



Mary McCracken is building her dream house, which uses a variety of green construction techniques, including straw bale walls.

The House of Straw

By Debby Schoeningh

Even though the straw house in the children's classic tale could not withstand the huffing and puffing of the big bad wolf, that little pig was really on to something.

If only he had used bales instead of loose straw and reinforced it with bamboo, he might have saved the hair on his chinny, chin, chin.

Unlike the little pig, Mary McCracken didn't take chances when she began planning her new straw house on 15 acres near Island City. She hired an architect, an engineer and a "green" building consultant, along with local contractors RMC Quality Construction.

"I've been wanting to build the house for more than 10 years," she

says. "I looked at other straw bale homes and read books on the subject, but knew I needed people with the skills and knowledge to do it right."

When designing her home Mary says she wanted to have the least amount of impact on the environment possible, using low-embodied energy products (the sum of all energy that goes into a product).

She says she looked into making her home from concrete, but found concrete goes through a high heat process requiring a lot of energy to manufacture.

Instead, she drove 10 miles down the road and picked up straw bales for \$1 each. Since straw bales are a byproduct of grain, she is using something that might otherwise go

to waste.

"I like to scrounge for things and buy secondhand," she says. "I've been a scrounger my entire life, even when I didn't need to be."

Even so, Mary says this is her dream home, and she will not cut any corners in making her 1,300-square-foot home long-lasting, non-toxic and sustainable.

"Izaak Edvalson (her green building consultant) and I agreed early on that we would make it a high priority to use my house to encourage a different way of building homes," Mary says.

Izaak says the home is a hybrid of many building technologies. There are conventional framed walls, straw bale walls, cob (mostly earth), earthen plaster and floors, a structural



Volunteer Maxwell Danlogo, left, and Izaak Edvalson install straw bales on rebar to provide stability.

insulated panel roof (SIP), radiant floor heat, solar water heating, solar electricity, passive solar heating and cooling, and a rubble trench foundation, to name a few.

“As an (retired) educator, Mary thought it important to expose people to many different options, and to try them herself,” says Izaak. “The home will be a model, not necessarily to be reproduced, but that many people can take ideas from and incorporate into their own homes.”

Construction began in the spring of 2006, and should be finished this summer. When complete, Mary’s home will end up costing more per square foot than a conventional home of the same size, but Izaak says the real savings will occur in the years ahead.

“The difference in building this home, as opposed to most homes these days, is that when we talk about ‘cost’ we are not simply talking about how much will I write my check for today, but how much will it cost down the road in five years, 10 years, 50 years,” says Izaak. “Will it give back, or will I have to keep writing more checks every month. How much energy will be saved down the road? In the long run, probably in less than 10 years, this home will begin costing less than a conventional home.”

Although the solar hot water sys-

tem will be expensive initially, he says it will provide free hot water for showers, cleaning and heating for the life of the home.

The solar photovoltaic system is also expensive initially, but it provides free electricity while maintaining service from Oregon Trail Electric Co-op (OTEC).

Through a net metering system, OTEC will provide electricity when needed. If Mary’s solar system produces more electricity than she uses, the excess energy will go onto the OTEC grid for use by its consumers, and Mary will be reimbursed for it.

The SIP roof is expensive up front, but it cut costs on labor and installation time, and Izaak says it provides superior insulation with a vaulted ceiling, which will increase the thermal performance and save even more on energy costs.

He says the vinyl windows will outperform less expensive windows, and will keep heat in or out, depending on the season.

“Besides providing natural daylight, they also allow the sun’s energy to enter during the colder months and heat the interior space, passive heating, which nearly negates the need for a backup heating system,” Izaak says.

The earthen plaster walls and earthen floors will be labor inten-

sive to install, but they can be made with free, local materials. The floors will be sealed with multiple coats of linseed oil to protect them from moisture, so they do not turn back into mud if you spill water on them.

Izaak says a big advantage with the earthen floor is that it can easily be repaired if it should crack or chip. Simply scrape it out, wet it, mix a little more and rub it in. He notes an earthen floor is much less likely to crack or chip than other surfaces because it is a softer, more durable, surface.

The straw bale walls are one of the least-expensive items in the house, but one of the most beneficial when it comes to energy efficiency due to a high insulation value and the width of the walls, which are a bale wide—about 18 inches.

Izaak says building code normally requires rebar to be driven down through bale walls to pin each layer together. But after presenting evidence to the building inspector that using cold metal in a breathable bale wall could cause moisture to condense, which would cause rot on the inside, a system of bamboo poles was approved.

The poles are placed on both sides of the wall, floor to ceiling, and tied through the wall to each other about every two feet, creating a tight corset that makes the wall strong. It also uses a natural, renewable material that can be plastered directly over. Rebar was used to tie the first course of bales to the foundation.

The bale walls have larger than normal overhangs to keep the rain from falling directly on the wall, and a moisture barrier to prevent water from splashing up onto the walls.

Mary’s big bad wolf will probably come in the form of seasonal high winds in the Grande Ronde Valley, but she has no doubts her straw bale house will hold up to the huffing and puffing of Mother Nature. ■

For more information on green home building, contact Izaak Edvalson at (541) 663-1962.