

ICC-ES Evaluation Report

ESR-1637

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This report is subject to renewal in two years.

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**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION**
**Section: 07 24 00—Exterior Insulation and Finish
Systems**
REPORT HOLDER:
QUALITY SYSTEMS, INC.
 1101 MENZLER ROAD
 NASHVILLE, TENNESSEE 37210
www.permacrete.com
EVALUATION SUBJECT:
**PERMA•CRETE® RESURFACING PRODUCTS EXTERIOR
WALL COVERING SYSTEM**

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:

- Weather resistance
- Wind load resistance

2.0 USES

The Perma•Crete® Resurfacing Products exterior finish system is used as an exterior wall covering on concrete masonry walls, concrete walls, or concrete walls constructed of flat profile insulating concrete forms (ICFs), for buildings of Type V-B construction under the IBC, and Type V-N construction under the UBC, and for dwellings under the IRC.

3.0 DESCRIPTION

3.1 General:

The Perma•Crete® Resurfacing Products exterior finish system consists of four components, including a proprietary skim (base) coat consisting of Perma•Crete® Matrix Mix with Perma•Crete® Concrete Bonding Additive; a fiberglass reinforcing mesh of Perma•Crete® Fiber Mesh; a texture (top) coat of Perma•Crete® Matrix Mix with Perma•Crete® Concrete Bonding Additive; and two coats of acrylic Perma-Seal sealer. See Figure 1 for details of the Perma•Crete® Resurfacing Products exterior finish system.

3.2 Materials:

3.2.1 Substrates: Substrates must be one of the following:

- a. Concrete masonry or concrete complying with the applicable code.
- b. Premolded, ASTM C 578 Type II or Type IX EPS, minimum 1-inch-thick (25.4 mm), flat-profile ICFs, having a maximum density of 2.0 pcf (36 Kg/m³), that are recognized in an ICC-ES evaluation report as being classified as a flat ICF wall system in accordance with Section R611.3 of the IRC.

3.2.2 Perma•Crete® Matrix Mix: The cement-based material is a component of the skim (base) coat that is used to embed the fiberglass reinforcing Perma•Crete® Fiber Mesh on the exterior face of the substrate and as a component of the texture (top) coat. The Perma•Crete® Matrix Mix is available as a dry mix material packaged in 40-pound (18.2 kg) bags and is to be mixed with the Perma•Crete® Concrete Bonding Additive. The dry Perma•Crete® Matrix Mix product has a shelf life of one year when protected from extreme heat and freezing. Storage temperatures must be within the range of 40°F to 90°F (4.4°C to 32.4°C).

3.2.3 Perma•Crete® Concrete Bonding Additive: The bonding additive is a water-soluble acrylic polymer compound that is mixed at the jobsite with the Perma•Crete® Matrix Mix to prepare the skim (base) coat and the texture (top) coat. The bonding additive has a shelf life of one year when protected from extreme heat and freezing. Storage temperatures must be within the range of 40°F to 90°F (4.4°C to 32.4°C). The Perma•Crete® Concrete Bonding Additive is available in 5-gallon (18.9 L) buckets and is to be mixed with the Perma•Crete® Matrix Mix.

3.2.4 Perma•Crete® Fiber Mesh: Perma•Crete® Fiber Mesh is a woven fiberglass reinforcing mesh that is treated for compatibility with the other Perma•Crete® Resurfacing Products. The mesh is available in a roll measuring 36 inches wide by 150 feet long (9144 mm wide by 45.72 m long) and weighing 4.5 ounces per square yard (153 g/m²). The roll must be packaged or stored in a manner to prevent damage due to abrasion and direct exposure to sunlight.

3.2.5 Perma-Seal: Perma-Seal is an acrylic emulsion formulated with or without colored pigments. Perma-Seal has a shelf life of one year when protected from freezing and extreme heat. Storage temperatures must be within the range of 40°F to 90°F (4.4°C to 32.4°C). Perma-Seal is available in 5-gallon (18.9 L) buckets.

3.2.6 Sealants: Sealants must be compatible with the exterior finish system components and be recommended by Quality Systems, Inc. Evidence must be submitted to

the code official showing that the exterior finish system manufacturer–recommended sealant is Type S or M, minimum Grade NS, minimum Class 25 and Use O sealant complying with ASTM C 920. Under the Use O classification, the sealant must be qualified for each material to which sealant is applied. The details for sealant installation, including the width and thickness of the sealant, must be designed by the registered design professional, designer, builder, or Quality Systems, Inc., in that order, to the satisfaction of the code official.

4.0 INSTALLATION

4.1 General:

The Perma•Crete® Resurfacing Products exterior finish system must be installed by contractors recognized and trained by Quality Systems, Inc.

No additives, such as sand, aggregates, rapid binders, antifreeze or accelerators, may be added to any components of the Perma•Crete® Resurfacing Products exterior finish system recognized in this report.

For installations regulated by the IBC, flashing must be installed in accordance with IBC Section 1405.3.

Refer to Figure 1 for typical details of the Perma•Crete® Resurfacing Products exterior finish system.

4.2 Application:

4.2.1 General: Before application of the base coat, the substrates as described in Section 3.2.1 of this report must be clean, structurally sound, and free of loose material, voids, projections, or other conditions that may interfere with the installation of the Perma•Crete® Resurfacing Products exterior finish system. The substrate surface must have no planar irregularities greater than $\frac{1}{4}$ inch (6.4 mm) within any 48-inch (1219 mm) radius. Additionally, if there are gaps or any damage in the substrate exceeding $\frac{1}{4}$ inch (6.4 mm) in any direction, the substrate must be repaired. The surface of the wall substrate and the outside ambient temperatures must be at or above 40°F (4.4°C), at the time of application of Perma•Crete® Resurfacing Products exterior finish system. All penetrations through and termination of the substrates must be protected with flashing or sealants in accordance with the requirements of the applicable code and the manufacturer's published installation instructions.

4.2.2 Mixing of the Perma•Crete® Matrix Mix and the Perma•Crete Concrete Bonding Additive: One 40-pound (18.2 kg) bag of Perma•Crete® Matrix Mix is mixed with one gallon of the Perma•Crete® Concrete Bonding Additive using a $\frac{1}{2}$ -inch (12.7 mm) drill, at approximately 800-2000 rpm, with a jiffler or standard gypsum wallboard joint compound or mud mixing paddle to produce a smooth, lump-free mixture. Additional amounts of Perma•Crete® Concrete Bonding Additive may be added to the mixture to adjust workability. The material must be mixed in batches that can be used during a six-hour work period. The mixture must be allowed to set for approximately three to five minutes, then remixed briefly to produce a uniform consistency.

4.2.3 Application of Perma•Crete® Matrix Mix Base Coat and Perma•Crete® Fiber Mesh: The base coat mixture is applied to the exterior surface of the substrate to an approximate uniform thickness of $\frac{1}{8}$ inch (3.2 mm) using a sprayer or a trowel. The Perma•Crete® Fiber Mesh must be troweled into the base coat until the mesh is completely embedded into the base coat. The reinforcing mesh must be applied continuously across corners and must be lapped a minimum of 2 inches (50.8 mm) at

horizontal and vertical seams of the mesh. The base coat must be allowed to dry for approximately three to four hours at a minimum ambient temperature of 40°F (4.4°C) until moisture has evaporated from the surface of the base coat, or a sufficient period of time to permit the base coat to develop enough rigidity to resist cracking or other physical damage during application of the texture (top) coat.

4.2.4 Application of Perma•Crete® Matrix Mix Texture (Top) Coat: Once the surface of the base coat is dry, a texture (top) coat of the Perma•Crete® Matrix Mix with bonding additive, measuring approximately $\frac{1}{8}$ inch thick (3.2 mm), is applied over the base coat. The total thickness of the base coat and the texture (top) coat must be a minimum of $\frac{1}{4}$ inch (6.4 mm). The texture (top) coat must be allowed to dry for approximately three to four hours at 40°F (4.4°C) until moisture has evaporated from the surface of the texture coat. Additional coats of the Perma•Crete® Matrix Mix with Perma•Crete® Concrete Bonding Additive may be applied. The texture (top) coat must be allowed to dry for approximately three to four hours at a minimum ambient temperature of 40°F (4.4°C), until moisture has evaporated from the surface of the top coat, before the Perma-Seal sealer is applied.

4.2.5 Application of Perma-Seal Sealer: Once the surface of the texture (top) coat is dry, the Perma-Seal sealer is applied in two coats using a brush, a roller or an airless sprayer in a minimum dry thickness of 10 mils (0.25 mm) per coat or approximately 235 ft² per gallon (5.8 m²/L) for the first coat and 290 ft² per gallon (7.1 m²/L) for the second coat. The first coat of Perma-Seal sealer must be allowed to dry to the touch before application of the second coat of the sealer. The second coat of Perma-Seal must be allowed to cure at least three to four hours before application of the sealant specified in Section 3.2.6.

4.3 Wind Design:

When the Perma•Crete® Resurfacing Products exterior finish system is applied to any of the substrates specified in Section 3.2.1, the maximum allowable positive design wind pressure transverse load is governed by the structural capacity of the substrate, and the maximum allowable negative design wind pressure transverse load is 35 psf (1.7 kN/m²).

5.0 CONDITIONS OF USE

The Perma•Crete® Resurfacing Products exterior finish system 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** The manufacturer's published installation instructions and this report must be strictly adhered to, and a copy of the instructions must be available at all times on the jobsite during installation. The instructions within this report shall govern if there are any conflicts between the manufacturer's instructions and this report.
- 5.2** The Perma•Crete® Resurfacing Products exterior finish system must be installed only by contractors recognized by Quality Systems, Inc., as being trained to perform installation of the Perma•Crete® Resurfacing Products exterior finish system.
- 5.3** The EPS foam-plastic insulation of the insulating concrete form (ICF) must be separated from the building interior with a thermal barrier complying with Section 2603.4 of the IBC or Section 2602.4 of the UBC, as applicable.

- 5.4 The design transverse wind load pressures must not exceed the allowable pressures indicated in Section 4.3 of this report.
- 5.5 The Perma•Crete[®] Resurfacing Products exterior finish system is limited to use on the substrates specified in Section 3.2.1. Evaluation of the substrate is outside the scope of this report.
- 5.6 The Perma•Crete[®] Resurfacing Products exterior finish system is limited to Type V-B construction under the IBC and Type V-N construction under the UBC, and to dwellings under the IRC.
- 5.7 Sealants must comply with Section 3.2.6 of this report.
- 5.8 Installation cards, such as those shown in Figures 2 and 3, must be completed by the Perma•Crete[®] Resurfacing Products exterior finish system applicator (Figure 2) and the sealant installer (Figure 3), and must be presented to the code official at the completion of each project.

6.0 EVIDENCE SUBMITTED

Data in accordance with Sections 4.2, 4.3, 4.4, 4.5, 4.7 and 4.9 of the ICC-ES Acceptance Criteria for Exterior Insulation and Finish Systems (AC219), dated October 2003 (editorially revised March 2006, August 2007 and April 2008).

7.0 IDENTIFICATION

Each container or package of material used as a part of the Perma•Crete[®] Resurfacing Products exterior finish system covered by this report must be labeled with the manufacturer's name (Quality Systems, Inc.) and address; the product trade names; the batch number; the quantity of material; storage instructions; pot life; and the evaluation report number (ICC-ES ESR-1637).

Insulating concrete forms must be labeled in accordance with the applicable evaluation report.

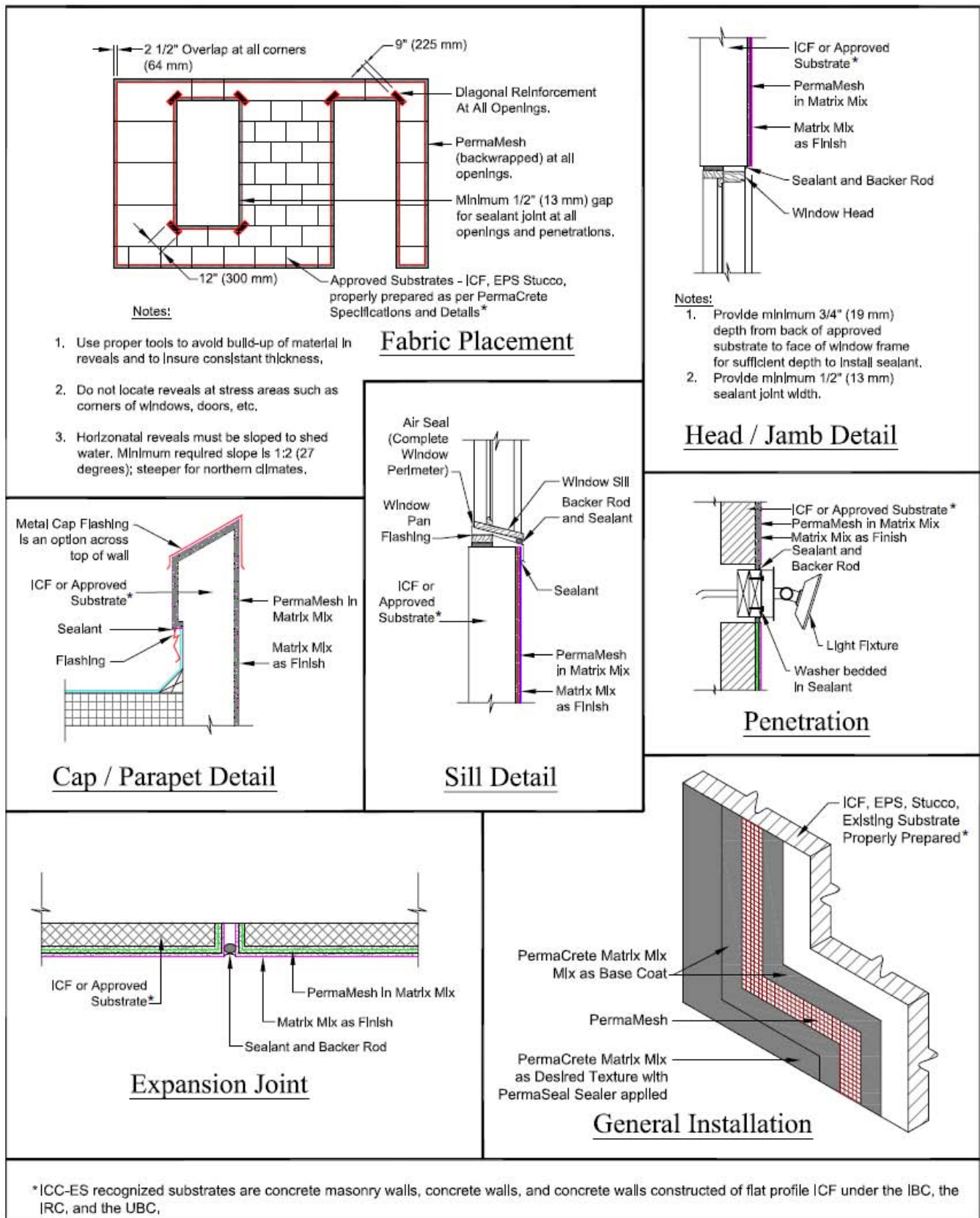


FIGURE 1—TYPICAL INSTALLATION DETAILS

[COATINGS CONTRACTOR NAME]

Completion Date: _____

THE PERMACRETE COATING SYSTEM INSTALLED ON THE STRUCTURE LOCATED AT THE ADDRESS INDICATED BELOW:

_____ CONFORMS

TO QUALITY SYSTEMS, INC. RECOMMENDED INSTALLATION PRACTICES AND SECTIONS 4.1 AND 4.2 OF ICC-ES, INC., EVALUATION REPORT ESR-1637.

Address of Structure:

Product Component Names:

Base Coat _____

Reinforcing Mesh _____

Finish Coat(s) _____

INSTALLATION

CONFORMS

A. Substrate Type and Preparation _____

B. Permacrete System _____

1. Reinforcing Mesh _____

2. Base Coat _____

3. Finish _____

C. The information entered above is offered in testimony that the Permacrete Coating installation conforms with the Quality Systems, Inc. installation methods and procedures, and the Quality Systems, Inc. ES report.

NOTE: An installation card shall be received from the Sealant Installer indicating that the sealant installation conforms with the Quality Systems, Inc. evaluation report and sealant manufacturer's installation methods and procedures shall accompany this declaration.

COATINGS

Contractor Company Name and Address:

Signature of Responsible Officer: _____

Typed Name and Title of Officer: _____

Telephone Number: (____) _____

cc: Original: Building Department (Shall be submitted with sealant
Copy: Quality Systems, Inc. Manufacturer installer declaration.)

FIGURE 2—COATINGS CONTRACTOR CARD

[SEALANT INSTALLER NAME]

Completion Date: _____

THE SEALANT INSTALLED IN CONJUNCTION WITH AN THE PERMACRETE COATING SYSTEM INSTALLED ON THE STRUCTURE LOCATED AT THE ADDRESS INDICATED BELOW:

CONFORMS _____

TO QUALITY SYSTEMS, INC. AND [SEALANT MANUFACTURER'S NAME] RECOMMENDED INSTALLATION PRACTICES AND SECTION 3.2.6 OF ICC-ES, INC., EVALUATION REPORT ESR-1637.

Address of Structure:

Product Component Names:

Primer(s) _____
Sealers _____
Bond Breakers _____
Sealant Materials _____

INSTALLATION

CONFORMS

- A. Designer's requirements, details and instructions _____
- B. Sealant manufacturer's details and requirements _____
- C. Quality Systems, Inc. Coating requirements _____

D. The information entered above is offered in testimony that the Sealant installation conforms with the sealant manufacturer's installation methods and procedures, and the EIFS manufacturer's evaluation report.

Sealant Installer Company Name and Address:

Signature of Responsible Officer: _____

Typed Name and Title of Officer: _____

Telephone Number: (____) _____

cc: Original: Building Department (Shall be submitted with coatings
Copies: Coatings Manufacturer contractor declaration.)
Coatings Contractor
Sealant Manufacturer

FIGURE 3—SEALANT INSTALLER CARD