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## BLUEPRINT FOR GREEN

It's beautiful. It's uber-eco-friendly. (The heating and cooling bills will be about \$15 a month!) Peek inside Heather Ferrier's finished house.

By LIZ STEVENS  
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Last in an occasional series

Heather Ferrier's home is hard to miss.

Crest the hill of Parker County's Lakeshore Drive, and it rises into view: first the sleek curved metal roof, then the seemingly random pattern of glass blocks pocking the brown stucco facade. In a moment, all of its earth-friendly modernity comes into view, and you wonder if you're only steps away from Lake Weatherford -- or the Bay Bridge.

But Heather's house is more about how it functions than how it looks. It stands on the cutting edge of a national movement toward homes that place less of a burden on the natural environment and a higher premium on human health.

Heather, 25, is just glad it's finished.

After four months of fretting over construction details, colors, timing and cost, she says, "I'm exhausted."

"In the long run, I know for sure I'll be glad [I did it]," Heather adds. "But it was more stressful than I thought it was going to be, and that's coming from someone [who works] in the industry."

Blame her dad.

Don Ferrier, an Aledo-based home builder, specializes in energy-efficient construction. When Don, his office assistant Heather and Dallas architect Gary Olp, whose GGO Architects firm specializes in eco-conscious design, put their heads together about a plan for Heather's first home, the result was a blueprint for a "green" showcase. The residence, they believed, could be a prototype for environmentally friendly living on a smaller and more affordable scale than is usually seen.

Compare, for instance, the size and cost of Heather's Home (2,028 square feet/\$117 per square foot) with the size and cost of the high-profile Zero-Energy Home built in Frisco last year (3,800 square feet/about \$300 per square foot).

"We had decided it really would be something we could use as a teaching tool," says Don Ferrier.

The trio chose to repeat the design for Olp's own 2-story Lakeview home, at a little more than half its size. Heather's version features an open floor plan that begins in the "great room" and steps down into the dining room and kitchen. A fireplace divides and defines the two spaces. The master suite flanks the other side of the kitchen and has double doors that open to a patio. An office/laundry room and carport with storage complete the first level, which features stained concrete floors.

Heather will (initially, at least) share the home with her sister Lacey and a mutual friend. Those two will reside upstairs in two bedrooms that incorporate cozy loft spaces and will share a tiled bathroom. The south bedroom has access to a spacious roof deck.

In the past two weekends, approximately 1,100 people have toured Heather's Home as part of the Greater Fort Worth Builders Association Spring Tour of New Homes. The house will be open for the final public viewing today. "It was neat because people are just really curious" about green and energy-efficient homes, Heather notes, "especially people my age." Walking through the house has brought the subject to life for them "instead of [remaining] just a concept," she says.

Before the blueprints for Heather's Home even existed, the project caught the eye of the U.S. Department of Energy's Building America program, which promotes energy-efficient housing. Building America provided the team with support from Building Science Corp., an East Coast engineering firm that worked with the Ferriers and Olp on the initial design. Using a computer modeling program to project the house's energy efficiency, Building Science found the home's final plan to be 50 percent more efficient than Building America's benchmark.

"I would expect the home would reach that savings criteria," says Building Science engineer Mark Sevier.

According to her dad, Heather's heating/cooling bills should come in at an average of \$15 per month.

Heather's Home also qualified for a U.S. Green Building Council pilot program for green homes. About 100 homes under construction across the country will participate in the pilot through the end of 2006, explains Taryn Holowka, the council's communications manager. The results will help the USGBC develop a new certification program for green-home construction, similar to the extremely successful one it has in place for commercial construction.

"I think we'll see more and more of [green building]," says Albuquerque-based builder Jerry Wade, another Building American partner and one of New Mexico's most prolific home builders. "But it's a matter of time and the public being educated on what is available. There are a lot of home buyers and their perception is all homes are built the same, which is definitely not the truth."

## Mother Nature's in the details

On a recent weekday morning, the living room of Heather's house is flooded with sunlight. The white walls give the room a crisp, fresh appeal. Tarps still cover the concrete floor, and men in jeans and dusty shirts use nail guns and utility knives to wind up the final construction details.

This space is the heart of Olp's passive-solar design: a wall of south-facing windows, shaded by overhangs and leafy trees from the high summer sun but accessible to the sun's low-angle winter rays. During those shorter, colder days, Heather's concrete floor will capture the sun's heat and release it into the house at night. That will keep heating costs down. And abundant natural light means less electricity use.

Two "whole house" fans at the top of her bamboo staircase also will help to cool the house in the summer. By opening windows or doors downstairs and turning on her fans, Heather can draw a breeze through the center of the living space.

On those Texas summer days when a bit of wind isn't enough, Heather's single-compressor air-conditioning unit reads the temperature and humidity levels in the house and dials itself up or down accordingly.

Olp calls the system "very sophisticated. ... It just makes things so much simpler" than having multiple compressors that run at one speed only.

Instead of wood-frame construction, Olp and Ferrier called for structural-insulated panels or SIPs. These exterior walls are pre-cut to size and composed of foam insulation sandwiched between two oriented strand boards.

"SIP walls are an excellent construction device," says Donney Dorton, plans department supervisor at Guaranteed Watt Saver Inc. The Oklahoma City-based engineering firm inspected Heather's home early in construction and will do so again after its completion to determine whether it meets certain energy-efficient criteria.

One of the best things about Heather's Home is that it doesn't smell "new." What's good about that? Most conventional finishes, from paints and stains to glues and caulks, contain high levels of volatile organic compounds, chemicals that can compromise human health. The EPA has warned that indoor air can be two to five times as polluted as outdoor air due to VOCs and other contaminants. For this reason, Heather instructed all of her subcontractors to use low-toxin finishes.

"We've probably found out there is more demand for [good indoor] air quality than there is for the energy efficiency," says Wade. "Don't get me wrong. The energy efficiency is a big factor, but when it gets down to an emotional thing ..."

Outside, Heather saved as many trees as she could on her property by building retaining walls. A rainwater catchment system will irrigate her native landscaping. Scrap drywall and wood on the construction site were recycled into mulch instead of being sent to a landfill.

## 'X' marks the problem

But just because Dad is the general contractor doesn't mean everything goes smoothly, especially when there's a learning curve involved.

Some of the subcontractors balked at the modern elements of Heather's Home: The company that came to score Heather's concrete floor found itself flummoxed by the pattern of random arcs that Olp's design assistant had dreamt up. The scorers tried to persuade Heather to go with a more traditional diamond pattern (no, thanks). The countertop installers asked repeatedly if Heather was sure she wanted a bright orange-red laminate on her kitchen island (absolutely!). A drywall worker spray-painted a "big black x," Heather says, on the dining room's concrete floor, assuming, of course, that the floor would eventually be covered with carpet or wood.

(After the latter incident, Heather crafted several neon-orange signs reading "Concrete will be stained and sealed" and placed them around the house.)

Re-educating skeptical subcontractors, agrees Building American's Jerry Wade, is "like pulling wisdom teeth."

Heather says she has been pleasantly surprised at the number of twenty- and thirtysomethings who have come to tour her home,

even though they probably aren't prepared to build their own green home anytime soon.

"But it's a dream of theirs," she says, "so they're doing their homework."

Take a tour

**What:** Tour Heather's Home, an example of eco-friendly living

**When:** 11 a.m. to 7 p.m. today

**Where:** 3916 Lakeshore Drive in Parker County. Take Interstate 30 west to the Mikus Road exit (I-30 turns into Interstate 20 prior to the exit). Follow Mikus until it ends at East Lake Road. Turn left and left again on Lakeshore Drive. The house is at the top of the hill. Drive time from downtown Fort Worth is approximately 20 minutes.

**How much:** Free

**Sponsored by:** Greater Fort Worth Builders Association Spring Tour of New Homes.

**For more info:** [www.fortworthbuilders.org](http://www.fortworthbuilders.org) or [www.heathershome.info](http://www.heathershome.info)

Heather's House by the numbers

**2,028:** Square feet of living space

**117:** Building cost, in dollars, per square foot (not including the lot and the site preparation) to build

**32:** Glass block windows on the home's north side

**15:** Anticipated cost, in dollars, of monthly heating/cooling bills

**4:** Number of months it took to build the eco-friendly house

**2:** "Whole house" upstairs fans to draw fresh air through the house.

**1:** Design element Heather and her architect regret (the smallish master bedroom closet)

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