

318 Sub D – Flexure and Axial Loads
ACI 318 Fall Convention
Millennium Hotel and Duke Energy Convention Center
Cincinnati, OH

Monday, Oct 17, 2011	M – Colonnade B	10:00 AM – 1:00 PM
Tuesday, Oct 18, 2011	C - 230	8:00 AM – 12:30 PM

Minutes

1. Call to order and welcome

Chair Frosch called the meeting to order, welcoming both members and guests.

Members in attendance:

Frosch (chair), Bertero, Bommer, Browning, Garcia, Ghosh, Mlakar, Parra-Montesinos, Pincheira, Saiidi, Santana, Taylor, Zeisler (ACI Staff)

Visitors in attendance:

Dave Fields, Tony Liu, Matthew Lovell, Luke Pinkerton, Santiago Pujol, Raymond Wang

Regrets were received from Ron Klemencic and Chuck Salmon (Consulting)

2. Approval of minutes

A motion to approve the minutes of the Summer 2011 meeting was made and seconded. The minutes were approved by unanimous voice vote.

3. Chapter 11 – One way slabs

The committee was updated on the status of the chapter. At the main committee meeting in Denver, the chapter was approved subject to a 30 day soft ballot to allow committee members to review any changes that were made in response to comments. No comments were received at the end of the 30 day period; therefore, this chapter has been officially approved.

4. Chapter 25 – Plain concrete

The second main committee ballot (LB11-5) of this chapter has been completed. All comments were addressed, and revisions to the chapter were made. Subsequently, the revised chapter and response to comments were sent to letter ballot to Sub D (LB11D-6). In addition, the negative voters were sent the revised chapter and response to comments. Prior to the meeting, five of the negative voters had withdrawn their negatives based on the revisions and responses.

The outstanding negative votes from LB11-5 were discussed, and the responses to these outstanding negatives were reviewed and unanimously agreed upon. In addition, all comments received by Sub D on LB11D-6 were discussed. A hand vote

was taken to approve the final version of the document and response to comments. Sub D unanimously approved the revised chapter.

5. Chapter 13 – Beams

The first round of balloting (LB11-4) of the beams chapter has been completed. The subcommittee discussed the major changes that were being made to the chapter in response to the comments up through Section 6. The rest of the comments will be addressed following the meeting, and the chapter will be sent to the subcommittee for review. Depending on the time necessary to complete the responses, there may be a shortened ballot to allow for the chapter to be reballoted by the main committee on LB11-7. However, it is likely that the chapter will not be ready until LB12-1.

6. Chapter 14 – Columns

A draft of this chapter has been completed based on the result of task group balloting and coordination with the first draft of the beam chapter. The chapter will be updated to agree with the latest draft of the beams chapter. It is planned that the columns chapter will be submitted for main committee ballot at the same time as the beams chapter.

7. Commentary

A first draft of the commentary for the one-way slabs chapter has been completed by Sub R. The commentary and its layout in a four column format were discussed to provide the subcommittee with an understanding of what is being provided. Sub D will ballot the commentary following the Cincinnati meeting. It was noted that the second column contains the material that will be balloted.

Plans were discussed for the development of commentary for future chapters. Based on that discussion, the current plan is for ACI staff to create the original version of the four column commentary. This version will be uploaded to the 318 commentary website enabling subcommittee access. At that point, a commentary development team will work on preparing the commentary for balloting by Sub D. The teams for the next two chapters are as follows:

Plain Concrete – Parra and Browning

Beams – Browning and Taylor

Following review by the commentary development team, the chapter will be submitted to the subcommittee for balloting.

8. New Items

a. LB11-5 Results – Interlocking spirals – CD018

The results of this letter ballot were discussed. Based on a negative by Taylor, additional language was provided to ensure that there is minimum interconnection of the spirals. In addition, several editorial changes were made to clarify the language of the provision. A vote was taken to approval the revised proposal. Sub D unanimously approved. This proposal will be reformatted after the first version of the columns chapter has been balloted by the main committee and reballoted by the subcommittee. It is planned that this proposal will be submitted

to the main committee as a stand-alone change proposal to be balloted alongside the second ballot of the columns chapter.

b. Minimum reinforcement – CD009

Bommer provided an overview of the current version of the change proposal that bases minimum reinforcement on a multiple of the cracking moment ($1.2M_{cr}$). In addition, the change proposal presented required consideration of minimum shrinkage and temperature reinforcement along the longitudinal axis of slabs and beams. The subcommittee agreed with the general presentation of the change in minimum reinforcement. However, there was disagreement on the addition of shrinkage and temperature requirements. Based on this discussion, it was decided to limit the proposal to consideration of the cracking moment. Bommer will update the proposal, and it will be balloted by Sub D. In addition, Frosch will resend to the subcommittee a report by Chet Siess regarding minimum reinforcement.

c. Tension controlled requirement for slabs and beams – CD007

Pincheira presented a change proposal that would require that slabs and beams be tension-controlled. This proposal is in response to voting by the main committee in which several negatives were received in the one-way slab, two-way slab, and beam chapters indicating that we should move away from the strain limit of 0.004 and only allow tension-controlled members. There was agreement regarding the change proposal. It will be finalized by Pincheira and submitted to Sub D for balloting.

d. Steel fibers for tension – CD022

A change proposal was submitted to Committee 318 by Helix to modify 318-11, Section 3.5.1.

“Discontinuous deformed steel fibers shall be permitted only for resisting shear under conditions specified in 11.4.6.1(f).”

Luke Pinkerton, President of Helix, attended the meeting to present the background to their request. It was discussed that the language of the current provision “shall be permitted only for resisting shear” has been interpreted that Section 1.4 does not apply which has restricted other applications in which discontinuous deformed steel fibers can be used. The general consensus of the subcommittee was that the current provision was never intended to exclude Section 1.4. The subcommittee was in favor of deleting the word “only” from the provision and revising the commentary such that it is clear that Section 1.4 can be used. Due to the reorganization, this provision is now included in Chapter 6. Based on the advice of Chair Poston, Sub D will ballot a change proposal on this issue and update Sub B who is now responsible for Chapter 6.

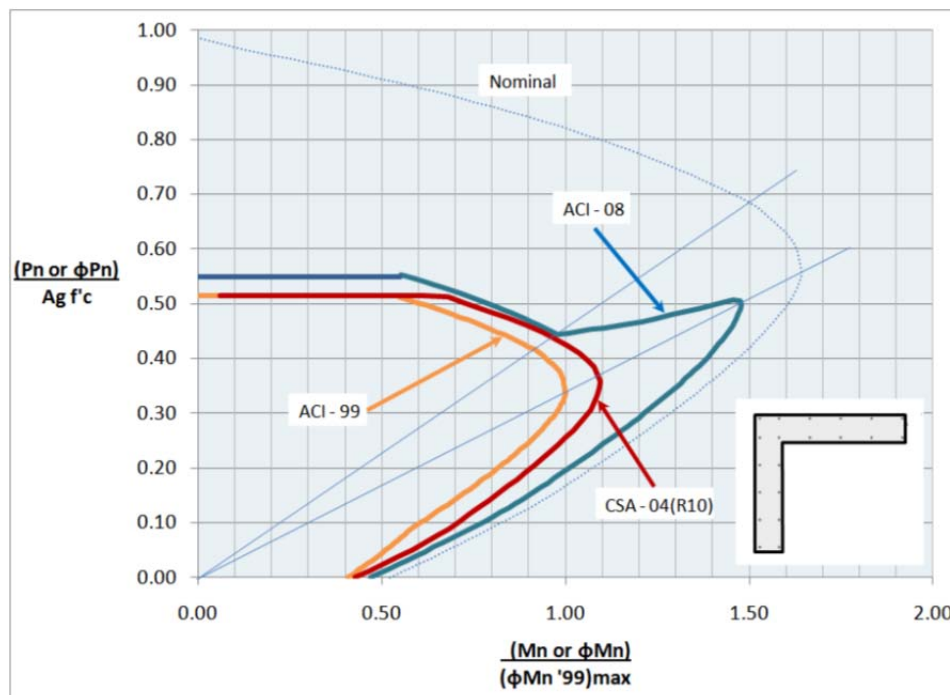
e. Lap splices of bottom integrity reinforcement – CD023

Santiago Pujol discussed a potential problem with the splicing of bottom integrity reinforcement. In the event that a column is removed from a structure, the bottom reinforcement must resist positive moment at the location of the missing column subjecting lap splices to significant forces which may lead to failure of the splice.

It was discussed that the original integrity provisions were never intended for such an event, and that the integrity provisions should not be considered a substitute for collapse prevention analysis. Based on the comments, it was decided that some additional commentary language is appropriate indicating that if loss of a column is of concern, the use of mechanical or welded splices rather than lap splices should be encouraged. As a minimum, staggering of splices should be considered. Finally, the commentary should indicate that these provisions are not a substitute for a collapse analysis to make sure that engineers realize this. While the commentary for the beam chapter is being developed, revised wording will be recommended to clarify and provide guidance. Frosch will work with Browning to develop language.

9. New business

Pincheira discussed a potential issue that occurs with the interaction diagram for nonsymmetrical sections. As shown in the figure below, due to the change of ϕ in the transition zone, it is possible for a “nose” to develop in the interaction diagram. Depending on the section, it is possible for the tip of the “nose” to provide axial strength greater than the maximum allowed at zero eccentricity. This “nose” does not occur in the older ACI provisions due to the manner in which the ϕ was transitioned. Pincheira will work further with Bertero and Santana to investigate if there are any concerns due this behavior of the safety factor. As pointed out in the discussion, the “nose” is an artifact of the transition in ϕ and not part of the behavior of the column as illustrated by the nominal curve.



10. Adjourn

The meeting was adjourned at 12:30 pm.