Sensible House

This new award-winning house and apartment were built to prove it's possible to meet the highest environmental standards in a home that's also beautiful, comfortable, functional and affordable. It was Seattle's first five-star Built Green™ home.

Green Home Case Study

Healthy homes for a healthy environment

Photos by Jon Alexander

About the project

Name: Sensible House
Type: New, single family house with accessory dwelling unit
Square Feet: 1,800, plus 650 in second unit
Location: East of Seattle's University District neighborhood
Completed: April 2004

This new house, which includes a small apartment, was built to prove that it's possible to meet the highest environmental standards in a home that's also beautiful, comfortable, functional and affordable. It's the first Seattle house to win five stars, the highest rating possible, in the Built Green™ program developed by the Master Builders Association of King and Snohomish Counties in partnership with King County and the City of Seattle. According to calculations done when the house attained a Platinum rating in Engineered for Life, a green rating program sponsored by a cellulose insulation manufacturer, the house will save 10,287 pounds of carbon emissions and 115,340 gallons of water each year compared to typical houses.

To meet their energy-efficiency goals economically and to wind up with a rental unit, the owners elected to dismantle a 1948 house on the lot, rather than remodel. Most of the materials were salvaged for reuse. The new building occupies virtually the same space on the lot as the old one-story structure did, but the replacement building has a basement that includes a garage, a workshop and storage space, as well as a second floor and an attic. Each unit has a front porch, and those, along with trim details and the roof pitch, give the house a traditional look and scale that fit the neighborhood.

Wrapped in a super-insulated shell, the house needs a heating system only about one-sixth as powerful as that in the average home in this climate. Instead of a furnace, a solar water heater and a back-up natural gas water heater provides the heat and also supply hot water to taps. An advanced plumbing system reduces the amount of water wasted when hot water is drawn. To protect indoor air quality, the builder avoided using materials that contain urea formaldehyde and selected low-toxic paints, finishes, caulks and adhesives. As extra insurance, the house was thoroughly vented after each interior finish was applied.

Ratings & Awards

Homebuilder Award, 2005 Built Green™ Design Competition

Built Green™ 5-Star Certified Project (471 points)

Energy Star Certified

The Team

Owners

Bob Scheulen & Kim Wells
www.sensiblehouse.org

Builder

Sunshine Construction
Jon Alexander
(206) 782-4619

Architect

Ted Granger
(206) 324-3726

Resources/Products

Building deconstruction

RE Store
(206) 297-9119
www.re-store.org

Rain screen mesh

Enkadrain
Available from:
Stuc-O-Flex International Inc.
(800) 305-1045
www.stucoflex.com

FSC-certified lumber

Dunn Lumber
(206) 632-2129
www.dunnlum.com

Low-toxic paint, FSC-certified flooring, reclaimed wood
Environmental Home Center
(206) 682-7332
www.environmental
homecenter.com

Air-tightening specialists

Atmosphere, Inc.
(206) 526-2700
www.myatmosphere.biz

Structural Insulated Panels

Shirey Contracting
(425) 427-1300
www.shireycontracting.com

Green Depot

(360) 705-2868
www.greendepotinc.com

Pervious pavers

EcoStone
Available from:
Mutual Materials
(425) 452-2300
www.mutualmaterials.com

Solar systems

Puget Sound Solar
(206) 706-1931
www.pugetsoundsolar.com

For More Info

Built Green™ – a residential green building program/rating system developed by the Master Builders Association of King and Snohomish Counties in partnership with Seattle.
www.builtgreen.net

Energy Star – a government-backed program helping businesses and individuals protect the environment through superior energy efficiency.
www.energystar.gov

King County Construction Works – provides free assistance and recognition to builders who recycle, reduce waste and use recycled-content building materials.
www.metrokc.gov/dnrp/swd/greenbuilding

Seattle Sustainable Building Program – provides guidelines, incentives, and assistance to increase the environmental performance of buildings in Seattle.
www.seattle.gov/dpd/sustainability

BUILT GREEN™

City of Seattle
Department of Planning
and Development

Printed with soy-based ink on totally chlorine-free paper made with 100% post-consumer fiber.

January 2006

Green Home Case Study

Sensible House

Goals/Challenges

Just the right size

The builder, Sunshine Construction, had worked for the owners on a previous house that was much larger and had a view, but they longed for a friendlier home more in keeping with the principles advocated by architect Sarah Susanka in her book, *The Not So Big House* (Taunton Press, 1998). After working through the book's design exercises about how to tailor a house to the way they live, the owners went to architect Ted Granger to finalize a design limited to rooms that would be used every day and that were a functional size but no larger. Besides cutting down on waste and unnecessary expense, the plan resulted in a more comfortable, friendly place to live. Because each unit has a front porch, neighbors often stop to chat.

Having close neighbors in the rental unit also adds to the friendly feel of the house. In addition, it helps carry out the house's "green" mission, since creating more compact neighborhoods reduces urban sprawl. And, of course, the rent can go a long way toward paying for the house.

Deconstruction, not demolition

Instead of bringing in a bulldozer to knock down the old house, the owners called in a crew from the RE Store, a non-profit organization that sells used building materials at its stores in Ballard and Bellingham. Some of the material was saved for the new house, but most went to the stores to sell. The crew sorted the leftovers and recycled as much as possible. A standard demolition could have been done in a day or two for $9,000 to $12,000. Deconstruction took two weeks and cost $8,000, substantially offset by a $7,000 tax deduction the owners got for materials donated to the RE Store.

In addition to saving some materials to use in this house, the owners and the builder bought hardwood flooring, stair treads, fir for interior trim and light fixtures that had been salvaged from other buildings.

Walls and roof

The house's energy efficiency stems in part from the way its walls and roof were built. Walls have double 2-by-4 framing, with a 2-inch air gap in the middle. Stuffed with cellulose, this assembly brings the wall insulation rating to R-33. The floor is also insulated with cellulose, and the roof is made of 12-inch-thick structural insulated panels, or SIPs.

Water-wise features

All of the gutter water flows into a 7,000-gallon concrete cistern, which was poured in place. The cistern's top doubles as a patio and stored water is used to flush toilets and irrigate landscaping.

To preserve the natural flow of water across the lot and allow the soil to act as a natural filter, solid paving was used only for the patio over the cistern and for the portion of the driveway from the sidewalk to the street. The rest of the driveway consists of pervious pavers set on a gravel base 10-12 inches thick.

'Home run' plumbing

Instead of routing hot water through a circuit of 1/2- and 3/4-inch copper pipes, the builder installed a "home run" system, where small-diameter pipes take water from the tank directly to each faucet. Wide pipes hold more water than thin ones, so each time someone turns on a tap and waits for hot water to arrive through typical copper pipes, several gallons may be wasted. With the narrower pipes, made of a type of plastic known as PEX, that waste is cut to a quart or so.

Lessons learned

Savvy salvage

Even though this project incorporated a significant amount of salvaged materials, far more could have been done. "But you have to start six months earlier and have a place to store it," says builder Jon Alexander of Sunshine Construction. The extra time also allows plans to be tweaked to take advantage of materials available only in certain sizes. Alexander ordered salvaged fir trim for this project but didn't have the opportunity to inspect it first. That resulted in a hard-earned lesson: "Never buy salvaged stain-grade material sight-unseen."

Alexander also advises early planning to obtain lumber that's certified through the Forest Stewardship Council as sustainably harvested. "You really can do a house in nearly 100 percent FSC if you give a competent lumberyard enough lead time," he says.

Rain screen

Because wind-driven rain can penetrate gaps in siding, this house has what's called a "rain screen" siding system. The siding is set out a slight distance from the sheathing so any water that gets through can drain safely away through vents at the bottom of the wall. To provide the offset, the crew cut furring strips from plywood. That turned out to be very time-consuming. Alexander has since started using a plastic mesh that does the job more quickly and less expensively.

Shared Commitment

This project's stellar green achievements are attributed to the mutual commitment shared by the owner, architect and contractor, as well as to the owner acting as a research assistant and staying involved throughout the process.