

Mason man's building block seeking a market

07/31/2005 12:00 AM CDT

Adolfo Pesquera
Express-News business writer

State District Judge Sam Medina is having a hard time suppressing his enthusiasm.

A former third-world homebuilder turned Lubbock jurist, Medina left Mexico 13 years ago with an aborted dream to provide affordable housing to the poor.

A Home and Garden Television junkie, Medina thought he had seen every kind of new-age alternative building material when an acquaintance of his son, who had heard of his interest in building, started talking about a block he was developing that was made from cement and paper pulp.

"I thought, 'Nah, one more person with the magic block,'" Medina said.

The young man, Zach Rabon, 30, brought him a lumpy gray block he had trademarked as Eco-EZ Blox. His fledgling company was Mason Green Star.

That was a year ago. Since then, Medina has been on the phone to every contact he had kept, from the state of Chihuahua, Mexico, to Panama. Builders and government officials from across Mexico and Central America will be meeting with him next month in Mason to look at that magic block.

"Since 1992, I had never invited them to come see anything," Medina said of his Latin American business relations. "This is a super block. I don't know what Zach did to it, but goodness mercy, it could change the way we build."

Cement and paper blocks, known among aficionados as "papercrete," have been around for decades. A score of small companies, mainly in the Southwest, have been experimenting with them, but a lack of official testing data has kept the products from getting to market.

The day Medina saw the block, he asked Rabon if he could hit it.

"I took a sledgehammer to it," Medina said. "All you get is a small indentation, much like you would if you hammered a nail too many times into a piece of wood."

Medina put a blowtorch on it, expecting it would pop and crack like concrete or catch fire like wood. It did neither.

The blocks are designed to make 10-inch-thick walls that, left without a stucco finish, saturate with rainwater to one inch, then dry out unharmed. Its rated thermal value shows it insulates two to three times better than fiberglass.

"I asked to see his utility bills," Medina said of Rabon's residence, which is built with the blocks. "The largest bill I saw was \$106, on a 3,300-square-foot house."

Medina describes Rabon's house as "cave-like cool," and because it is part experiment, part home, Rabon wanted to see how the interior and exterior walls would hold up without a finish. The house has the look and texture of something straight out of Fred Flintstone's Stone Age town of Bedrock.

Rabon, a Texas Tech alumnus with a degree in ecology and conservation, left Lubbock about the same time his father moved his general contracting business to Mason. There was a ready-mix plant for sale next to the city landfill, and Rabon bought it.

The young Rabon watched trucks bring trash, lamented on how his life wasn't following his university career plan and wondered how he might do something to lighten the load on those dump trucks.

It was about this time that the younger Rabon was introduced to papercrete by his father, Kent. During a vacation trip to Marathon, the elder Rabon met Clyde T. Curry, the operator of Eve's Garden Organic Bed & Breakfast and Ecology Resource Center.

Curry, 52, a tradesman from Reston, Va., who left the construction industry to build an ecovillage, was one of the earliest proponents of papercrete. The inn's Lotus Suite is built of the material.

Curry and the Rabon, 64, both builders, became friends. Rabon took one of Curry's blocks to his son, tossed it on his desk and suggested he make something with it.

For more than two years, Zach Rabon turned his ready-mix plant into a laboratory. When he was ready to start building, Rabon claimed to have a block that dried faster, shrunk less and kept a sharper edge once cured than anything his competitors were making.

Barry Fuller, who directs the government-funded research on papercrete through the Arizona State University Fulton School of Engineering Research, was impressed with Rabon's block

Fuller, who is developing his own block, has tested the compressive strength of Rabon's block. He described it as, "Superman strong, stronger than any other we tested."

The odd thing about papercrete blocks is that when put under pressure they tend not to crack like concrete, nor do they splinter and disintegrate like wood. When the cellulose fiber — the refuse of recycled newspapers, lottery tickets and phone books — is

reconstituted into a block form, it takes on the strength characteristics of both base materials, but acts like a very hard sponge. It shrinks slightly under extreme pressure.

It flexes when pushed. That makes it an ideal candidate for use in earthquake-prone zones, Fuller said.

Papercrete lacks approval from the International Code Council, which has stymied its use in urban areas where building codes are stricter. Fuller is head of a subcommittee for the American Society for Testing and Materials to set standards.

Beyond establishing its structural standards, papercrete will have to overcome a bias among builders and the public. Fuller can appreciate their reluctance.

"When I first saw this," Fuller recalled, "I didn't take it real seriously. I was wondering how anything could be built that way. It seemed so primitive."

Like adobe mud bricks, papercrete mix is poured into forms that dry in the sun. When it dries, its shape is jagged and porous. Fuller realized that bumpy shape added to its strength because blocks joined with a mortar of the same mix adhered to each other better than other buildings materials.

There is no stucco wire required for the finish coat. Because the wall is monolithic and self-insulating, there is no need for drywall, wood studs, insulation or vapor barriers.

Rabon estimates he can build houses for 20 percent below the market rate cost of a wood frame house. Fuller goes further, estimating the savings at up to 30 percent.

San Antonio architect Steven Colley, an expert on alternative building materials, is building a shed with Rabon's papercrete to see how it will weather. It appears to be suitable for the Southwest climate, he said.

Considered on the fringe of alternative building materials, Colley said people have- been experimenting with the formula for years.

"It didn't hold up very well," Colley said. "It tended to fall apart. I'm not privy to the formula Zach uses, but it has some additives that seem to have solved a lot of those problems."

Rabon is conducting various tests through two private laboratories in San Antonio, Texas Tech and Colorado State. If the results are favorable, Colley said the time would be appropriate to try using the material on a commercial scale.

The Eco-EZ Block seems to be holding up well now as an infill material in the houses where it's been used, Colley said, explaining that these are the nonload-bearing portions of walls. Using it as a load-bearing material is not outside the realm of possibilities, he said, adding, "I just want to see the tests first. As an architect, my liability is on the line."

Tradesmen who have used the block like it for another reason: It is light, weighing 8 pounds for a block whose size is comparable to a 30-pound adobe block or a 40-pound compressed earth block.

"The guys love working with it," Rabon said. "It's so lightweight, it doesn't strain your back."

Its weight lowers shipping costs, too. Trucks reach maximum load on volume long before they reach their weight limits, Rabon said.

Fuller will join Curry in Marathon from Aug. 15-17 to conduct a papercrete workshop at the Big Bend Nature Festival, an environmental event sponsored by the National Park Service and Marathon Chamber of Commerce.

Meanwhile, Judge Medina is reconsidering a venture in Mexico, where he had built houses of light-gauge steel and stucco until a peso devaluation killed his business.

"It's always been in my heart to want to do more of that building, to improve this world and do it in such a way that you can stay in business," Medina said. "I'm very, very impressed with this. I'm going to get involved as much as I can with it."