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## Building a house of straw

By John T. Miller



Amber and Norman Remer smile inside their house of straw, while under construction. Photo John T. Miller

While Norman and Amber Remer of Saranap are feeling no threats from the Big Bad Wolf, their efforts to build a house of straw have been beset by many obstacles, including county permits, the recent winter monsoons, concerns of neighbors, and the stress of time and space constraints.

When the Remers moved back to the Bay Area after spending five years in Washington, D.C., they realized they could not afford to live in the community of their choice on the teacher salaries they both earn. Norman is a high school English teacher and Amber teaches elementary school. The couple are also expecting their first child in January.

Norman's creative solution was to call on Mom and Dad - Lilli and Nick Remer - who were willing to take out a loan on their existing home and transfer the mortgage payments to their son and daughter-in-law so they could build a living quarters in their backyard.

They first began planning in July, 2015.

"We realized we could take advantage of this amazing opportunity to build something unique, beautiful and eco-friendly," said Norman Remer. "I researched adobe structures but realized it wouldn't work in earthquake country. My research led me to straw bale construction and I fell in love with the soft curves and undulating walls of the design. Luckily, Amber was willing to go along with my crazy scheme."

Straw bale homes have thick walls like adobe, are insulated with an agricultural waste product, and are perfectly suited to California's earthquakes and hot summers. Once the tightly packed bales are enclosed, there is no room for oxygen, rendering the house practically fireproof.

An advantage to the straw insulation is efficiency in heating and cooling. Amber Remer points out, "It takes 12 hours for changes in outside temperature to reach the inside. The house stays cool without air conditioning even on 100-degree days." The house can also support a green roof, with over 500 square feet of potential garden outside the upstairs bedroom window.

"When we first went in for the permitting process, the county officials were like deer in headlights with the concept of a building with straw walls," said Norman Remer. "Despite the fact that people have built like this for hundreds of years, the county wasn't sure how to deal with it. They worried that the house might collapse."

In the Remer's corner, however, was architect David Arkin, AIA, who is one of the founders and current director of the California Straw Building Association. Arkin and his wife, Anni Tilt, are partners of Arkin Tilt Architects in Berkeley.

"Arkin arranged a meeting with the lead planner and engineer with the county to present the project and address any concerns and provide the extra data required by them," Norman said. In all, the research and application process took over six months.

A major obstacle was the design. Space restraints limited the structure to 1,000 square feet, and they wondered how they could design a two-story home to get a living space worth building. They were able to get a square footage calculation allowance on the thickness of the walls. The straw bales require 21 inches of thickness, whereas standard walls are only 6 inches thick. Everything else was treated like a conventional building.

They also anticipated and tried to address potential neighbors' concerns over the two-story structure by limiting the downstairs ceilings to 7.5 feet high and slanting the roof from 6 feet high upstairs.

Their first task was to dig the foundation, but the severe winter rains cost countless delays. In addition, a deluge dislodged a newly installed sump pump and a tractor submerged in a quagmire of mud took an entire day to extract.

Once the walls were erected, one of the most satisfying days was the "bale raising." Similar to the tradition of a barn raising being a community event, the Remers called on family and friends to help. Over 50 people

came, including many they didn't even know as a result of calling out to the CASBA organization. Within three and a half hours, the tightly bound bales of hay were loaded into the walls and secured with wire.

Since the school year began, Norman Remer has spent weekends plastering the outside walls. He is using a lime plastering mixture, applied slowly, so it will dry properly into a protective limestone, which allows moisture to escape rather than becoming trapped within the walls. "Water is the enemy of straw-built houses and can lead to mold," he says.

While many people have helped on various parts of the project, Norman credits his childhood friend - local artist Evan Gerardo - for his constant help. "Evan is the reason I'm still alive today," he says. "He helped dig, moved lumber, and, once the plastering started he would show up regularly to give of his time and supportive energy."

At first, the couple had hopes of being able to move in before their baby is born, but Amber realized the stress of completion was getting to be too much: "My nesting urge is definitely kicking in, but I'll still be able to prepare the bedroom. We've accepted that we may not make it in time."

Looking back at the process, Norman says, "As painful and as time consuming as it's been, when I look at any particular piece of the house I can think of the person who helped me with it. I have a personal investment in every square inch of this project."



From left: Architect David Arkin and contractor Keith Kuhlmann at the straw house building site. Photos provided



Local artist Evan Gerardo lends a hand.

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