

ecohome

DESIGNS

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HOUSE PLANS FOR SUSTAINABLE LIVING

SUMMER 2009

Great Performances:
117

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92

REMAKING HISTORY

TRADITIONAL YET TRENDY, ENERGY-EFFICIENT YET READY-TO-BUILD, THE SKYWAY HOME MAKES A STRONG CASE FOR MIDDLE-GROUND GREEN

Ever since early American “pattern books” shaped the neighborhoods of the 19th century, and the first Sears, Roebuck & Co. “modern home” catalogs of the 1900s brought architecture to the masses, residential designers and publishers have responded to changing tastes and markets by meeting the demand for a specific kind of housing. For privately drawn and published pattern books, the desire was to record the most popular designs so that the look could be reproduced and sold by tradesmen across the country. For Sears, the need was for stylish yet customizable homes that leveraged breakthroughs in construction methodology (at the time, balloon framing and asphalt shingles) to achieve desirable price points.¹

Residential designers still publish their drawings in much the same way—in books, in magazines like this one, and, more

recently, on the Web. And just as before, prevailing architectural trends, social need, and the ingenuity of designers and builders determine what makes a successful pre-drawn house plan.

For architects like Scott Rodwin, president of Boulder, Colorado’s Skycastle Homes, the need today is for attractive, historically informed design that achieves impressive energy performance using widely available building materials. A real-world example of this principle is his Skyway home, a Prairie-style design under 3,500 square feet with cleanly drawn and open spaces bursting with creature comforts and easily achievable green goals. “We set out to design an attractive, saleable home that could be built with off-the-shelf products and gave a big bang for the buck,” says Rodwin. “It’s a very energy-efficient home that also achieves broader green goals, such as the use of sustainable materials.”

ALL PHOTOS BY: TIM MURPHY/PHOTOIMAGERY.COM. COURTESY OF SCOTT RODWIN



Contrasting use of stone and stucco cladding, as well as the flattened gables on the roof, emphasize the Skyway's long horizontal lines.

Under the Hood

Measuring how green the materials should be was a large part of keeping the home at the target price point of \$1.2 million: that meant saying yes to certain upgrades and passing on others. For instance, the home is designed with 2 x 6 stick-frame walls filled with cellulose insulation, instead of more costly (albeit even better performing) spray foam. The travertine backsplash in the kitchen—as opposed to recycled glass tile, for example—was another compromise

that will lower hard costs for homeowners. Likewise, highest-performance, triple-glaze windows would have been too expensive. Instead, the home uses double-glazed windows with an average insulation value of 0.31—still good for cold climates and available virtually anywhere.

Energy simulations show the home behaving very efficiently, rating a 75 on the HERS® Index—meaning that it is projected uses 25 percent less energy than does a typical home. “The simulation measured

everything that has an insulation value,” says HERS rater Frank Cooper-Berthe, owner of D.C. Energy Audits in Takoma Park, Md. Cooper-Berthe used the full set of working drawings to conduct the simulation. “That’s walls, roof, windows, doors—even the type of floor and foundation.” A score of 75 translates, in this case, to a \$751 annual savings for heating (air and water) and cooling, over the cost of a comparable home built to code.²

In conjunction with its material



A three-sided fireplace peninsula gently separates the family room from the breakfast area.



Upstairs bedrooms retain their privacy from the main level's high-traffic areas.



Online Now

In addition to this issue's feature home, we rated two other plans in our portfolio. They received HERS Index ratings of 82 and 68. To find out more about these homes, go online to www.ePlans.com and search for designs HWEPL00918 and HWEPL00892.

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specifications, the design of the home takes advantage of passive solar techniques to enhance its energy profile. Large windows and French doors surrounding the shared spaces invite daylight heat during winter months, lowering the demand on the home's heating system. In summer months, when the sun is higher in the sky, the covered porch shades those windows from solar gain. The open layout also allows cross ventilation along the width of the home.

Designed to Earn: A Good Start

The index of 75 also qualifies the home's predrawn plans for the Designed to Earn label. As part of the Environmental Protection Agency's (EPA) Energy Star program, the Designed to Earn label distinguishes plans that specify the energy-saving features necessary to build an Energy

Star-qualified new home. In other words, the Designed to Earn plans for the Skyway home are the blueprints to building an Energy Star-rated version of the home, pending onsite verification of the completed residence.³

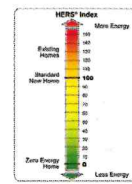
As green-labeling programs for house plans take firmer shape, plan buyers can expect to find the process of building a green home from predrawn blueprints become more streamlined. "But drawings alone do not make a green house," Rodwin observes. "You have to know how to build it and how to measure performance." Drawings that include critical information about insulation, windows, finish materials, and mechanical systems will allow the builder to concentrate squarely on the on-site factors that are specific to the project—completing the final steps of a successful green build.

1. For a more thorough history of the Modern Home mail-order program and to see photos of catalog pages, go to www.searsarchives.com.

2. The HERS® Index is a scale developed by the Residential Energy Services Network (RESNET), a nonprofit organization that certifies building energy performance. A HERS Index of 100 represents the energy use of a standard (built to code) home; an index of zero indicates that the building uses no net purchased energy. The HERS Index is a widely accepted standard, used regularly by the U.S. mortgage industry as well as the Energy Star program. For the purposes of the simulation, Cooper-Berthe assumed that the home would be built in Portland, Ore., and be equipped with Energy Star rated products, including a 94-percent-efficient

furnace. For more on the HERS Index, go to www.natresnet.org. Graphic courtesy of RESNET.

3. To read more about Designed to Earn and Energy Star for homes, turn to our story on third-party certification programs, on page 8.



Exposed rafters are another historically informed detail found on the exterior. Note the private deck that attends the upstairs bedroom.



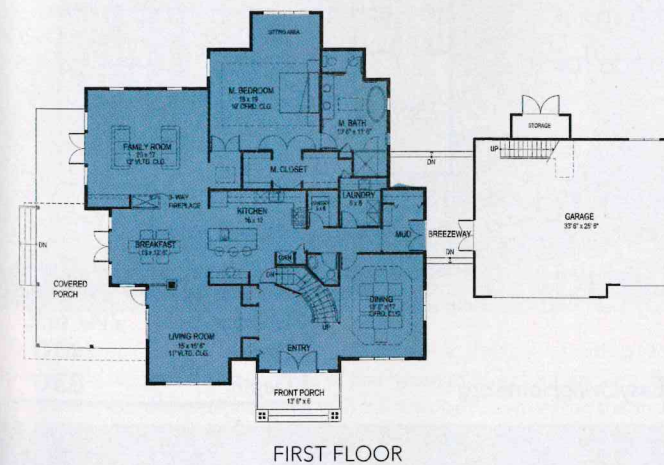
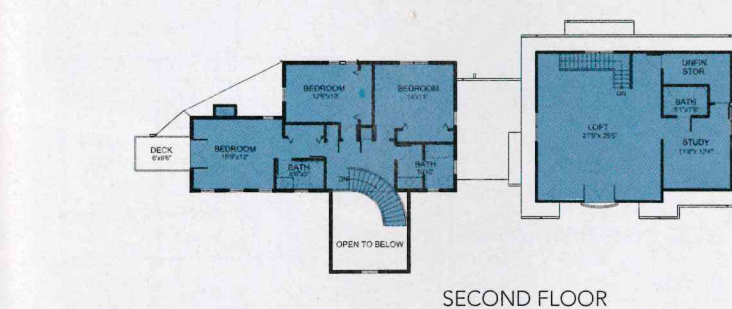
ECO0100134

First Floor: 2,574 sq. ft.
Second Floor: 880 sq. ft.
Total: 3,454 sq. ft.
Bedrooms: 4
Bathrooms: 3 1/2
Width: 97' - 8"
Depth: 61' - 2"
Foundation: Unfinished Basement

5-Set	8-Set	Repro	CAD	PDF
\$915	\$970	\$1,300	\$2,500	\$1,300



Wheat board was an attractive, sustainable choice for the kitchen cabinets. Easy access (at right) to the laundry, mud room, and garage add utility to this part of the home.



Coming Soon

In the next issue of EcoHome Designs, follow the story of a home plan that went on to earn the NAHB Green Building Program certification at the Gold level. Based on drawings by Alan Mascord Design Associates of Portland, Ore. and built by Lehigh Valley, Penn.-based studio26 homes, this ultra-efficient Craftsman is the product of sound predrawn design and smart on-site accommodations.