ICC AD HOC COMMITTEE ON WALL BRACING
MEETING #2

DRAFT AGENDA

December 5 - 6, 2006
Doubletree Hotel Denver
3203 Quebec Street
Denver, CO 80207
303-321-3333

December 5: 8:00 am – 5:00 pm
December 6: 8:00 am – 3:00 pm

1.0 Welcome and introductions – Chair Bajnai

1.1 Call to order; introductions; welcoming remarks

The meeting was called to order at 8:00 am December 5, 2006.

Self introductions of the committee and attendees were made.

Members present: Chuck Bajnai, Jay Crandell, Dan Dolan, Brad Douglas, Vic Finch, Brian Foley, Brian Juedes, Ed Keith, Dan Kelsey, Vladimir Kochkin, George Martin, Amos Morris, Jr., Randy Shackelford, Steve Thompson

Members absent: Bonnie Manley

Staff liaison: Mike Pfeiffer

Attendees: A list of attendees is provided at the end of these minutes.

2.0 Approve agenda

Approved as revised – item 5 heard prior to approval of the minutes and add new item 8.1 ASTM E2126 update.

3.0 Approve minutes of Meeting #1 August 22 – 24, 2006

Typos noted:

Item 1.3 Add section R602.11 as within scope of effort
Item 8.0 TB 179 should read RB 179

4.0 2006 Orlando Code Development Hearings

4.1 Review committee action on bracing code changes

Chuck noted that the work of the AHWB was well received in Orlando, both in terms of submitted modifications as well as testimony for and against identified code changes.

4.2 Review RB179 with approved code changes incorporated

Reference document: "RB179 by Mike". The following was noted:

1) The committee decided to leave the exception for R602.10 as printed in the change.
2) Renumbering of document in R602.10.1.3 will be done by ICC staff.

3) R602.10.1.2 & R602.10.1.3: Make the change to floor/roof diaphragm above the walls in question.
4) RB227: Merge is correct, but Dan Dolan will draft a change to correct the splice issue – number of nails - for increasing the splice requirements.
5) Wording "for purposes of computing percent bracing" should not be added to text or as a footnote to the bracing table. The word "amount" will be changed to "percentage" in all locations, except where the dimension is a length.
6) R602.10.3.2: Ed Keith will draft introductory language and provide cross references. "As an alternate to the bracing methods in Section R602.10.2, wall bracing panels in accordance with the requirements of Sections R602.10.2.1 and R602.10.2.2 shall be permitted."
7) R602.10.4.4: Keep table and eliminate the text. The wording in the table will be "Opening Clear Height".
8) Add reference to Figure R602.10.4(2) with text to make it consistent with the figure.
9) Figure R602.10.4.1: Concern over whether the figure should show the return corner specifics was voiced. Figure will be modified to indicate requirement for return and expanded to 4 figures to show options for ends of wall line.
10) Figure R602.10.4(2) needs to be changed to reference Section R60210.4.6. Terminology for figure needs to be coordinated with changes being introduced in Figure R602.10.4(1)
11) R602.10.4.1 #3: Add additional wording to second sentence - "Except as required by Sections R602.10.4.7,…"
12) R602.10.5: A comment will be developed by staff to reinsert text for this section that was deleted by subsequent code changes.
13) R602.10.7, Exception 2: Change the word "unless" to "when".
14) Length vs width: Height and length will be used for wall dimensions. Reword the definition of aspect ratio in the next cycle. Two definitions: one for diaphragms and one for walls. Also eliminate the definition of shear wall.

Where to go from here? Significant discussion on:

- How to simplify the complexity of code and at the same time fill gaps or provide additional flexibility.
- Change the percentages to lengths
- Add a sub-group of buildings that could be designed using a step function, or simplifying by making the detailing requirements consistent – such as setting a threshold at 3000 square feet.
- Develop a commentary
- Develop new options for improved bracing, etc.
- Rework order to put it in design logical format.
- Develop a computer program for bracing similar to that for energy (RezCheck)
- Look at several different formats. Keep the RB 179 as the skeleton for the next stop. The group then should break up into two task groups – one that deals with the engineering analysis and one task group working on simplification.
- Consider removing some of the exceptions and then changing the percentages to lengths.

- Some felt that the wind separation from seismic will require a change from RB 179 format.

4.3 Discussion of RB 214 & RB 216…where do we go from here?

Zeno Martin provided a presentation on the portal frame method and out-of-plane loads involving hinges. Portal frame tests were also presented and comparisons to TJ, Simpson, and WSU test results.

Discussion of the analysis for out-of-plane loading issues was presented to address concerns over lack of king studs to prevent failures at the header to wall location.

Issues:

- A specific code change to limit clear height of studs should be limited to 10 ft. This should be part of the simplification/consistency task group.
- Over use of 6:1 segments in construction is a concern in some people's minds.
- The adequacy of the bracing amounts is a separate issue.
- Currently this proposal is being held to a higher level of scrutiny than current methods. Many think that it is a significant improvement over what is currently in the code.
- Discussion on the NEESWOOD project. Damage locations was noted as a concern. RB 214 expands use to all hazards and locations.
- Cripple wall detail needs to be included to show that if present, it is located below the header.
- The issue of wind loading on cantilevered cripple wall was raised.

4.4 Develop public comments (due January 24, 2007)

RB 179:

- Develop 4 sketches to clarify the application of R602.10.4(1)
- Splice detail in R602.10.1.3.1
- R602.10.7: Method 5 and blocking. Delete method 5? This was discussed in the context of whether or not this was going beyond the scope of the original code change. Result: Keep method 5.
- APA to possibly submit a public comment on cripple wall/hinge issue.
- Text will be updated to allow 12.5 ft offset as figures will illustrate.
- Text will be added to R602.10.1.3.1 exception 2 at the end of the sentence to say "top plate lap splice face nailing is increased to 12 nails on each side of the splice"
- Section R602.10.1.3 last sentence: change to move 25 ft requirement into 2nd sentence.

RB 169:

- Code change was approved as submitted in Orlando. The issue of 6d vs 8d nails and tested values versus calculated values
- Not a cost issue
- Request disapproval, the nail size should be reviewed within the context of the numerical assessment of bracing methods

Other:

- Structure fiberboard proposal in the same format as used in R602.10.4 and relocate to R602.10.5 Louis Wagner will prepare a modification
- A question was posed as to Simpson's position on their proposal. Simpson is considering its options
- Vladimir will develop a comment to the code change that allows doubling the sheathing requirements if gypsum is removed from the opposite face.

5.0 Status report of the IRC Sheathing Ad Hoc Task Group chaired by Dan Dolan

Dan Dolan provided short summary of the meeting that was held in Orlando of the second ad hoc committee on bracing. The committee set the lower end of the resistance that will be used by the committee and the committee is working on setting the high end of the resistance from which the "as built" resistance will be set. Steps to complete:

1) Set the top end of the resistance
2) Set the position that "as built" represents on the partial restrained condition
3) Set the parameters for how to add dissimilar materials (including R-factor issues)
4) Set parameters on how to add dissimilar structural systems
5) Determine a process for converting test data to design values.

6.0 Develop Work Plan for Review of 2006 IRC bracing provisions

6.1 Discussion of Braced Wall Line concept

Walls over 50 ft require interior braced walls. An example was sited – how to address an L-shaped building requiring an interior wall line. This is further complicated when you add a garage - raises the height of the wall line - maintaining the wall line difficult to achieve. Some suggestions:

- Determine the total load based on sail area or footprint of the building. Then determine the total wall length and distribute it according to a developed set of rules.
- Require the exterior shell to be the resisting structure and the interior walls are ignored.
- Should the interior wall lines be required to extend from exterior to exterior wall?
- The definition of the wall line and the diaphragm issues need to be well defined. This would include the issue of requiring the top plates be connected or not.

These issues will define the analysis required to calculate the required bracing.Discussion of whether imaginary wall lines should be included was raised. It was brought up that this can make some designs work. Figure R602.10.1(3) indicates that the wall line must have wall segments on the line.

6.2 Identification of current bracing provisions in need of review/revision

- "See figure so and so" vs in "accordance with figure so and so." Figures are for illustration.
- Put more information in figures to provide simplicity
- Define braced wall line in chapter 2
- Organize chapter in order of design process – concern over changing the format a

second time. Should this be put off until subsequent cycles?
- Change percentages to lengths
- Change the method/type numbers to materials used
- Move high seismic and wind into appendix**.** Exception for seismic needs to be reworked
- R602.10.1 mixed bracing methods needs to be in the bracing method sections
- Break sheathing into wind vs seismic
- Blend sheathing amounts with wall spacing requirements
- Eliminate redundant sentences
- Table R602.10.1(2) . Delete 12 ‘ story height. Build adjustment factors into the tables. Need to include snow load in seismic numbers.
- Eliminate Table R602.10.1(2)?
- Revise Section R602.10.1.2 with a new drawing to clarify angled corners
- Add clarifying sketch from IBC (2003 IBC – Figure 2308.9.3) for general building configurations
- Redefine interior braced wall line
- R602.10.1.3 Braced wall spacing could be included in the base bracing tables – thus eliminating the section
- Improve exceptions – consistency in text and improved readability.
- R602.10.3.2.1 Replace text with figure(s)**.** Comprehensive review of text - R602.10.3.2.2, R602.10.4.5, R602.10.4.6 - but be careful about exceptions, etc. No footnotes
- Aspect ratio definitions

6.3 Establish task group, if needed

Reformat Table R602.10.1(1) - breaks into wind vs seismic. Depends on Dan Dolan’s Committee outcome for the actual values.

Braced Wall Methods:
- Describe the types

Braced Wall Details and Requirements:
- Describe the 13 types
    - Intermittent
    - Continuous
    - Bracing wall detailing requirements tied to wind vs seismic

General issues - miscellaneous such as Ch 2and 3 terminology issues.

7.0 Old business

None

8.0 New business

8.1 ASTM E2126 update (new)

B.J. Yeh provided an overview of the actions of the ASTM E2126 (cyclic testing) committee action and progress. Plan is to hopefully have a completed ballot by fall.

ASTM E564 test will be next to be updated. Discussion of impact of standard on design values. The impact will be in the future. Most people do not see significant changes in design process or design values currently used. The changes will come in how we combine materials and systems and the decisions on what partially restrained means. Items noted:

- Clarification of test protocol
- Need to achieve repeatability and reproducibility of results

9.0 Future Meetings

January 12, 2007 @ 10 am central:

Discuss/develop public comments

February:

Dan Dolan group sometime after NAHB conference

May:

May 1 – 2: Dan Dolan group
May 3 – 4: AHWB

July:

July 10 -11: Dan Dolan group
July 12-13: AHWB

10.0 Adjourn

Meeting was adjourned at approximately 1:50 pm on December 6th.

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List of Attendees

Steve Pryor	Simpson Strong-Tie
John Haluska	Norboard
Louis Wagner	American Fiberboard Association
Gary Ehrlich	National Association of Home Builders
Paul Lautrup	Covalence Coated Products
Ed Chan	Covalence Coated Products
B.J. Yeh	American Plywood Association (APA)
Zeno Martin	APA
Michael Gardner	Gypsum Association
George Muste	Montgomery County, MD
Craig Christianson	Knight- Celetox
Scott Robertson	Weyerhauser
Wanda Edwards	Institute for Business and Home Safety
Doug McNeil	Norboard
Chris Shepko	National Shelter Products