DETAIL

BEST ENERGY-EFFICIENT WALL DESIGN

by Clayton DeKorne

Thomas Brown, an architect from Stevens Point, Wis., won the best wall design at the 1991 Quality Building Conference held in Springfield, Mass., and sponsored by the New England Sustainable Energy Association. Brown's entry for an energy-efficient strapped wall was judged by an architect, an engineer, and a builder for "energy efficiency, buildability, simplicity, and innovation."

Brown's design combines conventional framing methods with several energy-conserving construction practices (see illustration). Brown claims his design "is very forgiving…and allows flexibility in the completion of the project." Most of the energy-conserving measures have been added to a standard 2x6 wall, he explains, and don't require a whole new method. "In fact," he adds, "it is possible to revert to more standard practices if budget or other constraints prevail."

Tight construction, rather than high R-values, distinguishes this award-winning wall

The basic wall consists of an insulated 2x6 stud wall covered on the inside with 1/2-inch foil-faced rigid insulation and strapped with 2x2s before the drywall is secured. With batt insulation, Brown claims the R-value of the wall materials adds up to about R-28, including an air space next to the foil-faced insulation. But Brown is quick to point out that high R-value is not the key to the wall's good performance, but rather tight construction.

A tight envelope depends on following through with several sequences. Most important is careful attention to the air/vapor barrier. Here Brown urges a few departures from conventional practice:

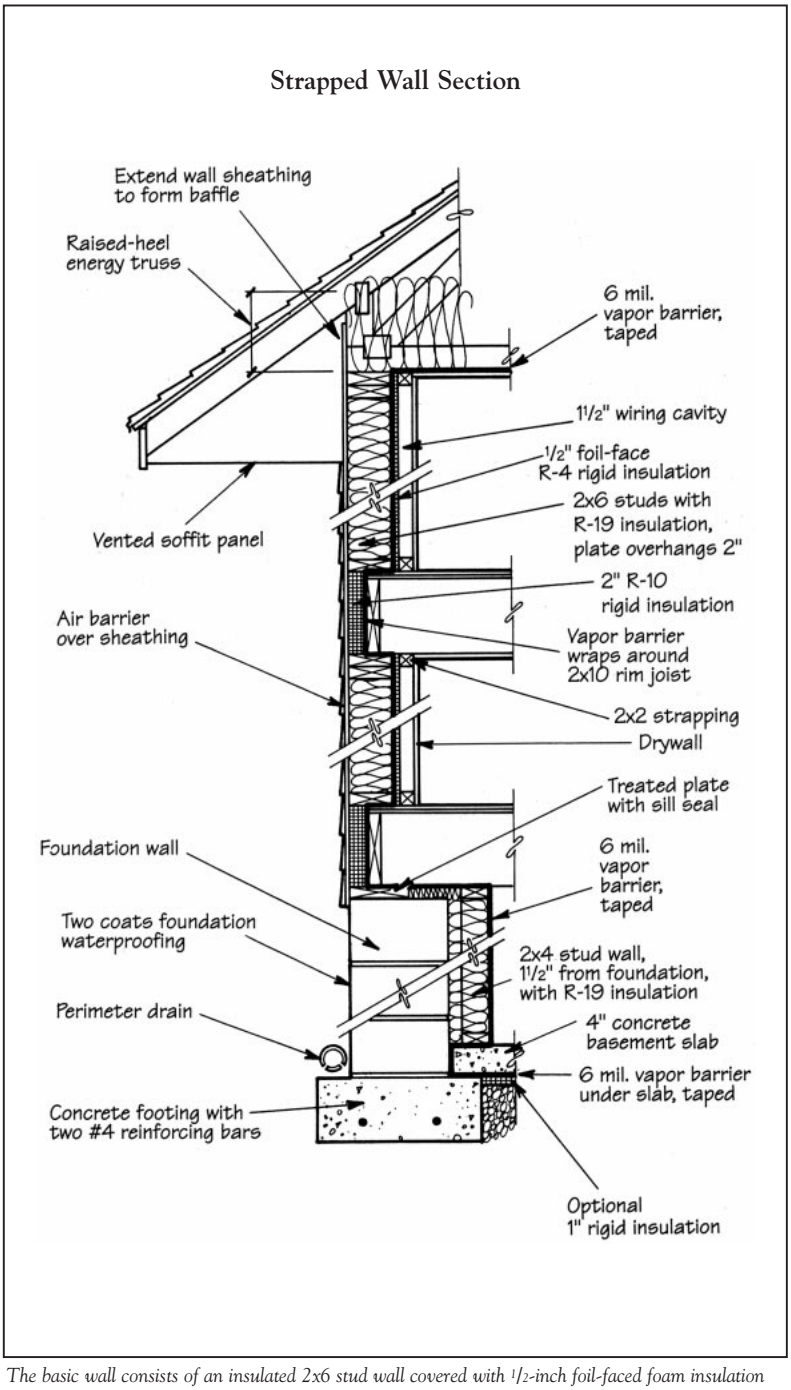
First, the vapor barrier must form a continuous envelope around the entire house. To achieve this, Brown calls for (1) running the sub-slab vapor barrier up the foundation wall before pouring the slab; (2) draping a wide strip of 6-mil poly over the top of the sill plate before the joists are laid down; and (3) running strips of poly around the rim joists and over the top plates on the upper floor. These steps leave tabs that can then be taped to the vapor barrier on the walls and ceiling.

Second, Brown calls for overhanging the 2x6 wall plates 2 inches so the rim joist can be inset to accept rigid foam insulation on the exterior.

Third, rough openings for windows are oversized by 3 inches in width and height, and the window is installed on added 2x4 nailers, creating a step for recessed wood trim.

Brown has designed about 15 houses with some variation on this wall, and in many cases, he says, the builder liked it enough to adopt it on other projects. Brown attributes the success of the design to its versatility. The strapping, he says, is a high performance feature that is not absolutely necessary, but which adds an extra level of efficiency. Without the air space and the electrical raceway, the wall can still perform better than average if care is taken around electrical boxes and other penetrations. And even if the interior foam is eliminated, the continuous vapor barrier and rim joist detail make a difference.

Brown has worked up a full set of construction notes and drawings of his wall. For a free copy, send a self-addressed stamped envelope to Wall Detail, *JLC*, RR#2, Box 146, Richmond, VT 05477. ■



The basic wall consists of an insulated 2x6 stud wall covered with 1/2-inch foil-faced foam insulation and 2x2 strapping on the inside. Note the indented rim joist to accept 2-inch rigid foam on the outside, and the continuous vapor barrier.

Clayton DeKorne is an associate editor at The Journal of Light Construction.