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December 2007

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By Renee DuFore Russell

The home in the New Hampshire hills that Bob and Kathie Tortorice of Building Alternatives, Inc., created for themselves and their family stands out in several important ways.

First, it's one of the homes that led to Building Alternatives, Inc., receiving the Gold Award for Most Energy Efficient Design Solutions of 2007 at the Home Builders and Remodelers Association of New Hampshire Cornerstone Award Ceremony. One of those homes designed and built by Building Alternatives earned a "5 Star Plus" rating for its energy efficiency.

"To be eligible as an Energy Star home, a rating of 50 (out of 100) is required; the home we designed and built has a rating of 94.2 — 71 percent better than Energy Star requires," says Bob Tortorice.

Of course, the Tortorices' house is a SIPs home. With 21 years' experience in his own company and several more years in other companies, Tortorice says simply, "The energy efficiency of SIPs makes them superior to any other system."

In building a home for themselves and their three daughters, the couple wanted not only "to talk the talk" about energy efficiency, they also wanted to show that they "walk the walk," as Tortorice explained. With Tortorice's Building Alternatives office inside the house, potential clients get the advantage of seeing first-hand what can be done with innovations in the building industry.



"When clients look at the house," he says, "I show them the energy features and their reaction is 'Wow! If you can build this, you can easily build my house.' It gives a level of confidence."

Visitors to the 3,500-square foot home can't help but react to the breathtaking view of Mount Lafayette and Cannon Mountain. "Given that I grew up in Brooklyn, N.Y.," said Tortorice, "my goal was to be on vacation when I was at home."

But guarding their retreat from the icy North Country winter winds is also another incentive for making the home as energy-efficient as possible.

The home, a 3,500-square-foot house over a finished basement, showcases the technology available in energy-efficient design. As a working model of efficiency, the house allows clients to experience the technology in use, see how the various elements are utilized, and how this technology significantly reduces energy costs.

Great design, location and more

A basic saltbox was the starting point for Kathie Tortorice's design. The sloping property in Franconia, N.H., is perfect for a two-story house over a full walk-out basement with an attached three-car garage.

The building placement itself is well thought out, setting the garage to block the north/northwest side of the house to buffer the wind. The Tortorices believe a traditional stick-built house would not perform as well in this location, as the occasional 80 mph winds would blow right through the building.

In every aspect of this home design, the Tortorices looked to utilize energy-efficient materials and harness the sun's power in as many ways as possible. For example, the first floor deck system is built on top of a nine-foot foundation wall, thus increasing the height (off grade) of the exterior deck.

This not only allows full sun to enter the basement, but avoids the "tunnel" effect of a traditional walk-out basement under

an exterior deck. "We don't even turn the lights on until 4 or 5 p.m.," Tortorice says, even though he works in his business office inside the house.

Passive solar through the windows collects 90 percent of the sun's rays. This, in combination with the two-foot overhangs, keeps the home at a comfortable 70 degrees during the sunny days of the fall and winter. The energy efficient construction retains heat in the building during the nights and cloudy days. In fact, in 2006, December 17 was the date the heat had to be turned on for the first time.

The active solar system from Dawn Solar is a reverse radiant system installed under the metal roof. That means, rather than collecting solar energy through traditional panels, this system absorbs all the sun's energy that gathers beneath the metal, and stores it in a 600-gallon water tank located in the basement.

Temperatures in this energy storage tank average 90-100 degrees year-round to pre-heat the 39-degree well water before it is used for radiant heat, as well as domestic hot water, the garage, and the swimming pool.

The five-member Tortorice family used a mere 1,000 gallons of propane in 2006, despite a home that has a generator, gas grill, gas stove, gas dryer and gas garage heater.

Learning as you go

Like many in the industry, Tortorice started out learning traditional stick-built methods. In retrospect, he considers the first house he worked on, with traditional 2x6 construction, "to be the worst way to build, even though, at the time, we put a lot of energy-efficient stuff into the house." Later, he worked for a company that built modular homes and he said he "got a lesson in how it should be."

Since then Bob's learned that SIPs are the simplest to install, the labor is simple, cathedral ceilings are a breeze and the energy efficiency is superior to any other system. He praises the other improvements and developments such as ICF forms, mentions his preference for energy-efficient windows from Pella, Anderson and — his choice for his own house — the Canadian Kohl-Tec brand that offers a U-value of .18. "It's a higher U-value than any U.S. window," he says.

One unexpected consequence in building with SIPs, says Tortorice, is having a house so airtight it needs mechanical venting. He mentions the air exchanger in his home runs for 15 minutes every hour when the windows are closed.

Features he advocates include radiant heat powered by geothermal energy, either earth- or water-sourced, and photovoltaic cells on the roof.

Clients, however, are not always easy to convince, even though some of the "new" technology is more than 25 years old, says Tortorice. "Our industry is very slow to change," he explains, and some both inside and outside the industry still hold the view that if it was good in my grandfather's day, it's still good.

(Bridget Atkins PR, Littleton, N.H., contributed to this story)

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