



Collaborative construction

Adam Jelen explains to Gay Sutton how the Gilbane Building Company has brought together the practices of collaborative teamwork, lean principles and building information modeling to improve the delivery of construction projects

When Gilbane Building Company, one of the largest construction companies in the US, and Hammel, Green, and Abrahamson, a nationally recognized architectural and engineering firm, won the contracts to build the new Kerry Center for the Kerry Group, a leading ingredients supplier to the global food and beverage industry, the synergies between the companies made it a great project in which to pilot an entirely new concept in project management. All entities as an integrated team believed in collaborative working, and both aspired to lean principles.

The new project management practices combined integrated project teamwork, lean principles, and the use of building information modeling, and Gilbane believed this combination would keep costs firmly on track, significantly cut design and construction time, and deliver a building precisely suited to the owner's needs.

Kerry's aim, meanwhile, was essentially to create a lean enterprise. By consolidating many of its existing administrative, research and customer-

focused facilities onto one site, the company hoped to eliminate duplication and overlap in equipment and activity, bring together the business's knowledge base, and create an environment that aided communication between departments. The project was designed as four linked buildings housing a new laboratory, pilot plant, customer center and offices, occupying a total of 260,000 square feet of space on a 130-acre site in Beloit, Wisconsin.

For the Integrated Project Team, the challenges presented by the project were enormous. It was a highly complex site and building, containing office, shared space, laboratory, and pilot plant facilities. User groups were spread across the United States, and all were required to give input into the project. And the new occupants of the buildings would eventually have to vacate their existing facilities and seamlessly transfer operations to the new site. Meanwhile, the construction schedule was aggressively fast-tracked, leaving no room for delay, and the buildings were to be LEED certified and designed to Energy Star standards.

The design work began in spring-summer 2007. "We started construction in the fall of 2007 and

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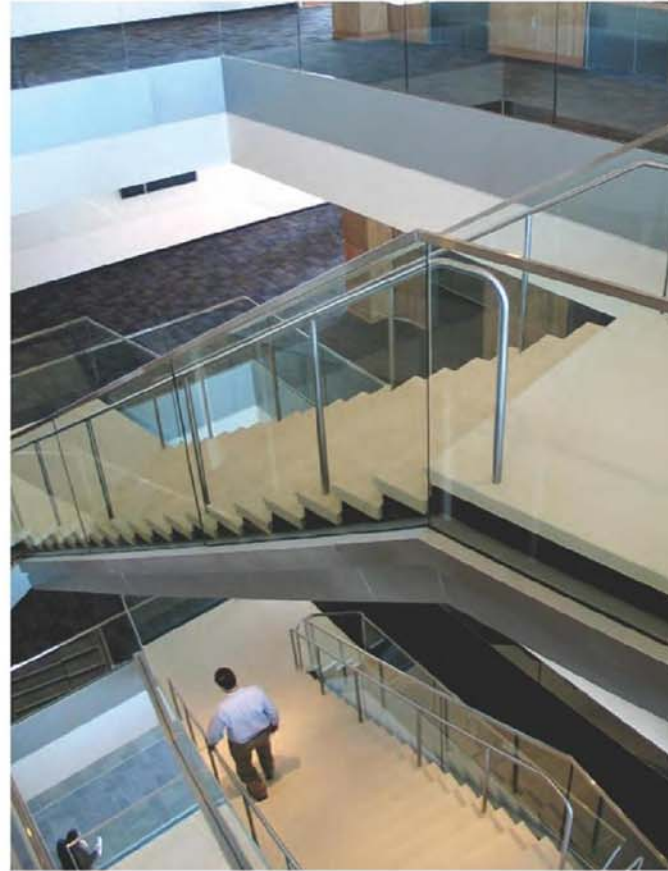
were open at the end of 2008, which is incredibly fast," explains project executive Adam Jelen. "But to me, the whole success of this project is due to collaboration." And collaboration has certainly been the glue that has held the entire project together. Kerry had assembled a team of extremely qualified, collaborative professionals led by their top management, along with Jelen from Gilbane and Rick Hombsch, principal and project manager from HGA.

The team met every Monday morning from the very beginning of the project until the building was fully occupied, reviewing the project and making executive decisions. "By doing it this way there were very few risks," Jelen says. "Everyone knew what was happening, and there were

no unknowns."

From the very beginning of the project, the process was revolutionary. Gilbane and HGA's architects and engineers benchmarked Kerry's new facility by leading key Kerry management on site tours of similar facilities, laboratories, offices, pilot plants and visitor centers. "This process lasted for about eight weeks. We wanted to show them what they could get for their money, so they could see what they liked and didn't like, and roughly what the options would cost them. They could then decide what would work best for them at a cost they could afford," Jelen says.

In conjunction with the site visits, HGA and Gilbane met with the user groups and developed a space program that identified precise requirements for each building. The Integrated Project Team continually looked for ways to streamline the program, thereby reducing unnecessary square footage. Gilbane worked with HGA and Kerry's management team to establish a cost framework for the entire project. A milestone time schedule was



also agreed upon, and here too Gilbane brought a new ethos to bear. Believing that if a large set of schedules were presented to contractors and suppliers, they would do precisely what was required of them and no more, the project was run through a collaborative work-planning system.

Each of the contractors created its own schedule of work for the week, presenting the schedule at the weekly site meetings. This encouraged contractors to do the best they could and to make a commitment to that schedule. Meanwhile, a formal master schedule was run in the background to monitor the effectiveness of the new way of working. "Month by month, we shaved time off the original schedule," Jelen says. Ultimately the 16-month construction schedule was completed in an impressive 13 months.

With this framework in place, the design and construction then progressed together, using a process called the living cost model—a step-by-step approach. "With the traditional value engineering method, you design the components, and then the value engineer pushes and pulls the design to bring it

back within costs, and that is a waste. Our aim is to design in value, so we only progress the drawings and design as far as we know the exact cost. It's about slicing and slicing and slicing again," he explains.

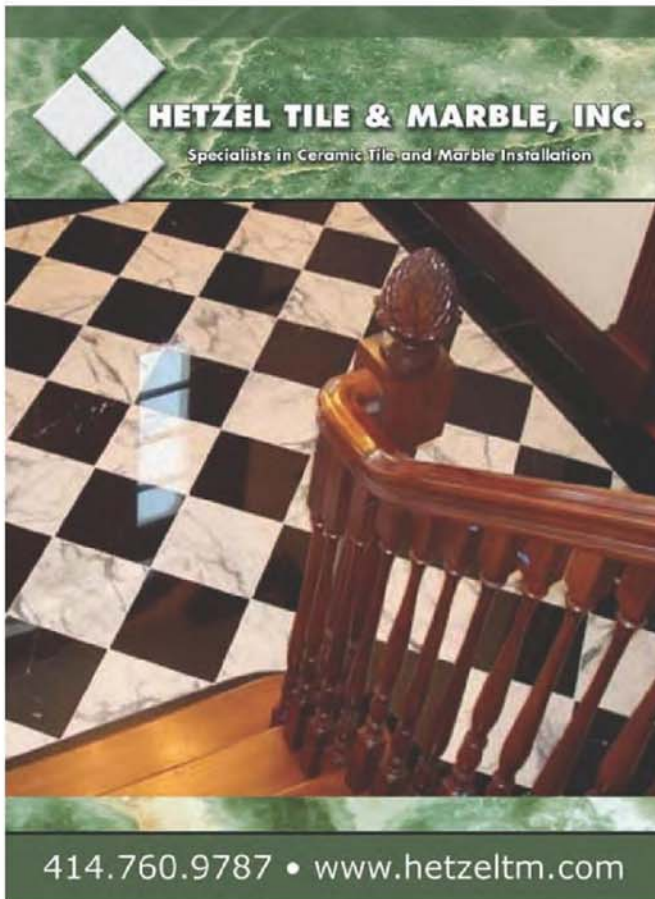
In this way, each step of the design is produced when required and kept strictly in line with the costs and specifications agreed with the client, and no time is wasted in re-engineering early drawings. The trades were also brought in at the early design stage, to incorporate their knowledge and experience into the project, and the massive job of coordinating input from the user groups was initiated.

Throughout the design and construction, the company used the software tool known as building information modeling (BIM), which produces a three-dimensional, real-time representation of the building, enabling the Integrated Project Team to study the building geometry and spatial

relationships between elements of the build. "We used BIM for constructability, schedule optimization and collision detection, but what was particularly useful was the visualization of the project for the owner and user groups. They could almost feel and touch the building, and that enabled them to make good decisions."

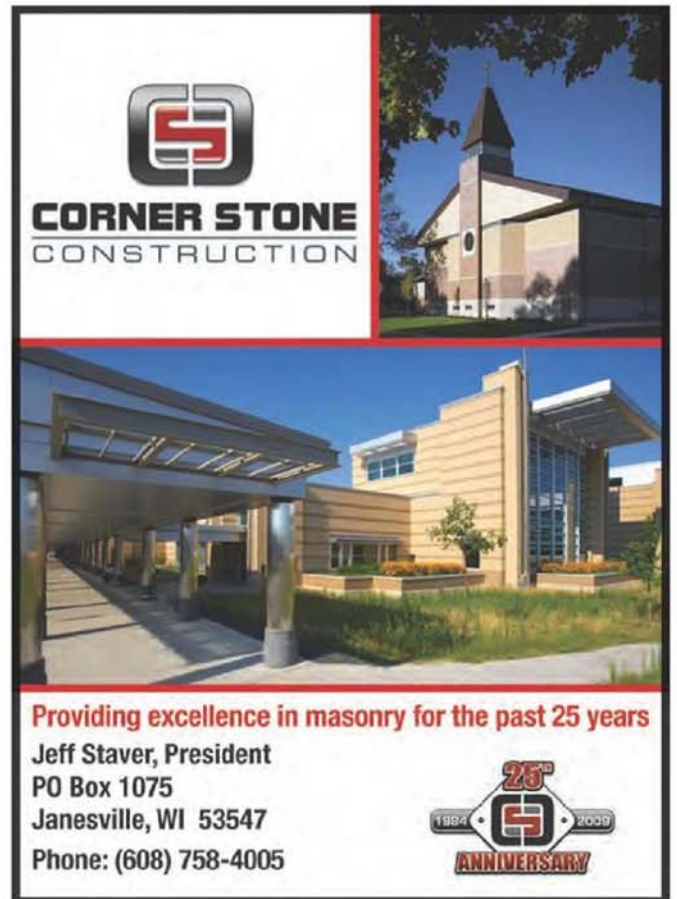
From end to end of the project, Gilbane and HGA focused on operating in a lean way, removing waste from the process and bringing value to the end user. Interestingly, the target cost for the project was \$61 million, and the final cost came in within \$300,000 of that.

"Many people think it costs more to manage projects in this way. It doesn't," Jelen says, "unless you're misusing the processes. At Gilbane, we believe this is the best way to do business." – *Editorial research by Greg Petzold* ■



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