Eco-friendly building techniques don't have to significantly raise construction costs

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Home builder Lance Schmidt hears it all the time: Green building costs more. But he and his colleagues are out to prove otherwise.

Schmidt is one of two general contractors on Mythbuster 2009, a demonstration home being built in Akron's Kenmore neighborhood to show that environmentally conscious building practices are feasible even in modestly priced homes.

The approximately 1,200-square-foot home will have a price tag of $92,000, yet it will meet the National Association of Home Builders' green building standards and the government's Energy Star criteria. Its monthly gas bill is expected to average about $38 a month, far less than what's typical for a home that size.

"The attitude that green costs more -- I'm gonna bust it to death," Schmidt said during a tour of the house for industry professionals, public officials, students and others.

The house is a joint project of the Home Builders Association Serving Portage & Summit Counties (Ohio) and the nonprofit Urban Neighborhood Development Corp., which builds affordable housing in Akron on lots that once were vacant or held dilapidated homes.

Schmidt, a green-building advocate and project manager at F.G. Ayers Inc., is sharing general contracting duties with Steve Miller of Rembrandt Homes.

The idea behind the house is to show the public and those in the construction industry how building materials can be conserved, construction waste minimized and a home's energy-efficiency improved, all without significantly increasing the cost. And because students in the Akron Public Schools' Education in Action program are involved in the construction, it's also an opportunity to teach green building techniques to the next generation of tradespeople.

To achieve those environmental benefits, the builders are using a number of construction methods that aren't standard in the industry.

For example, the floor joists are 2-by-8s spaced 19.2 inches apart on center instead of the usual 16 to save wood -- a method that's possible because the oriented strand board that lays atop those joists is more than strong enough for that spacing, Schmidt explained. The wall studs are 2-by-6s spaced 24 inches on center, a method that not only cuts down on lumber but creates more room for insulation.

Additional insulation space was created by using raised heel trusses, a technique that involved attaching scrap pieces of 2-by-4s to the roof trusses to raise them a few inches above the plate that tops the exterior walls.

The truss method added nothing to the construction cost, Schmidt noted, but it's not widely used. "See, most builders don't think that way," he said.

Other eco-friendly elements will include insulation on the outside of the foundation and a furnace that's 95 percent efficient and fairly small, since the house will be so well sealed and insulated. Lumber from an old warehouse may be remilled for use as flooring in part of the home.

The house also has a radon collection system, which is essentially a vent

pipe tied into the footer drain to carry off any radon that might enter the house. It cost about $100 to install, Schmidt said -- far cheaper than the cost of mitigation if radon were found after the home was built.

Some of the home's cost savings are coming from savvy purchasing. Schmidt, for example, bought house wrap at a fraction of the usual cost because it was printed with the name of a construction company that went bankrupt after ordering it.

Construction waste is sorted and recycled, an effort that saves money on Dumpster rental and greatly reduces what ends up in landfills. Areas of the side yard are marked for collecting various types of materials, most of which are taken to recyclers. The wood scraps are chipped and used to heat Schmidt's home.

Further on in the construction process, the house will undergo a blower-door test, which will pinpoint places where air can escape.

Sealing those leaks will not only keep conditioned air inside the house, but it will also eliminate the air movement that makes people feel cold as the air moves across their skin. That allows the house to be comfortable at a lower temperature, explained Karl S. Balla, the energy rater who will do the testing.

Balla, who owns Energy Pros of Ohio in Richfield, will also test the heating and cooling ducts to measure air leakage there. Sealing any remaining leaks with duct mastic will ensure that conditioned air isn't lost in the basement or wall cavities on its way to its destination.

The local Home Builders Association hopes to open the house to the public before it's sold and hold events there so its members can see and discuss the construction methods, said Carmine Torio, the group's executive vice president.

"There's a lot of things that can be done, but it's an education," he said.

Some of that education is hard-earned, Schmidt admitted. He pointed out that the oriented strand board covering the home's exterior walls has bowed in spots, because it wasn't installed with an eight-inch gap between pieces to allow for swelling as the board absorbs moisture from the air. That mistake will be rectified, he said, but he's hoping to turn it into a learning opportunity by bringing in framers to see the mistake and learn the proper technique for installing board.

Eventually the house will be offered for sale by the Urban Neighborhood Development Corp.

But that won't be the end of the green-building focus by the two sponsoring organizations, the HBA and the UNDC.

Schmidt, who is vice president of the local HBA and takes over as president next year, pledged to use his office to continue educating his fellow builders on green techniques. And he hopes that in the next year the two organizations can collaborate on construction of a prototype net-zero house, one that is super efficient and has a small solar-energy system to produce electricity so its net energy consumption is zero.

Those kinds of projects involve changing long-held beliefs, and that's not always easy, Schmidt conceded. But to his way of thinking, "isn't it the right thing to do?"
