

Classic Character, Modern Comfort



Behind the brick lies an airtight envelope and an extravagant bath

BY JASON BLACK

The inspiration for the house we're building comes from time Gretchen and I have spent in historic southern towns, particularly Charleston, Savannah, and New Orleans. Like our New Urbanism community here in Norton Commons, the historic neighborhoods in these cities were developed with a mix of commercial and residential buildings. Walking the side streets and alleys of the Battery in Charleston, we were struck by the impact of a well-designed porch railing and the shadowlines created by wood window trim on an otherwise very simple and modest house. A mix of brick, wood, and stucco structures all from the same period can be found on the same street in these neighborhoods. We wanted

to build something that added similar variety to our streetscape—within the parameters enforced by our architectural review board.

We have five style categories within the community pattern language book. For the *Fine Homebuilding House*, we designed within the Classical Vernacular category. We wanted the house to capture what we think is the best of historical southern design. On the exterior these hallmarks include our two-story front porch, the towering windows stretching 8 ft. up from the floor and flanked by operable shutters, and the built-up eave moldings to come later.

Historic southern houses in urban settings like Savannah and New Orleans are often brick—we liked



Brick and mortar. On a street of houses wrapped with fiber-cement products, the brick cladding adds warm, rich color and is a nod to historical southern design.

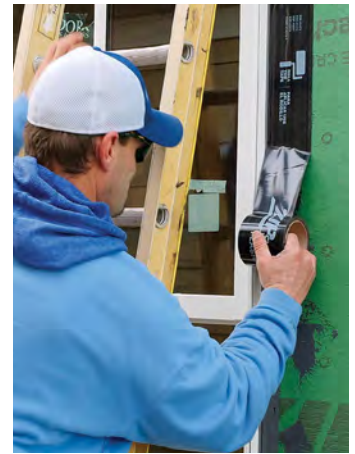
FOLLOW THE BUILD IN THREE PARTS

- Planning & Framing
- Envelope & Mechanicals
- Design & Reveal

In this three-part series, we explore the design and construction of a traditionally styled house in Kentucky. This installment covers the envelope and wet-room prep that provides comfort and durability.

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PRODUCT KNOWLEDGE

Windsor Doors and Windows

- Patio doors in swinging and sliding configurations in heights up to 10 ft.
- Sliding doors available for up to 20-ft. opening and bifold doors up to eight panels wide
- Windows and doors in traditional and contemporary styles and several materials: clad wood, cellular pvc, and vinyl
- Energy Star-certified windows with Cardinal LoE³-366 glass
- Durable, extruded aluminum cladding and convenient tilt-in sashes

the idea of brick for our house to differentiate it from all of the nearby fiber-cement lap-sided houses. The brick we chose has a weathered, aged appearance, and the Flemish-bond pattern our mason laid both looks good and gives the appearance of a full, two-brick-thick wall. The Flemish bond is limited to the front of the house. Because the homes are so close together in Norton Commons, we focused our budget for special touches on the front; design flourishes on the other three sides would never be seen. By the same token, the front windows and door have a thick limestone sill, while elsewhere on the house we laid bricks on the flat to create a sill. The contrasting color and the texture of the limestone and the more pronounced shadowlines are worth the expense on the street side of the house.

Windows set the tone

We chose Windsor windows because they are on the town architect’s approved list, they come in the sizes we needed for this project, and

they are Energy Star qualified. We used Windsor’s Pinnacle line of wood windows with white aluminum cladding and specified the mullion dividers on the outside. This creates a more realistic impression of a true divided-lite window, putting the shadowlines on the exterior. On the front elevation, the six-over-six windows are centered over each other, and we were also careful with the proportions of our lites—we wanted them to be vertically oriented rectangles somewhere between 3:2 and 4:3, roughly the proportions of the human face. The 8-ft.-tall double-hung windows on the front of the house flood the rooms with light; reinforce the connection between the house and public sidewalks, promoting the sense of community; and are accurate to the design language of the house. On the second floor, a six-lite door accesses the balcony off the master bedroom.

At the rear of the house, the indoor-outdoor connection relies on the 12-ft.-wide opening between the family room and the covered porch. The four-panel bifold door has one panel that operates as a

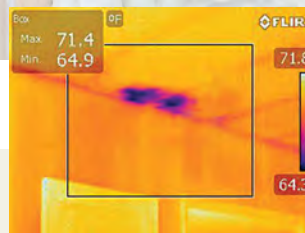


Spray and seal.
We used single-application low-VOC open-cell foam to insulate the stud and rafter bays, helping to air-seal envelope penetrations and seams.

single swinging door and the other three slide accordion-style against the jamb. This offers great flexibility: On pleasant days, the entire wall can open up and the family can flow freely between indoor and outdoor spaces; in the hottest part of the summer, the single door will provide access to the outdoors while conditioned air remains in the interior space.

Sheathing and insulating for a tight seal

With the house dried in, we turned our attention to the energy performance. As I start thinking about energy efficiency, my reference point is homeowner comfort rather than a particular performance benchmark—the owner expects to be comfortable in the house and expects utility bills to be relatively low. How we meet these goals depends on the project budget, but we always start by air-sealing because the amount of insulation won't matter if there's uncontrolled air infiltration through the envelope. The Zip System R-sheathing is our air

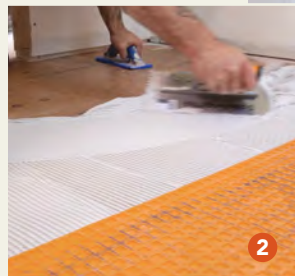


PRODUCT KNOWLEDGE

Flir

- Advanced thermal imagery finds air leaks and insulation voids, and pinpoints temperature deviations
- Camera size and performance for a variety of trades: from smartphone plug-in to pocket-size full-feature to high-resolution handheld cameras for energy raters





PRODUCT KNOWLEDGE

Schluter

- Kerdi waterproofing membrane can be applied over bathroom wall and floor substrates or installed in board form with the membrane integrated to rigid-foam sheets
- Kerdi-Board can be used to form structural features like benches
- Prefabricated shower niches with adjustable-height shelves integrate seamlessly
- Ditra uncoupling membrane allows tile to move independently from wood subfloor
- Installing Ditra with Kerdi-Band at the seams fully waterproofs the floor

barrier on the walls. We air-sealed all of the panel-to-panel joints with Zip System liquid flash, which we also spread over the nail heads in the field of the panel. Unlike Zip System tape, the liquid flash can be applied when the sheathing is wet (although the temperature has to be above freezing). We found the liquid flash is particularly suited for flashing through-wall pipe penetrations as it's much easier and faster to get a good seal. On the windows and roof we used Zip System tape to flash and air-seal.

We used spray foam to insulate our assembly and as an additional air-sealing measure. In the basement, the walls are framed 1½ in. off the face of the concrete and insulated with 2 in. of closed-cell foam. This assembly controls water-vapor diffusion to the interior and leaves plenty of room to run wires and plumbing.

All of the above-grade insulation is open-cell Icynene Classic Ultra Select. Our installer recommends it because it's a low-VOC water-blown polyurethane spray foam. Before the insulators began

spraying, they used sealant on joints between framing members on exterior walls—such as window headers and jack studs—for better air-sealing. This foam doesn't require an ignition barrier, so it works well in our unvented attic. (The attic is part of our conditioned space, so we can run our ductwork for the forced-air heat-pump system through it.) We sprayed R-40 to the underside of the roof sheathing and R-13 in the above-grade walls.

When the insulating was done, our energy rater conducted a blower-door test to direct the insulation team to air leaks and touch them up. This is an important step, as the expanding foam can visually hide small areas the installer missed on the initial spray. Sealing these small air leaks brought the final blower-door result to a tight 1.42 ACH50, which will keep the house comfortable. The rater's modeling shows our heating and cooling loads (22 kBtu per hr. and 13 kBtu per hr. respectively) will be met economically at around \$250 annually with the ground-source heat pump.



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The *Fine Homebuilding* House is supported by a host of industry sponsors. As a brand, we're not comfortable telling you to put products in your homes that we wouldn't put in ours. So, we've worked closely with our design and build team to identify appropriate products to include in this build. Our sponsorship model is built upon an invitation-only basis. Visit FineHomebuilding.com/fhb-house for a complete list of project partners and for more information on the materials used in the build.

- 1 ADHERE** Schluter-Kerdi membrane to the shower walls and mortar bed.
- 2 APPLY** Schluter-Ditra uncoupling membrane and vapor barrier to the bathroom floors.
- 3 WATERPROOF** the Kerdi and Ditra joints at the curb and floor-wall intersection with Kerdi-Band and preformed corners.
- 4 PLUG** the drain and fill with water to test the shower.
- 5 ESTABLISH** layout lines and install tiles.

Wet room is the focal point

In our market, “homeowner comfort” includes a focus on luxury. One place where customers desire quality and comfort is the master bath. For this project, I wanted the space to create a spa-like experience: A 214-sq.-ft. retreat from the rest of the house where the owners will start and end the day. The focal point of the space is a large wet room containing his-and-hers showers and a bathtub. With two sets of showerheads and a rain head as well as a soaking tub, waterproofing the enclosure is critical.

First, we had to figure out the shower pan. Faced with sloping the oversize area to a central drain, we decided the best approach would be a traditional mortar bed that we'd waterproof with Schluter-Kerdi. Using the Kerdi membrane on the walls as well meant we could use drywall for the substrate. The Kerdi is a fleece-backed, modified polyethylene membrane. The 6-ft. 7-in.-tall roll is installed in one continuous piece on the three shower walls and in one single

piece on the floor. This means fewer seams to waterproof with Kerdi-Band and fewer locations with overlapping membranes to tile over.

We used a Schluter-Ditra uncoupling membrane on the floors in the bathrooms so that any movement in the wood floor system over time doesn't cause the tile or grout to crack. The tile patterns that Gretchen designed for our bathrooms all have large-format tiles, so the Ditra is relatively cheap insurance for the investment in tile, labor, and our reputation.

At this stage, our focus turns to the final phase of the build. In the next issue, we'll look at the finishes Gretchen and I have chosen and why they work, especially in the kitchen and backyard entertainment area. □

Jason Black is a founder and owner of Artisan Signature Homes in Louisville, Ky. He has updates of the build on his YouTube channel, Building a Better South. Photos by Tim Furlong Jr, except where noted.