

# TILING A SHOWER ENCLOSURE OR TUB SURROUND

**B**ecause a shower enclosure is a wet installation, you must waterproof the walls and the framing. Use felt paper with cement backerboard but not with greenboard or waterproofed gypsum board (page 34).

A bathtub introduces additional challenges. If the tub is level, set a full tile at its top edge. To help hide the awkward appearance of an out-of-level tub, make the bottom row of tiles at least three-fourths of a tile high.

For a shower enclosure, extend the tile and the backerboard at least 6 inches above the showerhead. For a tub surround only, install the backerboard and tile 12 inches above the tub.

## PRESTART CHECKLIST

### TIME

About 20 minutes per square yard to prepare and set tile

### TOOLS

Utility knife, stapler, hair dryer, 4-foot level, tape measure, chalkline, carbide scribe, margin trowel, notched trowel, straightedge, drill, snap cutter or wet saw, nippers, grout knife, putty knife, masonry stone, caulk gun, grout float

### SKILLS

Ability to use hand tools, cordless drill, and trowels

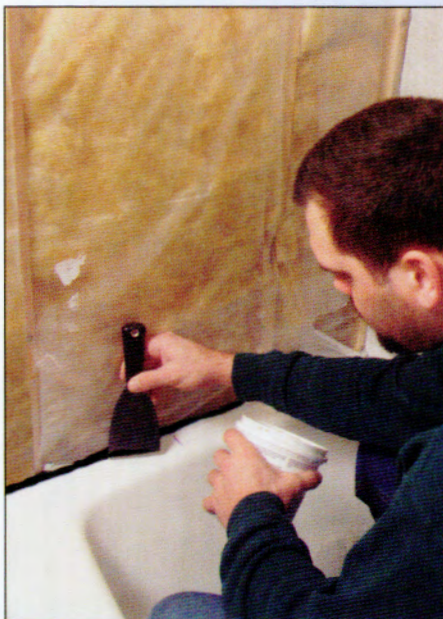
### PREP

Repair structural defects, remove finished wall material to studs

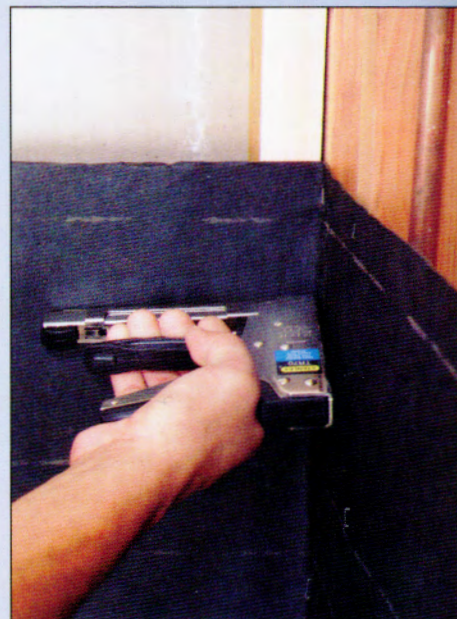
### MATERIALS

Asphalt roofing cement, 15-pound felt paper, staples, bucket, thinset, dimensional lumber for battens, backerboard, screws, tape, tile, spacers, caulk, grout, rags, sponge, water, tile base or bullnose, nylon wedges, accessories

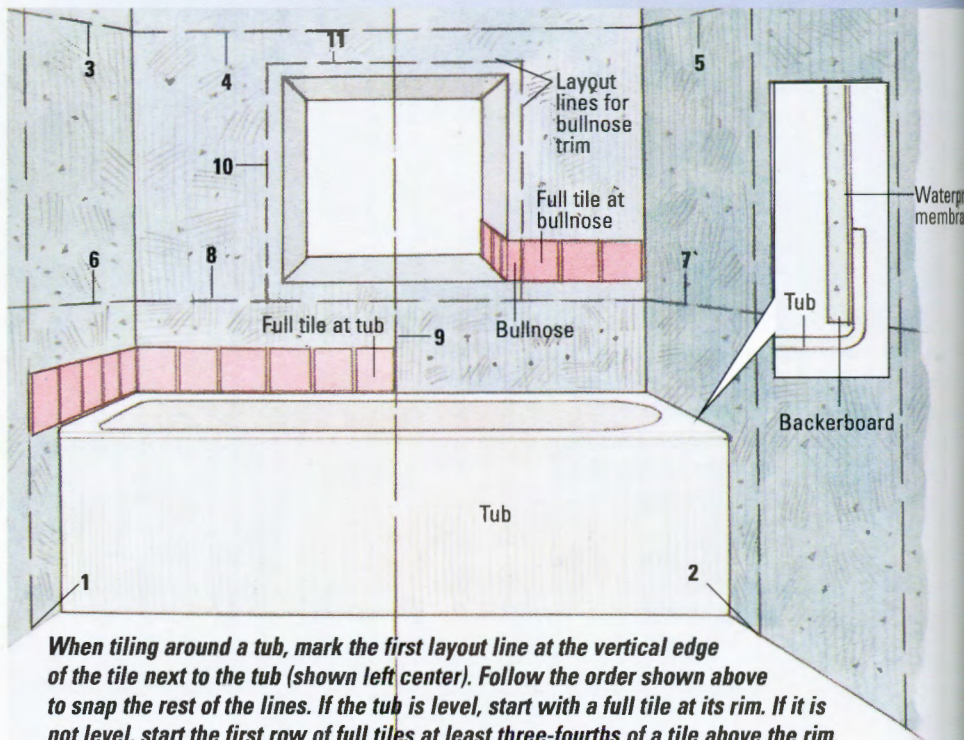
## A. Preparing the substrate



**1** Apply asphalt roofing cement to the flange of the tub. This is the place where most tub and shower surrounds fail, and water that gets into this joint will migrate upwards and down into the floor. The asphalt cement seals the tub to the waterproofing felt or 4-mil poly sheet.



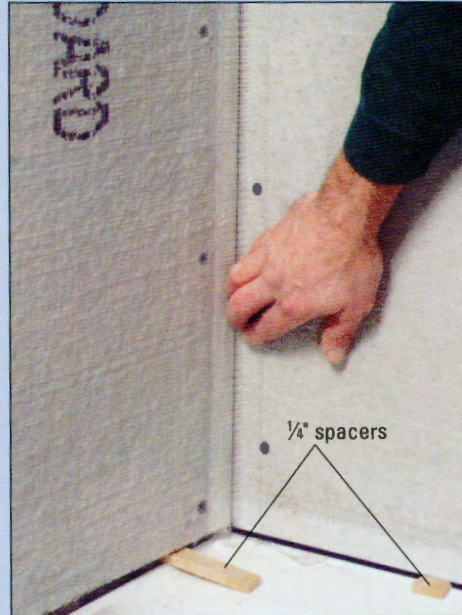
**2** Cut a piece of felt paper long enough to turn all corners and cover the surface in a single run. Apply asphalt mastic to the studs, then staple the paper, warming it with a hair dryer before pressing it into the corners. Overlap top pieces on lower ones and seal overlaps with asphalt mastic.



*When tiling around a tub, mark the first layout line at the vertical edge of the tile next to the tub (shown left center). Follow the order shown above to snap the rest of the lines. If the tub is level, start with a full tile at its rim. If it is not level, start the first row of full tiles at least three-fourths of a tile above the rim.*



**3** Cut backerboard so its edges will be centered on the studs and fasten it to the studs with backerboard screws. When fitting backerboard above a tub, leave a 1/4-inch gap between the bottom edge of the board and the tub rim.

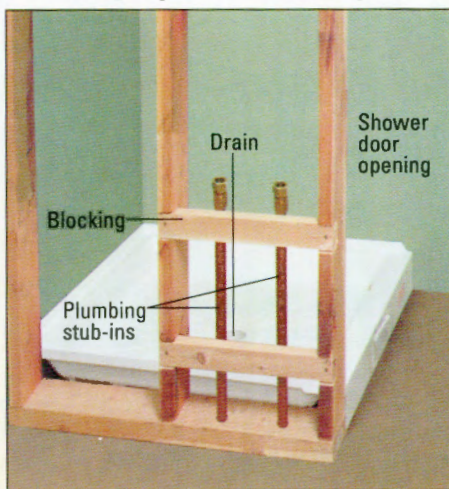


**4** Reinforce the corners of the backerboard with fiberglass mesh tape. Skim-coat the tape with thinset, let it dry, and sand smooth. Repeat the process, feathering the edge of the thinset. The spacers create a 1/4-inch gap for the bead of caulk.

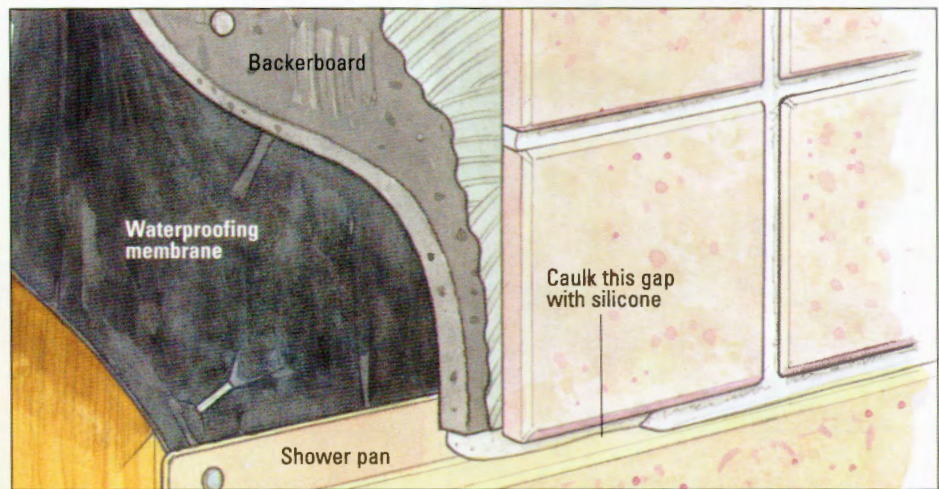


**5** Caulk the gap at the bottom of the backerboard with clear or white silicone caulk. The caulk seals the joint between the tub and backerboard and allows for some expansion and contraction of the different materials.

## Installing a prefab shower pan



**1** Using a dimensional plan for the shower stall, build the 2x4 frame, making sure it's plumb and square to the surrounding walls. Use blocking to support the plumbing stub-ins.



**2** Set the pan in place and check it for level in both directions. Attach the drain to the pan and to the drain line and test it for leaks by pouring buckets of water down the drain.

Most pans have a flange that fits tightly against the wall. Install the backerboard 1/4-inch above the flange and caulk the joint with silicone caulk.

## B. Installing the tile



**1** Using a dimensional layout drawing, locate the point on which a horizontal and vertical grout line will fall. Hold a 4-foot level on both planes and mark reference lines. Then snap layout grids whose dimensions equal the width of the tiles and grout joints.



**2** **Tack a batten** on the bottom of the wall, if necessary ([page 124](#)) and prepare enough adhesive to cover the number of layout grids you can lay before the adhesive begins to set up. Set field tiles on the back wall first. Don't set tiles around fixtures yet.



**3** When the back wall is done, set the side walls. Start from the front, leaving cut tiles for the back edge at the corner of the adjoining wall. Tape the tiles if necessary to hold them in place ([page 124](#)). Remove excess adhesive from the joints; let it cure.

### **STANLEY** PRO TIP

#### Cut the corners



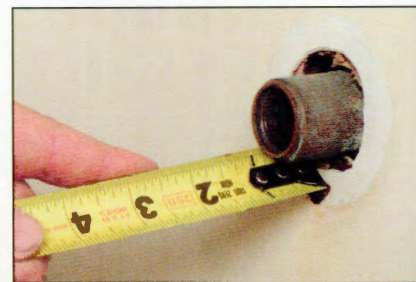
Cut the tile at the corner of the tub carefully. This cut can be somewhat tricky, so it's best to lay out the curve on a cardboard template and transfer the line to the tile. Make relief cuts and bite out the curve with nippers.

### **TACK A BATTEN** Keeping the tiles level



To keep the first row (and all that follow) level, tack a 1× batten to the backerboard one full tile width above the tub. Cover the tub with heavy paper to protect it from damage it might incur as you tile the wall.

### **REFRESHER COURSE** Measure the thread length



If you are tiling over existing wall tile or installing new tile with backerboard, the combined thickness of the new materials may exceed the length of the threads on the faucet valves. The threads of the valves need to extend beyond the new wall.

Before you install any tile, measure the depth of the threads. If they are less than the thickness of the new materials, you'll have to install new faucets—a job best left to a plumber.



**4** When the adhesive has dried overnight, cut and set the edge tiles and remove excess adhesive from the joints. Then mark, cut, and install the tile around the showerhead and faucets. Leave at least  $\frac{1}{4}$  inch around the fixtures and fill that recess with silicone caulk. Let the adhesive cure.



**5** When the adhesive is dry, clean the surface and joints of any remaining excess. Mix grout and apply it with a grout float, forcing it into the joints in both planes. Let the grout cure until a damp sponge won't lift the grout out of the joints.



**6** To scrape excess grout off the surface, hold the float almost perpendicular to the tile and work diagonally to avoid pulling the grout from the joints. Dampen a sponge, wring it out thoroughly, and clean the surface twice, smoothing the joints. Scrub off the haze with a clean rag.

### Framing a shower bench



**1** Make sure your plan for a bench includes exact dimensions. Measure each framing member before cutting and fastening it. Mistakes in shower stalls are certain to leak. Frame the rear wall of the bench first, then each front wall.



**2** Cover all the framing with a waterproof membrane and backerboard. Caulk all seams with silicone. Tile the seat surfaces first, followed by the wall tile. Use bullnose for the edges or round the field tile with a masonry stone.



**3** When the mortar has cured, grout the joints and clean the tile. When the grout has cured, seal the grout lines.

### Installing surface-mounted fixtures



When you set the wall surface, leave a space for surface-mounted accessories, such as soap dishes, cutting the tile around it if necessary. Use a margin trowel to apply mortar to both the recess and the back of the accessory and press the unit into place. Keep it centered with wedges. Tape it in place until the mortar dries, then caulk the joint.

# INSTALLING A MORTARED SHOWER PAN

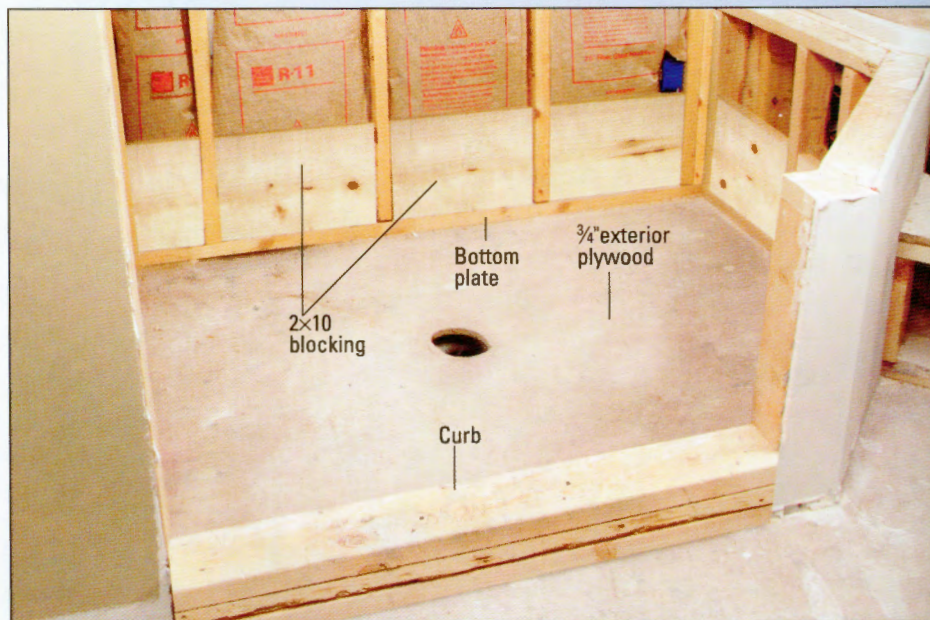
A mortared shower pan allows you to custom-fit a shower enclosure. The key to a successful installation lies in the use of a chlorinated polyethylene (CPE) or PVC membrane, tough but flexible plastics that form the pan of the enclosure and make the floor waterproof. Over the membrane, a mortar bed floor 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 sub-base for the membrane and floating a reinforced top floor that follows the slope of the sub-base. 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, tin snips, 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



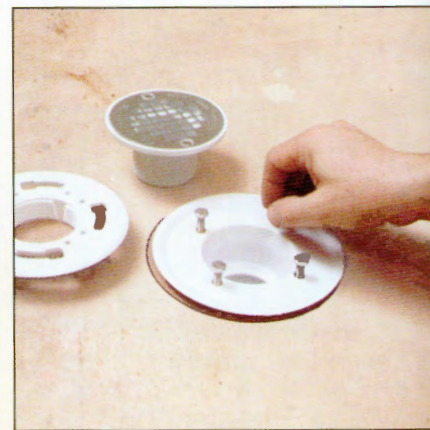
Replace an unsound subfloor with 3/4-inch exterior plywood. Cut pressure-treated bottom plates and pre-assemble the walls, centering the studs every 16 inches. Erect and brace the walls. Fasten the bottom plates to the floor with 3-inch decking screws and tie the top corners together. Toenail 2x10 blocking 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](#).

### FIT THE LOWER DRAIN PLATE

Seal the drain to prevent leaks

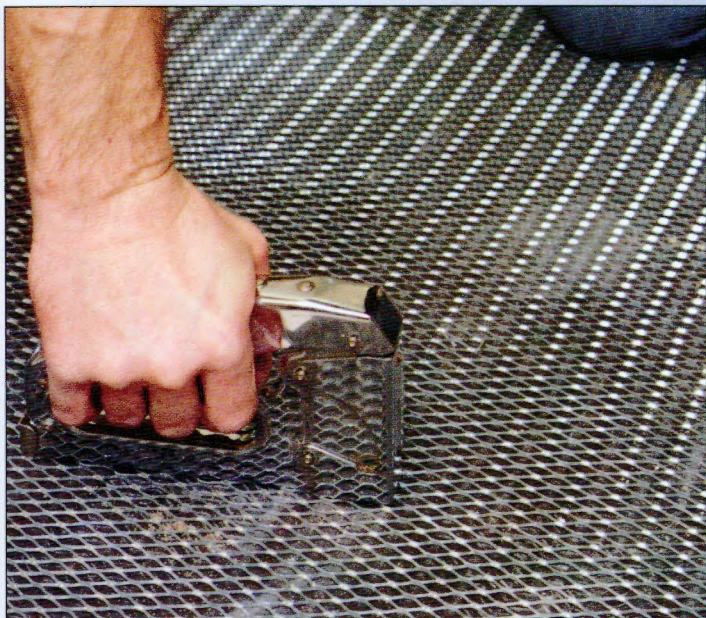


**1** Cut a hole in the floor with a hole saw or jigsaw (drilling a starter hole first). Coat the bottom of the lower drain with beads of silicone—one outside and one inside the bolt circle.

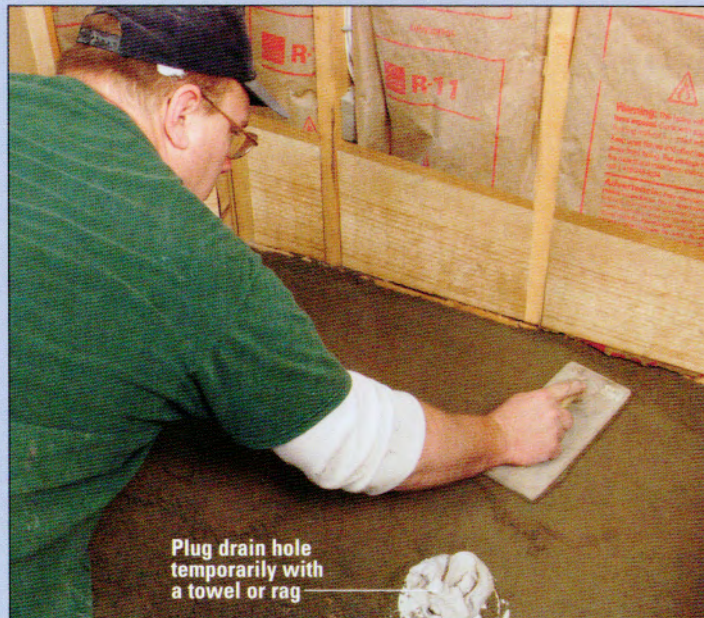


**2** Coat the interior of the drain with PVC primer and cement and twist the drain into the waste line. Let the cement dry and insert the drain bolts into the lower drain plate, leaving about 3/4-inch exposed.

## B. Building the sloped sub-base



**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 which could weaken the sub-base.



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 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, folding the edges, and rolling or folding 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 sub-base and against the sides. Wrinkles create air pockets that weaken the bed. It can be difficult to keep the membrane flat on the sloped sub-base, especially in large enclosures. To keep the membrane flat as you smooth out the air bubbles, trowel on a thin coat of asphalt mastic or laminating adhesive on the sub-base 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.

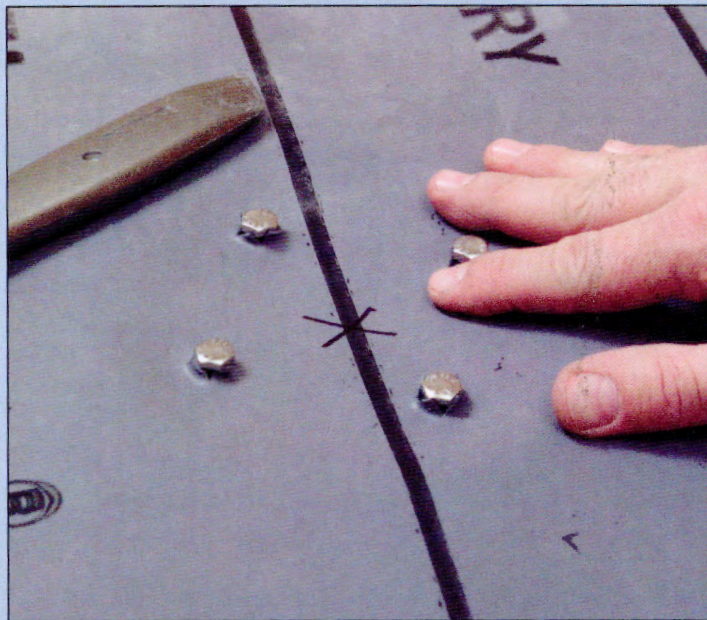


### WELD THE CORNERS

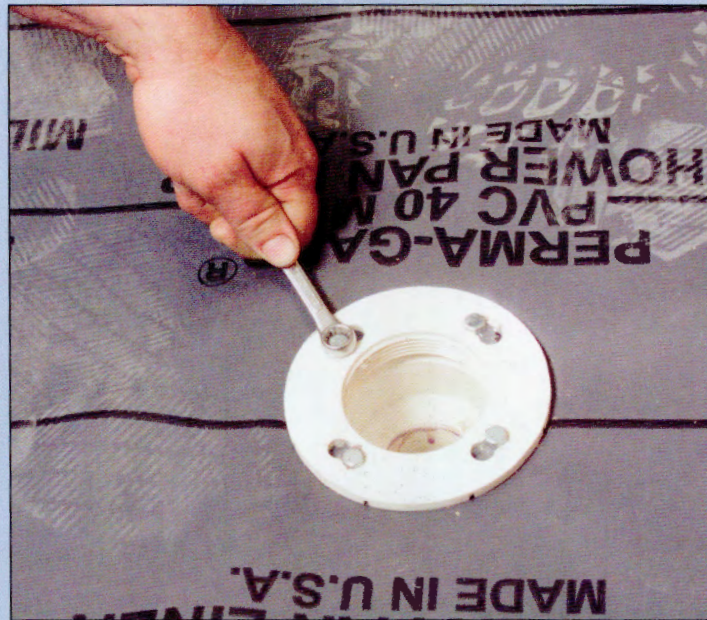
Make the membrane watertight



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 backerboard corner from puncturing it. Cut backerboard to fit the walls and set it on  $\frac{1}{2}$ -inch shims. Fasten the backerboard to the studs with backerboard screws (*page 94*); 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 backerboard with a felt-tip pen.



**2** The floor of the pan must slope  $\frac{1}{4}$  inch for every linear foot. Compute the amount of slope based on the dimensions of the enclosure and mark this point on the backerboard.



**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.

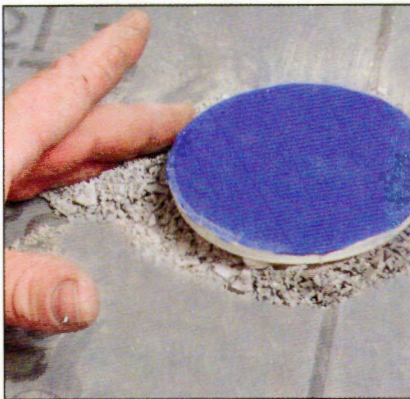
## E. Laying the floor tile



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 the grout haze.

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### 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.

### **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.

# BUILDING A SHOWER ENCLOSURE

A new shower stall installed in a corner of a room will require you to build only one wall. If it's in the middle of a wall, two new walls are required. The walls may reach all the way to the ceiling, or they may stop partway up. In the latter case, the top ledge must be covered with tile or another moisture-resistant surface. The opening can have a door, or you can install a curtain rod.

For a corner installation, a one-piece unit (page 194) is much simpler to install, though you have a limited choice of colors.

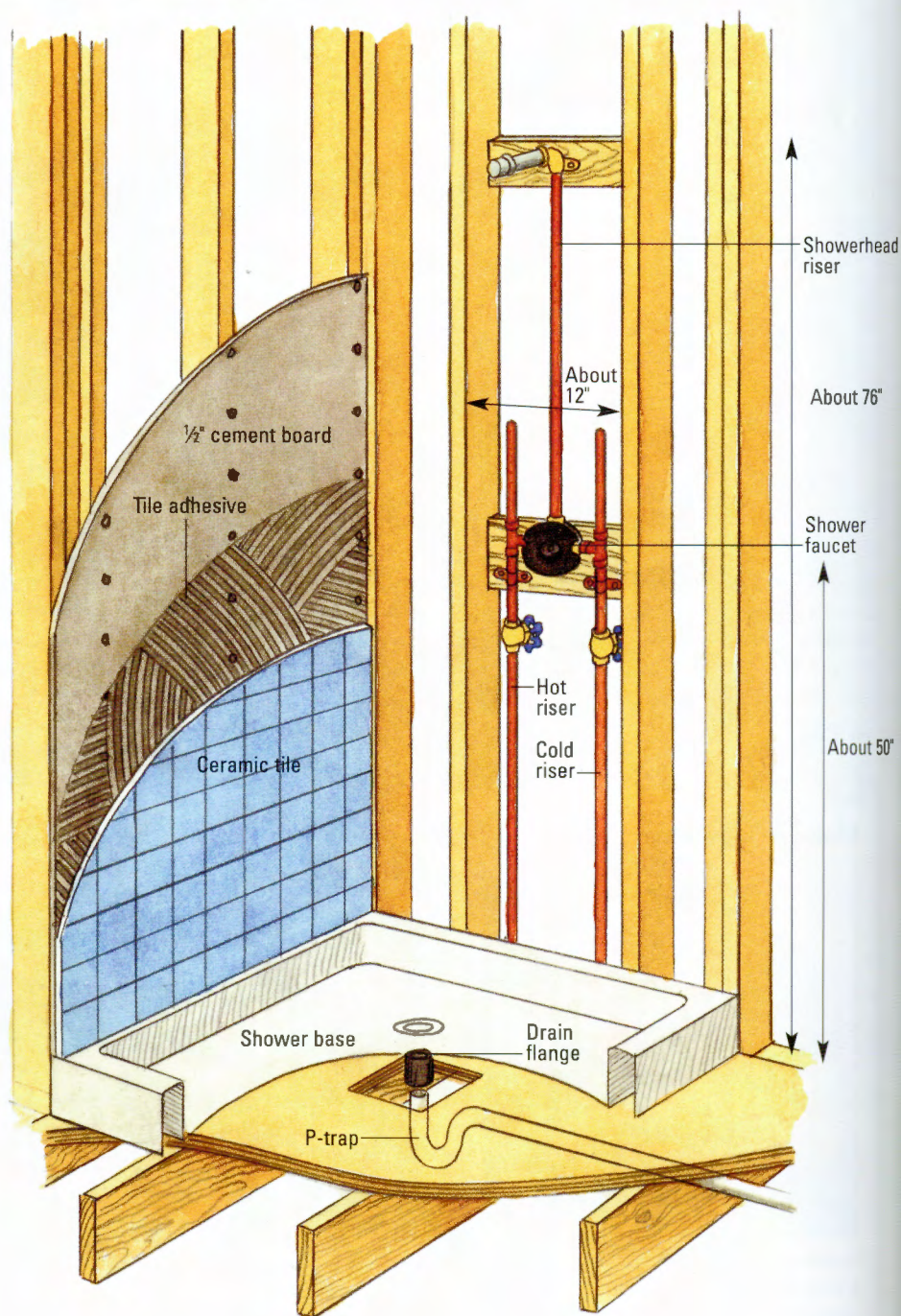
A 32-inch shower base will feel cramped; buy a base that is at least 34 inches. Some bases must be set in thinset mortar or in a bed of sand, while others can be simply placed on the floor.

For details on how to run drain and supply lines, see pages 178–181.

## PRESTART CHECKLIST

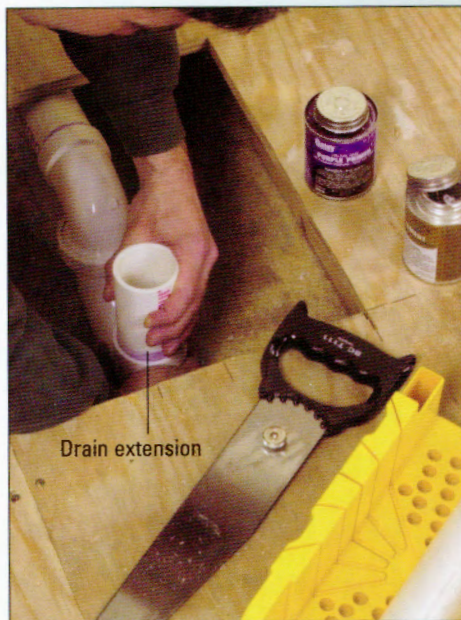
- TIME**  
Two or three days to install a base, plumbing, tiled walls, and a shower door
- TOOLS**  
Carpentry tools, groove-joint pliers, drill, tools for plastic (page 142) and copper pipe (page 140), tiling tools, steel rod
- SKILLS**  
Working with plastic and copper pipe, framing a wall, installing tile
- PREP**  
Install a drainpipe with trap in the center of the base, as well as supply pipes, faucet, and shower riser
- MATERIALS**  
Shower base, roofing felt, PVC primer and cement, 2×4 studs, cement backerboard, backerboard screws, tiles, tile adhesive, grout, caulk, shower door

## BUILDING A TILED SHOWER ENCLOSURE



*A shower drain should be installed at the center of the shower base. The flange should be level with the floor. Run the supply pipes after the framing is installed.*

## A. Installing the shower base



**1** Set the shower base over the drain to make sure the drain is directly below the opening of the base. Remove the base, then cut and cement an extension to the drainpipe. The extension should be flush with the floor.

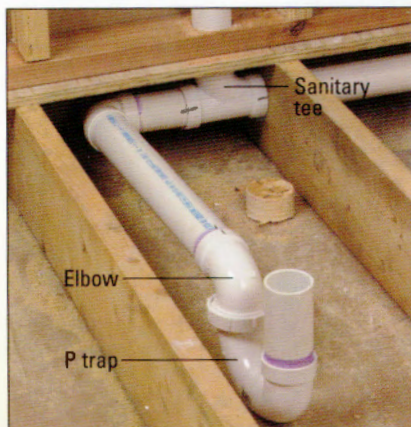


**2** Place a layer or two of roofing felt to smooth any unevenness in the floor. (Some manufacturers may require a bed of mortar or sand.) Set the shower base over the drain to confirm that the drain is positioned where you want it. Check for level; shim with roofing felt as needed.



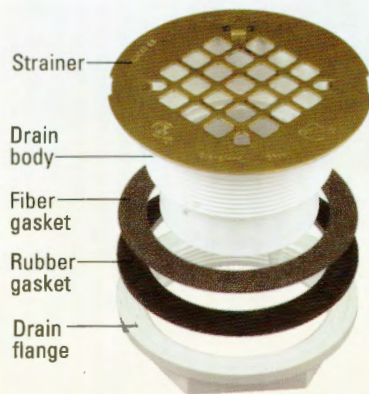
**3** Using liquid soap as a lubricant, fit the rubber flange (provided with the shower base) over the drain extension and push it as far down as you can. Tap it all the way in place with a 1/4-inch steel rod. Install the drain strainer.

### REFRESHER COURSE Installing a drain



See pages 178–181 for instructions on running a new drain line. A shower drain should be connected directly to a trap. Drain lines must slope at a rate of  $\frac{1}{4}$  inch per running foot and must be properly vented (pages 182–183).

### WHAT IF... The base uses a PVC flange?



Cement the drain flange to the drainpipe; the flange should be flush with the floor. Set the gaskets on top of the flange. Place the shower base over the drain hole. Check that the gaskets are still in place. Screw the drain body through the hole in the base and into the flange. Attach the strainer.

### **STANLEY** PRO TIP

#### Install a custom-mortared shower base

A custom-mortared shower base frees you from the styles, sizes, and colors available in prefab units. You can have anything you want. Constructing such a base, an endeavor once only within the reach of the pros, is an installation that is increasingly being done by do-it-yourselfers. It relies on a CPE (heavy plastic) liner set inside the frame to waterproof the surface. See pages 200–205 to learn how to install a mortared shower pan.

## B. Framing the shower



**1** With the shower base in place, build 2x4 walls for the sides. Remember that the studs will be covered with  $\frac{1}{2}$ -inch-thick cement board, plus the tiles (usually about  $\frac{3}{8}$  inch thick). No studs should be more than 16 inches apart. On the plumbing wall, space the studs so you can position the shower faucet—a pair of studs spaced about a foot apart will accommodate most faucets. Install horizontal braces to support the faucet and the showerhead arm. Some bases may require a ledger (*page 186*). Install the supply pipes and faucet, following instructions on *pages 184–185, 210–211*.

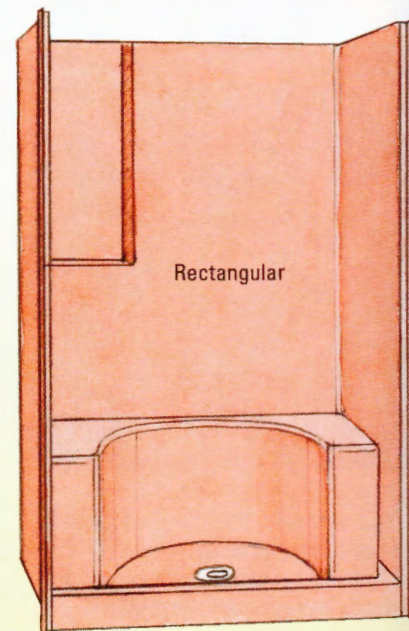
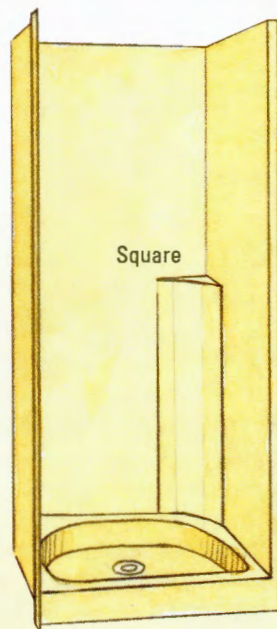
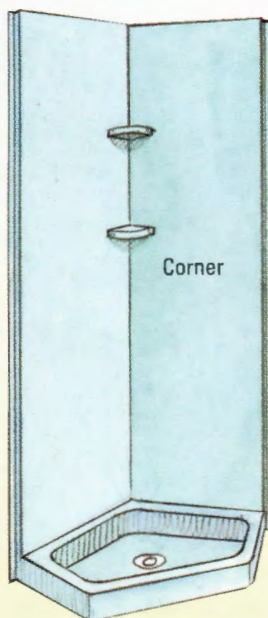


**2** Cut pieces of cement backerboard to fit. Cover all wood surfaces with the backerboard. Attach them to the studs with backerboard screws. Check that the wall surface is smooth and even because the tiles will follow any contours. Before tiling fill the gap at the bottom with **caulk**.

### One-piece shower units

Corner and rectangular shower stalls—made of acrylic fiberglass or polystyrene—are much easier to install than a custom-made enclosure. One-piece units are designed for new construction only because they are too large to fit through a door. Three-piece units are quickly assembled and are ideal for remodeling.

Two or three walls of these units must be installed up against solid walls. A corner unit can be installed in any corner that is reasonably square. A rectangular or square unit requires an opening of the correct width and height.



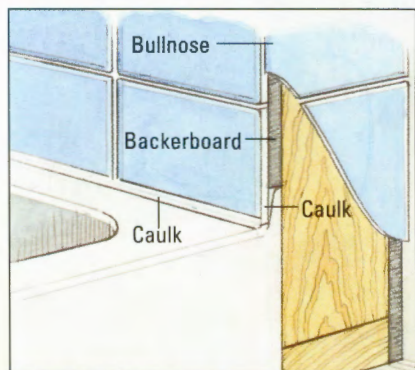


**3** Cover the backboard with ceramic tile or with a prefab tub surround kit (pages 190–191). Consult a book on tiling for guidelines on selecting, laying out, and cutting tile. In general, tiling should be planned to minimize small pieces. Wherever a tile edge will be exposed, install a bullnose piece, which has one finished edge (see illustration below). Use a notched trowel to apply thinset mortar or organic tile adhesive, then set the tiles. Use a tile-cutting hole saw for the faucet and showerhead stubouts. Once all the tiles are applied, allow the adhesive to set overnight.



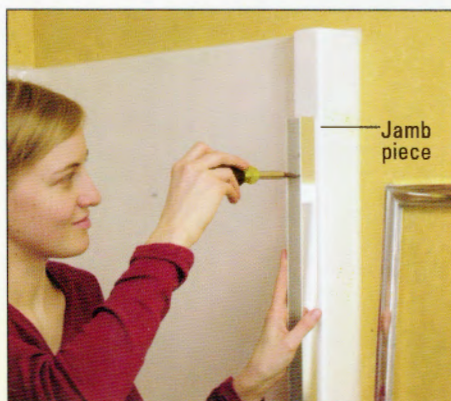
**4** Mix a batch of latex-reinforced grout and use a grout float to first push the grout into the joints; then scrape away most of the excess. Wipe several times with a damp sponge, working to create consistent grout lines. Allow to dry and buff with a dry towel. Caulk all the inside corners.

**CAULK THE EDGES OF THE STALL**

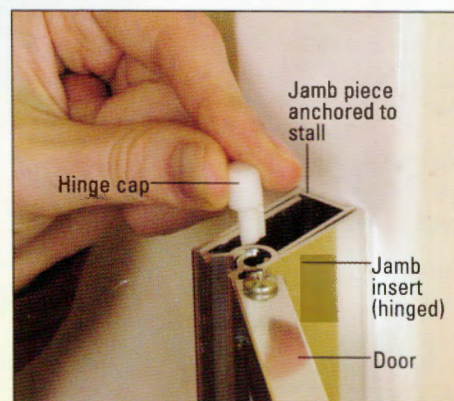


The bottom of a wall, where the tiles meet the shower base, must be installed correctly or water will seep behind the tiles and damage the studs. Install the backerboard to the top of the base's flange and fill the gap below with caulk. Apply tiles and apply a bead of caulk.

**Installing a shower door**



Measure the opening and select a door with a frame you can adjust to fit your unit. Follow manufacturer's instructions. In general you'll begin by cutting the jamb piece to size and installing a bottom track and seal. Each jamb is made of two interlocking pieces. One attaches



to the stall with screws and anchors. When both jambs are installed, decide which way the door should swing and install the hinged insert with the clamps provided. Slide the door in place, cap, and add the door handle. Install the other jamb insert and adjust.