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December 29, 2009

TO: PARTIES INTERESTED IN EVALUATION REPORTS ON PNEUMATIC-OR GAS-POWER-DRIVEN PIN FASTENERS USED TO ATTACH GYPSUM PANELS TO COLD-FORMED STEEL FRAMING

SUBJECT: Proposed Revisions to the Acceptance Criteria for Pneumatic- or Gas-power-driven Pin Fasteners Used to Attach Gypsum Panels to Cold-formed Steel Framing (AC259)

Proposed New Title:

Acceptance Criteria for Power-driven Pins for Attaching Gypsum Board to Cold-formed Steel Framing, Subject AC259-0210-R1 (PB/PC)

Hearing Information:

Wednesday, February 3, 2010
8:00 a.m.

Sheraton Gateway Hotel Los Angeles
6101 West Century Boulevard
Los Angeles, California 90045
(888) 627-7104

Dear Madam or Sir:

An evaluation report applicant has proposed revisions to the subject acceptance criteria, which will be considered at the ICC-ES Evaluation Committee hearing noted above. The proposed changes are as follows:

1. Change the title of AC259 to "Acceptance Criteria for Power-driven Pins for Attaching Gypsum Board to Cold-formed Steel Framing."
2. Update AC259 to reference the 2009 IBC and 2009 IRC only. References to legacy codes, including earlier editions of the I-codes, are deleted. Consequently, Table 1 is no longer necessary and is deleted.

Should the revised criteria be approved by the Evaluation Committee, the current criteria will remain on the ICC-ES web site for use in evaluations under the 2006 I-codes and the legacy codes.

3. Include a “reason paragraph” in Section 1.1, which states that the proprietary power-driven pin fasteners are alternate fasteners to the self-drilling or self-piercing tapping screws prescribed by code to attach gypsum board to cold-formed steel framing in accordance with applicable sections of the IBC and IRC.

4. Subdivide Section 1.2 (Scope) to highlight two previous restrictions of AC259:

Section 1.2.1: The assemblies are restricted to resisting transverse loads.

Section 1.2.2: The assemblies are restricted to nonfire-resistance-rated assemblies unless the necessary data are received and accepted.

These are considered editorial changes, and are provided to enhance ease of use of the acceptance criteria.

5. Revise Section 1.3 (Codes and Reference Standards) to include only the standards and codes referenced in the revised AC259.
6. Provide a new Section 1.4 (Definitions) for (1) Allowable Strength, (2) Available Strength, (3) Base Steel Thickness, (4) Corrosion Protection, (5) Design Strength, (6) Nominal Strength, (7) Gypsum Board, (8) Power-driven Pins, (9) Power-driven Pin, Edge Distance, (10) Power-driven Pin, Spacing, (11) Tensile Strength, and (12) Yield Point. These definitions are consistent with the 2009 IBC.
7. Revise subsections within Section 2.1.1 to require details concerning power-driven pins that are necessary to describe these types of fasteners.
8. Revise Section 2.3 (Test Report) to provide guidance concerning information deemed necessary by referring to ASTM E 575.
9. Revise Section 3.1.2 (Cold-formed Steel Framing Members) to require steel specifications according to Section A2.1 of AISI S100, and measuring steel properties according to ASTM A 370. This is considered an editorial change.
10. Revise the title of Section 3.1.3 from “Gypsum Panels” to “Gypsum Board,” to be consistent with IBC Section 2502 and IBC Table 2506.2. Additionally, verification test data on the gypsum board’s core, end, and edge hardness are now deemed necessary to ensure quality of gypsum board used in the testing described in Section 3.2 of the acceptance criteria.
11. Revise Section 3.2 as follows to require both small-scale and full-scale testing:

Section 3.2.2 provides details on testing and analysis of small-scale testing of power-driven pins for deriving available pull-out strength capacities of each type of pin installed into each type, grade, and thickness of steel.

Section 3.2.3 provides details on testing and analysis of small-scale testing of the pull-through resistance of power-driven pins used with each type and thickness of gypsum board sought for recognition in an ICC-ES evaluation report.

Section 3.2.4 provides details on full-scale wall assembly testing, which is intended to determine the effects of maximum spacing and edge distance on the pull-through resistance of the power-driven pins used to fasten each type and thickness of gypsum board to the CFS structural wall framing sought for recognition in an ICC-ES evaluation report. Staff's position is that this information can only be determined by full-scale testing, as indicated by Section 8.3 of ASTM E 1190-95(2007).

12. Revise Section 4.1 (Quality Control) to mandate that the power-driven pin manufacturer maintain a quality control system at the manufacturing facility to ensure that the dimensional and physical performance properties called out in Section 2.1.1 of AC259 are verified on a regular basis. At a minimum, the quality system must conform to ASME B18.18.1, *Inspection and Quality Assurance for General Purpose Fasteners*.
13. Revise Section 5.0 (Evaluation Report Recognition) to clarify for ICC-ES staff as well as the evaluation report applicant, at a minimum, the information deemed mandatory for inclusion in the ICC-ES evaluation report.

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

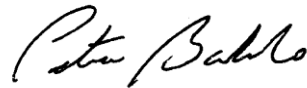
1. Written comments that are received by the Los Angeles business/regional office by **January 19, 2010**, will be forwarded to the committee prior to the hearing, and will be posted on the ICC-ES web site shortly after the comment deadline.
2. Written comments received up to ten days before the meeting, and staff memos responding to comments, will be posted to the web site on **January 28, 2010**.
3. ICC-ES is no longer providing printed copies at the meeting of proposed acceptance criteria, staff memos or public comments. These documents will be available on a limited number of CDs at the meeting, for uploading to computers; and ICC-ES will make arrangements with the hotel business center to have hard copies available for photocopying.
4. Written comments that miss the deadline noted in item (1), above, will only be available at the meeting if you provide 35 copies, collated, stapled, and three-hole punched, either at the meeting itself or to the Los Angeles business/regional office by **January 28, 2010**.
5. If you plan to speak for more than 15 minutes, or offer a visual presentation lasting longer, you should notify ICC-ES staff as far as possible in advance. There will be a computer, projector, and screen available at the meeting for anyone wishing to make a visual presentation, and presentations in most cases will need to be in

PowerPoint format. Also, ICC-ES will need to be provided with your presentation at least a half-hour before the start of the relevant meeting session (morning or afternoon) on either a CD or a flash card.

6. If you have any special needs related to a presentation, you should contact ICC-ES staff well in advance of the meeting.
7. Any visual aids for viewing at committee meetings (charts, overhead transparencies, slides, videos, electronic presentations, etc.) will be permitted only if a copy is provided to ICC-ES, before the presentation, in a medium that can be retained with other records of the meeting.
8. Any materials submitted for committee consideration are considered nonconfidential and available for public discussion, as noted in Section 2.7 of the ICC-ES Rules of Procedure for the Evaluation Committee.
9. Prior to the meeting, you should refrain from trying to communicate directly with committee members about agenda items, either verbally or in writing. Committee members reserve the right to refuse such communications.

Your cooperation with these guidelines is much appreciated, as is your interest in the deliberations of the Evaluation Committee. If you have any question, please contact the undersigned at (800) 423-6587, extension 3306, or Ping Cheng, at extension 3535. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,



Peter Bahlo, P.E.
Senior Staff Engineer

PB/md

Enclosures

cc: Evaluation Committee



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

1.0 PURPOSE

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

2.0 MEETINGS

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

2.2 All scheduled meetings shall be publicly announced.

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

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

2.5 Minutes of the meetings shall be kept.

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

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

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

3.0 CLOSED SESSIONS

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

4.0 ACCEPTANCE CRITERIA

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

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

4.2 Procedure:

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

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

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

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

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

4.4 Actions of the Evaluation Committee may be

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

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

5.0 COMMITTEE BALLOTING FOR ACCEPTANCE CRITERIA

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

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

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

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

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

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

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

6.0 COMMITTEE COMMUNICATION

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

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

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

Effective March 18, 2008

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR PNEUMATIC- OR GAS-POWER-DRIVEN PIN FASTENERS USED TO ATTACH GYPSUM PANELS TO COLD-FORMED STEEL FRAMING

proposed new title:

ACCEPTANCE CRITERIA FOR POWER-DRIVEN PINS FOR ATTACHING GYPSUM BOARD TO COLD-FORMED STEEL FRAMING

AC259

Proposed December 2009

Previously approved June 2004

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 purposes of issuing ICC-ES evaluation reports

PROPOSED REVISIONS TO THE ACCEPTANCE CRITERIA FOR PNEUMATIC-OR GAS-POWER-DRIVEN PIN FASTENERS USED TO ATTACH GYPSUM PANELS TO COLD-FORMED STEEL FRAMING

proposed new title:

ACCEPTANCE CRITERIA FOR POWER-DRIVEN PINS FOR ATTACHING GYPSUM BOARD TO COLD-FORMED STEEL FRAMING

1.0 INTRODUCTION

1.1 Purpose: The purpose of this acceptance criteria is to establish requirements for ~~pneumatic or gas-power-driven pins fasteners~~ used to attach gypsum panels board to cold-formed steel (CFS) framing to be recognized in an ICC Evaluation Service, Inc. (ICC-ES), evaluation report under ~~verifying compliance with the 2006 2009 International Building Code[®] (IBC), and the 2006 2009 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 and IRC Section R104.11, ~~BNBC Section 106.4, SBC Section 103.7, and UBC Section 104.2.8.~~

The reason for this criteria is the absence of referenced standards in the IBC or IRC that can be used to establish equivalent performance of proprietary power-driven pins as alternate fasteners to code-compliant self-drilling or self-piercing tapping screws that are used to attach gypsum board to CFS framing in accordance with IBC Section 2508, IRC Section R603.2.4, and Section D1.6 of AISI-S200.

1.2 Scope: This criteria is limited to ~~pneumatic or gas~~ applies to power-driven pins fasteners used to attach gypsum panels board to cold-formed steel (CFS) framing members for exterior applications that resist transverse (wind) loading on installed in structures of combustible (Type V) and noncombustible (Types I, II, III, and IV) construction. Gypsum wall Assemblies incorporating the ~~pneumatic or gas-~~ with power-driven pins fasteners meeting this criteria shall not be used to attach gypsum board to CFS framing are limited:

1.2.1 To resisting transverse loads, other than transverse (wind) loading. Gypsum wall assemblies incorporating the pneumatic or gas power driven pin fasteners meeting this criteria shall be restricted

1.2.2 To use in nonfire-resistance-rated assemblies applications unless tested the fire-resistance rating is determined in accordance with ASTM E 119 as required by the applicable code the test procedures set forth in IBC Section 703.2 or in accordance with the alternate methods for determining fire resistance set forth in IBC Section 703.3.

1.3 Codes and Referenced Standards:

1.3.1 ~~2006 2009~~ International Building Code[®] (IBC), International Code Council.

1.3.2 ~~2006 2009~~ International Residential Code[®] (IRC), International Code Council.

1.3.3 BOCA[®] National Building Code/1999 (BNBC).

~~1.3.4 1999 Standard Building Code[®] (SBC).~~

~~1.3.5 1997 Uniform Building Code[™] (UBC).~~

~~1.3.6 AISI Specification for the Design of Cold-Formed Steel Structural Members (refer to Table 1 of this criteria for edition date).~~

1.3.3 AISI-NAS-04, S100-2007, AISI Standard—North American Specification for the Design of Cold-Formed Steel Structural Members, 2004 edition, with 2004 supplement, published by the American Iron and Steel Institute (AISI) The United States provisions of AISI-NAS are applicable under this criteria.

1.3.4 AISI General-04 S200-07, AISI Standard—North American Standard for Cold-Formed Steel Framing—General Provisions, American Iron and Steel Institute (AISI).

1.3.5 AISI S211-07, AISI Standard—North American Standard for Cold-Formed Steel Framing—Wall Stud Design, American Iron and Steel Institute (AISI).

1.3.6 AISI S905-08, Test Methods for Mechanically Fastened Cold-formed Steel Connections, American Iron and Steel Institute (AISI).

1.3.7 ASME B18.18.1-2007, Inspection and Quality Assurance for General Purpose Fasteners, American Society of Mechanical Engineers

1.3.8 ASTM A 370-05, Standard Specification for Standard Test Methods and Definitions for Mechanical Testing of Steel Products, ASTM International.

1.3.9 ASTM C 79-04a, Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board, ASTM International.

~~1.3.10~~ ASTM C 1278, Standard Specification for Fiber-reinforced Gypsum Panels, ASTM International.

~~1.3.11~~ ASTM C 1396, Standard Specification for Gypsum Board, ASTM International.

1.3.10 ASTM C 473-06a, Standard Test Method for Physical Testing of Gypsum Panel Products, ASTM International.

1.3.11 ASTM D 2915-03, Standard Practice for Evaluating Allowable Properties for Grades of Structural Lumber, ASTM International.

1.3.12 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; ASTM International.

1.3.13 ASTM E 575-05, Standard Practice for Reporting Data from Structural Tests of Building

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Proposed New Title:

ACCEPTANCE CRITERIA FOR POWER-DRIVEN PINS FOR ATTACHING GYPSUM BOARD TO COLD-FORMED STEEL FRAMING

Constructions, Elements, Connections, and Assemblies, ASTM International.

1.3.14 ASTM E 1190-95(2007), Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members, ASTM International.

1.4 Definitions:

1.4.1 Allowable Strength: Nominal strength, R_n , divided by the safety factor, Ω .

1.4.2 Available Strength: Design strength or the allowable strength, as appropriate.

1.4.3 Base Steel Thickness: The thickness of bare steel exclusive of all coatings.

1.4.4 Corrosion Protection: Power-driven pins shall have rust-inhibitive coating suitable for the installation for which they are recognized for use, or be manufactured from material not susceptible to corrosion (see IRC Section R603.2.4, and Section A4 of AISI S200-07).

1.4.5 Design Strength: Resistance factor, Φ , multiplied by the nominal strength, R_n .

1.4.6 Nominal Strength: Strength of a structure or component (without the resistance factor, Φ , or the safety factor, Ω) to resist the load effects, as determined in accordance with the IBC.

1.4.7 Gypsum Board: As defined in IBC Section 2502 or in a current ICC-ES evaluation report.

1.4.8 Power-driven Pin: A forced-entry nail-like steel fastener designed to attach one material to another, characterized by a round (smooth or knurled) metal-wire fastener shank with an upset head at one end and a pointed shank at the other, typically hardened for penetrating steel and placed with a power tool reliant on explosive powder, gas combustion, or compressed air or other gas.

1.4.9 Power-driven Pin, Edge Distance: The distance from the longitudinal axis (center) of a power-driven pin to the nearest edge of the gypsum board member in which it is installed.

1.4.10 Power-driven Pin, Spacing: Spacing is the distance between the longitudinal axes of two power-driven pins in the same plane.

1.4.11 Tensile Strength (of Material): Maximum tensile stress that a material is capable of sustaining as defined by the ASTM standard specified for the steel wire or the cold-formed steel framing members.

1.4.12 Yield Point: First stress in a material at which an increase in strain occurs without an increase in stress as defined by the ASTM standard specified for the steel wire or the cold-formed steel framing members. (Yield stress is a generic term to denote yield point.)

2.0 BASIC INFORMATION

2.1 General: ~~Assembly Description:~~ The description shall include all of the components used in the assembly, as follows The following information shall be submitted:

2.1.1 Power-driven Pins Fasteners: The following information shall be provided for the power-driven pins fasteners:

2.1.1.1 Generic or trade name, brand name, and the power-driven pin catalog number.

2.1.1.2 Manufacturer's catalog number. Complete information concerning the manufacturing process of the power-driven pins.

2.1.1.3 Power-driven pin fastener head diameter, shape, and thickness.

2.1.1.4 ~~Nominal fastener or~~ and actual shank diameter.

2.1.1.5 ~~fastener~~ Shank length and total power-driven pin length.

2.1.1.6 Permitted manufacturing production drawings, including tolerances.

2.1.1.7 Washer size and thickness (if used).

2.1.1.8 Alignment tips (if used).

2.1.1.9 ~~Shank treatment and fastener protective coating style (smooth or knurled).~~ If the shank is knurled, the knurl pattern shall be described and the height of knurl above the wire shank diameter shall be specified.

2.1.1.10 ~~Power-driven pin fastener material specifications, including steel wire specifications, including tensile strength, and power-driven pin physical properties, i.e., including core and case hardness, and type of corrosion protection applied to the finished pin to make it suitable for the installation for which it is to be recognized for use.~~

2.1.2 Installation Instructions: Dimensioned drawings and installation details, noting installation limitations, the size and location of stud-to-track fasteners, size and location of power-driven pins, and the specification and thickness of the gypsum panels board and cold-formed steel CFS framing members.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification of the power-driven pins fasteners. The head of each power-driven pin fastener shall bear the manufacturer's name or insignia. Where multiple power-driven pin fastener types or sizes are provided, a mark differentiating the types or sizes shall also be on the head of each fastener pin or product packaging unit. The ICC-ES report number (ESR-four-digit number) shall be placed on the product packaging units.

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2.1.4 CFS Framing and Gypsum Board:

Appropriate national standard for the ~~materials~~ CFS framing members and the gypsum board shall be provided. Reports of physical properties shall be submitted for the ~~fastener material~~ the CFS framing members and the gypsum board material in accordance with Sections ~~3.1.1~~ 3.1.2 and 3.1.3, respectively.

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. In addition, test reports shall include the following information:

2.3.1 Power-driven pin fastener specifications consistent with Section 2.1.1 of this criteria.

2.3.2 Specification and thickness of the gypsum panels board, and the cold-formed steel members.

2.3.3 Steel specification of the CFS members. Described properties shall include the measured yield point, tensile strength, and base steel thickness.

2.3.4 Information as described in ASTM E 575, except that video recording is optional.

2.4 Product Sampling: Sampling of the ~~pneumatic- or gas power-driven pins fasteners~~ for tests under this criteria shall comply with Section 3.2 of AC85.

3.0 TEST AND PERFORMANCE REQUIREMENTS

3.1 Test Material Specifications:

3.1.1 Power-driven Pins Fasteners: Fasteners shall ~~comply with Section 2.1.1 of this criteria.~~ Verification of ~~compliance with information required by Section 2.1.1.10,~~ in the form of test reports complying with Section 2.3, shall be provided. ~~Where measured strength properties and dimensions exceed specified values, adjustment of design values based on ratios of test values to specified values shall be considered.~~

3.1.2 Cold-formed Steel Framing Members: ~~Cold-formed steel framing members shall comply with AISI-NAS, AISI General and, for recognition under the BNBC, SBC and UBC, the applicable AISI standard listed in Table 1 of this criteria. Verification of compliance, in the form of test reports, shall be provided. The steel CFS framing members used in the tests described in this criteria shall comply with the standard specified for the steel for which recognition is sought an applicable steel specification listed in Section A2.1 of AISI S100. The base-metal steel thickness (uncoated) of all steel CFS framing members shall be measured and reported. Base-metal thickness is the thickness of the steel exclusive of any coating, such as galvanization. The yield point strength and ultimate tensile strength of the steel shall be measured and reported. The measured yield point and tensile strength shall meet the~~

~~minimum specified strength values for the particular steel grade when tested in accordance with ASTM A 370. Where measured strength properties and dimensions exceed specified values, adjustment of design values based on ratio of test values to specified values shall be considered.~~

3.1.3 Gypsum Panels Board: Gypsum panels board shall comply with the applicable standard(s) listed in IBC Table 4 of this criteria 2506.2. Verification of compliance with the core, end, and edge hardness requirements of the gypsum board as specified in Section 12 of ASTM C 473, or applicable standard for the specific gypsum board sought for recognition in the ICC-ES evaluation report, in the form of test reports compliant with Section 2.3 of this criteria, shall be provided.

3.2 Test Methods and Analysis:

3.2.1 General:

3.2.1.1 Small-scale testing and analysis shall be in accordance with Section 3.2.2 to establish available pull-out strength values for each type and diameter of power-driven pin installed in each grade and thickness of CFS structural member sought for recognition in the evaluation report.

3.2.1.2 Small-scale testing and analysis shall be in accordance with Section 3.2.3 to establish available pull-through strength values of each head type and diameter of power-driven pins installed in each type and thickness of gypsum board sought for recognition in the evaluation report.

3.2.1.3 Full-scale wall assembly testing and analysis shall be in accordance with Section 3.2.4 to establish the influence of maximum spacing and minimum edge distance of the pull-through strength capacity of power-driven pins with respect to each type and thickness of gypsum board sought for recognition in the evaluation report.

3.2.1.4 Power-driven pins shall be installed using the manufacturer's installation instructions and tools or, where specific deviation is justified, in accordance with accepted field methods or to meet the requirements of the tests. The test report shall include this information.

3.2.2 Power-driven Pin Pull-out Testing and Analysis:

3.2.2.1 The sample size for determining the average pull-out strength of power-driven pins from CFS structural framing members shall be based on the coefficient of variation of the data set. A minimum of 10 test specimens shall be required when the coefficient of variation of the data set is less than or equal to 15 percent, and a minimum of 30 test specimens shall be required when the data set has a coefficient of variation greater than 15 percent. (Reference ASTM E 1190, Section 8.0-Number of Tests, for details.)

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3.2.2.2 All installed power-driven pins shall be tested for pull-out resistance regardless of pin embedment, angle of installation, damage to the CFS structural member, or damage to the pin. Power-driven pins that cannot be tested because they did not set at all, that is, were not installed properly, shall be reported as invalid data points. Invalid data points shall be excluded when determining the average ultimate (peak) test values.

3.2.2.3 The CFS structural steel framing member in which the power-driven pin is to be installed shall be representative of the materials and configuration intended for field use.

3.2.2.4 The pull-out resistance of power-driven pins installed into CFS test members shall be determined following the general test practice of S905, Section 8.3, for each base steel thickness and steel grade to be recognized in the ICC-ES evaluation report.

3.2.2.5 The pull-out resistance shall be derived as described in S100-07, Section F1, and adjusted according to difference between actual and specified tensile strengths and variation between the design and actual thickness of the CFS structural members used in testing, according to the principles of Section F1.1(c) of AISI S100. If the tensile strength of the steel from which the tested CFS structural framing member is fabricated is larger than the specified value, the test results derived according to Section 3.2.2.4 and analyzed according to this Section 3.2.2.5 shall be adjusted down to the specified minimum tensile strength of the steel that is to be described in the ICC-ES evaluation report. Test results shall not be allowed to be adjusted upward if the tensile strength of the CFS structural framing test members is less than the minimum specified tensile strength. Consideration shall also be given to any variation or difference between the design thickness and the measured thickness of the CFS framing members used in the pull-out tests.

3.2.3 Power-driven Pin Pull-through (Pull-over) Testing and Analysis:

3.2.3.1 Pull-over testing of power-driven pins for each type and thickness of gypsum board to be recognized in the evaluation report shall follow the general practice of ASTM C 473, Section 13, with the following modifications:

- (1) Replace "gypsum panel" with "gypsum board."
- (2) Replace "nail" with "power-driven pin."
- (3) Replace "The test nail shank shall be 0.099±0.003 inch (2.515±0.076 mm) in diameter and the nail head shall be 0.250±0.005 inch (6.350±0.127 mm) in diameter" in Section 13.3.1 with "The test power-driven pin shank and head shall have the same diameter as the pin sought for recognition in the ICC-ES evaluation report."

(4) Replace Section 13.4 *Sampling*, with the following: "A minimum number of samples shall be tested to achieve a precision of 5 percent at 75 percent confidence interval, with a minimum sample size of 15 (refer to ASTM D 2915)."

(5) The number of gypsum board test specimens required for Section 13.5 shall be consistent with item (4), above.

(6) Replace the diameter of the pilot hole specified in Section 13.5.2 with a pilot hole having the nominal diameter of the power-driven pin being tested.

(7) Delete the last two sentences of Section 13.7.

3.2.3.2 The pull-over resistance shall be derived as described in AISI-S100, Section F1.2.

3.2.4 Wall Assembly Testing and Analysis:

3.2.4.1 Cold-formed steel (CFS) framing members shall comply with AISI S200. The CFS framing member in which the power-driven pins are installed shall be representative of the materials and configuration intended for field use, and the stud-to-track connections shall comply with the code, as described in Sections B2 and C1 of AISI S211. Details of alternate methods of CFS framing construction as permitted according to Section B2 of AISI S211 shall be submitted to ICC-ES for approval prior to testing.

3.2.4.2 Assembly size shall be 48 inches by 96 inches (1219 mm by 2438 mm), constructed with CFS structural framing placed 24 inches (610 mm) on center. The thickness of CFS framing members shall be chosen in order to preclude power-driven pin pull-out with a minimal amount of CFS framing deformation from the test loads.

3.2.4.3 The gypsum board material attached to the CFS structural framing members of the wall assembly with the power-driven pins shall have one full-length vertical (butt) joint along the center stud. The power-driven pins shall be installed at the maximum spacing and minimum edge distance sought for recognition in the evaluation report.

3.2.4.4 A minimum of three identical wall assemblies shall be tested for negative transverse load capacity in accordance with ASTM E 330, Procedure B, for each type and thickness of gypsum board sought for recognition in an ICC-ES evaluation report. ~~assembly configuration for which recognition is desired.~~

~~3.2.4.5 Assembly size shall be sufficient to accommodate the desired assembly configuration, including the desired fastener spacing and the spacing and thickness of cold-formed steel framing members. The test specimen shall be stiffened as required to prevent the assembly from deflecting beyond the maximum deflection allowed by the applicable code when the assembly is subjected to the maximum design load.~~

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3.2.4.6 The allowable negative transverse load shall be the average ultimate (peak) load divided by a safety factor of ~~safety~~ of 3, provided none of the results vary by more than 15 percent from the average. Otherwise, the lowest result of the three tests shall be used. Where tests are not conducted to failure, the highest load achieved for each test will be assumed as ultimate (peak).

4.0 QUALITY CONTROL

4.1 Quality control documentation complying with the ICC-ES Acceptance Criteria for Quality Control Documentation (AC10) shall be submitted. The quality control documentation shall ~~ensure~~ be sufficient to demonstrate that a quality system is employed continuously at the manufacturing location to ensure the fastener power-driven pin properties, listed in Section 2.1.1 of this criteria, are maintained. At a minimum, the quality system shall conform to ASME B18.18.1, Inspection and Quality Assurance for General Purpose Fasteners.

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

5.0 EVALUATION REPORT RECOGNITION

The evaluation report shall include, at a minimum, the following:

5.1 Basic information required by Section 2.1.1 of this criteria concerning the power-driven pin fasteners; including product description, by Section 2.1.2 concerning installation procedures, and by Section 2.1.3 concerning packaging and identification,~~excluding Section 2.1.1.9.~~

5.2 Information required by Section 2.1.4 concerning the CFS structural framing members and gypsum board material.

5.3 ~~Allowable design~~ Available pull-out and pull-through strength loads for each assembly configuration, including maximum pin spacing and minimum pin edge distance, sought for recognition in the evaluation report, based on analysis of data in Section 3.2 of this criteria.

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**Proposed New Title:
ACCEPTANCE CRITERIA FOR POWER-DRIVEN PINS FOR
ATTACHING GYPSUM BOARD TO COLD-FORMED STEEL FRAMING**

TABLE 1—REFERENCED STANDARDS

STANDARD	DATE OF STANDARD			
	IBC and IRC	BNBC	SBC	UBC
ASTM C 79, Specification for Treated Core and Nontreated Core Gypsum Sheathing Board	2004a	1997	1997	1992
AISI Specification for the Design of Cold-Formed Steel Structural Members or AISI-NAS	2001	1996	1996	1986 with 1989 Addendum
ASTM C 1278, Specification for Fiber-reinforced Gypsum Panel	2003	—	—	—
ASTM C 1396, Specification for Gypsum Board	2002	—	—	—
ASTM E 330, Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference	2002	1997	1997	1997