

Masonry Software Takes a Leap Forward

David T. Biggs, P.E.

will provide tax relief to individuals who use high thermal mass construction materials in residential construction. We will soon begin developing a significant research, development, and demonstration program that will test new ways of producing concrete masonry products. During the recent Masonry Industry Legislative Conference in Washington, D.C. senior staff from the House Small Business Committee invited representatives from NCMA to explore ideas within their jurisdiction to provide grants and low interest loans to individuals and small businesses to promote the use of more efficient construction materials for individuals and commercial businesses.

NCMA has also had dialogue with Senator Barbara Boxer, the Chair of the powerful Senate Environment and Public Works Committee about the development of sustainable non-tax oriented "credits" for the construction of sustainable buildings – for doing as Senator Boxer suggested at a recent meeting with NCMA representatives – "the right thing" in the selection of construction materials – for our industry taking the lead to develop and build sustainable and energy efficient buildings and being real stewards of the environment.

NCMA is bringing its collective talents and resources to the congressional debate on sustainability. We are natural leaders and participants of this debate and can use the new found congressional interest in sustainability to add value to our industry. The long term bipartisan relationships we are building on Capitol Hill will serve the industry well in this effort. You may be certain that when it comes to these critical debates on Capitol Hill our industry's creativity and entrepreneurial spirit will stand out and it will be heard. *CMN*

Over the past year, a joint effort by NCMA, the International Masonry Institute, and Ryan-Biggs Associates has worked with Bentley Systems to expand Bentley's software for designing structural masonry. Bentley's RAM Advance has been updated to include hybrid masonry, which includes reinforced infill for structural steel-framed buildings. In addition, Bentley's RAM Structural System and RAM Advance have been improved, which further assists engineers in the design of "all-masonry" load-bearing buildings. The software uses the 2005 version of the Masonry Standards Joint Committee standards (ACI 530/ASCE 5/TMS402).

Hybrid masonry is a new concept developed to integrate with steel-framed buildings to provide the backup for the exterior walls and provide structural bracing for the overall building frame. Interferences with the steel framing can be reduced by eliminating steel bracing. The masonry infill can be designed to combine with the steel framing as load bearing or non-load bearing. RAM Advance is the first software package to provide this new concept for design.

Unlike other software packages, the RAM Advance software allows engineers to design both the masonry and the steel framing in the hybrid concept. It is the closest thing to a whole building software package that has ever been marketed that includes masonry.

Unlike most software currently available that only designs elements, the "all-masonry" aspects of the Bentley software allows engineers to model full buildings in the Structural System program and generate all loads in accordance with building codes. Once the building model is completed, it is imported to RAM Advance and the masonry module is used to design bearing walls, shear walls, and masonry lintels. The walls can also have openings.

Steel-framed and concrete-framed buildings have been designed for years using whole building design software. This is not the case for masonry buildings. Most have been designed using hand calculations, spreadsheets written by individual engineers, or commercial packages that design elements. The suite of Bentley software makes whole building design a reality for load bearing and hybrid masonry.

Engineers that design even modest-sized load bearing buildings recognize that hand calculations can be tedious and repetitious. For a simple four-story building, it is not uncommon for an engineer to spend 6 to 8 weeks developing design calculations. To put the effect of using this software into perspective, that time can be reduced to less than a week. In addition, it is possible to evaluate alternative designs or modifications to a design without starting over.

It is not surprising that many engineers tend to design with steel or concrete because software that designs the whole building has been available for decades. However, there has been no whole building software for masonry. The NCMA/IMI/Ryan-Biggs effort has advanced the development of these tools to where engineers can now develop masonry designs faster and concentrate on the overall design and not the task of creating hand calculations. Seminars are being developed across the United States to introduce the software and train engineers. *CMN*

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