

ACI COMMITTEE 369
SEISMIC REPAIR AND REHABILITATION

ACI Fall Convention
Monday, March 22, 2010
Arkansas Room
2:00 p.m. to 6:00 p.m.
Chicago, Illinois

Minutes

Members Present: Ken Elwood (Chairman), Sergio Breña (Secretary), Jeff Dragovich, Adolfo Matamoros, Halil Sezen, Dominic Kelly, Wassim Ghannoum, Thomas Kang, Ying Tian, Insung Kim, Laura Lowes, Mark Moore, Wael Hassan, Mo Ehsani, Chuck Hookham.

Visitors Present: Shunsuke Sugano, Sri Sritharan, James LaFave, Alvaro Celestino, Babak Alavi, Dylan Freytag, C. Garfield Neely, Ilker Kilic, Bardis Erdil, Attila Beres, Khaled Nahlawi, Oh-Sung Kwon, Vilas Mujumdar, Efegukce Kurt, Guney Ozcebe, Julian Carrillo Leon.

1. Welcome and Introductions

2. Approval of meeting agenda

The meeting was called to order at 2:02 PM.

Agenda approved as presented Moved: Sezen; Second: Moore

3. Approval of minutes from 2009 Fall meeting

Approved as presented.

Move: Kang; Second: Dragovich

4. ACI 369 session at *ATC-SEI Conference on Improving the Seismic Performance of Existing Buildings and Other Structures*, December 9-11, 2009, San Francisco (K. Elwood)

K. Elwood presented a summary of the session. Suggestions were provided by those present during sessions on information they would like to see included in the ACI 369 Seismic Rehabilitation Guide.

5. *Joint JCI-ACI International Workshop on Seismic Rehabilitation*, December 13-15, 2010, Tokyo.
Sponsored in collaboration with ACI 341 (S. Sugano)

As part of the ongoing collaboration between ACI 369 and the Japan Concrete Institute (JCI), S. Sugano (chair of JCI Committee on Performance-oriented Seismic Rehabilitation) presented a Japanese database of rehabilitated columns using jacketing for use by ACI 369. This original database belongs to the Architectural Institute of Japan (AIJ); they allowed JCI to use their database. After request from ACI 369, JCI has obtained permission from to share column jacketing database with ACI 369 (Attachment B).

S. Sugano also commented on an upcoming international workshop on seismic rehabilitation to be held in Japan in collaboration with ACI committees 369 and 341 and gave details of this workshop (Attachment B).

ACI 341 chair (Sritharan) subcommittee has produced a summary of different rehabilitation techniques for bridges with examples but without providing specific details. ACI 341 is currently developing guidelines that have a performance based emphasis by showing how to retrofit a bridge in the field based on two examples.

K. Elwood commented that funding for travel support to the international workshop has been sought but unfortunately has not become available. Good representation is expected by committee members

regardless of availability of funding.

6. Special Session and Publication: *James Jirsa's Legacy in Structural Concrete: A Time to Reflect*, Fall 2011, Cincinnati (J. Pincheira)

Session Co-chairs: S. Alcocer and J. Pincheira. Invited speakers are being selected. ACI 369 is co-sponsor of this session along with committees 352 and 374.

7. Parallel efforts related to Seismic Rehabilitation

a. NIST Task Order 5 (ATC 76-5) (K. Elwood)

K. Elwood will lead a scoping project to determine how much information is available that can be transferred into practice through this NIST project. Will take on technology transfer responsibilities using the NEES-GC project led by J. Moehle on collapse mitigation of non-ductile RC buildings (NEES-GC project: J. Moehle: PI). The project will provide an opportunity to take research results from a project in a form that is useful to the ACI 369 guide.

Phase 1 (scoping project) – ends in August

Phase 2 – Duration: 18 months. Start date approximately Jan. 2011

Information might be available in approximately 2 years.

b. Concrete Coalition (K. Elwood)

Purpose: document problem of non-ductile RC buildings in CA. Might look at other regions if funding available. Current work has focused on developing an inventory for buildings in CA. A critical aspect for future work is to identify the structural aspects of RC buildings that increase likelihood of collapse. The objective will be to identify these buildings using approximate (quick) methods. ACI 369 work might move toward developing a procedure or guide for rapid assessment of RC buildings as a future activity.

c. ASCE/SEI 31 and 41 (K. Elwood)

A meeting took place in Dec. 2010 prior to ASCE/SEI conference in San Francisco to discuss the status of ASCE standards 31 and 41. ASCE is supportive of the work that ACI 369 is conducting. During the meeting there was consensus that changes need to be made to ASCE 41 and recognition that ACI 369 is starting to work on changes to the reinforced concrete sections of the document. Some concerns were raised that only frame buildings are being addressed at this time and that work on wall buildings is being deferred.

d. NEES-GC (J. Moehle / A. Matamoros)

The project objective is to mitigate collapse of non-ductile RC buildings (sponsored by NSF-NEESR program). Testing side of the program has focused on columns and beam-column joints.

W. Hassan indicated that Phase 1 testing is almost finished. This phase includes corner columns subjected to moderate axial load not experiencing axial load failure. Phase 2 testing will start in approximately 3 weeks and will finish approximately in June. One goal is to provide data that will serve to modify ASCE 41 beam-column tables for exterior joints. A paper presentation will take place in July at the National Conference of Earthquake Engineering in Toronto.

8. *Guide and Commentary for Seismic Rehabilitation of Existing Concrete Frame Buildings* (K. Elwood)

a. TAC comments

K. Elwood presented a summary of the meeting with TAC. A task group will be formed to address comments from TAC. Any substantial changes to the guide will be letter-balloted by the end of summer 2010. The ballots will likely only involve sections/paragraphs that are affected to address comments received from TAC. TAC comments will be posted on the website.

b. Task group membership

Five task groups are currently conducting work in the committee (see section 9). Volunteers were solicited to work in the different task groups. Task group leaders will then coordinate with volunteers to perform the task group activities.

c. Schedule for recommendations for future changes from Task Groups

Task group activities will focus on a timeline to send the next version of the guideline in 2013. Idea would be to have a new version balloted in 2012.

9. Task Groups Reports

Each task group leader gave a short summary of the efforts being conducted and the proposed changes for the next version of the document. All groups are encouraged to finish the current work by the end of 2011 so that the modifications to the guide in each of the areas can be balloted during 2012.

- a. Materials (H. Sezen)
- b. General Provisions (J. Dragovich)
- c. Beams and Columns (W. Ghannoum)
- d. Beam-Column Joints (L. Lowes)
- e. Rehabilitation Techniques (S. Breña)

10. Other ACI Committee activities related to ACI 369

Brief reports on the interactions that ACI 369 membership has had with ACI 440 and ACI 374 were given. Efforts between ACI 369 and these other committees do not seem to overlap.

- a. ACI 440F Document Review (S. Breña)
- b. ACI 374 TechNote on frame member stiffness (W. Ghannoum)

11. New Business

A brief presentation on observed earthquake damage to reinforced concrete buildings in Chile after the earthquake in February 2010 was given by J. Moehle.

12. Next meeting – Pittsburgh, PA

Date: Monday, October 25, 2010

Time: 2:00-6:00pm.

13. Adjournment

Meeting was adjourned at 6:15pm

Attachment A – Agenda
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7. Parallel efforts related to Seismic Rehabilitation
 - a. NIST Task Order 5 (ATC 76-5) (K. Elwood)
 - b. Concrete Coalition (K. Elwood)
 - c. ASCE/SEI 31 and 41 (K. Elwood)
 - d. NEES-GC (J. Moehle / A. Matamoros)
8. *Guide and Commentary for Seismic Rehabilitation of Existing Concrete Frame Buildings* (K. Elwood)
 - e. TAC comments
 - f. Task group membership
 - g. Schedule for recommendations for future changes from Task Groups
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 - h. Materials (H. Sezen)
 - i. General Provisions (J. Dragovich)
 - j. Beams and Columns (W. Ghannoum)
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 - m. ACI 440F Document Review (S. Breña)
 - n. ACI 374 TechNote on frame member stiffness (W. Ghannoum)
11. New Business
 - If time permits - a brief presentation on earthquake damage in Chile by J. Moehle.
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Attachment B – Letter presented by Shunsuke Sugano

100322 Shunsuke Sugano

To ACI-369 Committee

I am Shunsuke Sugano, Hiroshima University, Japan and I am the chair of the JCI committee on "Performance-oriented Seismic Rehabilitation". I am very glad to be here as the representative of the JCI committee to communicate with this ACI-369 committee. Today I have two things to tell you as messages from JCI. One is the database of column jacketing and the other is the ACI-JCI workshop to be held in December of this year.

1. JCI Database

I brought the JCI database of column jacketing with continuous fiber sheets. I already sent the database to the chair of this committee by e-mail. I think the chair of this committee will transfer the data files to the chair of the subcommittee on rehabilitation techniques. Our committee will be very happy if this database is helpful for your committee.

2. ACI-JCI workshop

Our committee is preparing now the committee report on the present state of the performance-oriented seismic rehabilitation from the aspects of "research", "design" and "application". Here, the performance-oriented rehabilitation is equal to performance-based rehabilitation, and it includes the rehabilitations which overcome difficulties in design and construction, such as "non-evacuation". The report will be concluded by the end of this March. After the coming April, we will summarize the report and will translate it into English for the presentations in the Workshop.

The workshop will be held on December 13, Monday and 14, Tuesday. We hope to have the presentations from our committee in the early half of the first day. Our committee has an obligation to report the result of our activity to JCI members; therefore, the presentations will be made for JCI members and at the same time as committee reports for the workshop. We will make the presentations in Japanese language for JCI members and they will be simultaneously translated into English for ACI participants.

The late half of the first day and the full second day will be used for the workshop. The workshop will include keynote presentations, invited speeches, committee reports and research reports. All the presentations and discussions will be supported by simultaneous translations.

The names of speakers of Japanese side, except the six committee reporters, will be decided after hearing the names of ACI side participants. We hope to have as many ACI participants as possible. All of you are welcome and we are waiting for many of you will be coming. Thank you very much.