

From: Al Commins
Sent: Friday, May 15, 2009 3:40 PM
To: Brian Gerber
Subject: AC 316 Comments for June 4, 2009

Good afternoon Brian

Attached files are for AC316.

AC316 Rev 3, includes specific comments on changes embodied in the AC316
Should the comments not be crystal clear please call so I can clarify.

Part 6 Evaluating Tie Down Systems is most appropriate for AC391 but is also included here to help answer the question:

"What should the proponent or engineer use the backlash number for? Is it a pass-fail,
And no other use?

Is it used in the design of tie-down systems? If so how?

Part 6 include table 2 and figure 2. They compare six different systems.

Backlash and shrinkage both induce a slack connection for part of the loading cycle. This slack is distinctly different that normal load-deflection.

How does this loosens affect system performance?

Best Regards.

Comments for ICC-ES June 2009 Hearings

Document: ICC-ES AC316-0609-R2

Reviewers: John Weninger SE, SECB (714) 345-4139
john@sesol.com

Summary of Issue: This acceptance criteria is being developed for shrinkage compensation devices and is intended to provide information for the designer to use in designing the holdowns and calculating drift for multistory shear walls.

Code Provisions:

Discussion:

Engineered tie-down anchoring systems for wood shear walls have been utilized on multi-level wood framed buildings for some time now. These anchorage systems typically consist of a continuous rod or cable, plate, cage, and shrinkage compensating device. The design of the many of these components can be accomplished through engineering principles and need not be part of the acceptance criteria. For example the stretching of the rod is dependant upon the length of the rod and the load in the rod and can be evaluated by the engineer without resorting to a report. The shrinkage compensating devices provide for some movement of the wood through shrinkage and also for settling or compression of the wood.

The only unknown factor for the designer is the amount of distance that the device travels or internally stretches as it develops the load. This value that some have labeled “backlash” needs to be provided to correctly evaluate the deflection of the shear wall and can not be achieved except through testing.

Engineers do not have the “backlash” value for design of wood shear walls using shrinkage compensating devices. Complete design of the shear wall including the drift of the wall can be calculated only if the needed design information is provided. As a result additional deflection that can damage the shear wall is being allowed.

Eventually, it is recommended that these products be the subject of an ASTM standard and be addressed by the *Special Design Provisions for Wind and Seismic (SDPWS)* of the NDS.

Recommendations:

Engineers need information about the movement of and deflection of shrinkage compensation devices installed in the multi-story wood framed buildings and thus should be included in the information provided by the manufacturer.

**SIMPSON STRONG-TIE® COMPANY, INC.**

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May 15, 2009

Via Email

To: ICC-ES (Brian Gerber)

Subject: Proposed Revisions to AC316 Shrinkage Compensating Devices

Please find below our comments to the proposals for AC316. Please contact me with any questions or clarifications you may have regarding this subject.

•**Comment #2 from ICC-ES:** The deflection limit, Δ_A should be 0.132" in lieu of the suggested 0.25" for ASD design. The 0.132" limit is consistent with AC155, which limits holdowns tested on a steel jig to 0.185" for LRFD and 0.132" for ASD. In addition, LRFD deflection is required because ASCE 7-05 Section 12.8.6 specifies that design story drift shall be computed at strength level.

•**Figure 3:** Please provide a heading for this graphic.

Sincerely,
Simpson Strong-Tie Co., Inc.

Lisa McGurty, P.E.
Senior Engineering Project Manager