

New Jersey

MONTHLY

LEEDING the Way

Leadership in Energy and Environmental Design, the new wave of ultra-green certification, moves from schools and businesses into private homes.

by Deborah P. Carter



Katherine and Matthew Sheeleigh at the site of the LEED-certified home they are having built in New Vernon. Background, their current residence, which will be moved or recycled. Photo by Benoit Cortet.

In a frigid January morning, cup of hot coffee in hand, self-taught architect and builder Matthew Porraro surveyed the progress at Sycamore Farms.

By the time he was done, his cup was empty; but there was no dumpster in which to toss it. On this construction site, waste was ruled out by design. All materials already had been recycled or repurposed, except for the plastic-lined paper bags the dry concrete had come in—and those would soon be broken down into recyclable paper and a minimal wad of non-recyclable plastic.

The project—the future home of Matt and Katherine Sheeleigh, both 50, and their children, aged 15, 19, and 22—is slated for LEED for Homes certification. LEED (or Leadership in Energy and Environmental Design) is a national designation that requires—among other objectives—the elimination or reduction of all kinds of waste from work sites. That means no wasted resources, energy, labor, or even time.

“The main requirement [for LEED] is an attitude adjustment,” says Porraro, who owns Porraro Associates construction with his brother Gregory Porraro and PAI Architect with Gregory and a third partner, Dean Andricsak. PAI, of North Branch, designed the Sheeleigh home in the New Vernon section of Harding Township, and Porraro Associates is building it.

Green initiatives might bring to mind images of contemporary spaces with limited windows and hard angles, but the traditional style of the Sheeleigh home is one of its trailblazing attributes.

PAI fashioned the family a country farmhouse. The schematics were complete when the Sheeleighs decided to go for LEED certification. “If we had known it would be LEED from the beginning, I think it would look very different,” says Andricsak, who, with Matthew Porraro, designed the home.

“I think the majority of people are traditional,” says Porraro. “It’s a style that will be around for quite some time, so we have to grapple with it and come up with solutions that are LEED-compliant.”

“It’s tougher to shoehorn LEED in after the fact,” admits Matt Sheeleigh. “But it is doable.” The change added nearly a year (primarily for research) to the project, now to be completed in April 2010. In addition to being energy efficient, “A LEED home is a healthier home,” says Sheeleigh. One big reason that’s true is improved indoor air quality. “Most of the products in homes built recently have a lot of off-gassing”—an exuding of gases linked to illnesses such as asthma, allergies, and even forms of cancer.



Until construction is done, the family is living on the 7.6-acre property in an existing home purchased two years ago with the intention of replacing it.

“Harding has a beautifully rural character in what is really a suburban area,” says Sheeleigh. “We bought the property because we absolutely love the London plane trees that one sees when approaching the house. We are building what we feel will be our last house. We want to build a home that is warm and inviting to family and friends.”

The Sheeleighs are not certain what they will do with the existing 1940s home. It is structurally sound, but has issues typical of its age, such as asbestos roof tiles. “We’ll either donate it or move it to another area on the property, recycling and reusing what we can,” says Sheeleigh.

In the meantime, the family is looking forward to the lifestyle changes that will come. The new 6,700-square-foot, five-bedroom home will incorporate enough energy-saving, environmentally friendly features to exceed LEED's minimum standards and qualify for silver designation. Among the energy-saving highlights will be an energy recovery ventilator that expels stale indoor air three times daily, exchanging it for temperature-controlled fresh air; power-free reflective Solatubes, which diffuse daylight; a tankless water heater; and geothermal heating and air conditioning. Other LEED-compatible elements include:

- ✓ recycled wood flooring;
- ✓ blown-in cellulose insulation made from recycled newspaper;
- ✓ batt insulation made from recycled blue jeans;
- ✓ cisterns to collect rainwater for non-drinkable uses, such as greywater for toilets and refilling the pool; low-flow toilets;
- ✓ energy-efficient windows;
- ✓ low-VOC (volatile organic compound) paints and furniture finishes;
- ✓ rain gardens;
- ✓ dry wells.

The Sheeleighs also plan on putting the green ethic to work by growing their own produce and herbs. They may also add a beehive from which to harvest honey.

Landscape architect Michael Fleischacker, vice president of Back to Nature in Oldwick, has drawn plans for the vegetable garden (which will include underground cold frames to extend the growing season). The multi-variety apple orchard has already been planted, and nut trees, New Jersey teas, and berries may follow.

"Having an orchard has been a dream of ours. Matt and I have always loved gardening and being outdoors. It is wonderful exercise and fun working together. It is our hobby and passion," says Katherine.

Food production is not addressed by LEED, but the Sheeleighs share Fleischacker's philosophy here. "I look at all of the living systems that overlap and how they can influence society," Fleischacker says.

LEED does include parameters for surface water management, and the Sheeleighs' plan includes managing storm water runoff and dispensing it in a natural fashion that will improve conditions for wildlife and expand reuse. "Then there's composting," says Fleischacker. "You take kitchen scraps and put them into a till, and then put that back into a really organic garden, back into the earth. It's simply a matter of doing it—and doing it the right way."

These initiatives do come with a price, though it can be negligible depending on the scope of the project and the types of materials selected. "Costs are certainly greater in some areas but less in others," says Sheeleigh, who is president of Wallwork Group, a wholesale HVAC equipment company that sells, among other products, geothermal equipment. Green building requires a time investment for builders to become educated but will yield savings in areas such as the purchasing of materials, which becomes more precise, he says.

On any building project, there are voluminous details; on a LEED venture, the number grows exponentially—a fact builder Gregory Porraro can attest to. For example, he compiled the material list, including a cutting list for the wood. "There are probably tens of thousands components on this house. You need a material list for everything you buy, a cutting list for every board," he says. "This gets you to look at every single aspect of the project, every component. It all has to be accounted for; it's really a great exercise." But it is a mind-warping one that takes about three weeks to complete.

"If you need a bunch of 9-foot pieces, typically you'd order a 10-footer, lop off a foot, throw it out, and there is your 9-footer. Now, because [with LEED] you're only allowed a certain amount of waste, you say, 'I need this many 9-footers, so I'll get 18-footers and cut them in half,' maximizing your yield and minimizing waste," says Greg.

"In truth, [green principles] are the least expensive way to get the most out of something," says Matt Porraro. "These are not just visionary statements. There is value to the customer." As demand for homes built under these tenets grows, so will technology to support them. "Only what works sells in the market and will be repeated. As they are repeated, costs will come down."

"Now there is a right way to build a house," says Sheeleigh. The right way is ever changing as innovations and new considerations are added to LEED guidelines. Projects are only held to the LEED specifications in place at the time they are registered, but for proactive types like the PAI/Porraro team, Fleischacker, and the Sheeleighs, the United

States Green Building Council's 342-page manual and the latest updates are always close at hand.

"When we first got started, in order to get points for proximity to community resources, [the resource] had to be one-half mile from your property as a bird flies," says Katherine. "I spent all this time creating maps to show, Okay, here's my property, there's the resource. I got all fifteen maps ready to submit, then I get an e-mail saying, 'Correction/clarification: It's not as a bird flies, it's unobstructed walking.'

"This is how LEED evolves...You think you have something nailed down, and things change," she says. Technically, the Sheeleighs could have stood their ground on the issue, but as it turns out the property's backyard bridle paths allowed them to gain points—even with the emended rule.

The Sheeleighs are essentially novices at navigating LEED requirements, but are enthusiastic proponents of the concept. "As we learn, I think we're helping better [the criteria]," says Sheeleigh. "If they say to us, 'As a bird flies is not really in the spirit of the program—you really have to be able to walk it, and you can't cut through your neighbor's house'—that makes sense.

"We tend to be a 'ready, fire, aim' society, and now we're going back to 'ready, aim, fire.' Where we were just moving really fast and doing stuff, now we're actually thinking about it. And we're doing all of that thinking up-front," he says.

LEED Information

Created by the nonprofit United States Green Building Council, LEED is a collaborative organization of professionals who promote sustainable building practices. The program is an amalgam of committees, one of which serves as the third-party certifying arm that reviews projects, and offers guidelines, education, resources, inspections, and, ultimately, the nationally recognized LEED stamp of approval.

To earn that stamp, each project accrues points based on its embrace of green strategies. There are eight weighted categories from which to earn points, such as: design (Is the home situated to take optimal advantage of solar energy?), location (How accessible are community resources?), sustainable site (Is site disturbance managed during construction?), etc. Based on their point totals, projects can get basic certification or the higher levels of silver, gold, and platinum.

The LEED program was initiated in 2000 with commercial properties in mind. LEED for Homes, still in its infancy, was launched in 2008 after a three-year pilot program. At press time, about 1,500 homes nationwide had achieved certification (70 in New Jersey, 3 of which are single-family properties) and nearly 9,000 are in the works (817 in the Garden State, including 10 single-family homes).