



ICC Evaluation Service, Inc.
Los Angeles Business/Regional Office
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May 13, 2010

TO: PARTIES INTERESTED IN EVALUATION REPORTS ON EXTERIOR FINISH SYSTEMS

SUBJECT: Proposed Revisions to the Acceptance Criteria for Direct-applied Exterior Finish Systems (DEFS), Subject AC59-0610-R1 (MB/GH)

Hearing Information:

Tuesday, June 15, 2010
8:00 a.m.

DoubleTree Hotel

808 South 20th Street
Birmingham, Alabama 35205
(800) 222-8733

Dear Madam or Sir:

Revisions to the subject acceptance criteria will be considered at the hearing noted above. The proposed revisions address a request from an evaluation report applicant to recognize a coating system applied over Exterior Grade plywood. Since Exterior Grade plywood is permitted by the code as an exterior wall covering, the purpose of the coating system is to provide an architectural finish and provide water resistance at the panel joints. The report applicant has proposed testing of the coating under AC59, except that the tests of the substrate under Section 3.1 are not required.

AC59 was not intended to encompass wood-based sheathing as a substrate, although it does not explicitly prohibit it. At the time AC59 was developed, staff was concerned with the ability of the coating systems to be flexible enough to allow for thermal movement of the substrate. As proposed, the coating system must be elastomeric and must include a fabric mesh reinforcement to be considered for use with Exterior Grade plywood substrates.

Comments are requested as to whether the transverse load, racking and restrained environmental cycling tests in AC59 are sufficient to establish the durability of the coating when applied over plywood substrate and joints. Similar tests exist in AC212 (Acceptance Criteria for Water-resistive Barriers Used as Water-resistive Barriers over Exterior Sheathing), except the tests in AC212 are run sequentially and are followed by a water resistance test, whereas in AC59 the tests may be run on individual specimens and performance is determined visually. Staff is not aware of any failures of direct-applied systems that have been qualified under AC59.

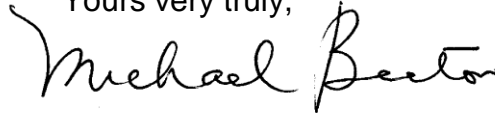
The criteria is also being updated editorially to include the 2009 International Codes.

You are cordially invited to submit written comments on agenda items, or to attend the Evaluation Committee hearing and present verbal comments. If you wish to contribute to the hearing, please note the following:

1. Written comments that are received by the Los Angeles business/regional office by **June 1, 2010**, will be forwarded to the committee prior to the hearing, and will be posted on the ICC-ES web site shortly after the comment deadline.
2. Written comments received up to ten days before the meeting, and staff memos responding to comments, will be posted to the web site on **June 10, 2010**.
3. ICC-ES is no longer providing printed copies at the meeting of proposed acceptance criteria, staff memos or public comments. These documents will be available on a limited number of CDs at the meeting, for uploading to computers; and ICC-ES will make arrangements with the hotel business center to have hard copies available for photocopying.
4. Written comments that miss the deadline noted in item (1), above, will only be available at the meeting if you provide 35 copies, collated, stapled, and three-hole punched, either at the meeting itself or to the Los Angeles business/regional office by **June 10, 2010**.
5. If you plan to speak for more than 15 minutes, or offer a visual presentation lasting longer, you should notify ICC-ES staff as far as possible in advance. There will be a computer, projector, and screen available at the meeting for anyone wishing to make a visual presentation, and presentations in most cases will need to be in PowerPoint format. Also, ICC-ES will need to be provided with your presentation at least a half-hour before the start of the relevant meeting session (morning or afternoon) on either a CD or a flash card.
6. If you have any special needs related to a presentation, you should contact ICC-ES staff well in advance of the meeting.
7. Any visual aids for viewing at committee meetings (charts, overhead transparencies, slides, videos, electronic presentations, etc.) will be permitted only if a copy is provided to ICC-ES, before the presentation, in a medium that can be retained with other records of the meeting.
8. Any materials submitted for committee consideration are considered nonconfidential and available for public discussion, as noted in Section 2.7 of the ICC-ES Rules of Procedure for the Evaluation Committee.
9. Prior to the meeting, you should refrain from trying to communicate directly with committee members about agenda items, either verbally or in writing. Committee members reserve the right to refuse such communications.

Your cooperation with these guidelines is much appreciated, as is your interest in the deliberations of the Evaluation Committee. If you have any question, please contact the undersigned at (800) 423-6587, extension 3289, or Greg Horeczko, Evaluation Specialist, at extension 3332. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,

A handwritten signature in black ink that reads "Michael Beaton". The signature is written in a cursive style with a large, sweeping initial "M".

Michael Beaton, P.E.
Senior Vice President

MB/md

Enclosures

cc: Evaluation Committee



ICC EVALUATION SERVICE, INC., RULES OF PROCEDURE FOR THE EVALUATION COMMITTEE

1.0 PURPOSE

The purpose of the Evaluation Committee is to monitor the work of ICC-ES, in issuing evaluation reports; to evaluate and approve acceptance criteria on which evaluation reports may be based; and to sponsor related changes in the applicable codes.

2.0 MEETINGS

2.1 The Evaluation Committee shall schedule meetings that are open to the public in discharging its duties under Section 1, subject to Section 3.

2.2 All scheduled meetings shall be publicly announced.

2.3 Two-thirds ($\frac{2}{3}$) of the voting Evaluation Committee members shall constitute a quorum. A majority vote of members present is required on any action.

2.4 In the absence of the nonvoting chairman-moderator, Evaluation Committee members present shall elect an alternate chairman from the committee for that meeting. The alternate chairman shall be counted as a voting committee member for purposes of maintaining a committee quorum and to cast a tie-breaking vote of the committee.

2.5 Minutes of the meetings shall be kept.

2.6 An electronic audio record of meetings shall be made by ICC-ES; no other audio, video, electronic or stenographic recordings of the meetings will be permitted. Visual aids (including, but not limited to, charts, overhead transparencies, slides, videos, or presentation software) viewed at meetings shall be permitted only if the presenter provides ICC-ES before presentation with a copy of the visual aid in a medium which can be retained by ICC-ES with its record of the meeting and which can also be provided to interested parties requesting a copy. A copy of the ICC-ES recording of the meeting and such visual aids, if any, will be available to interested parties upon written request made to ICC-ES together with a payment as required by ICC-ES to cover costs of preparation and duplication of the copy. These materials will be available beginning five days after the conclusion of the meeting but will no longer be available after one year from the conclusion of the meeting.

2.7 Parties interested in the deliberations of the committee should refrain from communicating, whether in writing or verbally, with committee members regarding agenda items. All written communications and submissions regarding agenda items should be delivered to ICC-ES. All such written communications and submissions shall be considered nonconfidential and available for discussion in open session of an Evaluation Committee meeting, and shall be delivered at least ten days before the scheduled Evaluation Committee meeting if they are to be forwarded to the committee. Materials delivered to ICC-ES at least ten

days before the scheduled meeting will be posted on the ICC-ES web site (www.icc-es.org) prior to the meeting. After this time, parties wishing to submit materials for consideration by the Evaluation Committee must deliver a sufficient number of copies as directed by ICC-ES. Consideration of materials not received by ICC-ES at least ten days before the meeting is at the discretion of the Evaluation Committee. Following the meeting, ICC-ES will make all materials considered by the Evaluation Committee available on the web site for a maximum period of one year following the meeting. The committee reserves the right to refuse recognition of communications which do not comply with the provisions of this section.

3.0 CLOSED SESSIONS

Evaluation Committee meetings shall be open except that the chairman may call for a closed session to seek advice of counsel.

4.0 ACCEPTANCE CRITERIA

4.1 Acceptance criteria are established by the committee to provide a basis for issuing ICC-ES evaluation reports on products and systems under codes referenced in Section 2.0 of the Rules of Procedure for Evaluation Reports. They also clarify conditions of acceptance for products and systems specifically regulated by the codes.

Acceptance criteria may involve a product, material, method of construction, or service. Consideration of any acceptance criteria must be in conjunction with a current and valid application for an ICC-ES evaluation report, an existing ICC-ES evaluation report, or as otherwise determined by the Evaluation Committee.

4.2 Procedure:

4.2.1 Proposed acceptance criteria shall be developed by the ICC-ES staff and discussed in open session with the Evaluation Committee during a scheduled meeting, except as permitted in Section 5.0 of these rules.

4.2.2 Proposed acceptance criteria shall be available to interested parties at least 30 days before discussion at the committee meeting.

4.2.3 The committee shall be informed of all pertinent written communications received by ICC-ES.

4.2.4 Attendees at Evaluation Committee meetings shall have the opportunity to speak on acceptance criteria listed on the meeting agenda, to provide information to committee members.

4.3 Approval of acceptance criteria shall be as specified in Section 2.3 of these rules.

4.4 Actions of the Evaluation Committee may be

ICC EVALUATION SERVICE, INC., RULES OF PROCEDURE FOR THE EVALUATION COMMITTEE

appealed in accordance with the ICC-ES Rules of Procedure for Appeal of Acceptance Criteria or the ICC-ES Rules of Procedure for Appeals of Evaluation Committee Technical Decisions.

5.0 COMMITTEE BALLOTING FOR ACCEPTANCE CRITERIA

5.1 Acceptance criteria may be issued without a public hearing following a 30-day public comment period and a majority vote for approval by the Evaluation Committee when, in the opinion of ICC-ES staff, one or more of the following conditions have been met:

1. The subject is nonstructural, does not involve life safety, and is addressed in nationally recognized standards or generally accepted industry standards.
2. The subject is a revision to an existing acceptance criteria that requires a formal action by the Evaluation Committee, and public comments raised were resolved by staff with commenters fully informed.
3. Other acceptance criteria and/or the code provide precedence for the revised criteria.

5.2 Negative votes must be based upon one or more of the following, for the ballots to be considered valid and require resolution:

- a. *Lack of clarity:* There is insufficient explanation of the scope of the acceptance criteria or insufficient description of the intended use of the product or system; or the acceptance criteria is so unclear as to be unacceptable. (The areas where greater clarity is required must be specifically identified.)
- b. *Insufficiency:* The criteria is insufficient for proper evaluation of the product or system. (The provisions of the criteria that are in question must be specifically identified.)
- c. *The subject of the acceptance criteria is not within the scope of the applicable codes:* A report issued by ICC-ES is intended to provide a basis for approval under the codes. If the subject of the acceptance criteria is not regulated by the codes, there is no basis for issuing a report, or a criteria. (Specifics must be provided concerning the inapplicability of the code.)

d. *The subject of the acceptance criteria needs to be discussed in a public hearings.* The committee member requests additional input from other committee members, staff or industry.

5.3 An Evaluation Committee member, in voting on an acceptance criteria, may only cast the following ballots:

- Approved
- Approved with Comments
- Negative: Do Not Proceed

6.0 COMMITTEE COMMUNICATION

Direct communication between committee members, and between committee members and an applicant or concerned party, with regard to the processing of a particular acceptance criteria or evaluation report shall take place only in a public hearing of the Evaluation Committee. Accordingly:

6.1 Committee members receiving an electronic ballot should respond only to the sender (staff). Committee members who wish to discuss a particular matter with other committee members, before reaching a decision, should ballot accordingly and bring the matter to the attention of ICC-ES staff, so the issue can be placed on the agenda of a future committee meeting.

6.2 Committee members who are contacted by an applicant or concerned party on a particular matter that will be brought to the committee will refrain from private communication and will encourage the applicant or concerned party to forward their concerns through the ICC-ES staff in writing, and/or make their concerns known by addressing the committee at a public hearing, so that their concerns can receive the attention of all committee members. ■

Effective March 18, 2008

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

AC59

Proposed May 2010

Previously issued July 2002 and September 1992

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.

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 proposed in this document, and otherwise meet the applicable performance requirements of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria proposed in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise meet the applicable performance requirements 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 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 purpose of issuing ICC-ES evaluation reports.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

1.0 SCOPE

1.1 Scope: The purpose of this document is to specify the conditions under which Direct-applied Exterior Finish System (DEFS) can be recognized in an ICC-ES Evaluation Service, Inc., (ICC-ES) evaluation report under the 1997 *Uniform Building Code*[™] (UBC), the 2009 and 2006 *International Building Code*[®] (IBC) and the 2009 and 2006 *International Residential Code*[®] (IRC).

1.2 Referenced Documents:

1.2.1 1997 *Uniform Building Code*[™] (UBC), International Conference of Building Officials.

1.2.2 2009 and 2006 *International Building Code*[®] (IBC), International Code Council.

1.2.3 2009 and 2006 *International Residential Code*[®] (IRC), International Code Council.

1.2.4 ASTM B 117-90, Practice for Operating Salt-spray (Fog) Apparatus, American Society for Testing and Materials.

1.2.5 ASTM D 226-97a, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing, American Society for Testing and Materials.

1.2.6 ASTM C 473-03, Standard Test Method for Physical Testing of Gypsum Panel Products, American Society for Testing and Materials.

1.2.7 ASTM C 920-98, Standard Specification for Elastomeric Joint Sealants, American Society for Testing and Materials.

1.2.8 ASTM D 1037-99, Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particleboard Materials, American Society for Testing and Materials.

1.2.9 ASTM D 2247-97, Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity, American Society for Testing and Materials.

1.2.10 ASTM E 72-02, Standard Test Methods for Conducting Strength Tests of Panels for Building Construction, American Society for Testing and Materials.

1.2.11 ASTM E 84-04, Standard Test Method for Surface Burning Characteristics of Building Materials, American Society for Testing and Materials.

1.2.12 ASTM E 228-85, Standard Test Method for Linear Thermal Expansion of Solid Materials with a Vitreous Silica Dilatometer Test, American Society for Testing and Materials.

1.2.13 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference, American Society for Testing and Materials.

1.2.14 ASTM G 153-00^{c1}, Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials, ASTM International.

1.2.15 ASTM G 155-00^{c1}, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials, ASTM International.

1.2.16 MIL-STD-180F, Test Method Standard for Environmental Engineering Considerations and Laboratory Tests, January 1, 2000, Department of Defense.

1.2.17 NFPA 268-01, Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source, National Fire Protection Association.

1.2.18 NFPA 285-98, 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.

1.3 Definitions:

1.3.1 DEFS: An exterior wall covering system applied to either bearing or nonbearing wood or metal wall framing. The system includes a ~~water~~weather-resistive barrier, substrate, fastening system, joint treatment, reinforcing mesh, basecoat and finish coat. The system also includes primers, sealers and accessories such as expansion joints, trim and corner beads as needed. The DEFS may also be used in limited horizontal applications such as soffits.

1.3.2 Substrate: Backing board, other than foam plastic insulation, that serves as the base for the coatings.

1.3.3 Fastening System: The method used to mechanically attach the substrate to the framing.

1.3.4 Proponent: Applicant for an evaluation report concerning a DEFS. The proponent has the responsibility for the substrate, exterior finish and other system components. Responsibility is defined as confirmation that the components comply with the evaluation report and applicable DEFS specifications for physical properties, compatibility and proper application.

2.0 BASIC INFORMATION AND REPORTS OF TESTS

2.1 Testing Laboratories, Reports of Test and Product Sampling:

2.1.1 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.

2.1.2 Test Reports: Test reports shall comply with AC85.

2.1.3 Product Sampling: Sampling of the system and components for tests under this criteria shall comply with AC85.

3.0 TEST AND PERFORMANCE REQUIREMENTS

3.1 Substrate: The substrate shall be tested and shall comply with Sections 3.1.1 through 3.1.3 of this criteria or shall be Exterior Grade plywood as described in Section 3.10.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

3.1.1 Physical Properties: The product must comply with Table 1 of this criteria. See Section 3.1.2 for test methods.

3.1.2 Test Methods:

3.1.2.1 Flexural Strength Tests: Prior to testing, specimens are conditioned at 75°F ± 5°F (23.8°C ± 2.8°C) and 50 percent ±10 percent relative humidity (R.H.) for 7 days. In addition, wet specimens are conditioned at 75°F ± 5°F (23.8°C ± 2.8°C) and 90 percent ± 5 percent R.H., for 48 hours prior to testing. As an alternate, wet specimens may be conditioned by totally immersing in water maintained at 75°F ± 5°F (23.8°C ± 2.8°C) for 48 hours. The test span is 10 inches (254 mm). Specimens are placed on roller-type supports with a length equaling the width of specimens and having a 1/8-inch (3.2 mm) minimum to a 1/2-inch (12.7 mm) maximum radius. Load is applied at midspan through a similar roller, at a rate such that failure of the specimen occurs in approximately one minute. Results are reported as average of loads at which the specimens break.

3.1.2.2 Fastener Pull-through Resistance: Dry and wet specimens are conditioned as noted in Section 3.1.2.1. Test method to be used is ASTM C 473, Sections 26 through 31 (nail-pull resistance of gypsum boards) or similar methods. The fasteners used in the tests must be the same as used in actual installation. Results are reported as load at which each fastener pulls through each specimen, and the average of all loads.

3.1.2.3 Water Absorption: Specimens are conditioned at 75°F ± 5°F (23.8°C ± 2.8°C) and 50 percent ± 10 percent R.H. to within 0.1 percent of the same weight and then weighed to within 0.5 grams. They are then immersed flatwise in water 1 inch (254 mm) over the top of the specimens. Specimens shall be propped to prevent lying on the bottom of the container. After two hours the specimens are removed, excess water wiped from surfaces and edges, and weighed immediately to within 0.5 grams. Results are reported as gain in weight of each specimen, as a percentage of the original weight, and the average water-absorption percentage for the product.

3.1.2.4 Linear Variation with Change in Moisture Content: Basis of testing is ASTM D 1037, Sections 107 through 110. Linear variation with change in moisture content is reported as the percentage change in length based on lengths at 50 percent and 90 percent relative humidity.

3.1.2.5 Linear Thermal Expansion: Basis of testing is ASTM E 228. Specimen is conditioned at 75°F ± 5°F (23.8°C ± 2.8°C), 50 percent ±10 percent R.H. for 7 days prior to testing. Temperature T₁ is -20°F (-28.9°C) and temperature T₂ is 130°F (54°C).

3.1.2.6 Fungus Resistance: Test method is MIL-STD810 F Method 508.5. On completion of test, specimens are examined visually under a 5x magnification, to determine extent of mold growth and deterioration.

3.1.2.7 Freeze-thaw Cycling: Specimens are coated on the back and sides with a nonpermeable material and left uncoated on the front face. They are then subjected to 10 freeze-thaw cycles. Each cycle consists of air drying at 120°F (49°C) for a minimum of eight hours,

followed by total immersion in water at 70°F to 80°F (21.1°C to 26.7°C) for minimum of eight hours and exposure to -20°F (-28.9°C) in air for minimum of 16 hours.

3.1.3 Field Identification: Field identification of the substrate shall comply with the appropriate evaluation report, when available, or include the manufacturer's name, product name, nomenclature and quality control agency, when applicable, and ICC-ES evaluation report number. Field identification details of the substrate will be described in the DEFS evaluation report.

3.2 Water Weather-resistive Barrier: Grade D paper, as specified in UBC Standard No. 14-1, Type I water resistive barrier complying with ASTM D 226 (IBC) or an equivalent water-resistive barrier recognized in a current ICC-ES evaluation report, is required to protect the interior wall covering and wall cavity.

3.3 Fastening Systems: Mechanical fasteners shall be specifically described including type, gauge, length, thread type, point type, head diameter and corrosion-resistant treatment.

3.4 Reinforcing Mesh: Description shall include material, weight, width, mesh or strand count, strength, weave type, and any treatments for system compatibility. When confined to joints, minimum width of reinforcing mesh is 4 inches (102 mm).

3.5 Joint Treatment: Specific description of materials is required including type, use, field mixing instructions, etc.

3.6 Basecoat/Primers—Adhesion Intermediaries: Specific description is required including type, use, specification, and any field mixing instructions.

3.7 Finish Coat: Specific description is needed including any field mixing instructions.

3.8 Accessories:

3.8.1 Joint sealants: Sealant materials shall comply with ASTM C 920 and be compatible with the proponent's DEFS. An installation card, completed by the sealant installer in the format shown in Exhibit B, shall be presented to the building official with the DEFS contractor declaration, Exhibit A, at the completion of each project.

3.8.2 Trim: Expansion joints, weep screeds, corner reinforcement and similar items, when required, shall be installed in accordance with the proponent's recommendations. Trim shall be described as to type of material, dimensions, thickness or gauge, and corrosion-resistive treatment.

3.9 Identification: Labeling for field identification of exterior finish materials shall include the following:

1. Name of manufacturer.
2. Identification of system component by product name.
3. Lot or batch number.
4. Quantity of material in packaged mix.
5. Storage, mixing and curing instructions.
6. Expiration date.
7. ICC-ES evaluation report number.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

3.10 Plywood Substrates: Plywood shall be Exterior Grade plywood complying with DOC PS-1 or PS-2. DEF systems applied over plywood substrates shall be elastomeric and shall incorporate fabric mesh reinforcement in the field of the coating and over plywood panel joints. The plywood sheathing shall be installed with all joints blocked.

4.0 EXTERIOR WALL CONSTRUCTION

4.1 Noncombustible Construction under the UBC: UBC Standard 26-4 or UBC Standard 26-9 (optional): This optional test is for recognition of DEFS for application to walls required to be of noncombustible construction. Other related requirements are addressed in Section 2602.5.2.2 of the UBC. Without compliance, DEFS is limited to combustible construction.

4.2 UBC Standard 8-1 (based on ASTM E 84-84) under the UBC (optional): This optional test is required for recognition of DEFS as an interior finish. Without successful testing, the DEFS is considered an exterior wall covering only. For recognition on noncombustible construction, the system components shall be tested separately in accordance with Item 4 of Section 2602.5.2.2 of the UBC.

4.3 Noncombustible Types I, II, III, and IV Construction under the IBC: NFPA 285 (optional): This optional test is for recognition of DEFS for application to walls required to be of noncombustible construction. Other related requirements are addressed in Section 2603.5 of the IBC. Without compliance, DEFS is limited to combustible Type V construction.

4.4 ASTM E 84 under the IBC or IRC (optional): This optional test is required for recognition of DEFS as an interior finish. Without successful testing, the DEFS is considered an exterior wall covering only. For recognition on noncombustible construction, the system components shall be tested separately in accordance with Section 2603.5.4 of the IBC.

4.5 Ignition—NFPA 268 under the IBC: This test is required for exterior wall coverings in accordance with Section 1406.2 of the IBC. For installation on walls required to be noncombustible Type I, II, III and IV construction, Section 2603.5.7 of the IBC applies.

4.6 Durability: Testing is required as follows:

1. Accelerated-weathering tests as set forth in Section 5.1.
2. Freeze-thaw tests as set forth in Section 5.2.
3. Bond-strength tests after weatherometer and freeze-thaw tests as set forth in Section 5.3.
4. Salt-spray resistance tests as set forth in Section 5.5.
5. Water-resistance tests as set forth in Section 5.6.

4.7 Serviceability:

4.7.1 Serviceability tests, as described in Section 5.4, are required to evaluate system performance and to ensure that the exterior finish will fail within the field of the substrate before failing at a joint, under imposed loads. They are also required to determine allowable positive and negative wind pressures that may be imposed on the DEFS. Test specimens shall be based on minimum

conditions of installation including material thickness, density and connections.

4.7.2 Deflection limits of structural wall components for horizontal loads shall be specified by the proponent. In no case shall the deflection exceed $1/180$ of span.

4.8 Miscellaneous: The need for expansion and control joints with locations shall be determined and specified by the architect, designer, builder or exterior finish manufacturer in that order. All expansions and control-joint materials shall be corrosion resistant. If used, expansion and control joints are a job consideration unless justified under serviceability tests and specifically addressed in the evaluation report.

5.0 TESTING

5.1 Accelerated-weathering Test (Weatherometer):

5.1.1 Test Specimens: Five samples are prepared as for the freeze-thaw test (Section 5.2), except that sample size is as necessary to fit the chamber. The back and sides of the sample shall be sealed with the appropriate impervious seal.

5.1.2 Apparatus: Either Section 5.1.2.1 or Section 5.1.2.2:

5.1.2.1 Test 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.

5.1.2.2 Test 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.

5.1.3 Duration: The test shall be for a minimum of 2,000 hours.

5.1.4 Conditions of Acceptance: Failure is defined as surface changes, as viewed by minimum 5x magnification, such as cracking, checking, crazing, erosion, or other characteristics that might affect performance as a wall cladding.

5.2 Freeze-thaw Test:

5.2.1 Five 6-inch (152 mm) square specimens are prepared with base coat and finish coat applied to the substrate on the front face. Five specimens are required for each combination of base and finish coats on which recognition is sought. The backs and edges of the specimens are sealed with either the base and finish coat or with a nonpermeable material.

5.2.2 Specimens are subjected to 10 freeze-thaw cycles. Each cycle consists of air drying at 120°F (49°C) temperature for a minimum of eight hours, followed by total immersion in water at 70°F to 80°F (21.1°C to 26.7°C) for minimum of eight hours and exposure to -20°F (-28.9°C) in air for minimum of 16 hours.

5.2.3 Conditions of acceptance are that after exposure there shall be no cracking, checking, crazing, erosion, or other characteristics that might affect performance as an exterior wall covering in each specimen when viewed under a minimum 5x magnification. Delamination or indications of same between component materials or layers is also defined as failure.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

5.3 Bond-strength Tests After Weatherometer and Freeze-thaw Tests:

5.3.1 Using five control specimens and all specimens subjected to weatherometer and freeze-thaw tests described in Sections 5.1 and 5.2, respectively, a total of fifteen 3-inch (76 mm) square specimens are prepared by sawing off all four edges. Specimens are maintained at 45 percent to 55 percent relative humidity and 70°F to 80°F (21.1°C to 26.7°C) until equilibrium has been attained.

5.3.2 A 3-inch (76 mm) square steel plate is adhered with epoxy to the front and back of each specimen. The plate shall have a clevis or other means of installation in a tensile testing machine.

5.3.3 After epoxy has cured to the appropriate strength, each specimen is tested in tension perpendicular to surface in a displacement controlled test machine. Displacement rate shall not exceed 0.05 inch (1.3 mm) per minute.

5.3.4 Condition of acceptance is that there shall be no delamination or splitting within any specimen below 5 psi (34 kPa) tensile bond stress. Bond failures of steel plates to specimen below 5 psi (34 kPa) shall be disregarded and retested.

5.4 Serviceability Tests:

5.4.1 Transverse-load Test:

5.4.1.1 Testing shall comply with ASTM E 330, Procedure B. At least three positive and three negative load tests must be conducted on specimens installed in accordance with the proponent's published instructions. As an option, the coating can be omitted. Specimens shall be a minimum 4 feet by 8 feet (1219 mm by 2438 mm) and include vertical and horizontal joints simulating field installation. Vertical-control joints, scored joints or other architectural features shall be included if these features are to be recognized in the evaluation report. Application of load to failure shall involve at least six increments with a 10 second load duration for each increment.

5.4.1.2 Specimens shall be mounted in accordance with ASTM E 330. Framing supporting the panel must be located at the maximum spacing on which recognition is desired. In most instances, this will result in three 16-inch (406 mm) spans or two 24-inch (610 mm) spans. Connections to framing members shall be minimum conditions since test specimens establish the basis of acceptance. This includes the steel gauge where metal framing is involved.

5.4.1.3 Load-deflection readings at midpoint of specimen shall be reported.

5.4.1.4 Conditions of acceptance are based on the following:

1. Allowable loading will be the average ultimate load divided by a factor of safety of 3 if all of the following are satisfied:
 - a. No single test result varies by more than 15 percent from the average of three tests. Variation exceeding this limit will result in larger safety factor.
 - b. Allowable load does not exceed established

values for mechanical connectors such as nails, screws and staples.

- c. Allowable load does not exceed load at which maximum allowable deflection specified in Section 4.7.2 occurs.

2. Other factors of safety can be considered based on unique conditions of installation or the material used.

5.4.2 Racking Test: The intent of this test is to evaluate the crack resistance of the exterior finish when subjected to racking movements as might occur under normal aging conditions of a structure.

5.4.2.1 Test setup, measurements and application of loads must comply with ASTM E 72 without hold-downs and as modified below. Tests shall be conducted on a minimum of three specimens with the substrate and each base coat and finish coat prepared, installed and cured in accordance with the proponent's published instructions. Specimens shall be a minimum 8 feet by 8 feet (2438 mm by 2438 mm) and include vertical and horizontal substrate joints simulating field installation. Specimen construction shall be based on minimum allowable conditions.

5.4.2.2 Application of load shall be in increments as described in the test method.

5.4.2.3 Throughout the test, the finished surface of the wall is inspected for signs of cracking or shear pinching of the finish within the field of the panel and at substrate joints.

5.4.2.4 Condition of acceptance is that there be no failure of the finish at substrate joints before failure of the substrate or finish in the field of the specimen. The results may be considered acceptable if there is no failure within the field or at the joints when 1 inch (25 mm) net deflection is achieved.

5.4.3 Restrained Environmental Cycling Test: The intent of this test is to evaluate the cracking performance of the exterior finish after exposure to cycles of wetting and drying and changes in temperature when installed on wall framing representative of service conditions.

5.4.3.1 One test must be conducted for each combination of substrate, base coat, and finish coat prepared, installed and cured in accordance with the proponent's published instructions. The specimen shall be a minimum 8 feet high by 8 feet wide (2438 mm by 2438 mm) and include vertical and horizontal substrate joints simulating field installation. Specimen construction shall be based on minimum conditions since the test specimen establishes the basis of acceptance.

5.4.3.2 Test setup shall include an 8 foot by 8 foot (2438 mm by 2438 mm) restraining frame representing field installation conditions for attachment of the DEFS, a water-spray apparatus capable of uniformly wetting the entire test surface at a minimum rate of 2 gallons (7.6 L) per minute and radiant heaters capable of providing a uniform radiant heat of 120°F ± 5°F (49°C ± 28°C) as measured on a 1-mm-thick aluminum plate painted mat black and affixed to the test surface at a minimum four locations, symmetrically distributed. Temperature shall be measured with a covered thermocouple attached to the surface of the black plate.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

The top edge of the DEFS shall be flashed and the back side of the assembly protected from moisture. One period of exposure to ambient conditions not exceeding 48 hours is permitted in the tests to accommodate laboratory operation.

5.4.3.3 The entire exterior surface is subjected to five cycles of the following uniform exposure conditions:

1. Water spray-24 hours.
2. Radiant heat-72 hours.

5.4.3.4 Throughout the test, the wall surface is inspected for signs of cracking of the finish within the field of the panel and at the substrate joint.

5.4.3.5 Condition of acceptance is that at the end of the test, there shall be no cracking of the finish visible to the naked eye within the field of the panel and at substrate joints or other distress that might affect performance as an exterior wall covering.

5.5 Salt-spray Resistance: Testing shall be in accordance with ASTM B 117-85. Three 4-inch-by-6-inch (102 mm by 152 mm) specimens in size are prepared similar to the freeze-thaw test specimens. Specimens shall be periodically inspected and results reported. The testing period is 300 hours. Condition of acceptance at the end of the test is the absence of deleterious effects from salt spray such as any cracking, checking, crazing, erosion, rusting or other distress that might affect performance as an exterior wall covering.

5.6 Water-resistance: Testing shall be in accordance with ASTM D 2247. Three 4-inch-by-6-inch (102 mm by 152 mm) samples are prepared similar to the freeze-thaw test specimens (Section 5.3). Specimens must be periodically inspected and results reported. The testing period is 14 days. Condition of acceptance is that at the end of the test no deleterious effects such as any cracking, checking, crazing, erosion, rusting or other distress that might affect performance as an exterior wall covering are visible.

6.0 APPLICATION INSTRUCTIONS

Application instructions bearing the date of publication shall be submitted. Instructions must include the following:

6.1 Illustrated details with the following as a minimum:

6.1.1 Flashing and/or sealing around heads, sills, window and door jambs, the top of exposed walls, the top of parapets and termination of parapets on the backside.

6.1.2 Closures and flashing at other terminations such as eaves, sills and adjacent exterior cladding materials.

6.1.3 Typical conditions within the field of the exterior surface showing substrate boards, control joints, etc.

6.1.4 Flashing and/or sealing at wall penetrations.

6.1.5 Other details deemed necessary as conditions of an evaluation report.

6.2 Curing instructions.

7.0 QUALITY CONTROL

7.1 DEFS: Documentation describing quality control on base coats, finish coats, reinforcing meshes, joint treatments, primers and sealers is required. This quality documentation shall comply with the ICC-ES Acceptance Criteria for Quality Documentation (AC10). Third-party follow-up inspections are not required.

7.2 Substrate: Documentation describing quality control on each substrate is required, except where substrates are recognized in ICC-ES evaluation reports or comply with the applicable code. This quality documentation shall comply with AC10. Third-party inspections are required only when specified by the applicable code or ICC-ES acceptance criteria for the substrate.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

TABLE 1—PHYSICAL PROPERTIES OF SUBSTRATE

NO.	PROPERTY	NUMBER OF SPECIMENS	SPECIMEN SIZE	PHYSICAL PROPERTY REQUIREMENTS
1	Dry and Wet Flexural Strength	10—Dry and 10—Wet, each composed of 5—Machine Direction 5—Cross Direction	6 inches by 12 inches	Average strength of wet specimens must be at least 60 percent of average strength of dry specimen ¹
2	Dry and Wet Fastener Pull-through Resistance	10—Dry 10—Wet	6 inches by 6 inches	Average load for wet specimens must be at least 75 percent of average load for dry specimens ²
3	Water Absorption	3	12 inches by 12 inches	Average water absorption of the specimens cannot exceed 10 percent
4	Linear Variation with Change in Moisture Content	1-Machine Direction 1-Cross Direction	3 inches by 12 inches long	Average of 2 specimens cannot exceed a linear variation of 0.15 percent
5	Mean Coefficient of Linear Thermal Expansion	1	See Test Method	10 x 10 ⁻⁶ inch/inch °F maximum
6	Fungus Resistance	See Test Method	5 inches by 5 inches	Mold growth must be confined to the inoculated area with no significant growth within. Also, there can be no delamination.
7	Freeze-thaw Cycling ³	5	6 inches by 6 inches	There can be no cracking, checking, crazing or erosion when viewed under 5x magnification. Also, there can be no delamination.

For **SI**: 1 inch = 25.4 mm, 1°C = (t°F - 32) ⁵/₉, 1 inch/inch · °F = 1 mm/mm · [(ΔT + 459.67)/1.8]°K.

¹If values obtained for wet specimens are lower than those for dry specimens, allowable positive and negative transverse load capacity determined by Section 5.4.1 of the criteria will be reduced proportionately unless substantiated by tests conducted in accordance with Section 5.4.1 of the criteria after conditioning for 48 hours at 90°F ± 5°F and 90 percent ± 5 percent relative humidity.

²If the values obtained for wet specimens are lower than those for dry specimens, allowable negative transverse load determined by Section 5.4.1 of the criteria will be reduced proportionately unless substantiated by tests conducted in accordance with Section 5.4.1 of the criteria after conditioning for 48 hours at 90°F ± 5°F and 90 percent ± 5 percent relative humidity.

³Not required if the DEFS is limited to areas where the average of the daily lows for any month is at least 30°F.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

EXHIBIT A

CONTRACTORS CERTIFICATE
(To be completed by DEFS contractor)

Completion Date: _____

THE DIRECT-APPLIED EXTERIOR FINISH SYSTEM (DEFS) INSTALLED ON THE STRUCTURE LOCATED AT THE ADDRESS INDICATED BELOW:

_____ CONFORMS

TO (DEFS MANUFACTURER NAME) RECOMMENDED INSTALLATION PRACTICES AND SECTION(S)

_____ OF ICC-ES, INC., EVALUATION REPORT NO. _____

Table with 2 columns: Address of Structure and Product Component Names. Components include Adhesive(s), Fasteners (mech), Base Coat, Reinforcing Fabric, Finish Coat(s), and Water-resistive Barrier.

INSTALLATION CONFORMS

- A. Substrate Type and Tolerance
B. Water-resistive Barriers
C. DEFS
1. Adhesive and / or Fasteners
2. Reinforcing Fabric
3. Base Coat
4. Finish

D. The information entered above is offered in testimony that the DEFS installation conforms with the DEFS manufacturer's installation method and procedures, and the DEFS manufacturer's ES report.

NOTE: An installation card shall be receive from the sealant installer indicating that the sealant installation conforms with the DEFS evaluation report and sealant manufacturer's installation method and procedure may accompany this declaration.

DEFS Contractor Company Name and Address

Four horizontal lines for contractor name and address.

Signature of responsible Officer: _____

Typed Name and Title of Officer: _____

Telephone Number: () _____

- cc: Original: Building Department (Must be submitted with sealant installer declaration)
Copy: DEFS Manufacturer

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

EXHIBIT B

SEALANT INSTALLER CERTIFICATE
(To be completed by Sealant Installer)

Completion Date: _____

THE SEALANT INSTALLED IN CONJUNCTION WITH A DIRECT-APPLIED EXTERIOR FINISH SYSTEM (DEFS) INSTALLED ON THE STRUCTURE LOCATED AT THE ADDRESS INDICATED BELOW:

_____ CONFORMS

TO (DEFS MANUFACTURER'S NAME) AND (SEALANT MANUFACTURER'S NAME) RECOMMENDED INSTALLATION PRACTICES AND SECTION(S) _____ OF ICC-ES, INC., EVALUATION REPORT NO. _____

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. DEFS manufacturer's 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 DEFS 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 (Must be submitted with DEFS contractor declaration.)
- Copies: DEFS Manufacturer
- DEFS Sealant Manufacturer