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June 23, 2010

**TO: PARTIES INTERESTED IN EVALUATION REPORTS ON
EXTERIOR FINISH SYSTEMS**

**SUBJECT: Revised Acceptance Criteria for Direct-applied Exterior Finish
Systems (DEFS), Subject AC59-0610-R1 (MB/GH)**

Dear Madam or Sir:

Enclosed is a copy of the subject revised acceptance criteria approved by the ICC-ES Evaluation Committee on June 15, 2010, effective July 1, 2010.

The criteria was revised to expand the scope to include substrates of Exterior Grade plywood and to include recognition under the 2009 International Codes. It is not stated in the criteria but the Evaluation Committee requested that the mesh used in testing be identified in the evaluation report.

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 acceptance 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 Evaluation reports based on a superseded version of an acceptance criteria must be brought into compliance with the most recent edition at the time the reports are reissued.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, applicants should submit data verifying compliance at the time they apply for re-examination.

If you have any questions, please contact Greg Horeczko, Senior Evaluation Specialist, at (800) 423-6587, extension 3275. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,

A handwritten signature in cursive script that reads 'Gary G. Nichols'.

Gary Nichols, P.E., SECB
Vice President

KS/MB/md

Enclosure

cc: Evaluation Committee

ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS)

AC59

Approved June 2010

Effective July 1, 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.

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 DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS) (AC59)

1.0 SCOPE

1.1 Scope: The purpose of this document is to specify the conditions under which a 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 226-06 (2006 IBC: -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 920-05, 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 84-07 (2006 IBC: -09), 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 155-05a (2006 IBC: -04), 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 268-07 (2006 IBC: -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 285-06 (2006 IBC: -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.

1.2.19 UL 723-03, Standard for Test for Surface Burning Characteristics of Building Material—with Revisions through May 2005, Underwriters Laboratories Inc.

1.2.20 DOC PS-1-07, Structural Plywood, U.S. Department of Commerce.

1.2.21 DOC PS-2-04, Performance Standard for Wood-Based Structural-Use Panels, U.S. Department of Commerce.

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-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.

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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.

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-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 Figure 2, shall be presented to the building official with the DEFS contractor declaration, Figure 1, 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:

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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.

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 noncementitious 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 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 Type I, II, III, or IV construction. Other related requirements are addressed in Section 2603.5 of the IBC. Without compliance, DEFS is limited to Type V construction.

4.4 ASTM E 84 or UL723 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 Type I, II, III or 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)

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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.

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. Specimen 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.

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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. 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. 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.

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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.

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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. _____

Address of Structure:	Product Component Names:
_____	Adhesive(s) _____
_____	Fasteners (mech) _____
_____	Base Coat _____
_____	Reinforcing Fabric _____
_____	Finish Coat(s) _____
_____	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

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

FIGURE 1

ACCEPTANCE CRITERIA FOR DIRECT-APPLIED EXTERIOR FINISH SYSTEMS (DEFS) (AC59)

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 _____
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- | | |
|---|-----------------|
| 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

FIGURE 2