Structural Advisory Committee (SAC), Meeting notes from 1/11/12 SAC meeting at MnSPE
See attached sign-in sheet.
Agenda for SAC meetings:
Feb. 9, 2012 IBC 21/22, IRC 7/8, related 1305/1309
March 14, 2012 IBC 20/23/31, IRC 10, related 1305/1309, IEBC

- MN amendment 1305.1805 Subp. 4 (Depth of footings) and Subp. 5 (frost protection) to be sent to 1303 committee for review.
- Adoption of seismic requirement for IBC discussed; not applicable to Minnesota (wind load requirements would control structural design)—committee recommended not to adopt seismic requirements in 2012 IBC (current status to remain)
- 2012 IBC 1803.2 exception was discussed, (The building official shall be permitted to waive the requirement for a geotechnical investigation where satisfactory data from adjacent areas is available….). Committee agreed on need for exception (exception to remain).
- 2012 IBC 1807.2 Retaining walls, page 402: Discussion about when design engineering by a MN licensed engineer is required. Note per Jim McDonagh—'standard of performance' is IBC or IRC in areas that have not adopted the building code. Gene Abbott—possible clarification in lieu of change to section; Gene Abbott will research when a licensed engineer is required.
- IBC Chapter 19, amendment MN 1305.1907 Corrosive environments: references ACI 318. Dan Murphy to review ACI 318-2011 version to see if amendment is still required, (amendment improves durability).
- IBC 1905.1.2 ACI 318 Section 21.1.1, page 423, seismic category A; Mike Lederle—not applicable to MN, Dan Murphy—MNSEA discussion? See later seismic discussion Page 2.
- IRC Chapter 5 Floors; Figure 507.2.3 (Deck attachment for lateral loads), page 148. Committee discussed practicality of detail drawing shown. Members noted that Section R507.2.3, referencing figure, reads "shall be permitted;" there are other design options and resources/guides. Jim McDonagh stated statistics on deck failure per his investigations.
- IRC 50, R502.6 Rick Davidson proposal (joist bearing, page 120). Committee discussed proposal that applies requirement of tail joists to all joists. Committee agreed that this requirement should not apply to all joists. Mike Lederle moved to deny proposal, seconded by Frank Berg, consensus reached to deny proposal.
- R507.1 Decks, vertical and lateral loads, page 146. Committee discussed the following: lateral loads on deck, live loads in addition to wind loads, only applies to Figure 507.2.3, questioned whether 1500 lb. lateral load is enforceable if designer chooses to use detail, adopting the model code unaltered (2012 code improves connections), and acceptance of alternate deck design guidelines. Dan Kelsey will email American Wood Council guide to SAC. Jim McDonagh noted that typically preservative is not added to cut ends of treated wood and the untreated ends are placed into connectors; also stated that education must accompany code changes (training for contractors).
- IRC 37, R202 Rick Davidson proposal (Porch definition). Committee discussed proposal, determined issue to be non-structural. Randy Johnson moved to deny, with the condition—unless there are non-structural reasons per MN1309 committee. Mike Lederle seconded; consensus reached to deny proposal w/condition. If MN1309 committee proceeds with proposal, recommendation to remove last sentence of proposed definition.

- IRC-54, MR 1309.0602 (Maximum allowable length of wood wall studs…). MN deletes IRC Table R602.3.1 and replaces it with a Table in MN 1309.0602; this 1309 Table currently has footnotes a through i. Committee discussed proposal to add footnote j reading "Walls designed using this section shall be without openings." Committee recommended revising footnote d in lieu of adding footnote j proposed. Footnote d currently reads "Studs shall be continuous full height;" committee recommends including wording about openings to this footnote. Trevor Axner will write new wording of footnote d and will bring to SAC for review. No motion at this time on this proposal.
- IRC 61, R612.4 Rick Davidson proposal (IRC 612.4 Garage doors, page 347). Committee discussed proposal to delete testing requirement (90 mile/hour wind) for garage doors. However, garage doors are specifically listed in IRC section R301.2.1 and committee expressed concern about potential structural breach of attic/house through garage. Frank Berg moved to deny proposal, Jim McDonagh seconded, consensus reached to deny proposal.
- Trevor Axner (BAM) asked for feedback from the Committee on a foundation anchorage issue by the National Association of Home Builders, see attached. Committee discussed non-bearing interior braced walls, required anchor bolts and footings. Committee determined that this proposed amendment is not needed for Minnesota. Submitted to 1309 committee?
- Seismic IRC; Section R301.2.2.1. (Determination of seismic design category). For purposes of seismic, MN is considered category A. Committee discussed adopting IRC seismic provisions only (not adopting seismic for IBC) and repealing MN 1309.0010 Subp. 4. Committee discussed the following: how site classification interacts with seismic category, monetary affect if MN adopts seismic for IRC, conflict when using IBC in lieu of IRC option for design, whether site classification study is needed, unintended consequences, including cost/no cost information in SONAR, eliminating alternate determination sections under 301.2.2.1, and concern about setting a precedent for future IBC seismic adoption. Mike Lederle moved to submit a proposal revising Section R301.2.2.1 to read "Buildings shall be assigned seismic design category A. ~~in accordance with Figure R301.2(2).~~ Gene Abbott seconded, consensus reached to approve revision and submit proposal. Mike Lederle to submit proposal for R301.2.2.1; Dan Kelsey to research/write reason why adopting seismic category A (for practical use of document only).
- Dan Murphy—should state provide commentary for MN amendments in general? Beth Diem to forward to MN DLI continuous improvement committee.
- R602.10 braced wall panels—Committee discussed issue of whether braced wall panels would be required to continue down to footings/foundation at 3-season porches, etc. Committee agreed there are other options, pre-engineered, etc. Gene Abbott will review simplified (alternate designs).
- Other/previous meetings: IBC 17 continuous special inspection; Committee discussed re-writing MN1305.1704 by narrative (not by reproducing Table); allowing periodic inspection in lieu of continuous inspection during grouting. References: Table 1.19.2, Pages C-70-71 commentary, 2011 building code requirements and specifications for masonry structures (does not include designed), reference TMS 402/ACI 530/ASCE 5 and TMS 602/ACI 530.1 ASCE 6. Dan Murphy to review, Dan Kelsey to review also.
- Other: Trevor follow-up from December meeting—has not yet discussed w/contractor; window wash structural requirements new construction only—not limited to OSHA requirements?

National Association of Home Builders Recommended State & Local Amendments to the 2012 Edition of the International Residential Code (IRC)

Issue: **Foundation Anchorage**

2012 IRC Section Number: **403.1.6**

Recommended Amendment:
Modify the section as shown below:

R403.1.6 Foundation anchorage. Where wood s~~S~~ill and sole plates are ~~and walls~~ supported directly on continuous foundation walls or monolithic slabs with integral footings required by the provisions of this code, they shall be anchored to the foundation in accordance with this section.

Cold-formed steel floor and wall framing shall be anchored to the foundation in accordance with Section R505.3.1 or R603.3.1.

Wood sole plates at all exterior walls ~~on monolithic slabs~~, wood sole plates of *braced wall panels* at building interiors on monolithic slabs with integral footings, and all wood sill plates shall be anchored to the foundation with minimum 1/2 inch (12.7 mm) diameter anchor bolts spaced a maximum of 6 feet (1829 mm) on center or approved anchors or anchor straps spaced as required to provide equivalent anchorage to the 1/2-inch-diameter (12.7 mm) anchor bolts. Bolts shall ~~be at least 1/2 inch (12.7 mm) in diameter and shall~~ extend a minimum of 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundations with integral footings that are not part of a *braced wall panel* shall be positively anchored with *approved* fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318. ~~Cold-formed steel framing systems shall be fastened to wood sill plates or anchored directly to the foundation as required in Section R505.3.1 or R603.3.1.~~

Exceptions:

~~1. Foundation anchorage, spaced as required to provide equivalent anchorage to 1/2-inch-diameter (13 mm) anchor bolts.~~

1~~2~~. Walls 24 inches (610 mm) total length or shorter connecting offset *braced wall panels* shall be anchored to the foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent *braced wall panels* at corners as shown in item 8 of Table R602.3(1).

2~~3~~. Connections of walls 12 inches (305 mm) total length or shorter connecting offset *braced wall panels* to the foundation without anchor bolts shall be permitted. The wall shall be attached to adjacent *braced wall panels* at corners as shown in item 8 of Table R602.3(1).

Reason:

The purpose of this amendment is to revise and clarify the language for anchorage of light-frame wood and cold-formed steel stud walls to the foundations of the house. We are concerned that the provisions as stated will be interpreted as requiring a continuous footing and anchor bolts along the entire length of an interior, non-bearing wall used as

part of a braced wall line. Chapters 4 and 6 of the IRC do not explicitly require a continuous foundation in these locations and they are not traditionally provided in low-wind, low-seismic areas. If interpreted and enforced as such by plan reviewers and inspectors in this area, disputes and project delays will result.

The ICC Ad-Hoc Committee on Wall Bracing revised this section during the 2007/2008 code cycle with the intent of insuring that sufficient anchorage is provided on braced wall lines and panels inside a dwelling to transfer lateral loads to either monolithic (thickened) slab foundations or continuous footings. While we agree that providing a continuous load path is important, the new language is overly broad in its application. In addition to the concern about non-bearing walls used as braced wall lines, we are also concerned the language could be taken to require ***all*** light-frame walls to be provided with anchor bolts to the foundation. Thus, a non-bearing interior partition that is not part of a braced wall line but which just happens to sit atop a foundation wall or continuous foundation (e.g. at a partial basement, crawlspace, or interior knee wall) would also be required to be fastened to the wall or footing below with 1/2" diameter anchor bolts at 6 foot spacing. The ability to use wedge anchors, expansion bolts, mudsill straps, or other equivalent anchorage in lieu of anchor bolts needs to be strengthened. This permission should be granted in the main text of the section similar to the IBC, not just as an exception. Among other benefits, this will help prevent a possible issue with requiring anchor bolts in the middle of a post-tensioned slab-on-grade used where expansive soils exist.

Further, there was no technical justification provided for the increased anchorage requirements. It is noted that the bottom plate of a braced wall line on the interior of a dwelling and supported on floor framing (including a raised floor system over a crawlspace or pier-and-beam foundation) can be attached to the framing with 3-16d nails at 16" spacing. In most dwellings, braced wall lines inside the dwelling will use Method GB bracing, reflecting the fact gypsum board is the typical interior finish. The ultimate capacity for Method GB when used on both sides of a braced wall is 400plf (or 200plf allowable). Clearly, this can easily be achieved not only by the standard nailing on a raised floor system, but also by short post-installed anchors or even power-actuated fasteners. 1/2" diameter anchor bolts at 6 foot spacing are not necessary.

Finally, the pointer to the foundation anchorage requirements in Chapter 5 and 6 for cold-formed steel framing is moved from the end of the paragraph on anchorage requirements for wood framing to the beginning of Section 403.1.6 where it can serve as charging language and an appropriate pointer. As part of the move the text regarding wood sill plates is deleted as this option is covered by the Chapter 5 and 6 provisions.

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Structural Advisory Committee Meeting/2012 International Codes

Date: JAN. 11 2012

Committee Member	Representing	Signature
Dr. Abi Assadi Peter Liukkonen	MnSPE MnSPE (Alt)	
Trevor Axner	BAM	
Frank Berg Gene Abbott	AMBO AMBO (Alt)	
Beth Diem	MN DLI/CCLD	
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Dan Kelsey	MN DLI/CCLD	
Mike Lederle	MNSEA	
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Guests

Name	Representing	Address	E-Mail