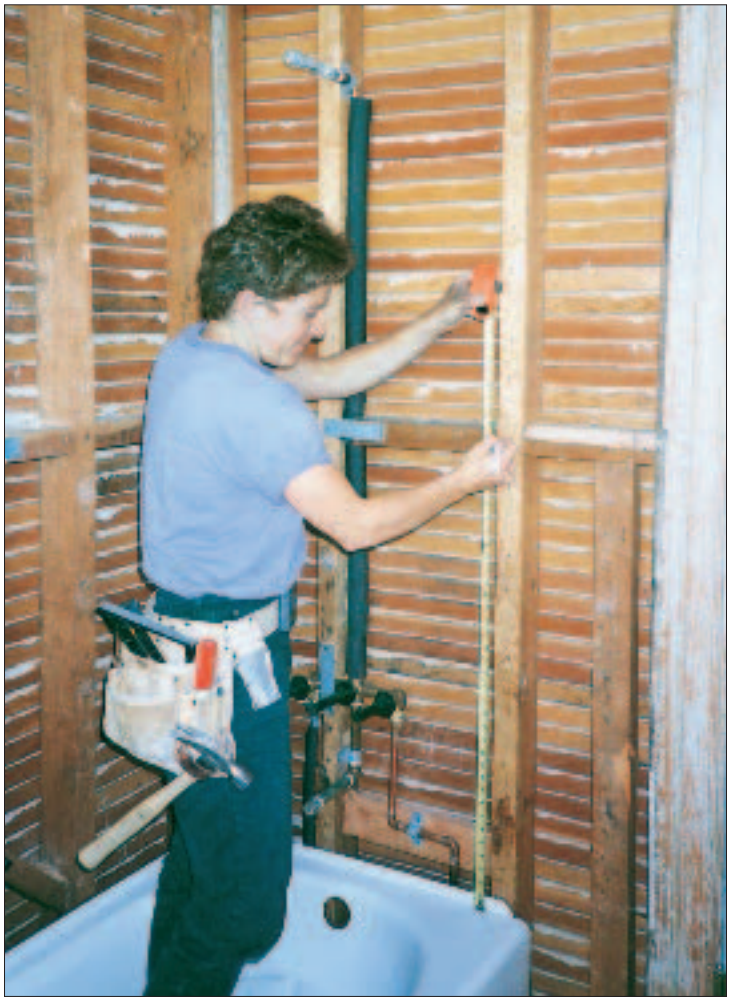
The Safe Bathroom

Guidelines and recommendations for building safe, user-friendly bathrooms



A carpenter marks the location for securing a vertical grab bar into the framing. Note the height of the showerhead stub — at 84 inches off the subfloor, it allows room for bathers taller than 6 feet.

My roofer, ever vigilant for his safety while climbing and standing on roofs, lost his balance as he was stepping out of his shower one morning. He reached for the shower curtain because there was no grab bar, and he and the curtain went down together. He lost several days of work and suffered needless pain from the resulting injuries.

As a remodeler, I try to keep safety issues in mind when redesigning bathrooms. Although most of my clients do not specifically request "safe bath" features, I try to steer them toward designs and floor plans that solve the main safety issues while also meeting their aesthetic and comfort demands.

Often, simple measures can prevent bathroom accidents. Some of these measures are dictated by code, some are recommendations by the National Kitchen & Bath Association (NKBA), and still others come from my experience in designing, building, and using bathrooms.

I take the basic approach that most bathroom safety issues revolve around human spatial needs and the kinds of physical activities that take place in the bathroom. If the design provides for these needs and activities, the bathroom will not only be safer but will also be a more comfortable and enjoyable room to use.

Safer Showers

When deciding on clearances in the bathroom, remember that we are not all created equal in size! What works well for a shorter person may not work for a basketball player.

This is especially evident in the shower. The Uniform Building Code (UBC) requires shower stalls to be at least 30x30 inches from inside finish surface to finish surface. Small people may fit comfortably in that space, but it doesn't give much elbow room to a 6-foot 7-inch person. (I come from a family of tall, stocky people, so I'm concerned about the needs of bigger people.) A larger person will fit more comfortably in a 38x42-inch shower. I always make showers at least 36x36 inches and prefer 42x42 inches, to accommodate all sizes.

Showerhead height. Showerhead placement is often a nuisance, as well as a safety issue, for tall people who cannot bend low enough to get their head under the spray (Figure 1). I have showered in places where the head was placed as low as 64 inches — a real head banger!

NKBA recommends roughing in showerheads at 72 to 78 inches above the floor. I prefer the upper number as a minimum, and have placed showerheads as high as 84 inches. (Remember that water travels downhill!) Place the shower-

by Iris Harrell

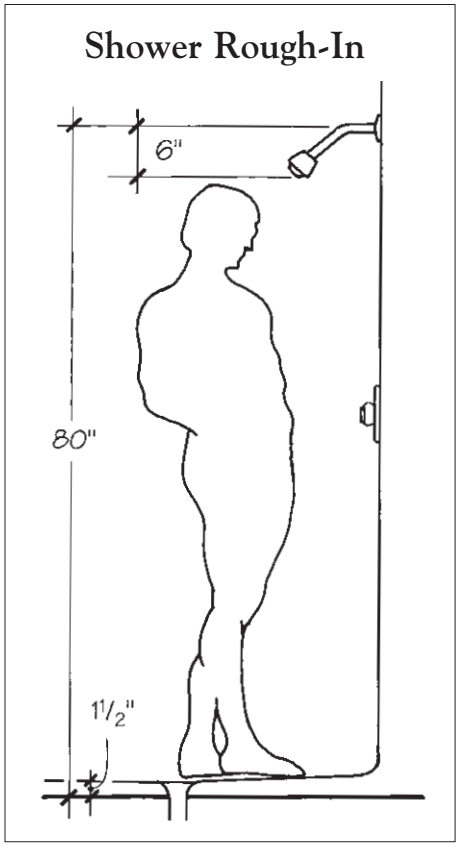


Figure 1. *Low showerheads are uncomfortable and unsafe for taller people. When roughing in the showerhead, remember to allow for the height of the showerhead itself, as well as the thickness of the shower floor. As the drawing shows, an 80-inch rough-in height allows just 1/2-inch clearance for a 6-foot person.*

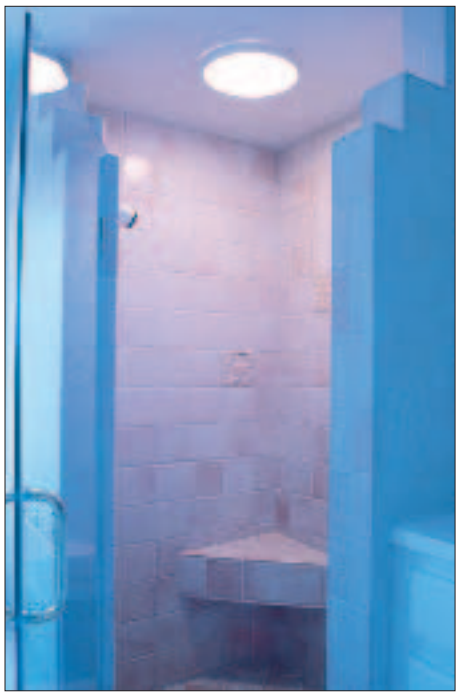


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Figure 2. *Whenever there's room, the author includes a bench in the shower for the bather to sit on while washing feet or shaving legs. This triangular corner bench is easy to frame and looks good.*

head higher to accommodate tall people, and it will still work for shorter people — the water will reach the shorter person a split-second later.

When roughing in the showerhead, keep in mind that you lose about 6 inches with the attachment of the showerhead itself, plus another 1 1/2 inches for the finished shower floor.

Ceiling height. A clearance that is not often thought about is the height of the shower ceiling (when it's not an open area). Just how far do the arms of a 6-foot 7-inch person reach while they're soaping their underarms? I've seen a carpenter this tall who could install crown molding on an 8-foot ceiling without a ladder. He needs close to an 8-foot ceiling height to freely do his thing in the shower. So I avoid furred-down ceilings in the shower — they feel claustrophobic and also increase the potential for mildew.

Shower bench. It's not easy to keep your balance while washing your feet or shaving your legs — standing like a stork with one foot raised and one foot on the floor. So where there's room, it's nice to provide a bench in the shower — preferably out of the direct spray of the shower. An angled bench across one corner of the shower works well — it's easy to frame, and since it requires no support underneath, it doesn't look bulky (Figure 2). Where there's not room for a bench, NKBA recommends a simple 6x6x6-inch corner protrusion for a footrest, so the person doesn't have to bend as far.

Shower doors. Shower doors must always swing out, for a simple reason — you can't easily help a person who has fallen or fainted against an inswinging door. The door must not hit any obstruction that would cause it to shatter. In tight spaces, you may need a hinge limiter to stop the door swing.

By code, all shower doors must be made of tempered glass, so breakage is only a financial issue and not an opportunity for an injury. The same is true for glass tub enclosures, and for any windows in a tub or shower area that are low enough to fall into.

With sliding glass shower doors, the minimum width recommended by NKBA is 42 inches for a pair of doors. This leaves 21 inches clear to get inside the shower. I find this to be tight and personally need 24 inches to safely enter and exit a shower.

Better Bathtubs

Ever notice how many of the award-winning bathrooms featured in magazines show glorious steps up to a palatial sunken tub — as if the bather will be queen for a day, with servants standing by to help her into and out of her luxurious bath? But how many of these have the necessary handrails to ensure safe entry and exit from the tub?

Steps for raised tubs. Figure 3 illustrates the problem with elevated tubs: The user's center of gravity is high as he takes a big, awkward step down into the tub. A better solution is to avoid steps altogether or limit the number to one. Tub platform steps — if they fit in the space you are working with — should have a minimum run of 10 inches and a maximum rise of 7 1/4 inches (NKBA's recommendation). UBC actually allows an 8-inch rise, but this is awkwardly high for most people.

The solution I prefer with whirlpools is to provide a wide ledge next to the tub. Users can then sit on the tub ledge and swing their legs into and out of the tub.

I have found that it is unsafe to use a whirlpool tub unit as a combination tub/shower. Many whirlpool tubs have contoured interior shapes that are great for soaking but are awkward and slippery for showering. Protruding jets can also get in the way.

Grab bars. Many of my clients are afraid of the "institutional" look, and will only allow us to put in one grab bar. I always specify a minimum 15-inch-long bar placed vertically at the entry and exit of the tub or shower. This is the point where the bather has one foot up and one foot down — not the safest posture to be in on a wet floor.

Watch out for grab bars that are too big around for children or adults with smaller hands to grasp well. And remember to provide plenty of solid blocking at the rough-in stage for fastening grab bars (Figure 4).

Toilets and Bidets

The amount of clear space needed around the toilet is largely a comfort issue, but also bears somewhat on safety.

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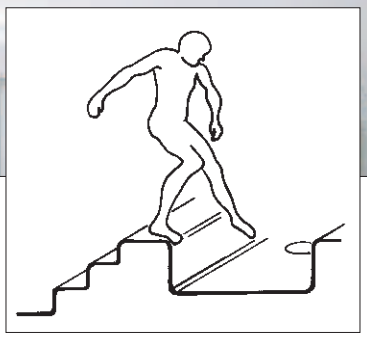


Figure 3. *Elevated, sunken tubs are hard to get into safely (right). The author avoids steps and provides a wide ledge next to the tub (above). Users can then safely sit on the tub ledge and swing their legs into the tub.*

Figure 4. *Although grab bars are not mandated by code, in most bath remodels the author includes a vertical bar at the entry to the tub or shower.*

The UBC requires a minimum of 15 inches from the center of the toilet bowl to any obstruction on the sides (Figure 5). I personally find the NKBA recommendation of 21 inches from center to side much more accommodating. UBC now requires 24 inches in front of the bowl (it used to be 21 inches). This clearance is harder to achieve with elongated toilet bowls, which are far more comfortable for tall people, so you have to plan carefully.

Bidet. When a bidet is placed beside the toilet, the designer should remember the direction the knees are facing. (For anyone not familiar with bidets, the user sits facing the wall while washing.) The minimum code distances are again 15 inches from the center of the bowl to the sides. If the toilet is right next to the bidet, this clearance is tight — the knee of the bidet user may hit the toilet. So I follow NKBA's recommendation and allow at least 18 inches from the center of the bidet to the side of the toilet.

Sometimes people will use a bidet for a foot bath. If that's the case, you may want to leave more clearance in front of the bidet than the 24-inch minimum.

Also keep in mind that the bidet will need a small towel bar placed close by.

Paper holder. What about the toilet paper holder? Hopefully it is recessed, if you have a minimum of space for the toilet — every inch of clearance counts. The toilet paper holder should ideally be 8 inches in front of the toilet and 26 inches above the finished floor. It's very awkward to reach backward for toilet paper — this creates an uncomfortable and undesirable contortion of the body.

Sinks and Vanities

Sinks and vanities must accommodate a variety of physical motions. There's the up-and-down motion of brushing teeth, the front-to-back motion of combing hair with one hand and blow-drying it with the other. There is the close-to-the-mirror activity of shaving or putting on makeup and the "Good Morning, America" speeches we give ourselves in the mirror to help us face the world for the day. (Is there any question how a vanity got its name?)

Vanity width. According to NKBA, the edge of a lavatory should never be closer than 2 inches to a side wall (Figure 6). But for a left-handed person, a 2-inch clearance to the left wall is intolerable. It just doesn't give the elbow room needed for drying hair and brushing teeth. NKBA's *recommended* clearance of 6 inches from the wall works much better.

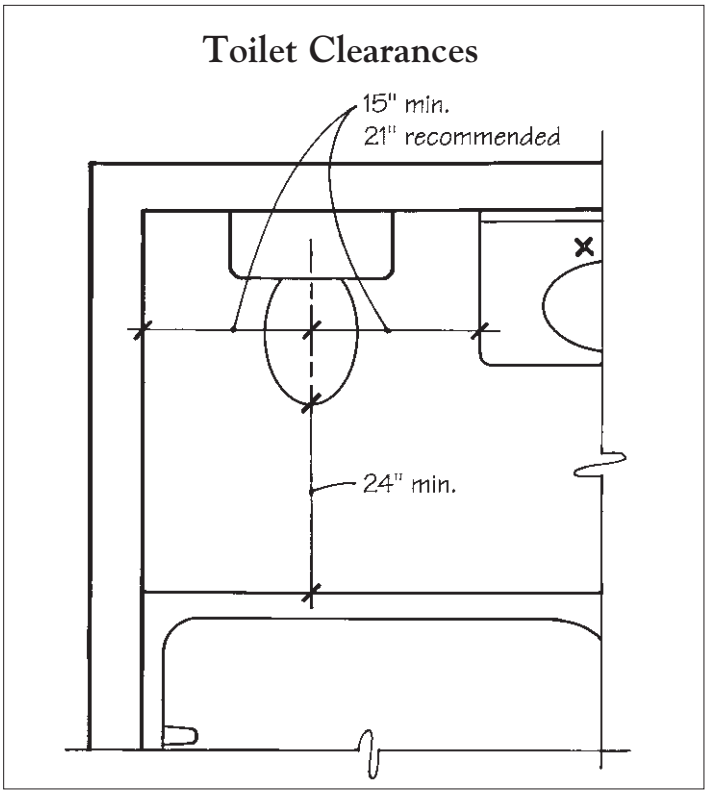
If the vanity has two sinks, NKBA's minimum vanity width is 60 inches, with 72 inches recommended. A liberal and more spacious two-sink vanity would be 96 inches wide.

Vanity height. For some reason, 30 to 32 inches has been the standard for vanity height. Bending more than necessary is awkward and uncomfortable, so be aware that most old vanities are actually too low for most users. NKBA recommends a height of 34 to 36 inches. I find that 36 inches is too high for some of my shorter clients. However, almost all my clients are comfortable with 34 inches, which means taller users will be accommodated as well. Some designers place the two sinks in a master bath at different heights, to accommodate the individual needs of the couple the bathroom is being designed for.

Don't forget the toe kick for the vanity cabinet. People are often in the bathroom without their shoes, and stubbing a toe is not a good way to start the day. Current cabinet styles often have toekick heights of 6 inches or more, although 4 inches works comfortably.

Door Swings

The swing of the passage door into the bathroom is another safety issue. The door should be placed where it can't hit anything or anybody. For a toilet compartment with a door, allow at least 16 inches from the face of the



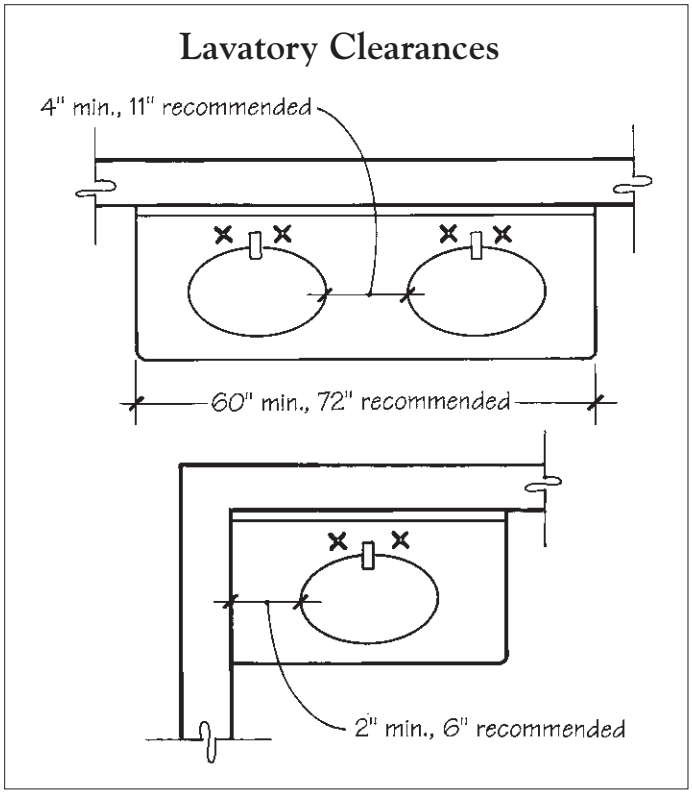


Figure 5. *The Uniform Building Code requires at least 15 inches from the center of the toilet to any obstruction on the sides, and 24 inches in front. The author prefers to follow the NKBA recommendation of 21 inches from center to side whenever possible.*

Figure 6. *For double-sink tops, NKBA recommends a total counter width of 72 inches, and a minimum width of 60 inches. The edge of a lavatory should never be closer than 2 inches to a side wall, and a minimum of 6 inches is recommended.*

toilet bowl to the edge of the opening door, to avoid hitting the user's knees should the door be opened.

Pocket doors can be useful for providing better clearances. However, many people don't feel secure and private behind a pocket door. But with a solid pocket door, the noise issue is taken care of, and higher-quality pocket door locksets provide adequate security (though they may not be as easy to operate where accessibility is an issue).

Protruding Objects

Protruding accessories are another safety issue. We don't usually give much thought to robe hooks, but their placement is critical. They need to be above eye level, but still within reach. This will of course vary considerably, depending on who is using the bathroom. Put hooks low enough for shorter users to reach but high enough that taller people don't walk into them at eye level.

Towel bars. Another protrusion that is often missed is a towel bar behind the open bathroom door. I've learned this lesson the hard way too many times. It's a safety issue because the open door can kick back and hit the person entering the bath in the face. It's also an aesthetic issue, because the impact will put a gouge in the bathroom door. Towel bars and grab bars protrude at least 3 inches — plan for them.

Cabinet knobs. Another useful warning from NKBA is to watch out for the material that cabinet door handles are made of. Glass, ceramic, and some plastic handles could shatter if hit inadvertently.

Lighting and Electrical Safety

Light fixtures should be carefully chosen for a shower or tub area. Use a fixture rated for either a damp location (tub) or a wet location (shower). These fixtures have sealed gasketed covers that usually cannot be removed without a screwdriver. This is to prevent a sleepy, fuzzy-headed user from trying to change the light bulb while he or she is showering. (Stranger things have happened.)

Tub and shower lights are safest when they cannot be touched while standing in the shower or tub. (Of course, nothing is out of reach for the 6-foot 7-inch person in an 8-foot-high room. Hopefully he or she will not have a screwdriver while showering.)

I also allow for a night-light in every bathroom for nighttime users who don't want to turn on the overhead light. The NuTone QT9093 fan/light/heater combination unit (NuTone, 513/527-5172) has a separately switched night-light built in — a great safety feature (Figure 7).

GFCIs. All receptacles in a bathroom should be GFCI-protected, as should switches placed anywhere near water. Most whirlpool tubs now come with special remote switches for safely turning on the jets while in the water.

Heaters. Although electric wall heaters are quite common, the safest

Figure 7. *A bathroom night-light is a nice safety feature for nighttime users who don't wish to turn on the main lights. The NuTone QT9093 fan/light/heater combination unit has a separately switched night-light.*

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Figure 8. *A banjo top allows for increased counter space, but the toilet tank must be accessible for servicing. A low-profile toilet helps.*

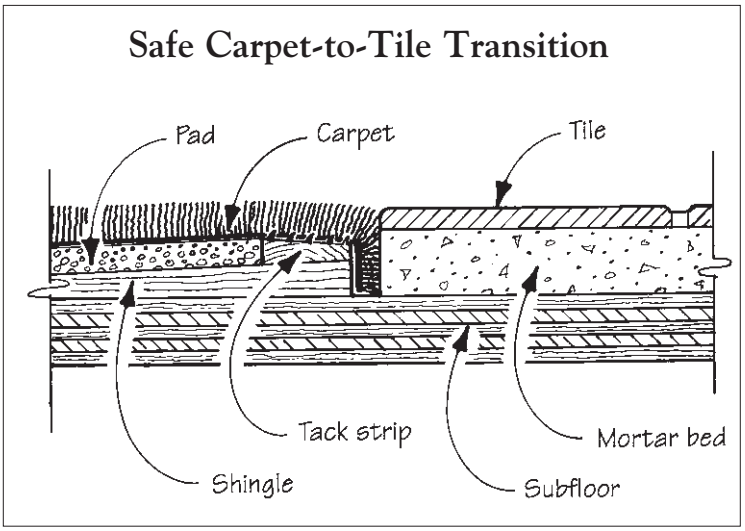

Figure 9. *To prevent tripping where carpet meets a mortar-bed tile floor, a layer of wood shingles beneath the carpet pad provides a gently sloping flush transition.*

place for a bathroom heater is in the ceiling, out of the reach of children. These come in two types — either with a radiant heat lamp or a forced-air fan heater. While radiant heat lamps are very comfortable, I find them too slow in the wintertime and usually opt for the fan type. However, others may not like the feel of warm air blowing on a wet body. Always ask your client.

Scald Protection

Scalding is a fairly common accident in the bathroom, and one that can result in very serious injury — especially in the case of small children and elderly persons. I always check the temperature setting on the hot water heater — it is often much higher than it needs to be, even for dishwashing.

But the best solution is to install a thermostatically controlled or pressure-balancing control valve in the tub or shower (see "Antiscald Protection for Showers," 7/94). These valves — which are now required by the most recent model building codes — will not let the temperature go above a set temperature (usually 120°F), even if you turn on every other water-hungry appliance in the house at the same time.

Another simple precaution, when there's room, is to place the shower valve on the opposite wall from the head, or to one side, so the user can turn on the water and adjust the temperature without standing in the line of the spray.

According to NKBA, children are safer using a single-lever faucet instead of separate hot and cold controls. Some single-lever valves are a little confusing to me — especially at that early morning, fuzzy stage, so I prefer the ones with clear red lines and arrows that indicate the dangerous temperature zone.

Safe Storage

Proper storage is a must in the bathroom, both for safety and convenience. Wherever children have access, medicines and cleaning chemicals should be stored in a locked cabinet or high enough to be out of reach.

For convenience, plan storage areas to coincide with the point of first or last use. Provide storage for toilet paper near the toilet, and, for instance, a place for hand towels and a hair dryer near the sink.

Most people leave an assortment of often-used items out on the bathroom counter all the time. Since counter space is precious in most baths, some designers will increase counter space by extending the counter over the toilet — often called a banjo top. If you install a banjo top, make sure it's placed high enough that the toilet lid can be lifted off for servicing and that it's shallow enough so the toilet seat will stay in the open position (Figure 8).

If you are using a toilet topper cabinet, the maximum safe depth of the cabinet should be 8 inches, to prevent anyone from skinning their back while getting up from the toilet.

Slip-Resistant Flooring

Last but not least, don't forget the slippery floor problem. If your floor is tile or marble, use nonslip, not glazed, tile and honed marble instead of highly polished marble tiles. Wide, sanded grout lines also offer better traction, if they fit with the design.

Some people really like carpet for bathroom flooring. Except in separate dressing room areas, carpet is not recommended by NKBA for the bath. It holds moisture and is a good breeding ground for fungi and bacteria, which are not healthy or pleasant to live with. Wet carpet can also increase the chance of rot in the wood structure.

Another small but important detail is the threshold at the bathroom entrance. The tile floor in the bathroom may be higher than the finished floor in the adjacent hall or bedroom. Make sure the transition can't cause tripping or toe-stubbing — people finding their way into the bathroom in the middle of the night will forget to step over.

A carpet-to-tile transition can be ramped with wood shingles (Figure 9), with the carpet turned under to avoid a metal trim strip. Hardwood to tile may require a custom-fitted threshold to bridge the difference in finish floor heights. ■

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