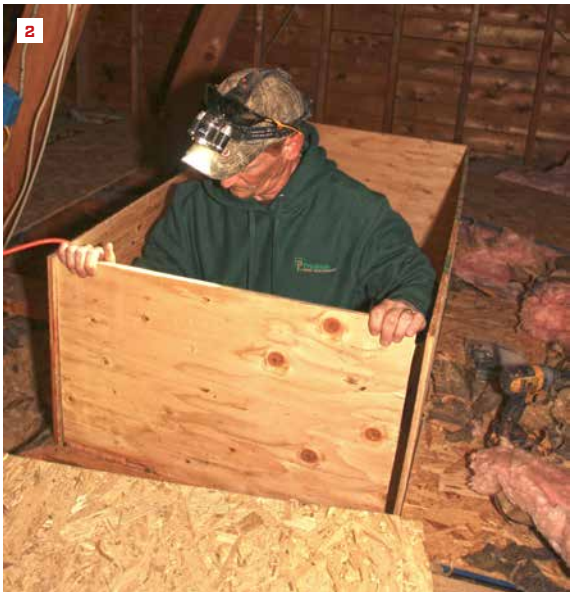

Before rebuilding an attic hatch, home-performance-retrofit technician Marcus Clement builds a plywood dam around the attic floor opening to contain blown cellulose insulation **(1, 2)**. The full job included removing all the old, low-performing batt insulation from the attic, sealing air leaks, and blowing an R-60 cellulose blanket into the attic.

Photos by Ted Cushman

A Site-Built Insulated Attic Hatch

BY TED CUSHMAN

Updating the attic of an existing older home is bread-and-butter business for Matt Damon and Paul Shepherd, the owners of Penobscot Home Performance, in Bucksport, Maine. In May, *JLC* stopped by a jobsite in Rockland, Maine, to see the company's crew building and installing an insulated hatch in the attic.

The full attic job included removing all the existing fiberglass insulation, sealing up all the typical leaks (including partition-wall wiring penetrations, recessed lights, bath fans, and a chimney chase), and then blowing an R-60 blanket of cellulose insulation into the lid. "We blow at 18 inches depth, and it settles to 16," explained Matt Damon.

Retrofit standards in Penobscot's market call for an airtight attic hatch that roughly matches the insulation value in the rest of the attic. Over the years, Damon, Shepherd, and their crews have worked out a solution: a lightweight panel door with a handle in the center, topped by several 2-inch layers of rigid insulation (either polyiso or extruded polystyrene), for an R-value of about 40.

"We put a 1x2 ledger around the opening, and we kerf in a weather strip for airtightness," said Damon. To gain access to the space, the homeowner pulls down the existing access ladder, grasps the door by the handle, and lifts it up. To secure the closed door, the owner dogs it down with window sash locks installed at both ends.

"The design has evolved over time," Damon said. "We used thicker plywood for some of the first ones we made, and those doors were kind of heavy and hard to lift. Now, we use thin AC plywood, or even lauan. We used to use hook-and-eye hardware to lock the doors down, and we've found that the window sash locks are easier to use and work better."

The Penobscot crew tests its jobs with a blower door on the way out, to make sure each job is meeting program targets. The attic hatches are "super tight," Damon said. "Once in a while, if the caulking detail around the ledger isn't perfect, you can get a little air coming out. Then the guys go back and do what we have to do to fix it and tighten it up."

Ted Cushman is a senior editor at JLC.

Clement screws a ledger to the plywood hatch box **(3, 4)**. After measuring the opening and cutting a piece of plywood to size, he screws a cabinet door handle to the center of the door **(5)**. The door handle makes it easy to carry the door blank back to the opening for test-fitting and scribing **(6)**, so that he can trim the door as needed for a better fit.

Clement test-fits the thin plywood door blank in the opening **(7)**. Once the piece is trimmed to fit, he screws a 1x2 edge to the blank **(8)** and cuts out foam insulation for the door, using a handsaw **(9)**. He stacks up the insulation **(10)**, secures it with foil tape **(11)**, and installs weather stripping on the door edge **(12)**.

Building a Decorative Cupola

BY BROOKS BAKER

In the northwest corner of Arkansas where I work, most cupolas you see are rotting away on top of dilapidated old hay barns, where the only creatures that seem to enjoy them are the resident cows. So I was a bit surprised when a client approached me about building a cupola on the roof of her home. This one would not be functional for ventilating the building below, like those on the barns, although it could have been with a different installation strategy. Instead, it would be purely decorative—a way to dress up an otherwise straight and boring roof.

Before I began building the cupola, I did some research to determine a size that would be proportionate to the roof. On the internet, I found a formula that would work well for this project: Each side should be about 1¼ inches wide for every linear foot of roof ridge. The ridge measured 29 feet long, so I decided on a cupola that was 36 inches square.

The construction was actually quite simple. I made it in three parts: a base that would saddle over the ridge, a main section with louvered sides, and a hip roof with surfaces that curved up to a point. I used cedar and exterior-grade plywood for all the components and gave the whole cupola three coats of white exterior paint.

Brooks Baker is a finish carpenter who works in Fayetteville, Ark.

Building the frame. First, the author built the 2x6 frames for the top and bottom of the cupola's louvered center section. To help prevent water from collecting on the horizontal surfaces, he milled a 20-degree bevel along the outside edges of the frames. For each frame, he cut four 36-inch-long pieces of 2x6 with mitered ends and assembled them picture-frame style using exterior glue and pocket screws **(1)**. Diagonal measurements confirmed that the assembly was square **(2)**. He glued and screwed the first frame onto 4x4 cedar posts that he finished with chamfered edges **(3)**. After flipping the assembly over, he glued and screwed the second frame, with the bevel facing down, to the other ends of the 4x4 posts **(4)**.

Photos by Mike Baker

Adding the louvers. Before installing the louvers, the author attached a beveled sill to the frame between the posts, to help shed water **(5)**. He laid out the louvers on the jambs, spacing 35-degree lines evenly top to bottom **(6)**. After installing the jambs, he glued and nailed the louvers—each of which had been cut to a 35-degree angle along one edge—to diamond-shaped blocks that separated each layer **(7)**, leaving enough room at the top of each louvered section for a decorative frieze. For scribing the gentle arch on the frieze boards, a thin ripping acted as a batten to create a perfectly even curve **(8)**. The author cut the curve on a band saw, smoothed and chamfered the edges of the boards, and glued and nailed them to blocks at the tops of the louver jambs **(9)**.


10


11


12

A "witch's hat" roof. To make the swooped roof on the cupola, the author cut four hip rafters, which met at the peak, out of cedar 2x6s **(10)**. He created the curve using the same batten method he'd used for the curved frieze. Right-angled plumb cuts at the bottom of each rafter would provide attachment for the cupola fascia. After screwing rough-cut pieces of 1/2-inch plywood sheathing to the rafters to create the swooped roof planes **(11)**, he shingled the cupola roof with architectural-style shingles to match the roof below, using a narrow, 4-inch shingle exposure to provide better coverage. He used cap shingles along each hip; the housing for a weather vane sealed the peak.


13


14


15

Assembly. The cupola's base, which saddled the ridge of the roof, was made from 3/4-inch exterior plywood, with corner gussets for reinforcement and boards applied to the exterior for a paneled look. To secure the base to the roof, the author screwed it to blocks that had been screwed to the roof and sealed with silicone caulk **(12)**. Caulking sealed the sloped edges of the base, but the bottom edges were left open to allow water to escape **(13)**. After painting all surfaces, he screwed the louvered section to the base **(14)**. He then added insect screen inside the louvered section, and screwed the roof section on **(15)**. A decorative weather vane topped off the completed cupola.