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April 1, 2010

**To: PARTIES INTERESTED IN CEMENTITIOUS EXTERIOR WALL COATINGS**

**Subject: Proposed Revisions to the Acceptance Criteria for Cementitious Exterior Wall Coatings, Subject AC11-0210-R1 (BB/BG)**

Dear Madam or Sir:

In February 2010, proposed revisions to the subject acceptance criteria were posted on the ICC-ES web site for public comment, under the alternative criteria process. The revised criteria was concurrently balloted to the ICC-ES Evaluation Committee, which approved the revisions with an effective date of March 1, 2010, while adding recognition under the 2009 I-Codes.

A copy of the revised acceptance criteria is enclosed. Evaluation reports issued on or after the effective date noted above, and falling within the scope of this criteria, will be required to comply with the enclosed edition of the criteria. Evaluation reports issued prior to the effective date may be in compliance either with the enclosed criteria or with the previous edition. Evaluation reports based on a superseded version of an acceptance criteria must be brought into compliance with the most recent edition at the time the reports are reissued. Therefore, affected report holders should submit data verifying compliance at the time they apply for re-examination.

If you have any questions, please contact Bart W. Berneche, PE, Staff Engineer, at (800) 423-6587, extension 5593. You may also reach us by e-mail at [es@icc-es.org](mailto:es@icc-es.org).

Yours very truly,

A handwritten signature in black ink that reads 'Gary G. Nichols'.

Gary G. Nichols, P.E., SECB  
Vice President

GGN/raf

Enclosure

cc: Evaluation Committee

# ACCEPTANCE CRITERIA FOR CEMENTITIOUS EXTERIOR WALL COATINGS

## AC11

Approved March 2010

Effective March 1, 2010

Previously approved June 2007, February 2006, October 2003, September 2002, January 2001, September 2000, January 1997, January 1993

## PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard 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.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (|) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (→) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid 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. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria 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 an evaluation report, if the product, material, or type 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 unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

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

# ACCEPTANCE CRITERIA FOR CEMENTITIOUS EXTERIOR WALL COATINGS (AC11)

## 1.0 INTRODUCTION

**1.1 Purpose:** The purpose of this criteria is to establish requirements for cementitious exterior wall coatings with laths to be recognized under the 2009 and 2006 *International Building Code*<sup>®</sup> (IBC), the 2009 and 2006 *International Residential Code*<sup>®</sup> (IRC) and the 1997 *Uniform Building Code*<sup>™</sup> (UBC). Where this criteria references code sections of each of the various codes, the applicable section is the section of the code under which the system is being evaluated, unless noted otherwise. Bases of recognition are IBC Section 104.11, IRC Section 104.11 and UBC Section 104.2.8.

The reason for the development of this criteria is to provide a guideline for the evaluation of cementitious exterior wall coatings, since the prescriptive requirements of Chapter 25 of the IBC and UBC and Chapter 7 of the IRC do not include requirements for evaluation of cementitious exterior wall coatings.

**1.2 Scope:** This acceptance criteria applies to exterior wall coatings comprised of various combinations of sand, cement, lime, fibers, admixtures, resins and water, and applied over wire fabric or metal laths to insulation boards, fiberboards and other similar substrates. Plaster that is prepared and applied in accordance with IBC Chapter 25, IRC Section R703.6 or UBC Chapter 25 is outside the scope of this criteria.

### 1.3 Referenced Documents:

**1.3.1** 2009 *International Building Code* (2009 IBC), International Code Council.

**1.3.2** 2009 *International Residential Code* (2009 IRC), International Code Council

**1.3.3** 2006 *International Building Code* (2006 IBC), International Code Council.

**1.3.4** 2006 *International Residential Code* (2006 IRC), International Code Council.

**1.3.5** 1997 *Uniform Building Code* (UBC).

**1.3.6** ASTM C 79-04a, Standard Specification for Treated Core and Nontreated Core Gypsum Sheathing Board, ASTM International.

**1.3.7** ASTM C 109-02, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens), ASTM International.

**1.3.8** ASTM C 144-93, Standard Specification for Aggregate for Masonry Mortar, ASTM International.

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

**1.3.10** ASTM C 206-03, Specification for Finishing Hydrated Lime, ASTM International.

**1.3.11** ASTM C 595-07, Specification for Blended Hydraulic Cements, ASTM International.

**1.3.12** ASTM C 834-00<sup>e1</sup>, Standard Specification for Latex Sealants, ASTM International.

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

**1.3.14** ASTM C 920-02, Standard Specification for Elastomeric Joint Sealants, ASTM International.

**1.3.15** ASTM C 926-98a (2005), Standard Specification for Application of Portland Cement-Based Plaster, ASTM International.

**1.3.16** ASTM C 1157-00, Standard Performance Specification for Hydraulic Cement, ASTM International.

**1.3.17** ASTM C 1328-05, Specification for Plastic (Stucco Cement), ASTM International.

**1.3.18** ASTM C 1396-06a, Standard Specifications for Gypsum Wallboard, ASTM International.

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

**1.3.20** ASTM G153-00a<sup>1</sup>, Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials, ASTM International.

**1.3.21** ASTM G 155-05a, Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials, ASTM International.

**1.3.22** UL 263-03, UL Standard for Fire Tests of Building Construction and Materials, 13<sup>th</sup> edition, Underwriters Laboratories Inc.

## 2.0 BASIC INFORMATION

**2.1 Application Instructions:** Application instructions bearing the date of publication shall be submitted. The instructions shall include the following:

**2.1.1** Illustrated details of the following, as a minimum:

**2.1.1.1** Flashing and/or caulking around heads, sills and jambs of windows and doors and the top of exposed walls.

**2.1.1.2** Weep screeds at or below the foundation plate line of exterior stud walls.

**2.1.1.3** Closures and flashing at other terminations, such as eaves, sills and other exterior wall coverings.

**2.1.1.4** Typical condition within the field of the wall covering, showing substrates and manner of installation for each.

**2.1.1.5** Parapets at top and termination of coating on back side.

**2.1.1.6** Flashing and/or caulking at wall penetrations.

**2.1.1.7** Other details deemed necessary for the particular evaluation report.

**2.1.2** Information on any variation in the amount of water added to the premixed product. See Section 2.2 of this criteria.

**2.1.3** Curing instructions.

**2.2 Packaging and Identification:** Labels shall include the following information:

• Name and address of report holder, and ICC-ES evaluation report number.

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- Identification of components.
- Weight of packaged mix.
- Storage instructions.
- Maximum amounts of water and sand, or water and cement, that may be added, and conditions that shall be considered in determining actual amounts added.
- Batching and mixing instructions based on Exceptions under Section 3.1.14 of this criteria, as applicable.
- Curing instructions.

**2.3 Testing Laboratories:** Testing laboratories shall comply with Section 2.0 of the ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

**2.4 Test Reports:** Test reports shall comply with AC85, and shall include the following:

- Preparation of test specimens and complete information, as applicable, on the exterior coating, such as formulation, density, mixing, application and curing.
- Description of the test procedures, with details.
- Test observations, including description of panels after completion of tests.
- Statement on passing or failing.
- Photographic record of tests.

**2.5 Product Sampling:** Sampling of products for tests under this criteria shall comply with Sections 3.2, 3.3 and 3.4 of AC85.

**3.0 TEST AND PERFORMANCE REQUIREMENTS**

**3.1 Material Specifications:**

**3.1.1 Cement:** Type and description shall be in accordance with ASTM C 150 for portland cement, ASTM C 595 for blended hydraulic cement, ASTM C 1157 for hydraulic cement or ASTM C 1328 for Type M plastic cement (UBC Standard 25-1). The manufacturer shall specify the type, as applicable.

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

U.S. STANDARD SIEVE	WEIGHT PERCENT OF AGGREGATE RETAINED ± 2 PERCENT	
	Min.	Max.
No. 4	—	0
No. 8	0	10
No. 16	10	40
No. 30	30	65
No. 50	70	90
No. 100	95	100

**3.1.3 Fibers:** Description, such as type of material and fiber length, and purpose, shall be submitted.

**3.1.4 Admixtures:** Description, purpose of each product and total proportion of admixtures to product mixture shall be submitted.

**3.1.5 Lime:** Lime shall comply with ASTM C 206.

**3.1.6 Gypsum Sheathing:** Water-resistant core gypsum sheathing shall comply with ASTM C 79 or ASTM C 1396.

**3.1.7 Foam Plastic Insulation:** Foam plastic insulation shall comply with IBC Section 2603, IRC Section R316 (IRC Section R314 for buildings under the 2006 IRC) or UBC Section 2602, as applicable, and the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12). All foam plastic boards shall be nominal 1.5 pcf (24 kg/m<sup>3</sup>) density, as a minimum, except where the coating system has been specifically recognized with foam plastic boards of lesser density. Also, see Section 5.2 of this criteria. Horizontal joints of foam plastic boards shall be tongue-and-groove with a minimum profile and thickness as shown in Figure 1.

**Exception 1:** Foam plastic insulation with a density of less than 1.5 pcf (24 kg/m<sup>3</sup>) with a polymeric facing material shall be permitted with square edges and in thicknesses of less than 1 inch (25.4 mm) for installation over open framing under the following conditions:

- The foam plastic insulation board with facers is installed with all butt joints at horizontal and vertical edges supported by framing or blocking.
- Comparison tests are conducted using ASTM C 203 to demonstrate flexural strength of the foam plastic insulation with facers is greater than or equal to flexural strength of 1-inch-thick (25.4 mm) Type II expanded polystyrene foam board; or full-scale comparative application tests are conducted demonstrating lesser or equal deflections during application of cementitious coating system.

• Transverse load tests are conducted in accordance with Section 4.3 of this criteria, unless the foam board is removed before testing.

**Exception 2:** Extruded foam plastic insulation having a thickness of 3/4 inch (19.1 mm) and tongue-and-groove edges shall be permitted over open framing under the following conditions:

- The minimum cementitious coating thickness is 5/8 inch (15.9 mm).
- The tongue-and-groove edges are consistent with Figure 1 of this criteria except the width of the shoulder is 3/16 inch.
- Transverse load tests with the 3/4-inch (19.1 mm) boards are not required provided the cementitious exterior wall coating system has been tested without a solid substrate and the allowable transverse loads are based on the tests conducted without a solid substrate.

• The foam plastic insulation can be used as one layer of the water-resistive barrier when two layers of Grade D paper are required, provided the second layer is a Grade D building paper having a 60-minute water-resistance rating (see Section 3.2.7).

• The extruded foam plastic insulation is specifically identified in the evaluation report on the cementitious exterior wall coating.

**Exception 3:** Vertical joints in 1-inch-thick (25.4 mm) extruded foam plastic insulation are not required to be backed by framing under the following conditions:

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- The extruded foam plastic insulation in unbacked vertical joints must have tongue-and-groove edges as described in Figure 1 of this criteria.

- Transverse load tests are conducted in accordance with Section 4.3 of this criteria, unless the coating system has been tested with the foam plastic insulation board removed before testing and the allowable transverse load is based on testing without the foam plastic insulation board.

- The evaluation report on the cementitious exterior wall coating specifically identifies the foam plastic insulation.

- Full-scale comparative application tests are conducted demonstrating the thickness of coating at unbacked vertical joints in test specimens incorporating the proprietary foam plastic insulation is less than or equal to the thickness of coating at unbacked horizontal joints in test specimens incorporating 1-inch-thick, Type II, expanded polystyrene foam plastic boards.

**3.1.8 Other Insulation Boards:** Other insulation boards shall comply with a standard referenced by the IBC, a standard referenced by the IRC, an applicable UBC standard, or a recognized national standard.

**3.1.9 Fasteners:** Fasteners shall be corrosion-resistant, and fastener descriptions shall be specified.

**3.1.10 Accessories:** All accessory items, such as weep screeds, corner reinforcement, trim and similar items, shall be corrosion-resistant. Descriptions shall be specified. Weep screeds and their installation shall comply with IBC Section 2512.1.2, IRC Section R703.6.2.1 or UBC Section 2506.5, as applicable.

**3.1.11 Caulking:** Caulking shall comply with ASTM C 834 or ASTM C 920. The manufacturer shall specify the type, grade, class and use, as applicable.

**3.1.12 Lath:** A description of the lath, including type, size and weight, shall be submitted. The lath shall be corrosion-resistant and shall be self-furring or furred, unless substrates are scoured or otherwise treated to provide equivalent conditions for keying of the exterior coating. Lath shall comply with the ICC-ES Acceptance Criteria for Metal Plaster Bases (Lath) (AC191) and shall be recognized in a current ICC-ES evaluation report. Alternative laths may be permitted to be used with the exterior wall coating system when the alternative lath has been qualified in accordance with Section 3.2.12 of this criteria.

The furring distance of self-furring lath shall comply with IBC Section 2510.3, IRC Section R703.6 or UBC Section 2506.5, as applicable, or with the following requirements:

- Maximum total coating thickness is limited to  $\frac{1}{2}$  inch (12.7 mm).

- Furring crimps shall be provided at maximum 6-inch (152 mm) intervals each way. The crimps shall fur the body of the lath a minimum of  $\frac{1}{8}$  inch (3.2 mm) from the substrate after installation.

**Exception:** Unfurred lath is permitted over unbacked polystyrene boards.

**3.1.13 Weather-resistive Barriers:** Weather-resistive barriers shall comply with IBC Sections 1404.2 and 2510.6, IRC Section R703.2 or UBC Sections 1402.1

and 2506.4, as applicable. Also, see Sections 3.2.7 and 3.2.10 of this criteria.

**3.1.14 Batching:** All components of the exterior coating shall be combined in the plant, except for sand and water, or cement and water.

### Exceptions:

1. In lieu of plant batching of components, special inspection in the field will be permitted. See Section 3.2.11 of this criteria.

2. When approved by the building official, continuous field inspections of all batching and mixing operations, by an authorized inspector trained and approved by the evaluation report holder, may be used in lieu of plant batching of components. The authorized inspector shall be independent of the plastering contractor. A declaration, such as that shown in Figure 3, shall be completed and signed in duplicate for presentation, along with the plastering contractor installation card, to the building owner and the building official.

3. The materials may be blended at a batch plant and delivered in bulk mixers when specifically recognized in the evaluation report.

## 3.2 Exterior Wall Construction:

**3.2.1 Noncombustible Wall:** Wall components shall qualify as Type I, II, III or IV construction under IBC Section 703.4, IRC Section R202 or noncombustible construction under UBC Section 215, as applicable.

Exterior wall coating systems utilizing foam plastic insulation recognized under the IBC or UBC are permitted for application to walls required to be of noncombustible construction, based on compliance with IBC Section 2603.5 or UBC Section 2602.5.2, respectively.

**3.2.2 Combustible Wall:** Combustible walls may be of any materials permitted by the applicable code.

**3.2.3 Fire-resistive Wall:** Testing in conformance with ASTM E 119 (UBC Standard 7-1) or UL 263 is required.

### 3.2.4 Durability:

**3.2.4.1** Coatings or coverings shall be subjected to weathering tests. See Section 4.1 of this criteria.

**3.2.4.2** Freeze-thaw tests are necessary. See Section 4.2 of this criteria. In lieu of testing, three existing installations that are at least five years old, and which have been subjected to temperatures below -20°F (-29°C) at least ten days per year, with a mean daily temperature on those days not exceeding 30°F (-1°C), can be considered under the following conditions:

**3.2.4.2.1** The inspection and report are done by a qualified, independent inspection agency that is accredited by the International Accreditation Service, Inc.

**3.2.4.2.2** The inspection agency is able to determine that the product and installation are the same as that represented in data submitted. This may require that core samples be taken.

**3.2.4.2.3** The report of inspection details the condition of the wall covering and whether, in the agency's opinion, the damage, if any, from freeze-thaw will not accelerate the rate of degradation.

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**3.2.4.2.4** The inspection report shall include documentation verifying the date of installation, dates of repairs (if any), and other information needed to positively identify the product inspected.

**3.2.5 Expansion and Control Joints:** Joints shall be installed as specified by the architect, designer, builder or exterior coating manufacturer, in that order. In the absence of criteria, conventional three-coat plastering details shall be used.

**3.2.6 Exposure:** Corner reinforcement and other appropriate trim are necessary for coatings utilizing metal lath. Highly corrosive exposures, such as coastal areas, require special consideration of materials used.

**3.2.7 Consideration for Detrimental Relative Movement:** Direct application of the exterior coating to hard substrates, in framed construction such as fiberboard, plywood and gypsum sheathing, without an intervening material to control detrimental relative movements, is prohibited. With an intervening material, it must be shown that sufficient protective measures have been taken to control relative movements of the system. For recognition under the IBC, IRC and UBC, two layers of Grade D building paper complying with UBC Standard 14-1 are required over wood-based sheathing. Direct application of the exterior coating to concrete or masonry is permitted when this is done in accordance with ASTM C 926 (IBC), IRC Section R703.6, or applicable portions of UBC Section 2508.

An alternative to two layers of Grade D building paper is as follows: One layer of Grade D building paper with a 60-minute water-resistance rating, plus one layer of EPS or XEPS. The EPS or XEPS shall have horizontal tongue-and-groove edges meeting the requirements noted in Figure 1.

**3.2.8 Lateral-resistance:** Tests of mechanical connections (such as nails and screws) are required if the connectors provide support for exterior wall coatings and extend more than  $1\frac{1}{2}$  inches (38.1 mm) through nonstructural material, such as foam plastic insulation.

**3.2.9 Structural Considerations:** All applications require transverse load tests to justify adequacy in resisting positive and negative wind pressures.

**3.2.9.1** Testing for negative wind pressures shall be accomplished in a manner that determines acceptability of the exterior wall coatings.

**3.2.9.2** Transverse load tests on the exterior wall system shall be based on "minimum conditions" such as thickness, material specifications and connections; and maximum conditions such as loading and span. See Section 4.3 of this criteria.

**3.2.9.3** Maximum allowable deflection of structural wall components shall be specified and shall be limited to a maximum  $\frac{1}{240}$  of span unless justification for an increase in allowable deflection is submitted and approved by ICC-ES. The maximum allowable deflection with justification shall be limited to  $\frac{1}{180}$  of span.

**3.2.10 Weather-resistive Considerations:** A water-resistive barrier complying with Sections 3.1.13 and 3.2.7 of this criteria is required under the exterior wall coating, except where coating system has been specifically recognized without barrier. The water-resistive barrier shall not be installed over the foam insulation board.

Details shall be submitted of a drainage system based on drainage performance testing. The applicant must submit a testing proposal to ICC-ES prior to testing. Precedent for a testing procedure can be found in the ICC-ES Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (AC235), Section 4.5.

In addition to a weather-resistive barrier complying with Section 3.1.13 of this criteria, the coating and lath may be applied over a water-resistive coating, complying with the ICC-ES Acceptance Criteria for Trowel-, Spray- or Roller-applied Water-Resistive Coatings Used as Weather-Resistive Barriers Over Exterior Cementitious Wall Coverings (AC209), applied over existing cementitious coatings.

**3.2.11 Special Inspection:** In lieu of limited field-mixing of components as set forth in Section 3.1.14 of this criteria, a special inspector complying with IBC Section 1704.1 or UBC Section 1701.2, as applicable, shall be used. The special inspector's responsibilities under IBC Section 1704.1.2 (for recognition under the IBC or IRC) or UBC Section 1701.3 include the verification of proper materials and application procedures in accordance with approved plans and specifications, appropriate evaluation reports, and the applicable code. Other, specific responsibilities of the special inspector include the verification of proper installation and application of all facets of the exterior coating system, including, but not limited to, the weather-resistive barrier or water-resistive coating, substrate, trim, flashing, batching, mixing and application of exterior coating and caulking.

### 3.2.12 Alternative Wire Lath:

**3.2.12.1** An alternative wire lath may be used with the exterior wall coating system, when comparative tests of systems with the alternative lath and the original, qualifying lath (lath used in qualifying transverse load tests under Section 4.3 of this criteria) are conducted in accordance with this section (Section 3.2.12). The purpose of this testing is to permit a third party to demonstrate that use of the alternative wire lath does not reduce the performance of a specific coating system. The results of transverse load tests conducted on assemblies incorporating both wire lath types tested under Section 3.2.12 of this criteria are compared.

**3.2.12.2** The transverse load test assemblies shall be constructed and tested in accordance with Section 4.3 of this criteria, with a minimum of three assemblies tested for positive loads and three assemblies tested for negative loads for the original, qualifying lath and for each alternative lath type. The assemblies for each lath type tested shall be identical except for the lath and shall have the sheathing substrate removed. Framing, fasteners, fastener type and fastener spacing shall be such that failure of the test specimens is in the coating or by pulling of the fasteners through the wire lath. The coating material to be used in the tests shall be determined from results of compression and flexural testing conducted on coating materials sampled from each coating manufacturer to be recognized. Transverse load tests shall be conducted on the coating materials exhibiting the lowest test values.

**3.2.12.3** The average ultimate transverse load for the assemblies incorporating the alternative wire lath shall be equal to, or greater than, the average ultimate transverse load for the assemblies incorporating the original, qualifying wire lath. The maximum wind load

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resistance that will be recognized for systems using the alternative lath shall be the wind load recognized for each coating system incorporating the original, qualifying wire lath.

### 4.0 TEST METHODS

#### 4.1 Accelerated Weathering Test (Weatherometer):

**4.1.1 Sample:** Ten representative samples of the product shall be used, of which five shall be held as controls. The samples shall be prepared as for the freeze-thaw test (Section 4.2), except that the size shall be as necessary to fit the weatherometer chamber, with the prepared joint running across the sample.

**4.1.2 Apparatus:** Tests shall be in accordance with ASTM G 153. The operating schedule shall be Cycle 1 set forth in Table X1.1 of ASTM G 153.

**4.1.3 Alternate Apparatus:** Tests shall be in accordance with ASTM G 155. The operating schedule shall be either Cycle 1, 5, or 9 as set forth in Table X3.1 of ASTM G 155.

**4.1.4 Procedure:** The test shall be run for a period of 2,000 hours. Specimen condition, examined under 5 $\times$  magnification, may be reported at the end of 500, 1,000, and 1,500 hours of exposure, and is required after 2,000 hours.

**4.1.5 Conditions of Acceptance:** Surface changes do not result in cracking, checking, crazing, erosion, or chalking.

#### 4.2 Freeze-thaw Tests:

**4.2.1** Five 6-inch-square (152 mm) samples are prepared, with the exterior coating applied without lath to the normal substrate on the front face and edges. The back of the sample shall be sealed with a material that need not be the coating. Specimens shall contain  $\frac{1}{8}$ -inch-wide (3.2 mm) joints in the coating representative of those used in construction.

**4.2.2** Samples are subjected to ten freeze-thaw cycles. Each cycle consists of air drying at a temperature of 120°F (49°C) for a minimum of eight hours, total immersion in water at 70°F to 80°F (21°C to 27°C) for eight hours and then exposure to a temperature of -20°F (-29°C) for 16 hours.

**4.2.3** Conditions of acceptance are that there shall be no cracking, checking or crazing of any surface that could promote delamination or moisture intrusion. This shall be based on examination of specimens under 5 $\times$  magnification.

**4.2.4** Where freeze-thaw tests are not submitted, recognition will be limited to areas where the average rainfall does not exceed 20 inches (508 mm) annually and the average daily low temperature exceeds 30°F (-1°C) in any month.

#### 4.3 Transverse Load Test:

**4.3.1 Procedure:** At least six specimens with the minimum thickness of coating, insulation board and sheathing shall be prepared in accordance with the manufacturer's recommended installation instructions. Specimen preparation shall be verified by the testing laboratory or its representative. Specimens shall be a minimum of 4 feet (1220 mm) square. Three 2-inch (50.8 mm) cubes of the coating application shall be prepared to

determine ultimate compressive strength at 28 days, following procedures set forth in ASTM C 109.

Specimens may be mounted horizontally or vertically to facilitate application of loads. Studs supporting the panel shall be located at the maximum spacing for which recognition is desired. In most instances, this will result in triple 16-inch (406 mm) spans or double 24-inch (610 mm) spans. The ICC-ES staff shall be contacted in the event that spans vary from this. Connections to framing members shall be based on minimum conditions, including the stud gage, since the test samples establish the basis of acceptance. Care shall be taken to avoid connections to members that are parallel to the span where the height-to-width ratio of the wall specimen is less than 2:1.

Positive and negative loadings on the cementitious face of the test panel each require three tests. Load application after 30 psf (1436 Pa) (positive or negative) shall be in increments not exceeding 15 psf (718 Pa), and shall be maintained for a minimum five-minute duration before proceeding to the next increment. Tests shall be completed within 45 days of specimen construction.

In addition to data specified in Section 2.4 of this criteria, the following shall be reported:

- Load-deflection readings.
- Compressive strength of cube specimens at

28 days.

#### 4.3.2 Conditions of Acceptance:

**4.3.2.1** Allowable loading shall be based on a factor of safety of 3 applied to the ultimate load, if both of the following are satisfied:

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

**4.3.2.1.2** Allowable load does not exceed established values for mechanical connectors such as nails, screws and staples. For fasteners placed in wood, calculations shall be based on a specific gravity of 0.42.

**4.3.2.2** Factors of safety shall be based on unique conditions of installation and use, or the type of material used.

**4.3.2.3** Minimum compressive strength of the coating material shall be established by test results on 2-inch (50.8 mm) cubes.

## 5.0 QUALITY CONTROL

### 5.1 Coatings:

**5.1.1** Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted.

**5.1.2** Third-party follow-up inspections are not required under this acceptance criteria for the exterior wall coating.

**5.2 Foam Plastic Insulation:** The boards shall be listed and labeled as set forth in IBC Section 2603.2 (for recognition under the IBC or IRC) or UBC Section 2602.2, as applicable. Compliance shall be based on a current evaluation report issued to the board manufacturer by ICC-ES.

**ACCEPTANCE CRITERIA FOR CEMENTITIOUS EXTERIOR WALL COATINGS (AC11)**

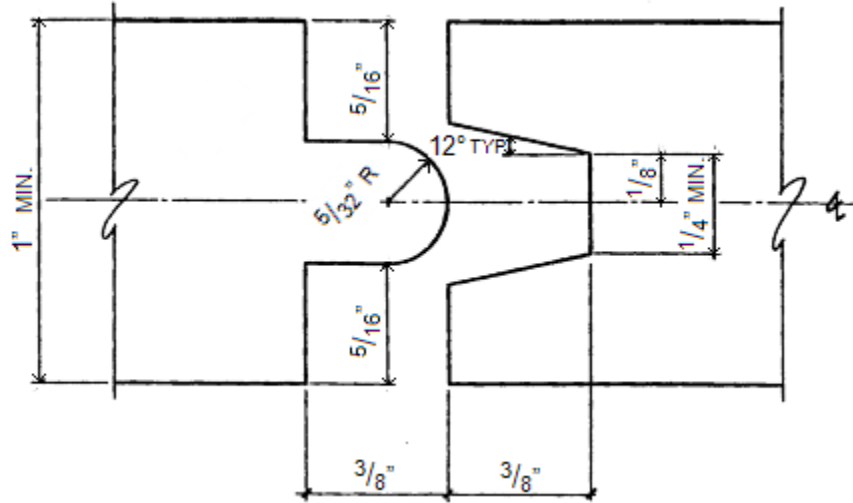
**5.3 Field Inspection and Report Requirements:**  
Field inspections and reporting shall include the following:

**5.3.1** Installation shall be by a plastering contractor approved, by the coating manufacturer, as being qualified to perform such installations. A list containing the names and addresses of approved contractors shall be maintained by the coating manufacturer and shall be made available to the building official. A copy of the

complete and current list of approved contractors shall be forwarded to ICC-ES on a monthly basis, at minimum.

**5.3.2** An installation card with a format as shown in Figure 2 shall be completed by the plastering contractor and presented to the code official at the completion of each project.

**5.3.3** See Section 3.1.14, Exceptions, of this criteria for field inspections. ■



**FIGURE 1—TONGUE AND GROOVE**

**ACCEPTANCE CRITERIA FOR CEMENTITIOUS EXTERIOR WALL COATINGS (AC11)**

**INSTALLATION CARD  
(Coating system Trade Name)  
(Name of coating manufacturer)**

**Job Address**

**ICC-ES Evaluation  
Report Number** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Date of Job Completion** \_\_\_\_\_

**Plastering Contractor**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: (\_\_\_\_\_) \_\_\_\_\_

Approved contractor number as issued by the coating manufacturer \_\_\_\_\_

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 specified above and the manufacturer's instructions.

\_\_\_\_\_  
Signature of authorized representative of plastering contractor Date

This installation card must be presented to the building inspector after completion of work and before final inspection.

**FIGURE 2**

**ACCEPTANCE CRITERIA FOR CEMENTITIOUS EXTERIOR WALL COATINGS (AC11)**

**(Company name of report holder)  
(Address and telephone number)**

**DECLARATION**

**Project Address:** \_\_\_\_\_ **Date:** \_\_\_\_\_

The field batching and mixing of all components of the exterior wall coating at the address noted above have been continuously inspected. The field batching and mixing have been found to comply with current evaluation report \_\_\_\_\_ and approved plans.

Authorized Inspector's signature \_\_\_\_\_

Authorized inspector's name (print) \_\_\_\_\_

Employer's name \_\_\_\_\_

Employer's address \_\_\_\_\_

\_\_\_\_\_

Telephone No. \_\_\_\_\_

\*This is to certify that the above noted inspector, approved by (Company name of evaluation report holder), was authorized to inspect the project so noted and was trained to properly discharge his duties.

\_\_\_\_\_  
Signature of employee or officer of report holder

Signer's name (print): \_\_\_\_\_

Date: \_\_\_\_\_

\*Signature required only if inspector is not an employee of evaluation report holder.

**FIGURE 3**