In Depew straw-bale home, ancient construction technique brings modern advantages

Builder David Lasher and Corrie Zaeoglien in Corrie Zaeoglien's straw bale home in Depew on Tuesday, April 28, 2015. (Robert Kirkham/Buffalo News)

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When Corrie Zaeoglien invited friends and co-workers over to see her new home for the first time, almost all of them had the same reaction when they stepped through the door.

They were amazed.

They had been hearing about her straw-bale home for a while, as she worked with an architect and green construction specialist to build the unconventional, energy efficient, eco-friendly home.

But people apparently didn't expect the smooth soaring walls, the light-filled rooms, the gleaming reclaimed woodwork, and the references to nature, including the natural tree trunks used as pillars and the boulders just inside the door. Somehow they had imagined something different.

"They said, 'We didn't picture this at all!' " said Zaeoglien. "Maybe they were picturing loose straw or something, something from the Three Little Pigs, something that looks like crap!"

During the construction process, there were plenty of bales and bits of golden straw and buckets and wheelbarrows full of sticky clay-based plaster on site. But today the home stands out, both for its graceful beauty and its clever, energy-saving design.

While other homes and garages in Zaeoglien's quiet Depew neighborhood are located near the street, facing out, her home sits sideways, toward the back of its deep lot. With its deep-eaved light green roof and pinkish stucco walls, seen through garden foliage, the home looks appealing and intriguing.

But the key to the heart of the home is both subtle and spectacular. Above the loveseat in the light-filled living area hangs a large framed photo of a sequoia Zaeoglien took in Sequoia National Park. Hinges in the edge of its wooden frame swing open to reveal the picture's true function: it's a traditional straw-bale home "truth window," showing off through tempered glass the mass of gleaming golden straw that fills her home's exterior walls.

"People love that," she said, smiling.

'I had a house'

She didn't know it at the time, but Zaeoglien's path to ownership of a straw-bale house started years ago, when David Lasher, owner and operator of Bale on Bale Construction, did an Earth Day demonstration at the University at Buffalo, where she was working. During his presentation, Lasher built a small straw-bale structure and talked about this ancient, durable technique. "I remember saying, 'Wall, that's kind of cool,' " said Zaeoglien. "But I never thought I would do that, because I had a house," a 3,000-square-foot two-story home, built in 1898.

Then she didn't. In September of 2007, a fire traced to the stove destroyed the house where she had lived for four years. Zaeoglien moved in with her parents, John and Barb Zaeoglien, and began to look for a new house. But nothing seemed right. "I wasn't sure that I was going to rebuild," said Zaeoglien. "But as I thought about houses, I realized they weren't what I really wanted. I wanted something that was eco-friendly. I knew I didn't want to do any kind of prefab, because of the chemicals and plastics."

Then she remembered Lasher and his straw-bale construction company.

She set up a meeting with Lasher and Kevin V. Connors, an architect, engineer and principal at eco_logic, who often works with Lasher. They began to develop the plans, which started with Connors' suggestion that the home be placed in a new spot further back on the property.

"I wanted to get away from where the fire occurred," said Connors. "It would be a new house in a different place, which is also very different from the other houses on the street." Locating the house at the back of the lot also allowed a green area of small trees and other plants, with an arbor, to be used for a transitional space from the parking area and street to the home. Finally, moving the house allowed the unobstructed roof of the garage, which remained in its original spot, to hold the solar panels that now provide most of the household's electricity.

"I don't know why I wasn't even nervous about it, but it didn't faze me," said Zaeoglien. She visited a couple of Lasher's other straw-bale constructions in Java and Grand Island, as well as the Massachusetts Avenue Project community greenhouse.

Meanwhile, Buffalo ReUse workers deconstructed Zaeoglien's fire-damaged house, pulling apart what remained and salvaging everything they could, leaving some undamaged doors and lumber for her to incorporate in her new home.

Rocks, trees and more

Work on the home began with the construction of a foundation in August 2008. The concrete floor was poured over heating pipes. Near the spot where her front door would open into her living area, Zaeoglein placed three boulders from the site, one with a flat spot on top that is perfect for perching while kicking off shoes.

"The previous owner had rocks in the gardens," said Zaeoglein. "We just picked a few of them. We had the outline of where the foundation was going to be poured and we put them right where the door was going to be. A bunch of us were standing around, we kept moving them a little bit, seeing how it would look best. They kept saying, 'Are you sure?' But I love them!"

The trunks of three medium-sized trees that had to be cut down on the house site were peeled of bark, oiled smooth and used as pillars, one outside near the front door and two inside supporting the second floor loft.

After the floor was installed, the crew assembled and raised bolible wooden stud sections, sized to accommodate the straw bales.

The day the wagon of golden straw is delivered to a straw-bale site is always exciting, as the heart and soul of the house makes its appearance. Lasher said, "We put a few second looks when a big wagon of straw pulls into the neighborhood for delivery."

Next came the fun part. To stuff the walls with straw, Zaeoglein, Lasher and his crew, and a few friends and relatives compacted the bales by sitting or standing on them and twisting their steps, then jamming them into the walls. When the strings were cut, the bales expanded slightly, fluffing up and filling the available room.

Clay slip was sprayed onto the straw, which Lasher points out is "kind of wacky" in its natural state. Next came 2 inches of earthen plaster made of clay dug from the site, mixed with sand and chopped bits of straw, then a layer of smooth lime plaster.

While some people worry that straw will deteriorate, Lasher said, "Straw does not spontaneously degrade in a wall." Century-old walls of homes built in Nebraska were found to contain straw and hay that looked fresh, he said. Well straw will not attract rodents any more than any warm house will, he said, and because it is thick, compacted and encapsulated in clay, a straw-bale wall is more fire-resistant than ordinary wood-frame construction. "Think of trying to burn a phone book," he said.

Lasher said he uses sound building techniques, including a durable, sealed exterior and ventilation from indoors, to keep out water, which will damage many building materials. "Because my buildings are very airtight, I include best recovery ventilation, which moves excess humidity and stale air and brings in fresh air," he said. "The heat from the outgoing air is captured and returned to the house."

Raising the roof

Many people gathered on the site the day a large crane lifted and placed the Structural Insulated Panels on the roof, which slopes from the south side to the north. "That was very exciting," said Connors. The sturdy panels, topped with metal roofing that contains nanotechnology features to save energy, have a deep overhang, reminiscent of Frank Lloyd Wright design. They placement blocks solar heat in the summer but let light and warmth into the structure in the winter.

Less than a year after the work started, with some delays due to weather, Zaeoglein was living in the home. "Most straw-bale houses are built in between six to 12 months depending on budget, the season and the experience level of the building crew," Lasher said.

Today, the most obvious feature of Zaeoglein's home isn't its construction or its technology, but its comfort and charm. A carved plaque crafted by Zaeoglein's father dubs the house "En Terra," or "of the earth," although Lasher calls it "the Phoenix," said Zaeoglein, "because it rose from the ashes."

The front door opens into a glaze-block-accented passive solar sun porch, which Zaeoglein and her father built from a hodgepodge of salvaged windows. Inside the house is an open-plan living room, dining room and kitchen, with a bedroom and bathroom down a short hall. A loft upstairs can be used as a second sleeping area, an office or for storage.

Tall, gleaming wooden pipes salvaged from an old pipe organ were taken apart; the slabs of polished wood become woodwork and stair railings. Lines of wire pulled taut keep the balcony and steps safe while minimizing visual or solar obstruction.

On the roof of the sun porch, a rack of eight borosilicate glass tubes collects enough solar energy to provide hot water almost all year round and some heat. A utility room in the back of the house holds an 80-gallon insulated tank for the heated water. There is gas heat on demand, but the demand isn't high – Zaeoglein estimates she pays about $300 for gas annually.

Her stove, washer and dryer are powered by electricity, some of which is provided by the garage's solar panel. Before she started driving an electric Chevy Volt, the solar panels provided all her electricity; Zaeoglein said, "I still pay very little for electricity, just taxes and fees all summer; I make more than I need in the summer."

The house, at 1,300 square feet, is significantly smaller than her previous house. "I downsized quite a bit," said Zaeoglein.

The dining room, furnished with her grandparents' dark-wood dining set, draped in linen and lace, and kitchen, with natural wood cabinets and bright 1930s decor, are tucked under the loft floor's exposed, salvaged beams. Her living room, furnished with a midcentury turquoise Kittinger living room set, an estate sale find, is set in the bright, two-story section of the house. The front wall is decorated with a free-form tree design that Lasher inscribed and Zaeoglein accented with gold paint.

While every home is different depending on size and the fixtures the owner chooses, Lasher said, "Costs to build are comparable to a home built with similar insulation levels, or close to what a custom home might cost."

Zaeoglein's home uses 75 percent of the energy used by a traditionally constructed house, Lasher said, and other straw-bale buildings he has worked on since then are even more energy-efficient. "Over a building's lifetime it is certain that the savings will more than pay for any premium paid for insulation," he said.

With passive solar heating and cooling with clerestory windows, Zaeoglein's house remains cool in summer and warm in winter. The curving lines of the rooms are charming and soothing. The thick walls deaden exterior sound. And, most importantly, Zaeoglein's new house is healthful for her and for the environment.

"We cannot pretend that many of our resources will not become scarcer over time, and we must accept that the emissions we are creating are altering the experience of life on this planet," said Lasher, who pointed out that straw is a renewable resource, lacks the volatile organic compounds used in many home construction materials, and, used as insulation, reduces use of fossil fuel. "We can have the experience of abundance and comfort we all want, but we can't keep using the same old ways to achieve it," he said.

The importance of the structure might not be immediately apparent to everyone who steps inside Zaeoglein's house. But they do have a common reaction, she said. After they get over their amazement, "Every single person loves it. They are impressed when I show them the truth window; how thick the walls are. They want to move in here. It's home."

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