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Homes
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Remodeled home blends with old neighborhood

Energy Efficiency

By Steve Andrews

If you like established city neighborhoods, but need more space and want all the features of a new home, you can pick up a few ideas from architect Doug Walter's project at 137 Dahlia St.

Although he added a major addition and remodeled his family's ranch-style home, it still fits into an older neighborhood.

It also illustrates ways to dramatically improve comfort and energy efficiency, while adding space with style and grace.

These were the primary reasons Walter's home was selected for coverage by *A House for All Seasons*, the locally produced Public Broadcasting Service series on lifestyle issues and energy-efficient housing. His home will be seen on Channel 6 at 5:30 p.m. on May 4 in a show featuring expandable home concepts.

BUT TO say Walter's remodel/addition was a major one understates the scope of the project. In the process of more than doubling his original home's size, he gutted the 2,000-square-foot, all-brick structure. He created such havoc with the existing building that his neighbors kept asking why he didn't just bulldoze it and start from scratch.

"For a while, our house looked as if it had taken a direct hit from a large bomb," Walter said. "But the challenge is to work with what's there because it's always cheaper that way. It helped us get what we wanted: a larger home that is essentially new, at a lower cost than if we built from scratch, in a close-in established neighborhood."

Walter kept 75% of the outside brick walls, and used the existing floor and foundation, which considerably speeded up construction. Yet he also wanted to add 2,600 square feet of living space without losing much more of his lot. He added a second story, relocated the garage and utility rooms on under-utilized lot space, and added a partial basement under the garage and utility rooms.

For his exterior, Walter used one continuous product — exterior foam insulation. He covered it with a maintenance-free synthethic stucco that provides a common surface tieing the old and new structures. It also improved the comfort level.

"We were tired of cold walls in an old drafty house," Walter said. "Our last all-brick home was like an icebox in winter. It was so bad that we had to abandon the living room during the coldest months. How do you measure the economic payback on such a critical feature as comfort? It simply wasn't an issue."

THE 3-inch layer of foam — good for an R-13 insulating value — was glued outside the brick walls. Walter also dug around his foundation in order to extend the foam 3 feet below grade. With some simple monitoring equipment, Walter established that his retrofitted foam insulation keeps the outside layer of the old brick wall 25 to 30 degrees warmer than the outside air temperature on cold winter days — a good improvement but not quite as good as advertised. Next time, he would add 4 inches of foam instead of 3.

While the insulation has had a significant impact on heating bills, Walter included other upgrades that also helped save energy:

- Low-E windows. A special coating on one layer of glass in all his replacement windows increases their insulating value nearly 50%, compared to double glazing. It also provides much better comfort in heavily glazed areas, and nearly eliminates condensation.
- More insulation. The upper level addition has R-30 walls, and the ceiling there and elsewhere was increased to R-40.
- Passive solar water heater. A coated tank under double glazing in a heavily insulated container acts as a hot water preheater. The system has no moving parts, minimizing maintenance concerns. This solar water heater was flush-mounted to the roof, which kept it completely out of view but at a slight loss in performance.
- Zoned heating. In such a large home, the high-efficiency hot-water heating system, with five separately heated zones, offers the kind of control needed to keep heating bills down. Each zone has its own thermostat.
- Relatively tight construction. Walter tried to minimize air leakage. Since foam/stucco systems inherently tend to be tighter than most other sidings, Walter built in a measure of safety and comfort by including an air-to-air heat exchanger to provide a controllable supply of fresh air.

A popular misconception is that tight homes are more of a health hazard. But they are not any more of a hazard than "leaky" homes, according to the Lawrence Berkely National Laboratory.

Since the home faces east and west, there was almost no opportunity to take advantage of solar gains through south facing windows. Given this limitation, the home is a surprisingly good energy performer. Using the Denver Energy Resource Center's new home energy rating, the Walter home is "7." By comparison, the average for more than 100 similar Denver designs — 2-story, gas-heated, with four occupants — is 14. With this "reversed-mileage" rating system, the lower the number, the better the home's rating.

In summer, the east and west windows will pick up a fairly large amount of unwanted heat. However, if the house is ventilated at night, the brick walls — now inside the insulation — will cool down enough to maintain comfort during hot summer days. Their whole-house fan can inexpensively boost night ventilation.

The foam and stucco exterior gives this structure its "new-home" look. But it took a careful and comprehensive design process to ensure that the additions didn't stick out like afterthoughts.

"If you can pick out what I've added on to the home, I've failed," said Walter, whose specialty is remodeling. "With a somewhat plain-looking ranch like the one we started with, you always want to look at it with an eye toward improving it, trying to determine, if you will, what it has the possibility of becoming."

Walter transformed his home into a mix between a prairie school look — dating from the 1920s — and a more contemporary southwestern style ranch.

SINCE THE original ranch had a long facade, Walter felt it was important to break up the large planes and potentially big front walls. To this end there are three depths to the front elevations, the same as on the original, though the new garage was brought forward on the least-used part of the lot. A narrow continuous section of roofing located above the new bay window and between the first and second floors is another means he used to add interesting lines. The front walled courtyard, an additional facade breaker, links the indoors and outdoors while creating an air of privacy.

To make sure the second story master suite addition fit in with proper balance, Walter reluctantly went with more space than he needed. The bedroom, bath, huge closets, and second story sunspace come to 850 square feet. He claims the price of adding a second story —

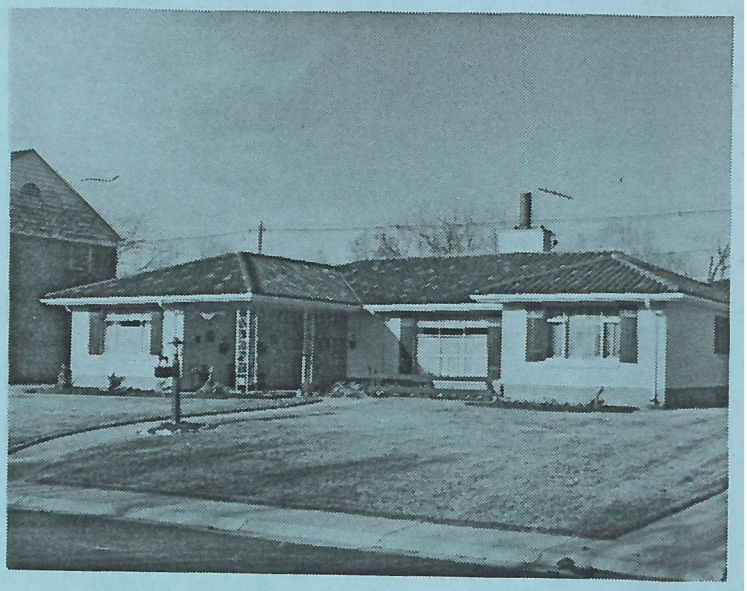
about $75 per square foot — is no greater than the cost of an addition at ground level.

A Walter trademark is a generous use of chimneys, some of them false, to reaffirm what he calls "anchors to the sky." He sees them as a way to maintain scale and evoke an emotional response rooted in tradition. Often he will use two false chimneys, as he did here.

When it comes to thoughtful planning, the Walter home's elegant interior matches its exterior. Nicely balanced daylighting illuminates the stunning new white-oak floors. An unusually open plan in the living-dining and the kitchen-family-room areas seems to elicit positive comments from visitors. Clever clustering of multi-function utility spaces between the garage and kitchen-family room keeps a cap on normal household clutter.

The attention paid to fitting into the established neighborhood helped Walter's home earn an appraisal value matching what he had invested in it. Clearly, he had followed his own maxim: "The difference between a well-done addition and one poorly done is that one is a good investment and the other is a foolish expense."

Steve Andrews is a residential energy design consultant, freelance writer, and writer/researcher for the Channel 6 series A *House For All Seasons. The series airs at 5:30 p.m. Sundays.*



Doug Walter's home at 137 Dahlia St. was a typica Denver ranch-style house, top, before he went to wor on it. It gained a sleek appearance with remodeling an an addition. It'll be on *House for All Seasons* May 4.