

MINUTES for ACI Subcommittee 445A Strut and Tie Models

Sunday Mar 25, 2020 9:30 am to 12:30 pm (Central)

Via Webex

Attendees: 18 members and 3 visitors

Members: A. Lubell, D. Sanders, D. Mullins, N. Varney, R. Tuchscherer, K. Habel, J. Ma, D. Kuchma, R. Barnes, M. Brown, G. Klein, C. Roberts-Wollman, L. Novak, J. Ramirez, DJ. Belarbi, D. Mitchell, O. Bayrak, F. Yanez

Visitors: K. Nahlawi (TAC), Mi Mac, Jim.

Regrets: --

1. Opening Remarks

Sanders started the meeting at 9:31.

2. Approval of Agenda

Sanders reviewed the only agenda item is to discuss finalizing the STM document.

No introductions

3. Recent action and next steps on the 445 STM Guide document

- Sanders summarized recent action: 445 ballot in 2019 that passed. Changes to address ballot comments were implemented. Document was submitted to TAC in late 2019. TAC review resulted in 18 pages of comments that were provided to Sander about 10 days ago. A sub-group of 445-A chapter leads had a meeting on March 27 to discuss any questions and proposed responses to TAC; most comments were accepted. A small group (Sanders, Belarbi, Lubell, Kuchma) met with the TAC review committee on March 28 to go through these responses and gain agreement.
- All documents for future work on the document are in "March2020" folder in the Box directory that Sanders set up. There is a single Word file and all future efforts need to be on the single file. Use Track Changes. << Discussed again later in meeting >>. Authors that do not have access link should contact Sanders.
- Box folder also contains a file with collected Response to TAC Comments provided by all Chapter authors.
 - "E" comments are Editorial and do not need to be re-balloted by 445.
 - "P" comments are primary and these will be re-balloted by 445. Authors to highlight these in yellow, and only those changes will be re-balloted.
 - If comment is "E" but resolving it creates a technical change or is a substantial piece of new text, authors should highlight these in blue and these will be re-balloted as well.

- After re-balloting as required, the final document and the Response to TAC Comments will go back to the TAC review committee. If no further changes are requested, the Guide will be published by ACI.
- *Related Discussion:*
 - Klein asked about what is considered a “substantive comment” since the bar for this Guide might be different than, for example, 318 changes. For example, would this include adding figures or tables? Sanders: Figures, tables, substantial amount of text changes/additions should be considered substantive and highlighted in yellow or blue as appropriate; minor text corrections or rearranging wording is not considered substantive. This approach was confirmed by Nahlawi during the call.

4. Discussion on Use of Dual Units

- Sanders discussed TAC comments and the sub-group meeting with TAC reviewers regarding need for Dual Units throughout the document. Dual Units for Figures and Tables can be done with conversions stated in the captions (similar to ACI Journals) if it is too messy or complicated to put these directly into the Table and Figure. Equations and text should always be done directly in the text. If example calculations are given, it is acceptable to only show the final answer in dual units.
- Klein asked for clarification on text references to $\sqrt{fc'}$: Nahlawi confirmed as an example that you would write “ $2\sqrt{fc'}$ psi” you would then include “[$0.17\sqrt{fc'}$ MPa]”, i.e. treat it like an in-line equation and give units for both.
- Sanders asked about the order of US/SI in Chapter 8, since many of the international standards are currently on in SI. Nahlawi requested that this Chapter use US Customary equivalent then SI to be consistent with order given in the first 7 chapters.

5. Discussion of key Changes Required in Chapters based on Discussion with TAC

- **Chapter 3**
 - Section 3.2 -- Intent is to add sub-headings to give this more structure. TAC suggested to swap order of Section 3.2 and 3.3. Sanders asked Barnes to review and decide.
 - “**A**” or “**An**” **STM** -- Sanders clarified that we should use “An” if we use the acronym STM.
- **Chapter 4**
 - Where tables are used and refer to ACI section numbers, need to make sure it is clear it is an ACI section and not from this Guide. Do this clarification for ACI 318 sections, not required for sections in this guide.
- **Chapter 5**
 - Kuchma attended the TAC meeting, so only brief summary given here:
 - Will add one photograph at example beams
 - Chapter 8 will be kept, so some cross-referencing will be added.
 - Section dealing with shear friction on a crack will be deleted. Kuchma explained that TAC’s concern was that the shear friction provisions were not intended for this

case; it had already had some concerns expressed in committee discussion so removing the section is best course of action at this time.

- **Chapter 6**
 - Roberts-Wollman has already implemented the changes (need to be moved to the new master document). A few cases of required dual units still to be addressed.
- **Chapter 7**
 - Comment 205 - Some discussion occurred on clarifying that use of curved bar node in frame corners is mandatory if following STM but not mandatory if following other design methods in ACI 318.
- **Chapter 8**
 - Sanders explained that committee wants to keep Chapter 8 as it is important to have information on other codes. Each section should be reviewed to ensure it has a limited introduction as to why the code was considered important to include for ACI readers (distinguishing features compared to ACI) and if it is still in use. i.e. give some context.
 - Kuchma elaborated on his agreement with this approach.
 - Mitchell would like to add a few additional items in the Section 8.1 highlighting the intent of the chapter.
 - Belarbi mentioned that TAC wanted a change to title of this Chapter. “Additional” was suggested in place of “Other”; Sanders will leave to Chapter 8 to select a title.
- **Chapter 9 - References**
 - Sanders highlighted need to clean up some of the references, specifically the SP’s.
 - Reference SP in general would go to ACI document
 - Reference specific paper, would reference the paper
 - Some figures may require references
 - Make sure all figures are cited from text
 - If it was taken from another source or an adaptation from another source would need a reference in the caption. State that it is adapted from reference.
- **Other Discussion on the Document:**
 - Lubell asked if the sub-committee members would be listed on the Name list of authors. Nahlawi confirmed that the subcommittee would be listed.
 - Klein asked about other non-committee contributors can also be listed. Yes. << *Post-meeting comment: Sanders may not know these names so they should be sent to him for inclusion.* >>
 - Sanders asked about any way to highlight the primary contributors. Nahlawi indicated this is done with an Asterisk for those identified by the Chair.
 - Klein asked that in Section 3.2 (background) that there should be acknowledgement of when STM came into ACI code. Barnes believes it is already included but will review.

6. Next Steps on Document Completion

- All future editing in a single Word file in the Box folder. Therefore will be sequential editing. <<Sanders will confirm with ACI if this can be split into Chapters>>. Assuming sequential corrections, the proposed order will be:
 - Chapter 4 (Tuchscherer) to make edits first....Sanders will get the dual formatting style included in Chapter 4 reviewed by ACI staff after this Chapter is completed so that all others will use a consistent, approved style.
 - Chapter 6 (Roberts-Wollman) to make edits next
 - Chapter 5 (Kuchma)
 - Chapter 3 (Barnes)
 - Chapter 7 (Klein)
 - Chapter 8
 - Chapter 2 (Novak)
 - Chapter 1
- Sanders will determine if there is a style manual available for the Dual Units.
- Sanders indicated that anyone adding notation or references should do that in Chapters 2 and 9 directly.
- Discussion on deadline: May 1, 2020 for all updates noted above. Sanders to confirm this timeline with Shannon from ACI.

7. Discussion on 445R Document

- Ramirez mentioned that 445 appointed a task group during Cincinnati meeting Kuchma, French, Lubell, Ramirez (+Belarbi) to develop a replacement of 445R-99.
- Task group met a few times to develop an outline, which has been distributed to the 445 sub-committee chairs
- Related to 445-A, the task group is aware the 445A STM Guide will be available before the new 445R and 445R will therefore only include a small summary of STM.
- Ramirez asked if there were any comments on outline, and if 445-A wants to identify individuals that want to lead the relevant section:
 - Sanders reviewed the outline.
 - Ramirez is suggesting 2 to 3 pages for the STM summary if it includes figures, or could be less if agreed by the sub-committee. Sanders and Belarbi will discuss and respond to Ramirez.
 - Ramirez is asked if the scope of STM work proposed for 445R is sufficient. Belarbi indicated this is similar approach as 445-E. No comments.
 - Sanders mentioned that we still need a Synopsis for the 445A Guide and that might be a good initial start.
 - Klein questioned if it even needs to be summarized because STM is a method to detail discontinuity regions for shear and flexure. Some discussion indicated that the summary should be on the shorter side.
 - Sanders will work with Ramirez on the summary, will be slightly expanded version of synopsis for STM document.

8. Approval of Minutes from ACI F2019 Meeting in Cincinnati, OH

- Minutes previously distributed.
- Motion to approve: Novak: Second: Barnes. No discussion. Motion carries.

9. Adjournment

- The meeting was adjourned at 10:45.

Minutes prepared by Adam Lubell, alubell@rjc.ca.