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The skeletal structure of Reunion Square, a retail and office center under construction in Leander, is made with LadderBlock, a revolutionary pre-cast concrete framing system designed by Austin-based P.E. Building Systems Inc. A five-man crew assembled a two-story building in 2 ½ days.

Form & function in CONCRETE



Engineer invents a frame that speeds up construction

By Adolfo Pesquera
Express-News Business Writer

Last month, an Austin-based general contractor erected the concrete skeletal frame of a two-story, 16,440-square-foot retail and office center in 2 1/2 days.

By any traditional method, that is not possible.

The speed of construction at Reunion Center impressed Bill Jett, owner of Jett Enterprises, the erection company that put up the Leander building with a five-man crew. The time savings, he said, was as much as four-to-one over a more

conventional tilt-wall or steel-frame structure.

The framing is called LadderBlock, a patent-pending system invented by Austin structural engineer David Powell.

Jett, a wall erection contractor for almost 40 years,

predicts that the system will eventually replace most comparable methods.

"It's like tilt-walls when they first came out," Jett said. "A lot of people were scared of it until they got to looking at it."

Getting an idea such as LadderBlock from the patent stage to general acceptance can take years. But gaining a foothold can be as simple as making the lowest bid, and a green-friendly market such as Austin can accelerate the process. It doesn't hurt when architects and builders are already talking about the product.

Experts who have worked with LadderBlock, on the market only six months, are amazed at its versatility. Jett said there are more options on roof types because it has stronger load-bearing capabilities than tilt-wall. A cheaper, heavier roof can be attached, and in less time.

LadderBlock is assembled using threader rods that are bolted through pipe sleeves set into the concrete. That allows LadderBlock to be reconfigurable.

"You may need more space," said Juny Armus, president of P.E. Building Systems Inc. "So you add on. Instead of demolishing, you can disassemble it and take it to another location."

The system is ready to take off, Armus said, but the company didn't get this far overnight. Powell, a successful engineering consultant, put six years into research and development. The major obstacle now, Armus said, is marketing.

"I think where we will see more resistance is in the fact that it is new," Armus said. "We have to do a better job of educating



A LadderBlock frame is lifted from the delivery truck.

design professionals, architects and engineers."

Gina Andre, an architect with Acanthus Architecture in Austin, is sold. A client who

hired her to build a custom house insisted she use LadderBlock after he saw the system at Powell's facility in Leander. The client's house is

to be built on a steep slope in Cedar Park.

"LadderBlock is real easy to accommodate on a hill," Andre said. "I saw the layout we had for the house could be easily pieced together with these components."

But Andre also noticed that a designer could forgo flooring at the lowest level and use the blocks as stilts.

"You could walk under the house," Andre said. "I'm thinking of how it can be useful in rebuilding New Orleans."

Andre's husband is from Louisiana. Her brother-in-law's house was in three feet of water for three weeks.

Architects are getting invitations to enter design competitions for new housing in the reconstruction effort. Andre set to work Monday on



Erection crew workers with Jett Enterprises bolt together steel rods that tie the concrete frames into place.

a prototype house using LadderBlock for the skeleton. Powell anticipates accepting jobs throughout Central Texas and has four active projects worth \$2.5 million.

"The conventional wisdom with pre-cast materials is you can ship 200 miles and still be cost-efficient," Powell said. "San Antonio is well within that range."

The company is looking for investors through joint ventures or franchise manufacturing agreements. Shipping is a significant cost factor that will be mitigated by setting up other facilities.

"Even though San Antonio is within reachable shipping distance," Powell said, "it makes more sense to put production closer."

The speed of construction will be a big factor in

attracting clients, Powell said. However, their first client bought in because of environmental considerations.

Joseph and Shari Greene, founders of Reunion Development Group, are committed to green design. They put a rainwater collection system into the roofing of Reunion Square. Steel-framed buildings are a little cheaper but also more expensive to cover because they're unsightly, Joseph Greene said. Also, steel is in short supply and pour-in-place concrete buildings waste wood.

"Forming on-site involves building and wrecking forms made of plywood and two-by-fours," Powell said. "We're not sending that to the dump every time we make blocks."

The Greenes also like the look.

"We found the arched frame block pleasing and had Reunion Square designed so that they remain exposed," Shari Greene said.

It isn't common for developers to prefer the form work of skeletal concrete as the finished look. Powell attributes this detail to his casting process.

"Our slip forms are made of concrete themselves," Powell said. "It's a very high-precision process. We had one potential investor visit the factory. He said this was some of the best finish he'd ever seen on pre-cast concrete."
