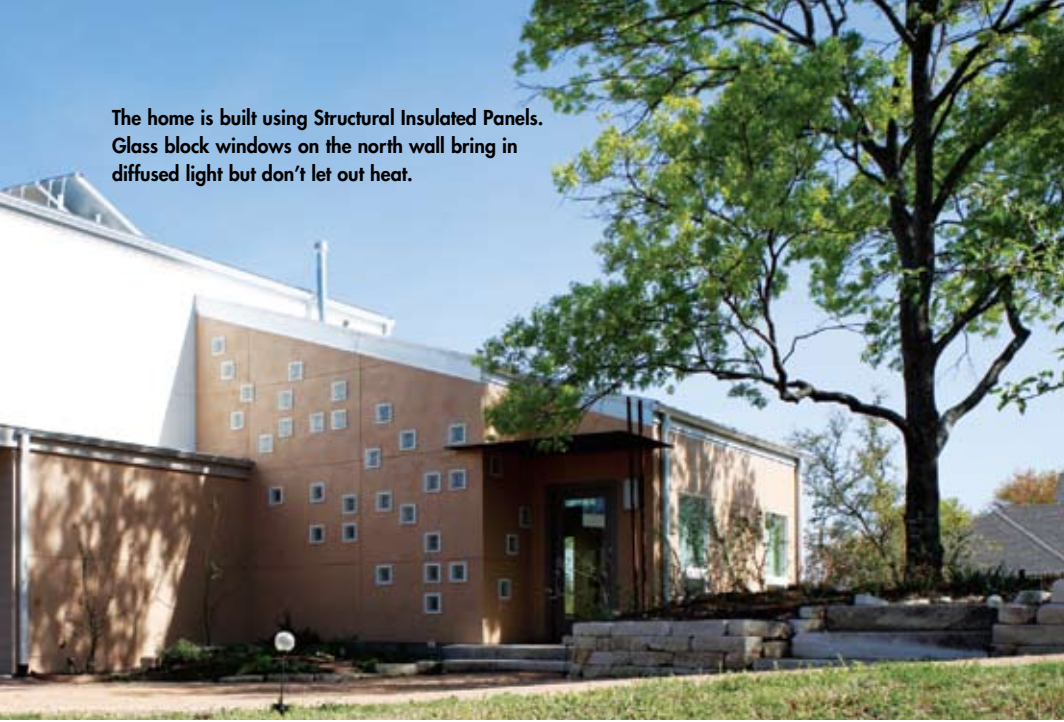


The home is built using Structural Insulated Panels. Glass block windows on the north wall bring in diffused light but don't let out heat.



Mission ACCOMPLISHED



Architect Gary Gene Olp (far right) and contractor Don Ferrier (left) helped Heather Ferrier (center) build a green home.

With little money, recent college graduate Heather Ferrier wasn't the likeliest candidate to build the greenest house in Texas. Her determination proved stronger than her limited dollars.



ROBYN GRIGGS LAWRENCE
PHOTOGRAPHY BY PAUL BARDAGJY

The home is designed so that cooling breezes pass through carefully placed windows and up through tall spaces, creating a chimney effect. Stained concrete floors collect the sun's heat by day and release it when it cools down at night.





Heather Ferrier grew up around green building. Her father, Don Ferrier, was crafting earth-sheltered homes in the Dallas/Fort Worth area in 1985, when she was a young girl working for his construction company. When she graduated from college and became general manager of Ferrier Construction, Heather wanted to build a deep green house. Not only did she crave a sunny, healthy place to live, but she was determined to show the world it could be done on a budget.

Because of mortgage stipulations and real estate minimum size requirements, Heather found she would have to build a roughly 2,000-square-foot house. That left her with a modest budget of \$115 per square foot—and she wanted a house with some flair. “Most clients have much larger budgets, needless to say,” she says.

Her accomplishment is astounding. Her 2,038-square-foot passive solar home, built for \$235,000, is the first home in Texas (the third in the United States) to get the U.S. Green Building

Council’s highest Platinum ranking. It’s a prototype for the U.S. Department of Energy’s Building America program, was named the 2007 Dallas Builders’ Best Green Home and won the Gold Energy Value Housing Award, which honors the nation’s energy-efficient elite. Nearly 4,000 people have toured the home.

“Heather wanted to dispel people’s grumblings that only the elite can afford a green home,” Don Ferrier says. Her goal of using the home as an educational tool has worked. “This house has really hit a nerve locally,” Heather says. “It’s caught the attention of a lot of people.”

Of no less importance, Heather has a bright, natural home to share with her sister, Lacey. She’s created a nontoxic, light-filled environment that doesn’t trigger her asthma or allergies, and she’s spending about \$200 less per month on utilities than her neighbors.

“When people visit, the first thing they say is that this place feels happy,” Heather says. “I believe there’s a psychological impact from living in a green home. Having this experience, I wouldn’t live in any other type of house.”

Heather's home is sited to catch maximum sun from the south and east. A metal Galvalume roof reflects back 75 percent of the sun's heat.




A double-sided fireplace and bookshelves under the stairs save space.



SEEING GREEN

A tireless cheerleader for green building across the country, Don Ferrier serves on the National Association of Homebuilders (NAHB) Green Building Subcommittee and was named NAHB's Green Builder Advocate of the Year in 2007. He's most excited, though, about bringing sustainable design and construction home to Texas. "A lot of folks say, 'But you're from Fort Worth—how can you build green?'" he says. "I'm a round peg in a square hole."

Slowly, he's rounding the corners. Following the area's enthusiastic response to Heather's home, he's built three replicas—all of which exceed the U.S. Department of Energy's Energy Star standards—and is in planning stages for an entire subdivision of "Heather's houses."



Heather's bedroom is filled with natural light.

A CHAT WITH THE HOMEOWNER

What books are on your nightstands?

HEATHER FERRIER: *Happier: Learn the Secrets to Daily Joy and Lasting Fulfillment* by Tal Ben-Shahar (McGraw-Hill, 2007) and *YOU: Being Beautiful: the Owner's Manual to Inner and Outer Beauty* by Michael F. Roizen and Mehmet C. Oz (Free Press, 2008).

What's always in your fridge or pantry?

HEATHER: A bottle of red wine to help me unwind.

What's great about where you live?

HEATHER: The connection to nature, like being greeted by a doe and her two fawns every day at sunrise and sunset.



Heather's kitchen features regionally produced cabinetry made of sustainably harvested white ash and GreenGuard-certified countertops.



Heather controls sunlight in her bedroom with off-the-shelf multicolored Ikea fabric panels. The master shower features recycled glass tiles.

Finding the right site

Heather set out to build a small home, which isn't easy in the Fort Worth suburbs. She spent a year and a half looking for the perfect lot, but most subdivisions required her to build a 3,000-square-foot or larger home. An urban infill lot in Lake Weatherford, an architecturally significant lake community 15 miles west of Fort Worth, proved to be exactly what she wanted. The parklike 1-acre lot accommodates a south-facing home and offers several large oaks to provide summer shade.

Because Heather didn't have cash for expensive green features, good design was crucial to her vision. She turned to Dallas architect Gary Gene Olp, who specializes in passive solar design, to take advantage of her site's natural bounty. Ferrier Custom Homes was building Olp's home at the time, and Heather requested a smaller version. "This is really a Mini Me—a smaller, more efficient version of my home," Olp says. "We wanted to show you can build responsibly for your region using passive solar, good design and efficient use of space. And it's affordable—that's the key."

Performance on a budget

"You can build cheap, or you can build affordable," Olp says. "In this house we had a lot of fun playing with materials and using them on the raw side."

Energy-efficient, easy-to-assemble structural insulated panels (SIPs) kept Heather's construction costs low, and Olp clad the exterior in fiber cement siding, stucco and hardisiding for low maintenance. Heather's budget wouldn't accommodate solar panels (although the home is hardwired to hook them up when she can afford them), but she was able to install solar water-heating panels with help from a federal tax credit. "Solar hot water in our climate is a no-brainer," Olp says. "It pays back so fast."

Heather, her father and Olp worked to make sure everything in the house would have a five- to seven-year payback. That ruled out renewable energy systems such as geothermal and wind, but energy-saving design techniques such as well-placed overhangs, a thermally effective building envelope and whole-house ventilation fans keep her utility bills way below average. Heather's home is nearly zero-energy; her utilities



Porches and overhangs provide shade in summer, and canvas awnings retract for natural daylighting.

average \$75 per month. She's also become more conscious of energy use since she began reporting her monthly consumption to Building Science, a Boston consultancy that uses her home as an energy-efficient prototype. "It's not like I live in a laboratory," she says, "but I'm much more aware now of how my behaviors affect energy consumption."

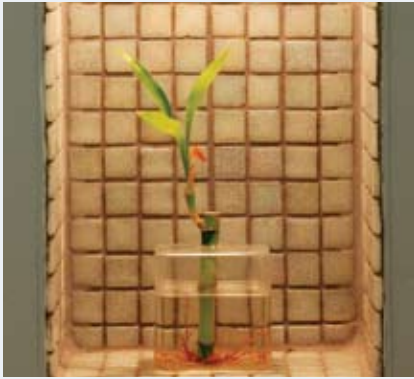
She's also more water-conscious now that she irrigates and flushes her toilets from the roof's 3,000-gallon rainwater cistern. Along with drought-tolerant landscaping, Olp says water catchment is "another no-brainer." "Why would we draw off drinkable water from the purification plant to flush down the toilet or water the lawn? It doesn't make any financial or common sense," he says.

No going back

Heather loves country suburban life. She's surrounded by tall trees, and deer come to visit at dawn and at dusk. Her home is light-filled and peaceful, and it works.

The only thing she'd change? "I'd make it smaller," Heather says. "I would just try to squeeze it down a bit more."

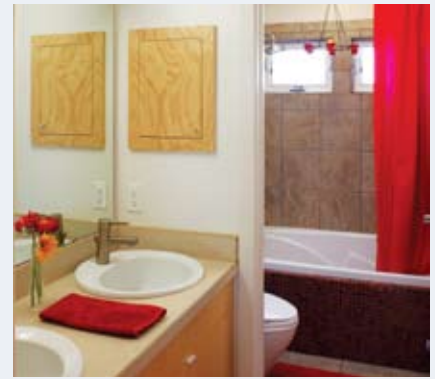
Natural Home *editor-in-chief* ROBYN GRIGGS LAWRENCE *thinks Texans are the coolest.*



Heather gave her home character with thoughtful details such as this powder room nook.



Leaves incorporated into the concrete floor connect it to the outdoors.



The bathrooms have Delta Brizo low-flow fixtures and dual-flush Toto toilets.

THE GOOD STUFF

ARCHITECT: Gary Olp, GGOArchitects, (214) 328-9091; www.ggoarchitects.com

BUILDER: Don Ferrier, Ferrier Custom Homes, (817) 237-6262; www.ferriercustomhomes.com

INTERIOR DESIGN: Heather Ferrier

LANDSCAPING: Howard Garret, (214) 365-0606; www.dirtdoctor.com

HOUSE SIZE (SQUARE FOOTAGE): 2,038 (including lofts in two upstairs bedrooms)

BEDROOMS: 3

BATHROOMS: 2.5

COST PER SQUARE FOOT: \$115

ENERGY

HEATING/COOLING SYSTEM: Daikin air source heat pump

ELECTRICITY SOURCE: grid, solar hot-water system

LIGHTING: Energy Star compact fluorescents and fluorescents

APPLIANCES: Kenmore Energy Star

INSULATION: FischerSIPS Structural Insulated Panels

BUILDING MATERIALS

EXTERIOR MATERIALS: fiber cement stucco, James Hardie siding, Galvalume standing seam metal roof (white TPO on flat roof), Jeld-Wen Energy Star/double-pane/low-E windows and Therma-Tru doors, tubular skylight in master closet, pervious decomposed

granite for driveway and walks, PEX plumbing, Impasse termite protection, translucent roof in storage shed for daylighting

INTERIOR MATERIALS: Sherwin Williams Harmony low- or no-VOC paints and stains; regionally produced, formaldehyde-free cabinetry made of white ash from Forest Stewardship Council-certified forests; stained and sealed concrete flooring; Beaulieu recycled PET carpet; InterfaceFLOR carpet tiles; bamboo stairs and landing; Formica GreenGuard-certified laminate countertops; programmable thermostats; attic fans; Energy Star ceiling fans; regionally harvested stones for walkways and retaining walls

WATER

COMMUNITY WATER CONSERVATION SYSTEMS: 3,000-gallon rainwater catchment tank (for toilets and landscaping), front-loading Kenmore HE washer, Kenmore Energy Star dishwasher, native landscaping

FIXTURES: Delta Brizo low-flow bathroom and kitchen fixtures; bathroom sinks and dual-flush toilets from Toto

CONSTRUCTION

WASTE REDUCTION: Jumbo SIPs manufactured and pre-cut in the factory for waste elimination; scrap lumber pile used throughout construction; advanced framing (24 inch on center instead of 16 inch, using less wood and decreasing thermal shorts, making it more energy efficient) on interior walls, ceiling joists and intermediate floor trusses; engineered lumber, structural beams and James Hardie siding—all made from recycled material

RECYCLING: Recycled 80 percent of all construction waste; all excess lumber, sheetrock and James Hardie fiber-cement siding was recycled into mulch; all scrap metals, plastics, cardboard/paper, aluminum, broken concrete/masonry was recycled

CONSTRUCTION METHODS: Passive solar design; advanced framing on interior; SIPs for all exterior walls and roof; all ducts located within conditioned space; careful sealing of all wall and roof penetrations, windows and exterior door installations

LANDSCAPING


SITE AND LAND USE: Infill lot (empty lot in established neighborhood); home situated around existing trees, all trees protected with fencing throughout construction

PLANTS: All native landscaping

WATER CONSERVATION: Rainwater harvesting used for landscape irrigation; only climate-appropriate plants used

CERTIFICATION

- LEED-H Platinum (first in Texas, third in the nation)
- American Lung Association Health House (first home certified under new, more stringent guidelines)
- Energy Star
- NAHB Green Building Guidelines
- Green Built North Texas

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