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Historic, Older Homes Benefit From 'Going Green'

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By John Byrd

In the old days in Old Town, nobody was green. The locals built houses that were solid, but drafty, then piled logs on the fire trying to stay warm. It's like they never even heard of R-30 insulation or Argon-filled windows.

Today, the owners of those charming but troubled homes are trying to rectify the mistakes of the past. Take a classic home on Prince Street – a distinctive Greek Revival built 150 years ago, when Alexandria was a booming river port. The owners recently invested in a major renovation, shoring up the walls and foundation and adding a new three-story rear addition.

In the process, they managed to render the house a model of energy efficiency. Their contractor, Kingston Custom Builders, took a “whole house” approach to improving the structure’s “energy efficiency problems,” best described as dollar bills floating out the doors and windows.

“They were definitely heating the outdoors,” says John Schmitt, Kingston’s vice president and resident old house guru. Schmitt, who recently completed a green professional certification course at the National Association of Homebuilders, says current technologies make it possible to retrofit older—even very old—homes so they perform as efficiently as new ones.

“But, in this case, the problem was more complex than usual.”

For example, Kingston’s systematic, whole-house operational analysis revealed some surprising reasons why the first floor always seemed much colder than the upper floors.

“Wicking,” says Schmitt, matter-of-factly. “The basement stayed wet nearly year round, and the walls soaked it up like a big sponge. The house was drafty to begin with, but the damp air compounded the problem.”

To stop the wicking, which Schmitt testifies went as high as six feet into the living room, Kingston carefully replaced a layer of mortar in the foundation with metal flashing, creating a moisture barrier. But the drying process was accelerated by the new heating system they installed: radiant flooring.

“In terms of long-term energy efficiency, it’s an excellent option,” says Schmitt. “Radiant



flooring is basically a system of underfloor pipes linked to your hot water heater.”

As the term implies, heat radiates from the floor upward — through the walls and, most importantly, at your feet. “It heats uniformly across the whole surface,” Schmitt says. “With a forced air system, the area is warmest near the vents; in an older house this can mean you’ll need to supplement with a space heater, which of course, adds cost.”

In fact, the Radiant Panel Association (RPA), a trade group specializing in hydronic technologies, says a heat conductive floor can reduce cost associated with forced-air energy usage by 20-30 percent.

Remarkably, the thermostatically-controlled water running through the system is typically set to be no warmer than a kitchen hot water tap. “It’s not like the old radiant flooring, where 120 degree water ran through copper tubing set in cement,” says Schmitt. “Now the floor panels and tubing are pre-assembled. On Prince Street, we laid an extra layer of R-30 insulation below the panels to help direct the heat flow. In a situation like this, you don’t even need to remove the existing floor planks.”

The new heating system, which covers 800 square feet on the first floor, allowed Kingston to remove certain non-period elements in the home: the cumbersome radiators beneath the windows and the forced-air ducts in the walls above. With visual obstructions eliminated, the restored mid-19th century interior elevations are pristine and symmetrical.

Of course, sealing the envelope of the existing structure was also critical to success.

“Older houses in particular tend to be discretely permeable,” says Schmitt. “For instance, we found it was necessary to insulate the ceiling of the crawl space below the house. We used a non-expanding foam around outlets, switches and window frames. In the attic, we spot-insulated with foam, then added a layer of R-30 insulation.”

The company also installed low-E, Argon-filled windows in the new rear addition but kept the original single-pane “bullet glass” in the historic front-facing part of the house. “We rebuilt the old divided light windows frames, which tightened up the glazing surfaces in the front elevation significantly,” says Schmitt.

The second and third floors were upgraded with an advanced Hi-Lo Heating and Cooling diffuser system. Upper vents supply the cool air in the summer; lower vents, the winter’s heat.

Also, replacing outmoded kitchen utilities with Energy Star appliances and lighting fixtures assured that daily chores could be carried out with state-of-the-art energy efficiency.

A whole house energy conservation strategy, says Schmitt, focuses on a few simple, well-integrated goals: reducing drafts and air leaks; achieving consistent temperatures across rooms; improving ventilation and humidity control; specifying the appropriate appliances and fixtures.

“Accomplishing these things will automatically reduce your energy costs,” he says, adding that Kingston routinely “foams” around switches, outlets, and windows as part of any project. “These are practical steps anyone can take. And it’s a lot easier than cutting firewood.”