

ICC-ES Evaluation Report

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DIVISION: 09 00 00—FINISHES

Section: 09 24 00—Portland Cement Plastering

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EVALUATION SUBJECT:

QUIKRETE ONE-COAT FIBERGLASS REINFORCED
STUCCO WALL SYSTEMS

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:

- Structural
- Durability
- Fire-resistance-rated construction

2.0 USES

The Quikrete One-Coat Fiberglass Reinforced Stucco Wall System is a cementitious exterior wall covering system installed on walls of wood or steel stud construction. The system is an alternative to the exterior wall coverings specified in IBC Chapter 25, IRC Section R703 and UBC Chapter 25. The system may be used in combustible construction to construct a one-hour fire-resistance-rated wall assembly when installed in accordance with Section 4.4 of this report.

3.0 DESCRIPTION

3.1 General:

The Quikrete One-Coat Fiberglass Reinforced Stucco Wall System is a cementitious wall coating consisting of a proprietary mixture of portland cement, sand, fibers, and proprietary ingredients mixed with water, reinforced with wire fabric or metal lath, and applied to substrates of

expanded polystyrene (EPS), extruded polystyrene (XPS) insulation board, wood structural panels, fiberboard, oriented strand board (OSB) or gypsum sheathing.

3.2 Materials:

3.2.1 Quikrete One-Coat Fiberglass Reinforced Stucco, Sanded: The fiberglass reinforced stucco is a factory-prepared mixture of Type I or Type II portland cement complying with ASTM C 150, lime, alkali-resistant glass fibers, a proprietary chemical additive and sand. The stucco mixture is packaged in 80-pound (36 kg) bags. One and three-quarters gallons (6.6 L) of water are added to each bag in the field and mixed in accordance with the Quikrete Companies' recommendations.

3.2.2 Quikrete One-Coat Fiberglass Reinforced Stucco, Concentrated: The fiberglass reinforced stucco is the same as the Quikrete One-Coat Fiberglass Reinforced Stucco, Sanded, and is designed for addition of sand in the field. The concentrated stucco mixture is packaged in 80-pound (36 kg) bags. Five and three-quarters to 6¹/₄ gallons (21.8 to 23.7 L) of water and 210 pounds (95.3 kg) of sand complying with Section 3.3 must be added to each bag in the field and mixed according to the Quikrete Companies' recommendations.

3.2.3 Quikrete One-Coat Fiberglass Reinforced Stucco, Sanded Pump Grade: The fiberglass reinforced stucco is a modified version of the Quikrete One-Coat Fiberglass Reinforced Stucco, Sanded. The stucco mixture is packaged in 80-pound (36 kg) bags. One and three-quarters gallons (6.6 L) of water are added to each bag in the field and mixed in accordance with the Quikrete Companies' recommendations.

3.2.4 Quikrete One-Coat Fiberglass Reinforced Stucco, Concentrated Pump Grade: The fiberglass reinforced stucco is similar to the Quikrete One-Coat Fiberglass Reinforced Stucco, Sanded Pump Grade, and is designed for addition of sand in the field. The concentrated stucco mixture is packaged in 80-pound (36 kg) bags. Five and three-quarters to 6¹/₄ gallons (21.8 to 23.7 L) of water and 210 pounds (95.3 kg) of sand complying with Section 3.3 must be added to each bag in the field and mixed according to the Quikrete Companies' recommendations.

3.3 Sand:

Sand must be clean and free from deleterious amounts of loam, clay, silt, soluble salts and organic matter. Sampling and testing must comply with ASTM C 144 or ASTM C 897. Sand must be graded in accordance with ASTM C 144 or C 897 within the following limits:

RETAINED ON U.S. STANDARD SIEVE	PERCENT RETAINED BY WEIGHT \pm 2 PERCENT			
	Natural Sand		Manufactured Sand	
	Min.	Max.	Min.	Max.
No. 4 (4.75 mm)	0	0	0	0
No. 8 (2.36 mm)	0	10	0	10
No. 16 (1.18 mm)	10	40	10	40
No. 30 (600 μ m)	30	65	30	65
No. 50 (300 μ m)	70	90	60	80
No. 100 (150 μ m)	95	100	75	90

3.4 Insulation Board:

3.4.1 Expanded Polystyrene: EPS board must have a nominal density of 1.5 pounds per cubic foot (24 kg/m³), a flame-spread index of 25 or less and a smoke-developed index of 450 or less; and must comply with ASTM C 578 as Type II board. Boards installed without sheathing over open framing must be 1 inch to 1¹/₂ inches (25 to 38 mm) thick and must be provided with ³/₈-inch-high (9.5 mm) tongues with compatible grooves for horizontal joints. See Figure 1 for joint details. All boards must be recognized in a current ICC-ES evaluation report. See Section 7.2 for board identification. Over solid substrates, a square-edge foam plastic board with a minimum ¹/₂-inch (12.7 mm) thickness and a minimum nominal density of 1 pcf (16 kg/m³) is permitted except when installation is as part of a water-resistive barrier over wood-based sheathing as described in Section 3.10.1, which requires 1-inch-thick (25.4 mm) EPS boards with tongue-and-groove on the horizontal edges as detailed in Figure 1.

When installation is over solid substrates, as described in Section 4.3, the boards must have minimum ¹/₄-inch-wide-by-¹/₈-inch-deep (6.4 mm by 3.2 mm) vertical grooves spaced a maximum of 12 inches (305 mm) on the back face of the boards. As an alternate to the vertical grooves on the foam plastic board, installation of flat-faced boards over a solid sheathing may incorporate the Tyvek StuccoWrap or Tyvek DrainWrap water-resistive barrier recognized in [ESR-2375](#).

3.4.2 Extruded Polystyrene: XPS board must have a minimum nominal density of 1.5 pounds per cubic foot (24 kg/m³) and must comply with ASTM C 578 as a Type II board. See Section 3.4.1 for other details and requirements.

3.5 Lath:

3.5.1 Wire Fabric Lath: Wire fabric lath must comply with the ICC-ES Acceptance Criteria for Metal Plaster Bases (Lath) (AC191). Minimum No. 20 gage [0.035 inch (0.89 mm)], 1-inch-opening (25.4 mm), galvanized steel, woven-wire fabric must be used. Lath must be furred or self-furring when applied over all substrates. Furring must comply with the following requirements:

- When maximum total coating thickness is ¹/₂ inch (12.7 mm) or less, the body of the lath must be furred a minimum of ¹/₈ inch (3.2 mm) from the substrate after installation.
- When the total coating thickness is greater than ¹/₂ inch (12.7 mm), No. 17 gage [0.058 inch (1.47 mm)] by 1¹/₂-inch (38 mm) woven-wire fabric lath must be used. The body of the lath must be furred a minimum of ¹/₄ inch (6.4 mm) from the substrate after installation.

3.5.2 Metal Lath: Metal lath must comply with AC191 and, when applicable, UBC Table 25-B. Furring and

self-furring requirements are as set forth in Section 3.5.1., for woven wire lath.

3.6 Gypsum Board:

Water-resistant core-treated gypsum sheathing must comply with ASTM C 79 or ASTM C 1396. Gypsum wallboard must comply with ASTM C 36 or ASTM C 1396.

3.7 Fiberboard:

Minimum ¹/₂-inch-thick (12.7 mm) asphalt-impregnated fiberboard must comply as ASTM C 208, Type IV, wall sheathing.

3.8 Wood Structural Panels:

The panels must be minimum ⁵/₁₆-inch-thick (7.9 mm) plywood or OSB for studs spaced 16 inches (406 mm) on center, and must be minimum ³/₈-inch-thick (9.5 mm) plywood or ³/₈-inch-thick (9.5 mm) OSB for studs spaced 24 inches (610 mm) on center. Plywood must be exterior-grade or Exposure 1 complying with U.S. Department of Commerce Product Standard PS-1 or UBC Standard 23-2, as applicable; and OSB must be Exposure 1 complying with U.S. Department of Commerce Product Standard PS-2 or UBC Standard 23-3, as applicable.

3.9 Caulking:

Caulking materials must be either acrylic latex complying with ASTM C 834, or must be polyurethane, polyurethane modified, polysulfide, or silyl-terminated polyether elastomeric sealant complying with ASTM C 920.

3.10 Weather Protection:

3.10.1 Water-resistive Barrier: A water-resistive barrier is required and must comply with IBC Section 1404.2, IRC Section R703.2 or UBC Section 1402.1, as applicable. Minimum No. 15 asphalt nonperforated felt complying as Type I in accordance with ASTM D 226 (IBC or IRC); minimum Grade D kraft building paper complying with Standard 14-1; asphalt-saturated felt complying with UL Standard 55A (UBC); or material recognized in a current evaluation report as complying with the ICC-ES Acceptance Criteria for Water-resistive Barriers (AC38), is required.

When applied over any wood-based sheathing, the barrier must be one of the following:

- A minimum of two layers of Grade D kraft building paper as set forth in IBC Section 2510.6, IRC Section R703.6.3 or UBC Section 2506.4, or an equivalent recognized in a current evaluation report.
- One layer of EPS or XPS insulation board having horizontal tongue-and-groove edges as described in Sections 3.4.1 and 3.4.2, respectively, over one layer of Grade D kraft building paper having a minimum water-resistance rating of 60 minutes, or a water-resistive barrier recognized in a current ICC-ES evaluation report with a minimum water-resistance rating of 60 minutes.

When Tyvek StuccoWrap or Tyvek DrainWrap, recognized in [ESR-2375](#), is used as the water-resistive barrier, the grooved insulation board described in Section 3.4.1 is not required. The Tyvek StuccoWrap or Tyvek DrainWrap must be installed as described in [ESR-2375](#).

3.10.2 Vapor Retarder: Protection against condensation must be provided in accordance with IBC Section 1403.2. Under the IRC, a vapor retarder must be provided in accordance with Section R318.1, unless its omission is permitted under the exceptions in IRC Section R318.1.

3.10.3 Flashing: Flashing complying with IBC Section 1405.3, IRC Section R703.8 or UBC Section 1404.2, as applicable, must be provided. Where membrane flashing is used, flashing must be a self-adhering, flexible rubberized asphalt and polyethylene material, a minimum of 0.030 inch (0.8 mm) thick, shingle-lapped with the water-resistive barrier. Rigid flashing must be sloped towards the exterior with an upturned leg on the interior side and at the ends, and must extend beyond the surface of exterior wall.

3.10.4 Trim and Accessories: All trim, screeds and corner reinforcement must be corrosion-resistant or approved plastic recognized in a current ICC-ES report.

4.0 INSTALLATION

4.1 General:

The exterior cementitious coating must be applied by hand-troweling or machine-spraying in one coat or two coats to a minimum $\frac{3}{8}$ -inch (9.5 mm) thickness, unless noted otherwise. Nominal thickness around penetrations is $\frac{3}{8}$ inch (9.5 mm) backed by framing or blocking. The lath must be embedded in the minimum coating thickness and must not be exposed. The finish coat, if required, must be applied according to the Quikrete Companies recommendations, as applicable, within seven days. Flashing, corner reinforcement, metal trim and weep screeds must be installed as shown in Figure 2.

The coating must be applied at ambient air temperatures between 40°F and 100°F (4.4°C and 38°C) by applicators approved by the Quikrete Companies. The water-resistive barrier must be applied as set forth in Section 3.10.1. An installation card, such as that illustrated in Figure 3, must be at the jobsite with the name of the applicator and the product to be used, before any water-resistive barrier or exterior sheathing is installed. Also see Section 5.7.

4.2 Application over Open Framing:

The water-resistive barrier must be applied, as set forth in Section 3.10.1, over open framing spaced a maximum of 24 inches (610 mm) on center. The insulation board described in Sections 3.4.1 and 3.4.2 must be attached horizontally with tongues faced upward, and must be temporarily held in place with galvanized staples or roofing nails. Vertical butt joints must be staggered at least one stud space from adjacent courses, and must occur directly over studs.

The lath must be applied tightly over the foam plastic insulation board and fastened through the board and water-resistive barrier, to wood studs, sills and plates having a minimum specific gravity of 0.50, at 6 inches (152 mm) on center using No. 11 gage galvanized roofing nails having $\frac{7}{16}$ -inch-diameter (11.1 mm) heads, or No. 16 gage galvanized staples having a minimum crown width of $\frac{3}{4}$ inch (19.1 mm). Minimum fastener penetration into wood framing must be 1 inch (25 mm). Care must be taken to avoid over-driving fasteners.

The Quikrete Fiber-Reinforced Stucco System may also be applied to minimum No. 16 gage [0.057-inch-thick (1.45 mm)] steel studs spaced a maximum of 24 inches (610 mm) on center. Application must be the same as for wood studs described in this section (Section 4.2), except the insulation board must be temporarily held in place with self-drilling tapping screws, and the lath must be fastened with No. 8, Type S-12, corrosion-resistant, self-drilling tapping screws, with minimum 0.420-inch-diameter (10.7 mm) pancake heads, installed at a maximum of 6 inches (152 mm) on center to framing and tracks. Screws must penetrate framing and tracks a minimum of $\frac{1}{2}$ inch (12.7 mm).

The lath must be applied with $1\frac{1}{2}$ -inch (38 mm) end and side laps. Wall bracing in accordance with IBC Section 2308.9.3, IRC Section R602.10 or UBC Sections 2320.11.3 and 2320.11.4, as applicable, or an acceptable alternative, must be provided. Wall corners and parapet corners must be covered with metal corner reinforcements attached to the framing members with approved fasteners spaced a maximum of 18 inches (457 mm) on center, or as necessary to hold plumb. Weep screeds must comply with, and be installed at the bottom of the wall in accordance with, IBC Section 2512.1.2, IRC Section R703.6.2.1 or UBC Section 2506.5, as applicable. Galvanized steel, $1\frac{3}{8}$ -inch-thick (35 mm), No. 22 gage [0.025-inch-thick (0.635 mm)], J-shaped trim pieces must be installed at other areas where insulation board is exposed. See Figure 2 for typical installation details. At windows and doors, flashing as described in Section 3.10.3 of this report is required. Butting J-trim and approved metal edges, when installed, must be flashed in accordance with the code. Holes for hose bibbs, electrical panels and other penetrations of substrate surfaces, except those caused by fasteners, must also be flashed in accordance with the code. The coating must then be applied as described in Section 4.1 of this report.

4.3 Application over Solid Substrates:

4.3.1 Fiberboard: Minimum $\frac{1}{2}$ -inch-thick (12.7 mm) fiberboard sheathing must be installed directly over wood studs having a minimum specific gravity of 0.50, or minimum No. 16 gage [0.057-inch (1.45 mm)] steel studs spaced a maximum of 24 inches (610 mm) on center. The fiberboard must be temporarily held in place with corrosion-resistant staples or roofing nails (for wood studs), or self-drilling tapping screws (for steel studs). A water-resistive barrier must be applied over the fiberboard as set forth in Section 3.10.1 of this report. When the optional insulation board is used, the foam plastic boards must have grooves as described in Section 3.4, or flat-faced foam plastic boards may be used provided the water-resistive barrier is Tyvek StuccoWrap or Tyvek DrainWrap as described in Section 3.10.1. When the grooved foam plastic boards are used, they must face the water-resistive barrier and must be aligned vertically, but may be offset a maximum 6 inches (152 mm) from adjacent boards. The vertical joints of insulation boards are staggered from adjacent courses a minimum of 3 inches (76 mm). Insulation boards are attached to the framing, but the vertical joints of the insulation boards are not required to align with the framing. The lath must be attached to studs through the sheathing with fasteners and spacing as described for insulation board in Section 4.2 of this report; or as described for fiberboard in IBC Table 2304.9.1, IRC Table R602.3(1) or UBC Table 23-II-B-1, as applicable; whichever is more restrictive.

Wall bracing in accordance with IBC Section 2308.9.3, IRC Section R602.10 or UBC Sections 2320.11.3 and 2320.11.4, as applicable, or an acceptable alternate, must be provided. Wall corners and parapet corners must be covered with metal corner reinforcements attached to the framing members with approved fasteners spaced 18 inches (457 mm) on center, or as necessary to hold plumb. Weep screeds must comply with, and be installed at the bottom of the wall in accordance with, IBC Section 2512.1.2, IRC Section R703.6.2.1 or UBC Section 2506.5, as applicable. Galvanized steel, $1\frac{3}{8}$ -inch-thick (35 mm), No. 22 gage [0.025-inch-thick (0.635 mm)], J-shaped trim pieces must be installed at other areas where insulation board is exposed. See Figure 2 for typical installation details. Windows and doors, and butting J-trim metal edges, must be flashed as described in Section 3.10.3 of this report. Holes for hose bibbs, electrical panels and

other penetrations of substrate surfaces, except those caused by fasteners, must also be flashed. The coating must then be applied as described in Section 4.1 of this report.

4.3.2 Wood Structural Panel Sheathing: Wood structural panel sheathing must be applied directly to wood studs under conditions as set forth in Section 3.8 of this report and IBC Table 2308.9.3(3), IRC Table R602.3(3) or UBC Table 23-IV-D-1, as applicable. The sheathing must be attached in accordance with IBC Table 2304.9.1, IRC Table R602.3(1) or UBC Table 23-II-B-1, as applicable. Installation to minimum No. 16 gage [0.057-inch (1.45 mm)] steel studs must be as described for fiberboard in Section 4.3.1 of this report, except the lath must be fastened with No. 8 by minimum $1\frac{3}{4}$ -inch-long (44 mm), self-drilling tapping screws spaced at a maximum of 6 inches (152 mm) on center. Screws fastening sheathing, and screws fastening lath, must be staggered from each other. The screws must penetrate the framing and tracks a minimum of $\frac{1}{4}$ inch (6.4 mm). The water-resistive barrier, optional insulation board, wire-fabric lath and coating must be applied as described for fiberboard in Section 4.3.1.

4.3.3 Gypsum Sheathing: Minimum $\frac{1}{2}$ -inch-thick (12.7 mm), water-resistant treated core gypsum sheathing must be installed directly on wood studs spaced a maximum of 24 inches (610 mm) on center, in a manner similar to that for fiberboard as described in Section 4.3.1 of this report. Gypsum sheathing must be fastened in accordance with ASTM C 1280 (IBC), IRC Table R702.3.5 or UBC Table 25-G, as applicable. The water-resistive barrier, optional insulation board, wire-fabric lath and coating must be applied as described for fiberboard in Section 4.3.1. except the lath must be fastened with No. 8 by minimum $1\frac{3}{4}$ -inch-long (44 mm), self-drilling tapping screws spaced at a maximum of 6 inches (152 mm) on center. Screws fastening sheathing, and screws fastening lath, must be staggered from each other. The screws must penetrate the framing and tracks a minimum of $\frac{1}{4}$ inch (6.4 mm).

4.4 One-hour Fire-resistance-rated Wall Assemblies:

4.4.1 First Assembly:

4.4.1.1 Interior Face: One layer of $\frac{5}{8}$ -inch-thick (15.9 mm), Type X gypsum wallboard, water-resistant backerboard or veneer base must be applied vertically or horizontally to the interior face of minimum nominally 2-by-4 wood studs (minimum specific gravity of 0.50) spaced a maximum of 24 inches (610 mm) on center. The wallboard must be attached with 6d coated nails, $1\frac{7}{8}$ inches long (48 mm) and with $\frac{1}{4}$ -inch-diameter (6.4 mm) heads, at 7 inches (178 mm) on center to studs, plates and blocking. All wallboard joints must be taped and treated with joint compound in accordance with ASTM C 840 or GA 216, and backed with minimum nominally 2-by-4 wood framing. Fastener heads must also be treated with joint compound in accordance with ASTM C 840 or GA 216.

4.4.1.2 Exterior Face: One layer of minimum 48-inch-wide (1219 mm), $\frac{5}{8}$ -inch-thick (15.9 mm), Type X, water-resistant core gypsum sheathing must be applied parallel to studs with No. 11 gage galvanized roofing nails, $1\frac{3}{4}$ inches long (45 mm) and with $\frac{7}{16}$ - or $\frac{1}{2}$ -inch-diameter (11.1 or 12.7 mm) heads, at 4 inches (102 mm) on center at board edges and 7 inches (178 mm) on center at intermediate studs. The sheathing must be nailed to top and bottom plates at 7 inches (178 mm) on center. A water-resistive barrier is required over the sheathing. The lath and coating must then be applied, without insulation board, as described in Sections 4.1 and 4.2, respectively.

4.4.1.3 Axial Load Design: The wood stud axial design stress for the wall assembly, calculated in accordance with Sections 3.6 and 3.7 of ANSI AF&PA NDS-05 (IBC and IRC) or ANSI/NFoPA NDS-91 (UBC), is limited to $0.78 F'_c$, and the maximum stress must not exceed $0.78 F'_c$ at a maximum l_e/d ratio of 33.

4.4.2 Second Assembly:

4.4.2.1 Interior Face: One layer of $\frac{5}{8}$ -inch-thick (15.9 mm), Type X gypsum wallboard, complying with ASTM C 36 or ASTM C 1396, must be applied horizontally to the interior face of minimum nominally 2-by-4 wood studs (minimum specific gravity of 0.50) spaced a maximum of 24 inches (610 mm) on center. The wallboard must be fastened with $1\frac{7}{8}$ -inch-long (48 mm), cupped-head gypsum wallboard nails with 0.30-inch-diameter (7.62 mm) heads and minimum 0.10-inch-diameter (0.3 mm) shanks. The fasteners must be spaced a maximum of 7 inches (178 mm) on center to studs, plates and blocking. All vertical wallboard joints must be backed by minimum nominally 2-by-4 wood framing and taped and treated with joint compound in accordance with ASTM C 840 or GA 216. Fastener heads must also be treated with joint compound in accordance with ASTM C 840 or GA 216. Kraft-paper-faced, $3\frac{1}{2}$ -inch-thick (89 mm), minimum density 0.65 pcf (10.41 kg/m³), R-11, fiberglass batt insulation, complying with IBC Section 719, IRC Section R316, or UBC Section 707.3, as applicable, must be installed in the cavity of the wall.

4.4.2.2 Exterior Face: One layer of minimum $\frac{7}{16}$ -inch-thick (11.1 mm) plywood or OSB sheathing, described in Section 3.2.6, must be applied to the wood framing under conditions set forth in Section 4.3.2. Horizontal joints in the exterior face sheathing must be offset 24 inches (610 mm) from horizontal joints of the gypsum wallboard on the opposite wall face. A water-resistive barrier, consisting of two layers of Grade D kraft building paper complying with UBC Standard 14-1, as set forth in IBC Section 2510.6 or UBC Section 2506.4, must be applied with 6-inch (152 mm) overlaps over the sheathing. The lath and coating must then be applied, without insulation board, as described in Section 4.3.1, except that the lath must be applied with 2-inch end and side laps.

4.4.2.3 Axial Load Design: Axial loads applied to the wall assembly are limited to the least of the following:

- 1,100 pounds (4893 N) per stud.
- A maximum of 47.5 percent of the load calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS-05 (IBC and IRC) or ANSI/AFoPA NDS-91 (UBC).
- Design stress based on $0.78 F'_c$ calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS-05 (IBC and IRC) or ANSI/AFoPA NDS-91 (UBC).
- Design stress of $0.78 F'_c$ at a maximum l_e/d ratio of 33 calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS-05 (IBC and IRC) or ANSI/AFoPA NDS-91 (UBC).

4.4.3 Third Assembly:

4.4.3.1 General: This assembly is not recognized for installation in areas enforcing the UBC. When installation is in areas enforcing the IBC, the fire separation distance must be greater than 5 feet (1524 mm), in accordance with IBC Section 704.5. When installation is in areas enforcing the IRC, the fire separation distance must be a minimum of 3 feet (914 mm), in accordance with IRC Section R302.1.

4.4.3.2 Interior Face: One layer of $\frac{5}{8}$ -inch-thick (15.9 mm), Type X gypsum wallboard, complying with ASTM C 36 or ASTM C 1396, must be applied horizontally to the interior face of minimum nominally 2-by-4 wood studs (minimum specific gravity of 0.50) spaced a maximum of 16 inches (406 mm) on center. The wallboard must be fastened with $1\frac{5}{8}$ -inch-long (48 mm), cupped-head, gypsum wallboard nails with 0.30-inch-diameter (7.6 mm) heads and minimum 0.10-inch-diameter (0.3 mm) shanks. The fasteners must be spaced a maximum of 7 inches (178 mm) on center to studs, plates and blocking. All wallboard joints must be backed by minimum nominally 2-by-4 wood framing and taped and treated with joint compound in accordance with ASTM C 840 or GA 216. Fastener heads must also be treated with joint compound in accordance with ASTM C 840 or GA 216. Kraft-paper-faced, $3\frac{1}{2}$ -inch-thick (89 mm), minimum density 0.65 pcf (10.41 kg/m³), R-11, fiberglass batt insulation, complying with IBC Section 719 or IRC Section R316, as applicable, must be installed in the cavity of the wall.

4.4.3.3 Exterior Face: One layer of minimum $\frac{7}{16}$ -inch-thick (11.1 mm) plywood or OSB sheathing, described in Section 3.2.6, must be applied to the wood framing under conditions set forth in Section 4.3.2. Horizontal joints in the exterior face sheathing must be offset 24 inches (610 mm) from horizontal joints of the gypsum wallboard on the opposite wall face. A water-resistive barrier, complying with Section 3.10.1, must be installed in accordance with this report. One-inch-thick (25.4 mm), Type I EPS insulation boards, having a nominal density of 1 pcf (16 kg/m³) and recognized in current evaluation report, must be temporarily held in place with galvanized roofing nails. The lath and coating must then be applied as described in Section 4.3.1, except that the lath must be applied with 2-inch (51 mm) end and side laps.

4.4.3.4 Axial Load Design: The allowable axial loading for the system is limited to the least of the following:

- 1,100 pounds (4893 N) per stud.
- A maximum of 47.5 percent of the load calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS-05 (IBC and IRC) or ANSI/AFoPA NDS-91 (UBC).
- Design stress based on $0.78 F'_c$ calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS-05 (IBC and IRC) or ANSI/AFoPA NDS-91 (UBC).
- Design stress of $0.78 F'_c$ at a maximum l/d ratio of 33 calculated in accordance with Sections 3.6 and 3.7 of the ANSI/AF&PA NDS-05 (IBC and IRC) or ANSI/AFoPA NDS-91 (UBC).

4.5 Miscellaneous:

4.5.1 Inspection Requirements: Building department inspection is required on lath installation prior to application of the coating, as required by the applicable code.

4.5.2 Control Joints: Control joints must be installed as specified by the architect or designer.

4.5.3 Curing: Moist curing must be provided for a minimum of 2 days after coating applications. The length of time and most effective procedure for moist curing will depend on climatic and job conditions.

4.5.4 Soffits: The system may be applied to soffits, provided the coating is applied over metal lath complying with Section 3.5.2 in lieu of wire fabric lath. Metal lath fastening must comply with IBC Section 2510.3, IRC Section R703.6.1 or UBC Table 25-C, as applicable, except that the fastener length must be increased by the thickness of any substrate.

4.5.5 Sills: The system may be applied to sills at locations such as windows and similar areas. Sills with depths of 6 inches (152 mm) or less may have the coating and lath applied to any substrate permitted in this report, provided the coating, lath, water-resistant barrier and substrate are installed in accordance with the applicable sections of this report. Sills with depths exceeding 6 inches (152 mm) must have substrates of solid wood or plywood. The substrate must be fastened in accordance with IBC Table 2304.9.1, IRC Section R602.3 or UBC Table 23-II-B-1, as applicable, and a double layer of Grade D water-resistive barrier must be applied over the substrate. The lath, optional insulation board, and coating must be applied in accordance with Section 4.3.1 of this report.

5.0 CONDITIONS OF USE

The Quikrete One-Coat Fiberglass Stucco Wall Systems 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 following conditions:

- 5.1** Materials and methods of installation must comply with this report and the manufacturer's published installation instructions. If conflicts exist between this report and the manufacturer's published installation instructions, this report governs.
- 5.2** Installation must be by installers approved by the Quikrete Companies, Inc.
- 5.3** The system is recognized as a one-hour fire-resistance-rated assembly when installed in accordance with Section 4.4 of this report. The one-hour fire-resistance-rated assembly described in Section 4.4.3 is not recognized for installation in areas enforcing the UBC.
- 5.4** In jurisdictions adopting the UBC, the coating system, without insulation board, is permitted to be attached to the surface of combustible exterior fire-resistance-rated assemblies described in UBC Table 7B without a change in the assigned hourly rating of the assembly.
- 5.5** The coating system is limited to Type V construction (IBC and UBC), and structures constructed in accordance with the IRC.
- 5.6** The interior of the building must be separated from the insulation board with a thermal barrier complying with the applicable code, such as $\frac{1}{2}$ -inch-thick (12.7 mm) regular gypsum wallboard mechanically attached in accordance with the applicable code.
- 5.7** A completed installation card, such as that shown in Figure 3, must be left at the jobsite for the owner, and a copy filed with the building department.
- 5.8** Foam plastic insulation board must not be placed on exterior walls of wood construction located within 6 inches (152 mm) of the ground where hazard of termite damage is "very heavy," in accordance with IBC Section 2603.8 or IRC Section R320.4.
- 5.9** The allowable wind load for the coating systems applied over wood or minimum No.16 gage [0.057 inch (1.45 mm)] steel studs spaced a maximum of 24 inches (610 mm) on center is 25 psf (1197 Pa) positive or negative. Support framing must be adequate to resist the required wind load. The maximum allowable deflection of support framing must not exceed $\frac{L}{240}$, where L is the support framing span.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Cementitious Exterior Wall Coatings (AC11), dated March 2007.
- 6.2 Reports of tests of fire-resistance-rated assemblies in accordance with ASTM E 119 (UBC Standard 7-1).

7.0 IDENTIFICATION

- 7.1 The factory-prepared mixes must be delivered to the jobsite in water-resistant bags or containers with labels bearing the following information:
 - a. Name and address of the Quikrete Companies and the evaluation report number (ESR-1240).

- b. Identification of components.
- c. Weight or volume of packaged mix.
- d. Storage instructions.
- e. Maximum amount of water and other components that may be added and conditions that must be considered in determining actual amount.
- f. Curing instructions.

- 7.2 Insulation boards must be identified in accordance with their respective ICC-ES evaluation reports. Additionally, the board density of insulation boards must be noted.

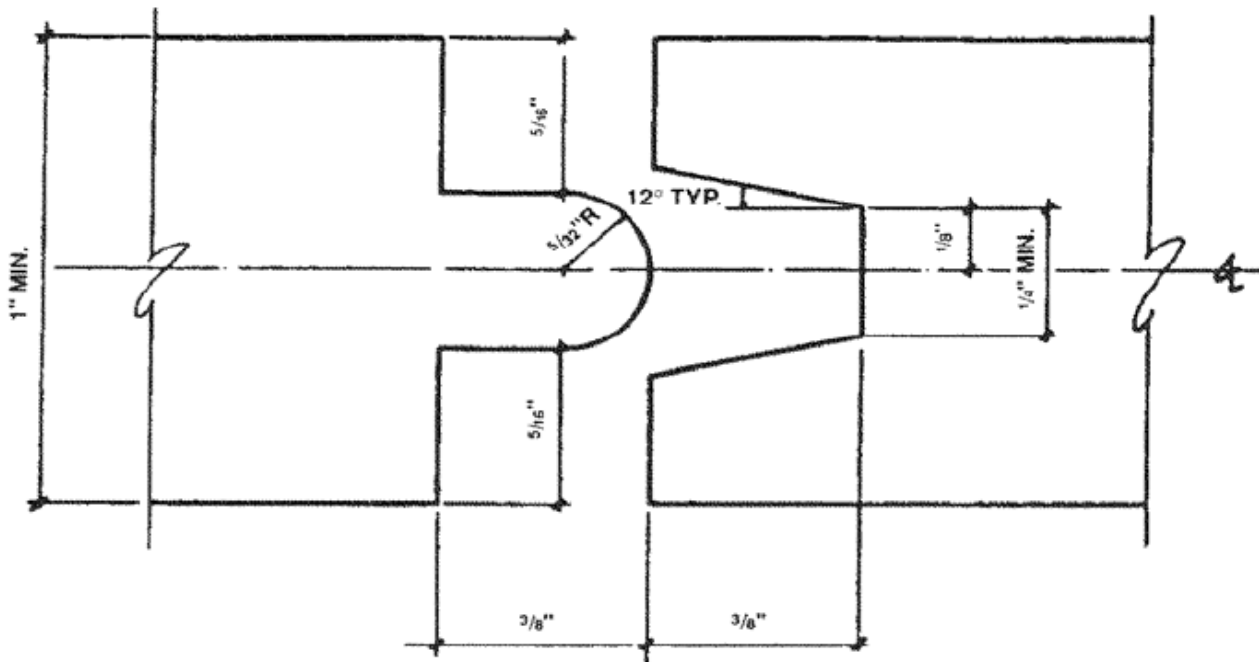
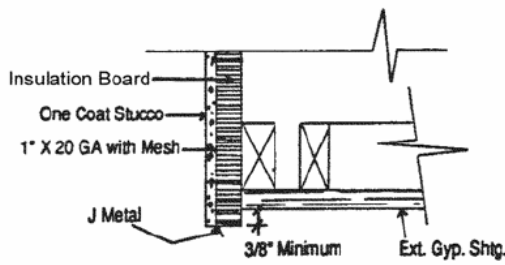
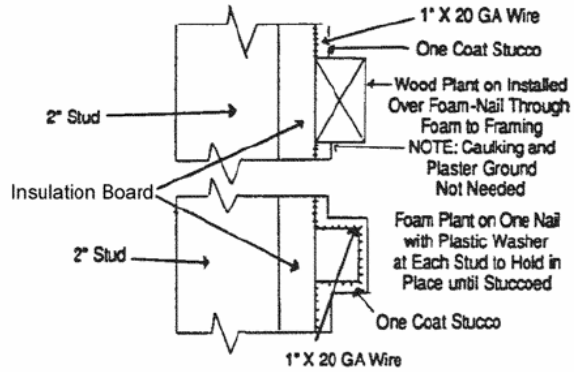


FIGURE 1—TONGUE-AND-GROOVE DETAIL

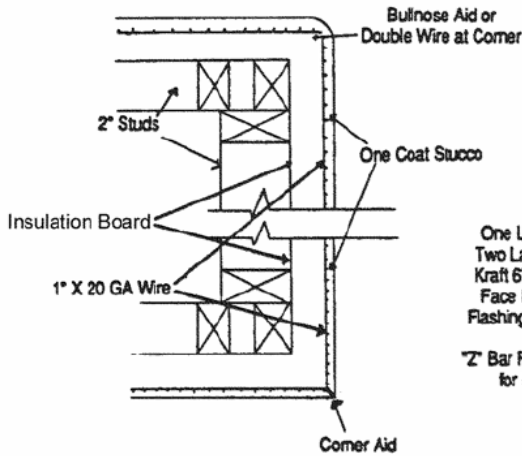


WOOD SOFFIT DET.

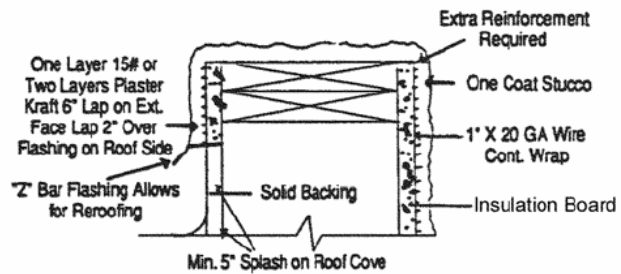


PLANT ON

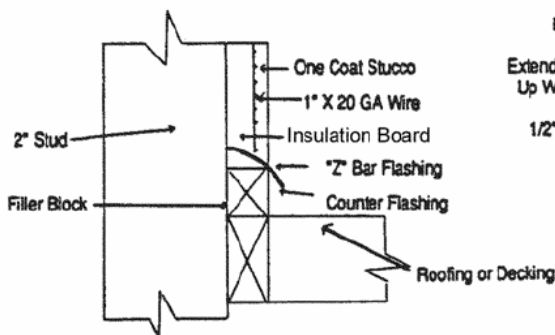
NOTE: Parapet Cap Should be Bullnosed or Sloped.
Foam Sheathing on Top & Roofside of Parapet
Optional When Foam is Omitted Use Approved Solid Backer



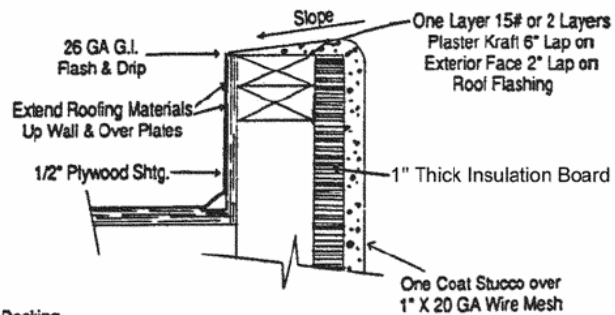
SQUARE CORNER - BULLNOSE CORNER



PARAPET & FLASHING DETAIL



GABLE OR DECK FLASHING



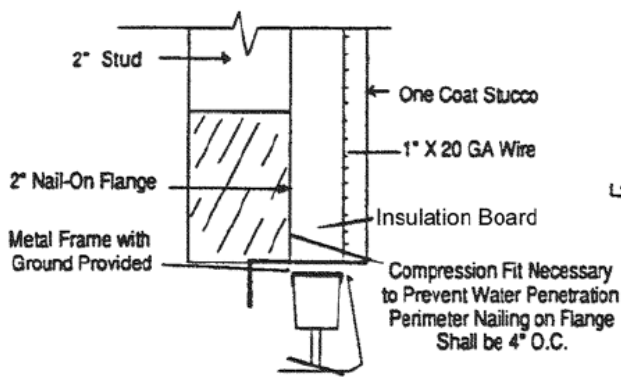
WOOD FRAME DOUBLE FACED PARAPET

For SI: 1 inch = 25.4 mm.

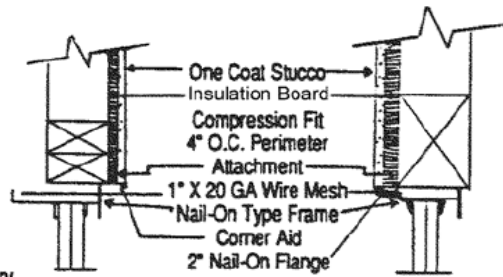
NOTE: When installation is over solid substrates, the water-resistive barrier must be installed over all substrates and behind the optional insulation board. When installation is over open framing, the water-resistive barrier must be installed behind the insulation board. See Section 3.10.1 of this report.

FIGURE 2—TYPICAL INSTALLATION DETAILS OF QUIKRETE ONE-COAT FIBERGLASS REINFORCED STUCCO SYSTEM

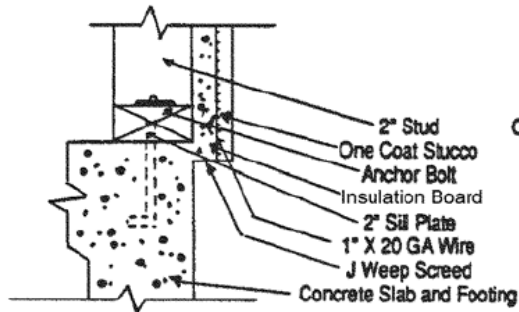
NOTE: When Proper Plaster Ground or Nail-On Flange Are Not Provided, Use Plaster Ground Design.



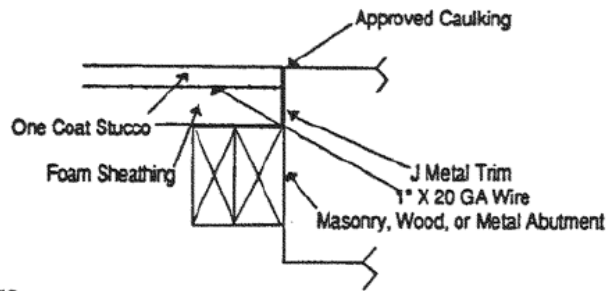
COMPRESSION FIT - METAL FRAME



SLIDING DOOR



SILL FLASHING



PLASTER GROUND

For SI: 1 inch = 25.4 mm.

NOTE: When using substrates other than foam, these details MUST apply. If other than 1-inch-thick substrates are used, grounds must be altered to maintain proper thickness.

FIGURE 2—TYPICAL INSTALLATION DETAILS OF QUIKRETE ONE-COAT FIBERGLASS REINFORCED STUCCO SYSTEM (Continued)

INSTALLATION CARD
QUIKRETE ONE-COAT FIBERGLASS REINFORCED STUCCO SYSTEM
Quikrete Companies, Inc.

Project Address

Evaluation Report ESR-1240

Date Completed _____

Plastering Contractor

Name: _____

Address: _____

Telephone No. () _____

Approved contractor number as issued by Quikrete Companies Inc.

This is to certify that the exterior coating system on the building exterior at the above address has been installed in accordance with the evaluation report and the manufacturer's instructions.

Signature of authorized representative of plastering contractor

Date

FIGURE 3—INSTALLATION CARD