

investment to grow

Loadbearing Masonry's Market Share

POWERFUL NEW
ENGINEERING DESIGN
SOFTWARE BRINGS
A BIG COMPETITIVE
ADVANTAGE

by JOAN BAGGETT CALAMBOKIDIS

►► New design software gives engineers the tools they need to prove what masonry professionals have long known: Structural masonry offers the best wall system and the best value.

Masonry has enjoyed many accolades over its illustrious past, but “groundbreaking” wasn’t one of them. Now, the marriage of traditional masonry materials with high tech structural design software is providing the impetus for dynamic growth in masonry construction.

Until now, masonry could not truly compete with steel and concrete because it lacked good design tools that structural engineers could, and would, embrace. However much they loved masonry, it had to be designed mostly by hand or with an incomplete set of tools. So, while structural masonry is readily acknowledged to offer a more efficient and cost effective system, the realities of design often ruled it out. Request from engineers like Ranjit Nandwana, PE, of TMP Associates asked for the resulting software.

Determination to Collaborate for a Unified Industry

Fortunately, the International Masonry Institute (IMI) and others in the masonry industry, such as the National Concrete Masonry Association (NCMA), Masonry Institute of Michigan’s Kevin Ryan, of Masonry Developers, and structural engineer David Biggs, PE, of Ryan-Biggs Associates, NY, were determined to change

“Now we are seeing [loadbearing masonry] value engineered ‘in’ [to projects]”



Photos courtesy of IMI

More flexible design options for masonry, like custom shapes and floor plans, are now possible, thanks to new software.

that. The group sought out construction software leader Bentley Systems, Inc., whose software was already being used by three-fourths of structural engineers to design concrete and steel frames. The enhancement of a masonry module to the Bentley software seemed to be the most direct route to expanding the structural masonry market. Initial development costs of roughly \$300,000 were split by IMI and NCMA.

The Powerful Tool

The resulting masonry design software, which debuted in 2008, exceeds all expectations. It provides a quicker solution for all masonry loadbearing buildings and offers five hybrid options where masonry can work with a steel frame as the structural system. The other big news for designers is the ability to easily design perforated shear walls. “Our design time went from weeks to days and we achieved a more detailed analysis,” says Biggs.

◀ Zaragon Place: Designers of Zaragon Place in Ann Arbor call the software “a powerful tool.” It has had a particularly dramatic impact on the mid-rise market.



Rendering courtesy of Neumann/Smith Architecture

"It is a powerful tool," says Marc Steinhobel, PE, SECB from Desai/Nasr Consulting Engineers in West Bloomfield. The firm enjoyed a custom in-house seminar that let staff really understand and appreciate its potential. "We are willing to push the boundaries of masonry design, as it has many structural and architectural benefits that add value to our clients' projects," he says. Steinhobel is the lead engineer for Ann Arbor's 128,000 sf Zaragon Place project and several other loadbearing masonry mid-rise buildings.

Having high performing software tools for masonry "has made a huge difference for everyone," says IMI National Director of Market Development David Sovinski, who spearheaded the Bentley project for IMI. "Designers have seen their design time shrink dramatically from a matter of weeks to days, while mason contractors and construction managers save real time using readily available concrete masonry units (CMU) that let construction start 12-14 weeks ahead of steel, which has a long lead time for shop drawings and fabrication."

The software capitalizes on the fact that structural masonry offers cheaper, faster and more energy-efficient solutions that appeal to everyone. In short, you get the

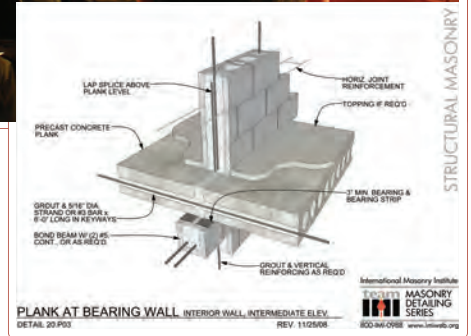


IMI seminars make engineers comfortable and enthusiastic about designing with the software. The inaugural seminar, held at The John J Flynn International Training Center, was conducted by structural engineer David Biggs, PE, who helped develop the software.

mass wall you want at a price you can afford. Or as BAC Local 9 President Nelson McMath put it, "It used to be that masonry was value engineered 'out' of a project...now we are seeing it value engineered 'in'."

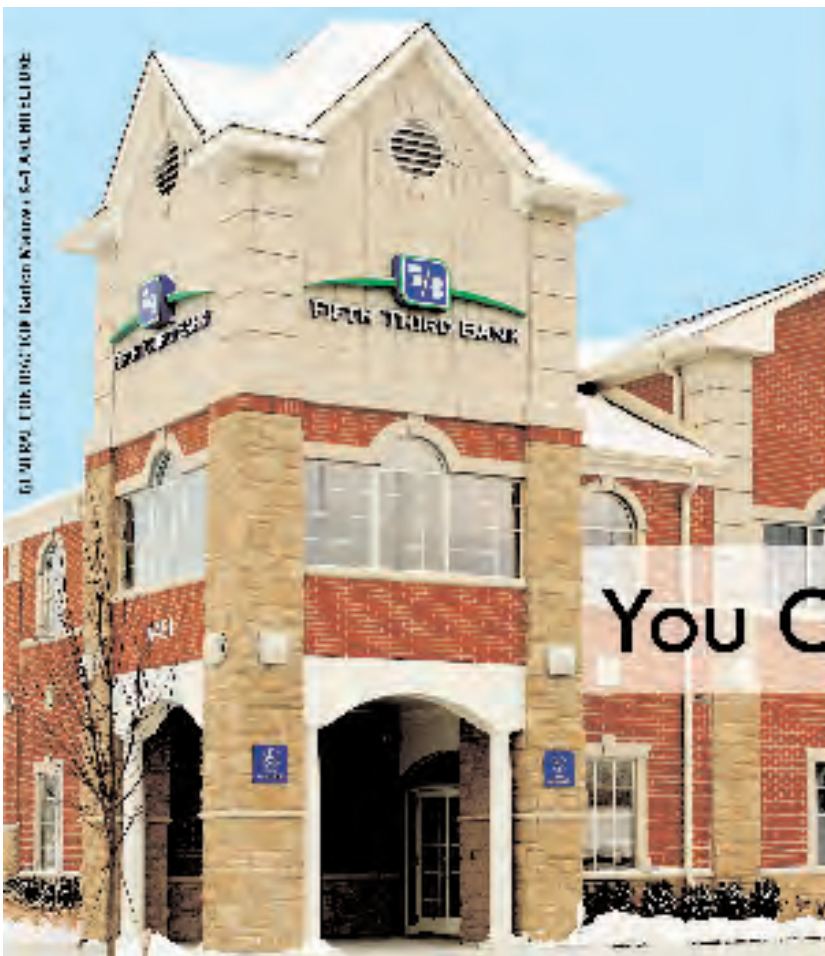
Training and Support Across the Country

Once the software development and testing was complete, a national Bentley seminar series was kicked off at



It's much more than software. IMI supports structural masonry through seminars, the Masonry Detailing Series [www.imiweb.org], and specific project consultation.

The John J Flynn International Training Center in Bowie, MD, last September. Approximately 12 seminars were held across the US in 2008, including Indiana, Wisconsin, Illinois and Michigan. Many more are scheduled for 2009.



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IMI software seminars, like this one conducted by National Director of Market Development David Sovinski, spread the word about the exciting new design options for masonry.

At Michigan's first software seminar, more than 60 engineers attended. In-house training is being scheduled for their entire firms. Plans for 2009 include another seminar plus personal visits to 169 firms.

The Michigan effort promoting use of the Bentley software is particularly noteworthy. Representatives of IMI, MIM, labor, contractors, manufacturers and suppliers are working closely together. Results are impressive. All groups combined resources to support the efforts of a full time consulting engineer, Scott Walkowicz, PE, to work with engineering firms on training and implementing the software.

IMI is also promoting Bentley far beyond the Michigan border through its network of 25 technical service representatives who devote a large portion of their time to introducing engineers to the software and following up with custom training for their specific project needs. When an engineering firm needs training, IMI is there. IMI Director of Engineering Diane Throop, PE, who assisted in the development and testing of the software, is working with IMI staff and local Bentley trainers to make sure engineers have the education and training they need to use the software properly. All reports indicate that once engineers can "test drive" the software, they get hooked. One Wisconsin engineer, who stated that he can finally design what he wants with ease, put his words into action by designing an 80,000 sf medical facility. IMI is now developing a custom design software seminar for all of his firm's designers.

The software, which integrates well with other programs, "will be a plus" for selling masonry design, says engineer Tim Gettelfinger from Structural Services in Louisville, KY. Also, he was so impressed with IMI grout training and certification that he wrote it into his structural specification notes.

Dramatic Impact in Mid-Rise Designs

Some of the most dramatic impact has been in the mid-rise market sector where masonry design is now more practical. In Michigan, engineers are using it on a dozen such projects and taking advantage of the in-house training that goes with it. The software is also exciting to dozens of designers in the state for schools and commercial buildings.

Perhaps the most dramatic example is a Detroit area middle school project that faced nearly two months' delay due to steel shortages. The software enabled quick-thinking engineer Mike Klein from Wakely Associates in Mount Pleasant to redesign the perimeter as loadbearing masonry in just one week to get the project right back on schedule.

In Rochester, where a mixed-used development project's atypical floor plan includes large open areas on the first floor, the software is allowing designers to deal with it easily while having their material of choice – masonry.

Environmentally Responsible

The availability of this new tool is particularly important given the emphasis on sustainability and an increasingly uncertain economy. In a climate where fewer buildings will be built, this software lets masonry contribute as much as it can.

For example, since sustainability will be a key element of all building construction from now on, structural masonry helps architects, engineers and building owners maximize their LEED credits. The concrete masonry mass walls store energy during the daytime and slowly release it during the nighttime hours, helping to moderate heat loss from a building. The thermal mass effect is recognized by codes. Structural masonry uses it to full advantage. Energy efficiency in general is much easier to accomplish with masonry walls since rigid board insulation or spray-on foam in a masonry cavity without thermal bridging offers the best in developing R-values. Future versions of LEED and other rating systems include greater emphasis on life cycle analysis (LCA). Structural masonry is one of the most effective systems available for LCA, as shown by a study performed by Kirk and Associates, who developed a LCA rating system now available through the IMI.

Universities Welcome the new SmartStructure Engineering

IMI is even making sure that tomorrow's designers understand the structural masonry option and appreciate what the software can do. In collaboration with Bentley, IMI

is reaching out to engineering schools all over the country, including Michigan, where IMI's Visiting Professor Program incorporates software training into courses at the University of Michigan, Lawrence Technological University, Wayne State University and the University of Detroit-Mercy.

In its short time on the market, the software has already proven to be a winning solution for everyone. Owners get a better quality building for less time and money; designers get to finally use a favorite material the way they have always wanted; structural engineers get to design quickly and efficiently with masonry; construction managers get a total building solution with fewer moving parts and headaches; good mason contractors get to shine; and skilled craftworkers get more work. Everybody wins. ☺



Photo by Stan Barouh/courtesy of IMI

Joan Baggett Calambokidis

Joan Baggett Calambokidis is currently President of the International Masonry Institute (IMI), a labor-management trust fund which oversees training and promotion for the union masonry industry.

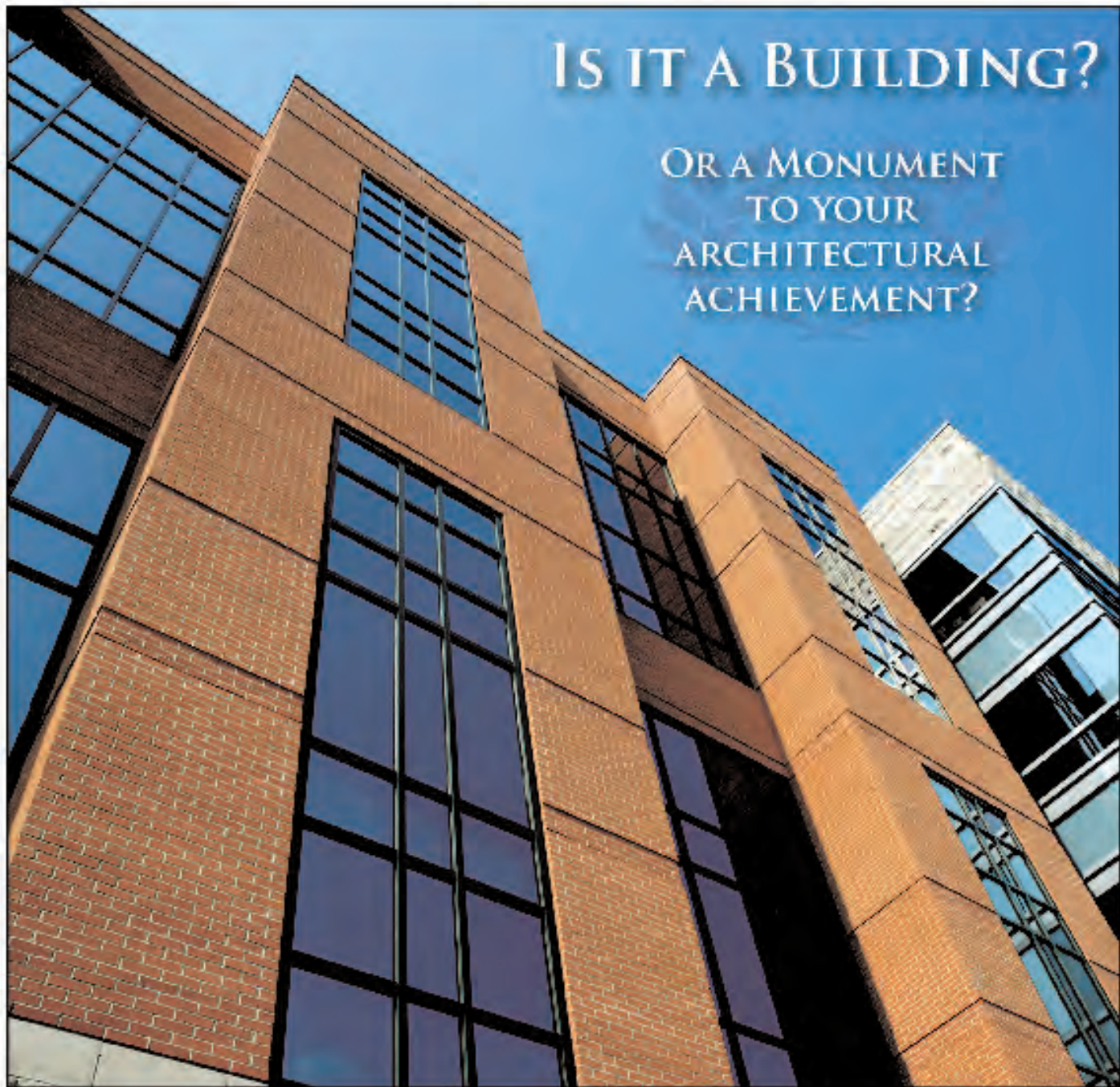
Prior to joining IMI, Ms. Calambokidis served as Assistant to the President and Director of Political Affairs at the White House during the first two years of the Clinton Administration; Chief of Staff of the Democratic National Committee (1991-1993) and prior to that, Director of Government Relations for the International Union of Bricklayers and Allied Craftsmen.

She serves on the national board of the ACE mentoring organization, the American Architectural Foundation as well as the National Building Museum. She also serves on the Board of the National Democratic Institute for International Affairs (NDI).

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