



PROJECT SUMMARY

Organization:

Structural Design Group

Products Used:

RAM® Structural System,
RAM™ Elements

STRUCTURAL DESIGN GROUP, INC.

RAM INCREASES COMPETITIVE EDGE

For Structural Design Group, small and midsize projects are their bread and butter – and they need RAM™ integrated software tools to make it all work. The Birmingham, Alabama-based engineering firm specializes in smaller projects like residential apartment buildings, hospitals, parking decks, light industrial, commercial and retail – everything but bridges.

“We do a lot of small – to medium-sized projects, filling a niche where it is our belief that larger companies cannot efficiently perform.” says one of the firm’s associate engineers, Michael Davis. “But there’s plenty of small work out there and with the right tools, we’re able to take on these projects and be profitable.” Those tools for S.D.G. are the software suite from the company thousands of other successful engineering firms have turned to: RAM International.

Despite the small scope of their projects – which are typically budgeted between \$1 and 20 million and ranges from 5,000 to 600,000 square feet – S.D.G. often finds itself working under the gun. In fact, the smaller the project, the more likely S.D.G. will be on a short-fused timeline, often facing design deadlines as soon as two to four weeks out. “Even though they’re smaller jobs, we still need to do a lot of engineering work and turn it around fast. To specialize in this type of work, we have

to be more practical for the client. Having RAM, we can quickly get work in and out. For us that means productivity and profit.”

Before supplying their engineers with a host of RAM products starting in the mid-1990s – everything from RAM Steel® and RAM Concrete™ to RAM Elements – S.D.G. suffered by doing projects with RISA 3D, PCA Beam and PCA Column. The RAM program S.D.G. now utilizes most often is RAM Concrete, which has drastically reduced not only the manhours needed to complete a job but the frequency of errors. In the past, the firm cobbled together many different computer programs – in addition to manual calculation of column loads – to design a concrete structure. “I had to do each floor and roof separately, with PCA Beam.” Davis elaborates. “Then I used a third program, RISA for lateral wind and seismic analysis. I had to extract all of that data and design the columns in PCA Column. It was pretty painful. Those designs might take three months to do. And if the architect moved something, you practically had to start over.”

The compilation of so many different systems was not only painfully slow, but an open invitation for error. “It was very easy to misread an output line and enter it into the next program incorrectly,” says Davis. “With an integrated program like RAM, errors don’t even enter into my mind. We are

FAST FACTS

- Specializes in small to medium-sized projects like residential apartment buildings, hospitals, parking decks, light industrial, commercial and retail
- Prior to using RAM integrated products, SDG cobbled together different programs which created an error prone and slow process
- RAM increased their confidence in a safe design and an economical design
- Able to cut their man hours in the field in half due to RAM



"Because we were using the program, I was able to incorporate all the changes and rerun all the beams, joists and columns."

ABOUT BENTLEY

Bentley Systems, Incorporated is the global leader dedicated to providing comprehensive software solutions for sustaining infrastructure. Architects, engineers, constructors, and owner-operators are indispensable in improving our world and our quality of life; the company's mission is to improve the performance of their projects and of the assets they design, build, and operate. Bentley sustains the infrastructure professions by helping to leverage information technology, learning, best practices, and global collaboration – and by promoting careers devoted to this crucial work.

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BENTLEY OFFICES

Corporate Headquarters

685 Stockton Drive
Exton, PA 19341 USA
1-800-BENTLEY (1-800-236-8539)
Outside the US +1 610-458-5000

Bentley Systems Europe B.V.

Wegalaan 2
2132 JC Hoofddorp
Netherlands
+31 23 556 0560

Bentley Asia

Unit 1402-06, Tower 1,
China Central Place,
No. 81 Jianguo Road,
Chaoyang District
+86 108 518 5220



confident that we have provided a safe and economic design that is practical for our clients."

RAM has also enabled SDG to generate drawings more easily. "We're able to lay it out as we would put it in the drawings," says Davis. "With RAM, we can use the DXF feature to generate plans rather than draw the concrete beams and pans manually in AutoCAD. Now we effortlessly get the framing in the drawing."

The rapid turn-around capability of RAM came into play on one of the firm's recent projects. Pilot Medical Park, a 60,000 square foot concrete office building in Birmingham, was just days away from the start of construction when the architect made significant changes to the structure's front atrium. "The owner just absolutely demanded a set of drawings in his hands by Monday, giving us only a week to totally redo the concrete design," says Davis.

"Without RAM, I would have had to tell them that it would have been another month. But because we were using the program, I was able to incorporate all the changes and rerun all the beams, joists and columns. We worked the weekend, but we were still able to satisfy the client."

RAM Steel and RAM Elements have also streamlined designing for S.D.G. "RAM Steel revolutionized the steel design process. We used to design the beams and columns and girders separately. It was almost archaic. Now we have a system that's integrated and faster."

Structural Design Group put RAM Steel and RAM Elements into play while engineering the Crest Cadillac Hummer dealership in Hoover, Alabama, which featured a corrugated steel deck and curved roof spanning 52 feet. "We didn't know if the building would be stable with this roof," explains Davis. "Being a complex roof system, the question in our minds was how it would react to wind and seismic loads.

In order to send out a design that's safe, we have to understand what the structure will do. RAM Elements

allowed us to model the moment frames and know where we needed to stiffen things up. Instead of spending maybe two weeks on it, I could look at the program and instantly see how the building reacts to the environmental loadings."

In this instance, the speedy RAM analysis enabled the contractor to opt for a partial penetration weld instead of a complete joint penetration weld. "They were able to cut their man hours in the field in half because of RAM, from 600 to 300. This resulted in a significant savings to the owner." It was an unequivocal win-win for all involved.

The integrated programs in RAM also enable the engineers to design a more economic structure, trimming the tonnage while ensuring the building remains secure. With the price of steel continually on the rise, this feature has become increasingly important to S.D.G.'s ability to compete in the marketplace.

By using RAM, S.D.G. avoided over-designing the dealership, which would have meant extraneous costs to the owner. "If we had gone too conservative, we'd have had a building that would withstand anything but been cost prohibitive. Instead, we were able to make the dealership as efficient as possible and still be confident that what we were sending complies with the building code."

Toss in the superior RAM customer service – which Davis is happy to report has always responded to his queries within the same day – and the software package becomes one that Structural Design Group knows it can never again live without.

"If we didn't have the RAM Structural System™ tools, we couldn't compete with those who do have their programs. We wouldn't be able to make a profit and wouldn't be physically capable of getting projects done on budget and on time if we had to use a manual process or a variety of software programs that are not integrated," says Davis. "For us, RAM means staying in business."

For more information visit www.Bentley.com/Structural

