
Chapter Six:

REQUIREMENT 6

Reinforced Walls for Grab Bars

6



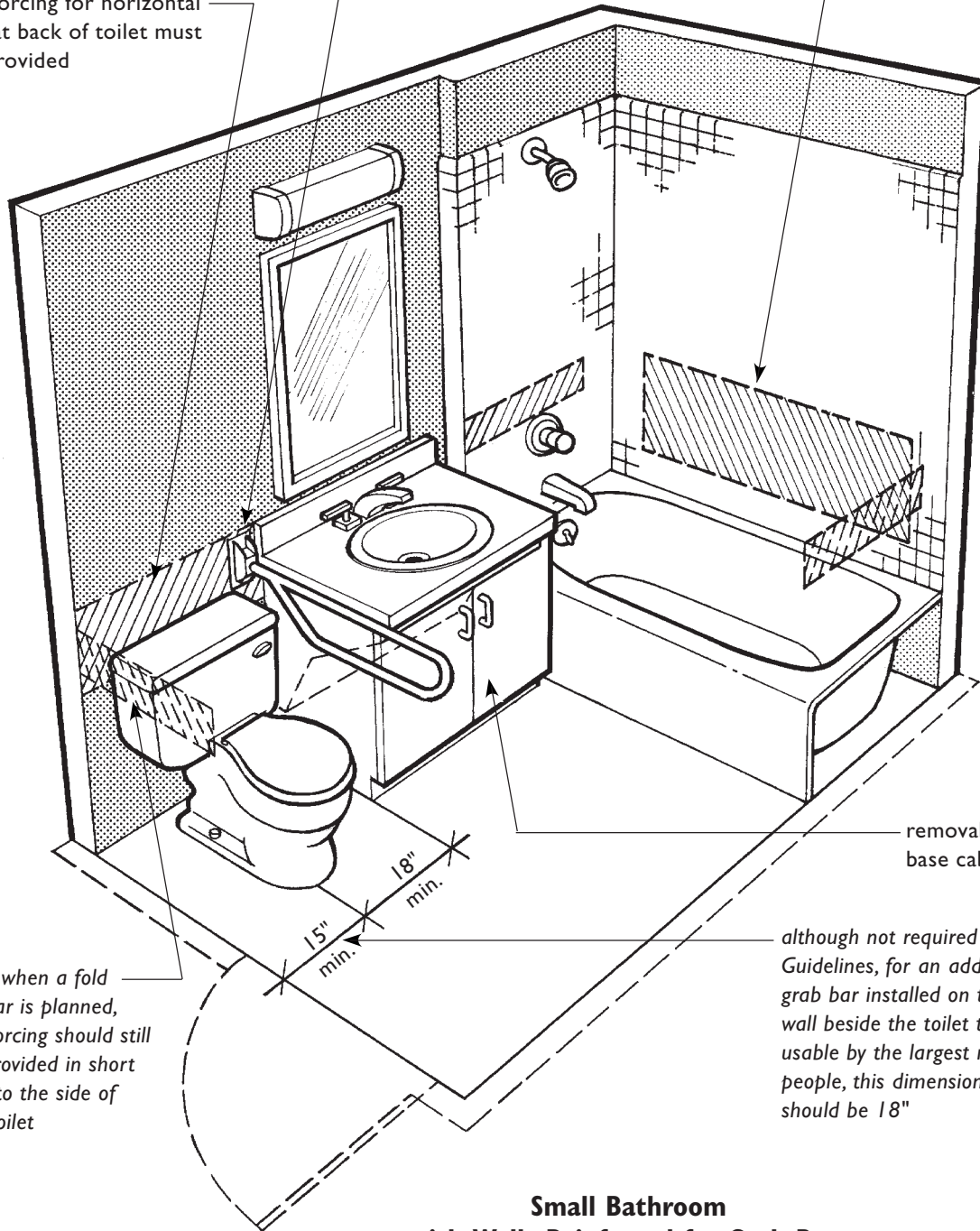
...covered multifamily dwellings with a building entrance on an accessible route shall be designed and constructed in such manner that all premises within covered multifamily dwelling units contain reinforcements in bathroom walls to allow later installation of grab bars around toilet, tub, shower stall and shower seat, where such facilities are provided.

Fair Housing Act Regulations, 24 CFR 100.205

where toilets do not have full side walls, reinforcing behind toilet must be enlarged to support a folding grab bar

reinforcing for horizontal bar at back of toilet must be provided

minimum reinforced areas at conventional bathtub



even when a fold up bar is planned, reinforcing should still be provided in short wall to the side of the toilet

although not required by the Guidelines, for an additional grab bar installed on the short wall beside the toilet to be usable by the largest number of people, this dimension also should be 18"

**Small Bathroom
with Walls Reinforced for Grab Bars**

INTRODUCTION

The Fair Housing Accessibility Guidelines (the Guidelines) do not require that grab bars be installed in bathrooms. However, the Guidelines do require that bathroom walls be sufficiently strong to allow for later installation of grab bars for resident use. This requirement applies to all bathrooms, and also to powder rooms when the powder room is the only toilet facility on the entry level of a multistory dwelling unit in an elevator building (see page 4.9). Reinforcing methods are discussed later in this chapter.

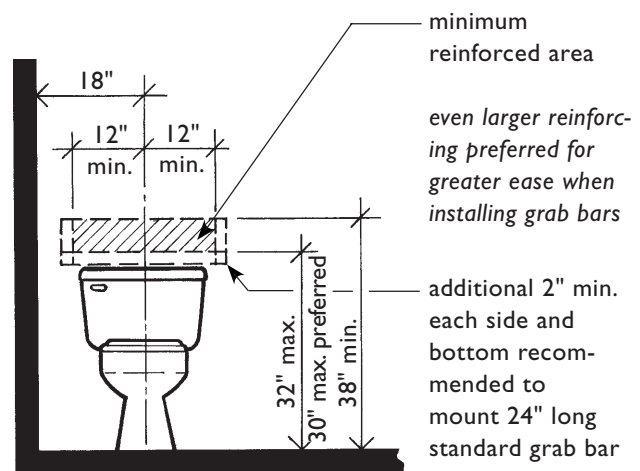
Grab bars are critical for many people with mobility impairments to be able to safely transfer on and off the toilet. Safety for everyone is greatly increased by the addition of grab bars at bathtubs and showers. The Guidelines do not prescribe the type or size of grab bars, nor the structural strength they must exhibit. The Guidelines state only that the necessary reinforcement must be placed “to permit the later installation of appropriate grab bars.” HUD encourages builders to look at the 1986 ANSI A117.1 Standard, or an equivalent or stricter standard, or their state or local building code in planning for or selecting appropriate grab bars.

It is recommended that building owners and managers permanently mount directions for installation of grab bars in every dwelling unit where applicable. The type of construction should be described, where reinforcing is located, and suggestions made for the most effective method for installing grab bars. These notices could be laminated to the inside of a linen closet door or to the inside of a utility or water heater/furnace door.

REINFORCING FOR GRAB BARS AT TOILETS

The Guidelines specify that reinforcing at least 6 inches wide by 24 inches long, capable of supporting grab bars, be provided behind and beside toilets. These minimal areas to be reinforced are adapted from the 1986 ANSI A117.1 Standard. However, the reinforcing should be both longer and wider so sufficient solid material is available to mount grab bars of differing lengths, mounting configurations, and designs. In fact, the Guidelines encourage longer reinforcing, as shown in the Guidelines Figure 3, “Water Closets in Adaptable Bathrooms,” where the preferred length of 42 inches for side wall reinforcing is given.

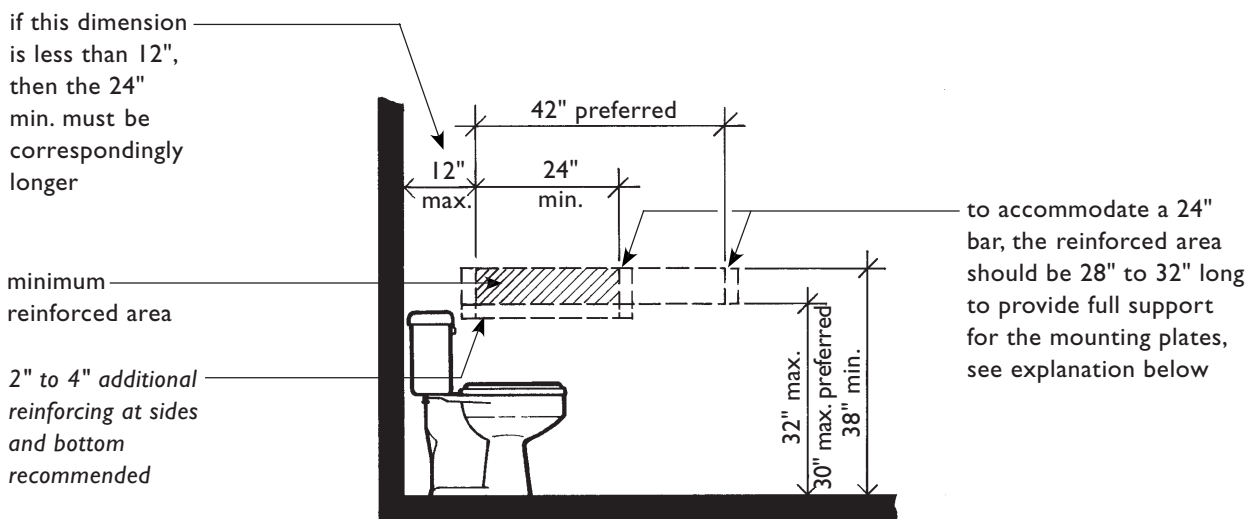
Grab bars, to be within the ranges presented in most accessibility standards, are mounted so their centerline is 33 inches to 36 inches above the floor. If the bottom of the reinforced area is at 32 inches, and a resident chooses to mount a bar at 33 inches, the mounting plates will extend below the reinforced area by 1/2 inch or more. To avoid a weak and unsafe connection, it is critical that reinforcing be enlarged.



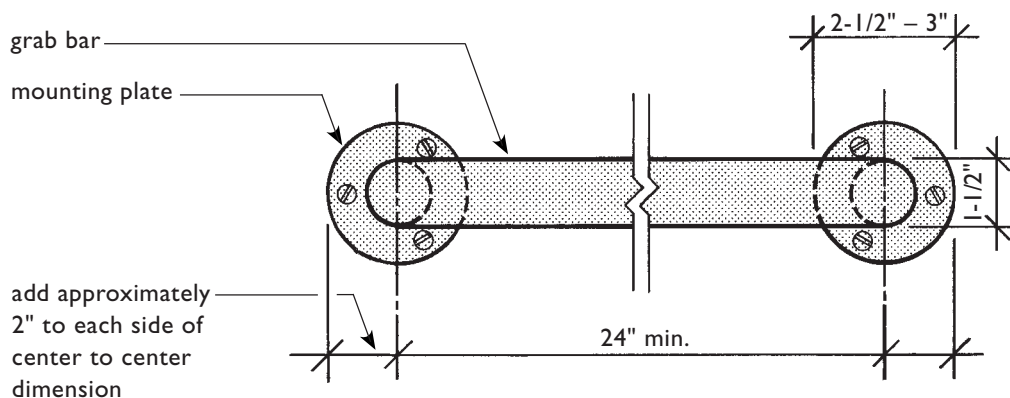
Minimum Reinforcing Behind Toilets Located Beside a Wall

The leading edge of the reinforcing beside the toilet should be positioned at least 36 inches from the back wall to accommodate a bar that is a minimum of 24 inches long. If the reinforcing starts 6 inches from the back wall then the 24

inches of reinforcing should be increased to 30 inches minimum. Whenever a toilet is next to a wall that allows for a longer area of reinforcing (42" is preferred), the longer area should be reinforced.



Minimum Reinforcing to the Side of Toilets

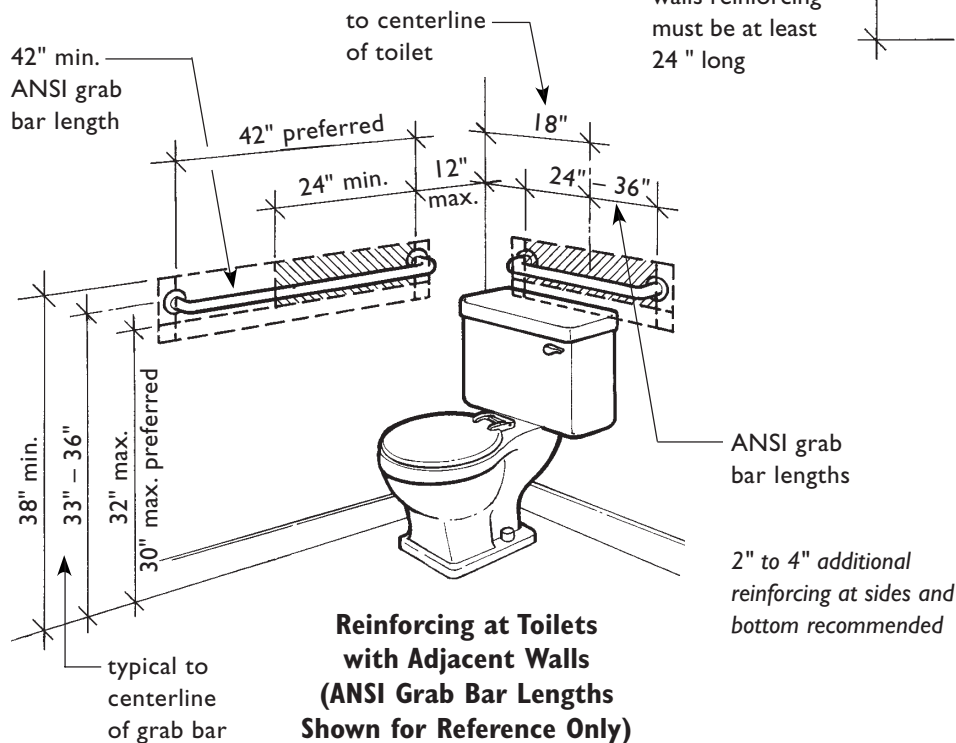
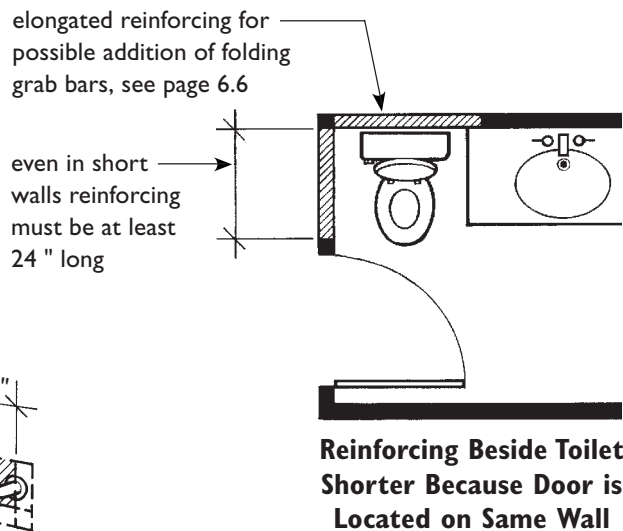
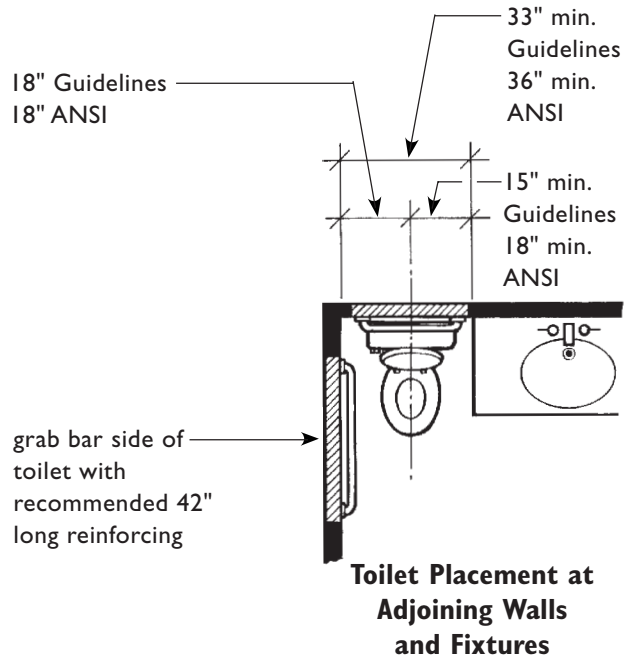


**Escutcheon Plates
 Extend Beyond the Given Grab Bar Length**

REINFORCED WALLS FOR GRAB BARS

Toilets positioned beside a wall offer the highest degree of safe use since a grab bar can be mounted to the side of the toilet. The dimensions describing the distance from the center of the toilet to a side wall and to the nearest fixture or obstruction on the opposite side have been adapted from the ANSI Standard. The 18 inches from the centerline of the toilet to the wall is an absolute measurement and will accommodate a grab bar and the shoulders of a person seated on the toilet. The Guidelines provide for a 15-inch minimum dimension on the nongrab bar side, which is more lenient than ANSI (which requires 18 inches minimum).

In small bathrooms where the door is located in the side wall immediately adjacent to the toilet, full length reinforcing as specified in the Guidelines may not be possible without enlarging the room. While a short grab bar is not preferred, it does work for some people.



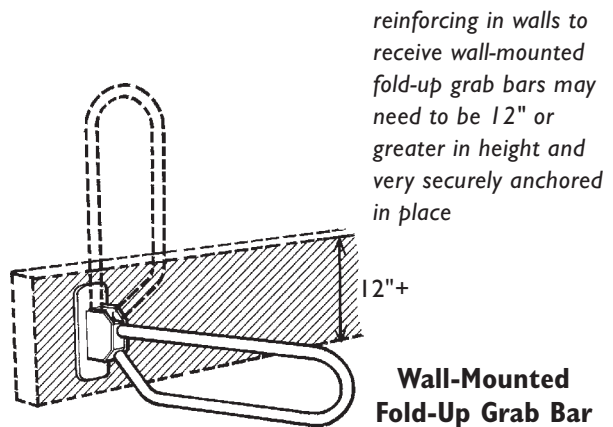
FOLDING AND FLOOR-MOUNTED GRAB BARS AT TOILETS

The Guidelines permit the installation of folding wall-mounted, floor-mounted or wall and floor-mounted grab bars where it is not possible to install “appropriate” wall-mounted ANSI, or similar, complying grab bars. This is particularly relevant when there is no wall or a very short wall adjacent to the toilet.

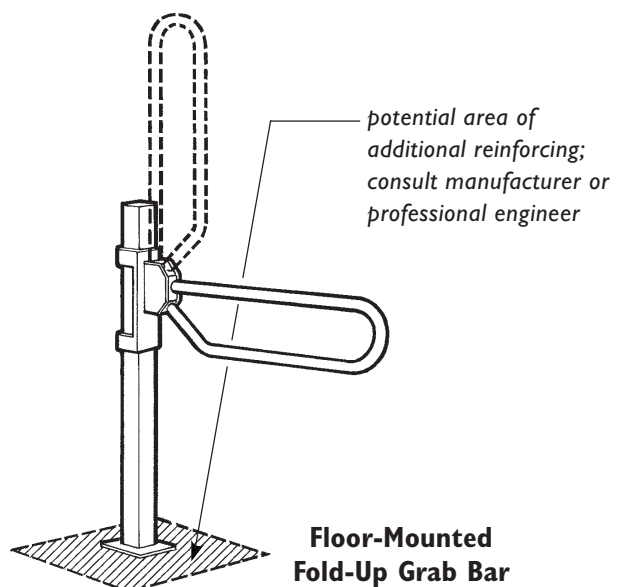
A wide variety of alternative folding grab bars are available. One of the most versatile is the bar that may be pulled down for support and folded out of the way when not needed. Although not quite as stable as the bar that is securely mounted to a wall at both ends, it provides reasonable support for some people.

Reinforcing for such folding grab bars must be substantial because of their cantilevered design. See the top illustration in the right column. For a grab bar to be floor-mounted or be hinged and mounted on the wall behind the toilet, larger areas of reinforcing in walls will be necessary and care must be taken to provide for the types of bars that will not encroach upon the necessary clear floor space at fixtures.

It is recommended that reinforcing for all types of folding grab bars be done strictly as recommended by manufacturers. Information about the exact size and location of reinforcement, and the type and size of bars the reinforcement is engineered to accommodate, should be included in the residents’ information suggested on page 6.3. See Product Resource List in Appendix A for sources of fold-up grab bars.

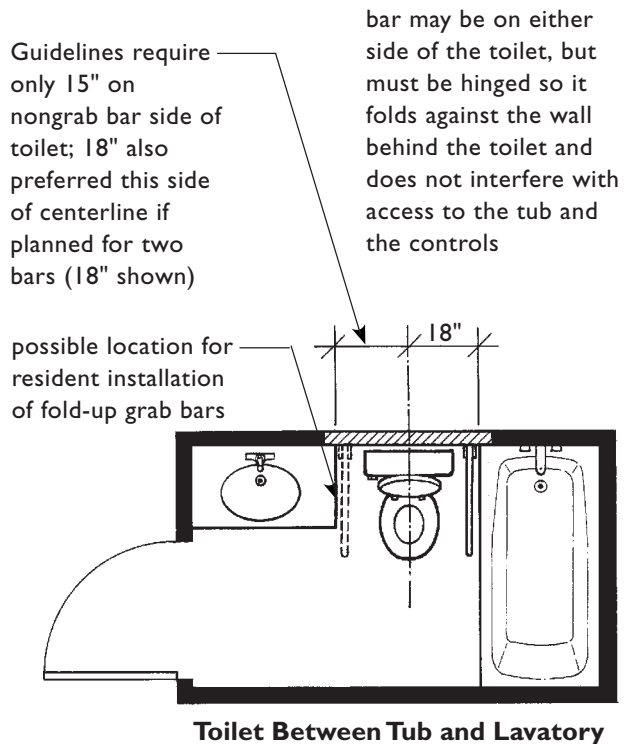
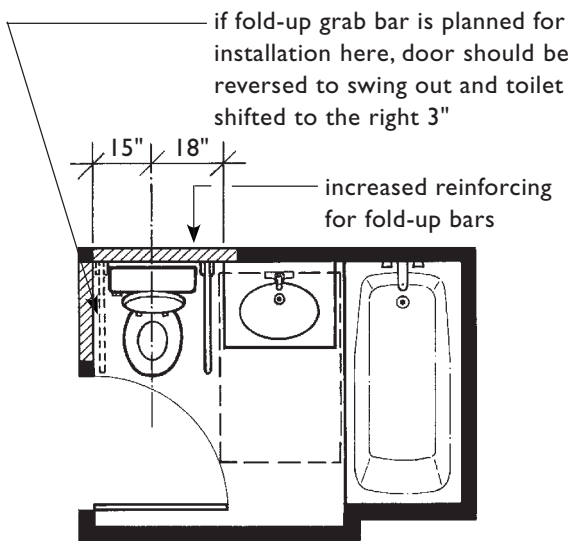
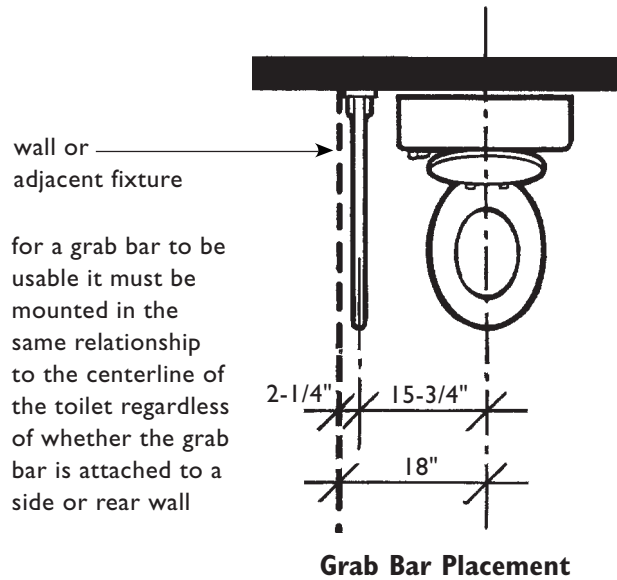


Floor-mounted fold-up grab bars, because of the stresses exerted upon them, will require an extremely secure floor connection. In frame construction, if access to the underside of the floor is available (i.e., from a crawl space or basement), necessary blocking or other reinforcing might be installed at the time the bar is installed. On concrete floor systems additional reinforcing may or may not be necessary. In either case the advice of the manufacturer and/or a professional structural engineer should be followed.



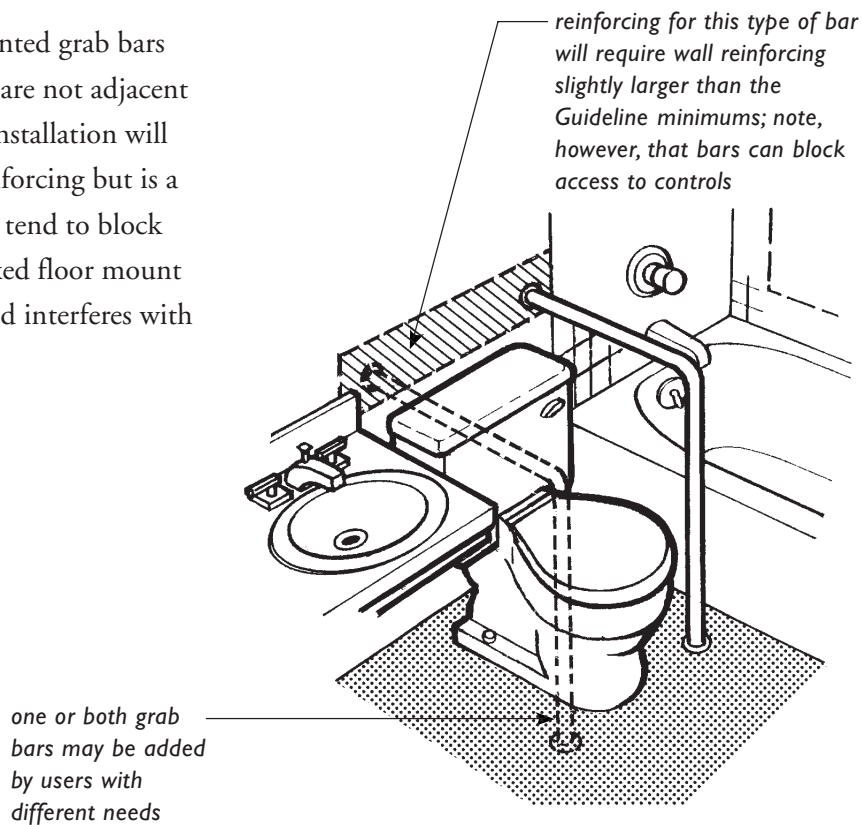
When a toilet is positioned in the room away from a side wall, grab bars must be mounted on the wall behind the toilet or be floor mounted. Reinforcing should be long and wide enough so a folding bar can be installed and, when lowered into position for use, its centerline is 15-3/4 inches from the centerline of the toilet. This dimension is consistent with the requirement that 18 inches be provided from the centerline of the toilet to the wall when that wall is to be equipped with a grab bar.

Advance planning will be necessary to determine on which side of the toilet a folding grab bar will be placed so the necessary 18 inches of space and additional reinforcing can be shifted to the grab bar side of the toilet. Although not required, it is recommended that the toilet be centered in a 36-inch space rather than the 33-inch space specified for usable bathrooms in the Guidelines. Adequate reinforcing could then run the full length behind the toilet to allow fold-up bars to be installed on either side, depending upon the needs and desires of the resident.



Recommended Locations for Fold-Up Grab Bars

Fixed floor and wall-mounted grab bars also can be installed where toilets are not adjacent to full length walls. This type of installation will require little if any additional reinforcing but is a poor choice because the grab bars tend to block access to adjacent fixtures. The fixed floor mount encroaches on clear floor space and interferes with wheelchair maneuvering.

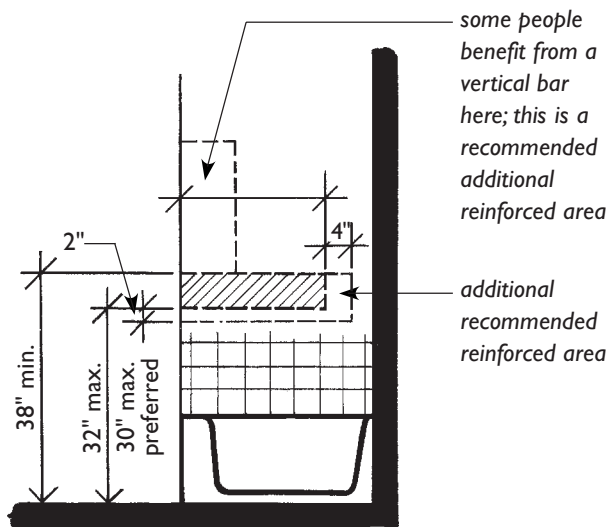


**Fixed Floor and Wall-Mounted Bars
 Not a Good Choice for Many People**

**REINFORCING FOR GRAB BARS
 AT CONVENTIONAL BATHTUBS**

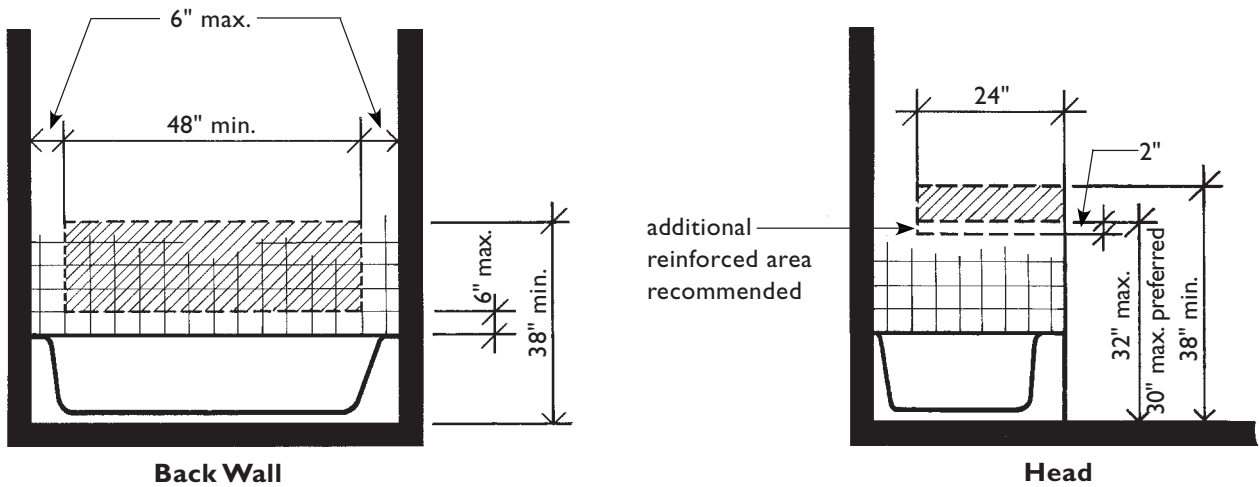
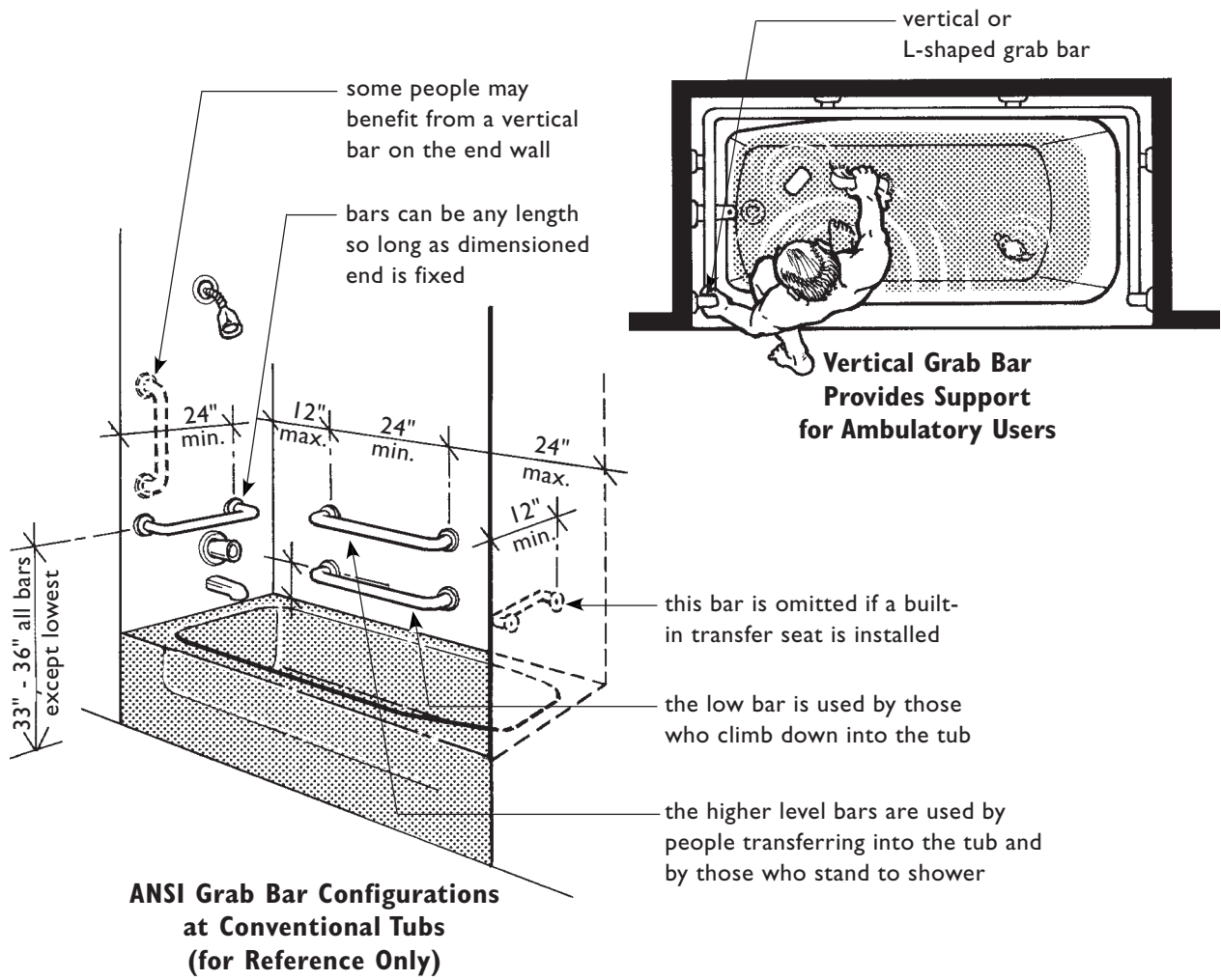
At conventional bathtubs the Guidelines specify wall reinforcing for grab bars as shown in the accompanying illustrations. The intent is to make it easy for a resident to install grab bars similar to those specified in ANSI A117.1 or other equal accessibility standard or code.

For the same reasons as discussed at toilets, the reinforced areas specified at the head and foot of tubs should be enlarged to provide full support for mounting plates and horizontal bars at the lowest position of 33" above the room floor. The enlarged reinforced areas are shown here as recommended additional reinforcing.



Foot (Control Wall)

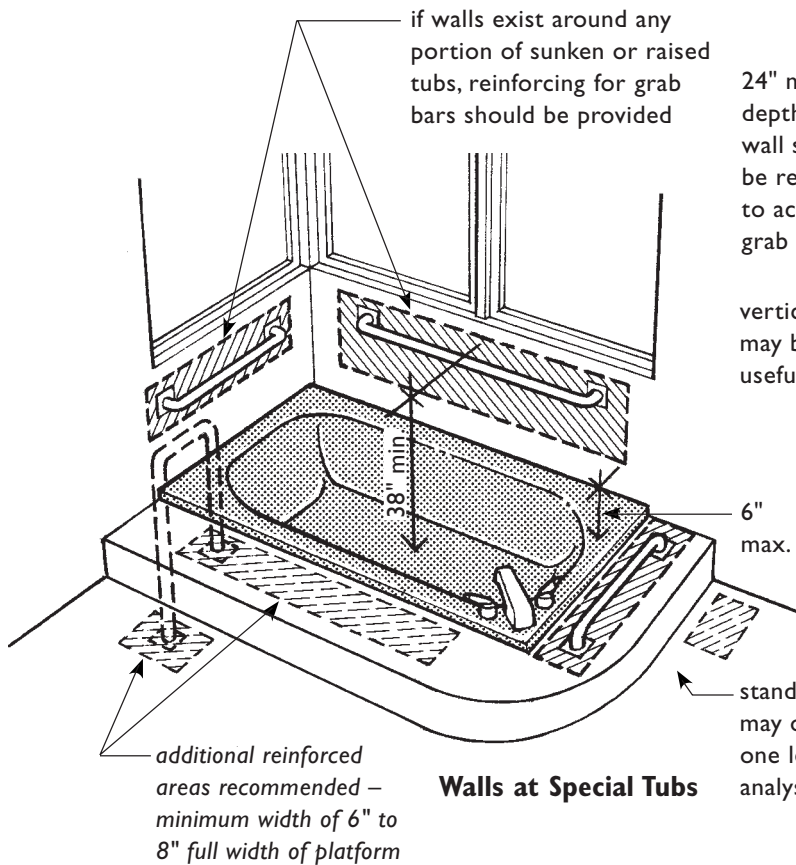
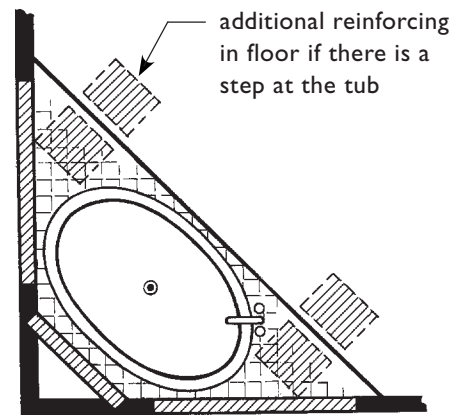
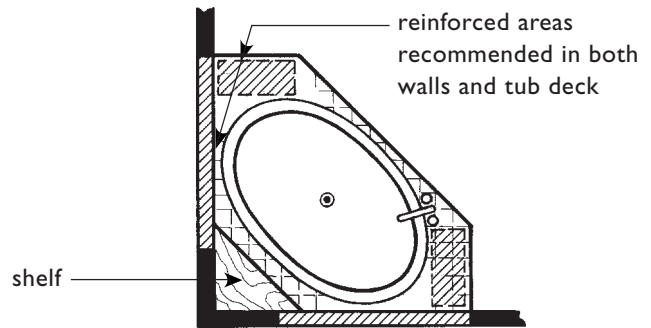
**Reinforced Areas Required by the Guidelines
 at Conventional Bathtubs**



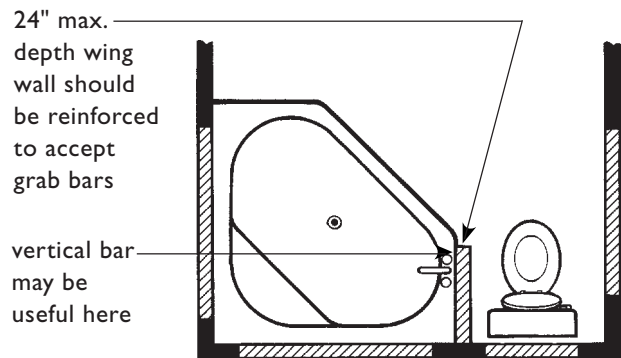
Reinforced Areas Required by the Guidelines at Conventional Bathtubs

**REINFORCING FOR GRAB BARS AT
 NON-CONVENTIONAL BATHTUBS**

The Guidelines do not limit the size or proportion of bathtubs or showers to the configurations shown. Bathtubs may have shelves or benches at either end, or may be installed without surrounding walls, provided alternative methods for mounting grab bars are made. For example, a sunken bathtub placed away from walls could have reinforced areas in the floor for installation of floor-mounted grab bars. Whenever walls are adjacent to raised or sunken tubs, reinforcing should be provided that closely matches the sizes given at conventional bathtubs.



Walls at Special Tubs



**Recommended Reinforcing
 for Grab Bars at
 Raised or Sunken Tubs**

standard nonreinforced floor may or may not be able to support one leg of a handrail; engineering analysis recommended

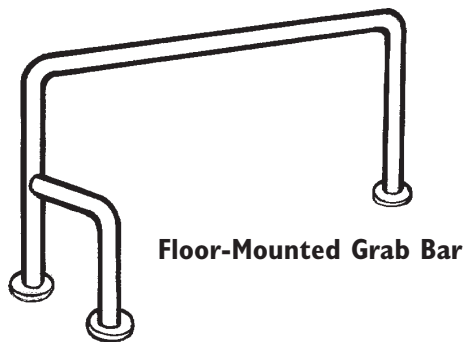
FLOOR-MOUNTED GRAB BARS AT SPECIAL BATHTUBS

On open sides of raised tubs having decks at tub rim level and at floors surrounding sunken tubs, the deck and other designated floor areas should be reinforced so they are structurally capable of receiving floor-mounted grab bars. The floor or deck must provide secure anchorage and such bars should withstand a 250 pound load applied in any direction and at any point. Although not required, any grab bar installation should be able to meet or exceed ANSI 4.24 Grab Bars.

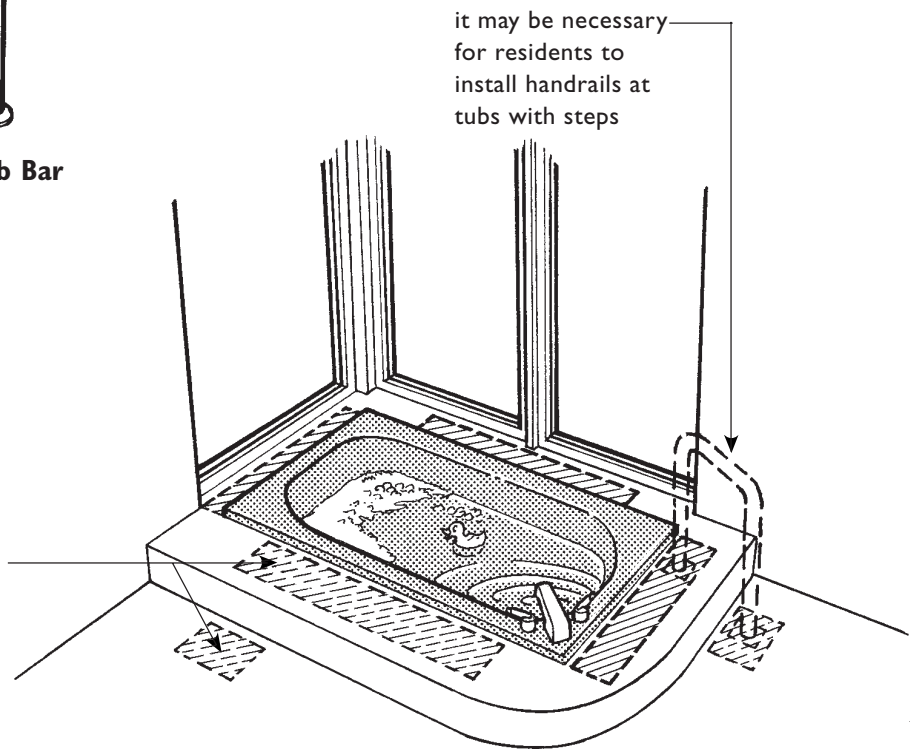
Floor-mounted bars in these installations may be from 18 inches to 36 inches above the tub rim. Some have a braced double-footed mount as shown here.

If designated reinforced floor areas are to be provided, their size should be comparable in length to those required for conventional bathtubs, or proportionally longer if the bathtub is larger than a conventional bathtub. The width of the reinforcing may well need to be wider than other reinforced areas for sufficient strength and space to accept the braced double-footed mounts described above.

The size and exact location of designated reinforced floor areas should be included in the permanent affixed tenant information for installing grab bars recommended at the beginning of this chapter. The builder/owner/manager also may want to include in that information the height, type of fasteners, type of bar and mount, or even the model number and manufacturer of the bars upon which the adequacy of the structure was engineered.



additional reinforced areas recommended – minimum width of 6" to 8" full width of platform



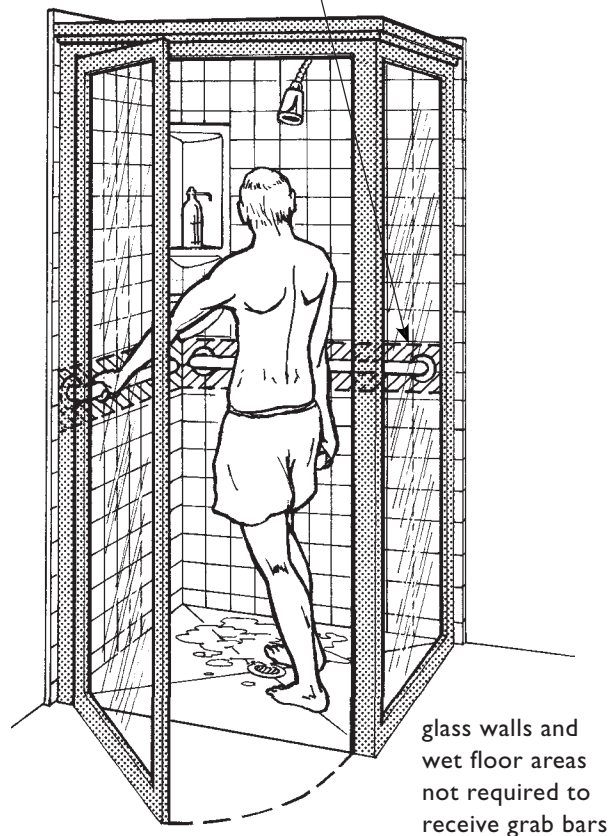
No Structural Walls at Special Tubs

REINFORCING FOR GRAB BARS AND SEATS AT SHOWERS

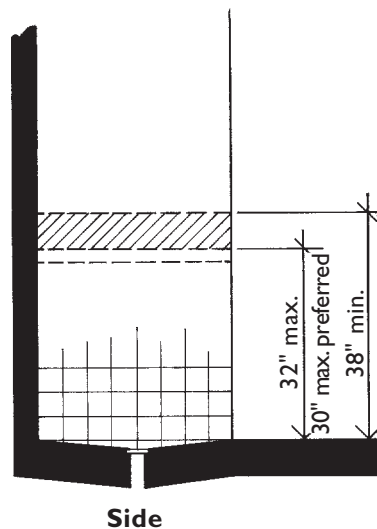
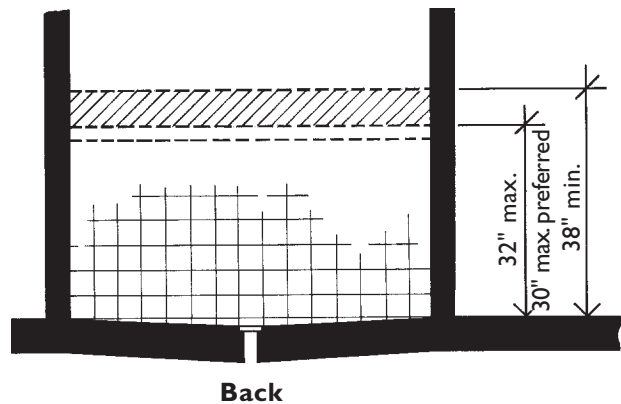
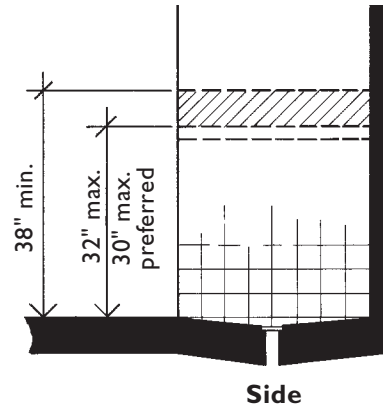
In glass shower stalls, only those walls that are solid construction, i.e., wood or metal studs with gypsum wallboard and/or tile or solid masonry, must have reinforced areas. Glass walls are not required to be reinforced, nor are shower stalls required to have the waterproof pan or floor seal pierced to receive screws/bolts for floor-mounted grab bars.

grab bars are helpful for standing users also

reinforcing in conventional walls for grab bars



Reinforcing in Glass-Walled Shower Stalls



Minimum Reinforcing for Grab Bars in Showers

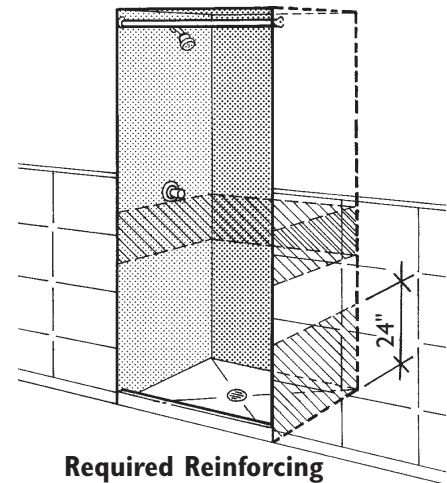
REINFORCED WALLS FOR GRAB BARS

Shower stalls in covered dwellings may be any size or configuration unless they are the only bathing fixture provided in the dwelling unit or on the entry level of a multistory dwelling in a building with one or more elevators. (See clear floor space at shower stalls in Chapter 7, Part B: "Usable Bathrooms.") Reinforcing for grab bars must be at the height shown in the illustrations on the preceding page and extend the full width of both side walls and the back wall. If shower walls curve, reinforcing must still be provided.

Because of the commonly accepted need to install horizontal grab bars between 33 and 36 inches above the floor, it is recommended that this reinforcing be enlarged so the bottom edge is 30 inches above the floor as explained previously at toilets and tubs.

There are certain situations where the shower stall is required to have reinforcing for later installation of a wall-hung bench seat. When this is required is addressed in Part B of Chapter 7, "Usable Bathrooms." Reinforcing is required in a shower stall that measures a nominal 36 inches x 36 inches. The reinforcing is located on the wall opposite the controls and must run the full width of the stall, starting at the floor, to a minimum height of 24 inches.

HUD encourages builders to refer to the ANSI Standard or local codes for specifications on grab bars and wall-hung shower benches. The ANSI specified shower seat is an excellent design for safe use by people with disabilities. The builder should attempt to locate several manufacturers and size the reinforced area for the seat to accommodate more than one model. See Product Resource List in Appendix A. Information detailing reinforced areas and location, as well as product choices, should be included in the permanently affixed resident information recommended at the beginning of this chapter.

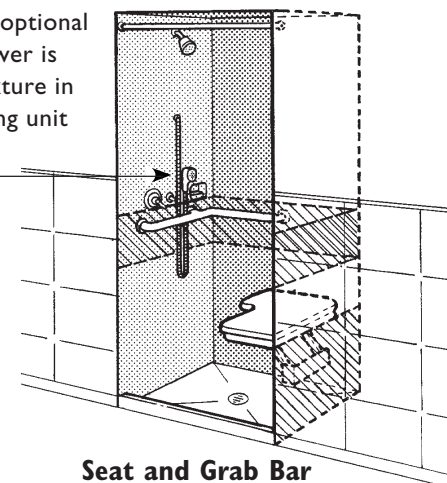


**Required Reinforcing
When Shower is Only
Bathing Fixture**

reinforcing for optional
seat when shower is
only bathing fixture in
covered dwelling unit

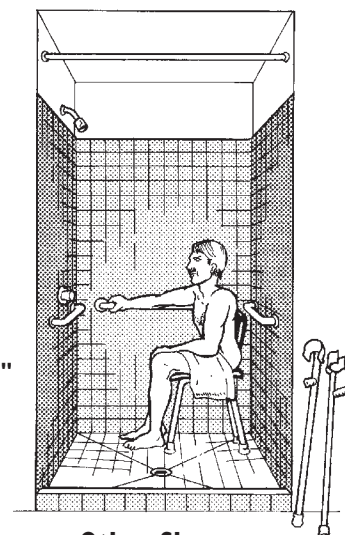
optional
hand-held
shower

17"-19", typical
seat height as
specified in
ANSI



**Seat and Grab Bar
in 36" X 36" Shower**

32" X 48"
shower



**Other Shower
Configurations Permitted**

**RECOMMENDED
REINFORCING METHODS**

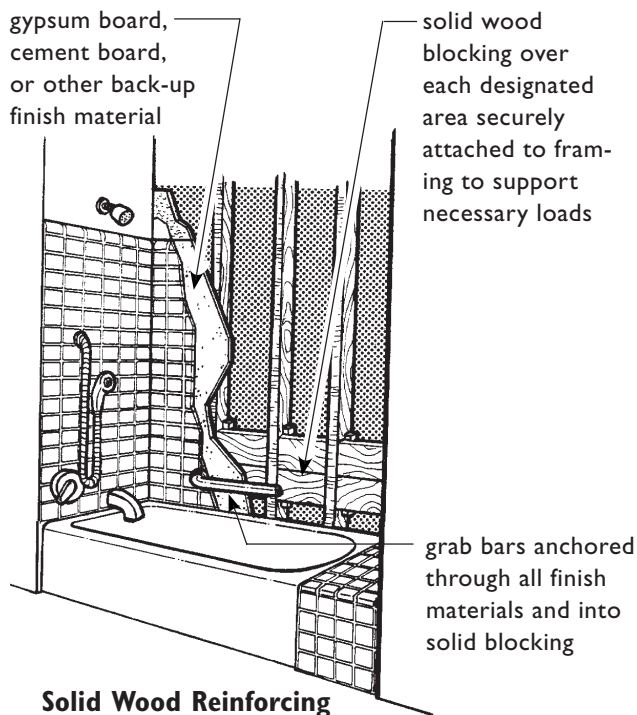
The Guidelines do not prescribe the type of material to use or methods for providing reinforcement at bathroom walls. Grab bar reinforcing may be accomplished in a variety of ways, some of which are suggested below.

**LIMITED AREA REINFORCING
WITH SOLID WOOD BLOCKING**

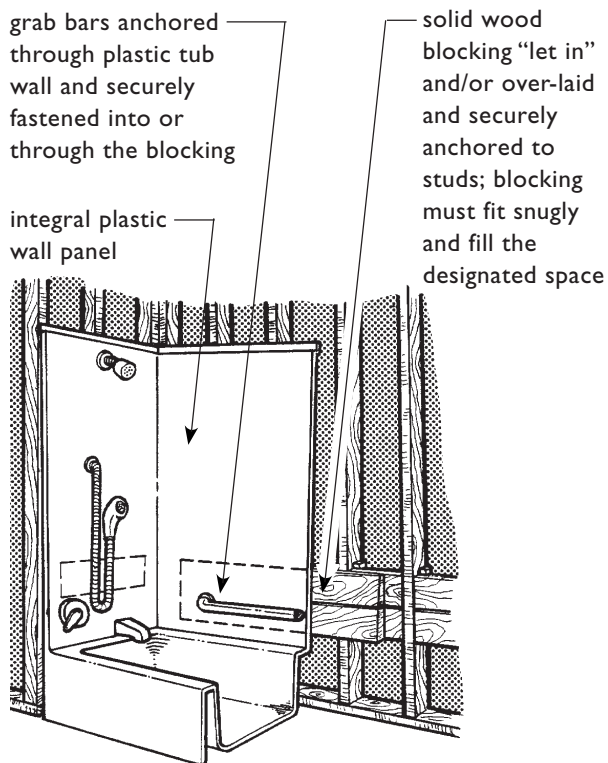
Stud Wall. In wood frame construction, the mounting area for grab bars can be reinforced by installing solid wood blocking either between or “let into” the studs and fastening the blocking securely to the studs. In either way, the solid wood reinforcing is installed flush with the face of the stud so finish materials can be applied to the studs and blocking in the normal manner.

Molded Fixtures. Fiberglass and acrylic bathtubs and showers with integral wall panels are common in both new construction and remodeling. The panels alone are too thin to support grab bars, and because they do not touch the stud wall except at the top, there is a space between the panel and the stud wall. To attach grab bars to these surfaces, an area of solid wood blocking or other solid substance must be installed in the cavity between the fiberglass or acrylic wall and the wall.

Since the space between the panels and the stud wall gets narrower as it approaches the top of the panels where they are fastened to the studs, this blocking must be cut to fit snugly in the space between the studs and the panel. The blocking must contact the plastic panel over the entire reinforced area.



**Solid Wood Reinforcing
on Wood Stud Walls**



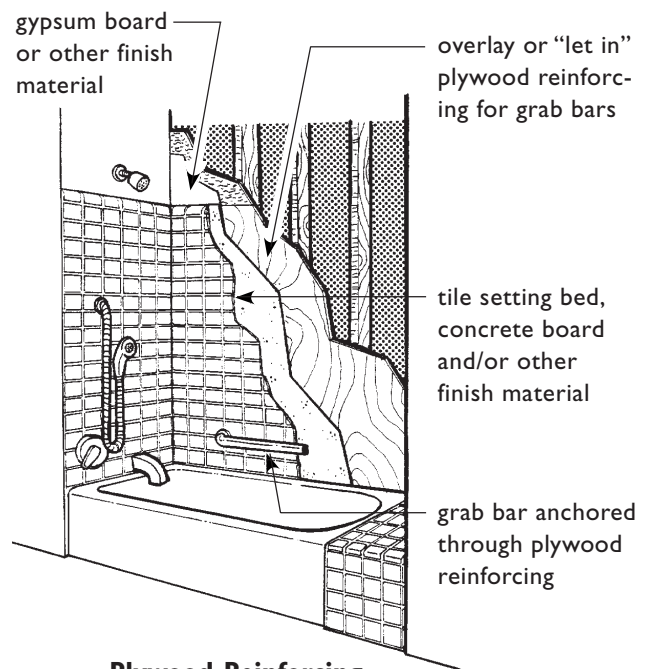
**Reinforcing for Grab Bars
Behind Fiberglass or Acrylic Tub
and Shower Surrounds**

Some fiberglass and acrylic tubs, showers, and wall sections are now made with reinforcing already in the walls to stiffen the fixture. If the reinforced fiberglass or acrylic wall is not specifically labeled as built for grab bars and meeting the ANSI load requirements, then additional reinforcing may need to be installed.

WHOLE WALL OR LARGE AREA REINFORCING WITH PLYWOOD

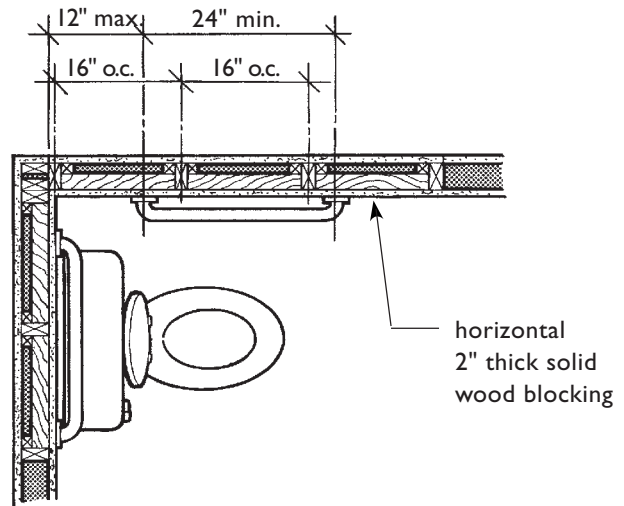
Although the location and the limited size of the wall areas that must be reinforced are specified by the Guidelines, it may be necessary or desirable to extend the reinforcing over a larger area or throughout the entire wall. Some people may want to locate grab bars in areas other than those specified in the Guidelines and other accessibility standards. Other people may have difficulty finding the minimum reinforced wall areas concealed inside a finished wall and install the grab bars in an unreinforced area. A larger reinforced area provides greater flexibility in placement and easier installation of grab bars.

Heavy plywood applied to the studs over a larger area can support grab bars and provide a base for the installation of finish materials such as ceramic tile or plastic wall panels. Plywood can be applied to the face of studs or “let in.” In either case the plywood must be of sufficient thickness and should be securely attached to withstand the forces specified in ANSI 4.24, or an equivalent or stricter standard. Anchors for securing the grab bars to the reinforced walls should be through-the-wall type or another type capable of meeting the ANSI force requirements.



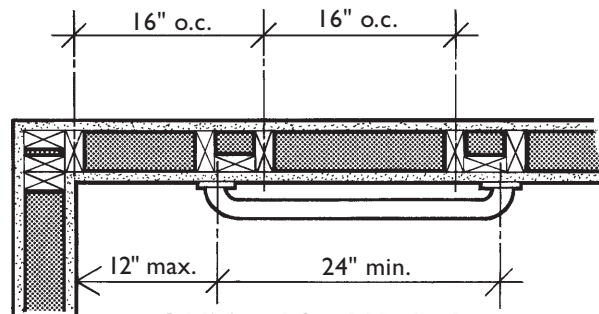
**Plywood Reinforcing
on a Wood or Metal Stud Wall**

Because of standard stud spacing, reinforced areas often will have to be longer than specified to support necessary blocking.



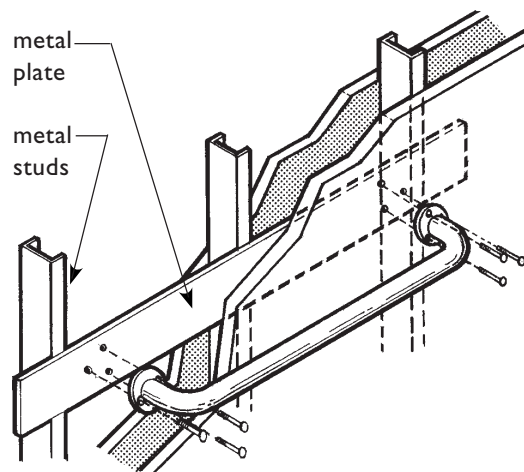
**Plan View of Extended Horizontal Blocking
 Between Conventional Wood Studs**

Additional vertical studs can be placed at ends of each specified reinforced area. This method is more expensive, difficult to install accurately, and more difficult to find after construction. It provides less flexibility in bar placement and is more likely to result in a weak connection.



**Additional Stud Method
 of Reinforcing for Grab Bars**

A manufactured, formed metal reinforcing plate can be spot welded or screwed to studs.



Reinforcing at Metal Studs