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STARTING



RENO

An energy-efficient house rises on an old foundation



GEHRUNG-GRAHAM

Pre-renovation

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ark Graham was actually relieved when he discovered that the first floor of his house was rotting.

He'd planned to add on, not tear down. But when crews prepared to build a second story onto the 1980 brick ranch house in Ivy, they discovered some problems. "It turned out the walls had holes from rodents and water," says Graham. There was leakage around the chimney too. It became clear they'd have to dismantle the house and rebuild.

"We left the basement and built up," says Graham, who—along with Barbara Gehrung, his partner in the architectural firm Gehrung+Graham—had already renovated the basement level. "Now we could know what was there. It was lovely to not have to deal with mystery materials."

That mattered because the team was aiming to meet stringent energy-efficiency standards: the Passive House criteria, which set a very high bar for reduced energy use. The engineering of walls is key to reaching this goal. The idea is to insulate heavily and not allow air or heat to move between the indoors and outdoors. "Now we could have a 2x6 wall with exterior insulation, as opposed to building inside the siding," says Graham. They could use the old footprint, but design the energy-efficient structure they wanted from square one.

Graham and his family had been living in the rancher for several years. They'd found the interior dark and overly compartmentalized, so rebuilding would mean completely reimagining the layout and feel of the house. "The driving forces were just connecting outside to inside, bringing in natural light, and using healthy materials," says Graham. Using the Passive House standards (which originated in Germany) forces designers to reckon with indoor air quality, since the method results in so little air exchange with the outdoors. Nontoxic materials and energy recovery ventilators are key to keeping indoor air healthy and fresh.

"We were early adopters of the Passive House movement here in the U.S.," says Gehrung. "I think Passive House was attractive to both of us because

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Over the course of the renovation, what was once a dark and overly compartmentalized space transformed into a light, airy layout that connects inside and outside. The kitchen, for example, has exterior doors on both ends.





Though the homeowners designed it to easily convert for aging in place, for now the house skews young: Their kids' second floor bedrooms feature nets hanging above their bedrooms.

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it empowers the architect. You can test your design in a model, and it helps you set priorities.”

The rebuilt house, which the family reoccupied in 2017, is full of light and closely connected to the outdoors. The kitchen, for example, has exterior doors on both ends: one to a deck, which Graham says his family now uses “all the time,” and one to a courtyard. “The kitchen was dark and dingy before, so we were partially reacting to that,” says Graham. Clerestory windows along the long wall provide light but also privacy.

Base cabinetry runs the length of that same wall, eliminating the need for upper cabinets and ensuring “a flow of space, instead of having a dead wall with a piece of furniture,” says Graham.

A Swiss railroad clock above the deck door symbolizes, for Graham, a “modern and comfortable” European aesthetic that he fell in love with during a stint in Switzerland. It’s something he and Gehrung, a native of Stuttgart, feel they share. “We’re trying to find ways of calming and simplifying,” he says. One strategy in this room

is to hide outlets in a gap behind the backsplash, rather than letting them break up wall space. The house also has centralized, programmable panels to control lighting, rather than light switches scattered throughout.

Though the floor plan is more open than in the old brick house, Graham says, it does offer more distinction between spaces than a standard great room. Cooking, eating, and living spaces form an L shape, providing some separation. “The ceiling heights change to suggest spatial differences,” says Graham.

“We also designed for aging in place,” says Gehrung, pointing out the built-in flexibility to turn the current music room and dining room into a first-floor suite if needed in the future.

For now, though, the vibe of the house skews young. Graham’s three kids enjoy whimsical features that friends probably envy: their second-floor bedrooms connect to upper lofts via rope ladders in the closets. Once they’re up there, they can launch themselves onto nets hanging above their bedrooms.

The entire family enjoys the basement media room—the Gehrung+Graham studio is also found on this level—and the kids are actually invited to play indoor soccer in a specially designed basement hallway, where hard paneling protects the walls.

If they get muddy outside, they (or the family dogs) can easily hose off in a basement shower tiled in slate. “It’s extremely durable, with a slot drain,” says Graham. And while they’re in there, they can draw on the walls with chalk.

Upstairs, anyone would feel drawn to sitting in the reading nook in the hallway. “We made it a big feature—a large window with a bench,” says Graham, “a zone where you can hang out and look at the Blue Ridge.” At a certain time of day, automatic shades lower themselves to cover the overhead skylights and prevent too much solar gain.

This one spot in the house symbolizes the transformation of the whole structure. Sitting in the reading nook, one would be surrounded by elements of sophisticated, energy-efficient design. But it’s the view that really captures the attention.