



Installing Grab Bars

These safety devices aren't there for looks—they must be well anchored to help prevent bathroom injuries

BY PAUL ALTHOFF

A sprained wrist. A concussion. A broken hip. A wet bathtub can be a dangerous place even when you're physically fit, let alone impaired in some way. All it takes is one slip that could be prevented by a grab bar. I install grab bars for a living; it's pretty much all I do.

For me, the best thing about installing grab bars is that I'm helping people to deal with difficult medical conditions and to improve the way they lead their lives. The hardest part of the job is making the bars work in the many different bathrooms I encounter. Framing materials, bar locations and wall surfaces all change from house to house, but no matter what, that bar has to hold up.

Where I live, there is no residential code for grab bars, but the American National Standards Institute recommends a weight limit of 250 lb. for commercial applications; the National Kitchen and Bath Association recommends that bars hold 300 lb. of static

Where to orient the bar by Barbara McGlynn

As a therapist, I often find that plumbers and handymen install grab bars securely but not in a position that helps my patients. I once had a client whose grab bars were installed

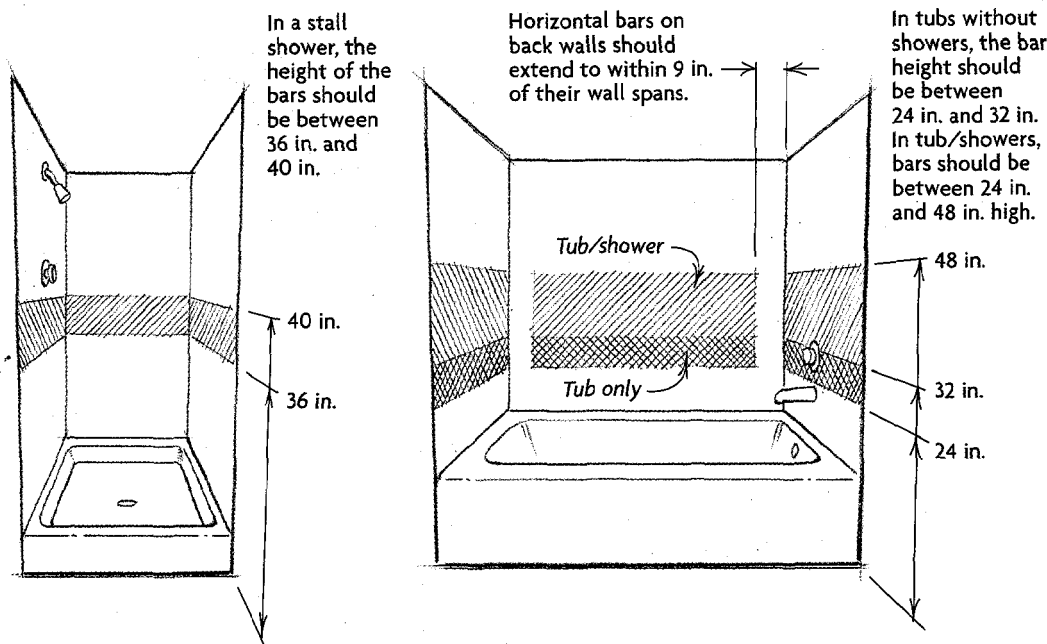
in the wrong place; she spent three days stuck in the tub until the police found her there. I hope that the following suggestions help you to position the bar in the best location.

The bathroom-wall framing largely determines where a grab bar goes, but several other factors also help to determine a bar's best location. For example, if the client had a

stroke that left her paralyzed on one side, certain locations may not help her. Will the client be standing or sitting on a chair in the shower? Sitting or standing in the tub? A ten-minute talk with the client should help you to understand what she needs.

Generally, a vertical bar at the entrance to the bath enclosure works best to help people get in and out of a tub or shower. A horizontal bar helps people who stand up in a shower. Because most people turn around to get their backsides clean, make sure the horizontal bar is long enough to help in that situation. To help someone stand from a sitting position, a diagonal bar is best; the second choice should be a vertical bar.

—Barbara McGlynn is a physical therapist in Minneapolis, Minnesota.



weight. A fragile 100-lb. woman who slips in the tub may exert much more load than her actual weight, and next week, she may have a 200-lb. brother-in-law visiting who might use the same bar. So I always make sure to err on the side of safety and be confident that the bar will hold.

Although these safety devices are installed around toilets and sinks as well, I'll focus on a more difficult situation, installing bars in a tub/shower stall.

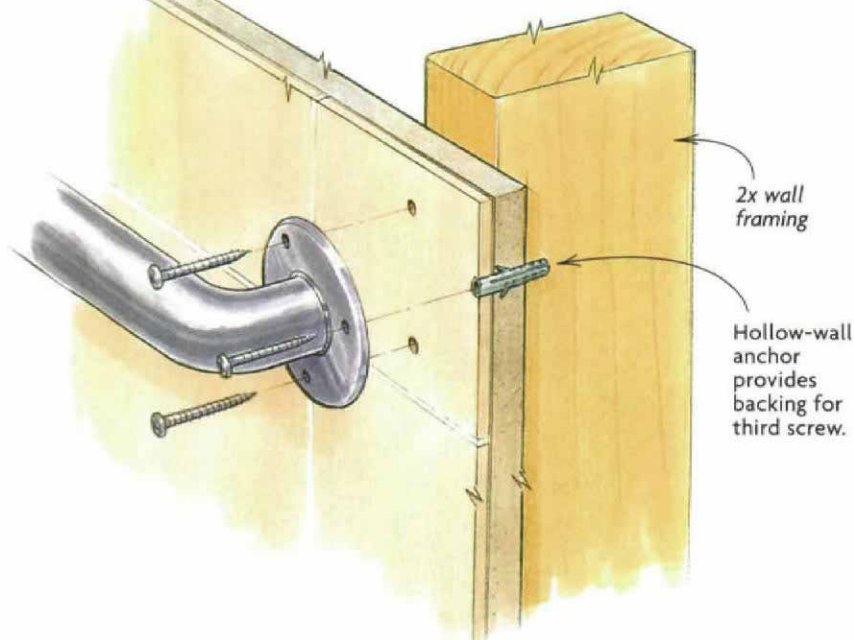
Finding studs is a critical task

Unless I'm working with reinforced concrete or hollow-block walls, my most time-consuming task is locating studs. After all, the success of any grab bar depends on its attachment to a wall's framing. Although most building codes call for framing on 16-in. centers, in real life the framing is never where you think it should be. The task is often complicated by a layer of tile, the plumbing or a tub-surround. An electronic stud finder can be a handy tool, but some of these gizmos can't distinguish between a stud and a pipe, duct or electrical line. I use a stud finder, but I also look in through the plumbing access door, remove the shower face plate or try to locate the studs on the backside of the bathroom wall. My last-ditch low-tech solution involves a small finish nail and a hammer. If there's a space between the tile and ceiling, I get permission from the homeowner to make several nail holes just above the tile line (photo left) where I think a stud is located. A combination of tapping, looking for nail dimples and measuring from each corner usually yields results. If the tile extends to the ceiling, I drill a 1/8-in. hole in a grout line close to the ceiling where I think a stud is located. I make as few holes as possible and seal them with tub-and-tile caulk after I've finished.

As you'll see later, finding a stud often isn't enough. In some installations, locating the stud's center is a critical part of the job; any fastener larger than a #12 screw needs a seat in the center of the stud. I've developed a drilling technique that seems to work with wood framing. After finding the stud, I insert the drill into the pilot hole at a 45° angle and carefully drill through the wood until I feel the drill bit pop through the side of the stud. If the bit seems to hit air too quickly, I assume that I'm too close to the edge, and I adjust the center accordingly. If I'm looking for steel framing, I'll often use the nail

Safety depends on good support

A grab bar isn't really safe unless it's solidly attached to the framing. Due to the three-screw configuration of most grab bars, the best you can hope for is to hit the stud with two screws; the third should be supported with a good hollow-wall anchor.



Divining the center of the stud with hammer and nail. As an alternative to electronic devices, a small finish nail is used to determine the exact location and center of the stud.



Hollow-wall anchors offer secondary support. The author prefers finned nylon anchors that won't spin in the tile substrate.



Silicone caulk makes for cheap insurance. The bar's mounting flange should be sealed along its perimeter, both inside and outside, to prevent water infiltration into the wall.



method to determine the exact position of the stud's edges and center.

Tiled walls must be drilled carefully

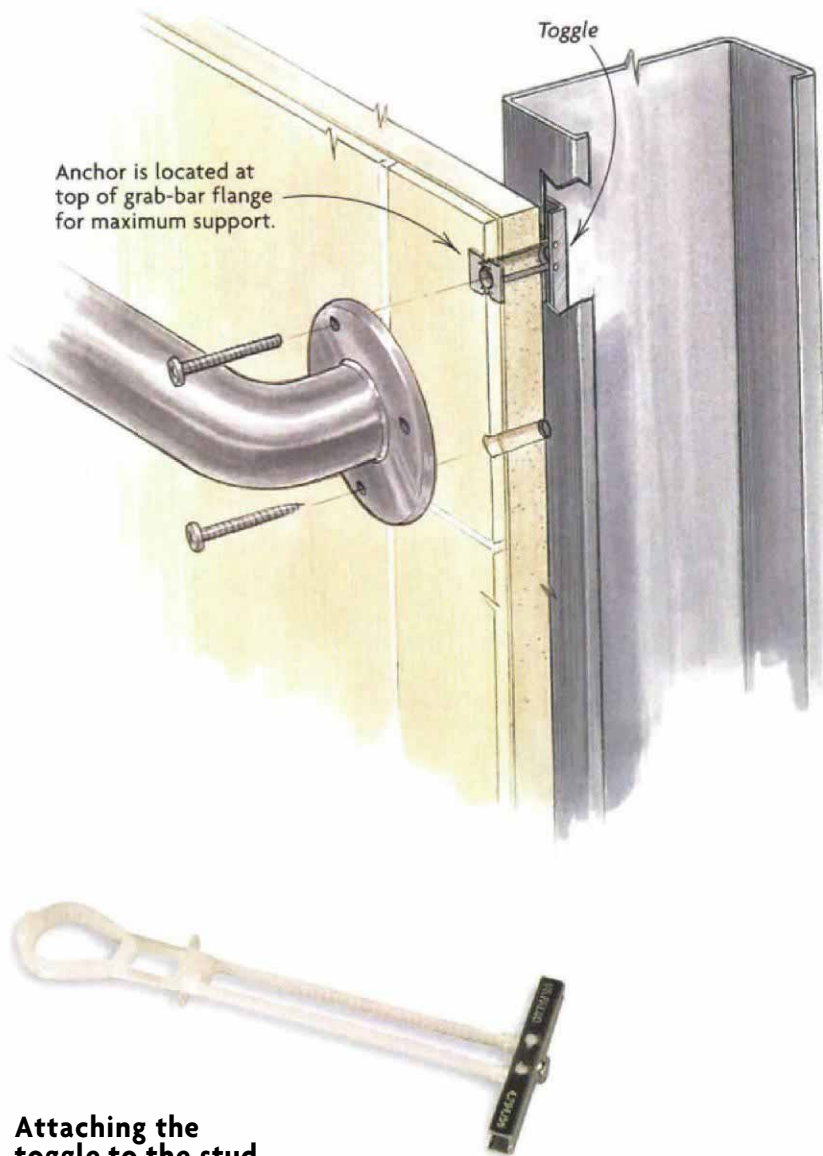
I spend a good part of my time installing bars onto tiled walls; I'm also seeing more bathrooms that are finished with stone or solid-surface materials. Tile is a difficult material to drill: It's hard, slippery and brittle, so I make sure that I have a supply of new, sharp masonry bits with me. I've also found

that drilling is much easier if I start with a small bit in a cordless drill. I don't use hammer drills because their excessive vibration sometimes cracks tiles; I also like to have a sense of the material as I bore into the wall, which is hard to do with a hammer drill.

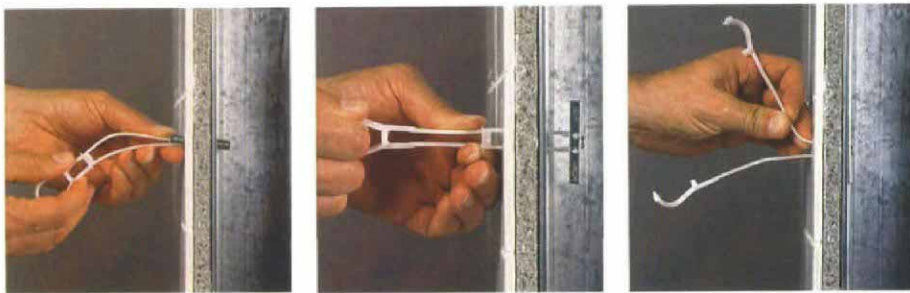
Once I've marked the stud locations, I hold the grab bar in place and mark the screw positions with a pencil. (For recommended locations, see sidebar, facing page.) To get good support, I try to locate two of the three

Hollow-wall anchors reinforce steel studs

After witnessing a few screw failures, the author began using one toggle anchor (Toggle Bolt Anchors; Mechanical Plastics Corp.; 914-347-2727) to beef up grab-bar support in steel-frame walls. Because the anchor requires a 1/2-in. hole, finding the center of the stud is a critical and primary task.



Attaching the toggle to the stud



The metal end of the toggle is inserted into a 1/2-in. hole and pulled taut against the back of the stud. A collar slides down the straps and snugs the anchor to the wall. After the straps are detached, the anchor is ready to receive its 1/4-/20 bolt.

Finding grab bars

Although many home centers carry a small selection, grab bars aren't standard household items, so you may have to look harder for the models that suit your needs. Below is a partial list of grab-bar manufacturers to get you started.

Sunrise Medical-Guardian
(800) 333-4000
www.sunrisemedicalonline.com

Safe-T-Bar Inc.
(800) 444-8855

Rubbermaid Health Care Products
(540) 667-8700
www.healthcareproducts.com

GAMCO
(800) 451-5766
www.gamcousa.com

C. D. Sparling Co.
(515) 232-3338
www.grabbars.com

mounting holes on the stud. I use a 1/8-in. masonry bit to drill pilot holes and enlarge as needed. Most bars come with #10 screws that are too short, so I use #12 stainless-steel screws that penetrate the wood at least 1 in. In the remaining hole where there's no backing, I use nylon hollow-wall anchors (drawing, center photo, p. 91), usually the type that have fins that prevent them from spinning in the drywall. I caulk each flange's backside with a bead of silicone (photo right, p. 91) to keep out water. Once the bar is installed, I plant my feet and give it a hefty yank (photo bottom right, facing page). If it holds me, I know it will hold a client who is losing his or her balance and grabbing for the bar.

Toggle bolts reinforce steel framing

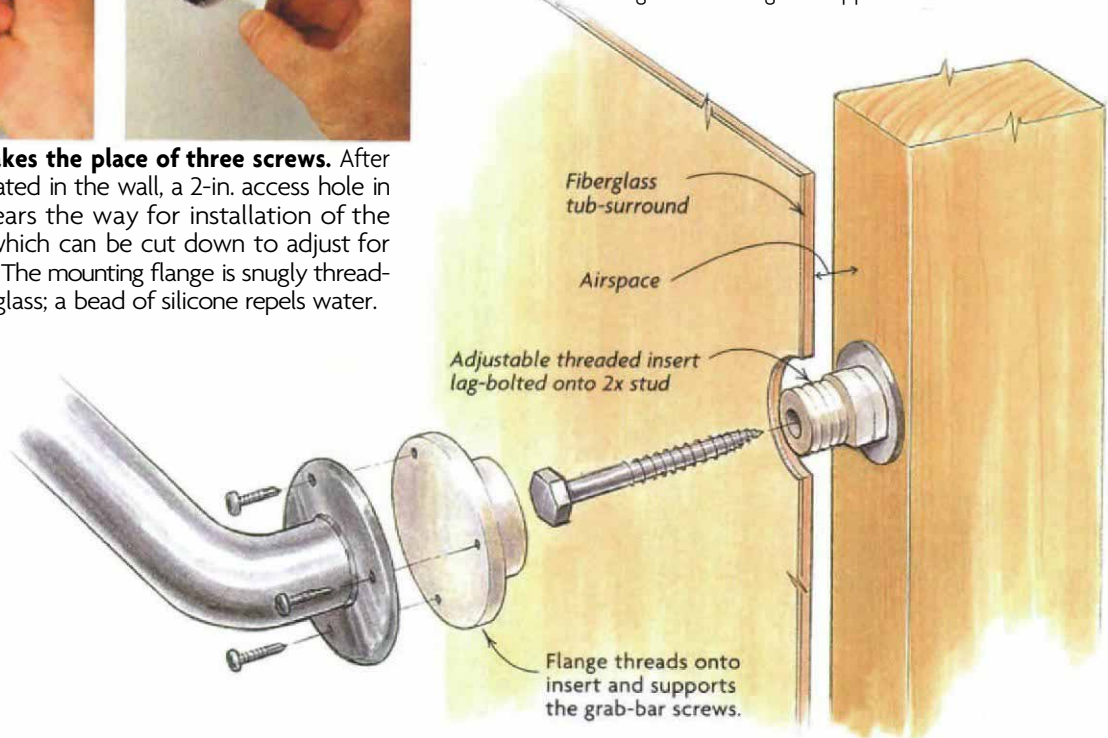
Metal studs present challenges not found with wood. In the past, I've seen screws pull out of thin-gauge steel; I also know it's all too easy to overdrive a screw and strip the threads. My solution is to use a nylon and steel toggle with a 1/4-/20 stainless bolt (drawing left) made by Mechanical Plastics Corporation (914-347-2727) that draws the stud to the wall and strengthens the entire assembly. One toggle at each end of the bar



One large bolt takes the place of three screws. After the framing is located in the wall, a 2-in. access hole in the fiberglass clears the way for installation of the threaded insert, which can be cut down to adjust for shorter distances. The mounting flange is snugly threaded onto the fiberglass; a bead of silicone repels water.

Anchoring a grab bar onto a fiberglass tub-surround

Bridging the airspace between a fiberglass enclosure and the bathroom wall is a difficult task. Fiberglass with no backing can easily crack and certainly won't hold a grab bar by itself. The author uses the heavy-duty plastic Solid Mount (Back to Basics; 714-533-3636), which cantilevers from wall to enclosure and gives the bar good support.



is sufficient. Here, the tricky part is having to drill a $\frac{1}{2}$ -in. hole into the face of the stud. That's why hitting the middle of the stud is so critical. Because steel framing often flexes away from direct pressure, I start a pilot hole with a $\frac{1}{8}$ -in. bit and then work up incrementally to a $\frac{1}{2}$ -in. bit. For the screws that don't have backing, I drill $\frac{1}{4}$ -in. holes and use hollow-wall anchors,

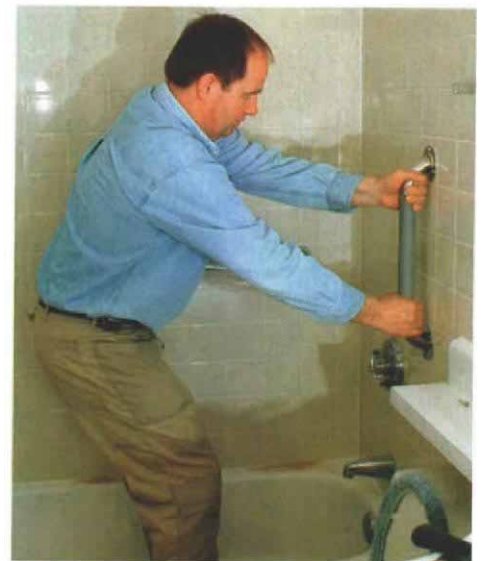
Anchoring into a fiberglass tub-surround

If I'm working with a fiberglass tub-surround, finding the stud can be challenging because there's often an airspace between the enclosure and the drywall. So the chances are better that if my marks aren't accurate and if I don't drill straight, I'll miss the stud. Although I have installed blocking in the past (for one example of blocking a fiberglass enclosure, see Herrick Kimball's suggestion in "Q&A," *FHB* #114, p. 18), I use something called Solid Mount (Back to Basics; 714-533-3636), which consists of a threaded plastic insert and mating flange (photos above) that's lag-bolted to the stud; the assembly's length is adjustable and provides good support. The problem is that to

seat the $\frac{5}{16}$ -in. bolt and threaded insert, you have to drill a 2-in. dia. hole in the fiberglass. A misplaced hole can ruin a tub-surround and the rest of your day in the bargain.

Obviously, it's important to find exactly where the stud lies. After I find the exact location of the stud with a finish nail, I plumb a line down from the stud center to the general location of the bar. I mark the outside diameter of one end of the bar and drill a small pilot hole ($\frac{5}{32}$ in. or so) at the center. Now I use the same drilling technique that I described earlier to find the exact center of the stud. I follow with a 2-in. hole through the fiberglass and bolt the threaded insert (photo above left) into the pilot hole. After sealing the back of the flange with silicone caulk, I thread the flange onto the insert (photo above right) and use adjustable pliers to make sure it's tight. Once both flanges are in place, I can drill three pilot holes for each end and attach the bar. Like the previous installations, I make sure I seal the back of the bar's mounting flange. □

Paul Althoff lives in Minneapolis, Minnesota, where he specializes in grab-bar installation. Photos by Charles Bickford.



Test-driving the installation. When he has completed an installation, the author always checks his work by putting his weight on the bar and giving it a few good pulls.