

ACCEPTANCE CRITERIA FOR EIFS CLAD DRAINAGE WALL ASSEMBLIES

AC235

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PREFACE

Evaluation reports issued by ICC Evaluation Service, LLC (ICC-ES), are based upon performance features of the International family of codes. (Some reports may also reference older code families such as the BOCA National Codes, the Standard Codes, and the Uniform Codes.) Section 104.11 of the *International Building Code*® reads as follows:

The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

This acceptance criteria has been issued to provide interested parties with guidelines for demonstrating compliance with performance features of the codes referenced in the criteria. The criteria was developed through a transparent process involving public hearings of the ICC-ES Evaluation Committee, and/or on-line postings where public comment was solicited.

New acceptance criteria will only have an “approved” date, which is the date the document was approved by the Evaluation Committee. When existing acceptance criteria are revised, the Evaluation Committee will decide whether the revised document should carry only an “approved” date, or an “approved” date combined with a “compliance” date. The compliance date is the date by which relevant evaluation reports must comply with the requirements of the criteria. See the ICC-ES web site for more information on compliance dates.

If this criteria is a revised edition, a solid vertical line (|) in the margin within the criteria indicates a technical change from the previous edition. A deletion indicator (→) is provided in the margin where wording has been deleted if the deletion involved a technical change.

ICC-ES may consider alternate criteria for report approval, provided the report applicant submits data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. ICC-ES retains the right to refuse to issue or renew any evaluation report, if the applicable product, material, or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause injury or unreasonable damage.

NOTE: The Preface for ICC-ES acceptance criteria was revised in July 2011 to reflect changes in policy.

Acceptance criteria are developed for use solely by ICC-ES for purpose of issuing ICC-ES evaluation reports.

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1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to identify requirements for exterior insulation and finish system (EIFS) clad drainage wall assemblies to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2012 and 2009 *International Building Code*[®] (IBC) and, the 2012 and 2009 *International Residential Code*[®] (IRC). The bases of recognition are IBC Sections 104.11 and 1408, and IRC Sections R104.11 and R703.9.

The reason for development of this criteria is to identify the requirements for an ICC-ES evaluation report that are not covered in the code referenced standards.

1.2 Scope: This acceptance criteria applies to EIFS clad drainage wall assemblies used as exterior wall coverings as defined in IBC Section 1408 and IRC Section R703.9. EIFS clad drainage wall assemblies are intended as exterior, nonbearing wall coverings providing a weather-resistant exterior wall envelope installed over a water-resistive barrier as defined in IRC Section R703.9.2.1 or IBC Section 1408.4.1.1, by the ICC-ES Acceptance Criteria for Water-resistive Coatings Used as Water-resistive Barriers Over Exterior Sheathing (AC212) or the ICC-ES Acceptance Criteria for Weather-resistive Barriers (AC38). The assemblies may be installed over combustible or noncombustible, fire-resistance-rated or nonfire-resistance-rated wall assemblies, provided Section 4.2 of this criteria is satisfied. This criteria is applicable to EIFS clad drainage wall assemblies used for framed construction under the IRC and the Type V, Group R-1, R-2, R-3 and R-4 Occupancies under the IBC.

1.3 Codes and Reference Standards:

1.3.1 2012 and 2009 *International Building Code*[®] (IBC), International Code Council.

1.3.2 2012 and 2009 *International Residential Code*[®] (IRC), International Code Council.

1.3.3 1997 UBC Standard 26-4, Method of Test for the Evaluation of Flammability Characteristics of Exterior, Nonload-bearing Wall Panel Assemblies Using Foam Plastic Insulation.

1.3.4 ANSI A118.9-1999, Test Methods and Specifications for Cementitious Backer Units, American National Standards Institute.

1.3.5 ANSI FM 4880-01, American National Standard for Evaluating:

- A. Insulated Wall or Wall & Roof/Ceiling Assemblies
- B. Plastic Interior Finish Materials
- C. Plastic Exterior Building Panels
- D. Wall/Ceiling Coating Systems
- E. Interior or Exterior Finish Systems

1.3.6 ASTM C 79, Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board, ASTM International. (See Table 1 for edition.)

1.3.7 ASTM C 150-07, Standard Specification for Portland Cement, ASTM International.

1.3.8 ASTM C 897-05, Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters, ASTM International.

1.3.9 ASTM C 920, Standard Specification for Elastomeric Joint Sealants, ASTM International. (See Table 1 for edition.)

1.3.10 ASTM C 1063, Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster, ASTM International. (See Table 1 for edition.)

1.3.11 ASTM C 1177, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing, ASTM International. (See Table 1 for edition.)

1.3.12 ASTM C 1396-06a, Standard Specification for Gypsum Board, ASTM International.

1.3.13 ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials, ASTM International. (See Table 1 for edition.)

1.3.14 ASTM E 119-07, Standard Test Method for Fire Tests of Building Construction and Materials, ASTM International.

1.3.15 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference, ASTM International.

1.3.16 ASTM E 331, Standard Test Method for Water Penetration of Exterior Windows, Skylight, Doors and Curtain Walls by Uniform Static Air Pressure Difference, ASTM International. (See Table 1 for edition.)

1.3.17 ASTM E 631-06, Terminology of Building Constructions, ASTM International.

1.3.18 ASTM E 2110-00, Standard Terminology for Exterior Insulation and Finish Systems (EIFS), ASTM International.

1.3.19 ASTM E 2273-03, Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies, ASTM International.

1.3.20 ASTM E 2568, Standard Specification for PB Exterior Insulation and Finish Systems, ASTM International. (See Table 1 for edition.)

1.3.21 NFPA 259, Test Method for Potential Heat of Building Materials, National Fire Protection Association. (See Table 1 for edition.)

1.3.22 NFPA 268, Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source, National Fire Protection Association. (See Table 1 for edition.)

1.3.23 NFPA 285, Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior, Nonload-bearing Wall Assemblies Containing Combustible Components Using the Intermediate-scale, Multistory Test Apparatus, National Fire Protection Association. (See Table 1 for edition.)

1.3.24 UL 1715, Fire Test of Interior Finish Material, Underwriters Laboratories Inc. (See Table 1 for edition.)

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1.3.25 UL 1040, Fire Test of Insulated Wall Construction, Underwriters Laboratories Inc. (See Table 1 for edition.)

1.3.26 U.S. DOC PS-1, Construction and Industrial Plywood, United States Department of Commerce. (See Table 1 for edition.)

1.3.27 U.S. DOC PS-2, Performance Standard for Wood-based Structural-use Panels, United States Department of Commerce. (See Table 1 for edition.)

1.3.28 ICC-ES Acceptance Criteria for Water-resistive Barriers (AC38).

1.3.29 ICC-ES Acceptance Criteria for Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing (AC212).

1.4 Definitions:

1.4.1 EIFS Clad Drainage Wall Assembly: EIFS are nonstructural, nonload-bearing, *exterior wall* cladding systems that consist of an insulation board attached either adhesively or mechanically, or both, to the substrate; an integrally reinforced base coat; and a textured protective finish coat. The assembly includes a water-resistive barrier conforming to IRC Section R703.9.2.1 or IBC Section 1408.4.1.1 or complying with AC38, or a water-resistive coating complying with AC212. The assembly also includes a drainage medium or other means of drainage; a fastening system; insulation board; a base coat; nonmetallic reinforcing fabric; and a finish coat. Additionally, the system may include primers, sealers, and accessories such as trim, corner beads, weep screeds, and stops.

The fastening system is the method used to attach the insulation board directly to the substrate or water-resistive coating. The fastening system may be an adhesive, a mechanical fastener or a combination thereof. For combination systems, either the mechanical or the adhesive portion itself shall be capable of resisting required loads when justification is other than results of full-scale structural performance tests, which are further described in Section 3.3.

1.4.2 Drainage Medium: Drainage medium is a means that allows incidental moisture to drain to the exterior of the EIFS wall cladding. To qualify the drainage medium, tests in accordance with ASTM E 2273 and Section 4.5 of this criteria are required

1.4.3 Applicant: The applicant is the party seeking an evaluation report on an EIFS clad drainage wall assembly.

1.4.4 Other Definitions: ASTM E 631, ASTM E 2110 and the IBC contain other definitions.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: Complete information concerning system components, material specifications, dimensions, and the manufacturing process. Material specifications shall comply with following requirements.

2.1.1.1 Adhesive Components:

2.1.1.1.1 Field-mix:

1. Cement: Type and description shall comply with ASTM C 150.

2. Sand: Shall be clean and free from deleterious amounts of loam, clay, silt, soluble salts and organic matter. Sampling and testing shall comply with ASTM C 897. Limits for grading sand shall be specified when added in the field.

3. Admixtures: Description and purpose are disclosed for each product.

4. Preparation: Mixing instructions are needed.

2.1.1.1.2 Factory-mix: A description of the factory-blended materials is needed.

2.1.1.2 Base Coat Components:

2.1.1.2.1 Field-mix:

1. Cement: Type and description shall comply with ASTM C 150.

2. Sand: Shall be clean and free from deleterious amounts of loam, clay, silt, soluble salts and organic matter. Sampling and testing shall comply with ASTM C 897. Limits for grading sand shall be specified when added in the field.

3. Admixtures: Description and purpose are needed for each product.

2.1.1.2.2 Factory-mix: A description of the factory-blended materials is needed.

2.1.1.3 Finish Coat: Specific description is needed, including any field-mixing instructions.

2.1.1.4 Nonmetallic Reinforcing Mesh: Description shall include such items as type, weight, thread count, strength, weave, and treatments for compatibility with coating, along with installation instructions.

2.1.1.5 Substrates: The EIFS clad drainage wall assembly shall be applied to a rigid, solid substrate such as concrete or concrete masonry. Application to other substrates, such as Exterior or Exposure 1 wood-based panel sheathing complying with US DOC PS-1 or PS-2, water-resistant core gypsum sheathing complying with ASTM C 1396, ASTM C 79 or C 1177, cementitious backer units complying with ANSI A118.9, or equivalent material shall require qualification testing for water penetration resistance as described in Section 4.4.

2.1.1.6 Foam Plastic Thermal Insulation Board: Description of foam plastic thermal insulation shall include type, density, flame spread index, smoke-developed index, conditioning requirements, dimensional tolerances, flexural strength, maximum water absorption, and other requirements necessary to show compliance with Section 2603 of the IBC, the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), and special requirements unique to the EIFS. When used on walls required to be of noncombustible construction, foam plastics shall satisfy the flame spread index and smoke-developed index requirements in Section 2603.5.4 of the IBC and be identified in accordance with Section 2603.5.6 of the IBC.

2.1.1.7 Other Thermal Insulation Boards: Other thermal insulation boards shall comply with applicable IBC reference standards or, if not available, a recognized national standard, with the concurrence of ICC-ES.

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2.1.1.8 Mechanical Fastening Systems: Mechanical fasteners shall be specifically described, including type, shank diameter, length, head diameter, corrosion-resistance treatment and material specifications.

2.1.1.9 Accessories: Expansion joints, weep screeds, corner reinforcement and similar items, when required by the applicant, shall be installed in accordance with the applicant's recommendations and as specified in the project design specifications (documents). Accessories shall be described as to type of material, dimensions, thickness and corrosion-resistant treatment.

2.1.1.10 Primers and Adhesion Intermediaries: Specific description is necessary, including type, use, specification and location.

2.1.1.11 Surface Sealers: Specific description is necessary, including type, use, specification and limitations.

2.1.1.12 Joint Sealants: Sealants used at control joints, intersections or terminations of the EIFS at dissimilar materials, wall/eave interfaces, penetrations and openings must be Type S or M, minimum Grade NS, minimum Class 25, and Use O, in compliance with ASTM C 920, and be compatible with the applicant's EIFS. Under the Use O classification, the sealant needs to be qualified for each of the materials to which the sealant will be applied, such as the EIFS material, copper piping, galvanized steel and vinyl window frames, by the adhesion and cohesion under cyclic movement test and adhesion-in-peel tests of Sections 8.8 and 8.9 of ASTM C 920. The details for sealant installation, including the width and thickness of the sealant, shall be designed by the registered design professional, designer, builder, or EIFS evaluation report applicant, in that order, to the satisfaction of the code official. The sealant declaration states that the sealant installation conforms to the EIFS clad drainage wall assembly evaluation report and the sealant manufacturer's installation methods and procedures.

2.1.2 Installation Instructions: Installation instructions bearing the date of publication shall include the information noted in Sections 2.1.2.1 through 2.1.2.7 of this criteria:

2.1.2.1 Illustrated Details: Details shall be available on the manufacturer's website or be of camera-ready quality, for inclusion in the evaluation report, and shall be consistent with required application instructions. The following are the illustrations to be supplied at a minimum:

1. Flashing and/or sealing around heads, sills and jambs of windows and doors, and at the top of exposed walls.
2. Closures and flashing at other terminations, such as eaves and sills, and at other dissimilar exterior wall coverings.
3. Typical conditions within the field of the wall covering, showing substrates, drainage media, and control joints.
4. Parapet at top and termination on backside.
5. Flashing and/or sealing at wall penetrations.
6. Installation over wood-based sheathing.

7. Other details deemed necessary for an evaluation report.

2.1.2.2 Information on any variation from recognized proportions or content of field-mixed components described in Section 2.1 of this criteria.

2.1.2.3 Curing instructions.

2.1.2.4 Limitations, such as angle of installation and installation in interior locations, shall be specified. Architectural treatments that can reduce resistance to water penetration are prohibited.

2.1.2.5 Exposure: For thermal insulation board, the applicant shall specify conditions and duration of exposure before covering.

2.1.2.6 Special Inspections: When a water-resistive barrier coating is a component of the assembly, special inspection shall be provided in accordance with IBC Section 1705.15 (Section 1704.14.1 of the 2009 IBC). Installation instructions shall include a description of the duties of the special inspector. Vertical joints of insulation boards shall be staggered from edges of wall openings.

2.1.2.7 Installation under the IRC: Under the IRC, EIFS shall be installed in accordance with IRC Section R703.9.

2.1.3 Packaging and Identification: Packaging and identification shall be in accordance with ASTM E 2568. Labels shall also include the ICC-ES evaluation report number (ICC-ES ESR-xxxx).

2.2 Testing Laboratories: Testing laboratories shall comply with the ICC-ES Acceptance Criteria for Test Reports (AC85), and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.3 Test Reports: Test reports shall comply with AC85.

2.4 Product Sampling: Products shall be sampled in accordance with Section 3.2 of AC85.

3.0 TEST AND PERFORMANCE REQUIREMENTS

3.1 Performance Requirements: Testing shall be in conformance with ASTM E 2568 and ASTM E 2273. Additional details are noted in Sections 4.1 through 4.4.

3.2 Joints: The need for and locations of expansion and control joints shall be determined and specified by the registered design professional; where a registered design professional is not involved, the designer, builder, or applicant shall be responsible. All expansion and control joint materials shall be corrosion resistant. If used, expansion and control joints shall be a part of test specimens for durability and structural tests.

When the EIFS clad drainage wall assembly is placed over platform-frame construction with dimensional lumber, control joints are required at each floor level.

3.3 Structural Considerations: An EIFS clad drainage wall assembly is a nonbearing system. Structural tests are required to determine allowable positive and negative wind loads that may be imposed on the EIFS clad drainage wall assembly. The test program shall incorporate the following:

3.3.1 EIFS clad drainage wall assembly shall represent minimum conditions of installation, including

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such items as material or sheathing thickness, density and connections. Section 4.3 provides additional requirements.

3.3.2 Maximum allowable deflection of structural wall components shall be specified and shall be limited to a maximum $1/180$ of span, except where more restrictive requirements prevail.

3.3.3 Lateral-resistance tests of mechanical connections (such as nails and screws) are required if connectors support heavy exterior wall coatings through foam plastic, or other nonstructural insulations, that are more than $1\frac{1}{2}$ inches (38 mm) thick. Where standard specifications are available on minimum structural qualities of the materials involved, calculations may be substituted for tests.

3.3.4 Negative load tests only are required to establish wind resistance of EIFS applied to concrete or masonry walls. The resistance of the concrete or masonry shall be established in accordance with applicable requirements in Chapters 19 and 21 of the IBC or Chapter 6 of the IRC.

3.4 Weather-resistive Considerations:

3.4.1 Flashing: Corrosion-resistant flashing shall be provided as part of the weather-resistant exterior wall envelope as set forth in IBC Section 1405.4, IRC Section R703.8. The flashing shall extend to the surface of the EIFS clad drainage wall assembly and be installed in such a manner to prevent water entry into the building interior, wall cavity, or wall framing structural components. Flashing installation shall be as determined and specified by the registered design professional; where a registered design professional is not involved, the designer, builder, or applicant shall be responsible. As a minimum, approved corrosion-resistant flashing shall be installed at the following locations:

Under the IBC:

1. At the perimeters (heads, jambs, and sills) of exterior door and window assemblies.
2. At penetrations and terminations of exterior wall assemblies.
3. At exterior wall intersections with roofs, chimneys, porches, decks, balconies, and built-in gutters, and at similar projections and locations where moisture could enter the wall.
4. On both sides and above the ends of copings, under sills and continuously above projecting trim require flashing with projecting flanges.

Under the IRC:

1. Exterior window and door openings.
2. At the intersection of chimneys or other masonry construction with frame walls, with projecting lips on both sides under copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

3.5 Plans, details and specifications, concerning proper installation of the EIFS clad drainage wall assembly, that are applicable to the specific building under consideration, shall be a part of documents submitted to the building official for approval.

3.6 EIFS clad drainage wall assemblies containing foam plastic thermal insulation board shall be separated from the interior of the building with a thermal barrier, in accordance with Section 2603.4 of the IBC, unless specific recognition is granted based on Section 2603.4.1 or 2603.9 of the IBC, Section R316.5 or R316.6 of the IRC, or AC12.

4.0 TESTING

4.1 General: All testing shall be done for each adhesive, lamina combination that is to be included in the evaluation report.

4.2 Fire Tests:

4.2.1 Optional Fire-resistance-rated Construction: This optional test is for recognition for fire-resistance-rated construction. Unless a report of successful testing of an assembly in accordance with ASTM E 119 is submitted, EIFS clad drainage wall assemblies are limited to nonfire-resistance-rated construction. In this regard, the application of the EIFS clad drainage wall assemblies to a recognized noncombustible fire-resistance-rated assembly negates the assembly's fire-resistance rating, unless: (1) the assembly is tested in accordance with the specified standard; or (2) an analysis of the effect of installation of the EIFS clad drainage wall assembly on the fire-resistance of the fire-resistance-rated assembly is submitted. The data comprising the analysis should include reports of fire-resistance tests on wall assemblies with and without the EIFS clad drainage wall assembly materials installed, and an analysis of the effect of the EIFS on fire resistance. Recognition of EIFS in fire-resistance-rated assemblies shall consider type of assembly, whether bearing or nonbearing, and thermal insulation board thickness.

4.2.2 Optional—Exterior Walls of Type I, II, III or IV Construction: Requirements for exterior walls of Type I, II, III or IV construction are addressed in Section 2603.5 of the IBC. Without compliance, EIFS clad drainage wall assemblies are limited to Type V construction. Test procedures include:

1. **Flammability Characteristics:** This test shall be conducted in accordance with NFPA 285, as set forth in Section 2603.5.5 of the IBC. Tests in accordance with UBC Standard 26-4 will be accepted provided the tests were conducted prior to November 1, 2009 (the effective date of this criteria.)

2. **Optional Fire-resistance-rated Construction:** This test applies where the wall requires a fire-resistance-rating as required in Section 2603.5.1 of the IBC. The test is conducted in accordance with ASTM E 119; additional considerations are in Section 4.2.1.

3. **Potential Heat:** This test shall be conducted in accordance with NFPA 259, as set forth in Section 2603.5.3 of the IBC.

4. **Ignition:** This test shall be conducted in accordance with NFPA 268, as set forth in Section

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2603.5.7 of the IBC. Additional considerations are in Section 4.2.4.

5. Flame Spread and Smoke-developed Indices: This test shall be conducted in accordance with ASTM E 84, as set forth in Section 2603.5.4 of the IBC. Additional considerations are in Section 4.2.3.

4.2.3 Optional Surface-burning Characteristics (Interior Use): This optional test is for recognition of EIFS as an interior finish provided thermal-barrier requirements for foam plastic insulation are resolved in accordance with Section 2603.4 of the IBC, and Section R316.4 of the IRC. Without successful testing the EIFS is limited to exterior surfaces only. To qualify the EIFS for interior application, the EIFS shall be tested with the face of the assembly exposed to the fire source during testing in accordance with ASTM E 84 and either ANSI FM 4880, UL 1040, or UL 1715. For recognition on noncombustible construction, the system components shall be tested separately in accordance with Section 2603.5.4 of the IBC.

4.3 Structural Performance Tests:

4.3.1 Testing shall be in accordance with ASTM E 330, Procedure B. At least three positive and three negative load tests shall be conducted on three specimens. The specimens shall be representative of end use configuration. As a minimum, the specimens shall include sheathing, water-resistive barrier coating or other water-resistive barrier, drainage medium, adhesive or mechanical fasteners, thermal insulation board, base coat and reinforcing mesh. Test-specimen fabrication shall be verified by the testing laboratory in accordance with Section 3.3 of AC85. Specimens shall be a minimum of 4 feet by 8 feet (1219 mm by 2438 mm) in size, and shall include vertical-control joints, scored joints and any other architectural features located midway between the stud framing, if these features are to be recognized in the evaluation report. Application of load to ultimate shall consist of at least six increments, with a 10-second load duration for each increment.

4.3.2 Specimens shall be mounted in accordance with ASTM E 330. Framing supporting the panel shall be located at the maximum spacing for which recognition is sought. In most instances, this will result in triple 16-inch (406 mm) spans or double 24-inch (610 mm) spans. ICC-ES staff shall be notified by the applicant in the event that spans vary from those required herein. For mechanically fastened systems, connections to framing members shall be based on minimum conditions (since test specimens establish a basis of acceptance), including the base steel thickness (where steel framing is involved).

4.3.3 In addition to test report requirements specified in Section 2.3 of this criteria, load-deflection readings at panel midpoint shall be reported.

4.3.4 Conditions of Acceptance: Allowable loading will be based on a minimum factor of safety of 3.0 applied to the average ultimate load, if all of the following are satisfied:

4.3.4.1 No single test result varies by more than 15 percent from the average of three tests. Variations exceeding this limit require larger safety factors.

4.3.4.2 Allowable load does not exceed established values for mechanical connectors such as nails, screws and staples.

4.3.5 To qualify the adequacy of fasteners in concrete or masonry substrates, a tension-load test program, consisting of fastener withdrawal from the applicable wall(s) of the building(s) at the location in question, shall be implemented. The testing shall be conducted by an approved testing laboratory.

The average withdrawal strength, in pounds, shall be six times the design wind pressure for the location in question.

A minimum of five tests per program is required, with results varying by no more than 15 percent from the average. If a minimum of 10 tests per program is conducted, variation from the average may be disregarded.

For masonry substrates, a minimum of 40 percent of the tests shall be run in masonry joints.

Prior to installation of EIFS fasteners, a certificate of compliance, concerning test results relating to load requirements in the evaluation report, shall be submitted to and approved by the code official.

4.3.6 Results of tests conducted over gypsum sheathing as specified in Sections 4.3.1 through 4.3.4 can be extended to EIFS clad drainage wall assemblies adhered to wood-based sheathing, cementitious backer units and glass-mat gypsum board, under the following conditions:

4.3.6.1 The EIFS clad drainage wall assembly is adhered to all sheathing in question (e.g., plywood, particleboard, waferboard and oriented strand board, gypsum panels, and cementitious backer units).

4.3.6.2 Tensile bond tests are conducted in accordance with ASTM C 297.

4.3.6.3 Tensile bond test results average a minimum of 15 psi (103 kPa).

4.4 Water Penetration Tests:

4.4.1 For each substrate for which recognition is sought, including the water-resistive barrier coating, three samples are prepared by applying the EIFS to the substrate. The substrate shall be attached to the supporting framework as required by the substrate manufacturer. The test samples shall be a minimum of 4 feet by 8 feet (1219 mm by 2438 mm) in size, and shall include a minimum of two vertical joints and one horizontal joint within the sheathing substrate and insulation board. Each sample shall be tested in accordance with ASTM E 331. A 2.86 psf (136.9 Pa) air-pressure differential shall be maintained, across the test specimens, for 15 minutes.

4.4.2 Conditions of Acceptance: For specimens with insulation adhered to the substrate, no water penetration is permitted on the unexposed substrate face (i.e., the face of the test specimen that is not exposed to the test conditions). For specimens with insulation mechanically fastened to the substrate, no water penetration is permitted on the plane of the exterior-facing side of the substrate. The substrate shall be removed after the test to make this determination.

4.5 Drainage Test:

4.5.1 Testing must be performed in accordance with ASTM E 2273. Three samples are required.

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4.5.2 Conditions of Acceptance: The assemblies shall be capable of draining water, and the assemblies shall have an average minimum drainage efficiency of 90 percent.

5.0 QUALITY CONTROL

5.1 Thermal Insulation Board: All foam plastic thermal insulation boards shall be listed and labeled as set forth in Section 2603.2 of the IBC. Compliance of foam plastic is based on a current applicable evaluation report, on the foam plastic, issued by ICC-ES; if no such report exists, foam plastic shall comply with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12). The quality control procedures shall also include special requirements of the EIFS, such as conditioning, dimensional tolerances, and strength. Section 2.1.1.6 has additional details.

5.2 EIFS Clad Drainage Wall Assembly: Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted. At a minimum, viscosity, pH level and specific gravity tests shall be conducted on all liquid components. Inspections by an accredited agency are optional.

5.3 Off-site fabrication of EIFS clad drainage wall assembly shall be done in the shop of an approved fabricator under special inspection in conformance with Section 1704.2.5.2 of the IBC (Section 1704.2.2 of the 2009 IBC).

5.4 Field Inspections and Reporting: Installation shall be by a applicator recognized by the applicant as being trained to perform such installations. A list of the names and addresses of recognized contractors shall be maintained by the applicant, and shall be available to the building official or ICC-ES upon request.



6.0 EVALUATION REPORT RECOGNITION

The evaluation report shall include the following information:

1. Product description, installation instructions, packaging and identification, based on requirements in Section 2.1.
2. Permitted support systems, substrates, water-resistive barriers, drainage medium and EIFS components, based on requirements in Section 4.0 of this criteria.
3. Allowable wind loads based on requirements in Section 3.3 of this criteria.
4. Fire-related characteristics based on tests in Section 4.2 of this criteria.
5. A statement indicating the system complies with IBC Section 1408 and IRC Section R703.9, and IBC Chapters 7, 14, 16, 17 and 26 and IRC Sections R314 and R703, as applicable.

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TABLE 1—REFERENCED STANDARDS

STANDARD	EDITION OF STANDARD			
	2012 IBC	2009 IBC	2012 IRC	2009 IRC
ASTM C 79	2009	2004a	2009	2004a
ASTM C 920	2008	2005	2008	2005
ASTM C 1063	2008	2006	2008	2006
ASTM C 1177	2008	2006	2008	2006
ASTM C 1396	2006a	2006a	2006a	2006a
ASTM E 84	2009	2007	2009	2007
ASTM E 331	2000 (2009)	2000	2000 (2009)	2000
ASTM E 2568	2009e1	2007	2009e1	2007
NFPA 259	2008	2004	2008	2003
NFPA 268	2012	2007	2012	2007
NFPA 285	2011	2006	2011	2006
UL 1715	1997, with revisions through April 2008	1997, with revisions through March 2004	1997, with revisions through March 2004	1997, with revisions through March 2004
UL 1040	1996, with revisions through September 2007	1996, with revisions through June 2001	1996, with revisions through June 2001	1998, with revisions through June 2001
U.S. DOC PS-1	2009	2007	2009	2007
U.S. DOC PS-2	2010	2004	2010	2004