Q When I recently visited the southern New Jersey coast, a fellow contractor told me that he made most of his shower pans out of fiberglass. Is this feasible to do on site?

A Michael Byrne, a veteran tile installer and consultant, and the moderator of *JLC*'s Ceramic Tile Forum, responds: Many different materials have been used to line wet areas over the centuries, including tar, used by ancient Egyptians, and lead sheets, used in Roman baths. Copper is still used today on occasion. But now these materials have been largely replaced with chlorinated polyethylene (CPE) or polyvinyl chloride (PVC) sheet material.

Fiberglass can also be used as an effective shower pan material. First, fiberglass cloth is fitted in the pan area (see photo, right), which then gets impregnated with resin to form a waterproof pan. But like every other type of pan material, the devil is in the details. Obviously, you want the pan to last as long as the structure where it is installed. But if the homeowner wants to remodel the bathroom—or if the pan was poorly fabricated and needs to be taken out—fiberglass can be difficult to remove from studs, backing, and subflooring.

Like any other shower-pan material, fiberglass resin and cloth must be installed over a subfloor with a ¼-inch-per-foot slope to the drain. Just as important is the resin itself. Most are water- and chemical-resistant, but some may not be: If fiberglass is specified for your install, a boat shop is probably the best source for resin and cloth. Crack prevention is another reason to use fiberglass materials formulated for nautical use, because boat structures are constantly bending, deflecting, and twisting. Building structures also move about, and fiberglass resins that cure rock-hard may corner-crack. Harder resins may also develop cracks around drain housings that are not adequately supported.

Fiberglass is a good choice for tile showers or sunken tubs that are curved or irregularly shaped. Regardless of the shape of the installation, however, shower pans made from fiberglass resin and cloth need to be properly supported. For most applications, this means installing blocking between studs that extends at least 9 inches above the sloped subfloor.

When it's time to hang metal reinforcing mesh for the overlying mortar bed, fiberglass actually excels over other materials. As the mesh laps over the fiberglass pan, it

can be securely attached to the pan with dabs of resin.

One problem when working with fiberglass is keeping resin off the bolts where the pan attaches to the drain housing. I've found that the best way to keep bolt threads clean is to screw the bolts at least two full turns into the housing and then wrap the entire protruding bolt with Teflon tape.

The curb is also an area that requires special attention when making a shower pan out of fiberglass. Make sure the fiberglass resin and cloth cover all three sides of the shower curb and lap up the jambs or sides of the shower opening.

One final area of concern is the interface between the outside face of the curb and the bathroom subfloor. Protecting the bathroom subflooring with resin and cloth is one option, but I don't recommend it. Instead, I'd use a sheet or liquid-applied membrane made for use with tile. Just be sure to join the two surfaces with a sealant that is compatible with whatever membrane you use as well as the cured fiberglass surface.

Q A client in a northern area has a concrete patio with a brick border. A dozen bricks have come loose where the patio steps down to a sidewalk. How should I do the repair?

A John Carroll, a mason and builder from Durham, N.C., responds: The most likely cause for the failure of the mortar is the freeze/thaw cycle. Water expands as it hardens into ice. As people who live in cold climates know, this expansion is a powerful force. It can crush boats and lift buildings, so it's no surprise that it can separate and break mortar and bricks.

The deterioration of exterior masonry is usually a cumulative process. One year, the ice causes a crack; the next year, the crack admits more water, which in turn causes more deterioration. It's a downward cycle, with ever increasing levels of damage.

The hardest part of this job is preparing the surface under the bricks. First take off all the loose mortar. You can use a cold chisel and a 2-pound hammer for this task; I also use a rotary hammer and a grinder with a diamond blade. Once you're down to a good, solid base, clean the surface of dust, dirt, and any organic matter, such as moss or mold. Using Clorox to get rid of organic matter is fine if you rinse it well when you're done. Before you lay the bricks, allow the surface to dry. You can speed up the drying process by using a leaf blower or hair dryer. The surface doesn't have to be bone-dry; just make sure there are no puddles sitting on it.

Before you start mixing the mud, be sure you have the right bricks and mortar. Exterior paving is a punishing environment for masonry, so it's imperative to choose the right materials. I would advise against reusing the old bricks. The pores of used bricks are usually filled with the old mortar, which prevents the fresh mortar from providing a good mechanical bond.

Instead, use paver bricks, which you can get at a masonry supply house. Paver bricks are harder and have more compressive strength than standard bricks. Most importantly, they absorb much less water, which makes them more resistant to the freeze/thaw cycle.

The mortar should be Type S or Type M masonry cement mixed with sand and water. In areas subjected to very hard freezes, I recommend Type M, which has a higher percentage of Portland cement. Use two-and-a-half to three parts sand to one part masonry cement. You don't need to mix an entire bag of mortar. For the number of bricks you need to lay, fill a gallon bucket with masonry cement, then fill the same bucket 2 ½ times with sand. Fill the same bucket with water and add about half of it to the mix. Mix this concoction thoroughly, then slowly add water until the mud becomes soft and mushy. It must be wet enough to absorb into the pores of the bricks, but it can't be soupy.

After mixing the mud, spread a layer about ½ inch thick on a scrap of plywood about 2 feet square. Set this aside and begin laying the brick. Lay a full bed of mud about ¼ inch thicker than the anticipated finished height of the joint. In normal brickwork, the finished joint is ½ inch, so the thickness probably needs to be at least ¾ inch. Now set the brick in place and set a small level on the surface of the patio and extend it over the brick. Tap the level down, driving the brick into the mortar until they both sit flush with the patio surface. Don't tap with the trowel handle—the trowel is always covered with mortar, and wet mud will sprinkle down and make a mess of your brickwork. Use a rubber mallet instead.

Bricklayers often butter the edge of each brick as they lay it, which is a difficult task to master. I prefer to set the bricks first and fill the joints later. Here's where the mud you spread on a piece of plywood comes into play. After the bricks are in place, retrieve the "mortar board." Having been spread in a fairly thin layer, the mortar should be slightly stiff at this point. Put a glove on your non-trowel hand and pry up a chunk of the mud (about 3 inches by 3 inches) with the trowel. Hold the chunk in the gloved hand just over the joint and use a ⅜-inch tuck pointer to slide the mud into the joint.

The object is to fill the joints without knocking the bricks out of place. Pack the joints full to maximize the surface area that bonds to the brick and locks it in place. More importantly, completely filled joints eliminate pockets where water can accumulate and freeze.

When you have filled all the joints, go back over them with a jointer. Don't try to clean up the mortar while it's still wet. Instead, leave the crumbs of mortar on the surface and let them dry. The following morning, vacuum up the loose mortar. Then clean up the faces of the bricks with a damp synthetic abrasive pad such as a Scotch-Brite pad.