For the Sake of SIMPLICITY

2017 HOUSES AWARD

BEST NEW HOME

Our 2017 Best New Home Award goes to Matt Risinger and Eric Rauser of Risinger & Co. A skillful execution of building-science principles and the quest for a simple, long-lasting home allow a unique detail to shine: the framing.

Putting the insulation outside of the walls opened up new design possibilities for this low-maintenance Texas home

BY MATT RISINGER AND ERIC RAUSER

When Greg Heidel told us that he wanted to "simplify the systems" of his life, he was speaking our language. Greg is a single guy who had recently purchased an empty lot in East Austin, Texas, an up-and-coming neighborhood. He wanted to build a new house that supported his lifestyle. Greg spends his time volunteering and saving money to donate to causes that are important to him, so he didn't want a house that would be expensive to heat and cool or one that would require a lot of time and money to maintain. We don't design many homes—we're building-science geeks, and we typically add our knowledge to other architects' designs. But Greg offered us the opportunity to both design and build his house, weaving proven building science into the plan from the get-go. We had the perfect approach in mind.

Outsulation is universally smart

Since we first read Joe Lstiburek's 2007 article, "The Perfect Wall," which describes an utterly simple yet radically unconventional building envelope, we've wanted to put it into practice in one of our projects. In the article, Joe outlines a wall assembly in which four control layers—one each for rain, air, vapor, and temperature—are installed outside the framing. Using this approach, the control layers protect the structure from water, vapor, and temperature swings, creating a

THE PERFECT WALL IN PRACTICE

The perfect wall concept specifies four control layers, which building scientist Joe Lstiburek puts in this order of importance: rain, air, vapor, thermal. Here is how Matt and Eric built this house and executed each of these controls along the way. The house is built on a **PIER-AND-BEAM FOUNDATION** over a vented crawlspace. The first-floor deck and inside of the rim joists are insulated from below with 1 in. of closed-cell spray foam, which acts as all the necessary controls for this location.

Before being sheathed with OSB for shear strength, the walls are covered with **SHIPLAPPED PINE**, which will be exposed to the interior.

A **PEEL-AND-STICK MEMBRANE** from Carlisle acts as the air, rain, and vapor controls. Installed before the insulation, the membrane is protected from the sun and temperature fluctuations.

Staggered layers of **RIGID INSULATION** (2-in. polyisocyanurate on the walls and 3-in. polyisocyanurate on the roof) act as the thermal barrier.

more durable building. Though it is certainly still an option to put more insulation on the inside of a perfect wall, one of the main differences between this approach and the way most walls are built is that the primary thermal layer is on the outside. This assembly works in any climate; typically the only necessary adjustment is the thickness of the insulation. Another significant difference is that the purpose of the siding (and perhaps the way we should think of all siding) is only to protect the control layers from UV radiation.

The perfect wall is also the perfect roof and the perfect floor. Only slight tweaks are made when changing planes. Integrating the control layers as they transition from the slab to the walls and the walls to the roof is important. The layers must be continuous.

Nicknamed "the 500-year wall" because it is possibly the most durable way to build a house, the perfect wall approach met Greg's desire for low maintenance. And once we'd decided that the insulation would be installed outside of the structure, we were able to explore a unique design possibility that this approach offers.

There is no drywall to be found in this house. Everywhere you look, you see structure. Yet designing the home wasn't as simple as just leaving the structure exposed. There was a lot to consider and research before we even presented this idea to Greg.

First, we talked to the lumberyard. They agreed to allow us to cull the most attractive lumber for this house and we agreed to send what we didn't take from the stacks to other projects where the lumber would be more conventionally hidden in the walls and ceilings. Then we talked to the framers, who were immediately excited that their

work would be visible. They helped us find solutions to many of the aesthetic challenges. For example, we didn't want a lot of toenailing, which often splits and splinters lumber. Above the window headers, where the cripples are commonly toenailed, the framers used a sill plate so the cripples could be through-nailed before being put into place. They also found ways to avoid the need for metal framing connectors and were extra precise with their nailing patterns.

Wanting the house to have a traditional quality, we didn't use any modern framing materials except for a couple of glulam beams where we needed long spans. The framers even used old-school crossbracing between the floor joists, and we sheathed the house first with shiplapped pine, to be seen as the interior finish, followed by a layer of OSB to create a shear wall.

You might ask how we passed inspection without the fire protection that drywall offers. It turns out that even the building inspector liked the idea that the wall cavities would be exposed. Because the cavities are not continuous between floors, the inspector saw the open walls as advantageous for fighting a fire, should one occur.

Repair and remodel with ease

If this house is going to last 500 years, Greg will likely not be the only homeowner, so it had better be easy to remodel. We found surprising opportunities for future remodeling while figuring out how to hide the electrical and plumbing runs.

All of the exposed wiring is metallic-sheathed cable and the outlets and switches are surface-mounted in metal boxes. This makes it easy to move and add outlets and switches. Most of the plumbing is hidden in closets or in the second-floor storage space behind the knee wall, which means that it is all easily accessible.

Both the plumber and electrician were helpful, creative, and neat with their work. In one particular case, the plumber took the time to bore a hole through the plates for a vent pipe that typically would

The walls and roof have a **VENTED RAINSCREEN** assembly, providing ¾ in. of air space behind the siding and roofing, which protects the control layers from damaging UV light.

The reflective **METAL SIDING**, air gap, and foil-faced insulation also act as a radiant barrier to minimize radiant heat gain in the hot Texas climate.

SCHOOLHOUSE SIMPLE

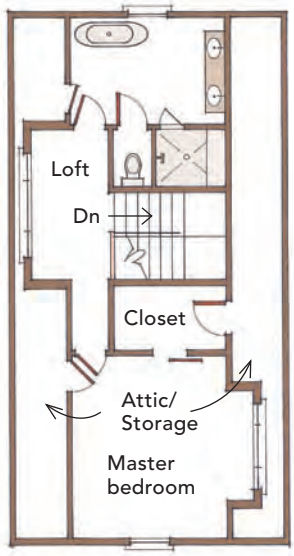
The home's footprint was restricted by two things: protected old-growth pecan trees and the homeowner's goal of simplicity. Modeled after traditional Texas schoolhouses, the home is essentially a rectangle with only a small bump-out in the back for a little extra kitchen and mudroom space. The first floor is open, mostly public space with the option of a second bedroom. Upstairs is a master suite.

Keeping it honest. *Even the stairs, built-ins, and bookshelves are built with framing material. The steel balustrade and handrail was custom designed and fabricated by Risinger's crew using off-the-shelf components from a metal supply yard.*

Floor-plan drawings: Martha Garstang Hill

First floor

A beam and a bump-out. *The kitchen is nestled into a nook, defined by one of only two engineered beams in the house. In the roof behind the beam are skylights that bring sunlight to the work surfaces. The cabinetry is from Ikea.*



Second floor

SPECS

Bedrooms: 2

Bathrooms: 2

Size: 1,450 sq. ft.

Completed: 2014

Location: Austin, Texas

Architect: Eric Rauser, AIA, rauserdesign.com

Builder: Risinger & Co., risingerhomes.com

North

0 2 4 8 ft.

Industrial candor. *The black-and-white bath is as revealing as the rest of the house with utilitarian porcelain light fixtures, wall-mounted faucets, exposed P-traps, standard pipe fittings fashioned into vanity legs and towel racks, and a Durcon epoxy-resin countertop meant for science labs.*

have been notched into the front edge. This subtle difference, which left just a fraction of an inch of the face of the plate intact, made a big difference in appearance.

After living in the house for some time, Greg decided that he wanted to move the tub filler, which took us only a couple of hours since the supply lines are accessible without removing any finished surface. The only carpentry was to bore a new hole and repair the old hole in the bathroom's paneling. We assume that the kitchen, which is tucked into a bump-out, can be completely remodeled in just a day or two.

Separate systems

Our mechanical designer, Kristof Irwin, says that houses are like boats: the more leaks you have, the bigger bilge pump you need. This house has few leaks, so it didn't need a very big mechanical system. In fact, we used separate systems for heating and cooling, ventilation, and humidification.

The house has a single minisplit compressor with three interior units. To counter the stack effect, we installed a return register in the second-floor bathroom with a fan that sends warmer air back down to the first-floor utility room. An ERV replaces indoor air with fresh air from outside. Lastly, we installed a dehumidifier under the stairs, because in our humid climate it's important to be able to control temperature and relative humidity separately.

Because of their simplicity and accessibility, the mechanicals, like the plumbing and electrical systems, will be easy to update over time and as technology advances. That is one of the three keys to longevity that we applied to this project while using the most advanced building science available: Make it durable by protecting the structure, make it adaptable so it doesn't get torn apart or torn down, and keep it simple so it is easy to upgrade as we learn more about buildings and develop more efficient mechanical systems. □

Matt Risinger and Eric Rauser, AIA, design, build, and geek out on building science at Risinger & Co. in Austin, Texas. Photos by Casey Dunn.