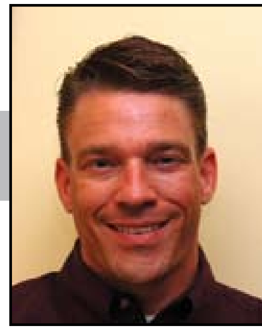
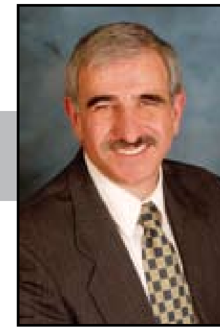
Report on the 2012 ICC Code Development Hearings

By Ed Huston, NCSEA Code Advisory Committee (CAC) General Engineering Subcommittee Chair, with input from Seismic Provisions Subcommittee Chair Kevin Moore, Existing Buildings Subcommittee Chair David Bonowitz, and CAC Committee Chair Ronald Hamburger.


Ed Huston


Kevin Moore


David Bonowitz


Ronald Hamburger

Most of us will soon begin using the 2009 IBC. The code change process, however, is already underway for the next version of the I-Codes, to be published in early 2012. Members of the NCSEA Code Advisory Subcommittees recently attended related ICC Code Development Hearings.

The major change in the 2012 IBC will be its adoption of the updated version of the Minimum Loads standard, ASCE 7-10: One of the most significant changes to this standard is the substantive technical and editorial revisions to the wind design requirements. Chapter 6 will be reorganized and expanded into several chapters. Rather than using a single map to determine wind design speeds, a set of four maps will be used. These new maps, which are adjusted for occupancy importance, will yield wind forces at the Strength Design level. As a result, the load factor for wind in the Strength Design Load Combinations will be 1.0 and, in the Allowable Stress Design Level, the load factor will be 0.6. Prior to the hearings, several material standards developing organizations expressed dissatisfaction with the changes to the maps; however, with almost no testimony at the hearings in opposition to the maps, the code change proposal adopting the new maps was approved. ASCE 7-10 also adds a new simplified wind design with a 160-foot height limit. The Alternate All-Heights provisions which NCSEA introduced into the 2009 IBC will remain in the 2012 IBC, giving engineers a chance to contrast and compare the two methods.

ASCE 7-10 also introduces new maps for seismic design. These new maps are intended to produce a uniform risk of collapse for buildings of not greater than 1% in 50 years. As a result, the definition of MCE ground motion has been revised to incorporate adjustments that account for the rate of seismic activity across the country. These new maps will lower the seismic forces by up to 15 percent in some parts of the country, while increasing them slightly in the regions of most severe seismic risk. The new seismic maps, which were created by USGS in cooperation with the Building Seismic Safety Council, were also adopted into the 2012 IBC.

ASCE 7-10 contains a number of important updates to the General Requirements chapter. The chapter has been rewritten around the concept of risk-based design. The former Occupancy Categories have been renamed Risk Categories and, in addition, the laundry list of building types that fall under the various occupancies have been moved to the Commentary, so as to avoid conflict with the table contained in the building code. In addition, an extensive section on performance-based design procedures has been added, providing guidance for use of alternative means to the prescriptive requirements for justifying the adequacy of structural designs. These performance-based procedures, originally developed for seismic design, can be used for any load condition. Finally, the basic structural integrity provisions, which formerly appeared as requirements for Seismic Design Category A structures, have been moved to the General Chapter and clarified as being "structural integrity" rather than seismic requirements.

Several code changes were proposed to modify the design requirements for connections between wood sill plates and concrete foundations. Together with Simpson Strong-Tie, the Structural Engineers Association of California (SEAOC) supported a research program that tested the connection of wood sill plates to concrete foundation elements, to confirm that ductility demand occurs within the wood member and steel bolt and that there is little (if any) ductility demand on the concrete anchorage. The tests were limited to nominal 2x and 3x sawn lumber plates, connected to concrete foundation elements with nominal 5/8-inch diameter cast-in-place L-bolts. Plate specimens were loaded in direct shear parallel to the long axis of the member. Based on this research, SEAOC developed two code change proposals, one of which was adopted and promulgated by the Seismic Subcommittee of the CAC. This code change proposal clarified current ACI 318 language to allow the use of wood design values for this connection. At the Code Development Hearings, NCSEA moderated several discussions among members of the concrete and wood industries, bolt manufacturers, structural engineers, the Code Resource Support Committee and others. Ultimately, NCSEA was able to expand this code change proposal to make it applicable in more situations, while maintaining safe and adequate building performance. This change will resolve a significant issue in the code since its adoption of the ACI 318-02 Appendix D anchorage requirements in the 2003 IBC. Numerous code change proposals aimed at simplifying Chapter 17 were also submitted this cycle. While significant progress was made at the Code Development Hearings, more effort will be required to achieve this goal.

Other Code Change Proposals to delete the alternate allowable stress load combinations, and the alternate methods of live load reductions, were opposed by NCSEA and were defeated.

In the 2006 and 2009 code change cycles, NCSEA spoke against Code Change Proposals related to hardening stair enclosures. These proposals would have required that exit stair shaft enclosures be designed for 288 psf of lateral pressure. The proponent of hardening stair enclosures resubmitted their proposal again in the 2012 cycle, although the pressure was reduced to less than 200 psf. This proposal was defeated once again.

NCSEA's Existing Buildings Subcommittee continued work on IBC Chapter 34, adjusting some of the major revisions successfully proposed for the 2009 code, and continuing its proactive development of the International Existing Building Code (IEBC).

The 2009 IBC, for the first time, triggers wind and seismic evaluation, and possibly upgrade, when extensive damage is repaired. For 2012, this new requirement will be adjusted to exempt one- and two-family homes from seismic upgrades, and to exempt all buildings assigned to Seismic Design Category C from seismic upgrades, unless the damage in question was caused by an earthquake.

In the IEBC, NCSEA was successful in proposing major revisions, updates, and clarifications to two oft-cited appendix chapters: Chapter A3 for the seismic retrofit of cripple wall houses, and Chapter A4 for the seismic retrofit of soft, weak, and open-front woodframe buildings. Among the 2012 changes to Chapter A4 is a solution to a code loophole that has troubled engineers and officials since ASCE 7-05 limited the R-value of retrofit systems. The solution will allow higher values as long as key irregularities are eliminated.

The 2012 IEBC will also have a new appendix, developed by the Institute for Business and Home Safety, for voluntary retrofit of gable-end wood buildings subject to high winds. NCSEA expects to work with IBHS to develop these provisions further in future cycles.

NCSEA's Code Advisory Subcommittees work with similar committees in NCSEA Member Organizations, and with others, in developing positions and, where possible, taking those positions forward to the ICC. Input from any Member Organization is welcome. If you notice a provision of the IBC or IRC that you believe needs to be addressed, or if you or your SEA are developing a code change proposal and want us to help you with it, please contact one of the subcommittee chairs.