



ASCE-SEI CODSBS Meeting – Summary Report
Friday, October 9, 2009
The Jonathan Beach Club – Santa Monica, CA

Chairman Carter called the meeting to order at 8:30 a.m.

Present:

Charlie Carter	John Gross	
Finley Charney	Jim Malley	
Peter Cheever	Clint Rex	
Bob Disque	Jim Rongoe	
Larry Griffis	Nabih Youssef	

Guests:

Joe Ales, WPM	Don Strand
Jon Heintz, ATC	Daniel Tunnick, NYA
James Parker, SGH	Chia Ming Uang, UCSD

Absent:

Bill Baker	Lou Geschwindner	Bob McNamara
Reidar Bjorhovde	Socrates Ioannides	Tom Murray
Mike Engestrom	Ron Johnson	Bill Thornton
Tom Ferrell	Larry Kloiber	Emile Troup
Jim Fisher	Larry Muir	Susan Burmeister

- The Agenda that was circulated prior to the meeting was amended to:
 1. Remove Article for MSC (completed).
 2. Add John Gross' presentation on the Collapse of the Dallas Cowboys' Practice Facility.
 3. Add Larry Griffis' presentation on Emergency Repairs to Under-construction Dome Project.
- Attendance was reviewed.
- Introductions were made in light of the guests in attendance.
- A formal Thank you to Nabih Youssef was extended.
- The Summary Report of the April 1, 2008 Meeting in Nashville, TN was approved via email.
- The Agenda was amended, re-ordered and approved.



Item 1 – Jon Heintz ATC-63, FEMA 695 - Presentation

Jon Heintz is the Chairman of the ATC-63, FEMA 695 Committee, assigned the task of researching the determination of R-factors for seismic design. It was noted that the 90% draft of the report was distributed for review, and Committee Members attended review hearings held in San Francisco (Jim Malley, Nabih Youssef), and in Chicago (Charlie Carter, Finley Charney, Peter Cheever).

Jon gave an overview of the work performed to date which includes all building systems. The actual building systems examined include wood shear walls and reinforced concrete moment frames. The work to date involves use of 44 ground motions which are conservatively severe. The procedure defined in ATC-63 requires use of these ground motions to establish fragility curves for “archetype” designs which must prove a 90% success rate.

Jon explained that NIST has provided additional funding for steel-braced frames. Jon expressed an interest in expanding on the R=3 research to date by Hines et al in this regard.

The ATC-63 analysis to date has used “OPENSEES” software (<http://opensees.berkeley.edu/index.php>), and the procedure to establish new R-factors would involve a Peer Review Engineer. Jon reported that California is poised to adopt the procedure, and ASCE-7-05 has adopted it for new systems.

Based on discussions at the San Francisco and Chicago review sessions, Jon was queried on how this would relate to existing R-Factors. Jon indicated there was no initiative on funding to study existing R-factors; however, he also indicated that as results unfold, future examination will be inevitable. Jon also mentioned that considerable discussion has involved “component” R factors, i.e., a strength and ductility component. This is becoming very apparent on the research side, where it has become increasingly difficult to accurately predict the performance of short period structures, at least in accordance with the standardized fragility curves.

Chairman Carter asked Jon what the steel design community should be doing to get in alignment with ATC-63. Jon indicated research should be focused on existing systems and noted research to date suggests SCBFs performed well. Additional work is required to separate Seismic Design Category A, B & C buildings from those in more severe Seismic Design Categories. Carter and Heinz will discuss further what project(s) might be undertaken collaboratively.

Item 2 Communicating Connection Design

This item was skipped over and will be discussed at the next meeting. As a reminder, the Action Items from the March 31, 2009 Meeting are as follows:

The work has been incorporated into Appendix D of the AISC Bracing Connections Design Guide by Larry Muir and Bill Thornton. In order to publicize the methodology, articles should be submitted to Structure Magazine and Modern Steel Construction. Larry Griffis suggested eliminating Case B of Method 2 (+/- single value). Bill Thornton agreed.



There was also discussion about how to communicate diaphragm force. AISC TC-5 has been looking at this.

Action – March 31, 2009

1. Larry Griffis will forward comments to Bill Thornton.
2. Bill Thornton will update document and circulate to Committee for review and comments.
3. Larry Griffis and Susan Burmeister will collaborate on communicating diaphragm force methods.
4. Larry Muir and Bill Thornton will prepare summary article for Structure Magazine.
5. Charlie Carter will have an AISC staff member prepare a summary article for Modern Steel Construction.

Action – April 1, 2009

Charlie Carter will ask the AISC IT Committee to help develop a mechanism for information transfer in software programs, perhaps with a post-processor created following the design recommendations.

Item 3 – AISC Update

Charlie Carter reported as follows:

- Jim Malley is the winner of the 2011 T.R. Higgins Award for his AISC Journal Paper on the 2005 AISC Seismic Provisions. Jim plans to update the paper to address the 2010 version.
- A November 2010 meeting is set for Sanibel Island to finalize the 2010 Specification.
- The 14th Edition AISC *Steel Construction Manual* will be published Fall 2011.
- The 2nd Edition AISC *Seismic Design Manual* will be updated and re-published Fall 2012.
- The Code of Standard Practice will be reviewed by the AISC Code Committee for finalization and publication in 2010.
- The 3rd Edition of the AISC *Detailing Manual* is now available. It is an update for consistency with current references only, with limited revisions otherwise.
- AISC's Steel Day was held on September 18, 2009, and over 7000 participants were received in events that were staged with at least one event in every state and 178 total events. 3,000 enjoyed the Steel Day webinar on stability by Lou Geschwindner.
- AISC will continue to offer webinars, and is looking increasingly at the online format for delivering seminars.

Item 4 – Collapse of the Dallas Cowboys' Practice Facility

John Gross presented the results of his investigation of the Dallas Cowboys' pre-engineered fabric-covered structure in Dallas, TX, under wind loading that was severe in some locations, but not necessarily at the facility that collapsed. The presentation highlighted incorrect wind loading application and incorrect lateral support at assumed bracing locations. Details also showed offsets and eccentricities in the intersections of truss member centerlines.



Item 5 – WPM Investigation of Dome Framing

Larry Griffis presented the WPM investigation of a steel-framed dome roof for a Performing Arts Center where the connections for the roof support beams and spandrel tension ring beams were compromised by the inappropriate column size and connection details that occurred due to miscommunication between the Engineer-of-record and the fabricator.

Item 6 – Presentation – “Thin Steel Plate Shear Wall System”

Daniel Tunnick and Nabih Youssef presented the design of the LACCH Hotel and Residence which is a 56-story residential tower with mixed-use occupancy at and below grade, utilizing a steel plate shear wall system with $R = 7$. Jim Malley of Degenkolb Engineers was the Peer Review Engineer. Performance-based design was used to optimize the lateral load system, and the precedents established with this project should provide guidance for engineers to utilize on future steel plate shear wall projects.

Charlie Carter announced that Nabih Youssef would be receiving an AISC Special Achievement Award for the work done on this project. This award will be presented at the AISC NASCC in Orlando in 2010.

Item 7 – 50 KSI Material

Mike Engstrom provided an update via email which is summarized as follows:

The subcommittee activity is in phases:

1. Determine the size range of bar-sized angles typically used in connections;
2. Determine the capability of bar mills to produce the typical range of structural angles in a 50KSI steel grade;
3. Plan a strategy for implementing a 50KSI connection design and coordinating with bar mills to ensure its implementation is met with success.

Phase 1 (Size Range):

After surveying a few select experts, a missed size range of angles was identified, based either on application or preferred (fabricator) detailing practice, but the entire size range of structural angles from the L2x2x1/8 (as shown in the AISC Manual) to the L8x8x1-1/8 should be considered. Comments to make the move to “grade 50” connection design were positive in providing benefits for the industry, including simplifying design/detailing, adding structural capacity, providing better control, and eliminating dual inventory (36/50).

Phase 2 (Bar Mill Capability):

From a metallurgical standpoint, there would be some additional effort (chemistry/rolling adjustments) that would need to be made for the bar mills who may not currently offer grade 50, but all bar mills have the capability and opportunity to produce grade 50.

Phase 3 (Implementation Strategy):

With the assumption that structural angles would be available in grade 50, a strategy for implementation needs to be developed. So, the following questions need to be addressed:

1. Would ASTM A529, in lieu of ASTM A572 grade 50, be an adequate alternate standard to meet the design criteria?
2. Should a material property survey be conducted on ASTM A529 and/or ASTM A572 grade 50 angles currently produced?



3. Should research (full scale testing and/or analysis) be conducted to determine to verify performance characteristics of a complete grade 50 design?
4. What are the steps (phases) for implementing a connection (and bracing) design using grade 50 structural angles?
5. How should the AISC specification/commentary for structural steel buildings be revised?
6. What publications/guidelines/education programs need to be developed to implement the change in design philosophy?

Due to time constraints, these questions were tabled, with planned discussion at the next meeting.

Item 8 – Standard Connections Project

This item was not reviewed at the meeting. See Summary from March 31, 2009 Meeting below.

(March 31, 2009) Tom Ferrell will write the description of each table, including how to use it and the assumptions that are used in creating the tables. An AISC staffer and Charlie Carter will finalize the tables for publication in an Article. The Article will present the tables as a means to facilitate the communication of acceptable connection details from the Structural Engineer to the fabricator, as well as to facilitate the review process. The article will also be explicit that other details with calculations are permitted.

Action – Charlie Carter will have completed article for next meeting.

Item 9 – R=3

Charlie Carter presented a summary of the research he had conducted as part of his PhD thesis. This material had been part of a session at the ASCE Structures Congress in Austin, Texas.

Pete Cheever presented a summary of the Connection Testing Program at the University of Illinois to determine post brace buckling or fracture capacity of the beam-to-column connection. Some Committee Members expressed concern about the condition of the gusset plate, which may be distorted by a buckled brace, contributing to the moment capacity of the beam-to-column connection. The connection testing is drawing to a conclusion, and a full presentation will be made at the next NASCC.

A follow-up Symposium on R=3 is still being planned by Tom Schlafly of AISC.

Item 10 – Wind Drift Survey

Finley Charney reported that he will contact Bob McNamara to get this action item re-started. Action items from the March 31, 2009 meeting are repeated below:

(March 31, 2009) Action - Task force to meet, correspond, research and provide a summary of information at the next meeting regarding current practices with wind loads on steel structures. Future goals would be article(s) summarizing same.



Item 11 – ASCE/SEI Website

Pete Cheever presented the CODSBS website planned for linking with the ASCE/SEI web page. Committee Members agreed that the website should be posted and made accessible. The Committee will still use the website maintained by Lou Geschwindner for work that is under development and not ready for release.

Bob Disque suggested using Charles J. Carter, Ph.D as the chairman's name of the Committee (instead of Charlie Carter, as listed).

(Note: The website is fully linked with ASCE/SEI, and can be reached at <http://www.lemessurier.com/PCheever/asce-sei-codsbs.html>. (No items will be posted on the website without Committee approval.)

Item 12 – New Members

- Susan Burmeister has been approved as a new member.
- Chia Ming Uang from the University of California at San Diego was in attendance and was nominated for membership.

Action: All Committee Members will forward nominations for new members before the next meeting.

Item 13 – Reducing the Number of Load Combinations

Jim Rongoe reported that ASCE-7 does allow for a simplified procedure.

Finley Charney has recently written an ASCE 7 Guide for Seismic Provisions.

James Parker mentioned that CASE will be hosting a session on Code Complexity in the near future.

Action: It was agreed that the best way to expand the discussion of this topic is to explore several sample building designs. Charlie Carter will follow up with proposed building designs to be investigated by the members of the Committee.

Item 14 – Progressive Collapse

Ron Johnson's emailed report is summarized as follows:

The following actions are in progress:

- **I am writing a paper on connections and tie forces that has been accepted by SEI for the structures congress (see attached for abstract), so that is in progress. Mustafa (my coauthor) is on the ASCE steel connections committee and I am on the SEI progressive collapse committee. Kurt Gustafson will participate in reviewing this paper for AISC.**
- **The SEI progressive collapse committee is now chaired by Robert Smilowitz. The risk-based approach that the committee had been pursuing was considered too broad, and now the committee will be focusing on prescriptive requirements, including non-threat specific guidelines. Two of the immediate goals were: 1) establish a consistent set of terminology, and 2) catalog worldwide research activities.**



- ASCE 7 integrity clause is being revised for 2010/11. The paper I am writing will address these revisions in addition to the IBC requirements.
- Will the AISC be putting an integrity section into the specification or commentary? Some discussion of this might be appropriate. I think it should be something simple like what is in the ACI. A while ago I started a more comprehensive document modeled on the “blast” section, but I think this may be too much for this stage. Some discussion by the committee on this would be good.

Item 15 – Simplifying Seismic Design

This item was passed over. Below are the notes from the March 31, 2009 meeting.

(March 31, 2009) There was discussion about the displacement method used in New Zealand and similar EuroCode requirements. There was discussion about performance-based design. There was discussion about the activities of ATC-58, which has substantial funding.

Following discussion, Chairman Carter suggested that a task force study alternative seismic design methodologies and report back to the Committee at the next meeting. It was also suggested that we invite Jon Heinz of ATC, who is familiar with the ATC-63 and ATC-58 Projects to the next meeting.

Volunteers – Nabih Youssef (Chairman), Bob McNamara, Larry Griffis

Item 16 – Other Business

Pete Cheever expressed concern that the Code of Standard Practice does not dictate minimum standards for shop drawings. Charlie Carter pointed out that a 3rd Edition Detailing Manual had just been published. Pete Cheever suggested this Manual should be a Reference Standard to the Code of Standard Practice. Charlie Carter will explore what can be done in AISC documents.

Item 17 – Next Meeting

The next Committee Meeting will be held on **Tuesday, May 11, 2010 in Orlando, Florida** at the combined NASCC and Structures Congress.

Meeting adjourned at 5:15 p.m.

Submitted by,

Peter J. Cheever
Secretary