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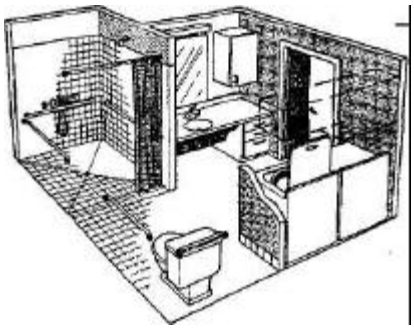
Bathrooms

a chapter
from *The*



Accessible Housing Design File

Tech Pack #1.00 Technical Assistance Packet

The following *TechPack.* is a chapter reprinted from *The Accessible Housing Design File*, a book designed and produced by Barrier Free Environments, Inc. and published by Van Nostrand Reinhold in 1991.

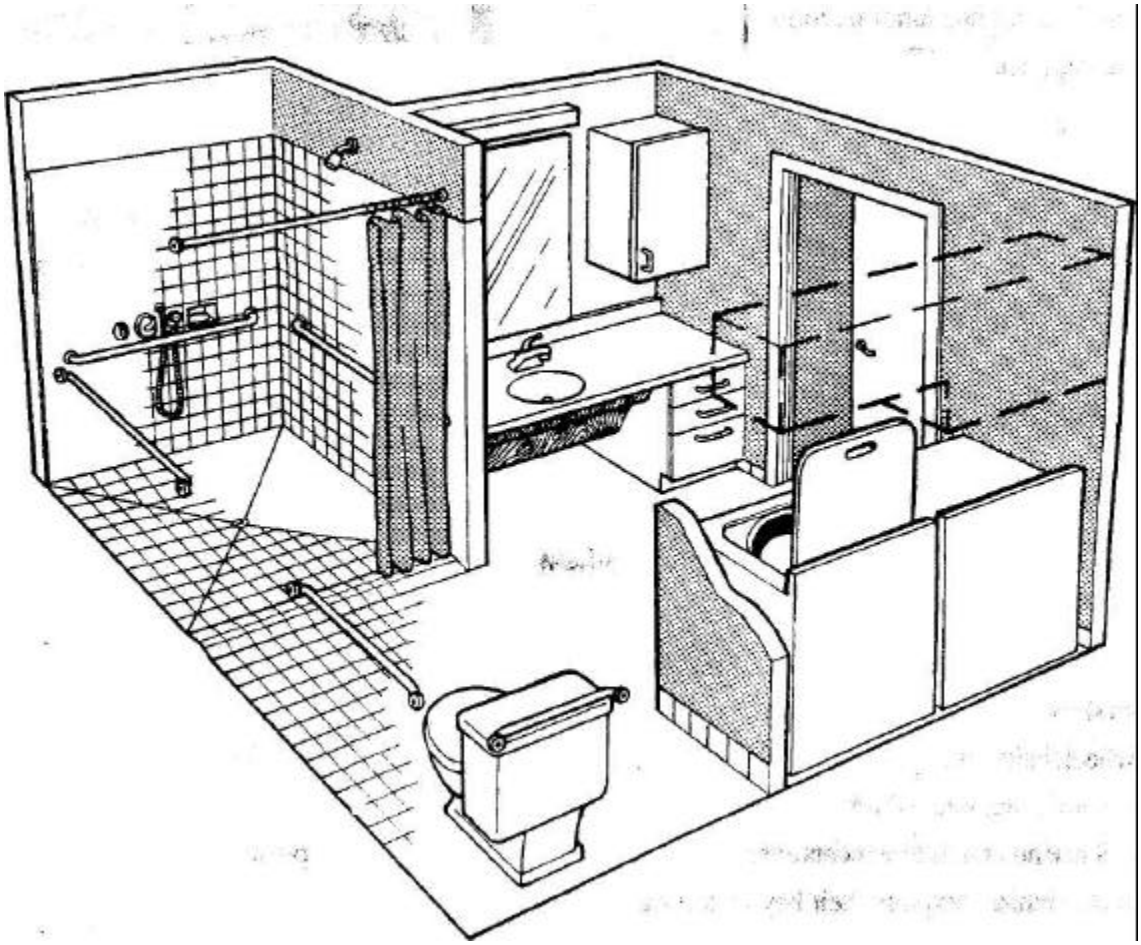
In order to make this technical information more available and accessible to all, Van Nostrand Reinhold has granted the Center for Accessible Housing permission to distribute reprints of each of the seven chapters for the book.

Each chapter offers clearly illustrated design solutions accompanied by explanations of why certain features are necessary to people with various levels of physical ability. Room layouts are also included where appropriate.

Ordering information for the book and other individual chapters is included at the end of this *TechPack.*

Bathrooms

CHAPTER 2

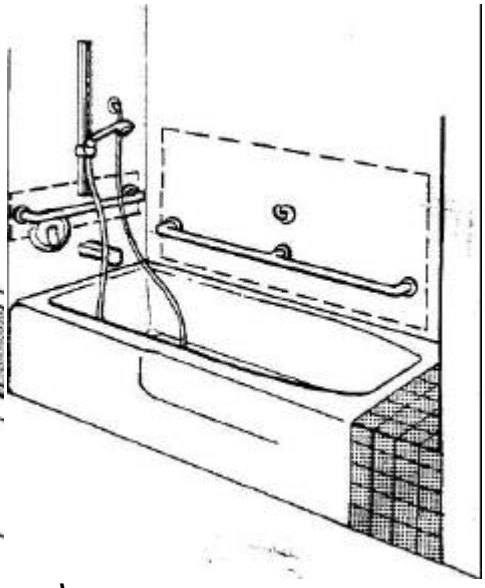


Accessible Bathrooms

To be used independently by mobility impaired people (those who use wheelchairs, walkers, crutches, or canes), bathrooms need not be particularly large, but must be carefully designed. Attention must be given to what type of bathing fixture is preferred by the potential user: a tub, a transfer shower, or a roll-in shower. In addition, careful planning must be done to provide critical clear floor space at each fixture so someone with a mobility aid can approach, maneuver close to, and use all fixtures. Knee space at lavatories (sinks), faucets and controls, as well as grab bar size and position must be considered.

Tub with Removable Seat

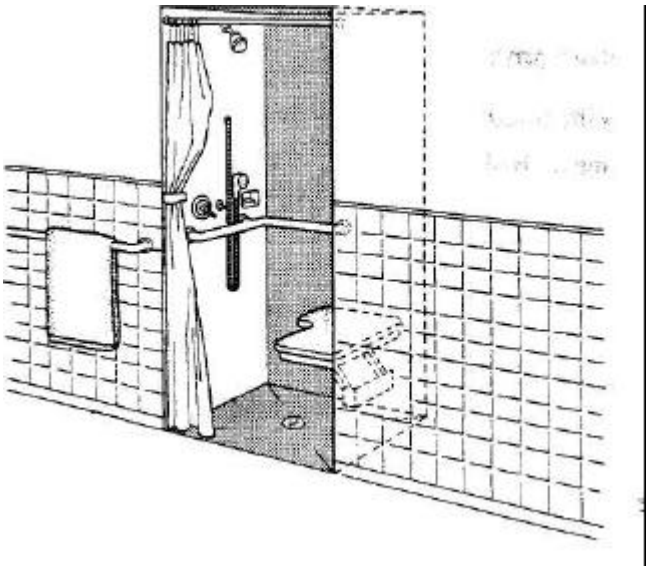
Tub with Built-in Transfer Seat



Bathing

Three types of bathing fixtures are commonly used by people with mobility impairments: 1) a standard bathtub with a built-in transfer surface or a removable seat, 2) a special 3' wide by 3' deep transfer shower stall with a corner seat, and 3) a roll-in shower stall (with no curb) that is large enough to permit people to shower in a wheelchair. Each of these three bathing fixtures has advantages and disadvantages that make them more suitable for some people and less suitable for others. Since no one fixture meets everyone's needs, the following sections present each of the fixtures, explain their key features and how they are used.

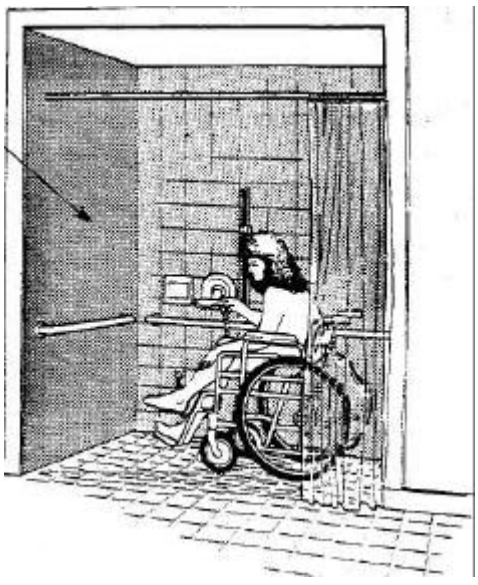
3[1] x 3' Transfer Shower



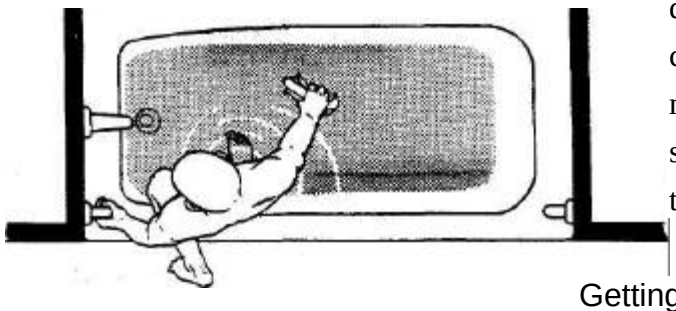
UFAS requires that controls be located on a side wall

ANSI permits controls to be located on either the back or side walls

5[1] x 5[1] Roll-in Shower



Vertical Grab Bars Can Be a Safety Aid for Standing People Entering a Tub



Getting In and Out of Bathtubs

Many people who have mobility impairments have difficulty using a conventional bathtub and must learn different ways to safely get in and out of the tub.

Getting In and Out of Bathtubs

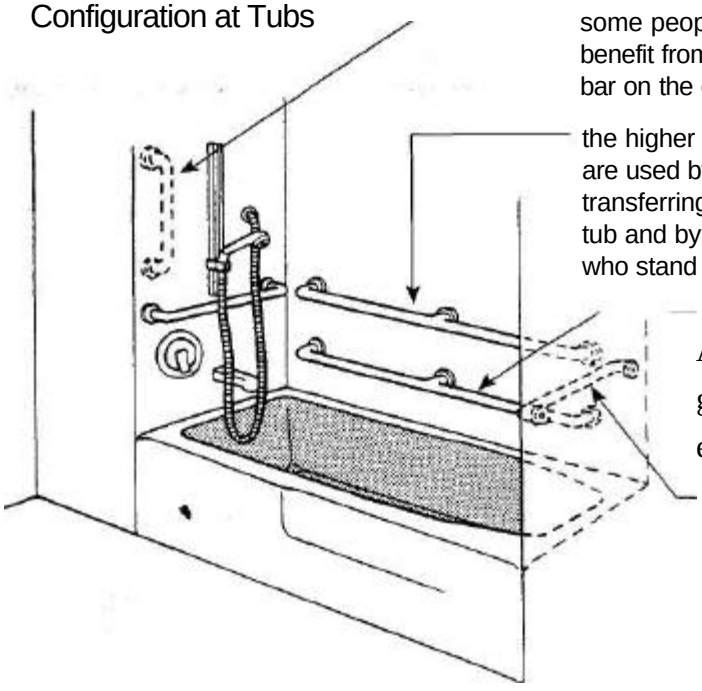
Grab Bars at Tubs

Safety for everyone is greatly increased by the addition of grab bars at bathtubs. The need for grab bars at the bathtub varies with the type and level of disability of the individual user. Some walking mobility impaired people are at great risk of falling while stepping over the tub rim. For them, a vertical grab bar which provides a stable handhold may be all that is required.

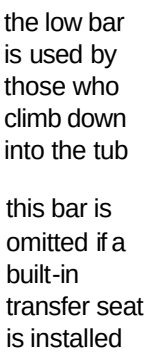
Some people who use wheelchairs can transfer from their chairs and get down into the tub independently, while others may require assistance from an attendant. For transfers, the tub may need grab bars on one, two, or all three of the enclosing walls and enough clear floor space in front to allow a forward or parallel approach.

The location of grab bars in a home will be determined by the needs of individual residents. The ANSI and UFAS standards require four horizontal grab bars at conventional tubs and three at tubs with built-in transfer seats. The ANSI/UFAS arrangement is based on averages and is good for most users. Their arrangement is especially appropriate where multiple users are

ANSI/UFAS Grab Bar Configuration at Tubs

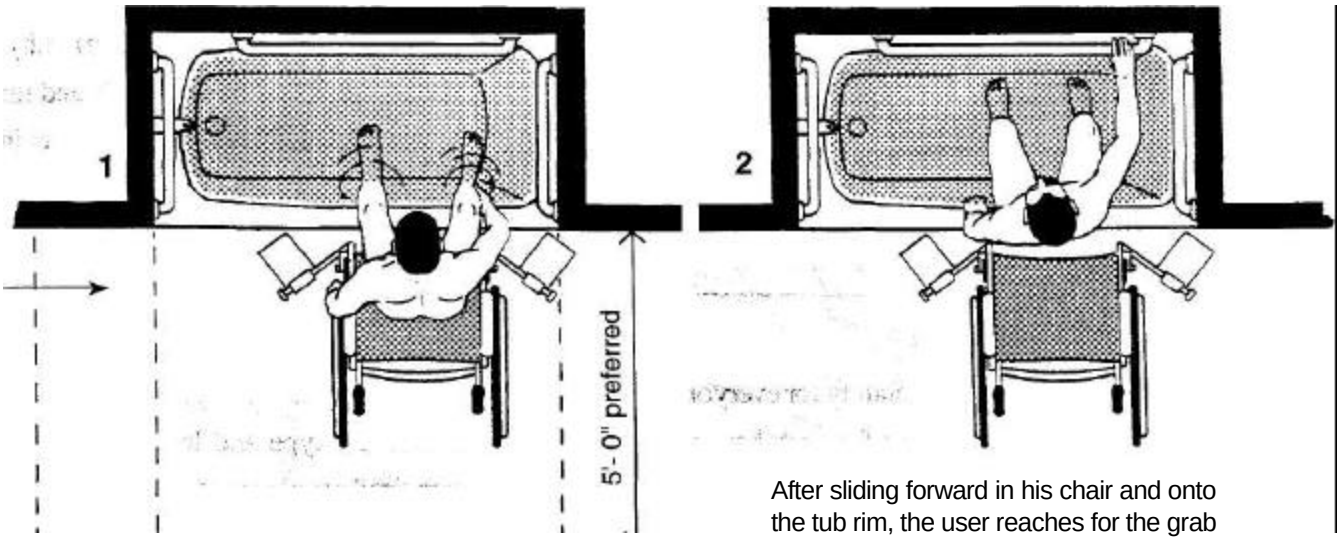


expected, in rental housing for example. (Please see ANSI and UFAS for required lengths and positions of grab bars at tubs.)



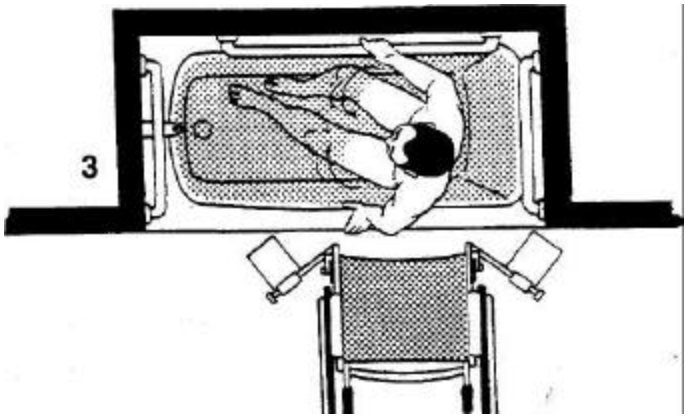
It is of critical importance for safety that grab bars be carefully selected and installed. Please see "Grab Bar Installation" below.

Forward Transfer from a Wheelchair into a Tub

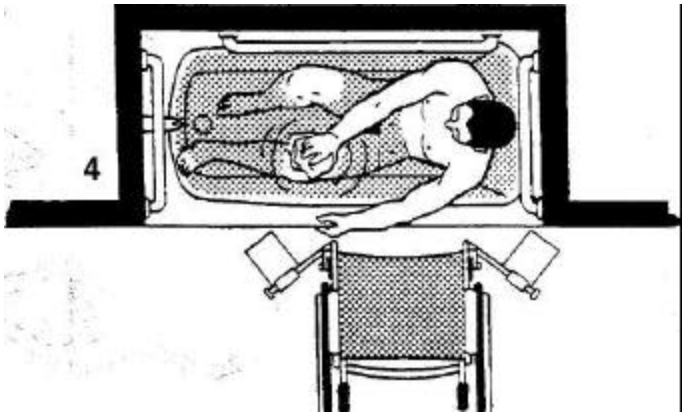


After sliding forward in his chair and onto the tub rim, the user reaches for the grab bar in preparation for transferring.

User pulls close to tub, swings footrests to side, lifts legs over tub rim, and pulls chair tight to wall of tub.



Grasping both the tub rim and the grab bar on the back wall, the user slides off the tub rim and lowers himself into the water—



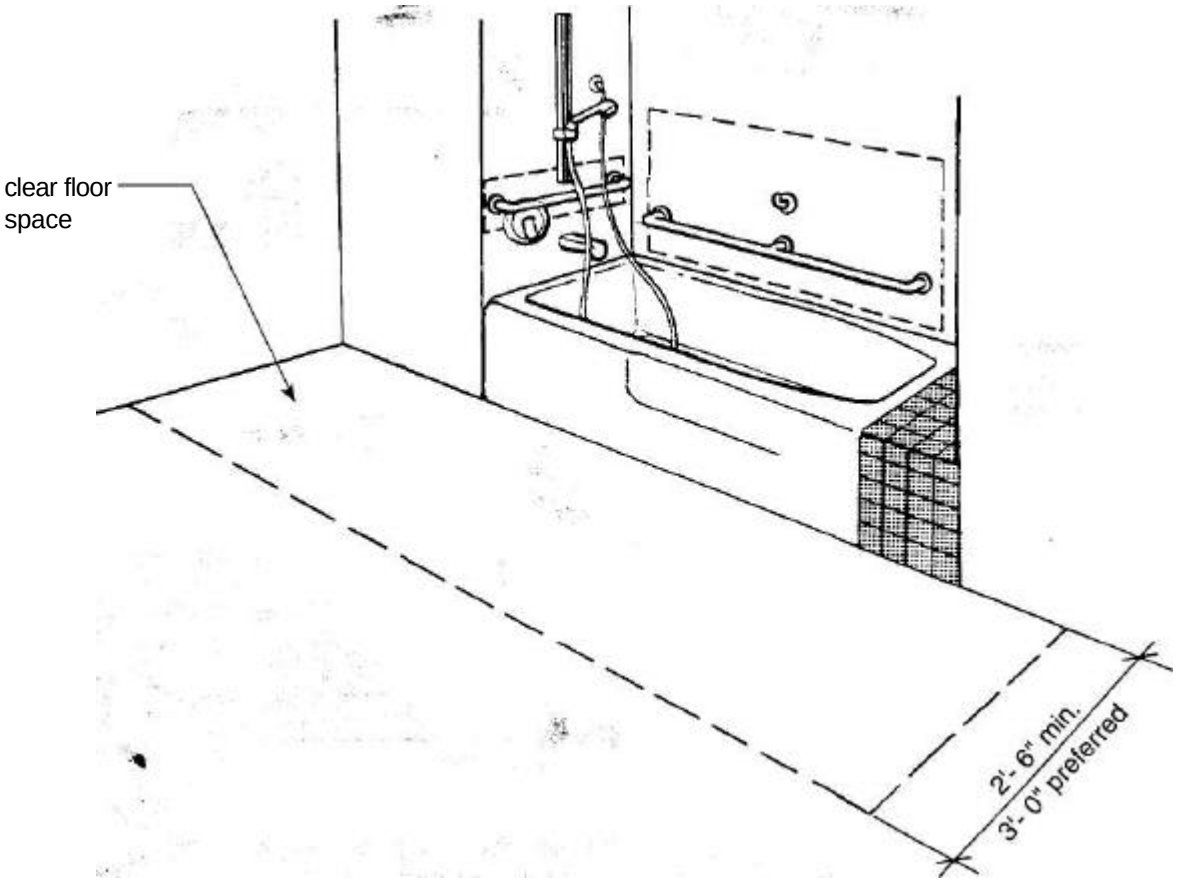
for a relaxing bath!

Getting In and Out of Bathtubs

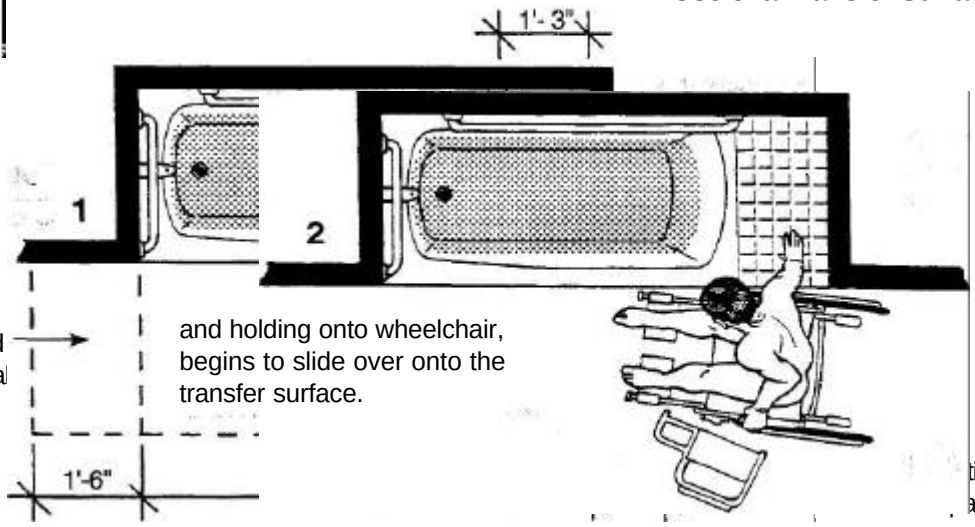
Transfer Surface

Often a built-in transfer surface or seat at the head (opposite the control end) of the tub is necessary. This transfer surface provides a place for a mobility impaired person to sit for a moment during the process of entering the tub. The ANSI and UFAS standards call for a built-in surface that is 15" deep with enough clear floorspace outside the tub to allow parallel approach with a wheelchair.

Tub with Built-in Transfer Surface



Use of a Transfer Surface from a Wheelchair

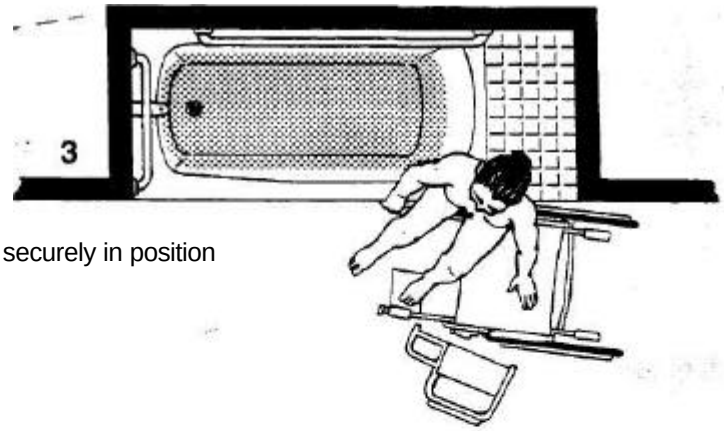


preferred additional clear floor

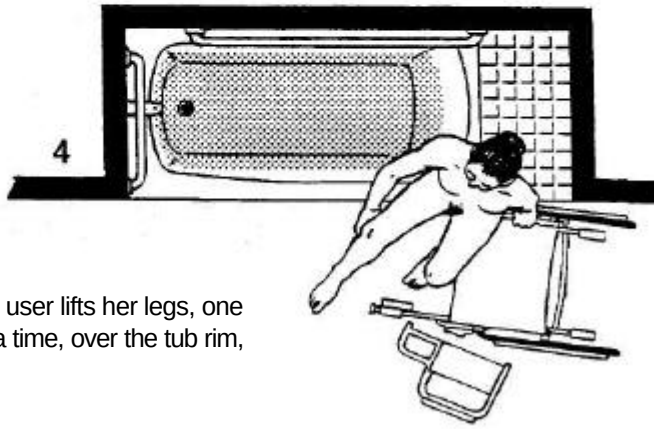
and holding onto wheelchair, begins to slide over onto the transfer surface.

tional
ace

User pulls parallel to transfer surface at head of tub, removes arm rest,

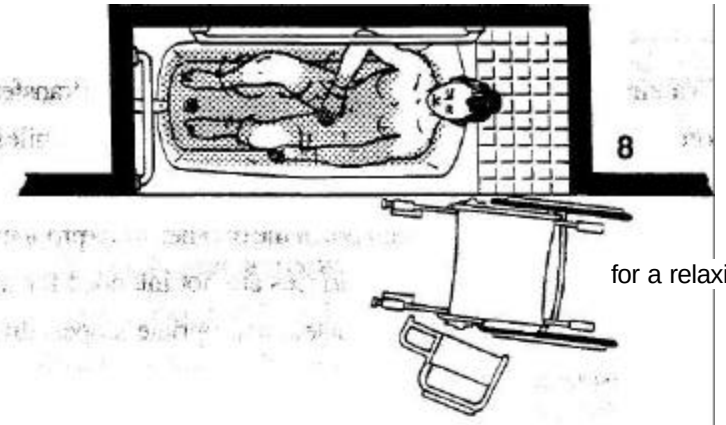


Once securely in position

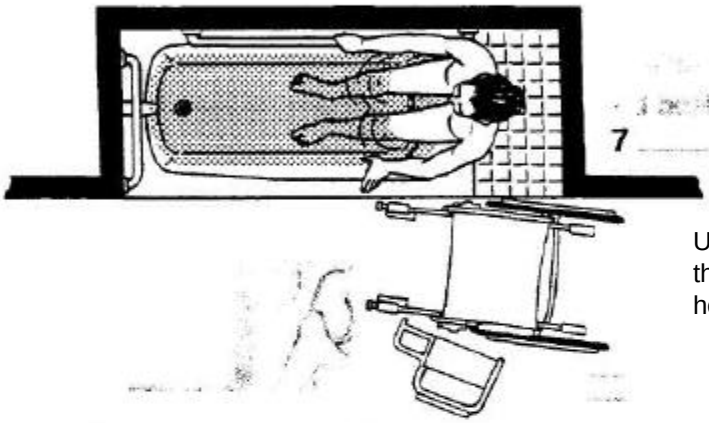


the user lifts her legs, one at a time, over the tub rim,

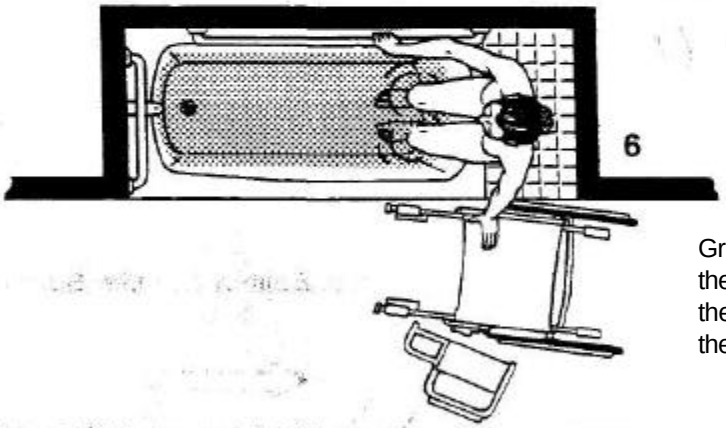
Use of a Transfer Surface from a Wheelchair



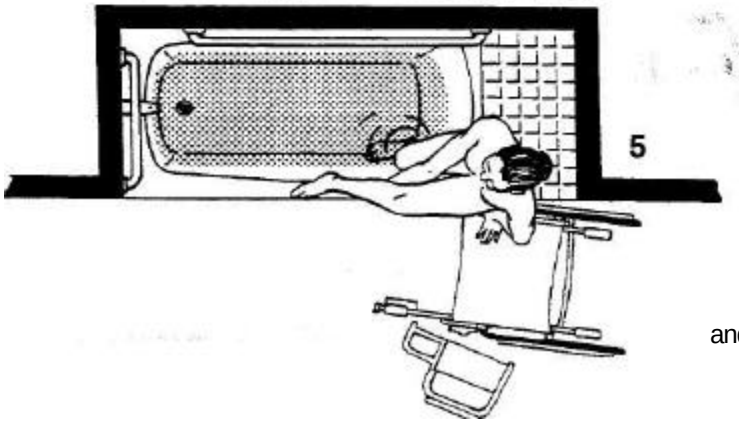
for a relaxing bath!



Using the grab bar and the tub rim, she lowers herself into the water—



Gripping the grab bar and the wheelchair for support, the user slides forward on the transfer surface.



and places them into the tub.

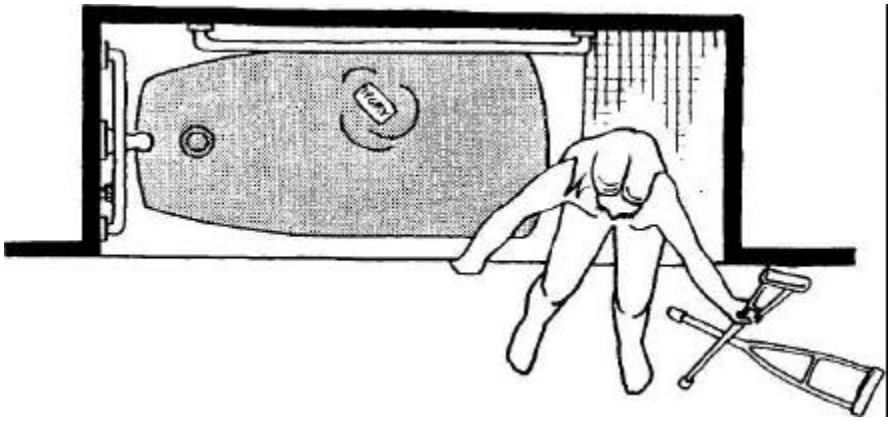
Getting In and Out of Bathtubs

Transfer Surface

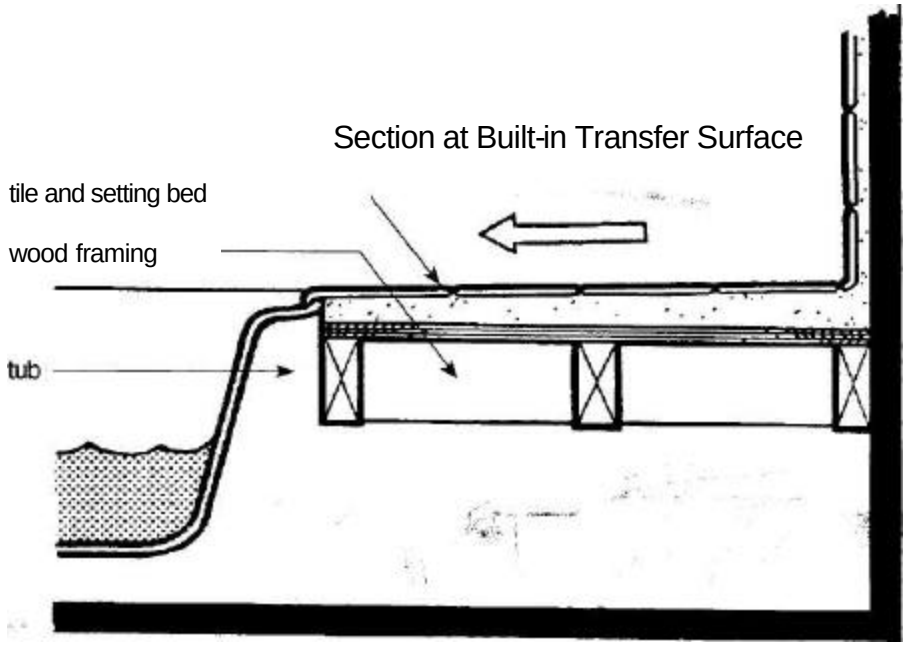
Walking mobility impaired people can sit down on the transfer surface before entering the tub, thereby avoiding the risk of falling while stepping over the rim.

Transfer surfaces can be built out of tile or other waterproof materials. It should be noted that transfer surfaces are not intended for use while showering. If such use is anticipated, appropriate slopes, drains, and curtains must be included.

Transfer Surface Used by Walking Mobility Impaired People



Section at Built-in Transfer Surface



Getting In and Out of Bathtubs

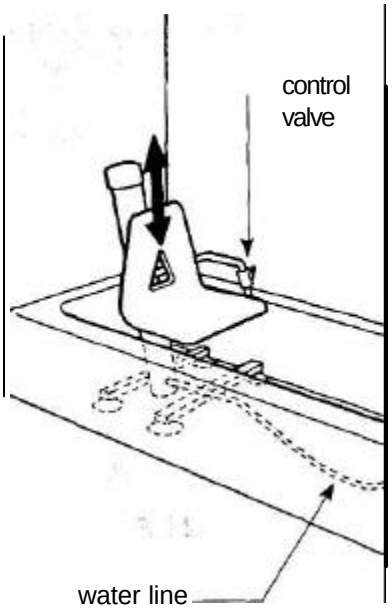
Hydraulic Seat

Hydraulic seats can also be used to facilitate getting into a conventional bathtub. The seats are usable by many wheelchair users and walking mobility impaired people as well.

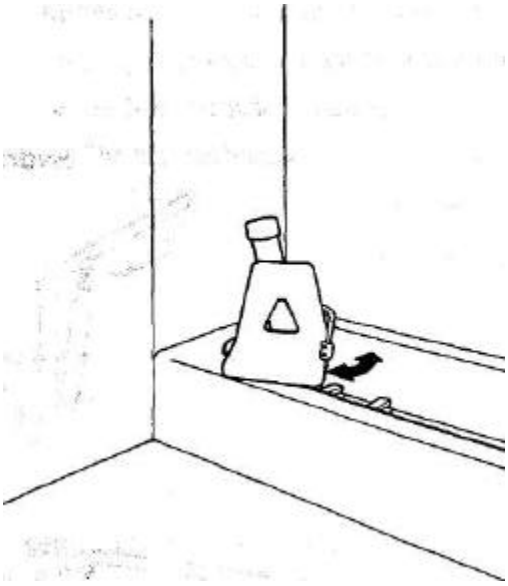
Hydraulic seats are powered by water pressure. They raise and lower the user into the tub and some models rotate out over the tub rim when in the "up" position to make it easier for users to get onto the seat. The user must remain on the seat while bathing because the mechanism takes up space in the tub. With the seat in place, it is impossible to get all of the way down into the tub or to recline in the tub.

Some disadvantages of hydraulic seats are their weight and the fact that they must be completely disconnected and removed from the tub if other people wish to bathe without the seat.

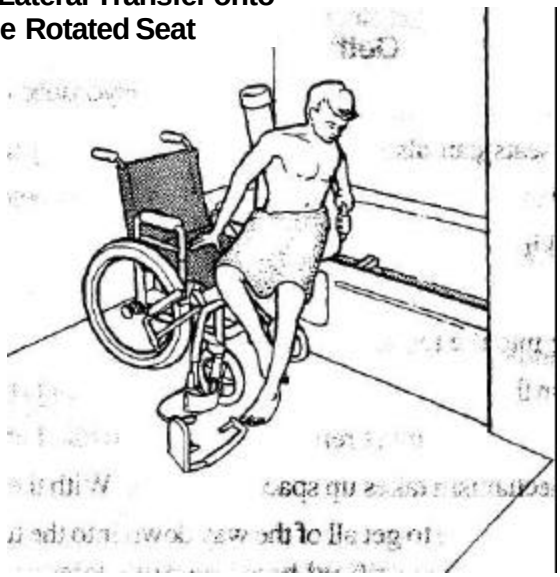
Hydraulic Seat

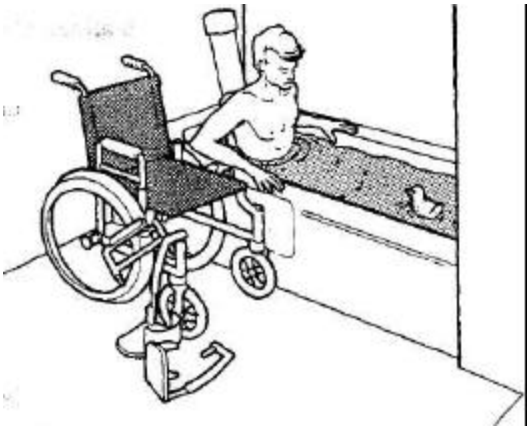


Rotating Seat Extends **Out Over the Rim of the Tub**



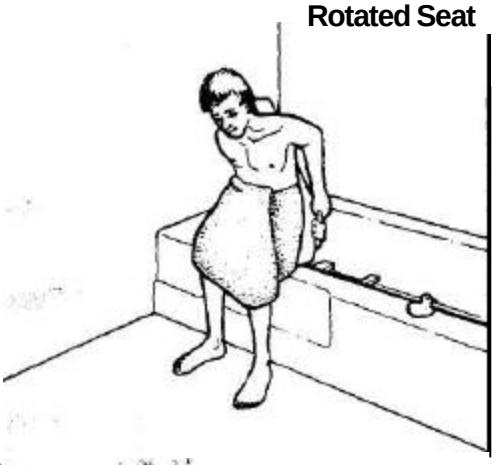
Wheelchair Users Make a Lateral Transfer onto the Rotated Seat





User Operates Valve to Lower and Raise the Seat as Needed

Walking People Sit Down on the Rotated Seat

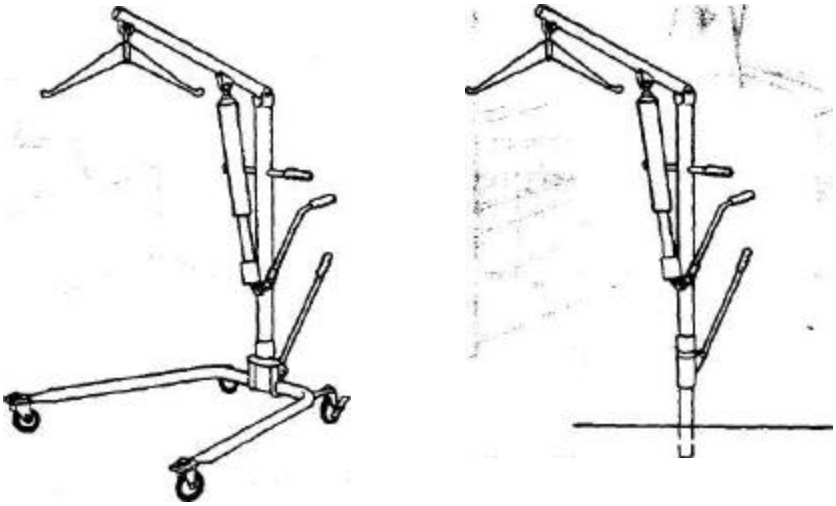


Getting In and Out of Bathtubs

Lifts at Tubs

Some people with disabilities will not be able to make a transfer and will have to be lifted into a conventional bathtub. Mechanical lifting devices can be used to avoid the risks inherent in carrying and placing someone into a tub.

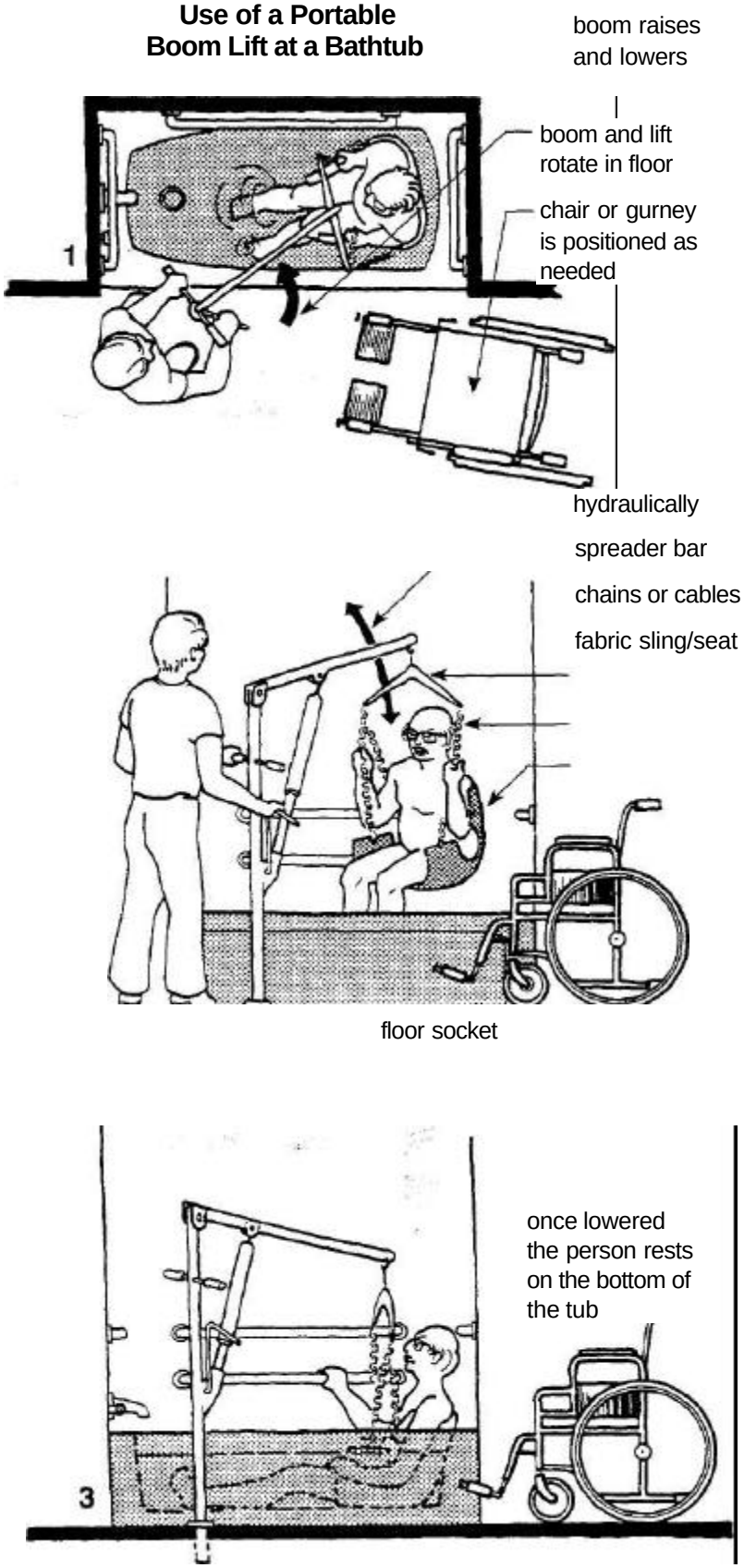
Hydraulic Boom Lifts



Getting In and Out of Bathtubs

Portable Boom Lifts

Use of a Portable Boom Lift at a Bathtub



Portable boom lifts are common for attendant use. They can be mounted in a floor socket at a tub or on a rolling dolly. The booms are raised and lowered by an attendant who operates a lever on a hydraulic pump.

The person being lifted sits or lies upon a fabric seat or sling. The person's chair or gurney is positioned under the boom and the fabric seat is attached by chains or cables to a spreader bar which is in turn attached to the lift boom with a swiveling hook. The attendant pumps the boom up to lift the person and then manually rotates the boom to swing the person over the tub. Opening a valve on the lift gently lowers the person into the tub where the lift cables can be detached. The fabric seat may be removed or remain in the tub while bathing.

Sockets for floor mounted boom lifts must be carefully positioned before the socket is installed to be certain the lift can swing properly. The socket can be installed in existing or newly constructed houses.

The lift mechanism can be removed from the socket and placed in storage when not in use. However, the lifts are heavy and cumbersome to carry, so storage should be located nearby. Because the lifts are bulky and unattractive, the best storage space would be an enclosed closet equipped with an additional floor socket to store the lift upright, maximizing available storage space.

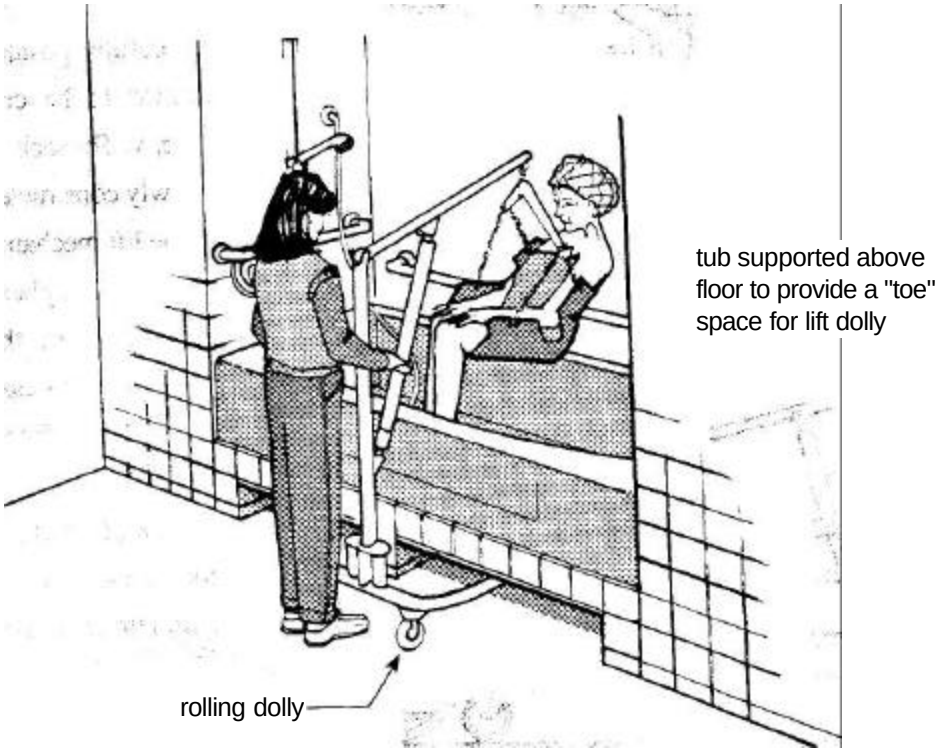
Getting In and Out of Bathtubs

Rolling Portable Boom Lifts

Rolling portable boom lifts are similar to those using floor sockets except they are mounted on a large stable rolling dolly. These lifts allow an attendant to pick a person up and roll them to another location. For example, someone could be picked up from the bed and rolled into the bathroom.

There must be adequate space available for a rolling portable boom lift to be used. The frame of the rolling dolly must pass under or around the bed, chair, or other surface from which the person is to be lifted. Use of portable rolling lifts at tubs is only possible when the tub is raised above the floor to provide a "toe" space for the legs of the rolling base. Since rolling boom lifts are quite large and somewhat clinical looking, an enclosed storage space near the bedroom or bathroom keeps them close at hand but out of the way when they are not being used.

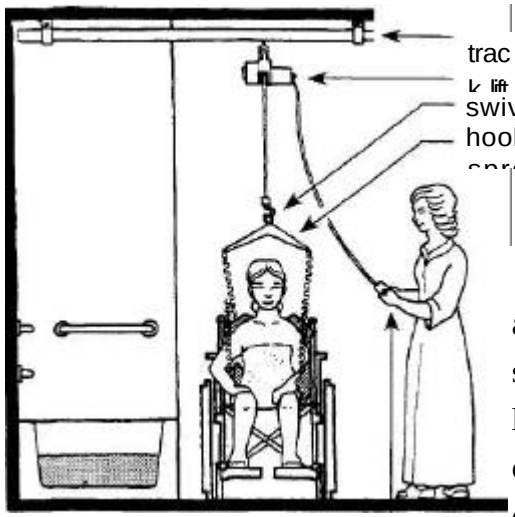
Use of a Portable Rolling Boom Lift at a Bathtub



Getting In and Out of Bathtubs

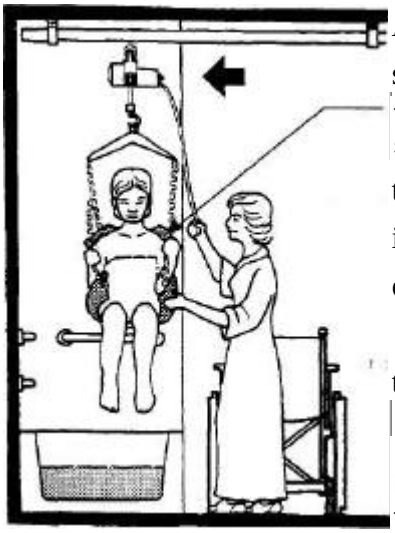
Overhead Track Lifts

Use of an Overhead Track Lift at a Conventional Bathtub



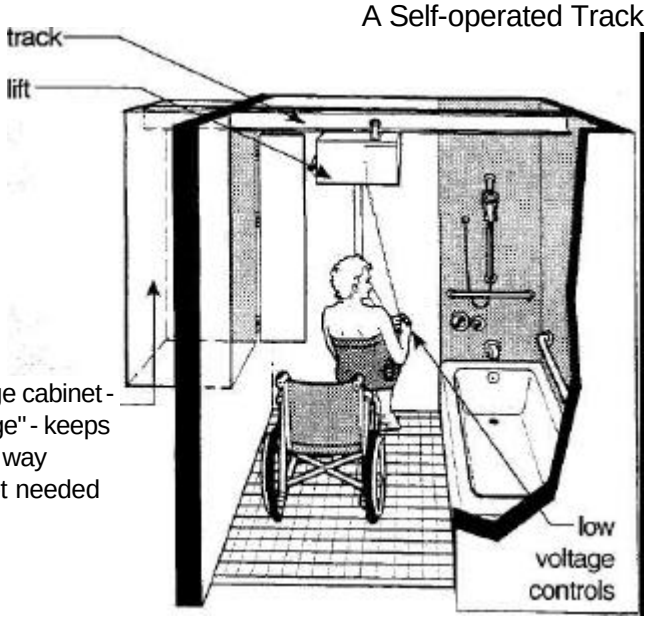
Overhead track lifts are power-operated devices that move along a track mounted in the ceiling. Using the same type of fabric sling/seat as other lifts, track-mounted lifts use electricity to power lift and move the person along the course of the track. The lifts operate on low voltage electricity to provide safety near water. They can be controlled by either the user or an attendant from a switch box on a hanging cord.

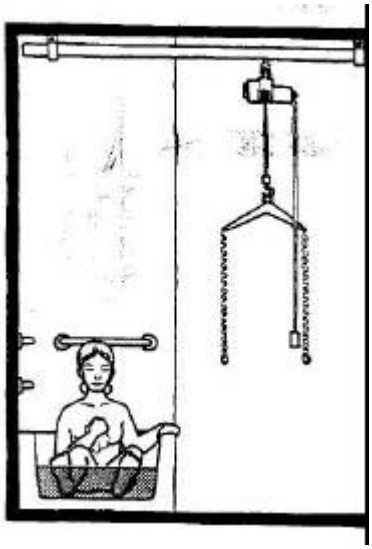
Ceiling-mounted tracks can be installed wherever they are needed and can be extended from one room to another. A track that runs between the bed, toilet, and tub allows the user to make a single transfer to the lift rather than several transfers between a wheelchair and the various fixtures. Self-operated track lifts can provide a degree of independence for some severely disabled individuals not achievable any other way.



In planning for overhead lift installations, it is a good idea to extend the track into a special closet or cupboard that can serve as a "lift garage". This will keep the machine and its components out of sight when not in use.

A Self-operated Track





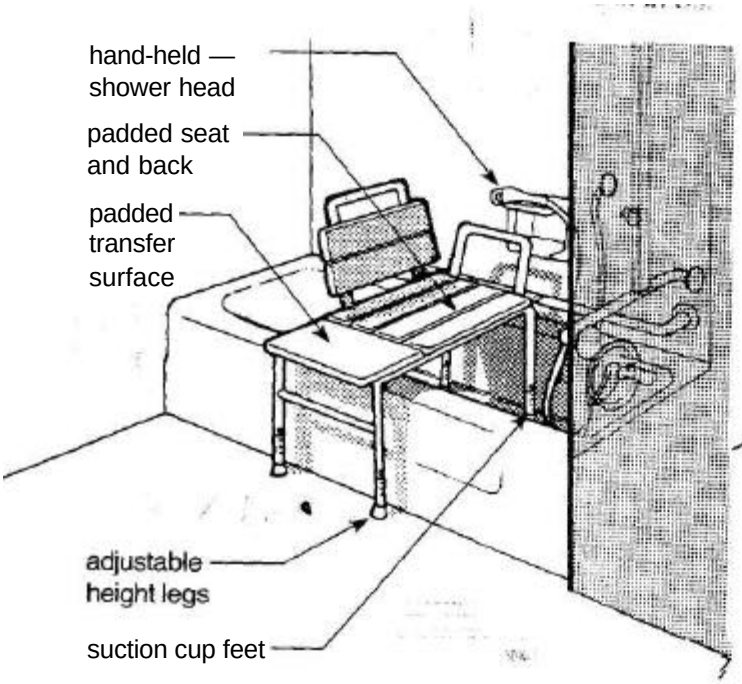
Removable Seats at Tubs

Unlike the hydraulic seats and lifts which allow the user to soak in the tub, removable tub seats elevate the user to the rim height of the tub. Tub seats are useful for people who cannot get down into a tub or who do not want or cannot afford an attendant or mechanical lift. Seats mounted in tubs are in many ways similar to transfer showers, allowing the user to "shower while seated."

Many tub seats bridge the tub rim and have two legs that stand inside the tub and two legs that stand outside the tub on the floor. The portion of the seat outside the tub serves as a transfer surface and the slatted portion over the tub serves as the seat during bathing. The user first sits on the transfer surface then slides over onto the seat while transferring their legs over the rim and into the tub. Most tub seat users remain seated while showering. However, some people use the seat only to avoid the risk associated with stepping over the rim of the tub and, once in the tub, stand up to shower in the conventional manner.

This type of tub seat must be adjusted to slope inward toward the tub to prevent water from running down the frame and onto the floor. There is usually a slot between the transfer surface and the seat area through which a modified shower curtain can be threaded to help contain the water in the tub.

Typical Free-standing Tub Shower Seat



The Transfer Surface Outside the Tub Is a Convenience and Safety Feature for Everyone

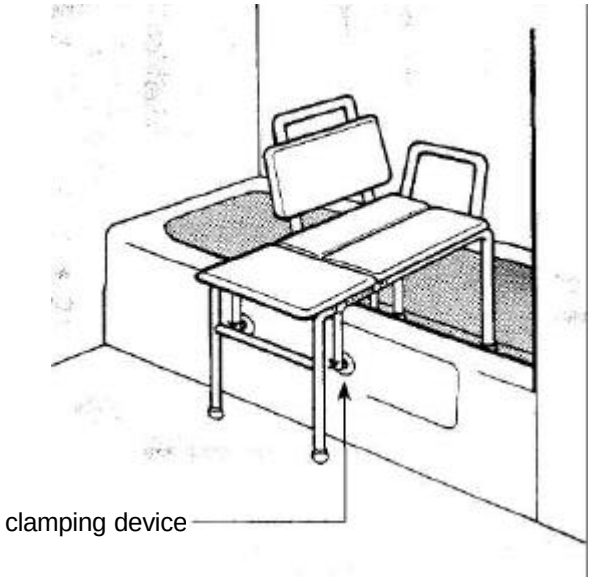
Removable Seats at Tubs

When choosing and installing a free-standing tub seat, precautions must be taken to ensure its stability. Usually, the legs of this type of seat have large suction cups on the bottom to promote stability. However, tub seats that attach only by suction cups are not entirely stable. The most secure free-standing seats have clamping devices that fasten tightly onto the tub. The ANSI and UFAS standards require that all seats at tubs be built-in or be capable of being securely attached to the tubs.

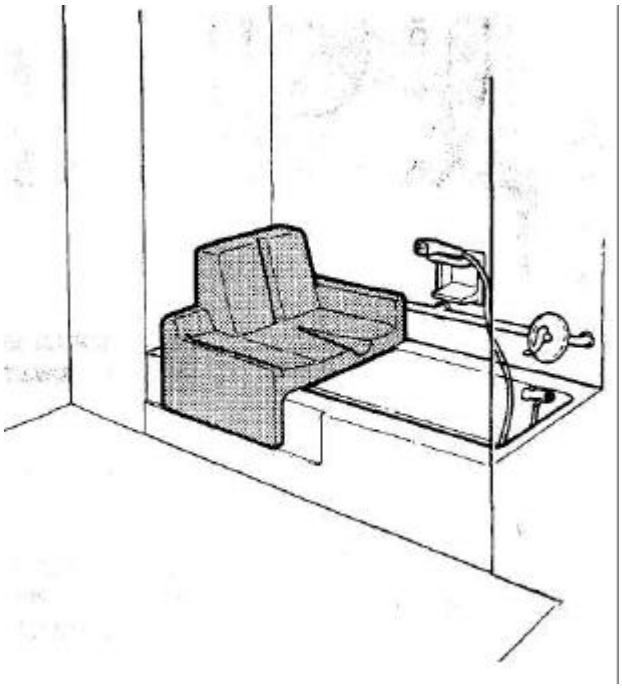
Tub seats should be easy to remove so the tub can be used by all members of the family. Ideally, a nearby closet could provide space to store the seat out of sight when not in use.

In response to the increasing need for seats in tubs or showers, some plumbing fixture manufacturers have models which include integral seats or they manufacture seat accessories in matching colors and materials.

Portable Tub Seats That Clamp Securely to the Tub Are Preferred



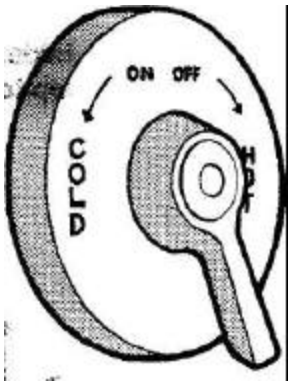
Some Tub Seats Have No Outside Transfer Surface but Still Clamp to the Tub



Controls at Tubs

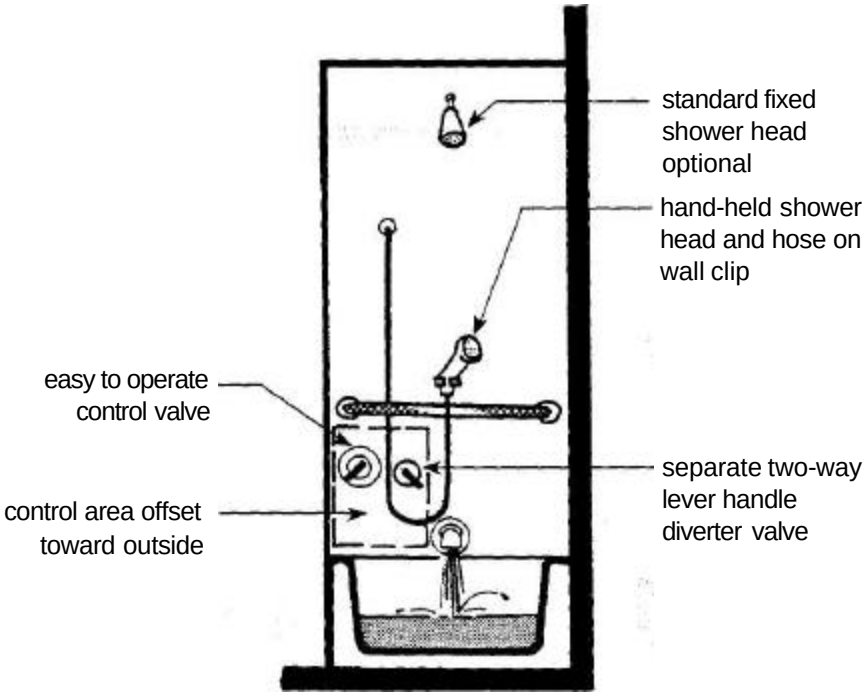
For controlling the water flow, valves and other controls that can be easily used with a closed fist are best. Lever handles, push plates, and electronic controls offer the preferred ease of use. Water valves, diverter valves, and other controls should be located on the end wall at the foot of the tub, below the grab bar, and offset toward the outside of the tub. This position eliminates the need to bend and stretch to reach the controls from outside the tub. Please see ANSI or UFAS for dimensions.

Lever Handle Control Valves Are Preferred



for safety, scald proof valves should be used

ANSI/UFAS Tub Control Wall



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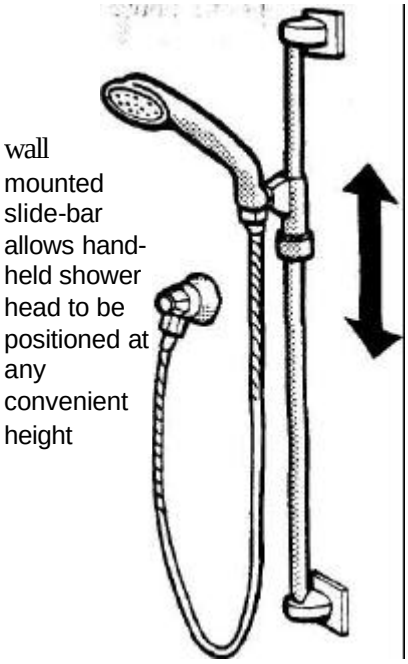
Controls at Tubs

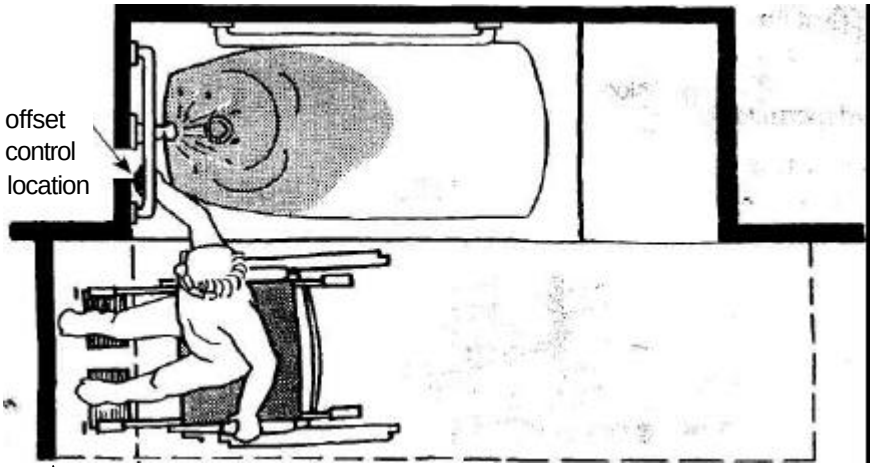
Since many disabled people have limited skin sensation, scald-proof thermostatically controlled or pressure balanced valves should be used to control the flow of hot water. Separate lever handle diverter valves are preferred over integral push-pull devices for the flow valves. Pop-up filler spout diverters and shower head mounted diverters are not within reach of many people with disabilities and should be avoided.

Hand-held shower heads are essential at accessible tubs. Mounting clip holders should be placed on the wall or a slide-bar installed so the hand-held unit is always available just above the grab bar. It is best if both ahand-held and a standard fixed shower head are provided. In some cases, the hand-held unit can double as a fixed head by installing a second holder clip at the height of the standard head or by using a slide-bar for positioning the hand-held unit.

Hand-held Shower Head On a Slide-bar Mount



Offset Control Location Is Easier for Everyone to Use



an additional clear floor space of 12"-18" here allows wheelchair users to reach controls without stretching over the footrests on their wheelchair

The 3[1] x 3' Transfer Shower

The 3' x 3' shower with a seat has been one of the most versatile and successful bathing fixtures for people with disabilities. A . transfer shower user must have at least moderately good use of their arms and hands, trunk stability, and the ability to transfer onto the seat.

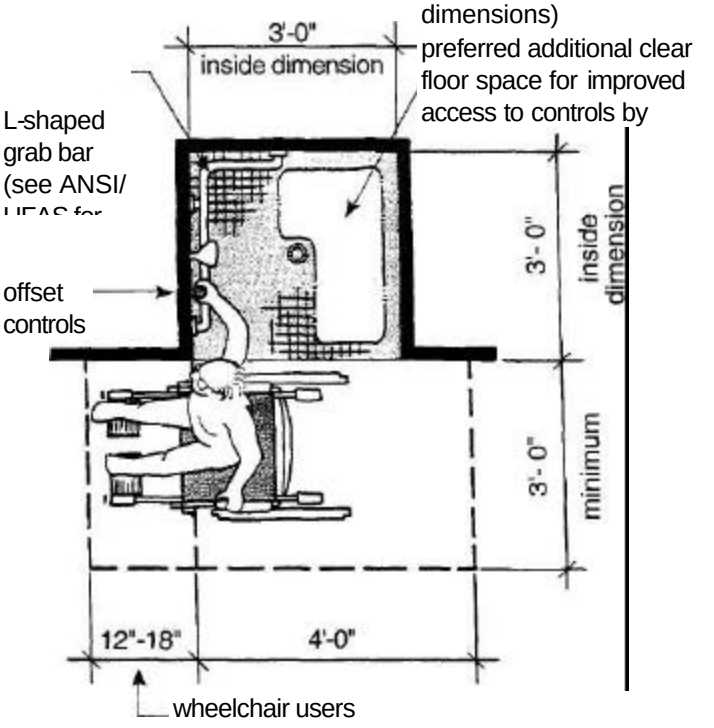
The transfer shower is 3' x 3' on the inside and has a specifically-sized L-shaped seat on onewall. The opposite wall contains a precisely located set of controls and an L-shaped grab bar. The dimensions and placement of the features of this shower are not arbitrary and should be followed precisely. Please see ANSI/UFAS for all dimensions and other details.

Padded and upholstered shower seats are preferred because many disabled people have difficulty sitting on hard surfaces. A folding seat allows the user the choice of standing or sitting while showering. However, fixed seats are acceptable under the ANSI and UFAS standards. Molded acrylic and fiberglass transfer showers that meet these specifications are now available.

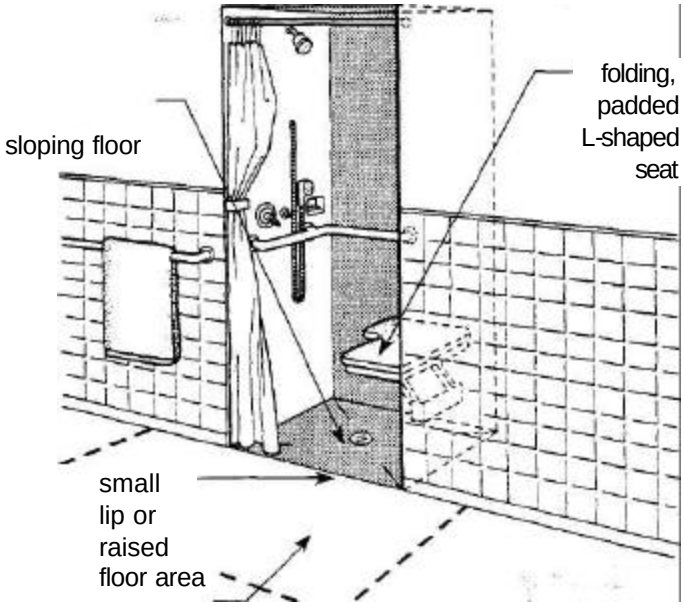
Although the ANSI/UFAS standards permit the use of a curb at transfer showers, it is preferred that no curb be installed. Curbs of any kind at showers make maneuvering over or near them difficult or hazardous for many people with disabilities. A small (maximum 1/2 inch) lip and sloping floor can be used to contain water. Eliminating the curb makes transferring easier by allowing wheelchair users to get closer to the seat and even to roll into the stall if it is equipped with a folding seat. Please see "Roll-in Showers" below.

-shaped seat, preferably padded

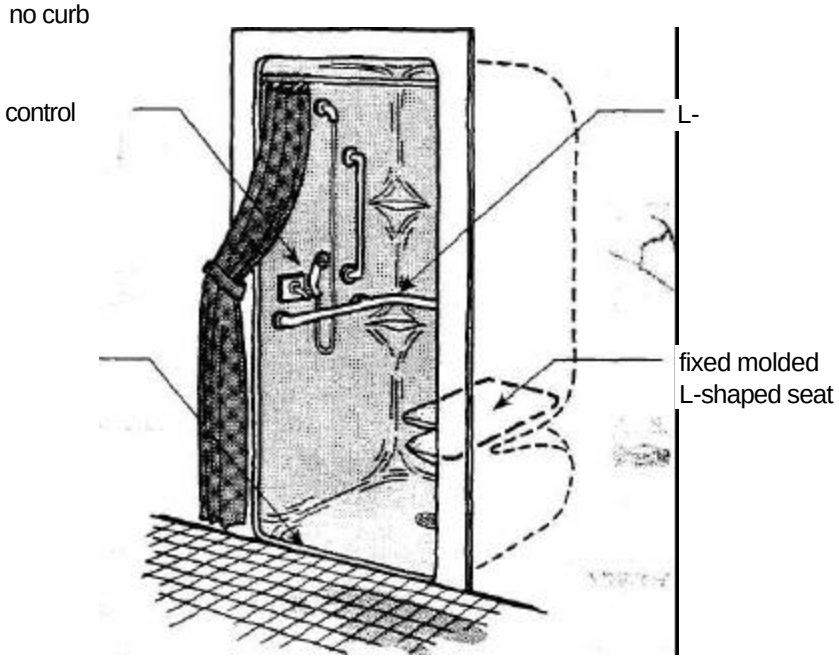
3' x 3' Transfer Shower



Custom Built 3' x 3' Shower with Padded, Folding Seat

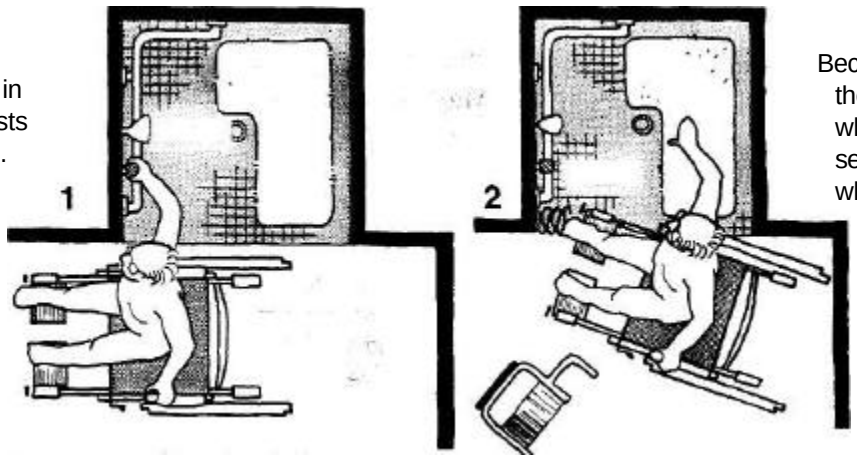


Molded Plastic 3' x 3' Transfer Shower



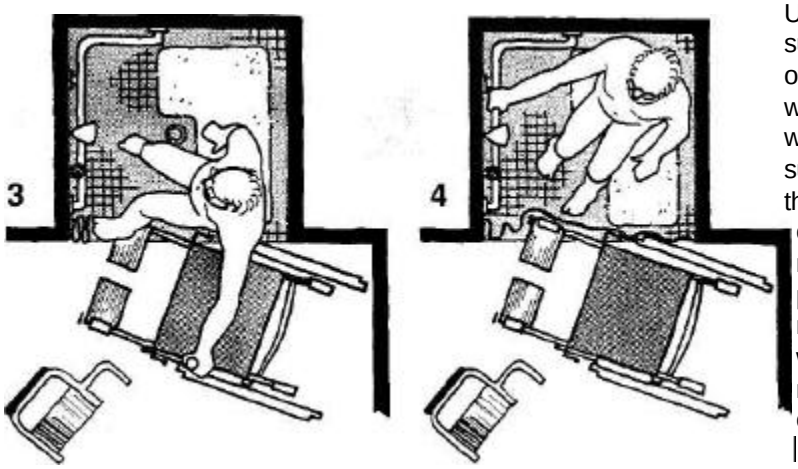
Use of the 3' x 3' Transfer Shower by Wheelchair Users

User pulls close to controls which are in easy reach and tests water temperature.



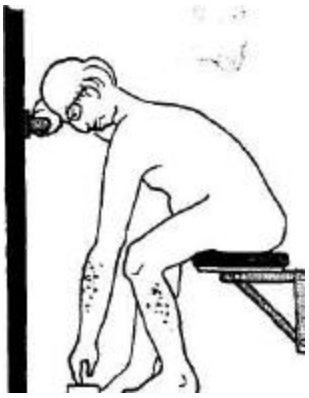
Because there is no curb, the user can pull his wheelchair close to the seat. After removing the wheelchair armrest,

the user transfers from his wheelchair to the shower seat. Transferring is made easier and safer because the shower seat is generally mounted at the same height as the wheelchair seat.



Using the grab bar for support, the user slides over to the corner where the shower walls provide lateral support. The size of the shower places the controls within easy reach. The grab bar provides a place to rest the arm for those who cannot easily reach forward and operate the controls.

Walking People May Choose to Sit While Showering



The grab bar serves as a balance point while leaning over to wash feet as well as a gripping surface for entering and exiting the stall.

This shower, with its seat, provides bathing ease for someone who walks with difficulty or who may not be able to stand to shower.

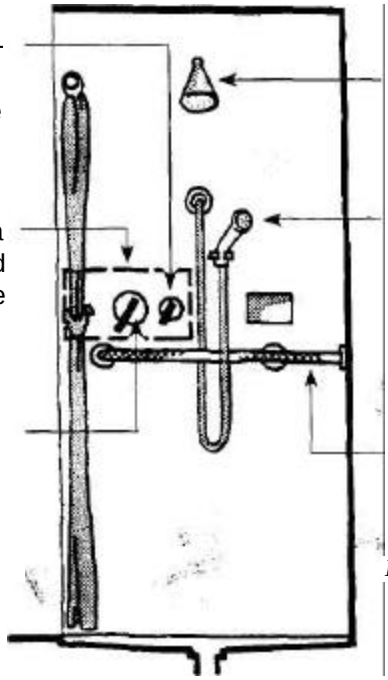
The 3' x 3' Transfer Shower

Grab Bars at Transfer Showers

The ANSI and UFAS standards require only one horizontal L-shaped grab bar in transfer showers. Some people may benefit from the installation of an additional vertical grab bar on the control wall. This vertical bar may also be helpful to standing people in maintaining balance. See ANSI/UFAS for required length and position of the horizontal bar and the section below on "Grab Bar Installation".

Because the seat folds up, the stall works as a conventional 3' x 3' shower stall.

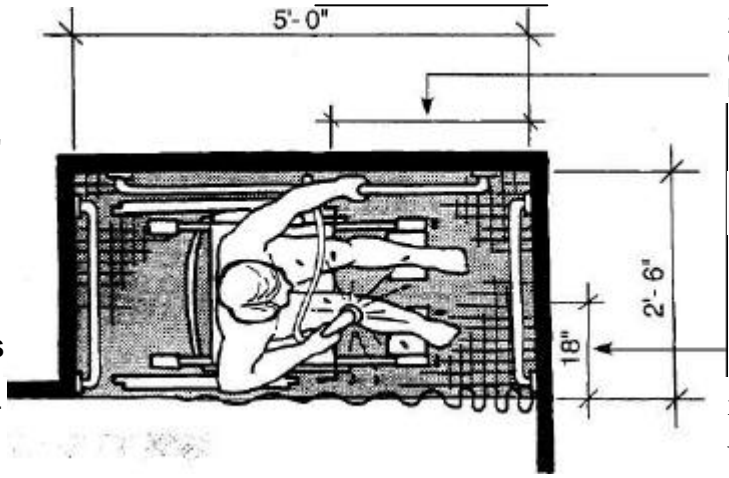
3' x 3' Transfer Shower Control Wall



The 3' x 3' Transfer Shower Controls

Control valves and diverter valves for transfer showers should be similar to those described for bathtubs. In this case, however, the controls are mounted above the grab bar. Please see "Controls at Tubs".

ANSI/UFAS Minimum-sized Roll-in



UFAS specifies controls be located on a side wall within 18" of front edge of shower. (ANSI allows controls to be placed on any of the three walls)

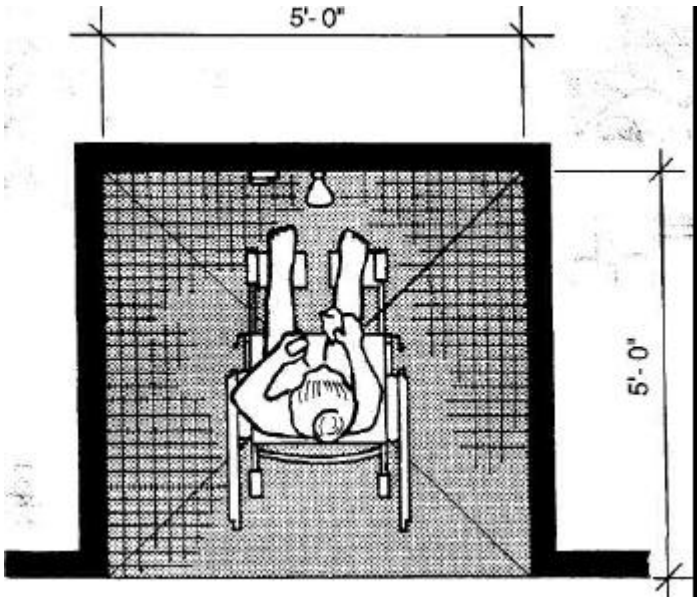
Roll-in Showers

A roll-in shower is simply a waterproofed area where a person can remain in a wheelchair while showering. Generally, a special waterproofed wheelchair is used for this purpose.

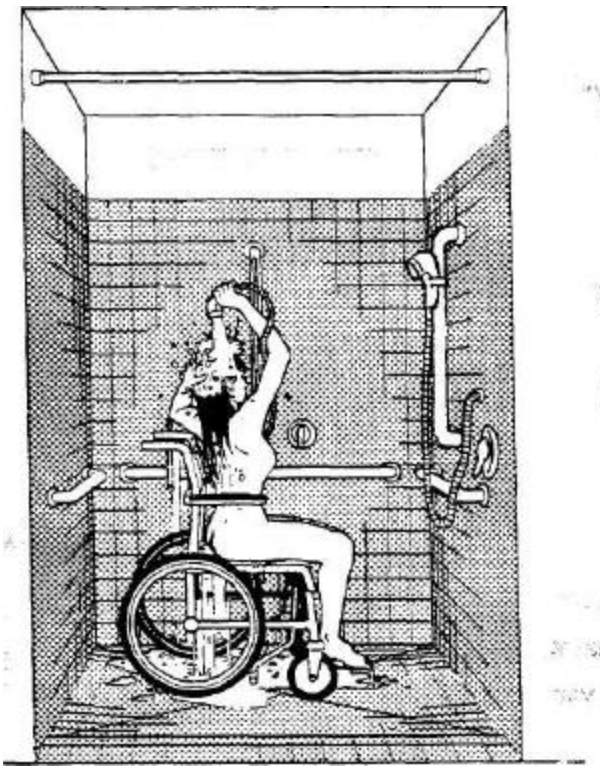
The size of a roll-in shower can vary widely depending on the user's ability and the available space. The ANSI and UFAS standards permit a roll-in shower as small as 2'-6" x 5 -0". This size occupies the same space as a conventional bathtub but is considered by most experts to be too shallow to retain water. More appropriate sizes are 4' x 5[1] or 5' x 5'.

There should be no curbs or abrupt changes in level at the entrance to roll-in showers. A gradually sloping shower floor with a raised strip at the entrance should be used to contain water while allowing wheelchairs to roll easily and safely into and out of the shower stall.

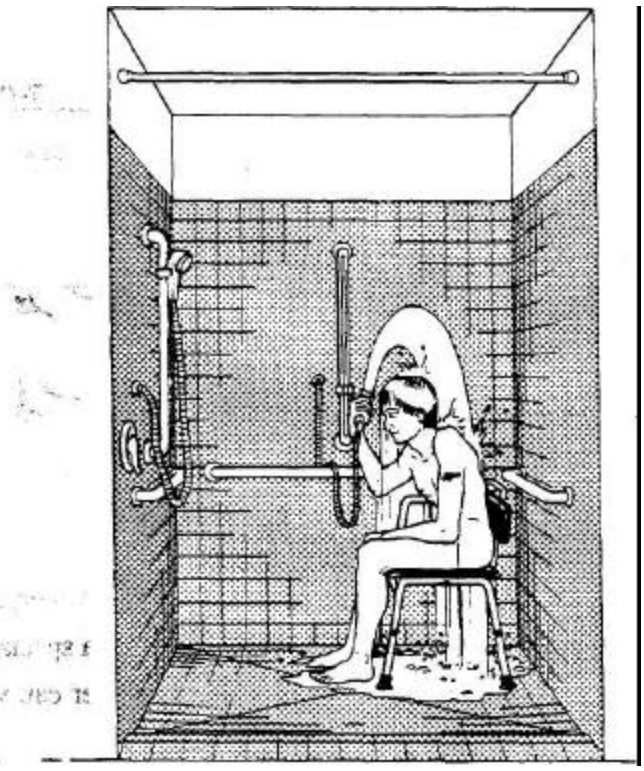
A More Adequate Roll-in Shower



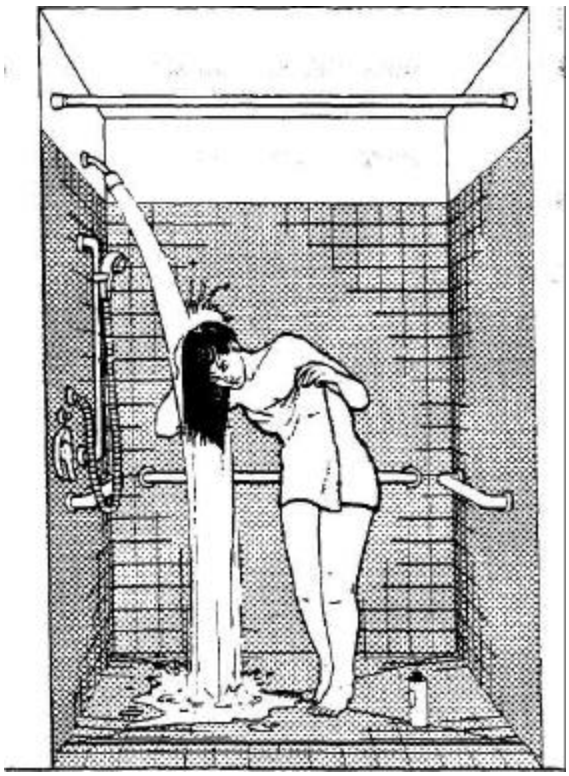
Roll-in Showers Are a Very Versatile Bathing Fixture



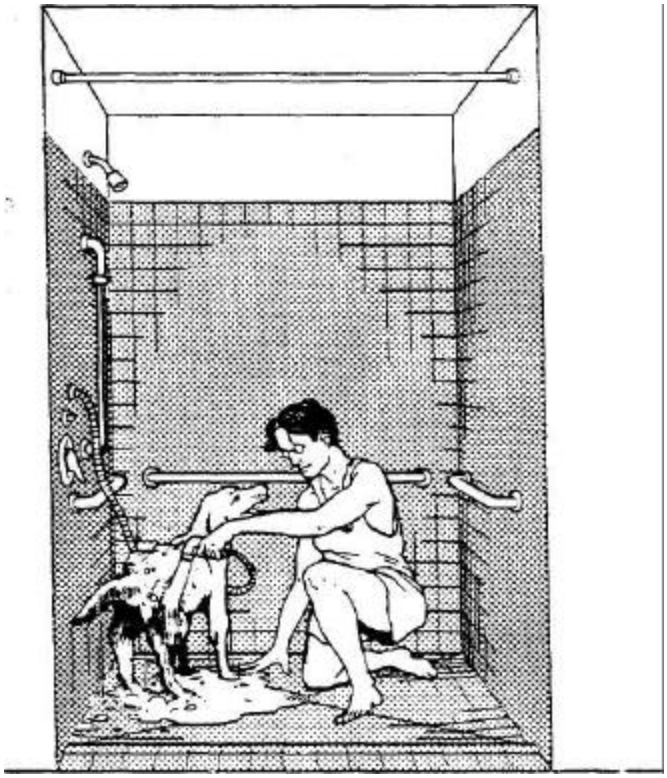
Roll-in showers provide enough space for people in wheelchairs to maneuver and enough space to have an attendant assist in the shower if necessary.



Portable seats can be placed in a roll-in shower for walking people who need to sit down to shower.

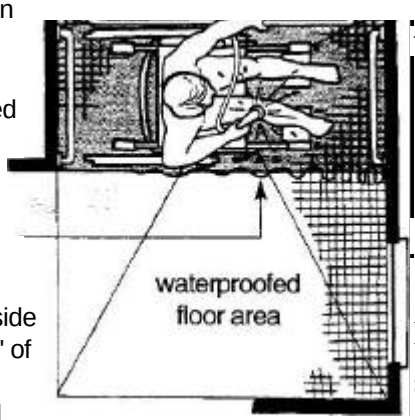


Roll-in showers can be used by non-disabled people in a conventional manner

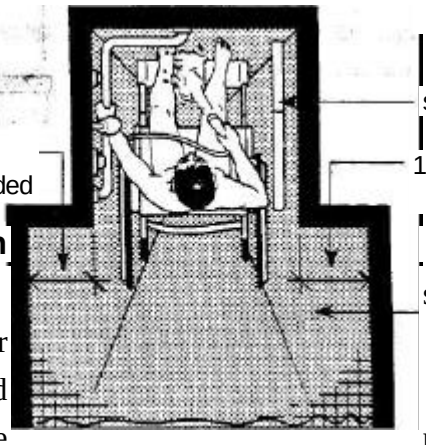


and they can be used by others for special purposes.

ANSI/UFAS Minimum Roll-in Shower with Extended Wet Area Floor



3' x 3' Transfer Shower with Extended Wet Area Floor

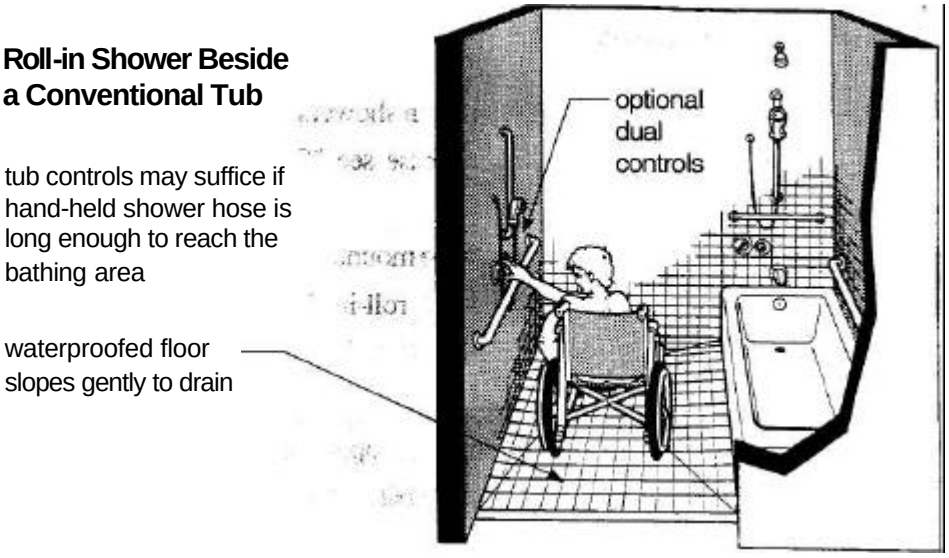


Roll-in Showers

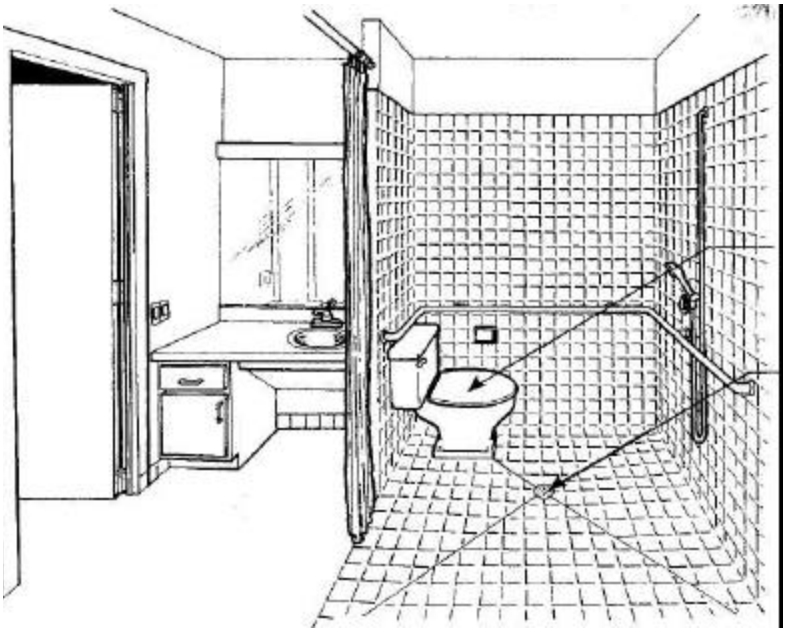
Where space is limited or where roll-in showers are smaller sized planned, it may be best to simply waterproof the entire bathroom floor and let it slope gently to a drain. An entirely waterproofed "wet area" serves multiple purposes and eliminates the need to retain the water within the immediate shower stall. For example, the small and somewhat inadequate ANSI/ UFAS 2'-6" x 5'-0" roll-in shower becomes a successful roll-in if the floor outside the stall is waterproofed as well. Some people can use the 3' x 3' transfer shower as a roll-in shower if it is equipped with a folding seat, and the floor outside is waterproofed and slopes to the floor drain.

"Wet areas" can be designed to allow multiple activities to occur in one space. This double use can save space and allow more types of bathing options in one bathroom. For example, a "wet area" located outside a conventional bathtub can be used as a roll-in shower. A combination shower and toilet compartment may also work provided the toilet fixture does not interfere with wheelchair maneuvering space.

Roll-in Shower Beside a Conventional Tub



Combination Shower and Toilet Compartment



Roll-in Showers

Grab Bars

The ANSI and UFAS standards require horizontal grab bars on all three walls of walk-in/roll-in showers. Some people may prefer installation of additional vertical grab bars on the side walls and/or adjacent to the controls. These vertical bars may be helpful to standing people in maintaining their balance as well as providing a safety measure when shower floors are slippery.

Where ANSI/UFAS compliance is required, refer to the standards for specified length and position for horizontal bars. Please also see the section below on "Grab Bar Installation".

Roll-in Showers

Controls

Control valves and diverter valves for roll-in showers should be similar to those described for bathtubs. Please see "Controls at Bathtubs".

The ANSI standards allow the controls to be mounted on both the side and back walls of the small 2'- 6" x 5'- 0" roll-in shower. The UFAS standards require that the controls be mounted on a side wall. The mounting heights of the grab bars and controls should comply with the ANSI/UFAS specifications with the operating valves placed immediately above the horizontal grab bar.

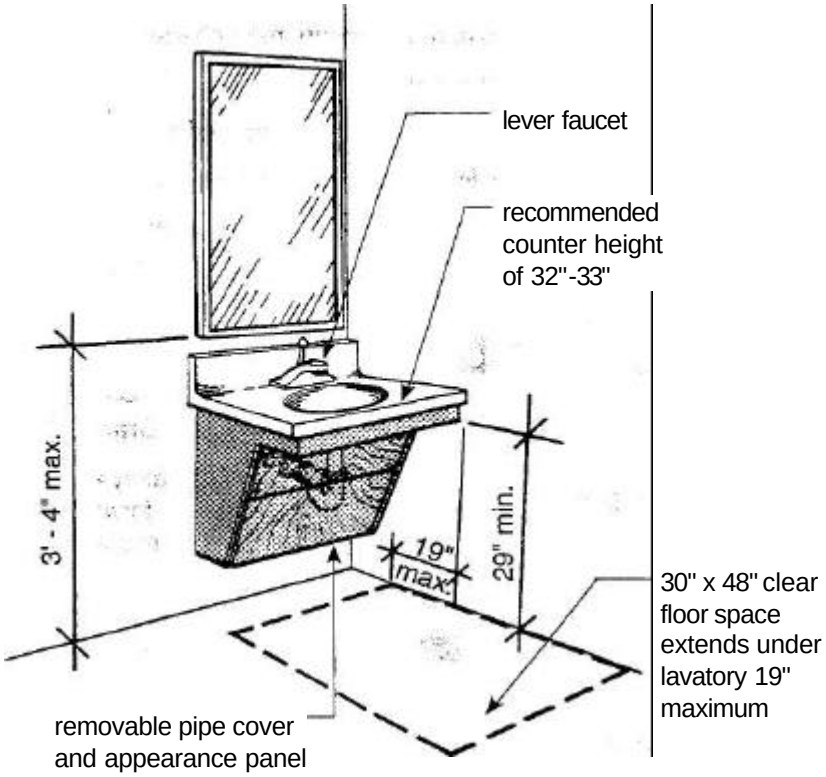
Lavatories (Sinks)

Both wall-mounted and countertop lavatories are used in accessible bathrooms. Lavatories can be standard models acquired from local vendors. Special "handicapped" models with elongated bowls are not needed and should not be used.

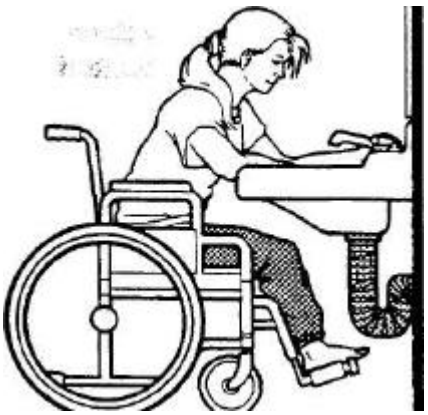
Although special fixtures are not necessary, certain features must exist for the lavatory to be usable. These features are as follows: 1) there must be a knee space under the lavatory so that people who use wheelchairs can pull underneath and get close enough to use the fixture; 2)theremustbeaclearfloorspace,30 inch minimum width by 48 inch minimum depth, that extends a maximum of 19 inches under the lavatory; 3) the lavatory must have at least 29 inches of clearance from the floor to the bottom of the apron at the front of the lavatory; 4) the drain and supply pipes must be covered to protect against accidental burns; 5) faucets must be able to be operated without gripping or twisting; and 6) the mirror must be mounted no higher than 40 inches off the floor.

Knee spaces are particularly important in bathrooms which are generally small and have little maneuvering space. The knee space under the lavatory provides clearance for turns as well as space for a close approach to the lavatory by people using wheelchairs.

Characteristics of an Accessible Lavatory



Knee Space Permits a Close Approach to the Lavatory



Lavatories (Sinks)

Although wall-hung lavatories can meet all of the above mentioned criteria, they are not ideal. Some disabled people must lean on a lavatory to maintain their balance. Many wall-hung lavatories will pull loose from the wall or their mounting brackets will bend under such loads. If used, wall-hung lavatories must have extra strength brackets or legs.

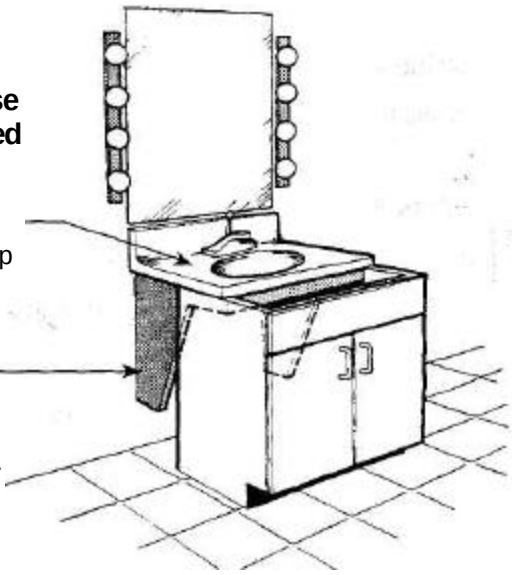
Wall-hung Lavatories Provide No Space for Toiletries and May Come Loose from Wall When Leaned On

Because of their design, wall-hung lavatories have little if any shelf space and therefore provide no surface on which to place toiletry and personal items. This presents a difficult situation for many disabled people who have difficulty reaching up into wall cabinets for supplies or bending over to pick up items that inevitably fall off a wall-hung lavatory.

Countertop lavatories can provide ample surface area and are generally a better choice for accessible bathrooms. Conventional countertop lavatories can be used and the counter can be any size. For use by disabled people, lavatories mounted in standard countertops, are best when placed as close as possible to the front edge of the countertop. This position allows a person to lean over the bowl more easily to wash or clean their teeth and reach to controls.

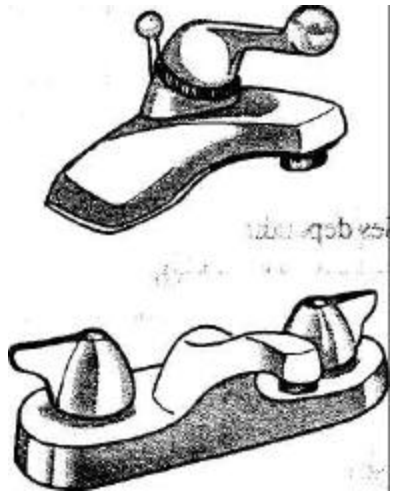
Countertops containing lavatories can be mounted on custom made wall brackets so the necessary knee space can be provided for wheelchair users. In rental housing where occupants may change frequently, the wall brackets can be surrounded by a free-standing base cabinet that will provide a vanity for tenants who do not require knee space. This "adaptable" vanity base cabinet can be removed and placed in storage when knee space is required. For additional adaptable design information please see *Adaptable Housing: A Technical Manual for Implementing Adaptable Dwelling Unit Specifications* (publication # HUD-1124-PDR).

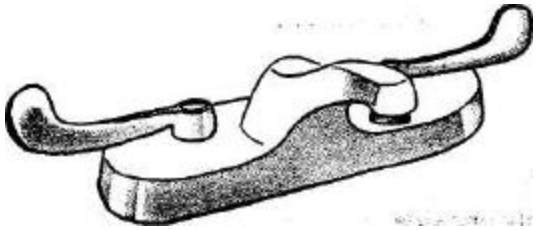
A Removable Vanity Base Cabinet at a Wall-mounted Countertop Lavatory



Countertop Lavatory on Wall Brackets

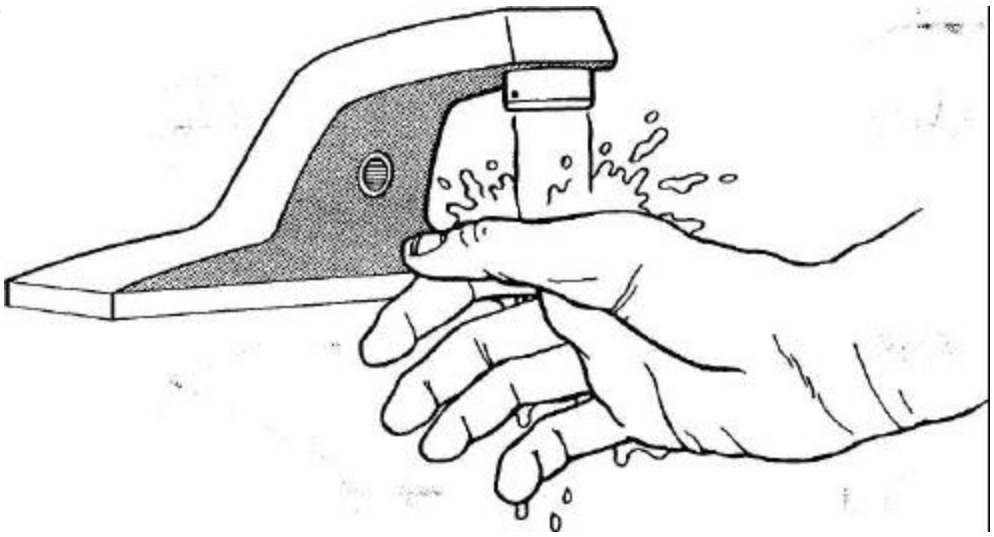
Single-lever or Blade Handles Are the Easiest to Operate





the Need to Turn Handles

Electronically Controlled Faucets Eliminate



Lavatories (Sinks)

Faucets and Controls

Many people have difficulty using faucets and water controls that require grasping and twisting of symmetrical shapes such as round, cylindrical, or square faucet handles. Asymmetrical valve handles, such as lever or blade handles, are good choices because they can be used without gripping or twisting. Single-lever faucet controls are preferable because both temperature and flow rate can be adjusted with one hand in a single motion.

If a proposed faucet can be operated with a closed fist and requires less than five pounds of force to operate, it is probably an acceptable control for most disabled people.

Electronically controlled faucets are now available that sense the presence of the user's hands and automatically turn on the water. The faucets eliminate the need to touch or turn handles and the temperature and flow rate are preset. Although these faucets are primarily used in commercial settings, they may be of benefit in the home for people with severe hand limitations.

Toilets

Toilets for use by mobility impaired people are best located in a corner where the wall behind and beside the fixture can be reinforced, and grab bars can be mounted if they are needed. To provide space for a person's shoulders, 18" of clearance should be allowed between the center line of the toilet and the side wall.

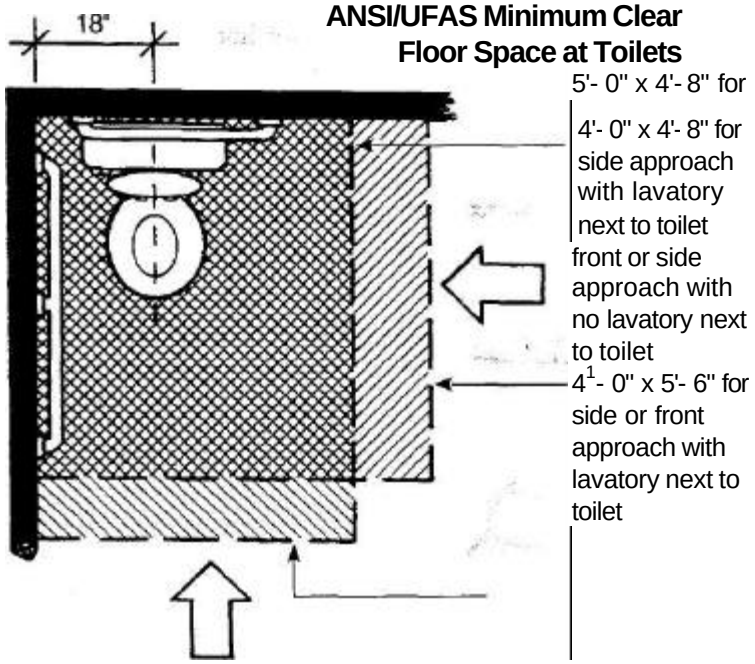
There should also be ample clearfloor space in front of and beside the toilet fixture to allow people using wheelchairs and walkers to maneuver, approach the seat, and make a safe transfer.

The ANSI/UFAS standards require clear floor space that varies depending upon the direction of approach to the toilet. When the fixture can be approached from both the front and the side and a lavatory is installed next to the toilet, the floor space to allowtransfersmustbeatleast4'-0" x 5'-6". The minimum 4'-0" dimension extends into the room from the side wall next to the toilet fixture. The minimum 5'-6" dimension is measured from the wall behind the toilet to the wall in front of the toilet fixture.

When the fixture can be approached from the front or side and no lavatory is installed next to the toilet, the floor space must be at least 5'-0" x 4'-8" and extend at least 3'-6" to the side from the center line of the toilet. This provides a minimum clear space beside the toilet for users to execute side transfers.

Some people can transfer to and from the toilet from only one side. Others can complete right, left, or front transfers. The technique used depends on which approach is most familiar, easiest, and safest to complete. Whenever possible, it is best to position the toilet to allow both front and side transfers.

ANSI/UFAS Minimum Clear Floor Space at Toilets



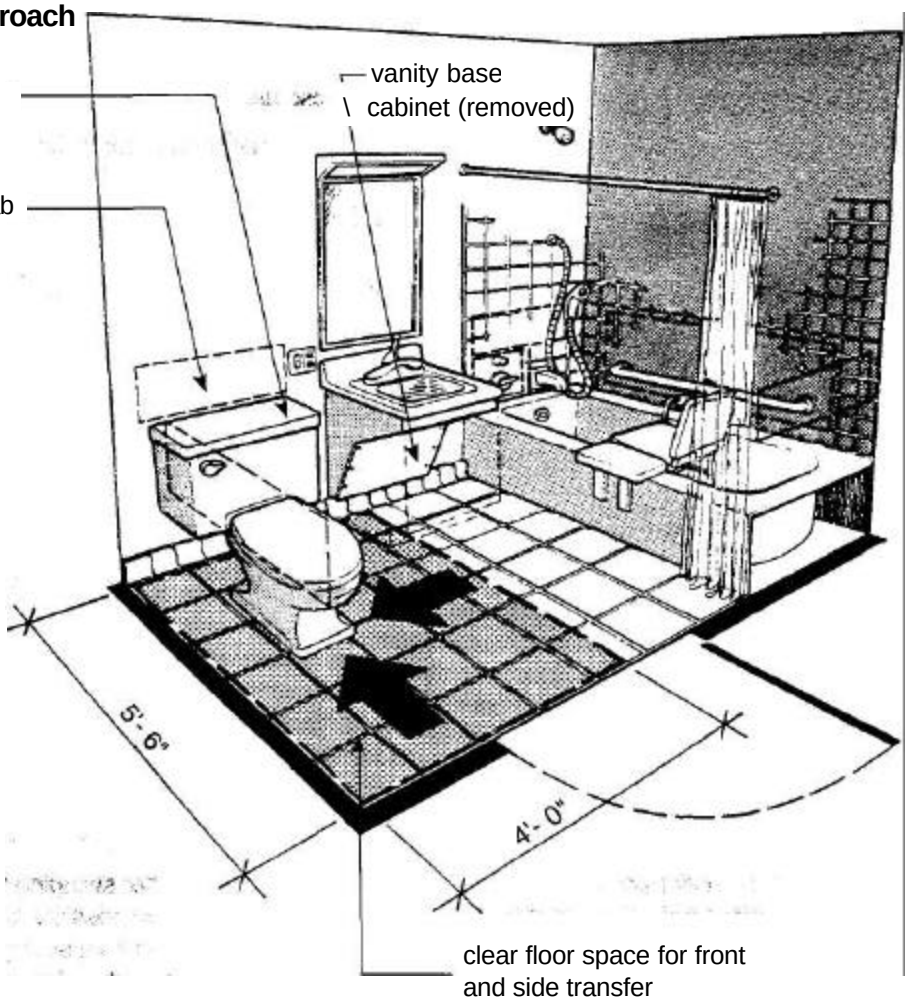
arrows indicate direction of approach

Minimum Clear Floor Space for Toilets with Front and Side Approach

4'- 0" x 5'- 6" ANSI/UFAS

corner installations are preferred for toilets

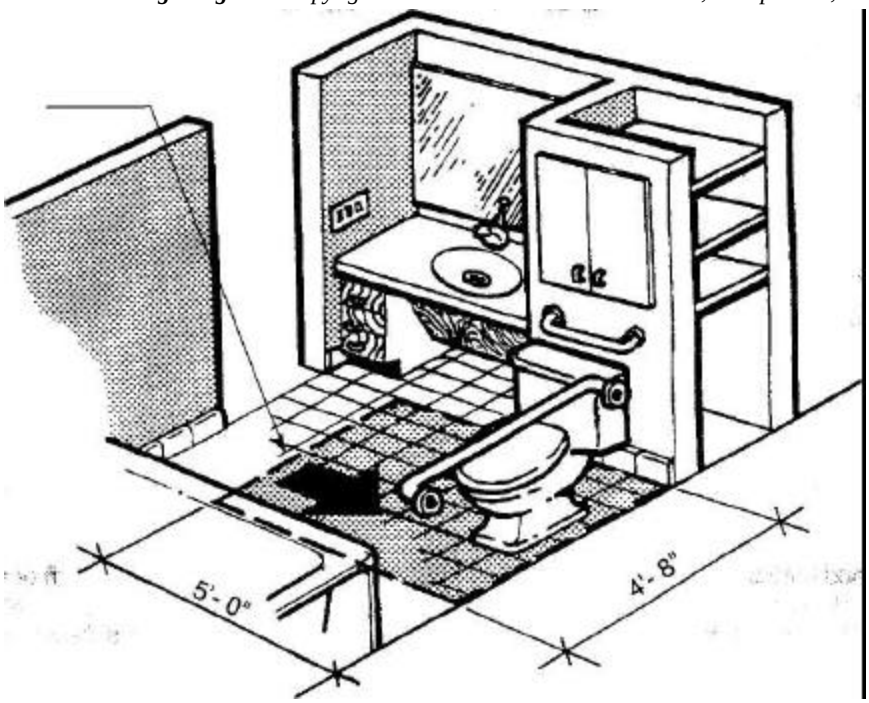
reinforced areas for grab bar installation as needed
bold arrows indicate direction of approach



Minimum Clear Floor Space for Toilets with a Side Approach

5' x 4'- 8" ANSI/UFAS clear floor space for side transfer

bold arrow indicates direction of approach



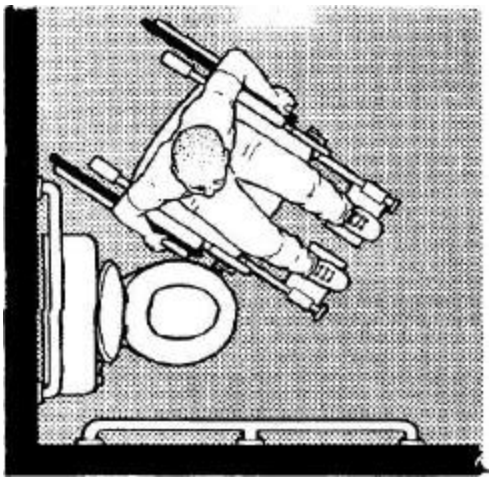
Toilets

Getting On and Off the Toilet

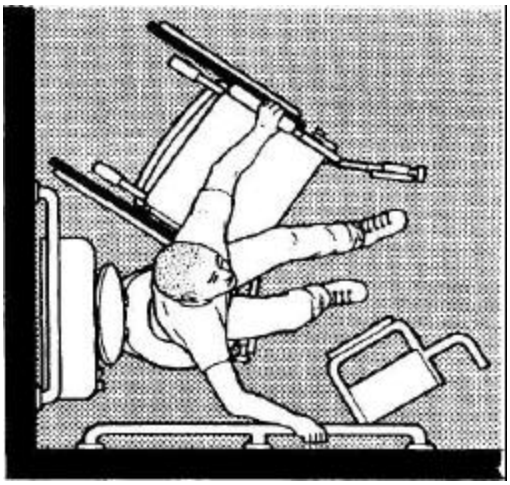
Many people who use wheelchairs are unable to stand up while transferring from a wheelchair to the toilet. These users must be able to position their wheelchair close to the toilet seat to transfer onto the toilet. Wheelchair users utilize several common positions while making a sliding transfer.

Common Wheelchair to Toilet Transfer Techniques

Diagonal Approach

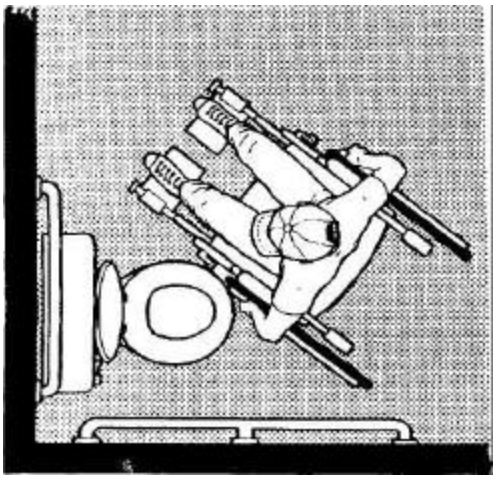


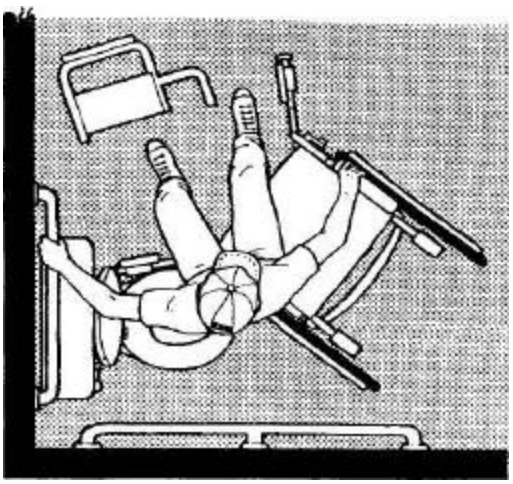
The user parks at a comfortable angle with the chair seat against the toilet.



After swinging the footrests out of the way and possibly removing the armrest, the user makes a sliding transfer using the grab bars and chair for support.

Reverse Diagonal Approach

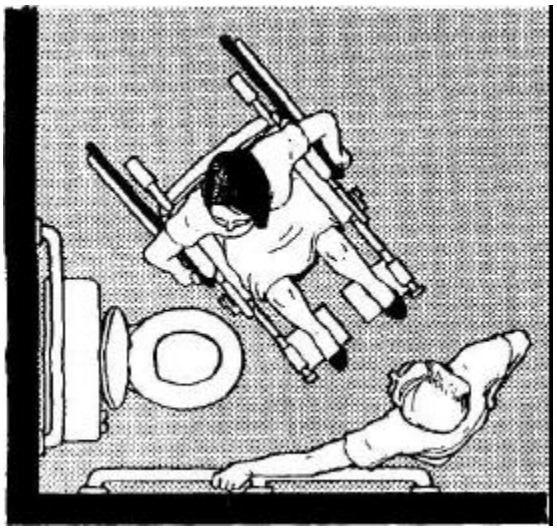




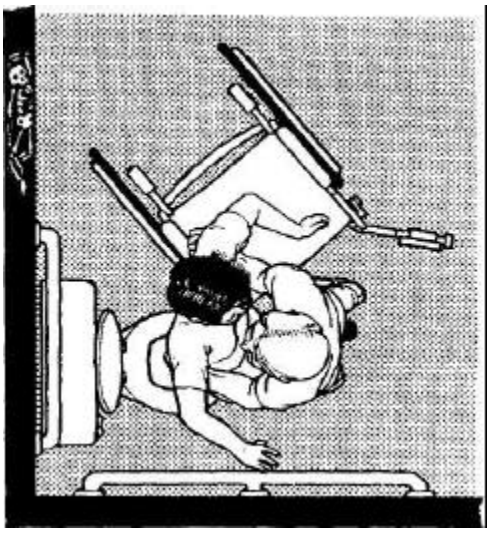
This method may be used to achieve a left-handed transfer in a right-handed room or vice versa.

Common Wheelchair to Toilet Transfer Techniques

Diagonal Approach with Attendant Assistance

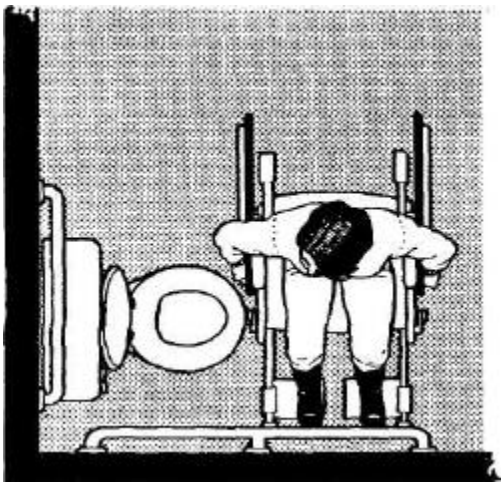


The user is positioned diagonally with the wheelchair seat close to the toilet. The attendant stands in front.

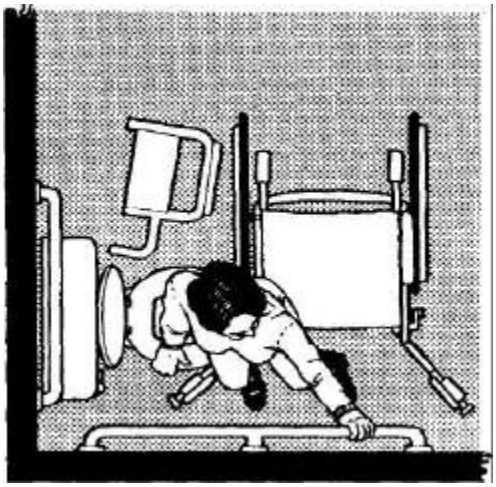


After swinging the footrest to the side, the attendant lifts the person to a standing position, rotates them, and places them on the toilet seat.

Perpendicular Approach



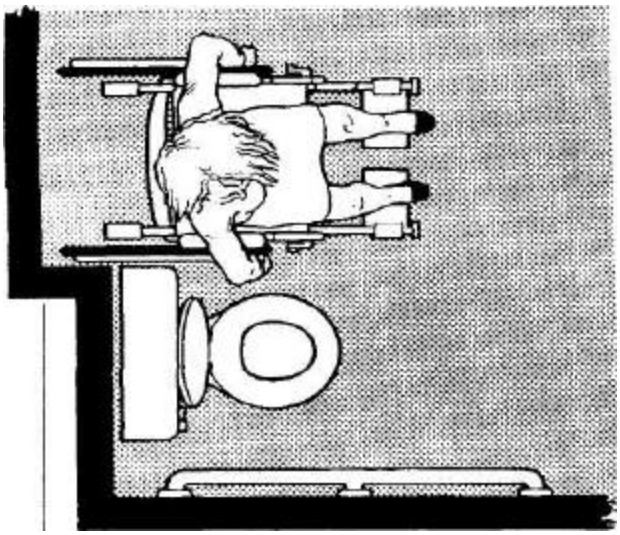
The user positions their chair at a 90 degree angle to the toilet, locating the wheelchair seat as close as possible to the toilet seat.



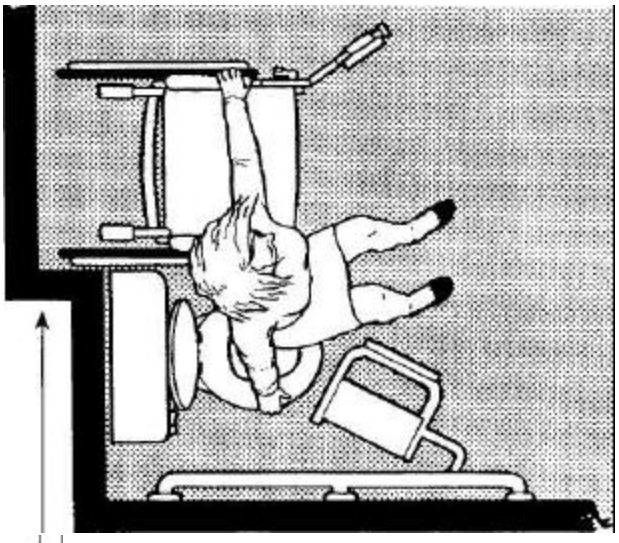
After removing one armrest and using the grab bar and toilet for support, the user makes a sliding and pivoting transfer onto the toilet seat.

Common Wheelchair to Toilet Transfer Techniques

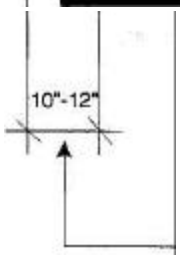
Parallel Approach



The user positions the chair beside the toilet seat.



After removing the armrest and rotating the footrests out of the way, the user makes a lateral sliding transfer using the grab bar and the chair for support.



Note: Offsetting the toilet wall 10" to 12" - provides extra space for the rear wheels of a wheelchair so the user can position the wheelchair seat parallel to the toilet seat. A safer and easier parallel transfer can then be made.

Toilets

Seat Height

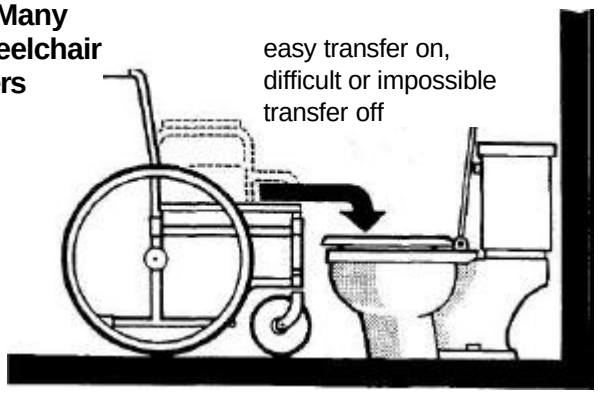
The height of a toilet seat can radically affect the use of the toilet by a disabled person. No single height is right for all users. Very low and very high seat heights are not good for anyone.

Low seats are difficult for walking mobility impaired people who have trouble getting up on their feet. They are also difficult for wheelchair users who may be able to transfer onto the seat but not get back into their wheelchairs without assistance.

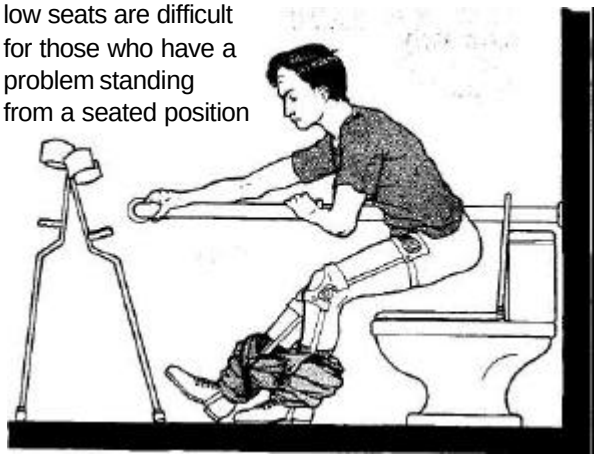
High seats are better for walking people who have difficulty getting up from a seated position. However, they can be uncomfortable for shorter people because the user's feet do not touch the floor, making balancing difficult and sometimes restricting blood circulation in the legs. Wheelchair users often cannot get onto very high seats without assistance.

The ANSI/UFAS standards specify a toilet seat height for dwellings of 15" to 19". As a general rule, 18" is a good height. This dimension is the same as most wheelchair seats.

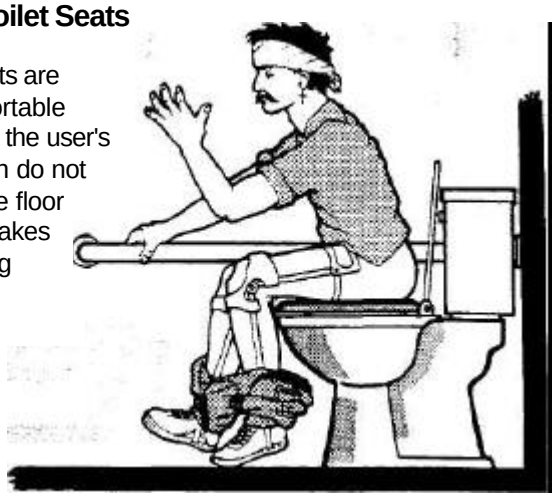
Standard Height Toilets Are Difficult for Many Wheelchair Users



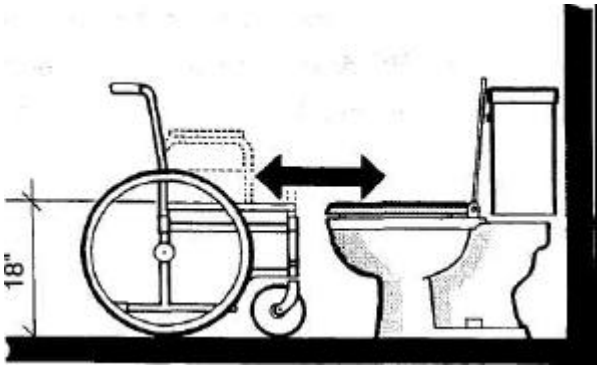
Low Toilet Seats



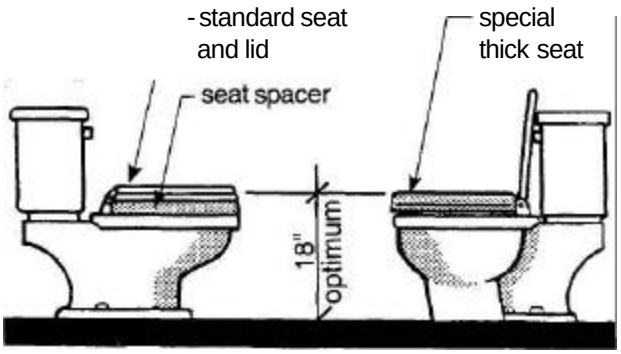
High Toilet Seats



Suggested Optimum Height for Most Users



Elevated Seats on Conventional Low Toilets



Toilets

Establishing a Specific Seat Height

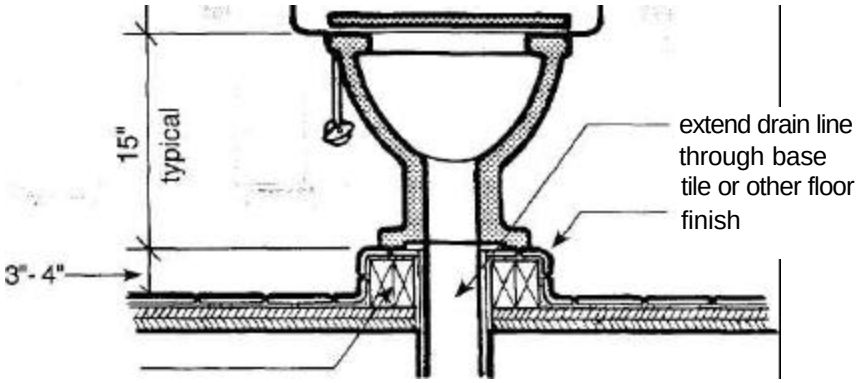
There are few if any moderate height toilets available. Most are low, approximately 15" high, while some special "handicapped" units are very high, approximately 19"-20".

Special thick toilet seats can be added to conventional low toilets to provide an intermediate seat height. A spacer ring can be placed between the toilet rim and a standard seat to raise it to a particular height. Thick seats and spacer rings are available in a variety of thicknesses.

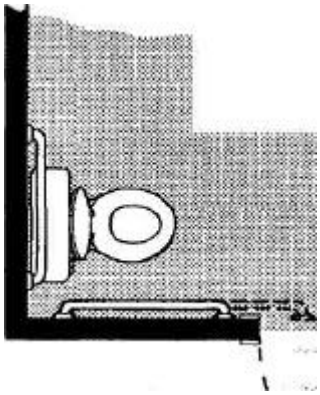
In new construction, a conventional low toilet can be mounted on a raised base to bring the seat to any desired height.

Elevated Base for Toilets

raised base
to elevate standard toilet

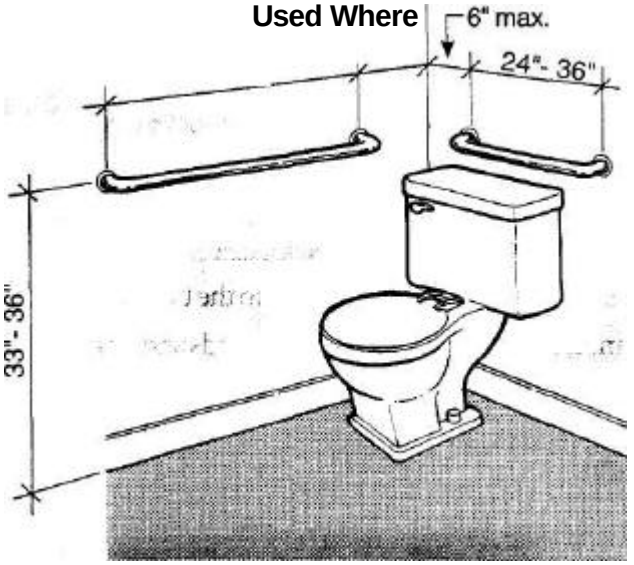


ANSI/UFAS Complying Grab Bars at Toilets



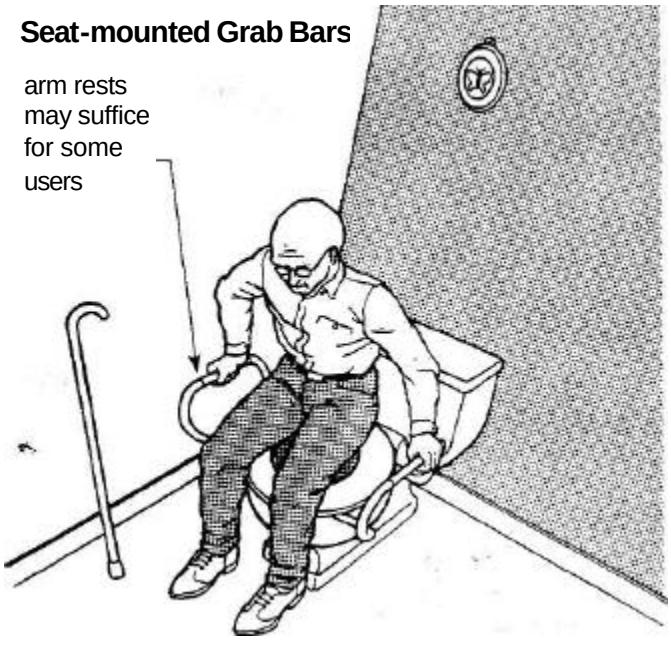
Space Is Limited
Toilets
Grab Bars

Occasionally Non-complying Grab Bars Are Used Where



The ANSI/UFAS standards require either the installation of two grab bars or reinforcing for later installation of grab bars at toilets in dwellings. One bar must be on the wall beside the toilet and the other on the wall behind the toilet fixture. The bars are used by mobility impaired people when transferring onto and off of the toilet and to maintain balance while seated on the toilet. The side-mounted bar is required by ANSI/UFAS to be a minimum of 42" long and the rear-mounted grab bar is required to be a minimum of 24" or 36" long. Grab bars should be mounted on a reinforced wall at a height of 33"-36" from the floor (see "Grab Bar Installation").

Seat-mounted Grab Bars



In small bathrooms where a door is located in the side wall, immediately adjacent to and forward of the toilet, a full length ANSI/UFAS complying grab bar may not be possible without enlarging the room. In such instances some people substitute a shorter grab bar. While this shorter grab bar is not preferred, it does work for many people. If shorter bars are used, they should be custom fitted over the door jamb and trim in order to achieve maximum length.

Some people who walk with difficulty and have problems sitting down and getting up again may benefit from seat-mounted grab bars that provide armrests on both sides of the seat. These bars bolt to the toilet fixture and work well as an aid to many older people. They generally do not work well for wheelchair users who cannot stand up while transferring.

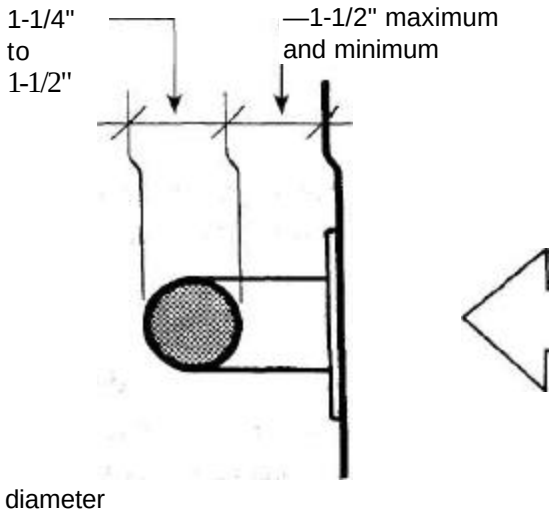
Grab Bar Installation

Grab bars are used around toilets, bathtubs, and showers to provide grasping and support surfaces. They help people maintain balance while transferring from a wheelchair or while sitting down from a standing position. People also rest their arms on grab bars to reach controls or to maintain balance, especially when they have limited grasping ability.

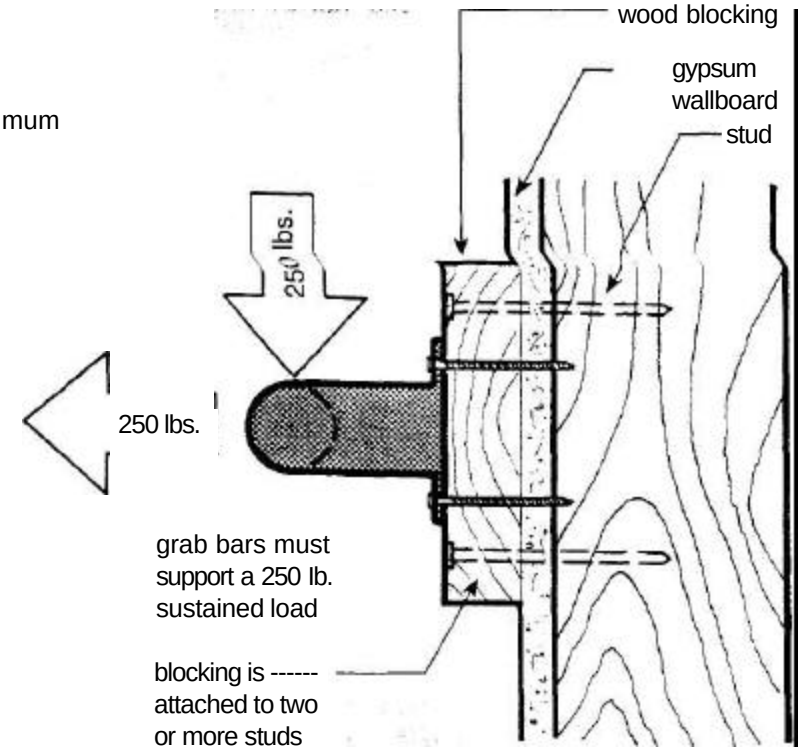
Grab bars must be firmly attached and capable of supporting 250 pounds of force in any direction. In new frame construction, the bars must be attached either to studs or to wall reinforcing/blocking mounted behind the finished wall surface. Do not attach a grab bar to an existing stud wall without providing some additional reinforcing because the bar will not support enough load.

When it is necessary to add a grab bar on an existing wall that does not have reinforcing, two approaches can be taken: 1) the existing finish on the wall can be dismantled and reinforcing added in the area where the grab bar is to be located, or 2) exposed reinforcing can be installed by attaching a board to at least two studs and then attaching the grab bar to the board. The board must be securely attached to the studs and it is preferred that at least one end of the grab bar also be attached through the board to a stud. Although not recommended, if this solution is used in bathtub and shower areas, the board and fasteners must be waterproofed.

Grab Bar Diameter and Mounting Distance from Wall



Surface Applied Reinforcing for Mounting Grab Bars

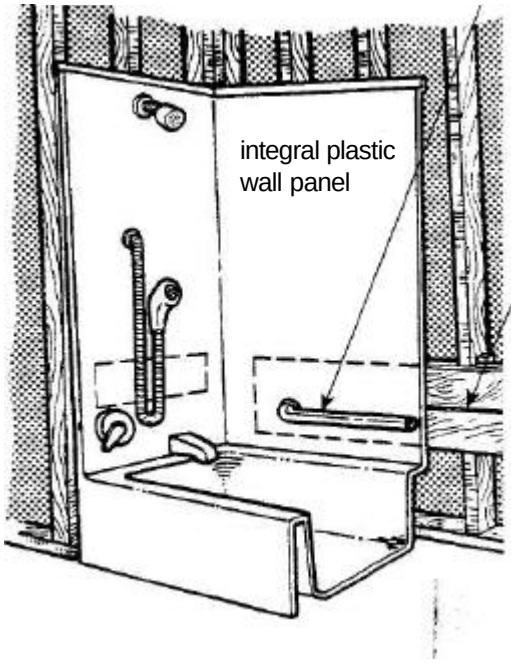


Grab Bar Installation

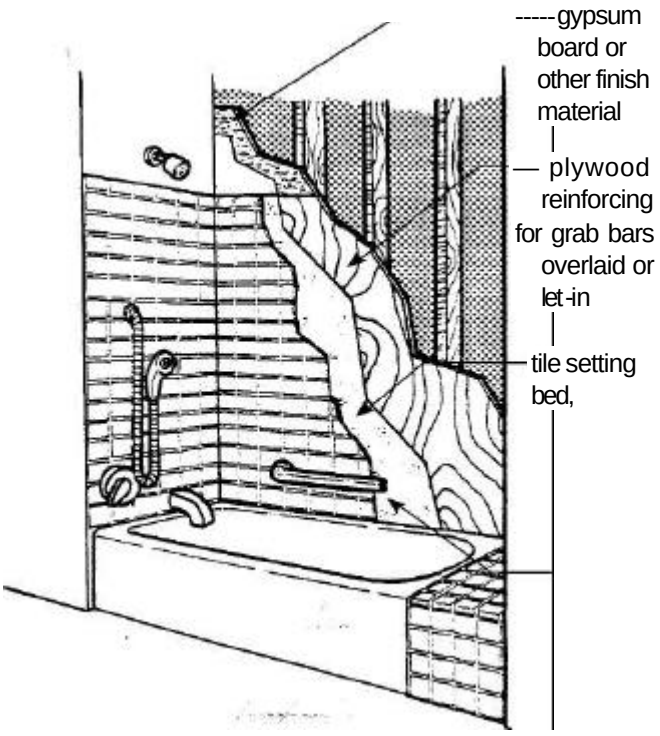
The ANSI and UFAS standards require specific areas to be reinforced for grab bars. Solid wood blocking is best for this purpose. When fiberglass or plastic tub and shower walls are used, the blocking should be shaped and extended to fit tightly against the plastic wall so no gap exists between the wall of the fixture and the house studs.

Some people may need or benefit from a grab bar or handle in a location that is unique to their way of bathing. For this reason, it is a good idea to reinforce entire wall areas around the bathtub,shower,ortoilet,allowingfortheaddition of other grab bars later if needed. Whole wall reinforcing can be accomplished by providing a structural plywood reinforcing panel as back-up to the regular finish wall material.

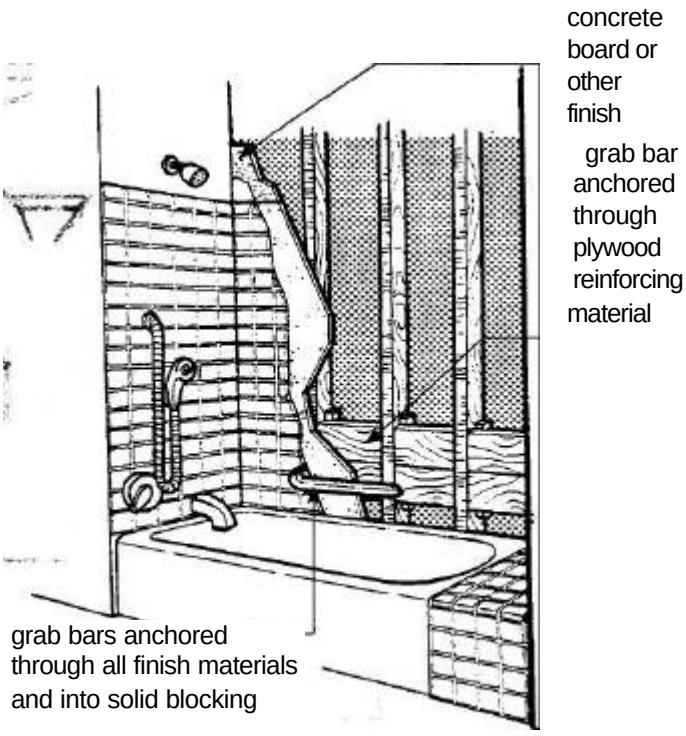
Reinforcing for Grab Bars Behind Fiberglass or Acrylic Tub and Shower Surrounds



Whole Wall Plywood Reinforcing for Grab Bars on Stud Walls



Solid Wood Reinforcing for Grab Bars on Wood Stud Walls



— gypsum board, cement board, or other back-up finish material

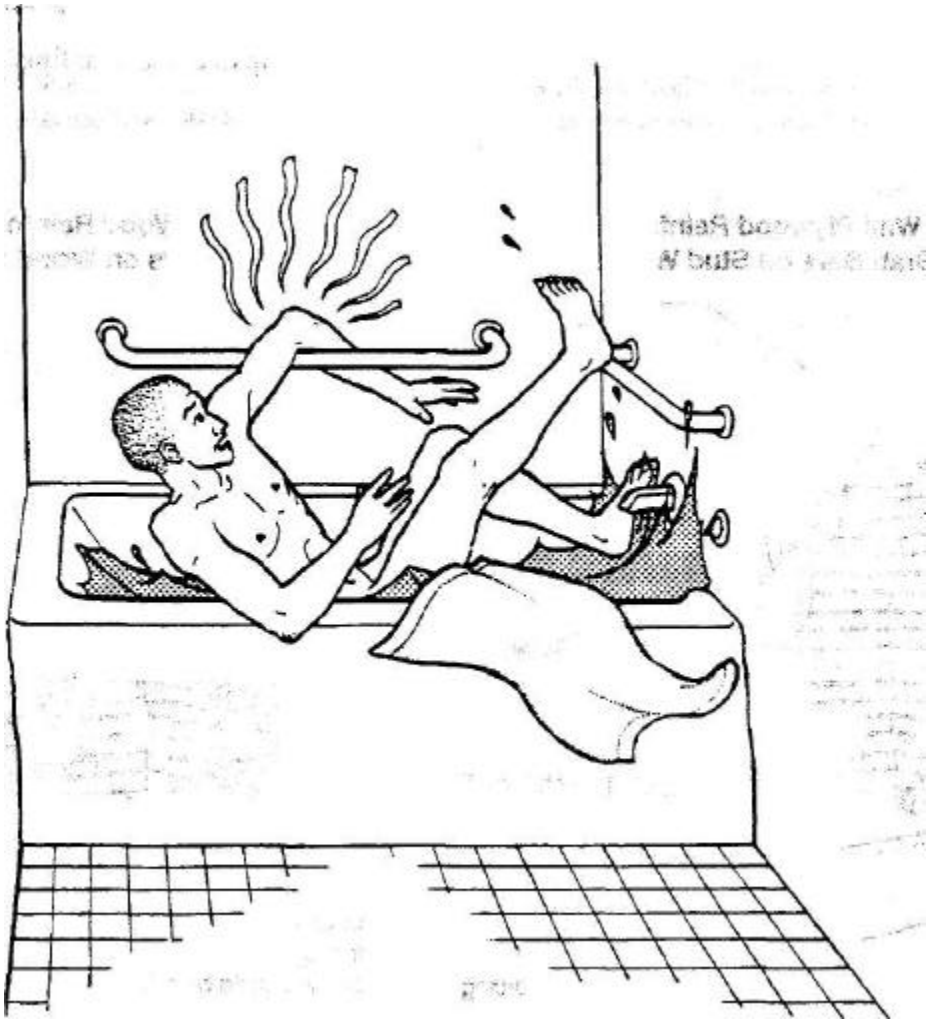
solid wood blocking over each designated area securely attached to framing to support necessary loads

Grab Bar Installation

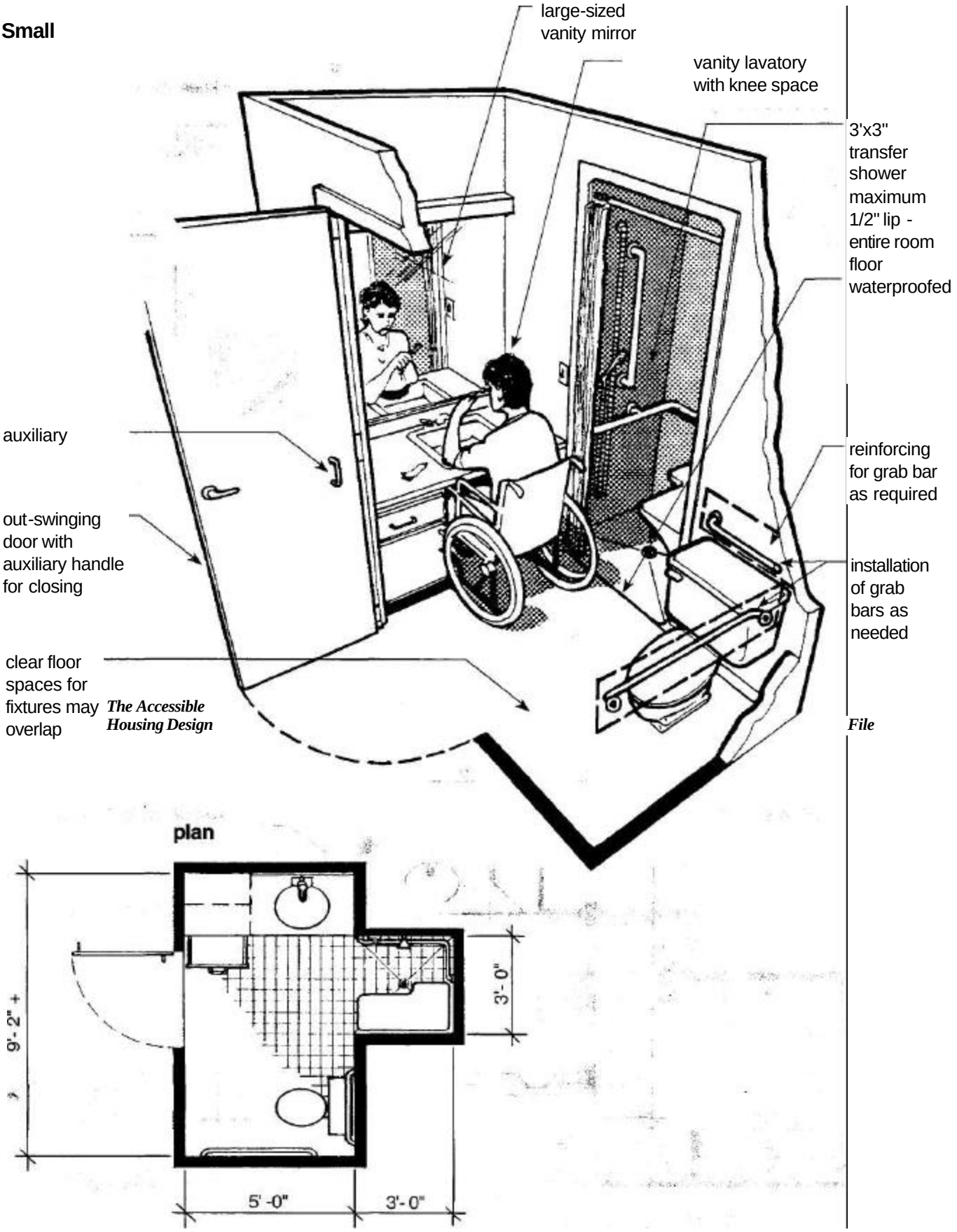
The space between a grab bar and the wall must be exactly 1-1/2". A wider gap is dangerous because the user's arm may slip through the space between the wall and the bar resulting in loss of balance, and possible arm fracture, if a fall were to occur. A smaller gap does not allow ample space for user's hands and knuckles.

Grab bars are now available in a variety of shapes, colors, and materials, including metal, nylon, and plastic. Some are decorative and can double as towel bars. Others are furnished as an integral part of molded shower or tub fixtures. Grab bars can also be custom made to suit individual preferences or design styles.

Grab Bars Must Be No More or Less Than 1-1/2" from the Wall



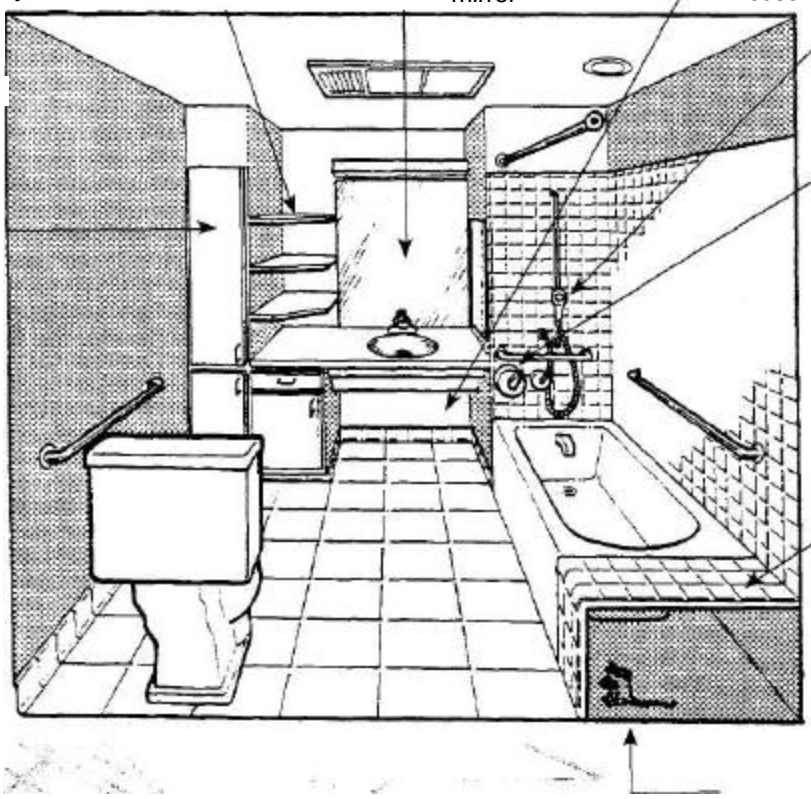
Small



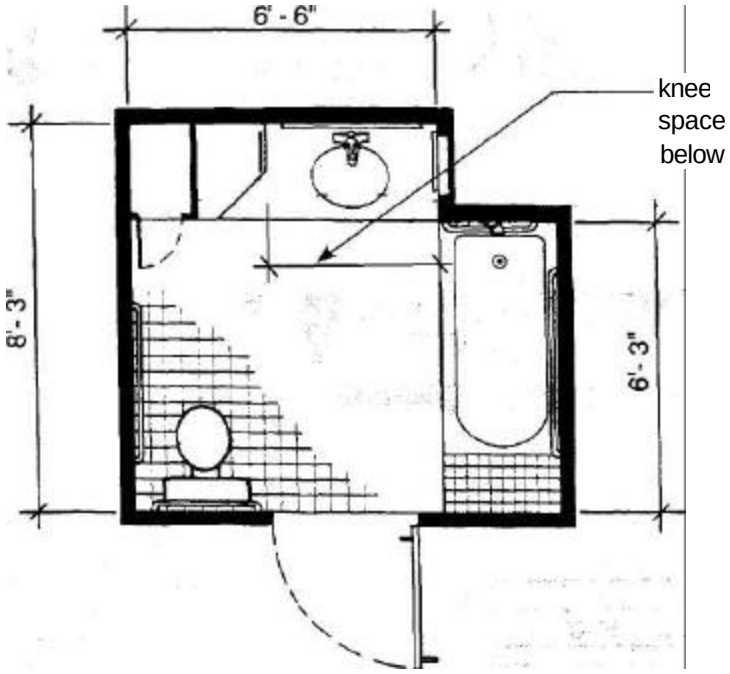
The Accessible Housing Design File

Bathroom with Built-in Transfer Surface at Tub

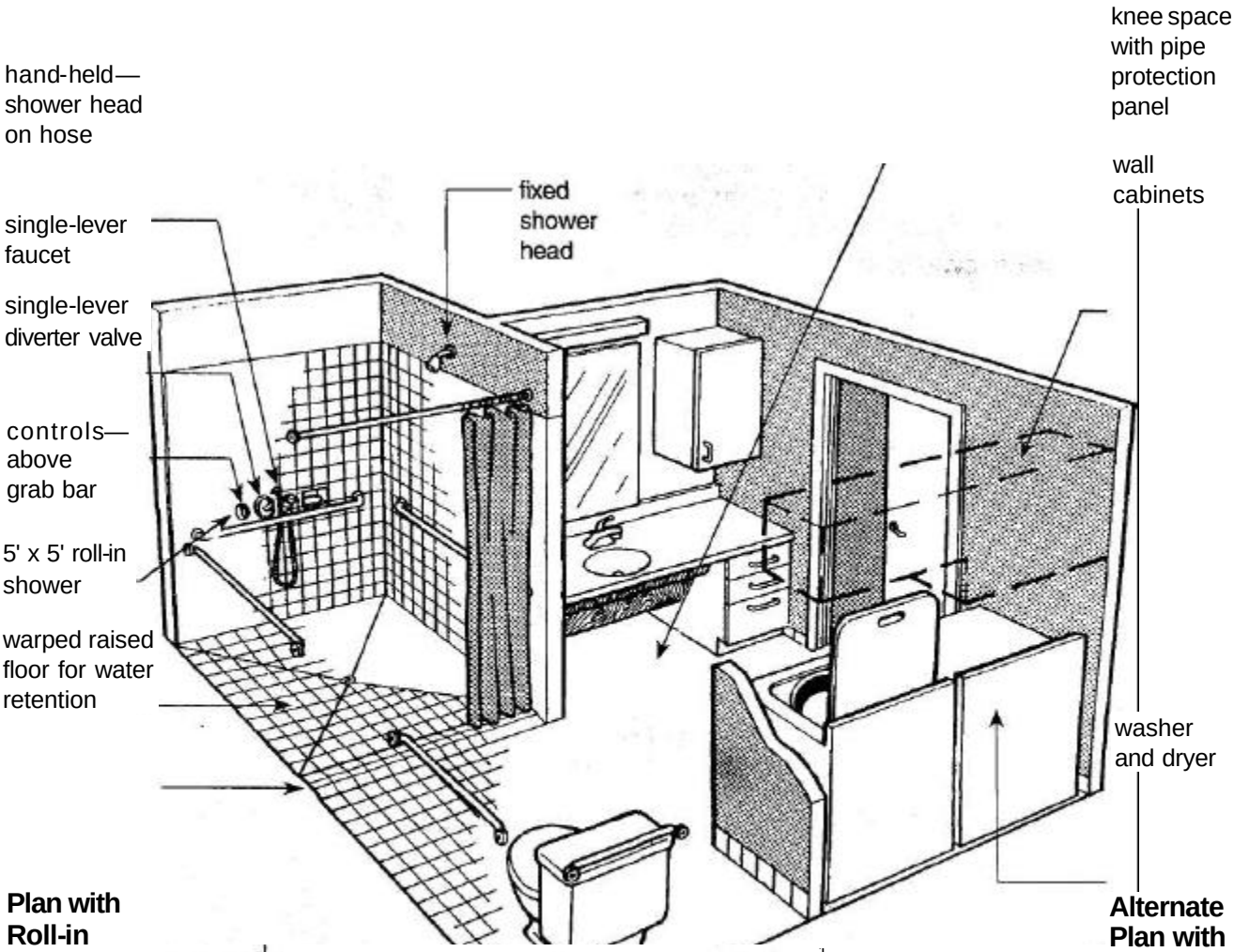
open shelves provide good storage for many disabled people who have difficulty reaching into cabinets
built-in linen closet



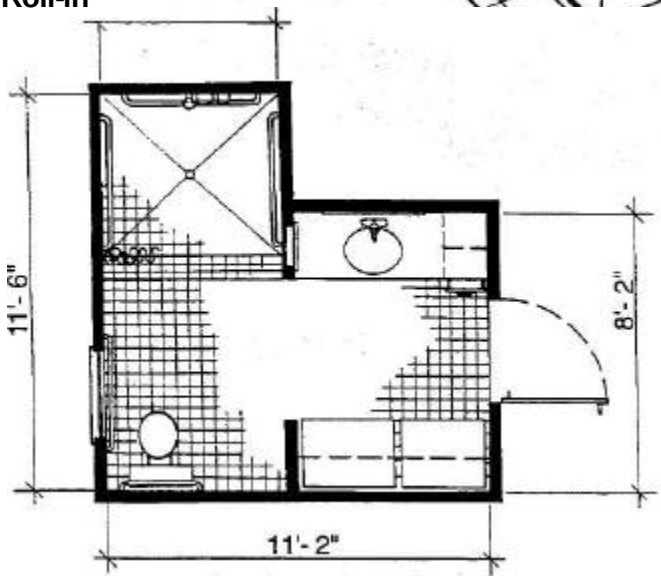
plan



Combination Laundry and Bathroom with Roll-in Shower



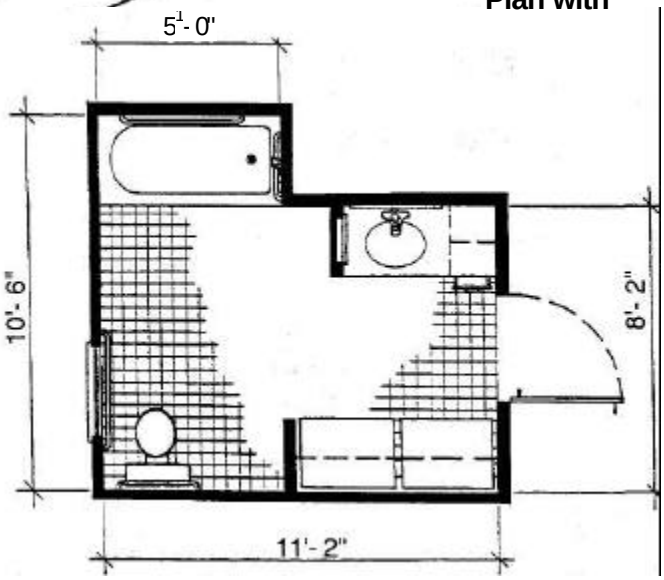
Plan with Roll-in



Shower

5'-0"

Alternate Plan with



Tub