



ICC Evaluation Service, Inc.
Birmingham Regional Office
900 Montclair Road, Suite A
Birmingham, AL 35213
tel: 205.599.9800
fax: 205.599.9850
www.icc-es.org

June 1, 2010

TO: PARTIES INTERESTED IN MOLDED PLASTIC FOOTING PADS

SUBJECT: Proposed Revisions to the Acceptance Criteria for Molded Plastic Footing Pads, Subject AC49-0610-R1 (MO/BG)

Dear Madam or Sir:

The subject criteria was approved October 2009 with revisions that defined the term "post-frame building systems" and added reference to ASABE/ANSI EP 486.1 (2000), Shallow-post Foundation Design, American Society of Agricultural and Biological Engineers. The proponent also requested that the criteria be revised to allow use of the footing pads with any type construction and occupancy type. The committee did not approve the use of the footing pads for occupancies other than agricultural (Group U), or decks for detached one- and two-family dwellings (Group R-3), as requested in the staff letter dated September 1, 2009. During the public testimony, questions were raised by the committee concerning seismic performance, and it was noted that the post-frame building systems are not recognized as a seismic force-resisting system in ASCE 7. Staff recommended that the footings continue to be used only for agricultural and deck construction based on the earthquake load design Exceptions 1 and 3 in Section 1613.1 of the IBC. This recommendation was approved by the committee.

The company requesting the October 2009 revisions has requested that their product be evaluated for use with post-frame Type V construction, any occupancy. They have provided input from the National Frame Builders Association (NFBA) concerning seismic performance under ASCE 7. They are recommending that post-frame building systems be designed for seismic using ASCE 7-05, Table 12.14-1, Design Coefficients and Factors for Seismic Force-Resisting Systems for Simplified Design Procedure. They propose that the system be considered as a Type B.23 Building Frame System—Light-frame walls sheathed with wood structural panels rated for shear resistance or steel sheets. The Type B.23 frame system uses a seismic Response Modification Coefficient, R , of 7, and is permitted in Seismic Design Categories B, C, D and E.

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. Section 1.2 (Scope) has been modified to allow the use of the molded plastic footing pads with post-frame building systems in any occupancy type allowed by the code for Type V construction.
2. Sections 1.1.2 (applicable code sections), 1.2 (Scope), and 6.2.2 and 6.2.8 (conditions of use) have been revised to clarify that use of the product with post-frame building system construction of detached one- and two-family dwellings does not require earthquake design when in accordance with Section 1613.1 Exception 1 of the IBC.
3. Section 1.3 was revised to add a reference to ASCE 7-05.
4. Section 6.2.5 was deleted and a new condition of use Section 6.2.8 was added to clarify the earthquake load design procedure in accordance with ASCE 7-05, and appropriate design coefficients and factors for post-frame buildings.

Staff requests input and testimony from the applicant, interested parties and the National Frame Builders Association (NFBA), regarding the following:

- a. Staff has concerns about the lack of seismic detailing for post-frame construction for one- and two-family dwellings that will be covered under Section 1613.1 Exception 1 of the IBC, and notes that the 2000 IBC commentary applied this exception only to structures complying with the IRC—conventional construction. The 2006 and 2009 IBC commentaries do not specifically limit this exception to conventional construction.
- b. Design procedure for post-frame building systems for uplift and lateral loads using the molded plastic footing pads that do not have a positive connection to the post. Since the definition in Section 1.4.3 implies that all the loads will be transferred to the foundation by the posts, it is unclear how a complete load path for lateral and uplift loadings is accomplished, since the subject footing pads are evaluated for vertical download capacity only.
- c. Use of post-frame building systems and this product in other than residential decks (Group R-3) and agricultural buildings (Group U. It is unclear whether structures built for other occupancies can tolerate the 0.75-inch movement permitted by Section 4.5.4.
- d. Documentation is needed justifying the use of ASCE 7-05 Table 12.14.-1, Frame System B.23, as proposed by NFBA. Staff has the following concerns regarding this recommendation:
 - i. This proposal to use light framed walls sheathed with wood structural panels or steel sheets is inconsistent with the definition of post-frame building systems in Section 1.4.3 of the criteria. The definition refers to use of secondary framing members, girts attached to primary framing members (posts) to provide lateral support and transfer sheathing loads to the posts.

- ii. Sheathed walls are continuously supported on foundations. How do the pads provide continuous support?
- iii. Sheathed walls may undergo flexure, which creates tension or uplift on one edge. Since the pads are prohibited from uplift, how is this resistance achieved?
- iv. Cyclic load tests with the sheathed walls on the pads may be needed to document performance.
- v. Staff notes that ASCE 7-05 Table 12.2-1 includes a Type G.7 frame system, defined as a cantilevered column system detailed to conform to the requirements for timber frames, R of $1\frac{1}{2}$, and permitted in Seismic Design Categories B, C and D. This frame system appears to be more appropriate to the post-frame building systems that are supported by the footing pads. Since the footing pads are intended only for downward load resistance, it is unclear how support for a cantilevered column is achieved.

The above items must be resolved before staff would recommend the proposed revisions to add all Type V buildings and occupancies.

You are cordially invited to submit written comments, within 30 days of the date of this letter. Please use the comment form on the web site attaching any letters to the form. 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 in preparing revisions to the criteria that may be considered at a future Evaluation Committee meeting. Comments received will be posted on the web site shortly after the close of the comment period.

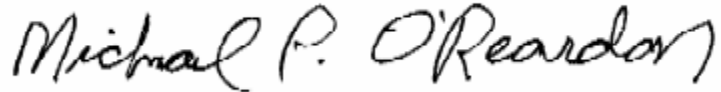
Your cooperation is requested in forwarding to the Los Angeles business/regional office all material directed to the Evaluation Committee. Parties interested in the deliberations of the committee should refrain from communicating, whether in writing or verbally, with committee members. The committee 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.

Please submit all comments using the form on the web site. Attach any letters to the comment form. If you have any questions (not comments), please contact the undersigned at (800) 423-6587, extension 5685, or Brian Gerber, Principle Structural Engineer, at extension 3255. 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 P. O'Reardon". The signature is written in a cursive style with a large, prominent "M" and "O".

Michael O'Reardon, P.E.
Regional Manager

MPO/raf

Enclosure

cc: Evaluation Committee

GE Engineering

20107 Buttermere Court Estero, FL 33928

Michael O'Reardon, P.E., C.B.O., M.C.P.

Regional Manager

ICC Evaluation Service, Inc.

Birmingham Regional Office

900 Montclair Road, Suite A

Birmingham, AL 35213

RE: AC49 – Molded Plastic Footing Pads

Dear Mr. O'Reardon:

Ag-Co Products, inc. respectfully request the following revisions to the approved above referenced.

Section 1.1.3 Building Occupancies

One story buildings of all permitted Use Groups for Type V Construction.

Scope: Add “one story” in front of post-frame and remove the word “agricultural”.

Add section 1.3.9 ASCE/SEI 7-05, Minimum Design Loads for Buildings and Other Structures.

Below is the reply by Harvey B. Manbeck P.E., Technical Director of the National Frame Building Association concerning how and where Post-Frame building are recognized in ASCE 7-05 as a seismic force resisting system.

“Post-frame building systems are not the only common building system that isn't specifically listed in Table 12.14-1 of ASCE/SEI 7-05, Minimum Design Loads for buildings and Other Structures. For example, wood stud-wall construction isn't specifically listed in the table, but I think most in the profession would agree that Row 13 of the table would be a reasonable generic description of a wood stud bearing wall system. Similarly, a post-frame system sheathed with either wood structural panels or steel sheets fits nicely under the generic Building Frame System listed in Row 23 of Table 12.14-1 of ASCE/SEI 7-05. The generic description in Row 23 reads, “Light-frame walls sheathed with wood structural panels rated for shear resistance or steel sheets. Post-frame construction, without question, is a Building Frame System, it is a light frame system, and it is sheathed with either rated wood structural panels or steel sheets rated for in-plane shear strength and stiffness.”

It is hopeful that the above revisions will meet the committees' approval

Respectfully,

Gerald Eckhoff P.E., Principal Engineer

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR MOLDED PLASTIC FOOTING PADS

AC49

Proposed June 2010

Previously approved October 2009, October 2008, October 2007, September 1990

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 MOLDED PLASTIC FOOTING PADS (AC49)

1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for molded plastic footing pads to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under the 2009 and 2006 *International Building Code*[®] (IBC) and the 2009 and 2006 *International Residential Code*[®] (IRC). Bases of recognition are IBC Section 104.11 and IRC Section R104.11. Applicable code sections are:

1.1.1 Footings and Foundations: 2006 IBC Sections 1805 (Footings and Foundations), 1805.1 (General), 1805.2 (Depth of Footings), and 1805.4 (Footings); 2009 IBC Sections 1808 (Foundations) and 1809 (Shallow Foundations); and 2009 and 2006 IRC Sections R401 (Foundations—General), R402 (Foundations—Materials), and R403 (Foundations—Footings).

1.1.2 Residential Decks and Detached One- and Two-family Dwellings: 2006 IBC Sections 310 (Residential Group R-3 One- and Two-Family Dwelling Units), Section 1602.1 (Definitions—Deck), 1604.8.3 (Anchorage – Decks), Table 1607.1 (Live Loads), 1613 (Earthquake Loads—Exception 1); 2009 IBC Sections 310 (Residential Group R-3 One- and Two-Family Dwelling Units), 1604.8.3 (Anchorage – Decks), Table 1607.1 (Live Loads), 1613 (Earthquake Loads—Exception 1); and 2006 IRC Sections R101.2 (Scope), R202 (Definitions—Deck), R301.2 (Seismic Provisions-Exception), R502.2.2 (Decks); 2009 IRC Sections R101.2 (Scope) and R502.2.2 (Decks).

1.1.3 Agricultural Buildings Group U Occupancies: 2009 and 2006 IBC Sections 312 (Utility and Miscellaneous Group U), Table 1604.5 (Occupancy Category of Buildings and Other Structures), 1613.1 (Earthquake Loads—Exception 3), and Appendix C (Group U—Agricultural Buildings)

The reason for the development of this acceptance criteria is to allow the evaluation of molded plastic footing pads as an alternative footing material, since the codes do not provide requirements for the evaluation of molded plastic footing pads.

1.2 Scope: The molded plastic footing pad is a footing for the support of a wood post column on an exterior residential deck, and post-frame building system construction of detached one- and two-family dwellings, post-frame agricultural buildings and one-story, post-frame agricultural buildings for Type V construction. The molded plastic footing pad shall only be used as an individual isolated footing supporting downward compression loads.

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

1.3.2 2006 *International Building Code*[®] (IBC), International Code Council.

1.3.3 2009 *International Residential Code*[®] (IRC), International Code Council.

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

1.3.5 ASTM D 790-07^{e1}, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical insulating Materials, ASTM International.

1.3.6 ASTM D 2990-01, Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics, ASTM International.

1.3.7 ICC-ES Acceptance Criteria for Air-conditioning Equipment Pads (AC100).

1.3.8 ASABE/ANSI EP 486.1 (2000), Shallow-post Foundation Design, American Society of Agricultural and Biological Engineers.

1.3.9 ASCE/SEI 7-05, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers.

1.4 Definitions:

1.4.1 Molded Plastic Footing Pads: Circular ribbed plastic pads injection-molded from of a mix of virgin or recycled plastic, and used as a shallow rigid footing that transmits design bearing load uniformly to the supporting soil.

1.4.2 Deck: Refer to the definitions in 2006 IBC Section 1602 and 2006 IRC Chapter 2.

1.4.3 Post-frame Building System: A post-frame building system is characterized by primary structural frames of posts as columns and trusses or rafters as roof framing. The roof framing is attached to the posts, either directly or indirectly through structural headers. Posts are typically graded lumber, graded timbers, or laminated lumber, or are fabricated of composite or hybrid material. Posts are embedded in the soil and supported on isolated footings, or are attached to the top of piers, concrete or masonry walls, slabs-on-grade, or other suitable foundations. Secondary framing members, purlins in the roof and girts in the walls are attached to the primary framing members to provide lateral support and to transfer sheathing loads, both in-plane and out-of-plane, to the posts and roof framing. Structures are sheathed with a wide variety of materials, including metal and wood structural panels or other suitable materials.

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. This information shall be submitted with the quality documentation required under Section 5.2.

2.1.2 Installation Instructions: Installation details and limitations, include allowable loads based on soil bearing capacity.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification of the molded plastic footing pad. Identification provisions shall include the evaluation report number.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR MOLDED PLASTIC FOOTING PADS (AC49)

2.1.4 Field Preparation: Field modification or fabrication of this product is not permitted.

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: Sampling of the molded plastic footing pad for tests under this criteria shall comply with Section 3.2 of AC85.

3.0 TEST AND PERFORMANCE REQUIREMENTS

The performance characteristics for molded plastic footing pads described in Sections 3.1, 3.2, 3.4, 3.5 and 3.6 shall be documented by testing and shall be conducted for each type of plastic material used in manufacturing the pads. Full-size molded plastic footing pads in each size and configuration to be listed in the evaluation report shall be tested to document performance characteristics described in Sections 3.5 and 3.6.

3.1 Exposure to Soil: The test methods are noted in Section 4.1 of this criteria.

3.2 Low-temperature Brittleness: The test methods are noted in Section 4.2.

3.3 Density: The test methods are noted in Section 4.3.

3.4 Stiffness: The test methods are noted in Section 4.4.

3.5 Allowable Vertical Load Tests: The test methods are noted in Section 4.5.

3.6 Creep Test: The test methods are noted in Section 4.6.

4.0 TEST METHODS

4.1 Exposure to Soil Environment: Testing shall be conducted for in-ground use in accordance with Section 4.3.1 of AC100.

4.2 Low-temperature Brittleness: Testing shall be conducted in accordance with Section 4.3.2 of AC100.

4.3 Density: Testing shall be conducted in accordance with Section 4.3.3 of AC100.

4.4 Stiffness: Test samples representative of the molded plastic footing pads to be listed in the evaluation report shall be tested for flexural modulus of elasticity in accordance with ASTM D 790 to evaluate the molded plastic footing pad as a rigid footing which transmits loads uniformly to the supporting soil. Five identical specimens of footing pad shall be tested.

Conditions of Acceptance: The average of the five identical test specimens must exhibit a flexural modulus of elasticity of 250,000 psi (1725 MPa) or greater.

4.5 Allowable Vertical Load Test:

4.5.1 Purpose: The purpose of this test is to evaluate the strength of the molded plastic footing pad under simulated support conditions. The footing shall be tested on a substrate with the following characteristics: readily definable strength characteristics, relatively uniform

stiffness throughout, consistent and/or repeatable stiffness between multiple tests.

4.5.2 Evaluation and Selection of Soil Substrate:

A substrate material composed of expanded polystyrene (EPS) or extruded polystyrene (XPS) shall be selected for use as a test substrate. Other materials meeting the basic requirements of Section 4.5.2.1 may also be used for laboratory testing. If actual soil is to be used as the test substrate in laboratory testing, special consideration must be given to the factors influencing soil stiffness and repeatability, such as soil confinement and compaction methods between subsequent tests.

4.5.2.1. Substrate Stiffness Classification:

Molded plastic footings pads shall be tested on a Class of Materials 5 substrate (Table 1) having a maximum modified modulus of soil reaction, k , not to exceed the values in Table 1. Subsequent testing on stiffer substrates may be performed where increased load capacity on stiffer soils is desired.

4.5.2.2. Substrate Evaluation: The modified modulus of soil reaction of the substrate shall be assessed using the procedure described below. The report shall indicate the test soil classification and the actual modulus of soil reaction, k , in psi/in. (kPa/mm).

All substrate material and test specimens shall be conditioned at standard laboratory conditions of 73.4 + 3.6° F (23.0 + 15.8° C) and 50 + 5 percent relative humidity for not less than 48 hours prior to testing. Standard laboratory conditions shall be maintained throughout testing.

The configuration (width, depth, thickness, and material lot/batch) of the substrate material during the stiffness evaluation shall be the same size substrate that is to be used during the test of the footing as required in Section 4.5.3.

The modulus of soil reaction, k , shall be measured by centering a 1-inch-thick (25.4 mm), 12-inch-diameter (304.8 mm) steel plate on the representative substrate. A load of 1131 lbf (10 psi) [5090 N (69 kPa)] shall be applied to the center of the plate at a uniform rate. The full load shall be applied over an interval not to exceed 1 minute. The full load shall be maintained for 10 minutes.

A deflection gauge having a resolution of 0.001 inch (0.03 mm) shall be positioned to measure the deflection at the point of load application. Load and deflection readings shall be logged continuously to produce a load-deflection plot for the substrate.

The modulus of soil reaction, k , shall be calculated as 10 divided by the total deformation of the plate under the 1131 lbf load (10 psi) [5090 N (69 kPa)]. The total deformation measurement shall be the total deformation measured at 10 minutes of sustained load, including the deflection occurring during the initial loading. A "toe-correction" may be applied to the total deflection value to account for the load required to bring the loading plate into full bearing with the substrate.

The substrate is acceptable for use if the modified modulus of soil reaction, k , does not exceed the value in Table 1, for the class of soil being evaluated.

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR MOLDED PLASTIC FOOTING PADS (AC49)

4.5.3 Procedure: The molded plastic footing pad shall be supported on the test substrate while subjected to a concentrated load using the following procedure:

The footing shall be centered on the test substrate material from the same batch qualified for use in accordance with Section 4.5.2.2. The substrate shall not be less than 4 inches (102 mm) thick and shall be of sufficient size to extend beyond the footing by not less than 1.5 inches (38.1 mm) on all sides.

The molded plastic footing pad shall be oriented as required by the manufacturer's installation instructions (i.e., stiffening ribs facing up).

The test load shall be applied to the footing over an area simulating the minimum contact area anticipated in service.

The test load shall be applied with an eccentricity that is to be the maximum permitted in-service eccentricity. The eccentricity shall be taken as the distance from the geometric center of the footing to the center of the applied load. A minimum eccentricity of 0.5 inch (12.7 mm) shall be used.

The rate of loading shall be such that presumptive load-bearing value for the soil class being qualified is reached in approximately 10 minutes [e.g., for Class 5 soil, the loading rate (in lbf/minute) equals the pad area times 1500 psf (72 000 Pa) per 10 minutes]. The load shall be applied at this rate until ultimate is reached.

Deflection gauges having a resolution of 0.001 inch (0.03 mm) shall be positioned to measure the deflection at the point of load application and at two locations along the edge of the footing. The gauges at the edge of the footing shall be positioned along the same line, that which intersects the center of the applied load, on opposite sides of the applied load, with one gauge along the closest edge to the applied load and the other gauge along the edge farthest from the applied load. Load and deflection readings shall be logged continuously to produce a load-deflection plot for each test.

4.5.4 Allowable Vertical Load: The allowable vertical load for the molded plastic footing pad shall be taken as the lesser of the following:

1. Maximum load divided by 3.0.
2. Maximum presumptive load for the soil class being assessed (i.e., presumptive load-bearing value times the area of the plastic footing).
3. Load at which a 0.75-inch (19.05 mm) deflection occurs at the point of load application (total deflection). A "toe correction" may be applied to the deflection measurements to account for the load required to bring the plastic footing pad into full bearing with the substrate.

Three tests of each size of footing are required, with none of the results varying more than 15 percent from the average of the three, unless the lowest test value is used. The average result from a minimum of five tests may be used regardless of the variations. The results from two tests may be used when the higher value does not exceed the lower value by more than 5 percent and the lower value is used.

4.6 Creep Test:

4.6.1 Purpose: The purpose of this test is to evaluate the strength of the molded plastic footing pad under sustained loads.

4.6.2 Procedure: The footing shall be subjected to a sustained concentrated load for 2000 hours in accordance with ASTM D 2990 except as modified below:

All test specimens shall be conditioned at standard laboratory conditions of 73.4 + 3.6° F (23 + 15.8° C) and 50 + 5% relative humidity for not less than 48 hours prior to testing. Standard laboratory conditions shall be maintained throughout testing.

Specimens shall be continuously supported around the perimeter of the footing on a rigid support. The support shall have a radius of 0.125 inch (3.18 mm) and shall have a test span equal to the nominal footing dimension minus 1 inch (25.4 mm) in each direction being supported. The circular footings shall be supported on a rigid circular support having a diameter equal to the nominal footing diameter minus 1 inch (25.4 mm). The specimen shall be centered on the support so that the specimen overhangs the support by $\frac{1}{2}$ inch (12.7 mm) on all sides.

The footing shall be oriented as required by the manufacturer's installation instructions (i.e., stiffening ribs facing up).

The test load shall be applied to the footing over an area simulating the minimum contact area anticipated in service.

The test load shall be applied with an eccentricity that is to be the maximum permitted in-service eccentricity. The eccentricity shall be taken as the distance from the geometric center of the footing to the center of the applied load. A minimum eccentricity of 0.5 inch (12.7 mm) shall be used.

The average net deflection of the footing under the allowable load must be calculated. The net deflection of the footing shall be calculated as the deflection at the point of load application minus the average of the two deflections recorded at the edge of the footer. This deflection shall be determined at the allowable load using the load deflection curves generated in accordance with Section 4.5. The allowable load shall be calculated as specified in Section 4.5.4.

The creep test load shall be equal to the applied load required to produce an immediate (short-term) deflection at point of load application that is equal to the net deflection determined in Section 4.6.2. The creep test load shall be determined using the support conditions for the creep test, as required in Section 4.6.2. The purpose of this procedure is to produce the same state of flexural strain when testing according to Section 4.5 (flexible support) except under the support conditions required in Section 4.6.2 (rigid support).

A deflection gauge having a resolution of 0.001 inch (0.03 mm) shall be positioned to measure the deflection at the point of load application. Deflection measurements shall be taken at the intervals specified in ASTM D 2990, except the interval between readings shall not exceed 1 week (168 hours), or 24 hours where there is evidence of tertiary creep (increasing creep rate).

The deflection data shall be presented in two plots: one plotting the creep deformation (inches) versus time

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR MOLDED PLASTIC FOOTING PADS (AC49)

(hours), and the other plotting the creep rate (in./hour) versus time (hours). The report shall indicate clearly whether tertiary creep is evidenced in the data.

4.6.3 Conditions of Acceptance: The molded plastic footing pad shall not exhibit tertiary creep (increasing creep rate) under 2000 hours of sustained load. Upon failure, the footing may be retested under a reduced creep load; however, the immediate deflection produced by the reduced creep load shall be used to calculate the corresponding allowable load from the load deflection plots produced in accordance with Section 4.5. The overall allowable load rating for the footing shall not exceed this reduced load.

5.0 QUALITY CONTROL

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

5.2 Third-party follow-up inspections are not required under this acceptance criteria.

5.3 Quality Control Tests: Quality control tests shall be conducted during the production of the pads in conformance with procedures set forth in the in-house quality control manual. The quality control tests and conditions of acceptance shall be as follows:

5.3.1 One flexural test in accordance with ASTM D 790 shall be performed for every 1,000 pads produced, and one concentrated load test in accordance with Section 4.6 of this report shall be performed for every 3,000 pads produced.

5.3.2 The test samples shall be randomly taken from the injection-molded products.

5.3.3 Percentages and types of material used shall be recorded for each day of production. If different material sources, percentages, or types of materials are introduced into any production run, tests noted above shall be performed and documented in accordance with procedures set forth in the in-house quality control manual.

5.3.4 Conditions of Acceptance: The determined flexural modulus and flexural strength shall not be less than 95 percent of the lowest control sample values reported in the initial qualification test report. The allowable deflection under load shall not be more than 95 percent of the value reported in the qualification test report.

6.0 EVALUATION REPORT RECOGNITION

6.1 Installation: The following is information that shall be included in the ICC-ES evaluation report on the molded plastic footing pads:

6.1.1 Table of allowable load capacities of each footing size based on soil bearing capacity.

6.1.2 Figure showing plan and cross-sectional view of footing pad with dimensions noted and rib configuration shown.

6.1.3 Detailed description of installation of molded plastic footing pads.

6.2 Conditions of Use: The following Conditions of Use for molded plastic footing pads shall be included in the evaluation report:

6.2.1 The [name of product defined as molded plastic footing pads] must be installed in accordance with this report and the applicable code.

~~**6.2.2** The [name of product defined as molded plastic footing pads] are used to support wood posts used to support exterior residential decks or wood post columns for post-frame building systems for construction of detached one- and two-family dwellings, Group U (Agricultural Buildings), and one story Type V, buildings construction under the IBC. or any construction under the IRC.~~

6.2.3 The [name of product defined as molded plastic footing pads] must be installed below the frost line of the locality.

6.2.4 The [name of product defined as molded plastic footing pads] are used as individual isolated footings to resist bearing loads only and are not used to resist lateral or uplift loads.

~~**6.2.5** The [name of the product defined as molded plastic footing pads] have not been evaluated for seismic or wind loads.~~

~~**6.2.5**~~ ~~**6.2.6**~~ Mechanical fasteners must not be used with the molded plastic footing pads.

~~**6.2.6**~~ ~~**6.2.7**~~ Patio covers or other types of roof construction must not be connected to residential decks supported by molded plastic footing pads

~~**6.2.7**~~ ~~**6.2.8**~~ Design calculations in accordance with Chapter 18 of the IBC, Chapter 4 of the IRC and ASABE/ANSI EP 486.1 must be submitted to the code official documenting uplift and lateral load resistance.

6.2.8 When required by the code, design calculations for earthquake loads must be submitted to the code official, documenting loads to be resisted by the [name of product defined as molded plastic footing pads]. The calculations shall be in accordance with ASCE 7-05 using design coefficients and factors in Table 12.14-1, building frame system B.23, light-frame walls sheathed with wood structural panels rated for shear resistance or steel sheets.

Design for earthquake loads is not required for Group U (Agricultural Buildings), residential decks and detached one- and two-family dwellings complying with Section 1613.1, Exceptions 1 and 3, of the IBC or Section R301.2.2, Exception, of the IRC.

6.2.9 The allowable soil bearing pressure and vertical movement for the [trade name of molded plastic footing pad product], must be determined by a site-specific geotechnical investigation or evaluation in accordance with Section 1803 of the IBC or Section R401.4 of the IRC. A geotechnical investigation or evaluation must be submitted to the code official for approval, when required by the applicable code.■

**PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR
MOLDED PLASTIC FOOTING PADS (AC49)**

TABLE 1—SOIL CLASSIFICATION

| CLASS OF MATERIALS | PRESUMPTIVE LOAD-BEARING VALUE (psf) | MINIMUM MODIFIED MODULUS OF SOIL REACTION, <i>k</i> (psi/in) |
|--|---|---|
| 1. Crystalline bedrock | 12,000 | — |
| 2. Sedimentary and foliated rock | 4,000 | — |
| 3. Sandy gravel and/or gravel (GW and GP) | 3,000 | 800 |
| 4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC) | 2,000 | 400 |
| 5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH) | 1,500 | 100 |

For **SI**: 1 psf = 48 Pa, 1 psi = 6.9 kPa, 1 inch = 25.4 mm.