ICC EVALUATION SERVICE, INC.
Evaluate ■ Inform ■ Protect

April 3, 2008

TO: **PARTIES INTERESTED IN EVALUATION REPORTS ON BARRIER SYSTEMS FOR PROTECTION OF WOOD POSTS AGAINST DECAY AND TERMITES**

SUBJECT: Proposed Revisions to the Acceptance Criteria for Barrier Systems for Protection of Wood Posts Against Decay and Termites, Subject AC313-0408-R1 (KR/MO)

Dear Madam or Sir:

The revisions proposed to the subject acceptance criteria, as presented in the enclosed criteria draft, are being posted on the ICC-ES web site to allow for public comment. The revisions include:

1. Expanding the definition of barrier systems to include asphalt emulsion as an alternate adhesive. (Sections 1.4.1)

2. Revising editions of standards noted in Section 1.3 and to show the current standards referenced in the *International Building Code* (IBC) and the *International Residential Code* (IRC), or the most current editions available.

3. Modifying the name and definition of Bitumen Adhesion to Barrier System Adhesion and adding a reference to asphalt emulsion in Section 3.4.2.

You are cordially invited to submit written comments, within 30 days of the date of this letter. An explanation of the alternate criteria process can be found on our web site at http://www.icc-es.org/Criteria_Development/alternative_criteria_process.shtml.

All comments received in the 30-day comment period will be considered. During this same 30-day period, however, the draft criteria will be balloted to the Evaluation Committee. If the public comments raise major issues, generate controversy, or require the criteria to be substantially rewritten, then ICC-ES staff may decide to reballot the criteria; or place a revised draft on the web site for further public comment; or put the criteria on the agenda for a future Evaluation Committee meeting.

Correspondence received and a memo outlining staff's resolution of the comments in the correspondence will be posted on the web site shortly after the close of the comment period.

Your cooperation is requested in forwarding to the Los Angeles business/regional office all material directed to the Evaluation Committee. Parties interested in the deliberations of the committee should refrain from communicating, whether in writing or verbally, with committee members. The committee reserves the right to refuse communications that do not comply with this request.

Newly approved acceptance criteria may involve test methods or test protocols that are not currently included in the scope of testing services offered by accredited testing laboratories. As noted in the ICC-ES Rules of Procedure for Evaluation Reports, the scope of the laboratory's accreditation must include the type of testing that is to be reported to ICC-ES. We encourage accredited laboratories to expand their scopes of accreditation to include testing under newly approved acceptance criteria. Please note that testing laboratories must be accredited by the International Accreditation Service (IAS) or by another accreditation body that is a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement. For further information, please contact IAS at (562) 699-0541, extension 3309, or send an e-mail to pmccullen@iasonline.org.

If you have any questions, please contact the undersigned at (800) 423-6587, extension 5694, or Michael O'Reardon at extension 5685. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,

Ken Roberts
Evaluation Specialist

KGR/raf

Enclosure

cc: Evaluation Committee

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR BARRIER SYSTEMS FOR PROTECTION OF WOOD POSTS AGAINST DECAY AND TERMITES

AC313

Proposed April 2008

Previously approved June 2007 and June 2005

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.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR BARRIER SYSTEMS FOR PROTECTION OF WOOD POSTS AGAINST DECAY AND TERMITES

1.0 INTRODUCTION

1.1 Purpose: The purpose of this criteria is to establish requirements for barrier systems for protection of wood posts against decay and termites, in accordance with the applicable EPA labeling and as alternatives to preservative-treated lumber and timbers, to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2006 *International Building Code*® (IBC), the 2006 *International Residential Code*® (IRC), the BOCA® *National Building Code*/1999 (BNBC), the 1999 *Standard Building Code*© (SBC), and the 1997 *Uniform Building Code*™ (UBC). The bases of recognition are IBC Section 104.11, IRC Section R104.11, BNBC Section 106.4, SBC Section 103.7 and UBC Section 104.2.8. Applicable code sections for locations requiring preservative-treated wood for fungal decay and/or termite resistance are Section 2304.11 of the IBC, Sections R319 and R320 of the IRC, Section 2304 of the SBC, Section 2311 of the BNBC and Section 2306 of the UBC. Applicable code sections for fasteners in preservative-treated wood are Section 2304.9.5 of the IBC, Section R319.3 of the IRC, Section 2306.3 of the SBC, Section 2311.3.3 of the BNBC and Section 2304.3 of the UBC.

The reason for the development of this criteria is to allow the evaluation of proprietary decay and termite barrier protection systems for wood posts, since Section 2304.11 of the IBC and Sections R319 and R320 of the IRC do not provide test methods and performance requirements for wood posts resisting decay and termites.

1.2 Scope: This acceptance criteria covers barrier systems for protection of sawn lumber posts and round posts used in ground-contact applications. Materials complying with this criteria are suitable for locations requiring preservative-treated wood for fungal decay and/or termite resistance. The system is used to protect solid-sawn lumber and engineered products made from solid-sawn lumber (glulam and nail-lam columns) and is used for both preservative-treated wood and nonpreservative-treated wood. The barrier systems are used to protect nonpreservative-treated wood posts used as interior ~~floor~~ supports in ground contact with the boot material extending a minimum of 8 inches (203 mm) above exposed earth. The barrier systems are also used to protect preservative-treated wood posts that are recognized for aboveground exterior use but that are installed as support posts in ground contact.

1.3 Codes and Referenced Standards: Where standards are referenced in this criteria, these standards shall be applied consistently with the code upon which compliance is based.

1.3.1 Codes:

1.3.1.1 2006 *International Building Code*® (IBC), International Code Council.

1.3.1.2 2006 *International Residential Code*® (IRC), International Code Council.

1.3.1.3 BOCA® *National Building Code*/1999 (BNBC).

1.3.1.4 1999 *Standard Building Code*© (SBC).

1.3.1.5 1997 *Uniform Building Code*™ (UBC).

1.3.2 American Wood-Preservers' Association (AWPA) Standards:

1.3.2.1 200~~6~~7 American Wood-Preservers' Association (AWPA) Book of Standards©.

1.3.2.2 AWPA E1-06©, Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites.

1.3.2.3 AWPA E7-0~~1~~7©, Standard Method of Evaluating Wood Preservative by Field Tests with Stakes.

1.3.2.4 AWPA E10-06©, Standard Method of Testing Wood Preservatives by Laboratory Soil-Block Cultures.

1.3.2.5 AWPA E11-06©, Standard Method of Determining the Leachability of Wood Preservatives.

1.3.2.6 AWPA E12-94©, Standard Method of Determining Corrosion of Metals in Contact with Treated Wood.

1.3.2.7 AWPA E14-0~~2~~7©, Standard Method of Evaluating Wood Preservatives in a Soil Bed.

1.3.2.8 AWPA T1-0~~4~~7©, Use Category System: Processing and Treatment Standard.

1.3.2.9 AWPA U1-0~~6~~7©, Use Category System: User Specification for Treated Wood.

1.3.3 ASTM International Standards:

1.3.3.1 ASTM D 143-94 (2000)e1, Standard Test Methods for Small Clear Specimens of Timber.

1.3.3.2 ASTM D 2103-05, Standard Specification for Polyethylene Film and Sheeting.

1.3.3.3 ASTM D 3345-74 (1999), Standard Test Method for Laboratory Evaluation of Wood and Other Cellulosic Materials for Resistance to Termites.

1.3.3.4 ASTM D 4801-06, Standard Specification of Polyethylene Sheeting in Thickness of 0.25 mm (0.010 inches) and Greater.

1.3.4 American Forest & Paper Association Standard:

1.3.4.1 NDS-05, National Design Specification (NDS) for Wood Construction, with 2001 Supplement.

1.3.5 European Committee on Standardization (CEN) Standard:

1.3.5.1 EN 252:1989, Field Test Method for Determining the Relative Protective Effectiveness of Wood Preservatives in Ground Contact.

1.4 Definitions:

1.4.1 Barrier Systems: A barrier system for protection of wood posts against decay and termites is an impermeable, weather-resistant polyethylene boot with an interior bitumen layer that is permanently adhered to the wood substrate. Alternately, an asphalt emulsion applied to the wood prior to application of the boot may be used instead of bitumen. The boot is preformed from 0.30 mm polyethylene and heat shrunk to the wood so that the wood

is encased. The manufacturing process is done under controlled conditions to ensure proper heat shrinkage of the plastic and bonding to the wood. The boot is applied to both treated and untreated lumber and timber posts.

1.4.2 Barrier System Fabricated Wood: Wood posts fabricated with the barrier system shall be referred to using a proprietary trade name listed in the ICC-ES evaluation report on the system. The fabricated wood shall be manufactured in accordance with an approved quality control manual.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: Complete information concerning material specifications, thickness, size and the manufacturing process.

2.1.2 Installation Instructions: Installation details and limitations.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification of the product. Identification provisions shall include the evaluation report number and the name or logo of the accredited inspection agency.

2.1.3.1 Each piece of lumber or pole shall be legibly branded with, marked with, or otherwise have permanently affixed, the following information:

a. Identification of manufacturer.

b. Identity of the accredited inspection agency.

c. Installation diagrams with groundline indicated

2.1.4 Field Preparation: A description of the methods and procedures for repair of any cuts and holes due to field work.

2.2 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.

2.3 Test Reports: Test reports shall comply with AC85.

2.4 Product Sampling:

2.4.1 Test specimens must be sampled in accordance with the product sampling requirements of Section 3.1 of AC85. In addition, specimen sampling methods shall comply with Section 8.1 of ASTM D 4801, except that the provisions of this acceptance criteria shall govern where differences occur. Statements shall be in the test report indicating whether specimens were produced in accordance with the minimum requirements of the approved quality control manual.

2.4.2 Test samples shall be prepared and/or obtained under the supervision of an accredited inspection agency, and verification shall be provided to the testing agency regarding the authenticity of the samples.

2.4.3 Existing samples in long-term (multiple-year) testing may be accepted provided an accredited inspection agency reviews all records on sample preparation and identification and provides verification of the authenticity of these samples to the testing agency.

3.0 MANUFACTURING PROCESS

3.1 General: The barrier system's fabricated wood is intended to be used in ground contact. The manufacturing process must be under a quality control program established by the evaluation report applicant and an independent inspection agency. The procedures outlined in the approved quality control manual shall be used by the manufacturers and by independent ICC-ES recognized inspection agencies at manufacturing facilities, distribution points, and jobsites.

3.2 Product Standards:

3.2.1 Barrier System: The barrier system shall conform to the composition described in Section 1.4 of this criteria.

3.2.2 Material: All grade-marked species of lumber shall be acceptable. Round posts or poles shall meet applicable grading standards.

3.2.3 Physical Quality: Lumber, posts and poles shall be free from decay. The product shall meet all requirements of the marked grade. All wood products to be protected with the barrier system shall achieve the approved moisture content before fabrication to allow for proper adhesion of the barrier system. Moisture content readings shall be taken with an electrical-resistance needle-type moisture meter in accordance with ASTM D 4444. In case of dispute, the ASTM oven-dry method (ASTM D 4442, Method A) shall be used. Moisture content readings of 28 percent or more shall be verified by oven-dry procedures.

3.3 Manufacturing Process: A proprietary manufacturing process, described in the approved quality control manual submitted to ICC-ES by the applicant for the evaluation report, shall be used.

3.4 Results of Fabrication: The barrier system shall be adhered to the wooden substrate in accordance with the approved quality control manual, submitted to ICC-ES by the applicant for the evaluation report.

3.4.1 Groundline Placement: The groundline on all products shall be indicated and placed so that an appropriate length of wood shall be imbedded in the ground.

3.4.2 ~~Bitumen~~ Barrier System Adhesion: ~~The b~~Bitumen or asphalt emulsion shall adhere to over 75 percent of the wood and polyethylene surfaces.

3.4.3 Boot Snugness: The polyethylene boot shall fit snugly around the wood substrate in accordance with the approved quality control manual.

3.5 Marking: Each piece of material shall be marked with the applicable mark illustrated in the quality control manual for production of the barrier system. The licensed manufacturer may not mix marked material and unmarked material in the same package.

4.0 TEST METHODS AND PERFORMANCE REQUIREMENTS

The performance characteristics of the barrier system fabricated wood shall be documented by testing. Testing shall be in accordance with AWPA, ASTM and CEN standards and shall demonstrate resistance to fungal decay and to subterranean termites. Product sampling shall be in accordance with Section 2.4 of this criteria. The following documentation (Sections 4.1 to 4.7) is needed to substantiate the performance characteristics of the barrier system fabricated wood product. The barrier system

fabricated wood products tested shall include nonpreservative-treated wood posts and preservative-treated wood posts that are recognized for aboveground exterior applications.

4.1 Laboratory Tests: The testing indicated in Sections 4.1.1 and 4.1.2 of this criteria shall be performed.

Conditions of Acceptance: Testing shall demonstrate efficacy of the barrier system fabricated wood products and uses indicated in this criteria.

4.1.1 Soil block testing in accordance with AWPA E10.

4.1.2 Termite testing in accordance with AWPA E 1 or ASTM D 3345. The product shall demonstrate resistance to subterranean termites. The testing shall consider Formosan termites unless these are excluded in the evaluation report (see Section 6.3 of this criteria).

4.2 Simulated Field Tests: Soil bed exposure testing in accordance with AWPA E14.

Conditions of Acceptance: Testing shall demonstrate efficacy of the barrier system fabricated wood products and uses listed in this criteria.

4.3 Field Tests: Ground-contact field stake testing in accordance with AWPA E7 or EN 252 shall demonstrate performance for ground contact.

Conditions of Acceptance: Testing shall demonstrate efficacy of the barrier system wood fabricated products and uses listed in this criteria.

4.4 Barrier Permanence: Testing indicated in Sections 4.4.1 and 4.4.2 shall be performed for ground-contact use.

Conditions of Acceptance: Testing shall demonstrate levels of performance for the barrier system fabricated wood products and uses indicated in this criteria.

4.4.1 After a minimum of five years of exposure, field stakes shall be visually inspected for signs of UV degradation, splitting, holes or other evidence of wear in the barrier system.

4.4.2 Adhesion of the ~~bitumen~~ barrier system shall be tested on field stakes after a minimum of two years of exposure, using procedures in accordance with the approved quality control manual submitted to ICC-ES by the applicant for the evaluation report.

Alternate: As an alternate, adhesion of the ~~bitumen~~ barrier system can be evaluated after artificial weathering in accordance with the procedures in Annex A of AC62 for a minimum of 12 complete cycles.

4.5 Effects on Wood Properties: Static bending strength testing in accordance with ASTM D 143 shall be performed.

Conditions of Acceptance: The testing shall document the MOE and MOR strength retention of the product and the use of load duration factors under Section 2.3 of the NDS.

Alternate: As an alternate to testing, an independent engineering analysis may be submitted. The analysis shall be signed, sealed and dated by the responsible engineer.

4.6 Boot Material Performance: Testing shall be submitted in accordance with ASTM D 4801.

Conditions of Acceptance: The testing shall document compliance with the standard.

4.7 Dynamic Impact Performance: Three specimens of nominal wood 4-inch-by-4-inch booted material shall be conditioned for four hours or more at room temperature. The specimens shall be tested with a Gardner Impact Tester or equivalent, using a 2.2-pound (1 kg) impact load and an impactor with a flat impact end with cross-sectional areas of 0.15 square inch (100 mm^2). The impactor shall be released from a height of 4.9 inches (125 mm). The test shall be repeated five times on each specimen for a total of 15 impacts. The specimens shall then be visually examined for punctures.

Conditions of Acceptance: The testing shall show no punctures through the barrier system.

Alternate: Field stake tests in accordance with Section 4.3, wherein the barrier system is purposely punctured or cut and where these stakes show equivalent performance to intact barrier stakes, can be used to demonstrate the puncture resistance of the system. A minimum of five years of exposure is required for the stakes.

5.0 QUALITY CONTROL

5.1 The barrier system fabricated wood products shall be manufactured under an approved quality control program with inspections by an inspection agency that maintains continuing supervision, testing and inspection over the quality of the product. Inspection agencies shall be listed by an accreditation body that complies with the requirements of the American Lumber Standards Treated Wood Program, or that is otherwise acceptable to ICC-ES.

5.2 Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted that lists specifications and physical properties of materials used for production of the barrier system fabricated wood products.

6.0 EVALUATION REPORT RECOGNITION

The following are conditions of use for barrier system fabricated wood products covered by this acceptance criteria:

6.1 The evaluation report shall specify appropriate sizes and size limitations of the barrier system fabricated wood products for both square and round wood post materials.

6.2 The evaluation report shall state that barrier system fabricated wood products shall not be permitted to be used in areas subject to Formosan termite attack unless data, in accordance with Section 4.1.2 or 4.3, showing resistance to Formosan termites, is submitted.

6.3 The evaluation report shall specify limitations on the use of load duration factors in accordance with Section 2.3 of the NDS.

6.4 Penetrations of the barrier below the groundline marking by fasteners, bolts and nails shall not be permitted in the belowground portion of the barrier system.

6.5 The evaluation report shall list the approved fabricators.

6.6 The evaluation report shall state that barrier system fabricated wood products using nonpreservative-treated wood members, shall not be permitted in applications where the untreated portions are directly exposed to the weather, and that the boot material shall extend a minimum of 8

inches (203 mm) above exposed earth.

6.7 The evaluation report shall state that the barrier system shall be limited to applications involving solid-sawn lumber and engineered products made from solid-sawn lumber, such as glulam and nail-lam columns.■