frac{3}{4}$ inch (19 mm) thick. The
71 mortar must comply with IBC Section 2103.8 or IRC Section R607.1, as applicable, and must
72 be cured in accordance with IBC Section 2512.6 prior to application of the veneer units.

73 **4.1.4 Installation over Open Studs:** The cement plaster backing must be installed over
74 a water-resistive barrier, flashing and weep screeds as described in Section 4.1.3. Studs
75 must be spaced no more than 16 inches (406 mm) on center. Lath must be a corrosion-
76 resistant, 3.4-pound-per-square-yard (1.8 kg/m^2), $\frac{3}{8}$ -inch (9.5 mm) rib lath complying with
77 ASTM C 847. The lath must be fastened to wall framing and the scratch coat applied as
78 described in Section 4.1.3.

79 **4.1.5 Installation over Concrete and Brick Masonry:** The veneer units may be
80 applied to clean, untreated masonry surfaces without the use of metal lath, provided the
81 masonry surface is clean. Where lath is used, it must be corrosion-resistant, 2.5-pound-per-
82 square-yard (1.4 kg/m^2), galvanized, expanded diamond mesh metal lath complying with
83 ASTM C 847. The lath must be fastened to the wall in accordance with Section 7.10 of ASTM
84 C 1063, and IRC Section R703.6.1, as applicable. The fasteners must be spaced a
85 maximum of 6 inches (152 mm) on center vertically and 16 inches (406 mm) on center
86 horizontally. The scratch coat must be applied as described in Section 4.1.3. The gravity load
87 (shear) capacity and negative wind load (pull-out) capacity of the proprietary fasteners must
88 be justified to the satisfaction of the code official.

89 **4.1.6 Concrete and Brick Masonry Backing:** Wall surfaces must be prepared in

90 accordance with Section 5.2 of ASTM C 926 and IBC Section 2510.7, as applicable.

91 Alternatively, a cement plaster backing may be installed as described in Section 4.1.5.

92 **4.2 Application of Veneer Units:**

93 A nominally $\frac{1}{2}$ -inch-thick (12.7 mm) layer of Type S mortar must be applied to the back of
94 each veneer unit, and then pressed firmly in place to assure full bond. The mortar must
95 comply with IBC Section 2103.8 or IRC Section R607.1, as applicable. Veneer units must be
96 installed at least 4 inches (105 mm) above earth. Joints between veneer units must be
97 grouted and tooled in accordance with the veneer manufacturer's published installation
98 instructions. The ambient temperature and veneer unit temperature must be 40°F (4°C) or
99 higher at the time of veneer application.

100 **5.0 CONDITIONS OF USE**

101 The Ply Gem Stone described in this report complies with, or is a suitable alternative
102 to what is specified in, those codes listed in Section 1.0 of this report, subject to the
103 following conditions:

104 **5.1** Installation must comply with this report, the manufacturer's published
105 installation instructions and the applicable code. In the event of a conflict
106 between the manufacturer's published installation instructions and this report,
107 this report governs.

108 **5.2** The use of the precast stone veneer is limited to installation on wood framed
109 or light-gage steel framed walls and concrete or masonry backings.

110 **5.3** Expansion or control joints, used to limit the effect of differential movement of
111 supports on the veneer system, are to be specified by the architect, designer
112 or veneer manufacturer, in that order. Consideration must also be given to
113 movement caused by temperature change, shrinkage, creep and deflection.

114 **5.4** In jurisdictions adopting the IBC, the supporting wall must be designed to
115 support the installed weight of the veneer system, including veneer, setting
116 bed and cement plaster backing, as applicable. At wall openings, the
117 supporting members must be designed to limit deflection to $1/600$ of the span of
118 the supporting members.

119
120 In jurisdictions adopting the IRC, where the seismic provisions of IRC Section
121 R301.2.2 apply, the average weight of the wall supporting the precast stone
122 veneer, including the weight of the veneer system, must be determined. When
123 this weight exceeds the applicable limits of IRC Section R301.2.2.2.1, an
124 engineered design of the wall construction must be performed in accordance
125 with IRC Section R301.1.3.

126 **6.0 EVIDENCE SUBMITTED**

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

129 **7.0 IDENTIFICATION**

130 Boxes of the precast stone veneer units are identified with the manufacturer's name
131 (Ply Gem Stone), product name, pattern name, and the evaluation report number
132 (ESR-3170).

133

134 This evaluation report is subject to re-examination in one year.