

INSTALLING A MORTARED SHOWER PAN

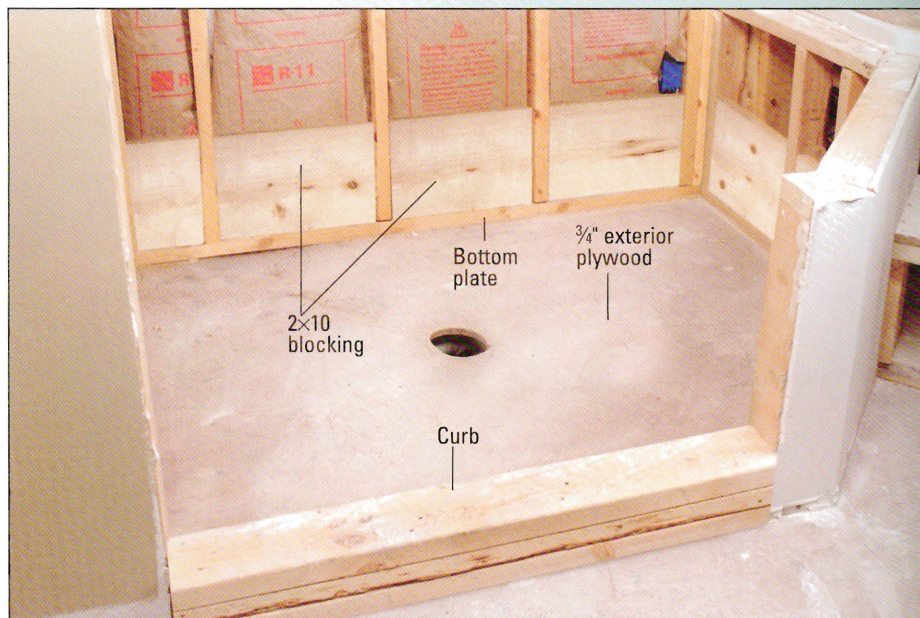
A mortared shower pan allows you to custom-fit a shower enclosure. The key to a successful installation lies in the use of a chlorinated polyethylene (CPE) or PVC membrane—tough but flexible plastics that form the pan of the enclosure and make the floor waterproof. Over the membrane, a mortar bed floor supports the tile. Smaller tiles work best to conform to the slope.

This thick-bed installation relies on a troweled mortar mix which, when properly mixed, is like a sandy clay. Floating a thick bed takes two steps: floating the sloped subbase for the membrane and floating a reinforced top floor that follows the slope of the subbase. Because of its considerable weight, you should install it only on a slab or properly supported wood subfloor.

PRESTART CHECKLIST

- TIME**
Two to three days to frame the enclosure, float the floor, and tile and grout the interior
- TOOLS**
Carpenter's hammer, framing square, tape measure, 4-foot level, carbide scorer, utility knife, wrench, scissors, tinsnips, stapler, 1/2-inch drill, mixing paddle, notched trowel, grout float, jigsaw, marker, circular saw
- SKILLS**
Basic framing skills, mixing and floating mortar, setting tile, grouting
- PREP**
Strengthen and repair subfloor
- MATERIALS**
Dimensional lumber, 3/4-inch exterior plywood, backerboard, backerboard screws, dry mortar mix, metal lath, felt, staples, 4-mil polyethylene, thinset, CPE or PVC membrane and solvent, nails, masking tape, shower drain, tile, grout

A. Framing the stall

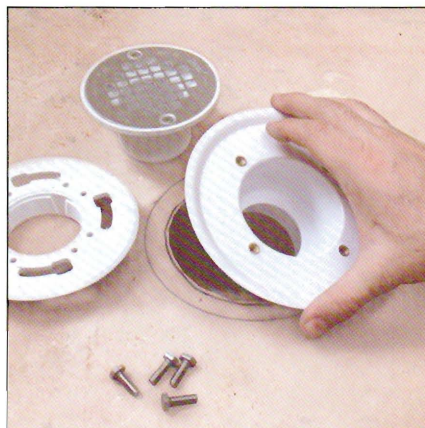


Replace an unsound subfloor with 3/4-inch exterior plywood. Cut pressure-treated bottom plates and preassemble the walls, centering the studs every 16 inches. Erect and brace the walls. Fasten the bottom plates to the floor with 3-inch decking screws and tie the top corners together. Toe-nail 2x10 blocking between the studs to support the sides of the membrane. Build the curb from three pressure-treated 2x4s. Tack 3/4-inch guides around the perimeter (not necessary for stalls larger than 4 feet on both sides). Cut a hole in the center of the floor and [fit the lower drain plate](#).

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FIT THE LOWER DRAIN PLATE

Seal the drain to prevent leaks

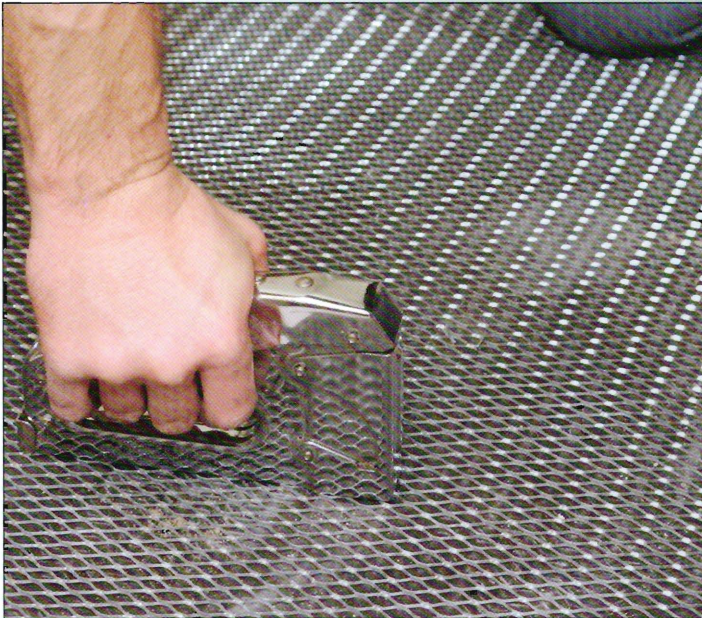


1 Cut a hole in the floor with a hole saw or jigsaw (drilling a starter hole first). Coat the bottom of the lower drain with beads of silicone—one outside and one inside the bolt circle.



2 Coat the interior of the drain with PVC primer and cement, and twist the drain into the waste line. Let the cement dry, then insert the drain bolts into the lower drain plate, leaving about 3/4 inch exposed.

B. Building the sloped subbase



1 Cut a piece of 15-pound felt to fit the floor area between the bottom plates or the $\frac{3}{4}$ -inch float guides, and staple the felt to the floor. Cut a section of metal lath to the same dimensions. The metal gives the floor a “tooth” for the mortar. Set the metal lath in place and snip out a circle about an inch wider than the circumference of the drain. Staple the entire sheet of metal lath securely to the floor, flattening any bumps that could weaken the subbase.



Plug drain hole temporarily with a towel or rag

2 Using bagged sand mix from your home center (or 4 parts sand, 1 part portland cement), mix up a batch of **dry deck mud** with latex additive (not water). Mix the mortar in a wheelbarrow (not a bucket). Dump the mortar onto the floor, spreading it with a wood float and sloping it from the top of the guides (or from the bottom wall plate on larger stalls) to the top of the drain flange. Compact the mortar into an even surface and let it dry overnight.

WHAT IF...

You want to install a mortared shower bench?



1 Spread mortar on the shower pan and set concrete block in the mortar. Plumb and level the block. Mortar the side pieces in place and repeat the process for the next course(s) of block. Then spread a level coat of thinset on the surfaces to be tiled.



2 Tile the bench as you would a wall, lining up the courses on the front of the bench with the courses on the walls. Finish tiling the shower and grout the entire installation. Seal the grout with the product recommended by the manufacturer.



DRY DECK MUD

The squeeze test



The mortar for a shower enclosure should be just wet enough to clump together. You'll know it's right when you squeeze it and it just holds its shape.

C. Installing the membrane and upper drain plate



1 Roll out the membrane on the surrounding floor. Mark the cut lines 9 inches larger than the shower floor on the sides and back, and 16 inches larger in the front (to cover all faces of the curb). If the stall is larger than the membrane, solvent-weld additional sections. Reinforce the drain area by solvent-welding a 10-inch circle of membrane in the center. Roll or fold the membrane so it fits easily in the enclosure.



2 Set the membrane on the floor of the enclosure and unroll it from front to back, pulling it forward until it covers the front of the curb. Working from the drain outward, smooth out the air bubbles. Then staple the top 1 inch of the sheet to the blocking. **Weld the corners** and cut the sheet at the bottom of the jambs. Fold the sheet over the curb and tack it only on the front. Solvent-weld a dam corner (available from the manufacturer) over the jamb cuts.

STANLEY PRO TIP

Keep the membrane flat

Shower pan membranes must lie flat on the subbase and against the sides. Wrinkles create air pockets that weaken the bed. It can be difficult to keep the membrane flat on the sloped subbase, especially in large enclosures. To keep the membrane flat as you smooth out the air bubbles, trowel a thin coat of asphalt mastic or laminating adhesive on the subbase and blocking. Make sure the adhesive you use is compatible with the membrane material.

WHAT IF...

You need to add another section of membrane?

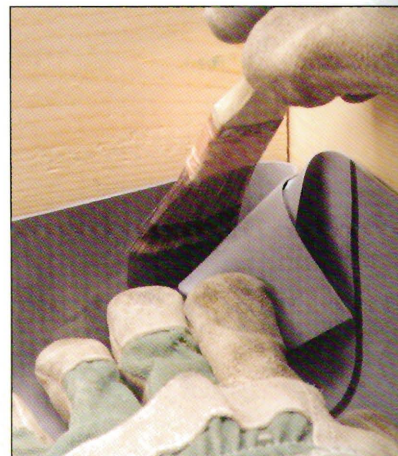


If the shower enclosure is larger than the CPE or PVC sheet, you will need to seam an additional section. Coat both sides of the seam with the primer or sealer appropriate to the material, covering about 4 inches from the edges. Let the primer dry. Overlap the edges and roll them tightly. After 5 minutes try to separate the seam. If it comes apart, repeat the process.

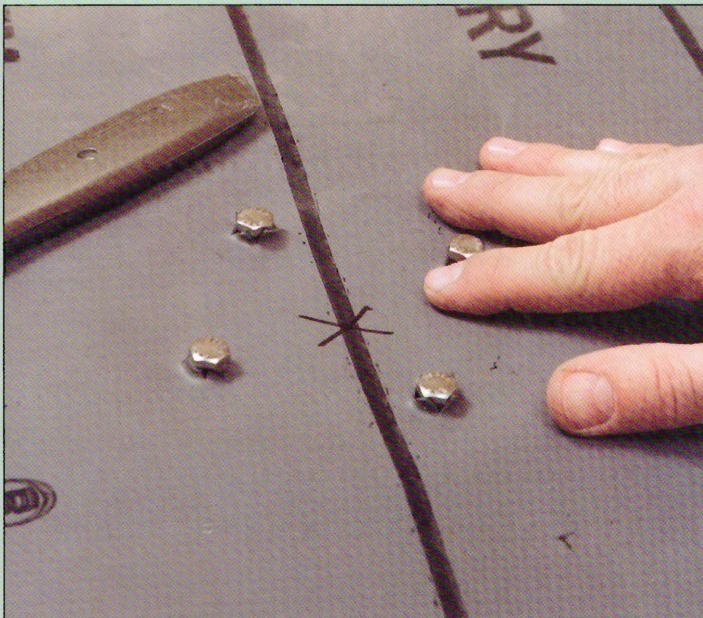


WELD THE CORNERS

Make the membrane watertight



After stapling the membrane along its length, you will have excess material at the corners. Fold the corners into triangles and solvent-weld the folds in place.



3 To cut the membrane so the bolts will be exposed, feel around each raised bolt head and press the membrane down until the profile of the bolt shows clearly. Then with a sharp utility knife, cut a $\frac{3}{8}$ -inch "X" in the membrane over the bolts—just enough to allow you to push the membrane over the bolt head. Then unscrew the bolts so you can fasten the upper drain plate.



4 Position the upper drain plate so the holes are directly above the X cuts in the membrane. Don't seal the underside of this plate with silicone—it will clog the weep holes. Reinsert the bolts in the holes, turn the plate to lock it, if necessary, and tighten the bolts evenly with a wrench. Using a long sharp knife, carefully cut away the membrane in the drain hole. (Don't use a utility knife. Its blade is not long enough to make a clean cut.) Then **check for leaks**.



CHECK FOR LEAKS

To check for leaks in the membrane, plug the drain hole with an expandable stopper, which you can purchase at a hardware store.

Fill the pan with water to about an inch from the top of the membrane. Let the water come to rest, mark its level on the side of the pan, and let the water sit for 24 hours. Then check the level. If it's still at the mark, the pan is watertight. If the water is below the mark, the membrane has a leak somewhere.

Check the surrounding floor for water, which would have come from a leak in the side. If there's no evidence of water, pull the plug, expand its diameter a little, and repeat the test.

If the water has drained out completely, it's probably leaking at the drain flange, which is either too loose or too tight (and may have cut the membrane). Tighten the bolts if they feel too loose. If the flange has cut the membrane, remove the drain plate, let the membrane dry completely, and solvent-weld a patch at least 2 inches larger than the puncture.

Installing the strainer



Wrap the threads of the strainer with four or five turns of plumber's tape and screw the strainer into the flange. To protect the strainer and drain from stray mortar and thinset, apply two layers of crisscrossed masking tape. Overlap the tape and cut it flush around the edge of the strainer.

D. Installing the mortared floor



1 If any of the walls are outside walls, insulate them with fiberglass batts. Then cut sheets of 4-mil polyethylene waterproofing membrane long enough to hang from the top of the walls down to 3 or 4 inches below the top edge of the pan membrane. Use only four or five staples on each stud to attach the poly, the minimum necessary to keep it in place. Make sure you don't put staples through the pan membrane lower than 1 inch from the top.



2 Clean off any grit with a damp cloth. As added protection you can cover the liner with a drop cloth to prevent a backboard corner from puncturing it. Cut backboard to fit the walls and set it on 1/2-inch shims. Fasten the backboard to the studs with backboard screws (*page 194*); keep the screws within the top 1 inch of the pan membrane. Remove the shims and caulk the space at the bottom with silicone. Tape and mud the seams with modified thinset.

Sloping the floor



1 Using a torpedo level or 2-foot level (the longest size that will fit the enclosure), transfer the plane of the bottom of the strainer to the walls and the curb. Mark the plane on the backboard with a felt-tip pen.



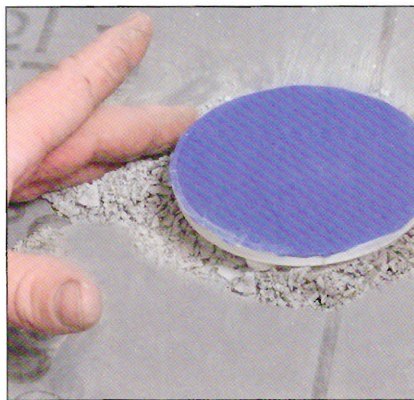
2 The floor of the pan must slope 1/4 inch for every linear foot. Compute the amount of slope based on the dimensions of the enclosure and mark this point on the backboard.



3 Mark the slope on the walls. **Protect the weep holes** from clogging and mix up another batch of dry mortar. Spread the mortar about halfway to your marks, keeping the slope at about one-third of a bubble on a level. Lay metal lath over the first course, then pack and level a top layer, starting at the wall, even with the marks. Work in sections, sloping the floor toward the drain. Bend lath to fit the curb and pack it also, slanting the top inward.



PROTECT THE WEEP HOLES



Weep holes allow moisture trapped in the mortar bed to escape down the drain. If the moisture can't go down, it will go up—into your grout, causing mold and mildew. To keep the weep holes from clogging with mortar, put a few spacers or pieces of gravel around them.

E. Laying the floor tile



When the floor has dried, scrape off any remaining imperfections with a steel trowel, then spread and comb latex-modified thinset. Press the tiles firmly into the mortar to make sure they conform to the slope of the floor. Line up all the edges with a 2-foot straightedge and let the mortar cure overnight. Grout the tiles with latex-modified grout, cleaning off the excess and wiping off the grout haze.

STANLEY PRO TIP

Prebend the lath

Metal lath is sharp, especially its cut edges, and can easily put holes in the membrane that covers the curb. To avoid puncturing the membrane when fitting the lath, prebend the lath over the 2x4s before installing the membrane. Make the bends slightly oversize so you can put the lath section down over the curb without tearing the membrane.

WHAT IF...

You puncture the membrane?

If you do happen to puncture the liner, it doesn't mean you have to take the whole thing up and start over. Clean the punctured area thoroughly and cut a patch at least 2 inches wider than the puncture. Apply the appropriate solvent to both the membrane and the patch. Roll the patch flat and let the repair dry.

Don't forget the tile

Don't mortar right to the top of the drain. Leave room for the tile so it comes out level with the top of the drain.