



July 6, 2009

Mr. Kurt Stochlia  
International Code Council Evaluation Service  
5360 Workman Mill Road  
Whittier, CA 90601-2256

RE: Proposed Revisions to Acceptance Criteria AC 269

Dear Mr. Stochlia,

This letter is in response to your request for comments on ICC-ES AC 269. In particular, we have the two major concerns regarding the changes that have been made:

1. Your letter dated June 1<sup>st</sup> indicates that this AC will be processed through the Alternative Criteria Process, rather than scheduled as part of traditional public hearing process. We strongly recommend that, after comments are received in the alternate process, that this AC be considered and reworked into a document presented through the Public Hearing process culminating in presentation at the October hearing of the ICC-ES Evaluation Committee.
2. Item 2 of your letter indicates that Section 4.1 and Table 1 of the AC are applicable to wood framing and that "no comparable table exists for cold-formed steel (CFS) framing." While this may be the case, this AC has been successfully applied in the past to CFS framing. Why the change now? However, if ICC-ES would like a separate table for CFS framing, the industry should be able to provide a table based upon the *AISI Prescriptive Method*, 2001 edition with the 2004 Supplement, as adopted in the 2006 I-Codes. We would prefer this solution over simply adding statement to the criteria that requires an applicant contact ICC-ES for recognition for CFS framing.

Thank you for your consideration. In preparing a draft for the next hearing, we should be able to provide more specific language in strikeout/underline format to address the issues highlighted in your letter.

Sincerely,  
STEEL STUD MANUFACTURERS. ASSN.

Don Allen, P. E.  
Technical Director

AMERICAN IRON AND STEEL INSTITUTE

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Mr. Kurt Stochlia  
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Whittier, CA 90601-2256

RE: Proposed Revisions to Acceptance Criteria AC 269 in the Alternative Criteria Process

Dear Mr. Stochlia,

As stated in my joint letter from Steel Stud Manufacturers Association (SSMA) and American Iron and Steel Institute (AISI), my primary concern is that Acceptance Criteria AC 269 is in the Alternative Criteria Process, rather than scheduled as part of a public hearing. However, just in case we do not have that opportunity, I am providing the following comments as part of the current, alternative process.

Comments in response to the four items listed in your cover letter:

1. Section 4.3: it is appropriate referencing ASTM E2126 methods A or B (Sequential Phased Displacement (SPD) Loading Protocol or ISO 16670 Protocol).
2. Table 1 and section 4.1 include procedures that have successfully been used for steel in the past. Although section 14 of the referenced ASTM E 72 is specific for wood, this Acceptance Criteria could include language permitting use with steel. As proposed in the previous letter, industry would like the opportunity to work with ICC-ES on the appropriate wording of the section in AC 269 for cold-formed steel (CFS) framing.
3. Section 6.2: The section did not appear to imply that special inspections are required under the IRC; section 6.2.2 clearly provides an exception for the IRC. For this entire section (6.2.1 and 6.2.2), rather than repeating code requirements, it would make sense to state, "Special inspections shall be performed where required in accordance with sections 1704 and 1705 of the IBC. Buildings constructed in accordance with the IRC do not require special inspections." The exception for IBC section 2308 shown in section 6.2.2 of the proposed criteria should be removed.
4. A broader, more inclusive discussion should be included on the footnotes to table 1. Many industries, including light-framed wood and steel, have moved to tables of ultimate loads, with phi and omega factors for load and resistance factor design (LRFD) and allowable strength design (ASD) respectively. This may be an appropriate model for ICC-ES to follow in Acceptance Criteria for IBC. IRC should still maintain allowable values.

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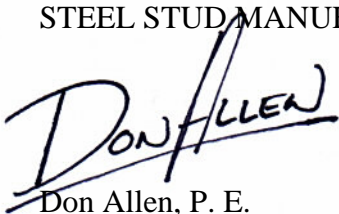
Additional comments (in addition to the four items listed in your cover letter):

1. The strikeout/underline format does not truly reflect changes from the current (March 1, 2009) document. This makes a thorough and comprehensive review of changed items difficult.
2. Section 3.1.3: change 0.033 inch thickness to 0.0329 minimum thickness (0.0346 inch design thickness.)
3. Section 3.1.4: fastener edge distance for steel shall not be less than 1.5 times the fastener diameter from the center of the fastener to the nearest edge of the formed steel sheet. This applies to both steel framing members and steel components of sheathing materials being tested.
4. Sections 3.2 and 6.1.4: Some applications permit 4:1 aspect ratios with specific detailing. The blanket prohibition of aspect ratios greater than 2:1 could restrict innovative products specifically designed for narrow applications. Note that sections 3.2 and 3.3 of ASTM E72 give guidance on height and width of panels, but do not limit the aspect ratio.
5. Seismic design category (SDC) C for steel should be moved from section 4.3 to section 4.1.
6. Section 4.4.1: although this section is "Allowable Stress Design..." it also includes ultimate and LRFD provisions in 4.4.1.1. This just needs some rewording of the titles and/or reworking of the section numbering: the principals seem appropriate.
7. Equivalence testing using cold-formed steel (CFS) framing should be permitted, as it has been in the past. My response to comment 2 (page 1 of this letter) addresses this, but in a broader scope, there should be a more detailed method for recognizing sheathing in accordance with the IRC. Since the IRC references the *AISI Prescriptive Method*, which in turn uses oriented strand board (OSB) as a basis for shear resistance, an approach should be formally instituted to permit products that have either more or less capacity than the target (OSB) values. This could be done by derivation of a factor for each product, so the bracing amounts could be scaled up or down. The full wording of this proposal is beyond the scope of this comment letter – this is part of the reason I recommend this be included in the public hearing process.

Thank you for your consideration. In preparing a draft for the next hearing, I can provide more specific language in strikeout/underline format to address these issues.

Sincerely,

STEEL STUD MANUFACTURERS ASSOCIATION

A handwritten signature in black ink that reads "DON ALLEN". The signature is written in a cursive, slightly slanted style. The letters are connected, and there is a prominent vertical stroke on the left side of the name.

Don Allen, P. E.  
Technical Director

**TO: Mr. Kurt Stochlia**

**FROM: Jay Crandell (ARES Consulting) representing Dow Building Solutions and Covalence/Berry Plastics**

**DATE: July 6, 2009**

**RE: Comments on AC 269 per ICC-ES Alternate Criteria Process**

Pursuant to the request for comments posted on ICC-ES website and in keeping with the deadline of July 6, 2009, the following comments are offered in relation to the four requested items:

1. We are in support of adopting ASTM E2126 into AC269 as we feel it offers a superior and state-of-the-art means of assessing cyclic performance of shearwalls. However, we also recommend adopting additional criteria that make use of ASTM E2126 to determine seismic performance parameters in a manner consistent with other similar ACs (e.g., AC322 App A and AC130) and as also documented in a recent staff memo on the topic (e.g., last fall). This is needed for AC 269 to ensure competitive and fair evaluation of bracing methods under AC269 and to avoid the arbitrarily penalizing application of only two categories for seismic response in the reference model codes (e.g., R=6.5 for wood structural panels and R-2.0 for "all other panels").
2. We also support inclusion of additional information pertaining to use of AC 269 with cold-formed steel wall framing. However, we wish to bring staff's attention to some serious inconsistencies between wood and steel framing within AC 269 and between AC269 and treatment of these materials in the reference model codes. For example, the IBC (and NDS Wind & Seismic Supplement) use safety factors of 2.8 for seismic (which includes a deflection limit) and 2.0 for wind (which does not include a deflection limit but is based on a 1.4 multiplier applied to the seismic design value). Yet, in AC 269 a universal safety factor of 3 is used for bracing on wood framing. Conversely, the IBC (and AISI/Lateral standard S213) use a safety factor of 2.0 for wind and 2.5 for seismic. Yet, in this case, AC 269 uses a safety factor of 2.5 for bracing on steel framing (which is at least partially equivalent to the code for seismic applications). Our request is to revise safety factors such that for both wood and steel framing the safety factors are consistent with safety factors and performance criteria used in the reference model codes and standards. We offer additional comments to this issue in a later comment.
3. We recommend striking reference to "IRC" from Section 6.2. The requirements in Section 6.2 are not applicable to the IRC. They are applicable to the IBC and should be consistently applied for both steel and wood framing. However, we also believe that these issues do not necessarily need to be addressed in AC269 as they are universally applicable in the reference code and are broader in scope than just wall bracing. These requirements in the code also apply irrespective of whether the bracing method is an "alternative" or one that is a recognized "commodity" in the code.
4. We are in support of changes to footnote 2 and like the first sentence as proposed. However, in making reference to Section 4.4.1 we again bring attention to inconsistencies in safety factoring and performance criteria as mentioned in our comment on Item #2 above. Rather than refer to this section in footnote two, we would like to see Section 4.4.1 itself addressed in this regard for a long

needed update to become consistent with modern I-codes, especially in regard to recent progress in the IRC 2009 made by a 3-year effort of an ICC ad hoc committee on wall bracing. We have a later comment embellishing our recommendation on this matter. Finally, we feel that continuing the 150 plf limit is inconsistent with the performance-based evaluation concept underlying ACs. Regardless of the unit shear capacity, wall bracing can be used effectively from the standpoint of meeting code-consistent performance criteria irrespective of the magnitude of unit shear value attained. Those with greater unit shear value will require less bracing in application and those with a lesser unit shear value will require more bracing. This is fundamental to a performance-based evaluation and the application of design principles using the evaluation data. We also address a related concern or performance-based evaluation need for AC 269 which deals with a “sliding scale” alternative to the current approach of having a pass/fail equivalency to IRC bracing methods.

In addition to the above comments, there are three concepts related to AC269 that we feel are important updating considerations. These concepts are ideally suited for ICC-ES staff to consider as they do not (or should not) represent any individual interest, but they potentially impact all materials qualified under AC269:

1. Update to IRC 2009 wall bracing performance (design) criteria. The criteria in AC269 should be updated to be consistent with the performance (design) basis of the IRC 2009 wall bracing provisions. Foremost, this will require separate criteria for seismic and wind with respect to safety factoring as well as “target” unit shear values currently in Table 1 of AC269, among other things. This updating is needed to ensure that alternative bracing materials and methods are evaluated in a manner consistent with code and bracing materials and methods recognized in the code. The provisions in the IRC 2009 are the result of a 3-year effort of an ICC ad hoc wall bracing committee and represent a long-needed upgrading of bracing provisions for wind. In the 2000 IRC, wall bracing provisions for seismic were similarly upgraded from past code requirements and remain essentially unchanged in performance basis in the 2009 IRC. Currently, the AC269 criteria are not consistent with the performance criteria used in developing the IRC bracing provisions. This affects the ability of alternative bracing materials to be competitively and equivalently evaluated. The same concern exists with respect to determination of unit shear values consistent with those in the IBC and referenced material design standards.
2. Formalize a “sliding scale” equivalency alternative to the “direct” equivalence approach to IRC bracing methods. The bracing methods currently recognized in the IRC 2009 have been consolidated into two groups based on similarity of peak (ultimate) unit shear strength from test data – a 400 plf group and a 700 plf group (each including 200 plf to account for interior finish as it performance in end-use with whole-building system boundaries at the edges of the gypsum finish). These unit shear values were then used to determine bracing amounts (for wind) in the IRC 2009 in a straight-forward, performance-based manner. Similarly, there are two groups of bracing values (including also R factors) represented in the IRC seismic bracing amounts. These groupings reflect the unit shear strength of the bracing methods represented in the IRC. They do not necessarily align with unit shear value of any specific alternative bracing method. Thus, any alternative bracing method that is less than 700 plf (but more than 400 plf) is currently rounded down to the lower

group (a maximum 40% penalty in actual performance). However, the intent in forming the groups of bracing methods in the IRC was not to penalize any of the materials assigned to a given group (by significant rounding down) and it was both a coincidence and by plan that the bracing methods in the IRC had similar bracing values within the two groupings. Also, the IRC 2009 provisions effectively place a “cap” on unit shear value (for the purpose of determining bracing amounts in the IRC) at 700 plf. The “cap” is a necessary restriction because stronger bracing methods will exceed the level of partial restraint considered to be provided by conventional construction (e.g., dead loads, connections, etc.). To be technically consistent with this approach used in the IRC, alternative bracing methods qualified in accordance with AC269 should be permitted to use a “sliding scale” whereby bracing amounts for equivalent performance are determined in proportion to relative difference in unit shear value from those used in the two IRC groupings. However, the maximum bracing value for alternative methods should remain capped at 700 plf for reasons given above (unless the alternative method includes detailing/connections to increase the level of partial restraint in proportion to the increase in bracing strength above the 700 plf cap). In this manner, alternative bracing methods are not arbitrarily penalized by being rounded down to the 400 plf grouping in the IRC when the bracing strength may be between 400 plf and 700 plf. Further, alternatives that provide greater than 700 plf capacity can be recognized provided detailing is included to enhance conventional connection requirements in the IRC. Thus, performance equivalency to the IRC is achieved without an arbitrary rounding down to bracing groups formed specifically on the basis of unit shear strengths of bracing methods represented in the code.

3. Testing with SPF or DF/YSP lumber. While AC 269 and referenced ASTM’s currently require use of #1 DF or #1YSP, these lumber grades have become nearly impossible to secure for testing because they are not commonly used for in light framed construction in the US. Securing these grades can cost 10 times the cost of SPF grades. In addition, the IRC 2009 is based on SPF lumber which is commonly used and readily available. Recent ASTM actions are working to delete the requirement to test with DF or SYP for reasons stated above.

Covalence/Berry Plastics and Dow Building Solutions appreciate the opportunity to provide these comments to ICC-ES staff and offer assistance in working with staff to fully consider the above concepts for updating AC269. It is recognized that these concepts represent a significant undertaking. But, there is now a wealth of valuable information that has been generated through the IRC development and the efforts of the ICC ad hoc committee on wall bracing. Much of this information has been documented in two Wood Design Focus articles which can be made available to staff upon request as a starting point for consideration. We would also like the opportunity to meet ICC-ES staff to discussion these concerns in detail and exchange ideas and thoughts with regard to an appropriate solution.