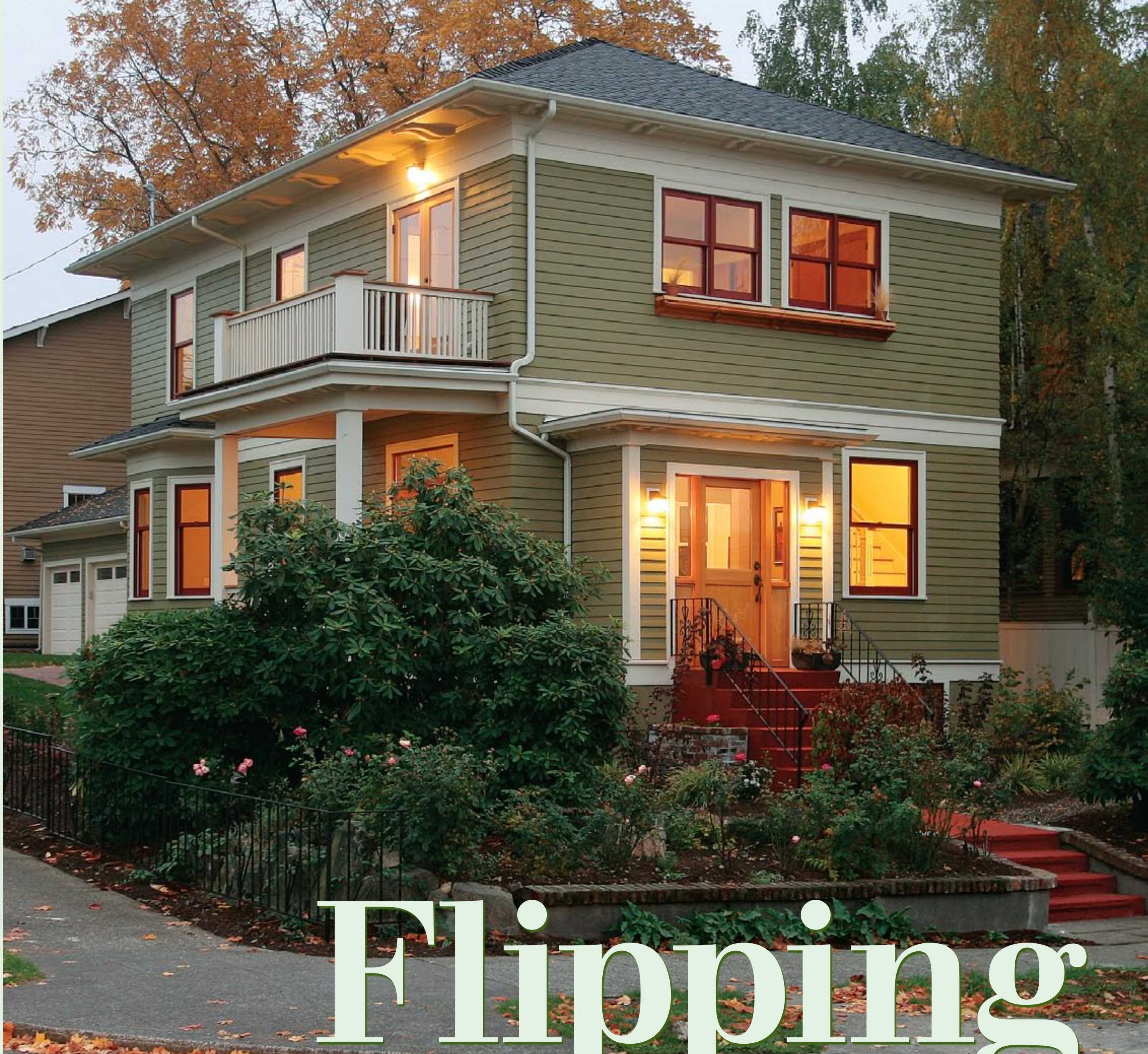


# Flipping

## In Seattle, a builder and architect prove that remodeling and energy efficiency can be a winning combination

**BY GEORGE OSTROW**

After years of building custom homes, a local builder decided to buy a fixer-upper to remodel and sell on their own for a profit. As the architect for many of their earlier projects, I've gotten to know the owners of LastingNest Builders (www.lastingnest.biz). When they asked me to help them transform this small, run-down house into a decidedly green one, I was happy to join the effort.

### Speculative need not be ordinary

Design isn't always the first priority for builders who are looking to flip a house for profit. In this case, however, we agreed that a thoughtful design had to be part of the equation because the house sits on a prominent corner lot in an established neighborhood. It's close to the University of Washington and Seattle's biotech district, and we were aiming to attract an educated buyer in a green-minded city.

The neighborhood and the large lot both called for a large house, so we spent some time looking carefully at nearby houses for design inspiration. This process led us to traditional details such as a bay window, backbands at the window trim, and drip caps at the trim bands and window heads. Early on, we talked about a big gable roof springing from the original top plates, but that shape cut the upper-story space in half. Instead, we chose a full second floor topped with a shallow hip roof that has generous overhangs; the

Inset photos left: George Ostrow

# Green

*Connecting to the outdoors.* *A brick patio sets the stage for outdoor dining just off the kitchen (photo above). Balconies off the living room and the master bedroom provide a connection to the outdoors and balance the bay-window bump-out. The style of the house called for a deep roof soffit. Custom-made brackets grouped in pairs add a signature accent (inset photo).*

Italianate style found on some nearby homes provided the inspiration.

### The existing footprint supports an addition

Now that the project is finished, people often ask how much of the original house is left. The answer is that all but the roof framing and interior walls remain. To expand the living space, we worked with the house's good bones and within zoning parameters to move up instead of out.

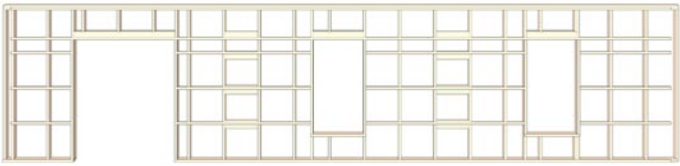
The house had a living room, a dining room, a kitchen, two bedrooms, and what was perhaps the city's narrowest bathroom, all on one floor. By demolishing the old bathroom, we opened the kitchen to one of the original bedrooms to create a family room; the other bedroom is now a study.

We put three bedrooms on the new second floor, each in a corner with windows in two walls. This layout allows for cross ventilation, which cools the house enough to eliminate the need for air-conditioning. Locating the two second-floor bathrooms back to back allows them to share plumbing, which made it easier to route the waste pipe through the existing first-floor rooms. A third of the existing old house was sitting on the ground, so we continued the foundation and turned the basement into a playroom, a workshop, a mechanical room, and storage space.

To extend the main room on each floor outdoors, we added a balcony deck off the

# ADVANCED FRAMING: LESS IS MORE, EVEN IN A SEISMIC ZONE

***Conventional framing*** *Total board feet: 488*

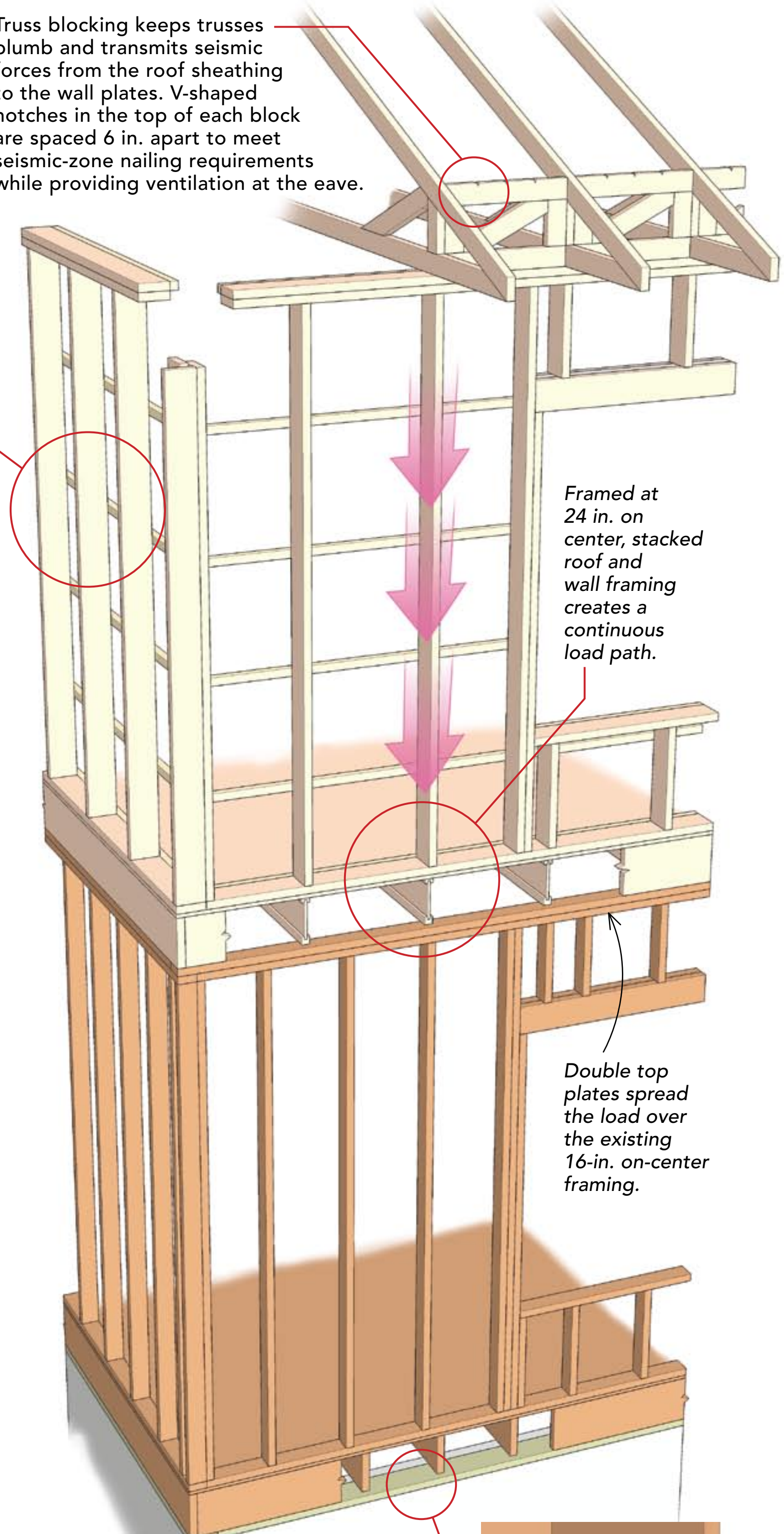


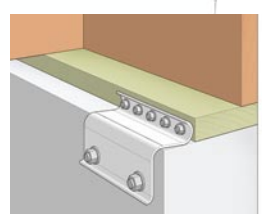
***Advanced framing with furring*** *Total board feet: 365*
*Lumber reduction: 25%*

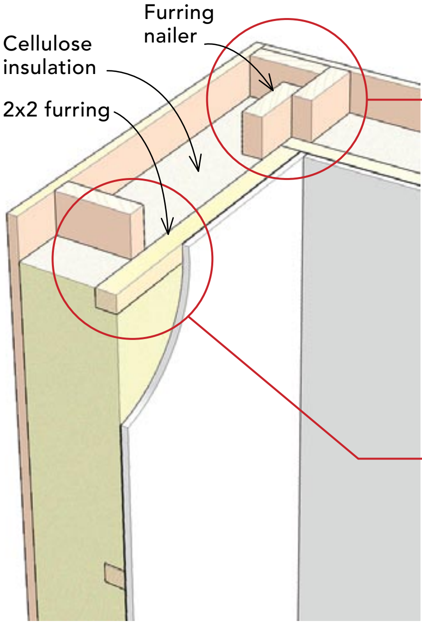
**This building approach uses less lumber** and creates space for more insulation. The basic practice is to frame walls 24 in. on center with a single top plate, a stack roof, walls, and floor framing to maintain a direct load path to the foundation; and to use two studs in the corners (drawings above). On this project, the second-floor walls were framed with 2x6s spaced 24 in. on center, then furred with 2x2s spaced 24 in. apart. Filling the resulting 7-in.-thick wall cavity with dense-packed cellulose insulation yielded R-26 with negligible thermal bridging (drawing below).

The first-floor walls were gutted to the original 2x4 studs spaced 16 in. on center, then insulated to R-11. At the time, the author decided not to fur out the first-floor walls because he was concerned about losing floor space and the hassle of adding custom jamb extensions around windows and doors. He now wishes he had.

A double top plate on the first-floor walls carries load paths from the 24-in. spacing above. Truss blocking, a double top plate on the second-floor walls, and Simpson Strong-Tie's Universal Foundation Plate fulfill seismic-zone requirements (drawing right).






Drawings: Dan Thornton

master bedroom and a porch off the living room. For a more gracious entry and for mud control, we included an alcove at the front door and a mudroom with a breezeway to the garage in back.

## A plan for recycling

A demo company could have knocked down and hauled the old house to the landfill in a single day. But we saw the value in the old-growth Douglas fir from which the house was built 100 years ago. We created a waste-management plan that identified what materials would be removed and what should be done with each of them.

Whatever we could not use on site was offered to salvage companies, including bricks, lumber, wood flooring, cabinets, and most plumbing and lighting fixtures. Asphalt roofing, aluminum siding, copper pipe, gypsum plaster, and concrete rubble all were recycled. Unfortunately, single-lite windows and dirty insulation couldn't be reused or recycled, so they ended up in the landfill. By following the waste plan and documenting each of the truckloads that left the site, we're sure that we recycled or salvaged 70% of the material that otherwise would have been thrown away.

***High ceilings and elbow room.*** *Moving the bedrooms to the second floor allowed the first-floor space to breathe. Veneer-plywood cabinets, a glass-tile backsplash, counters made of FSC-certified paper, and reclaimed apitong flooring work together to create a durable and sustainable kitchen.*

The crew sorted materials into piles that made finding them for reuse much easier. Lumber was stacked by length, so short pieces of blocking could be pulled from a pile of short 2x4s rather than cut from the end of a new board.

For many of the materials that were not reused from the existing house, we went to Craigslist (www.craigslist.org). A couple of the exceptional deals we found include salvaged apitong (a mahoganylike hardwood) flooring at 50¢ per sq. ft.; it typically costs $6 per sq. ft. We also got 1500 lin. ft. of salvaged 1x6 clear vertical-grain Douglas fir for free.

In the end, we used salvaged lumber exclusively for the first-floor walls and the floor framing. Rain-screen furring strips were ripped from salvaged interior paneling. We milled drip caps, window backbands, and soffit brackets from salvaged dimensional lumber. Salvaged flooring, sheathing, and bleacher boards became trim and layered belly bands. All lumber that wasn't salvaged was certified by the Forest Stewardship Council (www.fscus.org).

## A tight house with fresh indoor air

Every project we do gets an energy simulation to inform the design and a blower-door test to ensure a tight enclosure. For this house, a Remrate energy simulation (see *FHB* #198, pp. 18-20) calculated a HERS index of 54, which predicts a 46% energy savings compared with a house built only to code standards.

We did two blower-door tests, hoping to achieve at least 3.0 ACH50, which would mean that the building envelope is two times as tight as Energy Star requires. The first test was done when the house had just been closed in. The roof was finished and the windows installed, but the walls were not insulated or drywalled. The test resulted in a 4.0, which is good but not great. Compelled to lower the score, we filled all gaps that the test revealed—around pipe penetrations and window-shim spaces, for example. The second test was done after dense-packed cellulose insulation and drywall were complete and was used to verify the house for Built Green certification. This test resulted in 2.3 ACH50.

When you tighten a house, you also need to make sure that you provide adequate ventilation. For this house, we installed an in-line fan in the attic that draws fresh air from an inlet on the roof, runs it through a filter, and blows it into each of the three upstairs bedrooms at low velocity. Bathroom fans exhaust stale indoor air. The new mechanical systems in this house include a 94% efficient gas-fired boiler that delivers radiant-floor heat for all three levels.

One-quarter of all the new houses in Seattle's King County are certified Built Green. The house we worked on is one of only four remodels/additions to achieve Built Green's highest five-star rating, and it is also certified Energy Star. Fortunately for us, educated homebuyers are starting to look at energy-performance ratings when they are house-hunting. For savvy green buyers in Seattle, this remodel should prove to be a wise purchase. □

George Ostrow is president of Velocipede architects inc. (www.velocipede.net) in Seattle. Photos by Chris Ermides, except where noted.