Wide-open bath
Curbless showers are sleek and accessible

Perfect doors in crooked old walls

Time-tested chimney flashing

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Old-School Path to a Wide-Open Bath

At age 10, Tom Meehan got his first taste of tilework when he started mixing mud for his father, a professional tilesetter. Almost 50 years later, Tom is now a master of tile and with his wife, Lane, owns Cape Cod Tileworks in Harwich, Mass. The couple co-wrote Working With Tile (The Taunton Press, 2005), and Tom has written on all things tile-related for Fine Homebuilding since 1991. To this day, Tom incorporates lessons he learned from his father, especially when it comes to his favorite method for a tile-floor installation, the classic mud job.
Life is full of uncertainties. You can count on a few things, though, and here’s one of them: Water runs downhill. In a bathroom, the trick is to keep water going toward the drain. Porcelain vessels are good at containment, but switching from a tub to a shower stall changes the game. Curbless showers, which make life easier for folks with special needs, also complicate the issue of the drain.

Before the advent of tile backerboard, tile was set on a substrate of troweled cement mortar, known in the tile world as a mud job. I’ve learned to apply this mud-and-tile method to a curbless shower so that the water goes where it’s supposed to. (For a look at a similar job, see my article “A Sloping Floor for a Barrier-Free Bath,” FHB #185.) For this job, I also installed a linear drain along the far wall, which means that the shower floor is pitched in only one plane, rather than in a bowl shape around a circular drain.

Prep the subfloor first
I begin by lowering the subfloor in the area of the shower so that I don’t have to use as much mortar. There are three options for this step: (1) add an additional layer of ¾-in. plywood around the shower area; (2) notch the floor joists and resheathe the floor; or (3) add cleats to the joists. Whatever option I use, the idea is to lower the floor in the shower area by ⅛ in. (Larger showers may require more pitch.) On this job, it was easier to add another layer of plywood to the subfloor.

Next, I put down a layer of #15 builder’s felt, followed by galvanized 2.5-lb. diamond-mesh wire lath to anchor the mortar to the floor. I start nailing in the middle of the room, then push out the mesh to the perimeter as I nail so that the wire doesn’t buckle in the middle.

The floor needs a proper mix
It’s extremely important that the mortar have the right consistency. If it’s too wet, it has no...
strength; too dry, and it won’t pack down. I start with 25 full shovels of sand for every bag of portland cement. This basic batch unit will cover about 35 sq. ft. at a depth of 1½ in. To arrive at the correct consistency, I use about 5 gal. of water, added in small amounts as I mix.

Establish the perimeter
After I’ve mixed the mortar, I fill a 5-gal. bucket and start to dump the mortar around the perimeter of the room, up to the shower area. I tamp it down hard with a steel trowel and use a wooden float to pack the edges, especially the corners. (Be aware of the toilet flange’s location. You don’t want to cover it over and tile it—unfortunately, I know this from experience.) As I pack down the perimeter, I keep checking to make sure that it’s level all the way around the room. I’ll deal with the pitch in the shower once I have this level line as a reference.

At the door threshold, I nail a strip of 1x as a stopping point. When installed, the tile should come flush to the top of the strip. To establish the correct height of the mortar, I create a point 3⁄8 in. below the top of the strip, then check the height with a tile once I’ve laid the mortar. It all depends on how level the floor is, but I usually aim for a perimeter depth of about 1 in. and no less than ¾ in.

Fill and screed to the drain
When the perimeter is packed and level, I start to fill in the interior with mortar. Using the perimeter as a guide, I screed the mortar with a straightedge. The key to pulling the straightedge is not to pull it straight but at an angle from the perimeter. I pack everything down with the steel trowel, then smooth the surface with a wooden float in an orbital

TRICK OF THE TRADE

The right mix
One trick to mixing mortar is to use a chopping motion, bringing the hoe up high so that gravity helps to pull it through the dense sand and portland-cement mix. I mix the ingredients twice, once from each side, then add water and mix three more times.

Isolate and protect. The first layer of the tile floor consists of overlapping pieces of #15 builder’s felt, which prevents the subfloor from absorbing moisture from the mortar.

Ground the mortar. Galvanized diamond mesh gives the mortar an attachment point on the floor. Cut into pieces with a 2-in. overlap, and nail with 1½-in. galvanized roofing nails every 6 in. to 8 in.

Not too wet or too dry. The mortar is just right when it holds together.

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LAY THE MORTAR BED

Using a mortar underlayment makes pitching the floor toward the drain possible. While round drains require the surrounding floor to be bowl-shaped, a linear drain is positioned against the shower’s back wall, so the shower floor needs to slope only in a single plane to the drain.

Dump the mortar. Use a 5-gal. pail to distribute piles of mixed mortar evenly around the perimeter.

Pack and level. On the level part of the floor, use a steel trowel to pack down the loose mortar so that it forms a level perimeter about 1 in. thick around the room.

Fill and screed. Dump more mortar in the middle of the floor, and pack it down. Use a level as a screed, resting one end on the perimeter as a reference for the floor’s center.

Create the pitch. In the shower area, extend the level floor grade to the high end, then create a single slope to the drain. The total difference in grade should be about \( \frac{3}{4} \) in. for a 3-ft.-long shower like this.

Smooth transitions. Once the pitch is established, use a wooden float to grade the transition from the level floor to the shower along the side.
motion as I go. If there are any low points, I fill them in and pack them down again. I use a steel trowel for a last finishing pass. It’s a good idea to work from inside the room toward the door.

Once I’ve established a level plane in the rest of the room, I start working on the pitched floor of the shower. Here, the outside edge of the shower is level with the rest of the room. Inside the shower area, I pitch the mortar down to the drain, aiming for a 3⁄4-in. difference in grade from one end to the drain. I use 2x2 tiles in the shower to ease the transition in grade from the shower to the floor, which will be covered in 12x12 tiles.

With the pitched floor established in the shower, my next task is to set the drain. For this job, I’m installing a linear drain. Unlike a traditional round drain flange that’s installed before the mortar, this drain is tied into the membrane overlay. Besides its shape, the main difference in a linear drain is that it doesn’t require a flange. Once installed in the floor, it’s tied directly to the drainage pipe with a flexible coupling. When the drain fits, I finish the rest of the floor and allow the mud to dry overnight.

Protect the floor with a waterproof membrane
Now that the mortar has set up, I can set the drain and then install a waterproof membrane that seals the porous mortar layer. (I used Schlüter’s Kerdi membrane on this job, but Noble’s NobleSeal and Laticrete’s Hydro Ban are two alternatives.) Using the drain template, I check to see that the space is the right size. The mortar is still relatively soft, so it’s easy to make adjustments with a small trowel. I vacuum up the crumbs, apply the thinset, and install the drain. This whole trough should be level so that water will go to the center drain evenly.

Once the drain is in, I start the membrane process by installing the 5-in. band around the room’s perimeter, splitting it between the wall and the floor. I use a 3⁄16-in. V-notch trowel to spread the thinset, lay out the band, and squeegee out the excess thinset with a drywall knife whose corners have been rounded off. The preformed corners are installed the same way, and I am especially careful to make the inside corners tight against the wall. Next, I cut sheets of membrane and dry-fit them around the room, making sure that I have at least 2 in. of overlap on all seams. I draw a line at the edge so that I apply the thinset only where I need it.

With the sheet back down, I start at the center and work my way toward the outside, first with my hands, then with the drywall knife, pressing out all the voids and air pockets. The joints should be nice and tight. The worst thing you can do is start on the outside from each direction and have the whole thing buckle in the middle. Whatever excess is outside, I flatten down with the trowel. Voids will eventually cause cracks in the tile. In the shower area, I overlap the entire drain flange with the membrane.

Tile is the easy part
When I first spread the thinset, I use the back side of the trowel and burnish it over the membrane. I also do this over plywood or
In a perfect world, tile would be flexible

Tiles, especially large tiles, must be installed so that they’re fully supported on a flat surface, or they’ll crack. In situations where the floor is not flat (in a shower stall, for instance), small tiles conform more easily. In this bath and curbless shower, both conditions exist, and rather than use small tiles throughout, I made a transition from large field tiles to small tiles in the shower with intermediate-size tiles that could handle the switch between level and sloped floors. I decided to go with a diagonal layout bordered by 4-in.-wide strips. After bringing the small shower tiles to the edge of the transition, I cut 4-in.-wide strips from the 12x12 tiles and mitered each corner. Next, I cut the big square tiles in half diagonally, which established the pattern for the rest of the floor.