
Chapter Seven:

REQUIREMENT 7

Usable Kitchens and Bathrooms

- **PART A:** Usable Kitchens
- **PART B:** Usable Bathrooms

7



■ **PART A: Usable Kitchens**

7a



...covered multifamily dwellings with a building entrance on an accessible route shall be designed and constructed in such a manner that all premises within covered multifamily dwelling units contain usable kitchens...such that an individual in a wheelchair can maneuver about the space.

Fair Housing Act Regulations, 24 CFR 100.205

counters may be at the standard height of 36" (counter height of 34" as shown in Fig. 2(c) of the Guidelines does not apply)

lever hardware, although preferred and more usable by everyone, is not required

kitchens in covered units must be on an accessible route and have door openings at least 32" clear to allow passage; see Chapter 4 "Usable Doors" and Chapter 5 "Accessible Route"

outlet located beyond reach of seated person permitted if other outlets in accessible locations are provided, see Chapter 6 "Switches, Outlets, and Controls"

ranges and cooktops may have front-, rear-, or side-mounted controls; *for safety reasons and ease of use, front- or side-mounted controls are preferred*

adequate space within the kitchen to provide 30" X 48" clear floor space at each fixture and appliance

Notes in italic type are recommendations only and are not required by ANSI or Guidelines.

in U-shaped kitchens, if less than 60" between the two legs of the U, then sink base must be removable, see page 7.12

Guideline Specifications for Kitchens

INTRODUCTION

Kitchens that comply with the Fair Housing Accessibility Guidelines (the Guidelines) can be designed to look and function like conventional kitchens typically found in multifamily housing. The Guidelines specify that three specific requirements must be provided to allow people who rely on mobility aids to “use” the kitchen. “Usable” kitchens, as specified in the Guidelines, are not necessarily “accessible” kitchens, but they do provide maneuvering space for a person who uses a wheelchair, scooter, or walker to approach and operate most appliances and fixtures.

The Guidelines 1) specify minimum clear floor spaces at fixtures and appliances, 2) define minimum clearance between counters, and 3) provide additional specifications when a U-shaped kitchen is planned. Wheelchair turning spaces, described in accessibility standards, are not required in kitchens that meet the Guidelines, except in some U-shaped kitchens, see page 7.9.

Additional supplemental design information, presented in *italic type*, is offered for designers/builders who may wish to increase the accessibility of dwelling units. This supplemental information is not required by HUD, the Fair Housing Act, or the Guidelines.

CLEAR FLOOR SPACE AT FIXTURES AND APPLIANCES

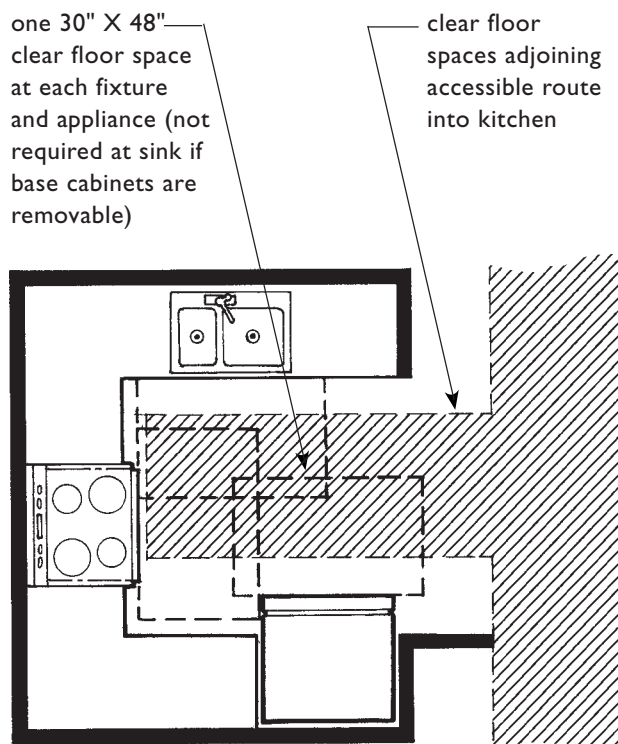
The Guidelines specify that a 30-inch x 48-inch clear floor space be provided at each kitchen appliance or fixture, and that each of these clear floor spaces adjoin the accessible route that must pass into and through the kitchen. It is anticipated that in any conventional kitchen plan, the overlapping of the minimum 36-inch wide accessible route with the clear floor spaces at all fixtures and appliances provides the necessary maneuvering space to make it possible for a person using a mobility aid to approach, and then position himself or herself close enough to use the fixture safely.

The clear floor space must be positioned either parallel or perpendicular to and centered on the appliance or fixture, i.e., the clear floor space must have its centerline aligned with the centerline of the fixture or appliance. This centered position is most critical at corners where an appliance may have to be pulled away from the corner to allow a full centered approach. The two types of approaches and where they are necessary are described on the following pages.



30" X 48"
clear floor space

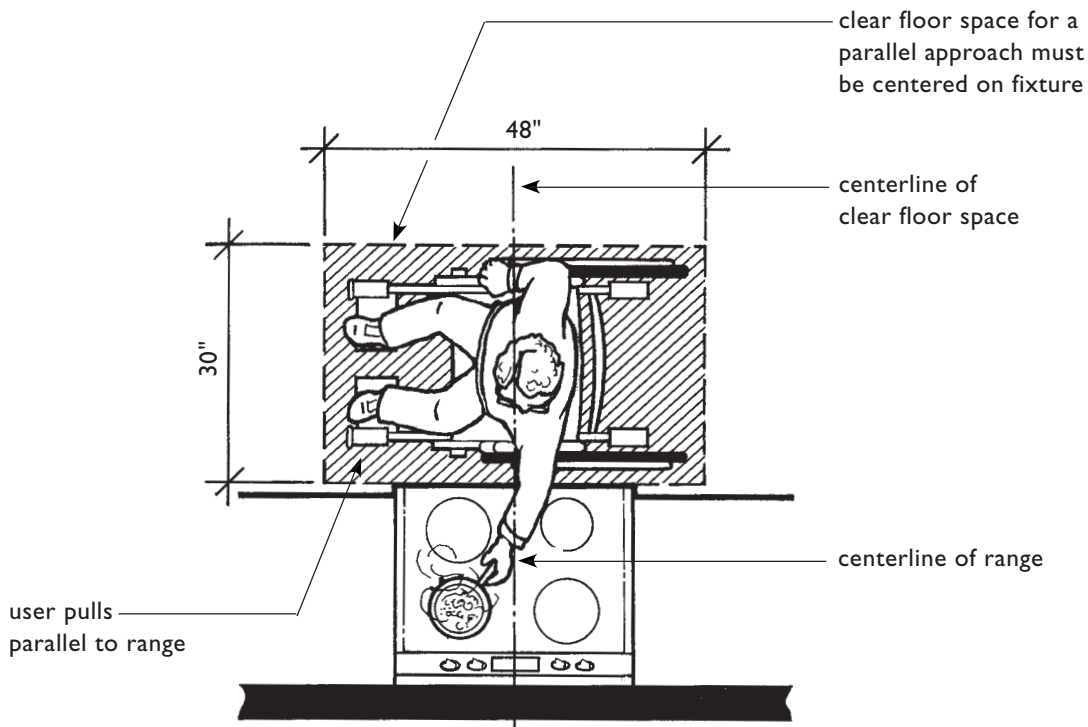
Clear Floor Space for Wheelchair Parking at Appliances and Fixtures



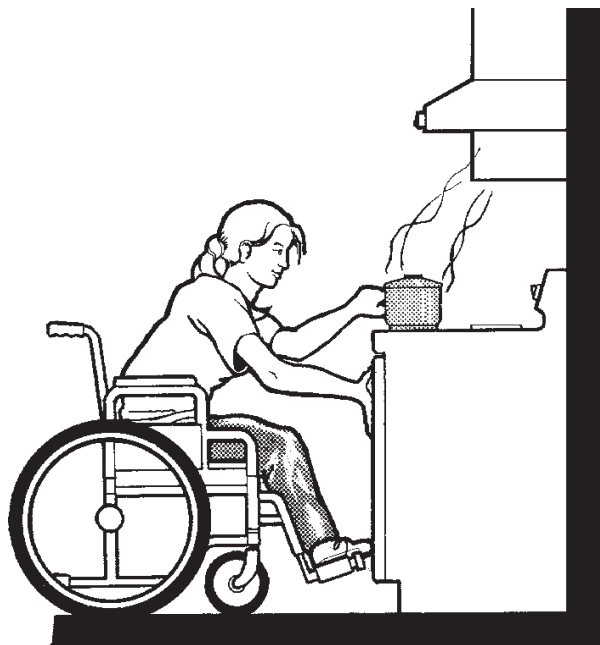
Overlapping Clear Floor Spaces and Accessible Route Provide Maneuvering Space

CLEAR FLOOR SPACE AT RANGES, COOKTOPS, AND SINKS

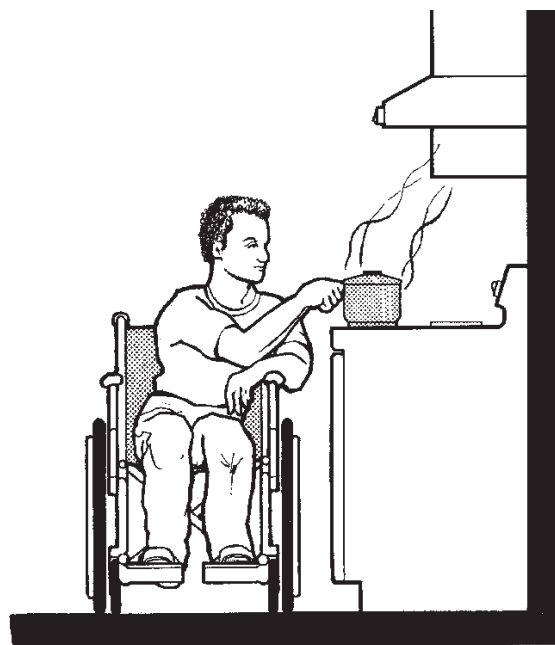
Unless knee space is provided, space to execute a parallel approach must be provided at ranges, cooktops, and sinks. The clear floor space in this parallel orientation allows the wheelchair user to make a close side approach permitting safer and easier reach to controls and cooking surfaces. A forward approach, on the other hand, is difficult and unsafe, especially when controls are located at the back, because it requires seated users to lean forward over their feet and knees to reach not only hot pots and pans but the controls as well. See pages 7.11 through 7.16 for required clear floor space at cooktop or sink when knee space is provided.



Space for Parallel Approach Required at Range and Cooktop



Forward Approach at Range is Difficult and Unsafe

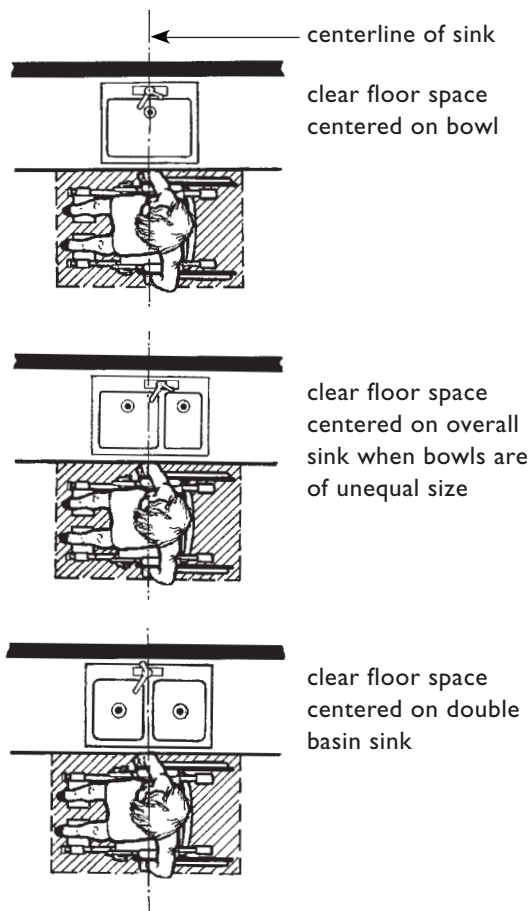


Parallel Approach to Range Specified in Guidelines

A **parallel** approach also must be provided at sinks so a seated user can reach down into the bowl. A forward approach with kneespace below the sink may be required in some very small U-shaped kitchens. See page 7.11.

The parallel clear floor space at sinks, as at ranges and cooktops, must be centered on the bowl or appliance. At single bowl sinks the centerline of the clear floor space must align with the centerline of that bowl. Where there are multiple bowl sinks the clear floor space must be centered on the overall sink itself.

Faucets usually are placed at the center of or within six inches of the center of the sink, regardless of the number of basins. Since the clear floor space is centered on the sink, users are still afforded access to faucet controls.



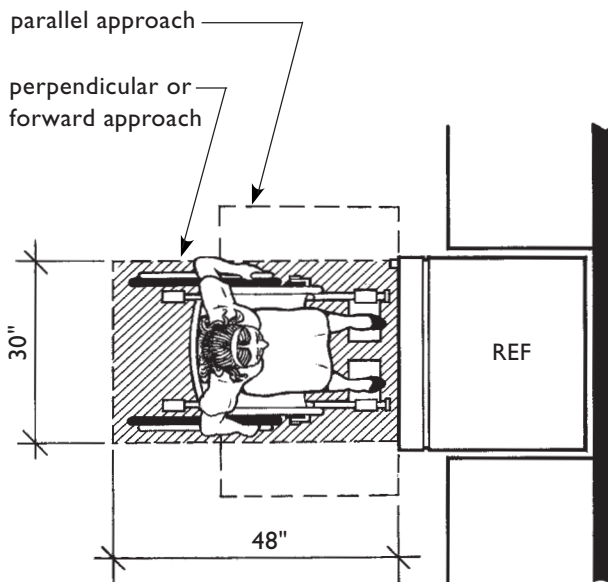
Space for Parallel Approach Required at Sinks

**CLEAR FLOOR SPACE AT OVENS,
 DISHWASHERS, REFRIGERATORS,
 FREEZERS, AND TRASH COMPACTORS**

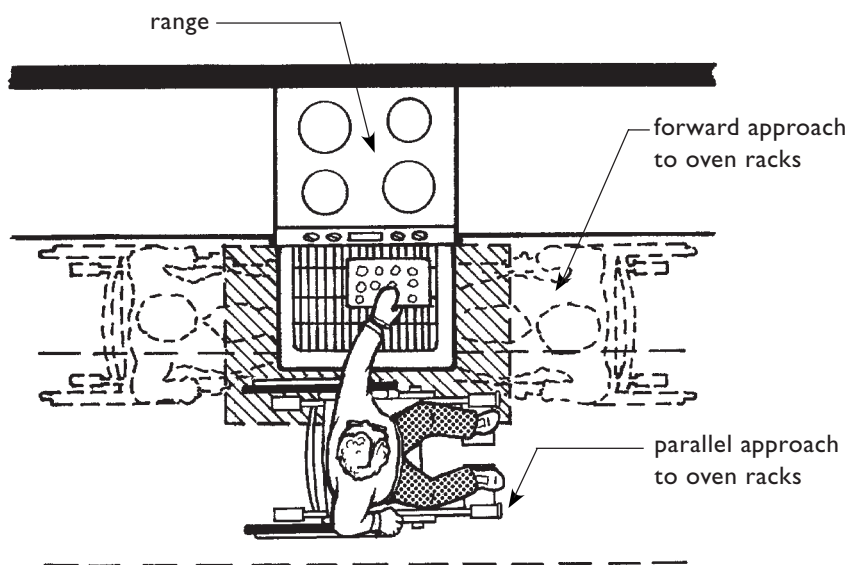
The 30-inch x 48-inch clear floor space oriented in either one of two positions—parallel or perpendicular—is required at the oven, dishwasher, refrigerator, freezer, and trash compactor. Wall-mounted and microwave ovens, like ovens in ranges, also must have either a parallel or perpendicular clear floor space adjacent to the appliance.

Even though this group of appliances has operable doors that require the user to be able to get out of the way of the door swing, for purposes of design and room layout the clear floor space must be centered on the appliance itself. However, the clear floor space for the specific appliance and the clear floor space for adjacent appliances and fixtures, combined with the 36-inch wide accessible route into the room, provide the functional space necessary to open a door and maneuver close to the appliance to be able to reach into it.

clear floor space for at least one type of approach (forward or parallel) must be centered on the refrigerator; this applies to side-by-side as well as over/under models



Space for Either a Forward or Parallel Approach Must be Provided

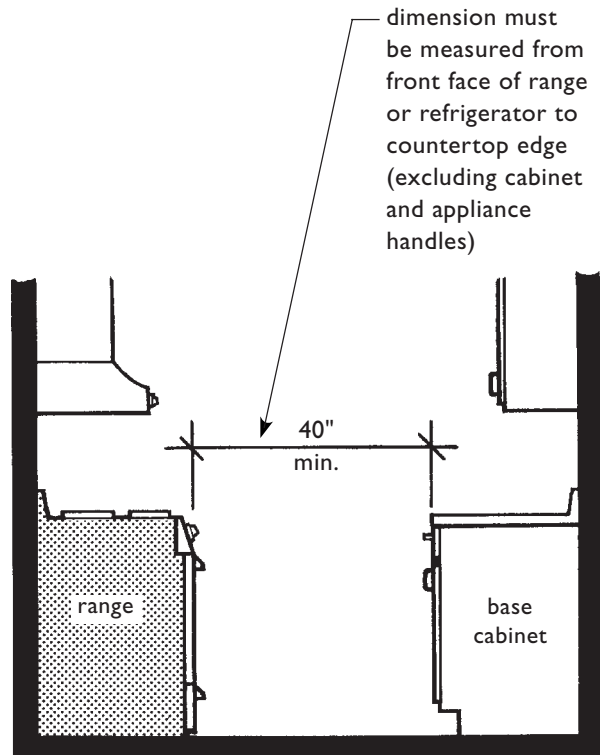


**Functional Use of Oven
 Could Be From Any One of These Positions**

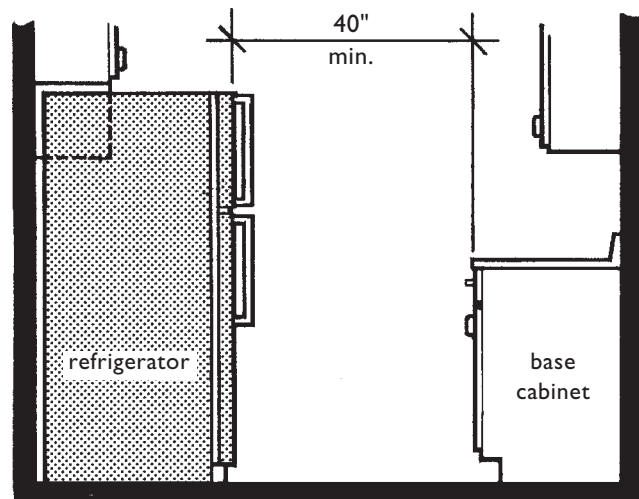
CLEARANCE BETWEEN COUNTERS AND ALL OPPOSING ELEMENTS

The Guidelines require a clearance of at least 40 inches between all opposing base cabinets, countertops, appliances, and walls. The 40-inch clearance is measured from any countertop or the face of any appliance (excluding handles and controls) that projects into the kitchen to the opposing cabinet, countertop, appliance, or wall.

Refrigerators vary greatly in depth and may extend up to eight inches beyond cabinet faces. Standard free-standing and drop-in ranges may project up to three inches. Appliance depths (excluding door handles) must be included when calculating the 40-inch clearances.

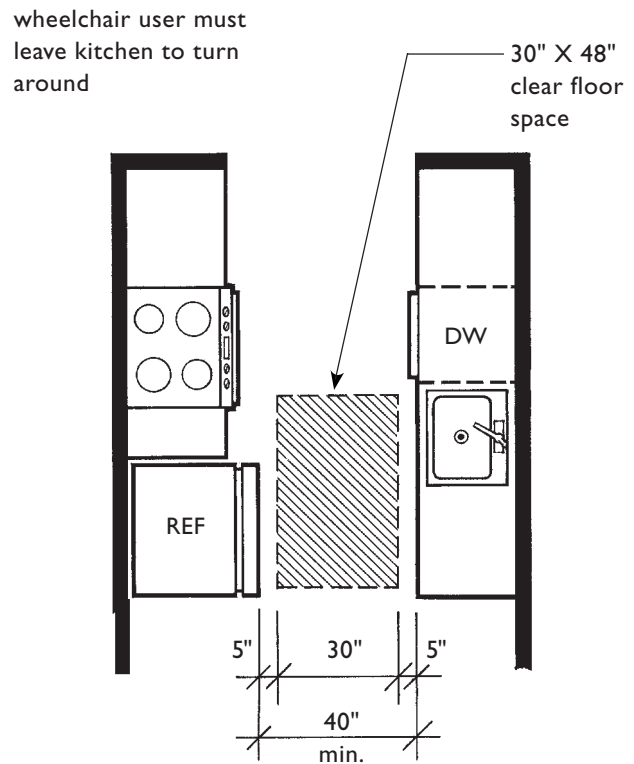


Minimum Clearance between Range and Opposing Base Cabinet



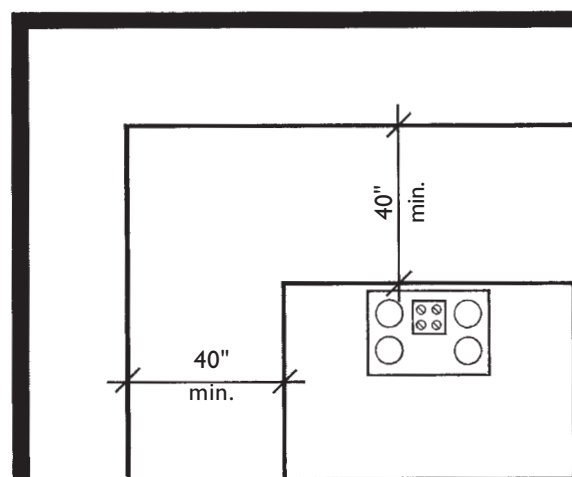
Minimum Clearance between Refrigerator and Opposing Base Cabinet

In a narrow kitchen the 40-inch minimum clearance provides an additional five inches on either side of the required clear floor space of 30 inches x 48 inches at each fixture or appliance, so a user in a wheelchair can maneuver as close as possible to appliances or fixtures. A narrow kitchen such as the one shown to the right meets the Guidelines and is usable, but may be difficult for many people using wheelchairs. Its narrow corridor design requires a user in a wheelchair to exit the kitchen to turn around.



40" Minimum Clearance Between all Counters, Base Cabinets, Appliances, and Walls

In more elaborate kitchens where an island is planned, the 40-inch clearance must be maintained between the face of the island and all opposing features. Even though an accessible route for a 90-degree turn around an obstruction is 36 inches, to ensure sufficient space for maneuvering within the kitchen, the Guidelines require that the minimum clearance of 40 inches be maintained.



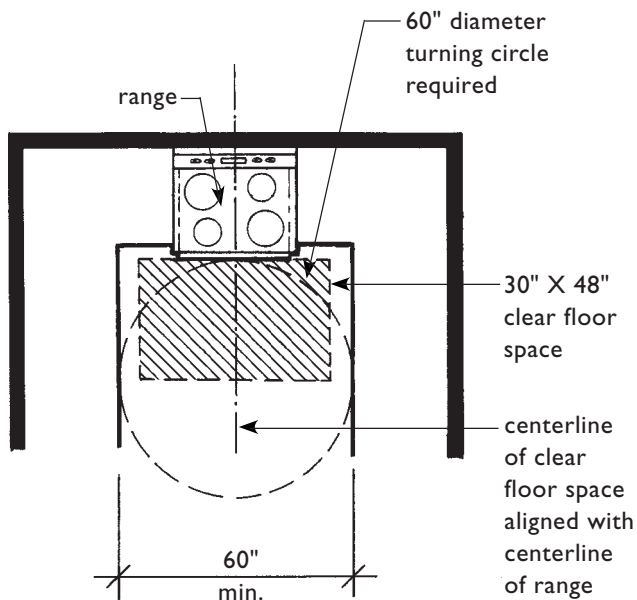
40" Must Be Maintained Between Island and all Opposing Features

U-SHAPED KITCHENS

A 60-inch diameter turning circle is required in a U-shaped kitchen that has a sink, range, or cooktop at its base. This turning diameter is necessary to provide adequate maneuvering space for a person using a wheelchair to approach and position themselves parallel to the appliance or fixture at the base of the U. Any appliances, such as refrigerators and ranges (excluding door handles), that project beyond countertops and cabinets must not encroach upon this 60-inch diameter turning space.

In addition to the turning space, the kitchen must be arranged so there is a 30-inch x 48-inch clear floor space for a parallel approach centered on the sink, range, or cooktop. The centerline of the fixture or appliance must be aligned with the centerline of the clear floor space.

When a sink, even a standard single basin sink, is at the bottom of the U and a dishwashing machine is planned to be included adjacent to the sink, the distance between the legs of the U must be greater than 60 inches to allow for a full centered approach at the sink. See the lower plan in the right column.

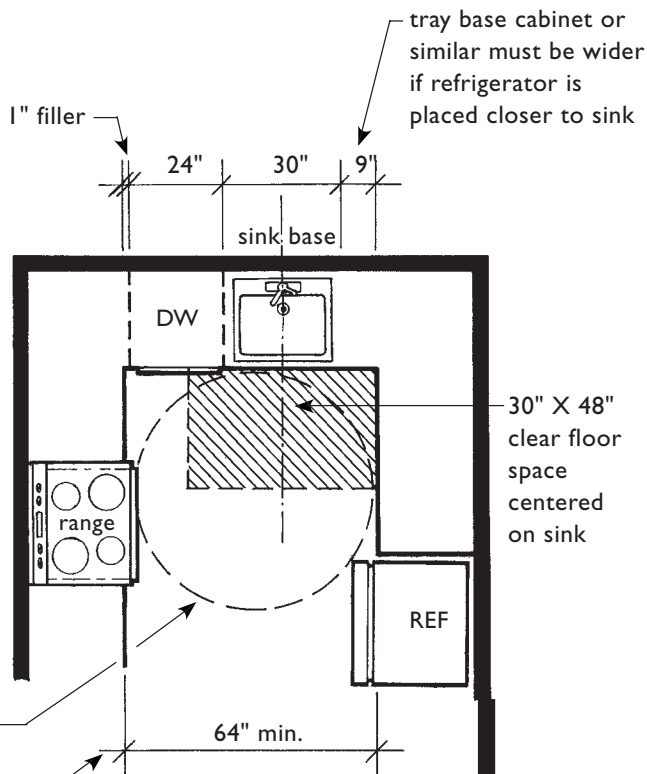


60" Diameter Turning Circle when Sink (Only), Cooktop, or Range is at Bottom of U-Shaped Kitchen

refrigerator must be selected and positioned so it does not encroach upon the 60" diameter turning circle or the clear floor space at the sink

60" diameter turning circle

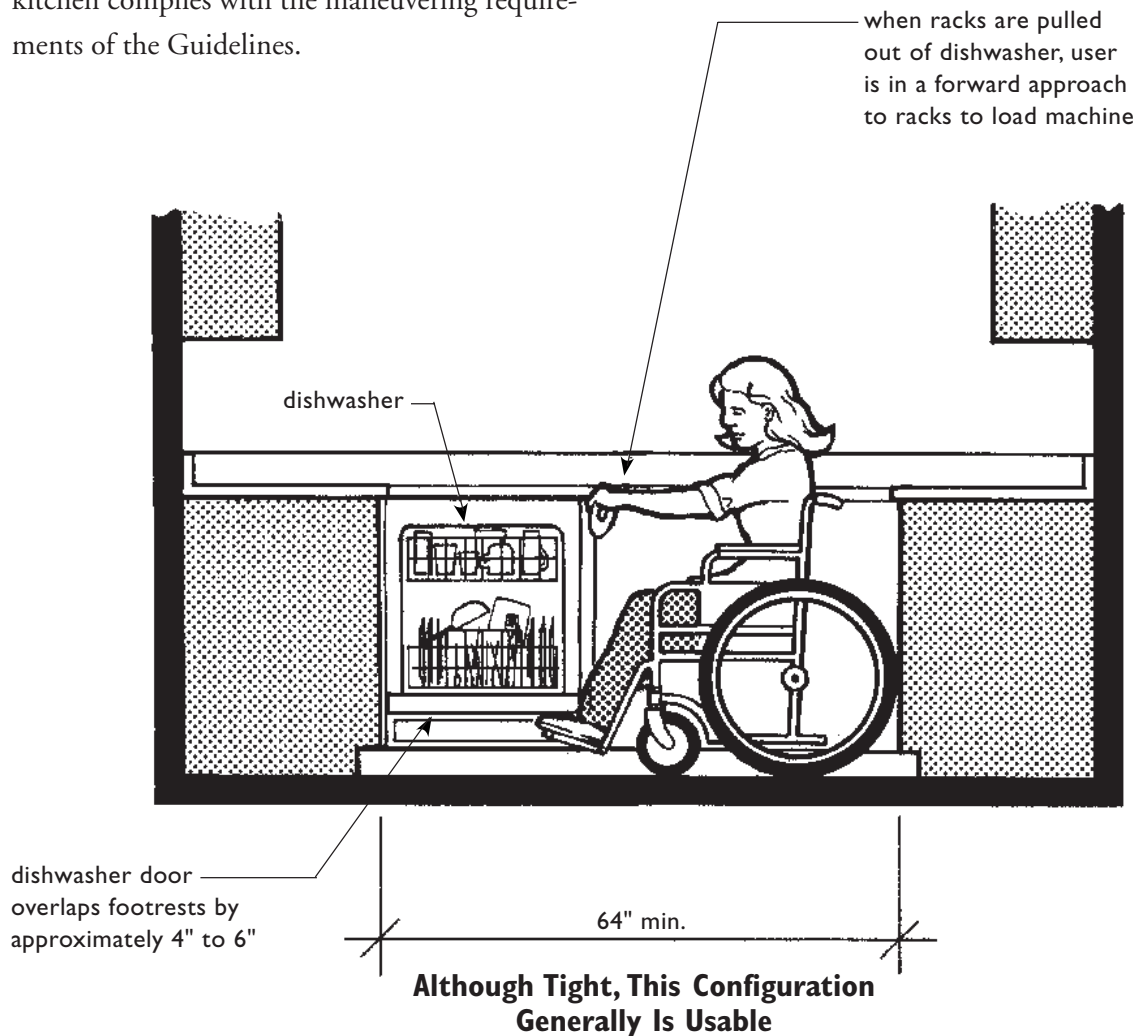
this dimension may need to be increased slightly for a double basin sink if wider than 30"



Sink and Dishwasher at Bottom of U-Shaped Kitchen Increases Room Width

In the lower plan on page 7.9, the refrigerator is pulled away from the sink and beyond the turning circle. Since a refrigerator may not overlap the five-foot turning space, if the refrigerator must be located closer to the sink, the distance between the legs of the U must be increased.

To reduce the need for additional floor space, and because clear floor space at appliances and fixtures may overlap, the clear floor space at the sink can serve as the clear floor space for a forward approach to dishwasher racks when they are pulled out of the dishwasher. Even though the dishwasher door would rest on the feet of the user, the required clear floor spaces are provided and the kitchen complies with the maneuvering requirements of the Guidelines.

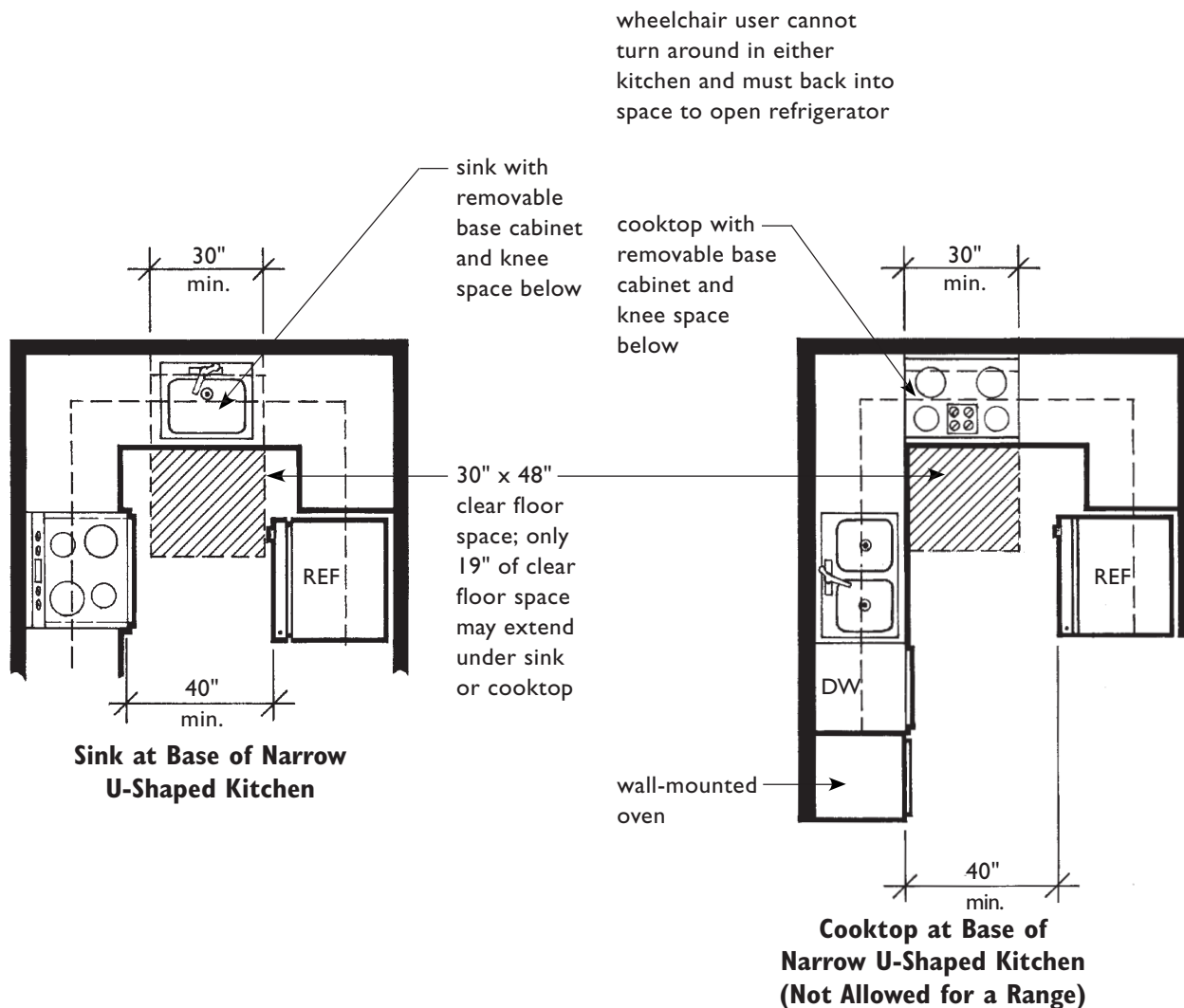


AN EXCEPTION

The Guidelines permit U-shaped kitchens with a sink or cooktop at the base of the U to have less than 60 inches between the legs of the U only when removable base cabinets are provided under the cooktop or sink. A clearance of at least 40 inches is required. Since knee space cannot be provided below a range, kitchens with a range at the base of the U must have the 60-inch minimum turning diameter.

Once the base cabinet is removed, the resulting knee space allows a person using a wheel-

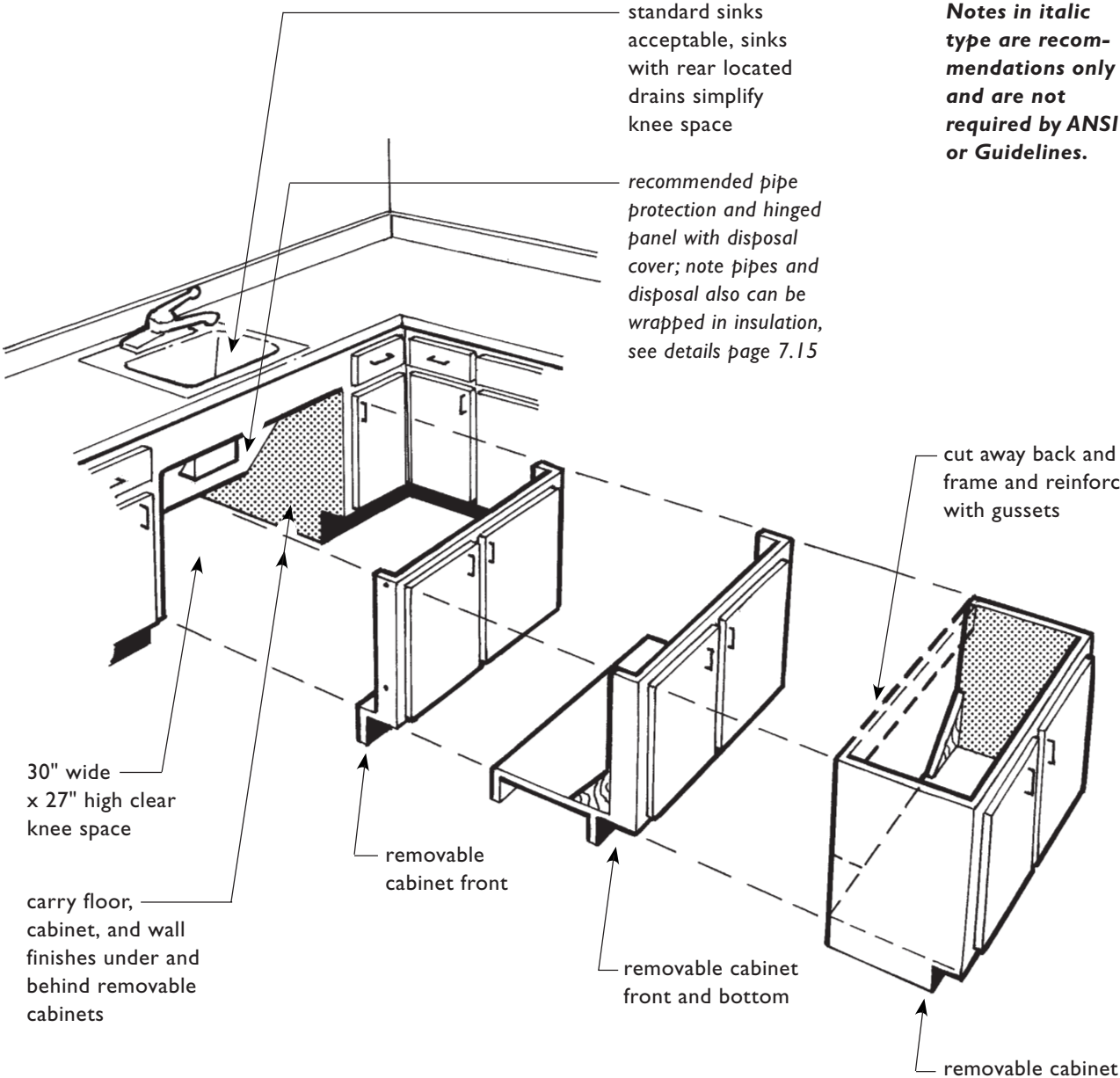
chair to pull up under the feature to reach controls and perform cooking/cleaning functions. A note of caution: knee space beneath cooktops provides essential maneuvering space for seated people, but it also creates a greater risk from hot food spilled in the lap. If cooktops are to be provided with knee space below, although not required, it is suggested that they be placed in lowered or adjustable height counter segments so they can be used more easily and safely by people using wheelchairs. Knee space configurations are shown on pages 7.14 and 7.15.



REMOVABLE BASE CABINETS

Narrow U-shaped kitchens, where knee space must be provided below sinks or cooktops, can appear identical to those kitchens which lack this additional feature since knee space can be concealed by a removable base cabinet. When a potential resi-

dent or owner needs the knee space it can be provided quickly and easily. Specifications for knee space are based on the Guidelines' requirements for bathrooms and ANSI 4.19 and 4.32. See also pages 7.14 - 7.15 and 7.52.

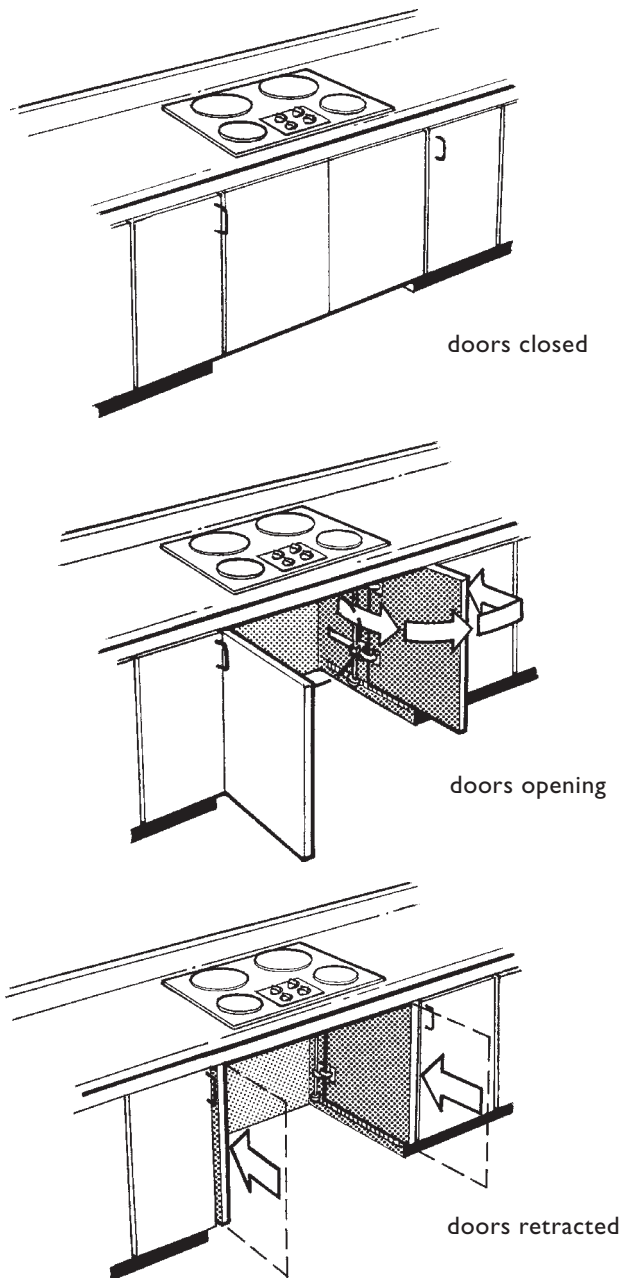


Possible Removable Cabinet Options for Required Knee Spaces at Sinks or Cooktops in Narrow (Less Than 60" Wide) U-Shaped Kitchens

The Guidelines require that the floor, walls, and cabinet faces of knee space be finished during initial construction so no other work is necessary when the base cabinet is removed. When sinks or cooktops are installed at the bottom of a narrow U-shaped kitchen, regardless of whether the knee space is exposed or concealed by a removable cabinet, hot pipes or exposed sharp edges should be insulated or enclosed at the time of initial construction. Protection methods are addressed on page 7.14 “Knee Space and Pipe Protection.”

There are no kitchen cabinet manufacturers that currently offer “removable base cabinets” in their standard lines. The methods for providing removable cabinets presented here are some of the possible solutions. Of those shown, the removable cabinet front is likely to be the easiest to accomplish based upon current manufacturing processes. However, the resident may need to reinstall the cabinet at a later date, therefore, storage needs to be considered. It is recommended that instructions regarding proper storage be taped to the inside of the cabinet, as well as reinstallation instructions, if applicable. Other similar design options include removable cabinet floor and bottom, or, with some modification of rear supports, removal of the entire cabinet. This last option requires the counter to be installed independent of the base cabinet, with storage of the removable portion of the cabinet again a consideration.

Use of swinging retractable cabinet door hardware provides another excellent method to conceal knee space because the doors are self-storing and no part of the cabinet has to be removed or stored at another location. A special combination hinge allows the doors to swing open in a traditional manner and, when desired, allows the doors to be pushed back into the cabinet.



Use of Self-Storing Door Hardware to Expose Knee Space

KNEE SPACE AND PIPE PROTECTION

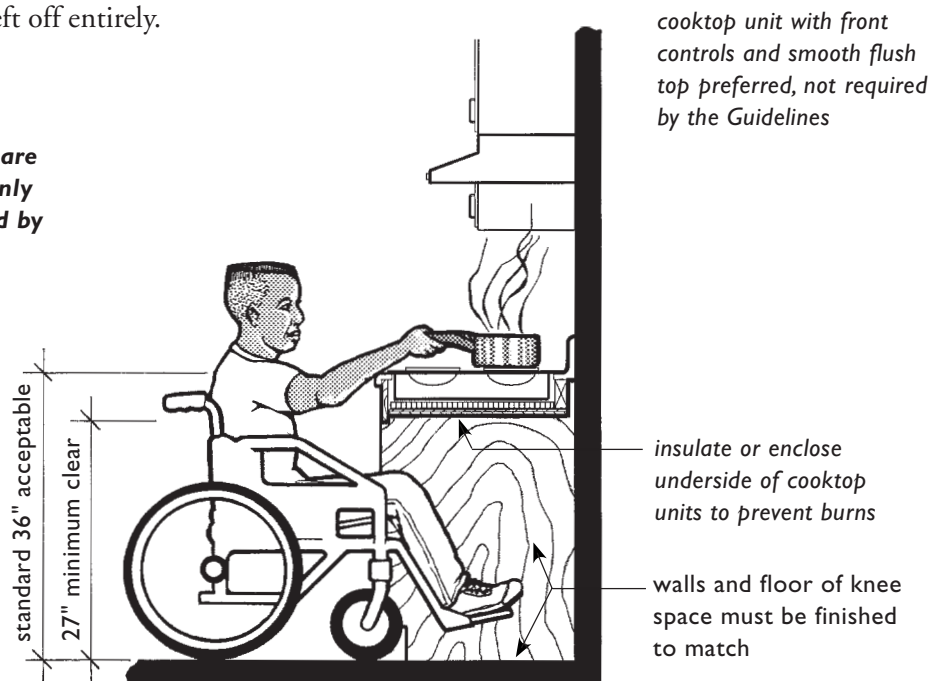
Where knee spaces are provided below sinks and cooktops, protecting seated users from burns and abrasions is strongly recommended. While the Guidelines do not specify such protection, the two most common design standards on accessibility (ANSI A117.1, 1986 and UFAS) require that the bottom of cooktops and sink supply lines and drain pipes be insulated or enclosed. Many people who use wheelchairs or scooters have limited sensation in their legs and cannot feel that they are touching a hot pipe or sharp edge and may be unaware that a serious injury has occurred. In addition, the need for protection from burns is an important safety consideration for all persons.

Pipes at sinks may be wrapped with insulation, but each time the plumbing is serviced the insulation must be removed and reinstalled. If the pipes are rewrapped using the original insulation (which may have lost much of its adhesion) the resulting application often is ineffective or the insulation may be left off entirely.

A more aesthetic and practical method for pipe protection is the installation of a removable panel over the plumbing. This panel shields the seated user and hides the plumbing from view. If such a panel is installed it should not inhibit access by encroaching upon the knee space. The panel should be hinged or otherwise removable so the pipes can be serviced easily.

The dimensions for the knee space itself must be 30 inches wide (minimum) and should be 27 inches high (minimum). Since there is no specific ANSI figure delineating the requirements for knee space clearance beneath sinks or cooktops in dwelling units, the accompanying illustrations may be used as guidance when providing knee space beneath removable base cabinets. The pipe protection panel is patterned after the ANSI Figure 31 for Lavatory Clearances. See also ANSI 4.32.5.5 Sinks and 4.32.5.6 Ranges and Cooktops.

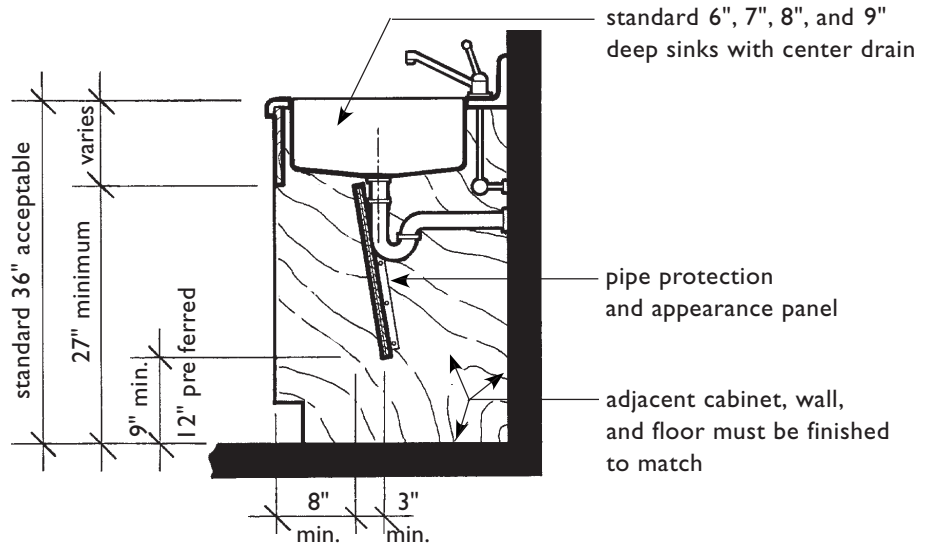
Notes in italic type are recommendations only and are not required by ANSI or Guidelines.



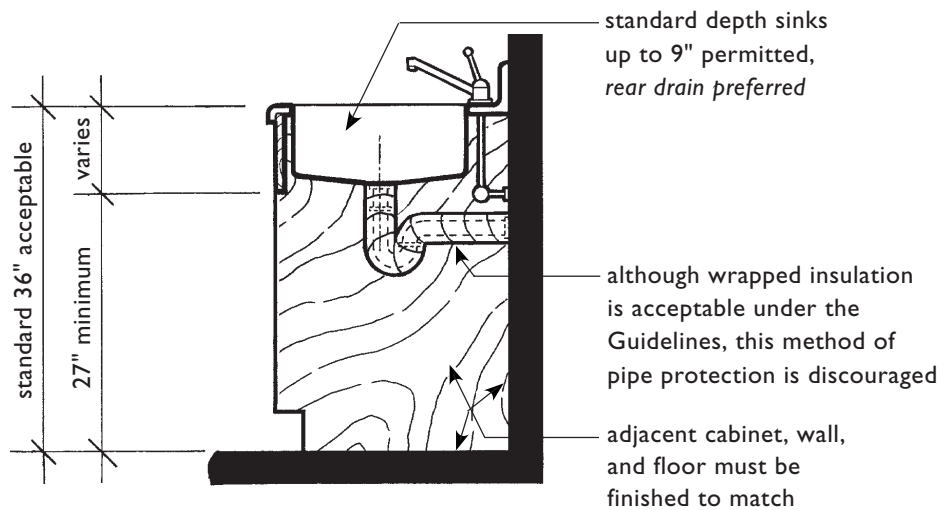
Cooktop with Knee Space Below

Knee Space at Sink with Pipe Protection Panel

sinks with rear located drain are not required but are a significant advantage when creating usable knee space



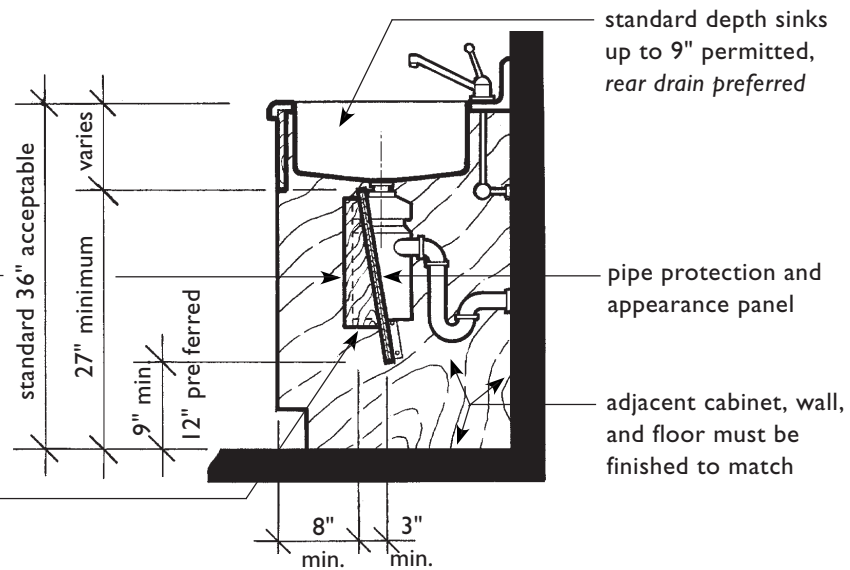
Knee Space at Sink with Wrapped Pipes



Knee Space at Sink with Garbage Disposal and Pipe Protection Panel

disposal cover
12" wide ±

open bottom for
ventilation and access
to reset buttons

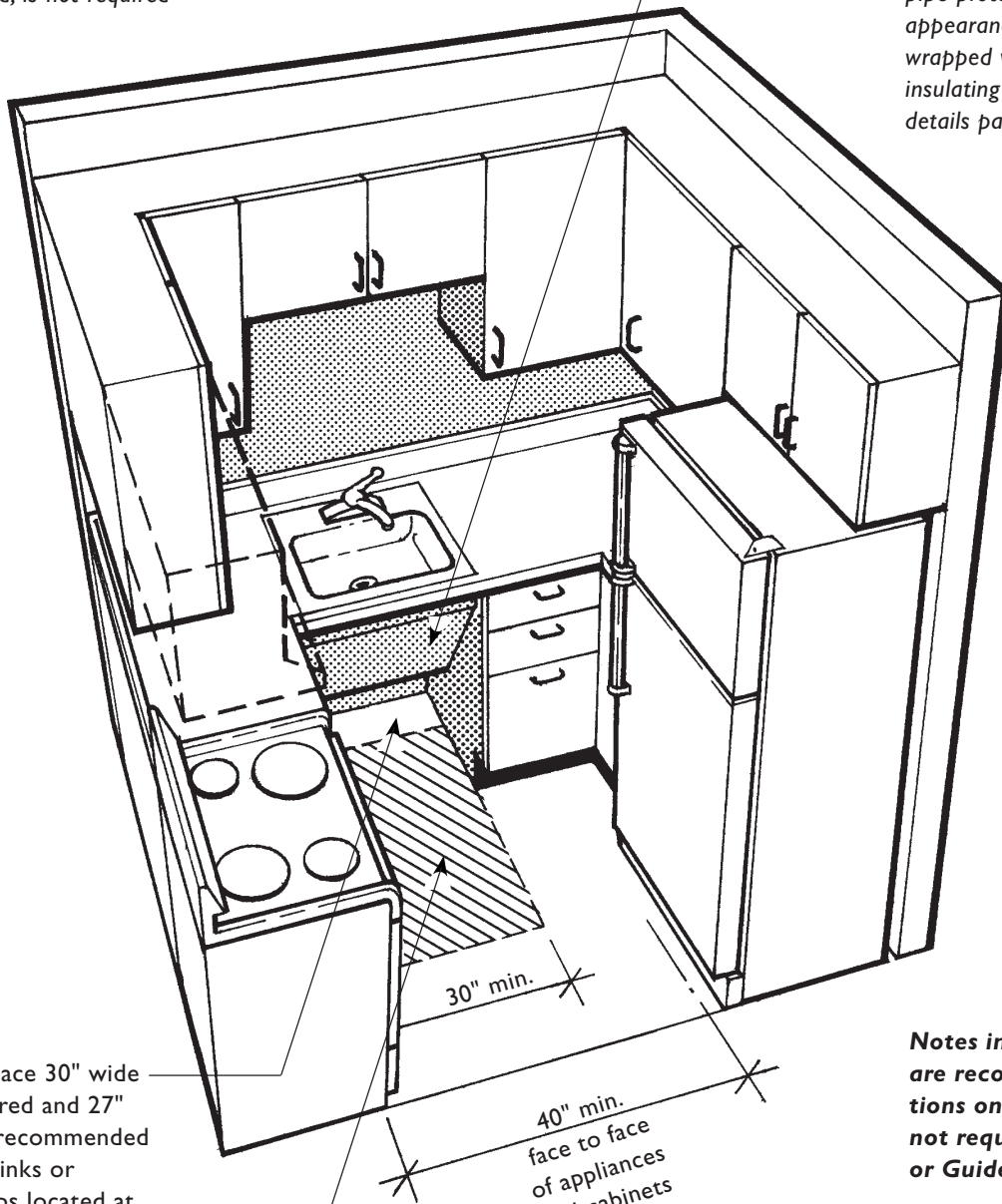


shallow basin sink and rear drain, although not required by the Guidelines, greatly improve access by wheelchair user

lever hardware, although preferred, is not required

knee spaces must have walls and floor surfaces finished

plumbing and other elements should be covered by a removable pipe protection and appearance panel, or be wrapped with padded insulating material, see details page 7.15



knee space 30" wide is required and 27" high is recommended under sinks or cooktops located at bottom of U-shaped kitchens when the U is less than 60" wide

30" X 48" min. clear floor space; must not extend more than 19" into knee space

40" min. face to face of appliances and cabinets

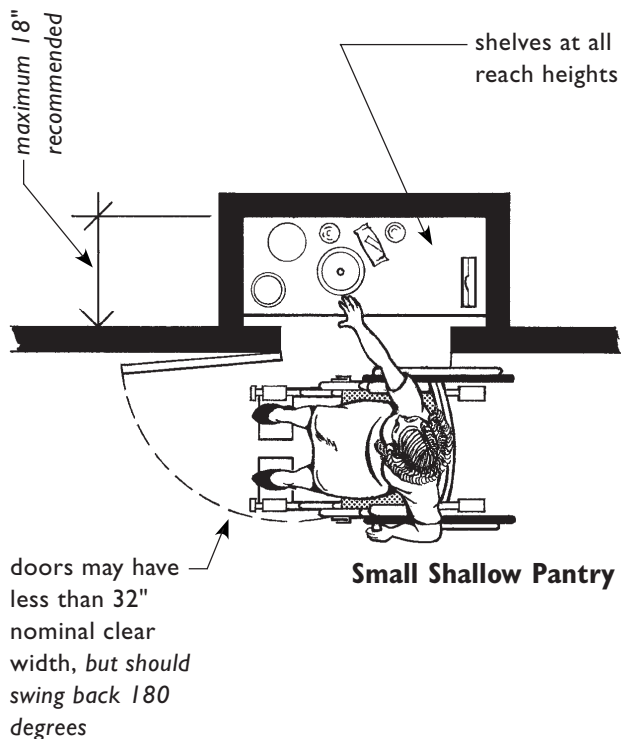
Notes in italic type are recommendations only and are not required by ANSI or Guidelines.

Knee Space at Narrow U-Shaped Kitchens

PANTRIES

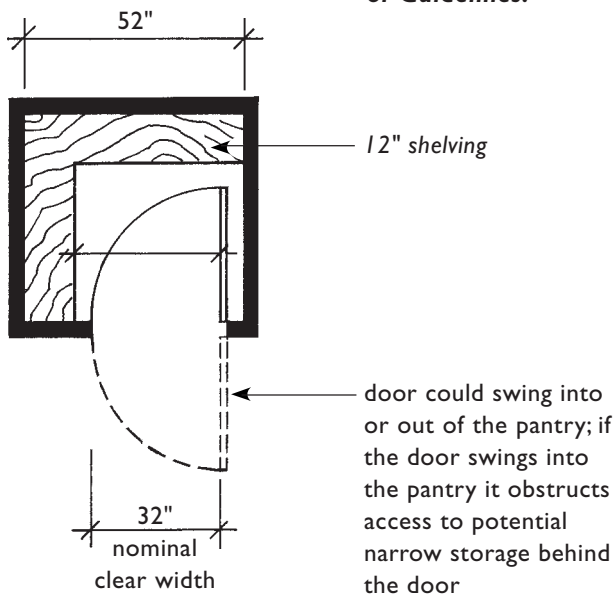
Shallow storage closets, such as pantries, may have doors that do not provide a 32-inch clear width since they do not require the user to pass through the door to reach the contents. However, at walk-in pantries that must be entered to reach the stored items, the doorway must provide a 32-inch nominal clear opening. Shelving is not addressed by the Guidelines; however, it is recommended that it be provided at a variety of levels.

In the small walk-in pantry (below left), if wheelchair users enter the pantry facing the contents, they must back out of the space. In the larger walk-in pantry (below right), if the first shelf is placed at two feet above the floor, a wheelchair user could turn around in the pantry and exit facing out.

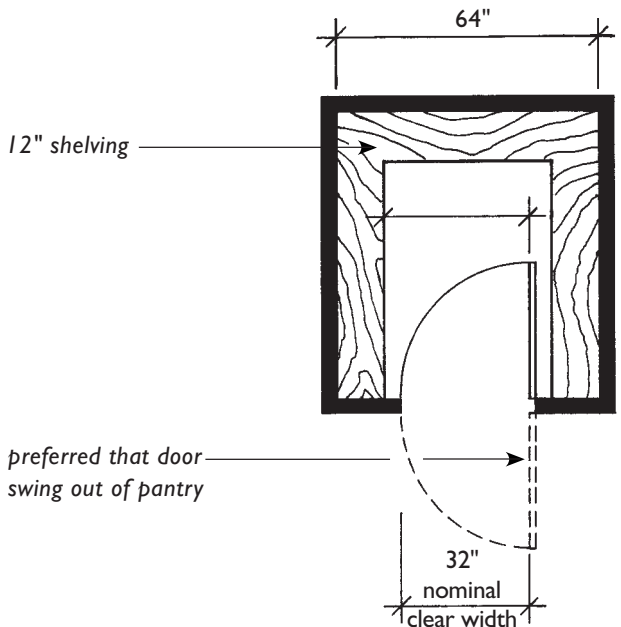


Small Shallow Pantry

Notes in italic type are recommendations only and are not required by ANSI or Guidelines.



Small Walk-In Pantry



Larger Walk-In Pantry

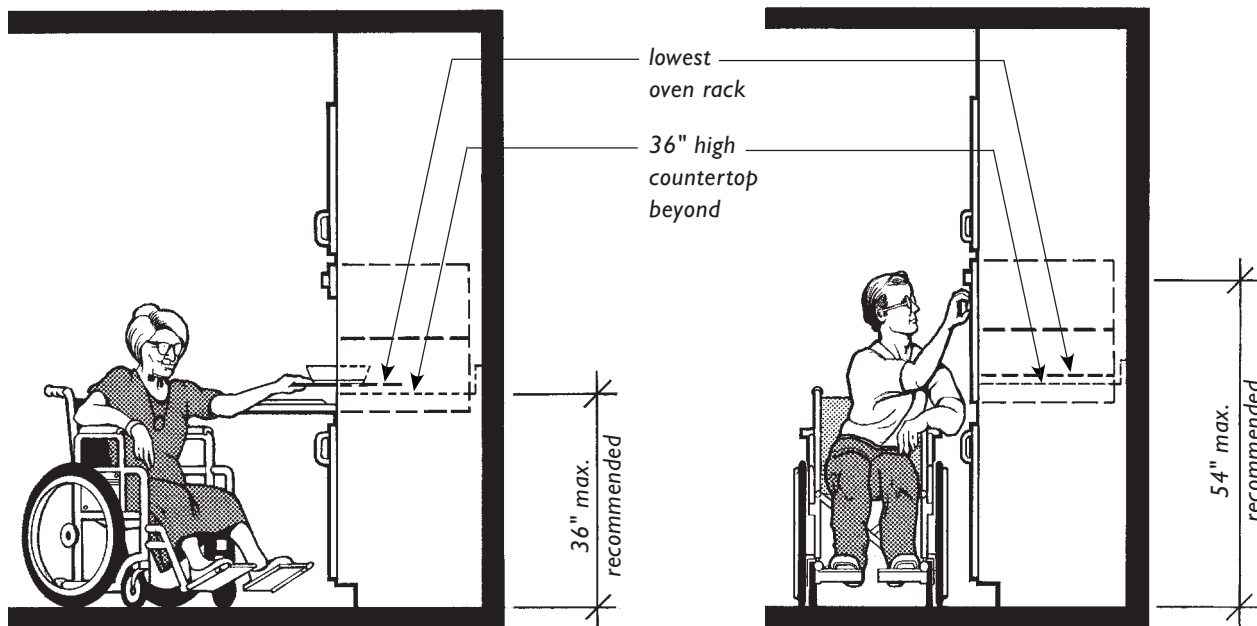
**RECOMMENDATIONS FOR
 INCREASED ACCESSIBILITY**

AT WALL OVENS

Wall-mounted ovens, like ovens in ranges, must have either a parallel or forward clear floor space adjacent to the appliance. When a single wall-mounted oven is installed, it is recommended that the bottom of the oven be mounted at or near counter height so a seated user could reach over a potentially hot door and, at a minimum, pull out the bottom oven rack. Controls also should be within the reach of a seated user.

If double ovens are installed, a wheelchair user must be able to execute a parallel or a forward approach at the appliance. At least one oven interior and its controls, even though appliance controls are not covered by the Guidelines, should be within the reach range of a seated person. See page 5.5 for reach ranges.

bottom of oven should be positioned so lowest oven rack is at or near countertop height



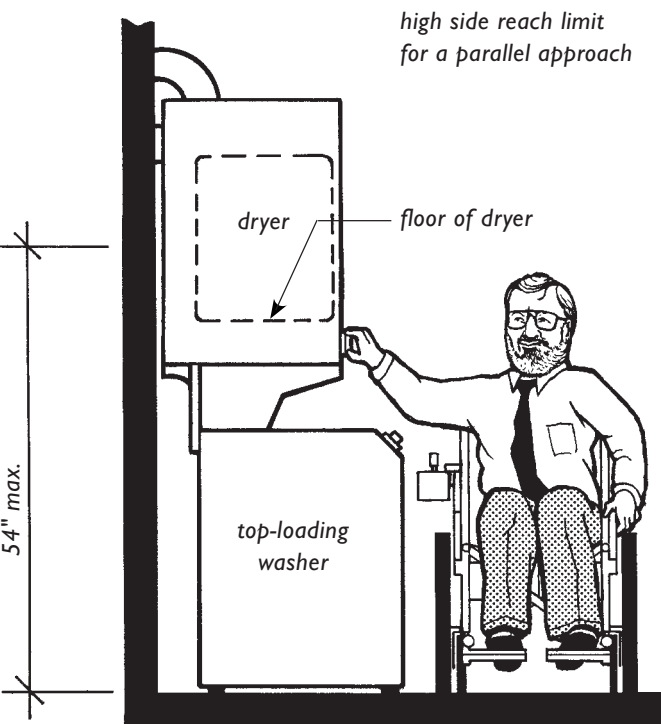
**36 Inches to Bottom
 of Single Wall-Mounted Oven**

**54 Inches Recommended Reach to
 Controls at Single Wall-Mounted Oven**

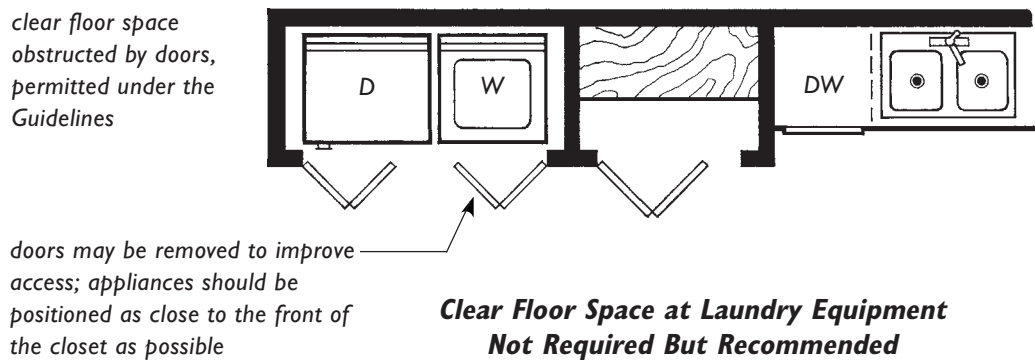
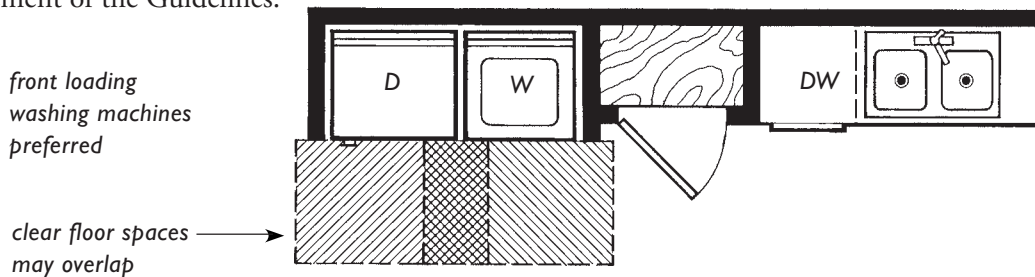
AT LAUNDRY EQUIPMENT

The Guidelines do not require washers and dryers in individual dwelling units to be accessible, which also means that they are not required to have 30-inch x 48-inch parallel clear floor spaces positioned in front of them. However, when located in the kitchen along a row containing other appliances, it is recommended that space be provided for a parallel approach to each machine. The Guidelines permit the installation of stacked washers and dryers. It is recommended that the controls be within the reach of seated users; see the illustration in the upper right column.

If the washer and dryer are located behind doors or are in a separate utility room, clear floor spaces in front of the machines are not required. However, if the door to the utility room is intended for user passage, the door must provide a 32-inch nominal clear opening. When laundry equipment is located in a common use area, it must conform to the requirements for accessible public and common use facilities, see page 2.26. Note: Non-italic type indicates a requirement of the Guidelines.



Stacked Washer/Dryer Unit with Dryer and All Controls Within Reach Range of Seated User

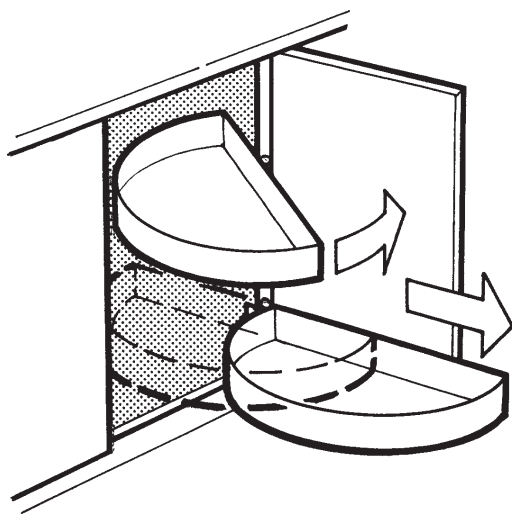


AT OTHER APPLIANCES AND FIXTURES

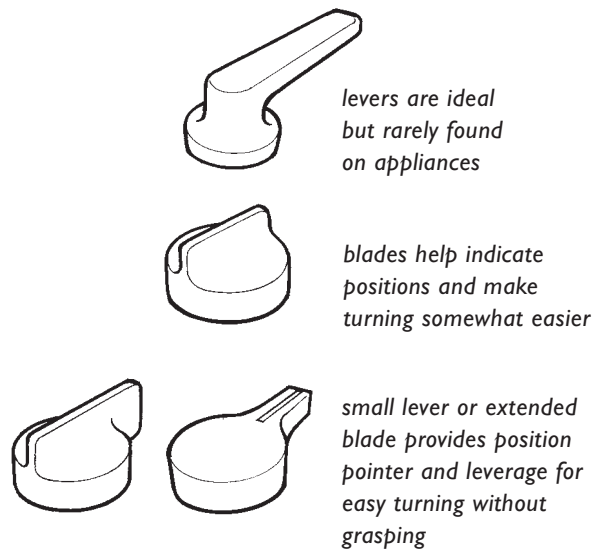
While not required by the Guidelines, careful consideration should be given to the selection of other appliances and fixtures installed in kitchens so potential residents who may currently, or in the future, have a physical limitation may more completely use and enjoy their dwelling.

A partial list of additional considerations for kitchens:

- ranges and cooktops with controls that are front- or side-mounted and have click stops to indicate heat settings,
- vent hoods with controls mounted at or near countertop level,
- shallow sink basins with rear-mounted drains when removable base cabinets are provided,
- lever or blade type handle faucets and controls,
- revolving/extending semicircular shelves for corner base cabinet storage.



**Revolving/Extending Shelves
at Corner Base Cabinets Are an Advantage
for All Users**

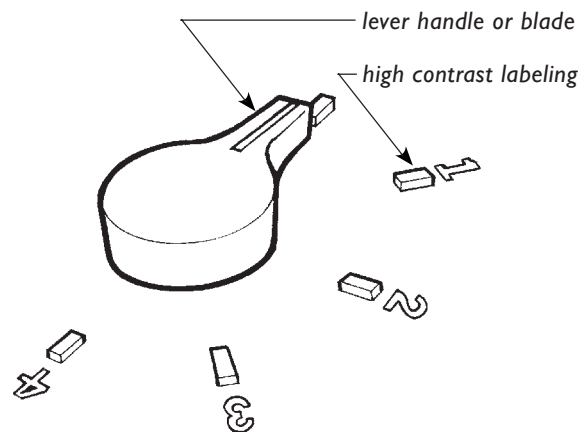


levers are ideal
but rarely found
on appliances

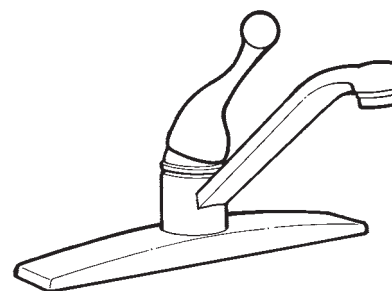
blades help indicate
positions and make
turning somewhat easier

small lever or extended
blade provides position
pointer and leverage for
easy turning without
grasping

Preferred Control Choices



Ideal Control Knob



**Lever Handles on Faucets Are Easy
for Most People to Operate**

**EXAMPLES OF KITCHEN
FLOOR PLANS THAT COMPLY
WITH THE GUIDELINES**

The plans presented on the following pages are examples of “usable” kitchens that comply with the Fair Housing Accessibility Guidelines (the Guidelines). They range from very small to larger, more elaborate kitchens but are only a small sampling of the layouts possible. The plans are neither required nor even suggested as ideal examples. They are included to illustrate typical applications or interpretations of specific requirements of the Guidelines under various circumstances.

The plans may be used as resource material and planning guides when developing new multi-family housing designs. Conventional industry standard fixture and appliance sizes have been used consistently when developing these plans. It is important to allow sufficient space for any fixtures that may be larger than those shown here. Although

designers should rely upon the dimensions indicated and not scale off the drawings, all plans in this section are reproduced at 1/4 inch scale.

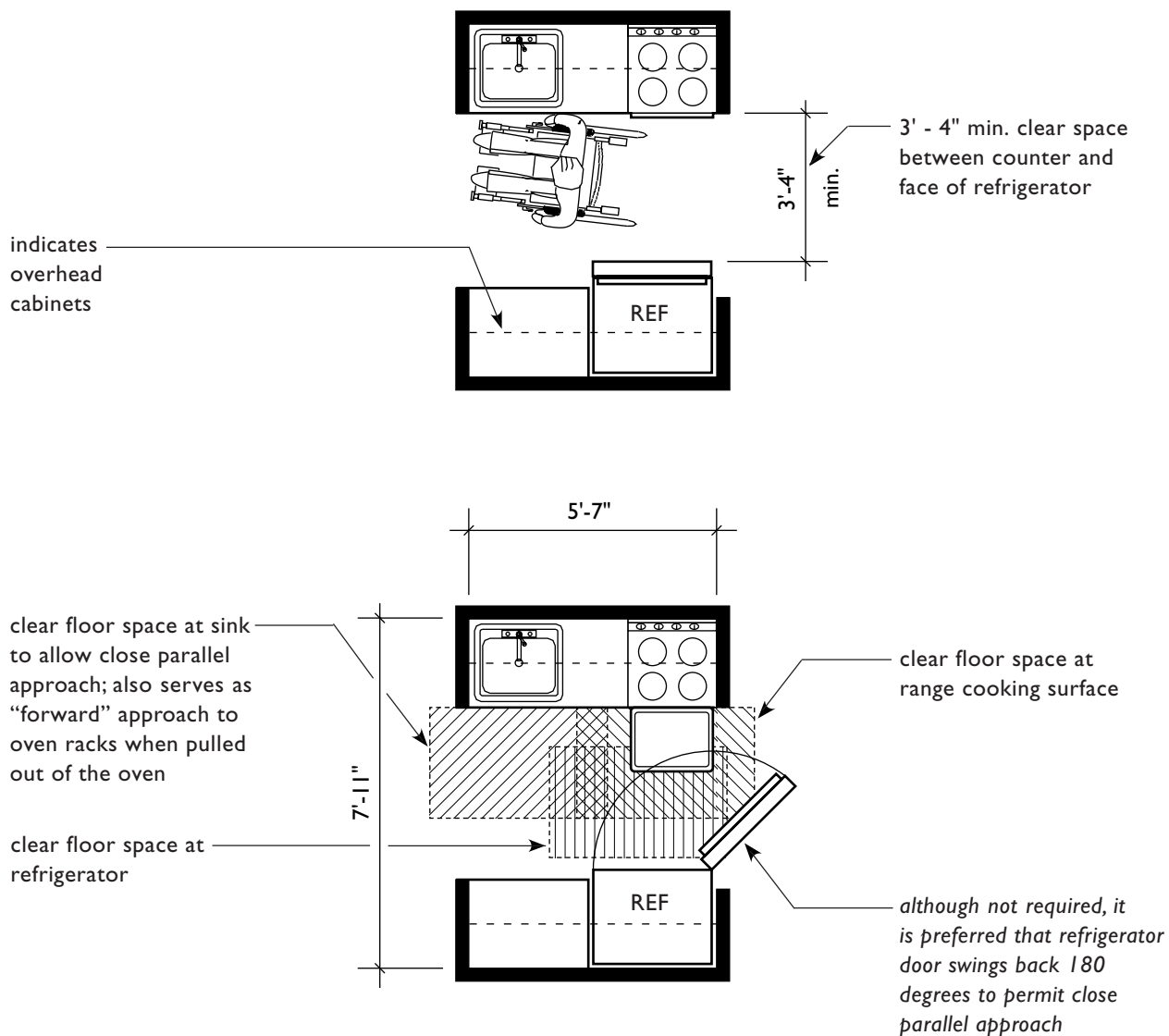
The plans are presented in pairs, with the first plan showing fixture and appliance placement and key dimensions, such as aisle widths, that are required by the Guidelines. The second plan gives the overall room dimensions which are offered for comparison purposes only and are not required by the Guidelines. The second plan also shows clear floor spaces adjoining individual appliances and fixtures and describes their use, and, to give the reader the “real” space that appliances occupy, appliance doors are shown in their open position.

Text and notes presented in *italic* type are comments or recommendations and are not required by the Guidelines.

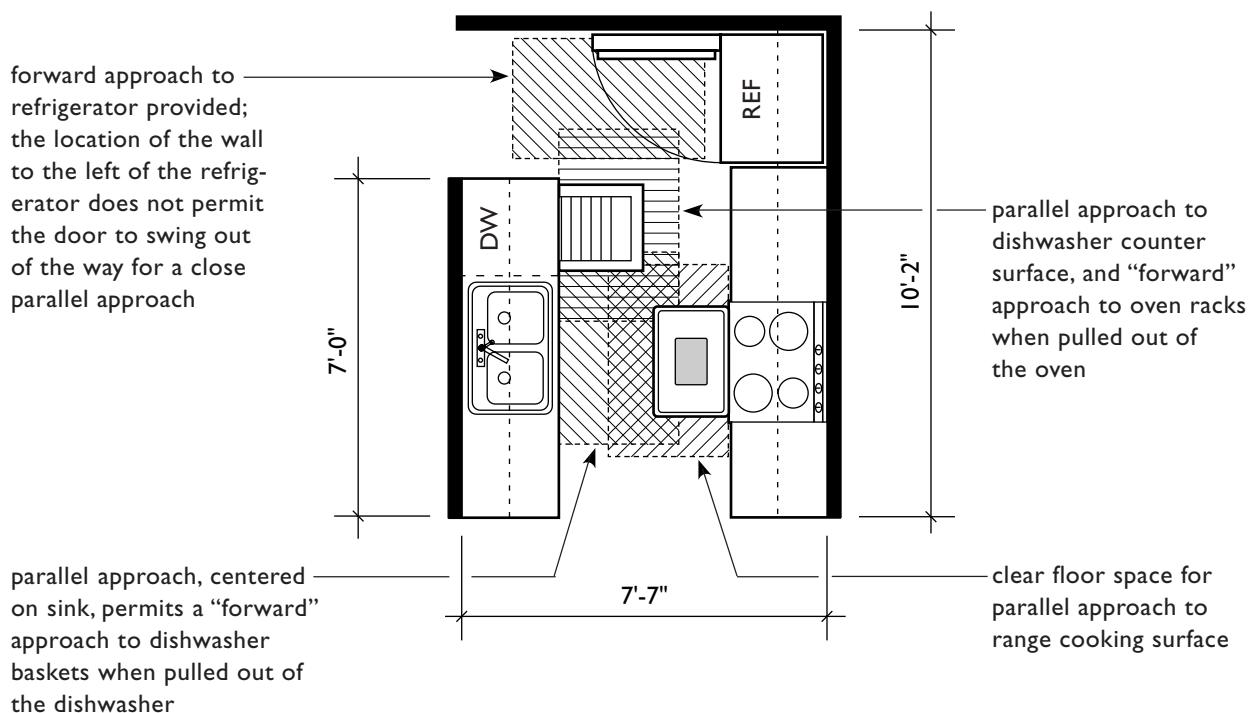
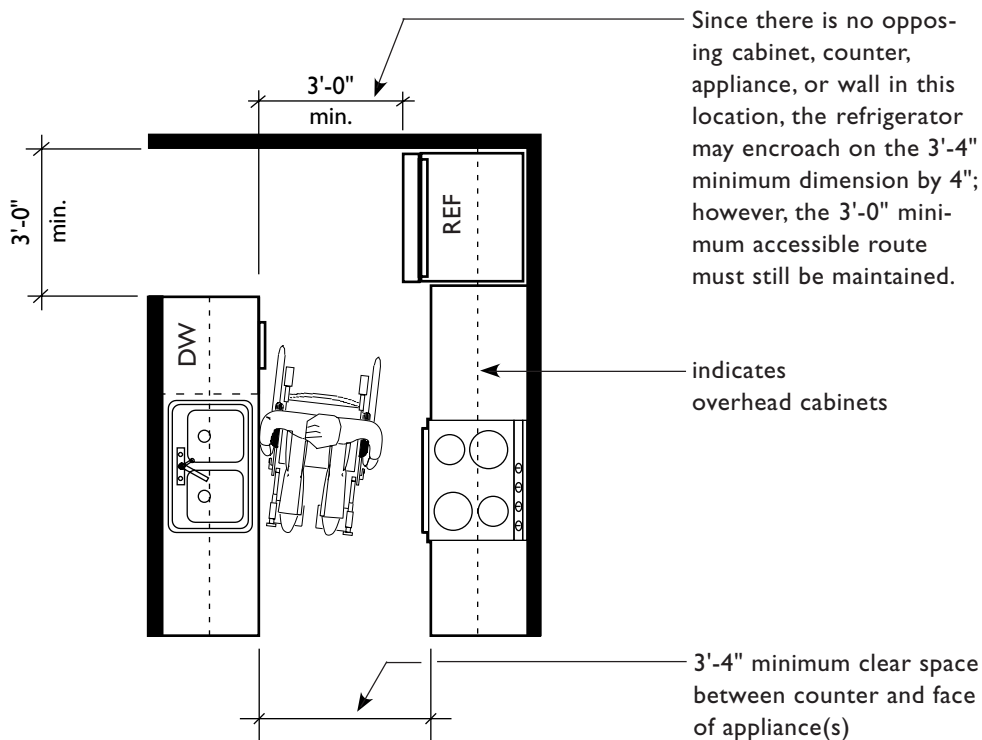
Very Small Parallel Wall Kitchen (Without Dishwasher)

In this kitchen design, walls may not continue across either open end because they would obstruct clear floor spaces required at each appliance.

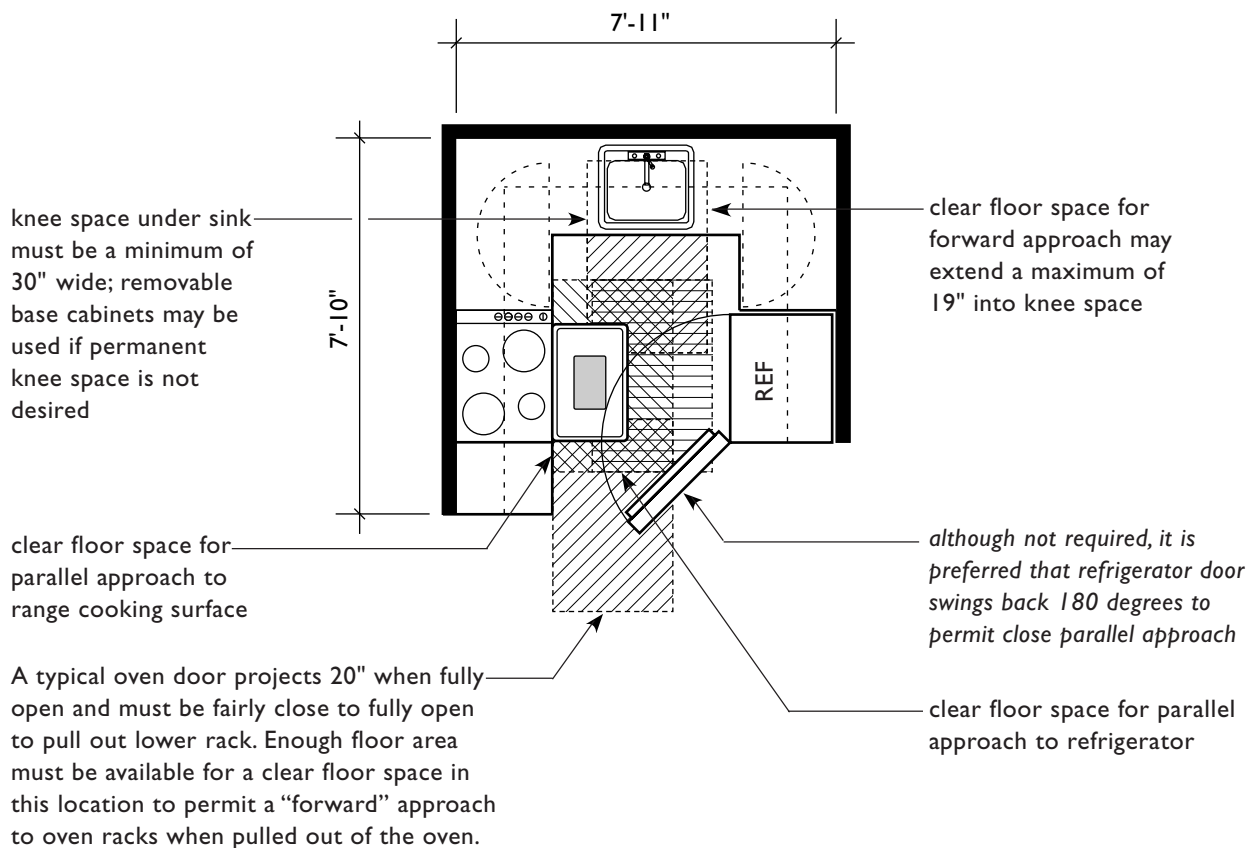
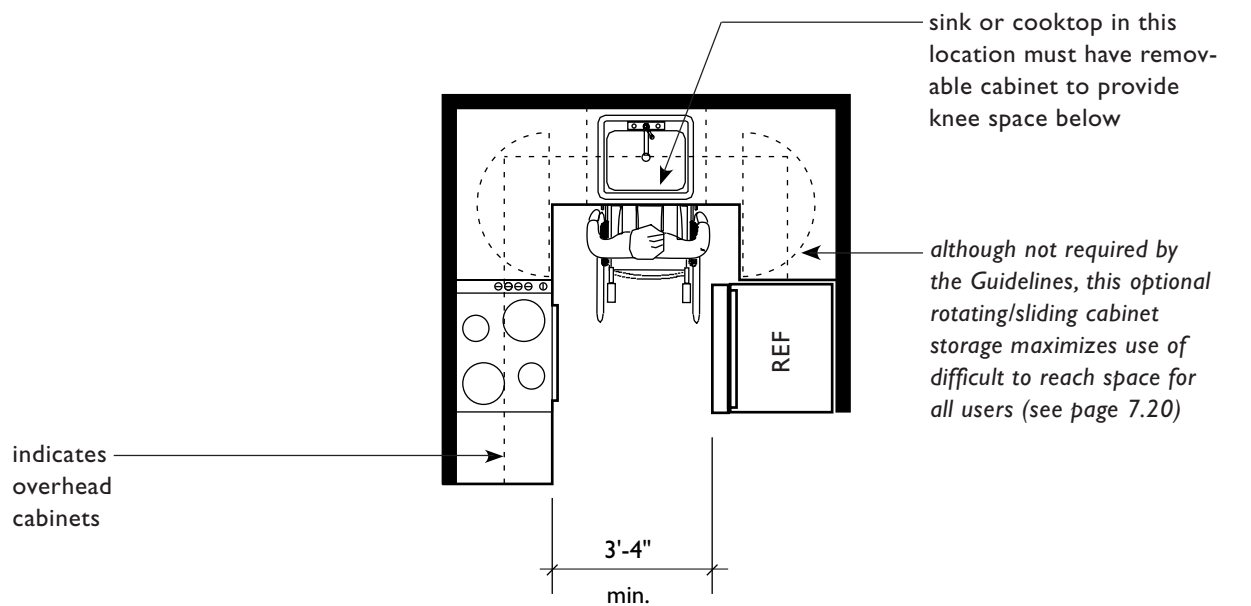
Although discouraged because maneuvering space would be severely restricted, the sink end could be closed if a removable cabinet that conceals a minimum 30-inch wide knee space is provided under the sink; 36-inch wide knee space is preferred.



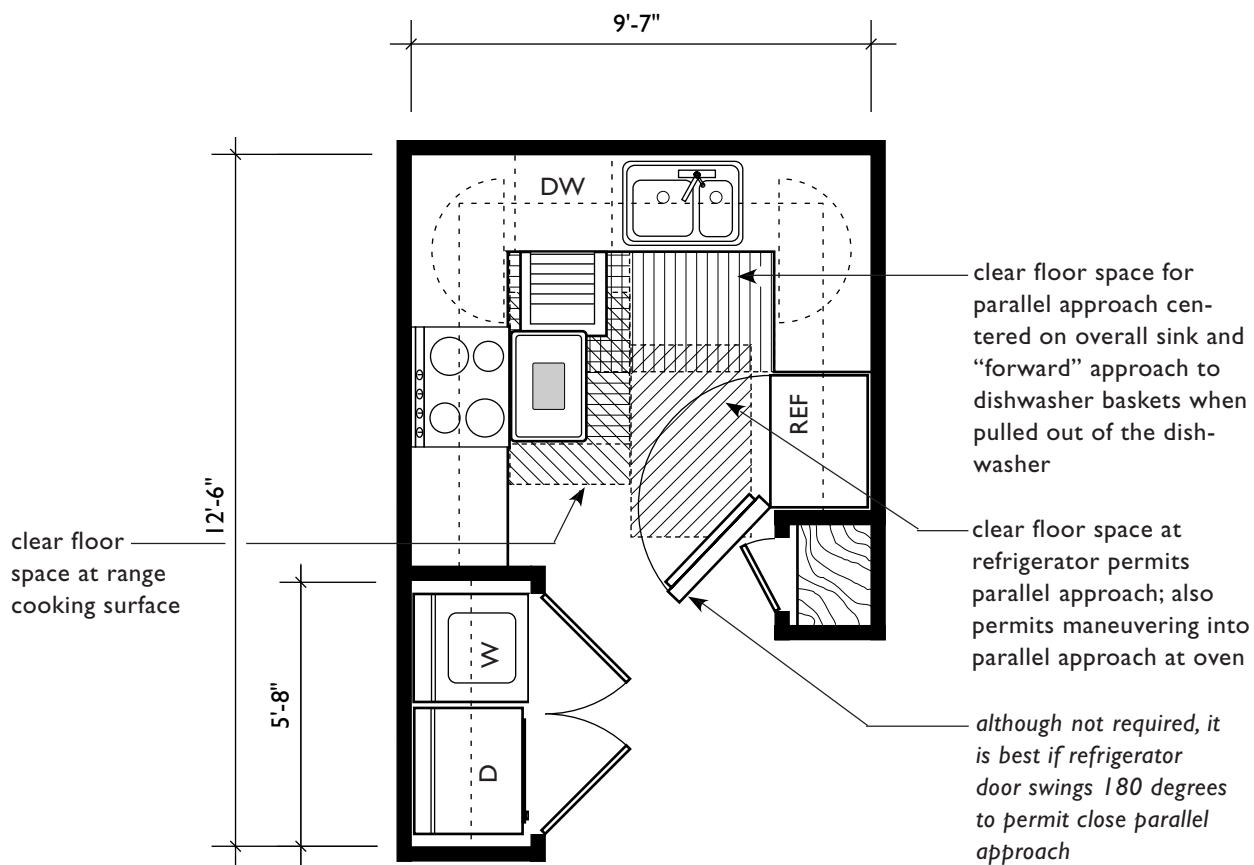
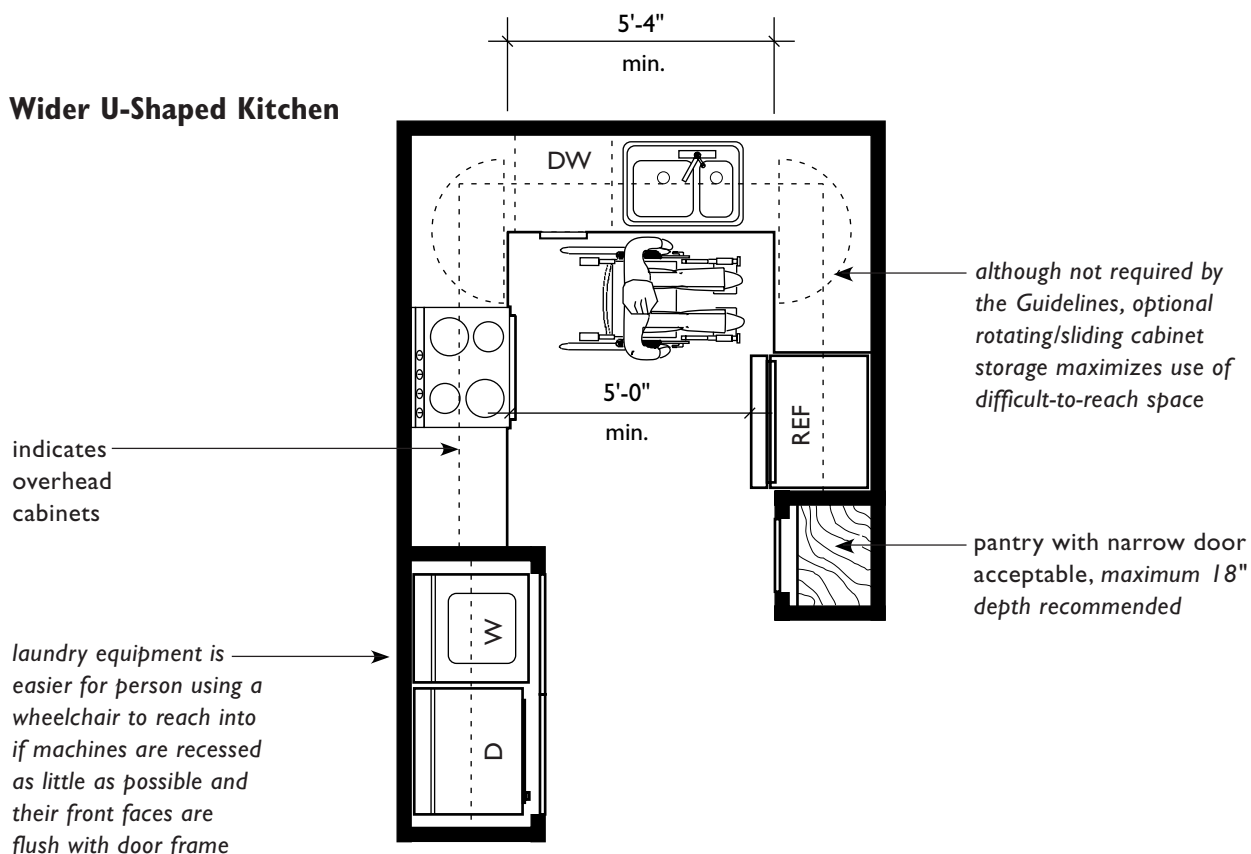
Parallel Wall Kitchen



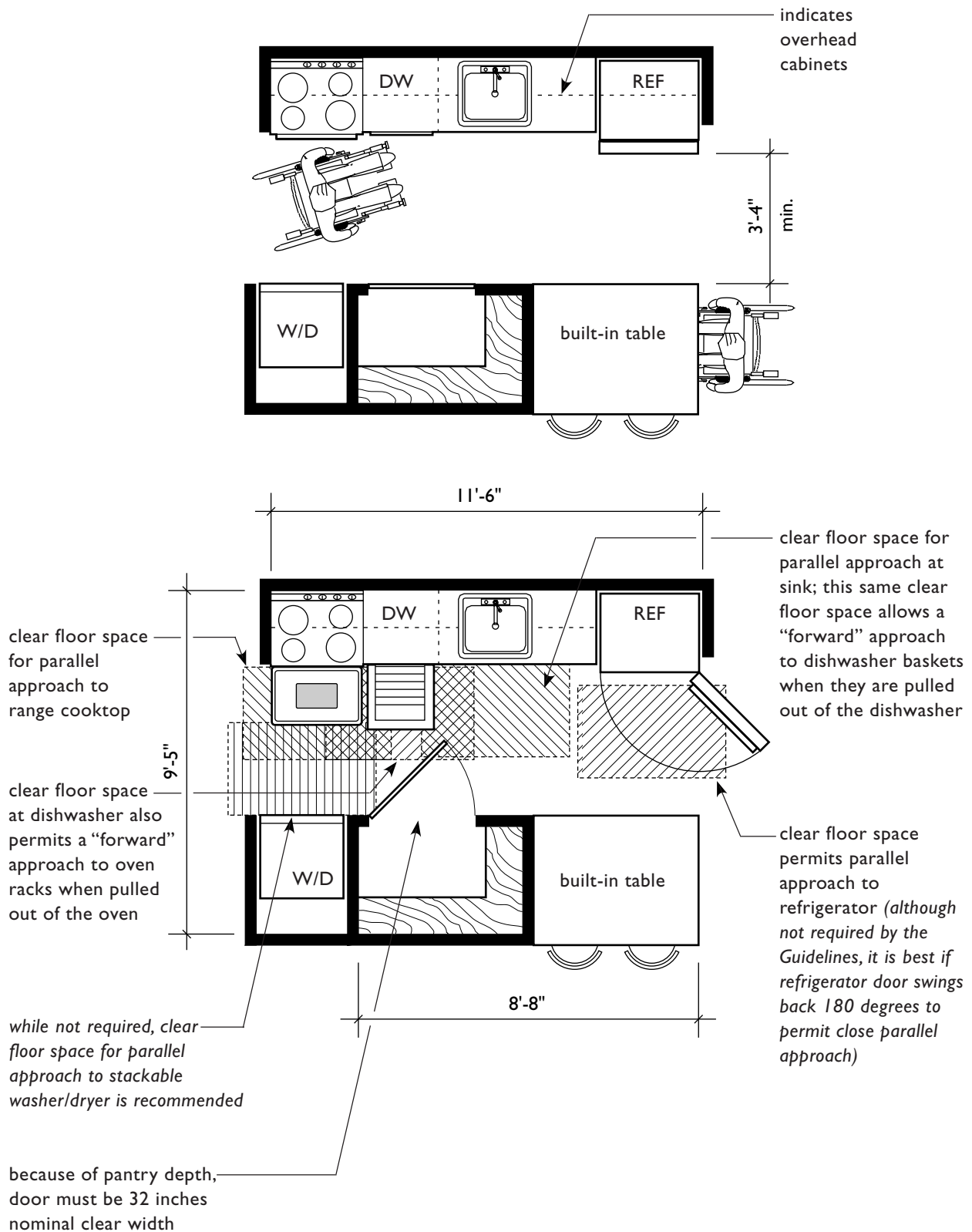
**Narrow U-Shaped Kitchen
 (Without Dishwasher)**



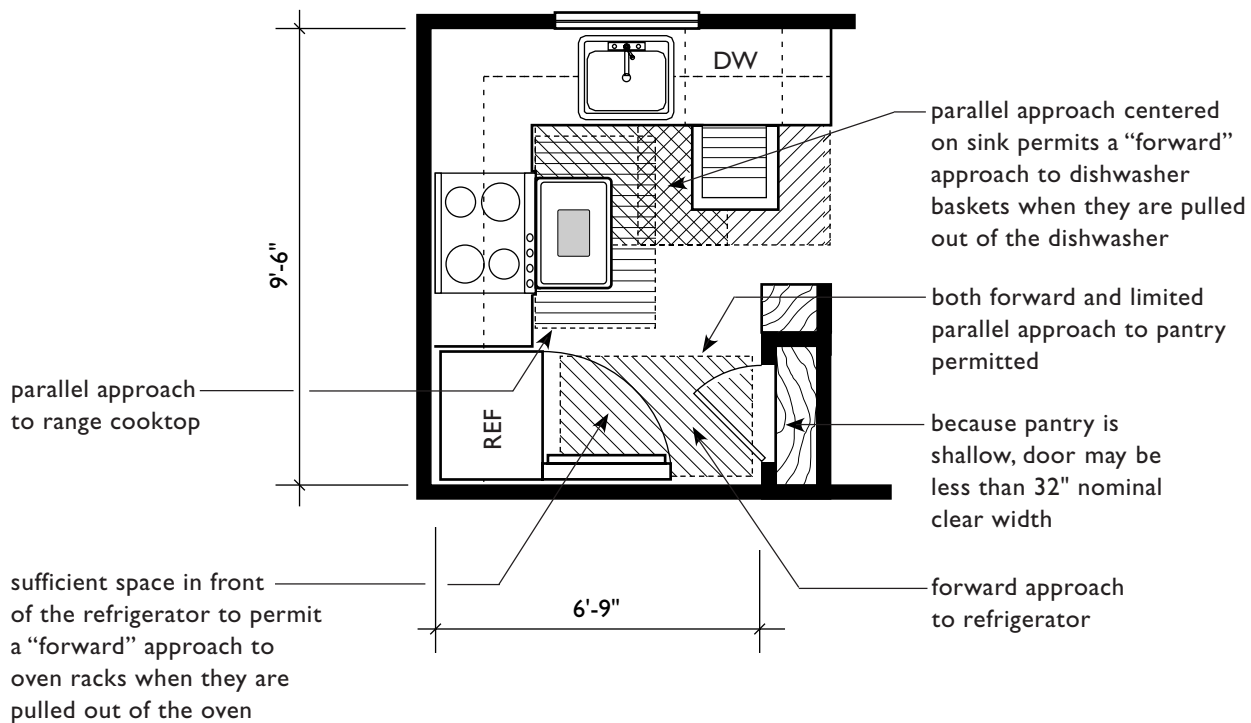
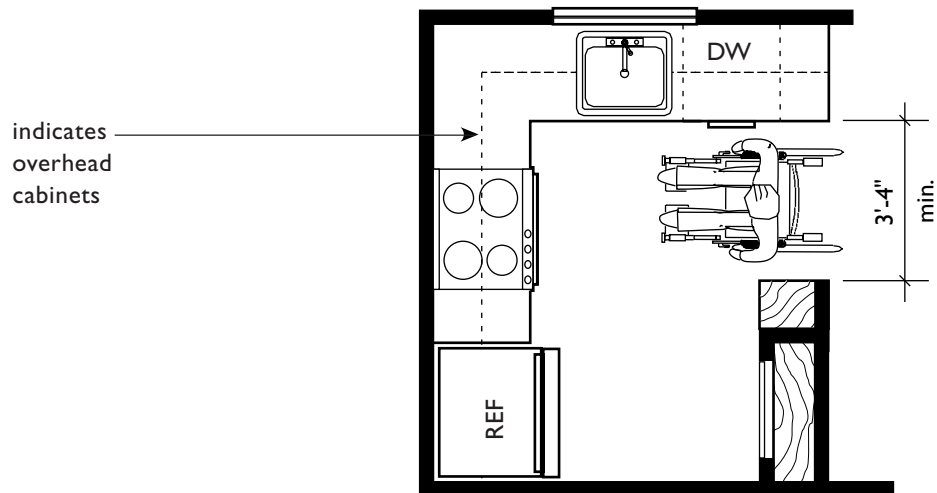
Wider U-Shaped Kitchen



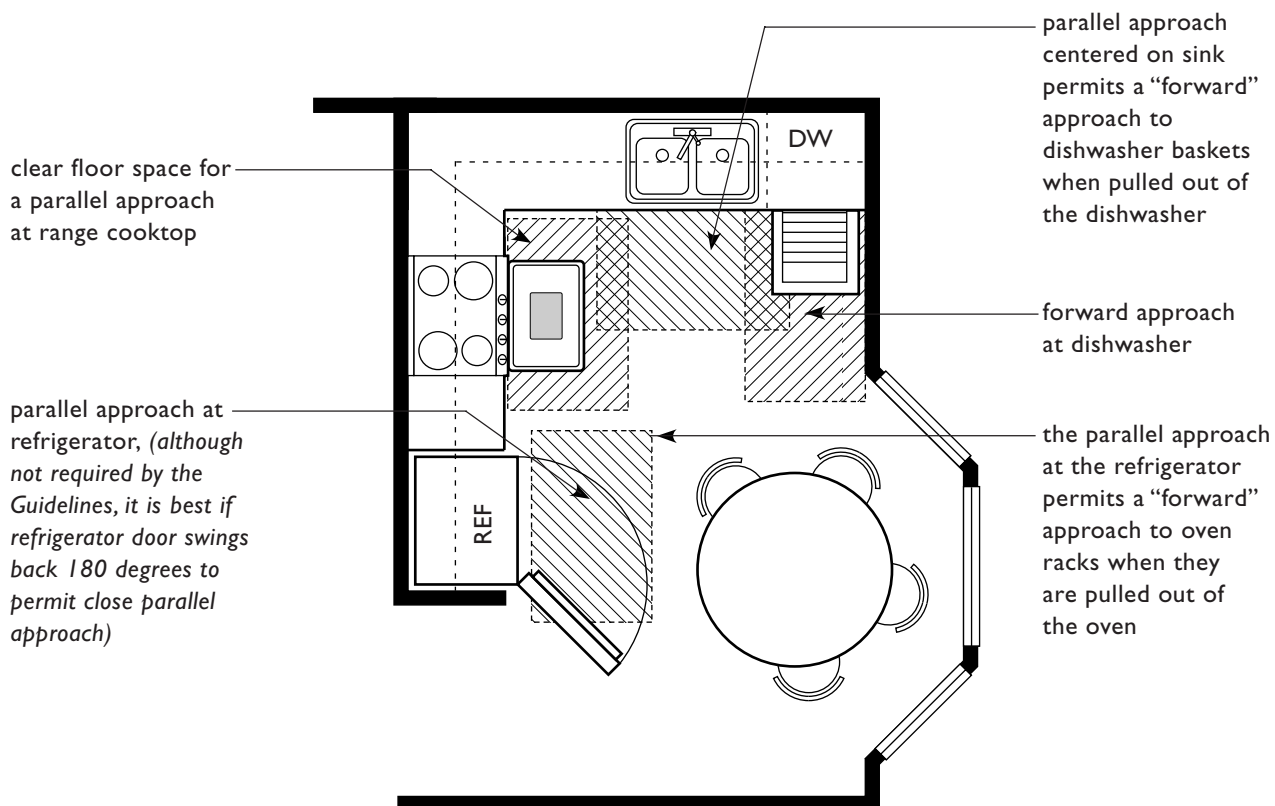
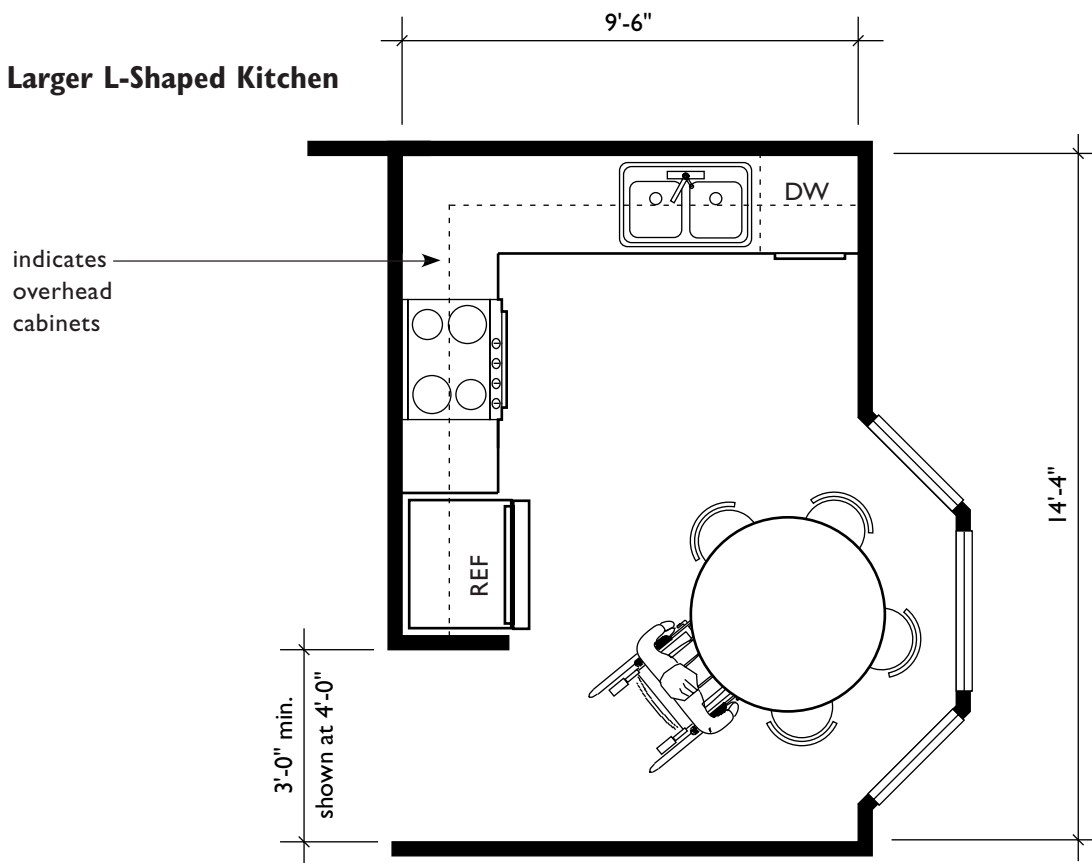
Parallel Wall Kitchen



Small L-Shaped Kitchen



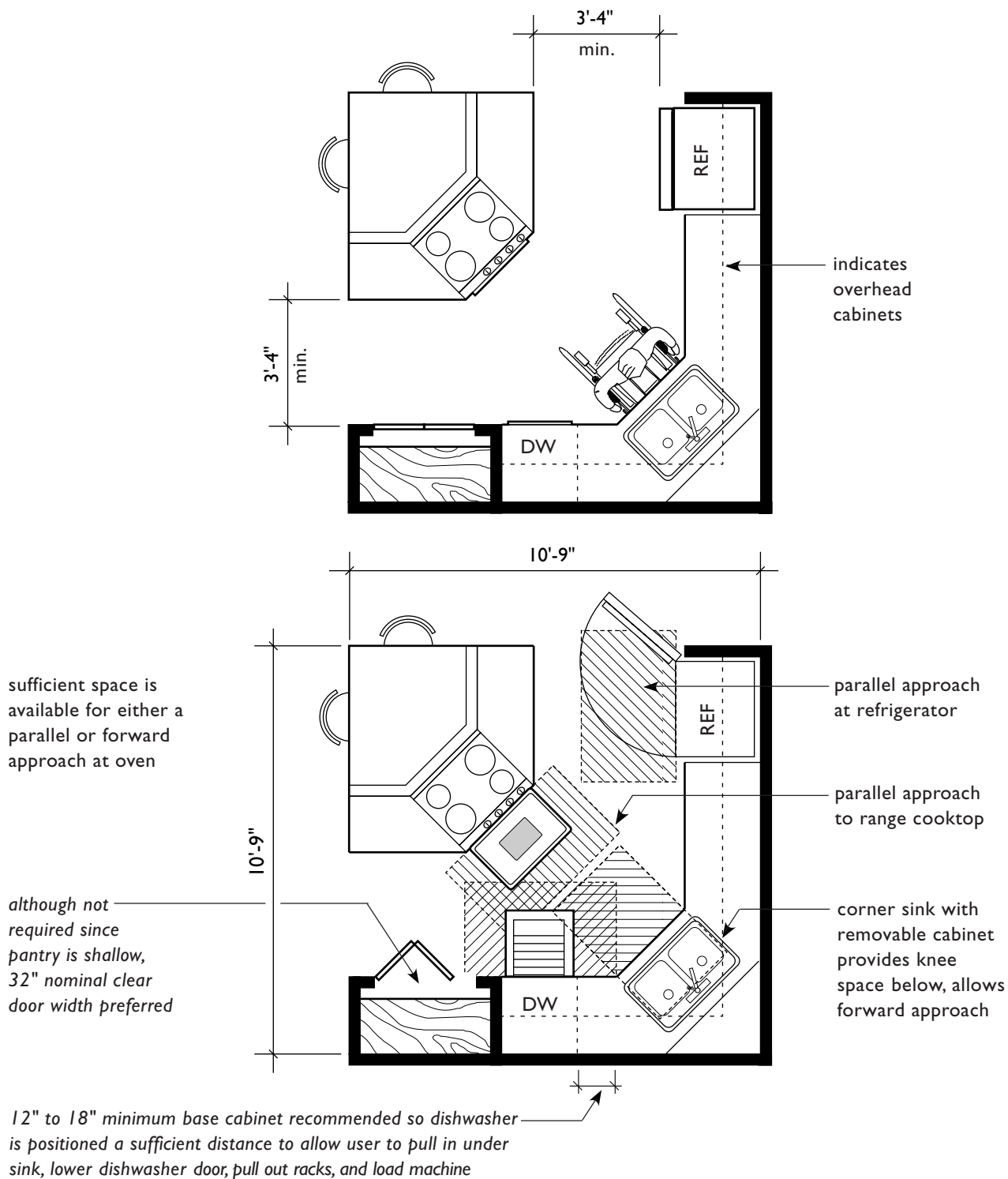
Larger L-Shaped Kitchen



Broken U-Shaped Kitchen

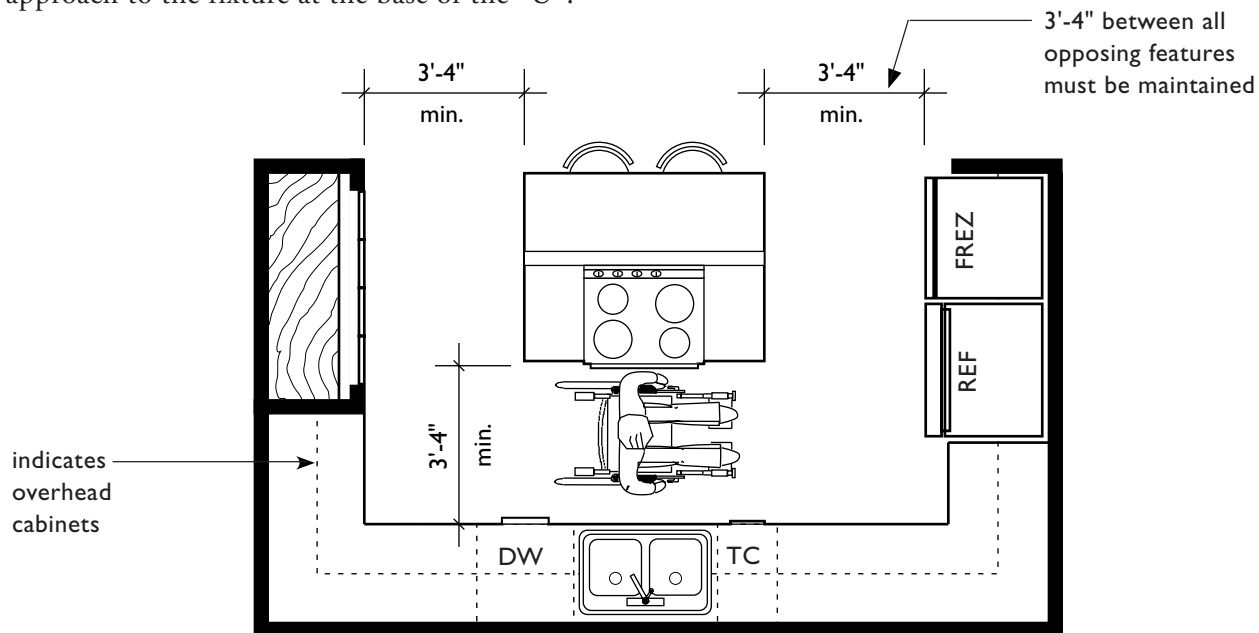
If a corner position with knee space below is being considered for either the sink or cooktop, it is preferred that the sink be located in the corner, as

opposed to the cooktop. This is because a cooktop with knee space below at the standard 36-inch height of a kitchen countertop is dangerous for seated users.



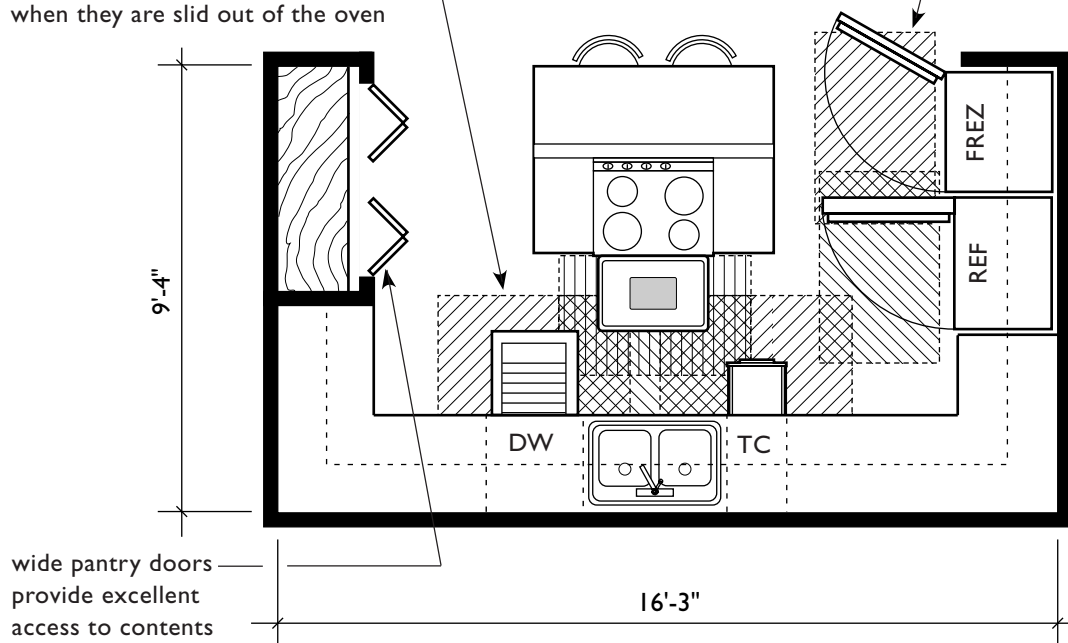
Spacious U-Shaped Kitchen

While this kitchen has an overall “U” shape, it functions like a parallel wall kitchen with two points of entry and exit and allows close parallel approach to the fixture at the base of the “U”.



parallel clear floor spaces at the dishwasher and trash compactor permit either a left- or right-handed “forward” approach to oven racks when they are slid out of the oven

parallel clear floor spaces at both refrigerator and freezer



wide pantry doors provide excellent access to contents

■ **PART B:** Usable Bathrooms

7b



...covered multifamily dwellings with a building entrance on an accessible route shall be designed and constructed in such a manner that all premises within covered multifamily dwelling units contain usable ...bathrooms such that an individual in a wheelchair can maneuver about the space.

Fair Housing Act Regulations, 24 CFR 100.205

Definitions from the Guidelines

Bathroom. A bathroom which includes a water closet (toilet), lavatory (sink), and bathtub or shower. It does not include single-fixture facilities or those with only a water closet and lavatory. It does include a compartmented bathroom. A compartmented bathroom is one in which the fixtures are distributed among interconnected rooms. A compartmented bathroom is considered a single unit and is subject to the Act's requirements for bathrooms.

Powder Room. A room with only a water closet (toilet) and lavatory (sink). (Definition found in Requirement 6.)

INTRODUCTION

The Fair Housing Accessibility Guidelines (the Guidelines) provide specifications for bathroom design that make it possible for people who use mobility aids, and who, heretofore, could not even get into conventional bathrooms in multifamily housing, to now use such facilities. Though not fully accessible, when designed to comply with the Guidelines, these “usable” bathrooms provide a person who uses a wheelchair or scooter or who may use a walker or other mobility aid with a bathroom that has enough maneuvering space to allow the person to enter, close the door, use the fixtures, and exit. In some cases, a resident with a disability will find it necessary to make additional modifications to meet his or her specific needs.

In covered multifamily housing, bathrooms that meet the definition in the Guidelines for a bathroom must then meet the specifications outlined in the Guidelines for usable bathrooms. The Guidelines distinguish between bathrooms and powder rooms and provide different specifications (see definitions on facing page).

Usable bathroom specifications include:

1. an accessible route to and into the bathroom with a nominal 32-inch clear door opening (Requirements 3 and 4),
2. switches, outlets, and controls in accessible locations (Requirement 5),
3. reinforced walls to allow for the later installation of grab bars around the toilet, tub, and shower stall; under certain conditions provisions for reinforcing must be made in shower stalls to permit the installation of a wall-hung bench seat (Requirement 6),
4. maneuvering space within the bathroom to

permit a person using a mobility aid to enter the room, close and reopen the door, and exit (Requirement 7), and

5. maneuvering and clear floor space within the bathroom to permit a person using a mobility aid to approach and use fixtures; fixture dimensions and placement are specified only under certain conditions (Requirement 7).

Powder rooms, except as noted below, are only subject to the following specifications:

1. they must be on an accessible route with a nominal 32-inch clear door opening (Requirements 3 and 4) and
2. they must have switches, outlets, and controls in accessible locations (Requirement 5).

There is an **exception**, however, with respect to multistory dwelling units in buildings with one or more elevators. The level served by the building elevator must be the primary entry level for the dwelling unit and there must be either a usable bathroom or a usable **powder room** on the entry level. If there is both a bathroom and a powder room, then the bathroom would be required to be usable and meet Requirements 3 through 7 of the Guidelines. In cases where only a powder room is provided, then it must meet, in addition to Requirements 3, 4, and 5, the applicable provisions of Requirements 6 (Reinforced Walls) and 7 (Maneuvering and Clear Floor Spaces) of the Guidelines. The chart on page 7.35 summarizes the requirements for usable bathrooms and usable powder rooms.

Accessible route, usable doors, controls in accessible locations, and reinforced walls for later installation of grab bars are covered in other chapters of this manual. Maneuvering and clear

floor space requirements are explained in the first part of this chapter, followed by a presentation of a variety of bathroom floor plans that comply with the requirements of the Guidelines.

Two Bathroom Specifications

To satisfy the maneuvering and clear floor space requirements for usable bathrooms, Requirement 7 of the Guidelines gives two sets of specifications to design bathrooms, referred to in this manual as Specification A and Specification B. Although not the only difference between the two specifications, a bathroom designed to meet Specification B has greater access to the bathtub than a bathroom designed to meet Specification A. The two specifications and their differences will be described in the following discussions of maneuvering and clear floor space requirements.

How Many Bathrooms and Fixtures Must Comply with the Guidelines?

In dwelling units containing more than one bathroom, if Specification A is selected as the basis for designing a bathroom, all bathrooms in the dwelling unit also must comply with the A Specifications. If Specification B is selected, only one bathroom in the dwelling unit must meet those requirements; all other bathrooms in the dwelling unit must be on an accessible route (Requirement 4), have doors with a nominal 32-inch clear opening (Requirement 3), have switches, outlets, and controls in accessible locations (Requirement 5), and have reinforced walls around toilets, tubs, and shower stalls (Requirement 6). However, maneuvering space as specified in the Guidelines' Requirement 7 is not required in other bathrooms

within the dwelling unit when one bathroom is designed to meet the B Specifications.

However, any powder room provided in a dwelling unit, regardless of which set of specifications the bathroom(s) meets, is still subject to Requirements 3 (Usable Doors), 4 (Accessible Route), and 5 (Controls in Accessible Locations). The exception that requires certain powder rooms also to meet Requirements 6 (Reinforcing) and 7 (Maneuvering and Clear Floor Space) is discussed on page 7.33.

In bathrooms where several of each type of fixture are provided, e.g., a separate shower and tub or two lavatories, **all fixtures** must be usable in Specification A bathrooms while only **one** of each type of fixture must be usable by a person with a disability in a Specification B bathroom.

Which Bathroom Should Meet the Requirements of the Guidelines?

When a builder or developer is deciding whether to use the A or B Specifications when designing bathrooms, it is important to consider the number of bathrooms in the dwelling unit. If there is only one bathroom, the builder may follow the Specifications for either A or B. However, while not required by the Guidelines, it is recommended that Specification B, which provides the higher level of accessibility, be used.

In multiple bathroom dwelling units the issue is somewhat more complex. If the B Specification is selected for use in a two-bathroom dwelling, which bathroom should comply? The master or the hall bathroom? If the hall bathroom is selected to be the usable bathroom and the family member who has a disability would normally occupy the master bedroom, then he or she would have to go down the hall to that bathroom. If, on the other hand, the master bath is

the usable bathroom and the family member with a disability is one of the children, then it will be necessary for the child to continually enter the master bedroom suite.

Where there are two or more bathrooms, the ideal situation would be to have at least one bathroom

meet Specification B, and the other bathrooms meet Specification A. However, it is acceptable under the Guidelines to have only one bathroom meet Specification B, and the other bathrooms meet Requirements 3, 4, 5, and 6 of the Guidelines, but not Requirement 7. This discussion is advisory only.

Bathroom Requirements for Covered Dwelling Units

All bathrooms as defined in the Guidelines must:

1. be on an accessible route (Requirement 4),
2. have 32-inch nominal clear width doorways (Requirement 3),
3. have switches, outlets, and controls in accessible locations (Requirement 5),
4. have reinforcing around toilets, tubs, and showers (Requirement 6), and
5. meet Requirement 7, Specification A or B:

Specification A

If Specification A is used it applies to all bathrooms, and all fixtures in those bathrooms must be usable.

Specification B

If Specification B is used, it applies to one bathroom, and only one of each type of fixture must be usable; additional bathrooms in the unit are exempt **only** from maneuvering and clear floor space requirements at fixtures.

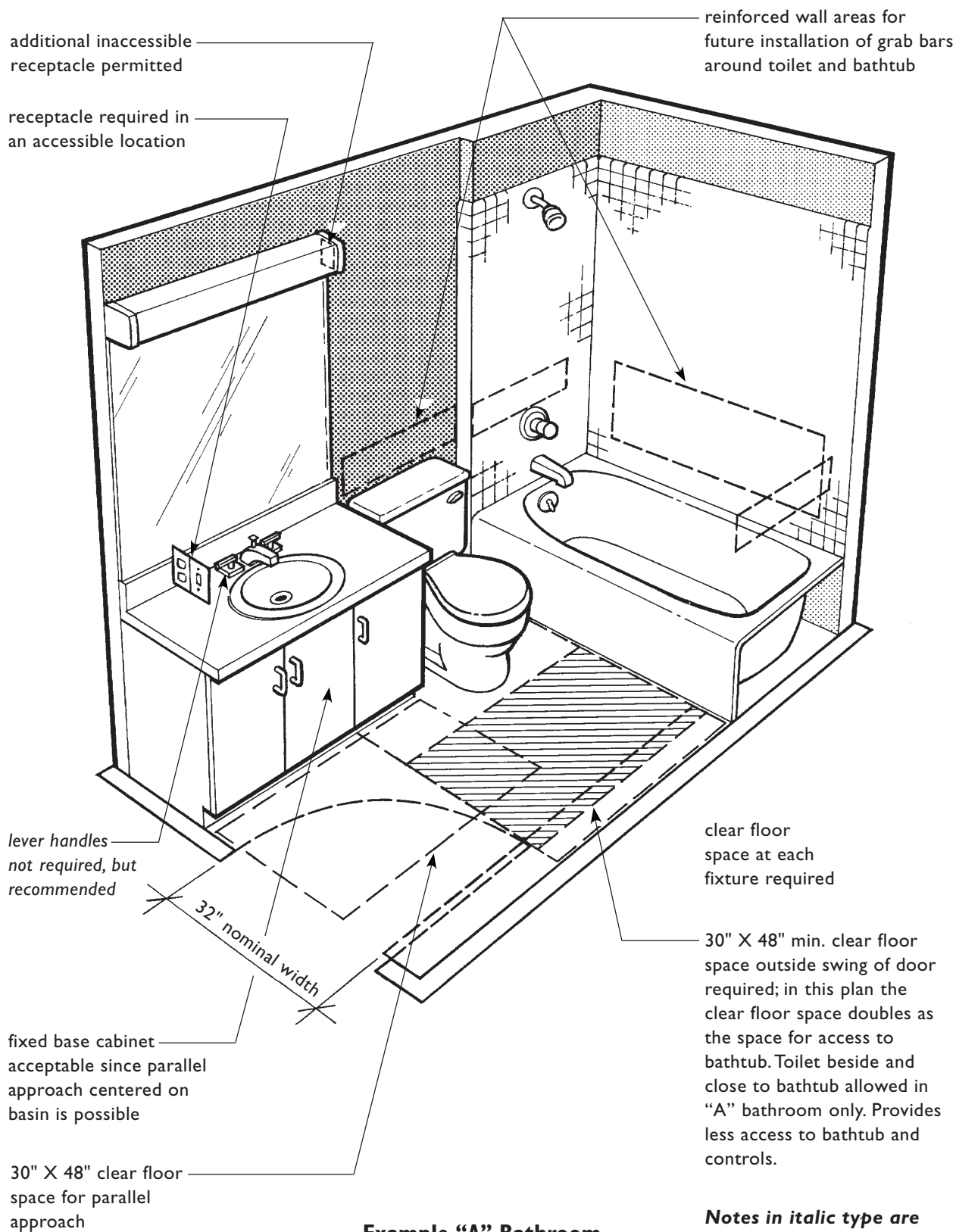
Powder Room Requirements for Covered Dwelling Units

Powder rooms must:

1. be on an accessible route (Requirement 4),
2. have 32-inch nominal clear width doorways (Requirement 3), and
3. have switches, outlets, and controls in accessible locations (Requirement 5).

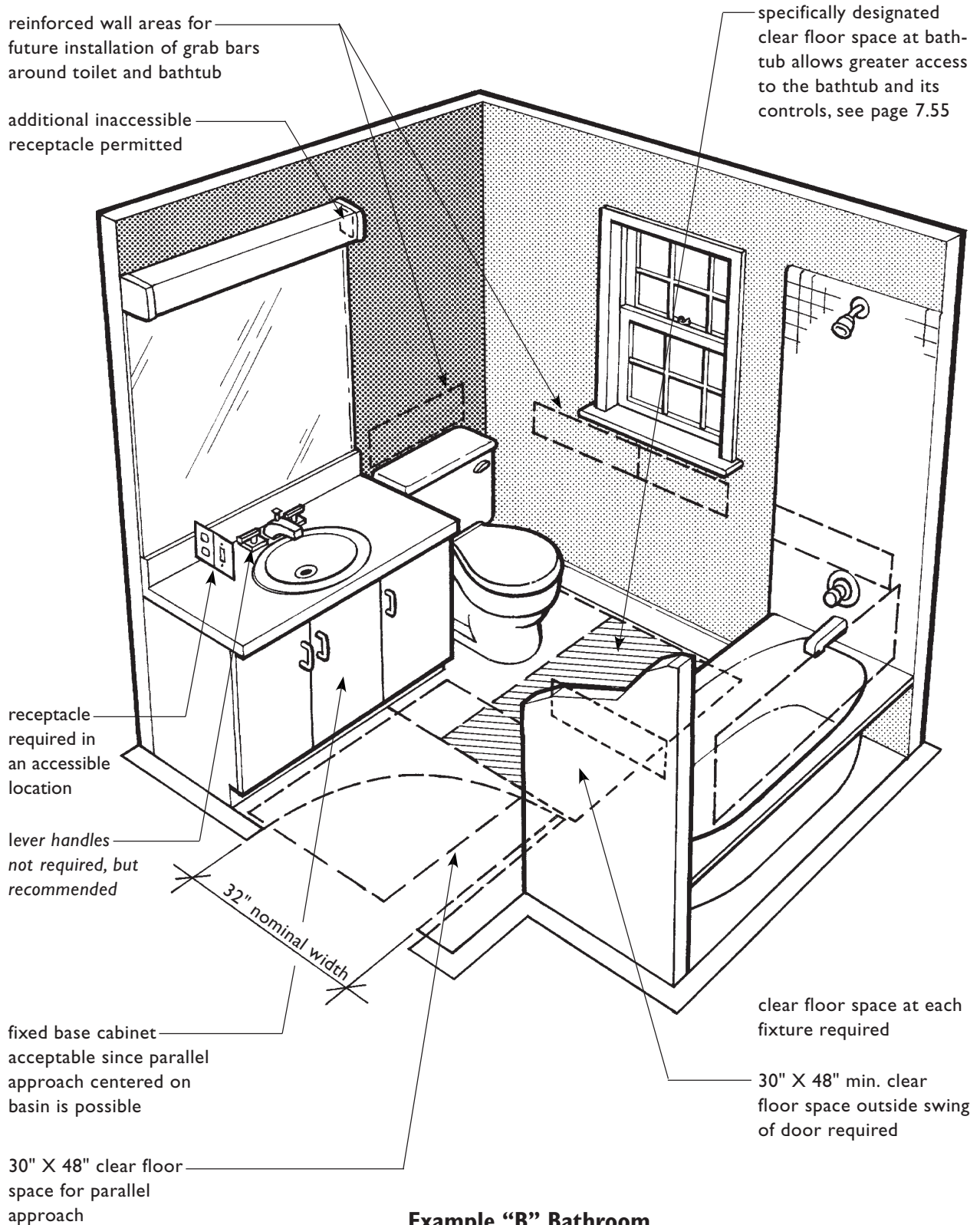
Exception

When the powder room is the only toilet facility on the entry level of a multi-story unit in a building with one or more elevators, it must, in addition to Requirements 3, 4, and 5, **meet the reinforcing specifications of Requirement 6 and the maneuvering and clear floor specifications of Requirement 7.**



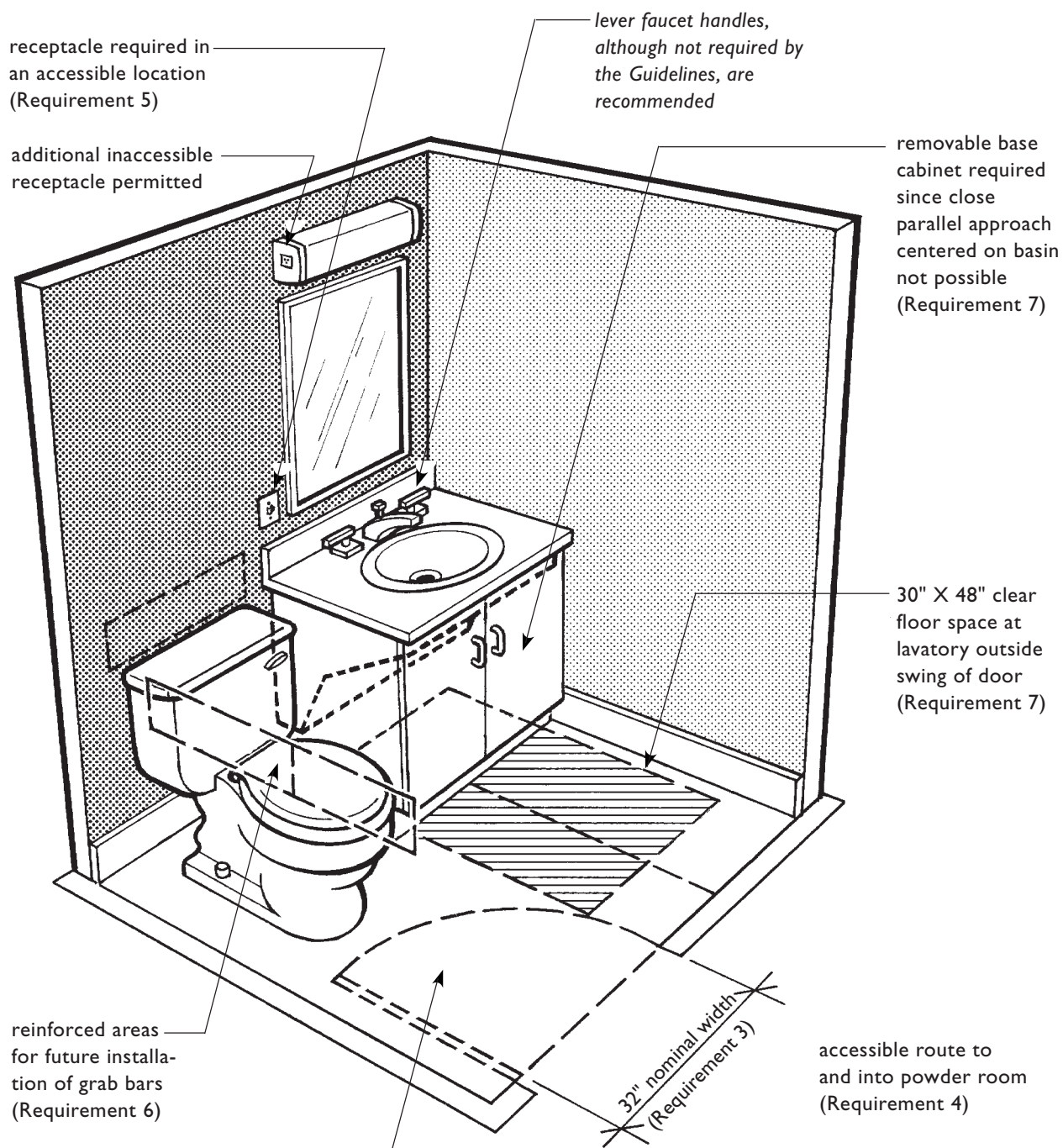
Example "A" Bathroom
 9'-4" X 5'-2"
 (See plan page 7.66)

Notes in italic type are recommendations only and are not required by the Guidelines.



Example "B" Bathroom
Greater Access to Bathtub
6'-10" X 7'-9"
(Similar to Plan on Page 7.67)

Notes in italic type are recommendations only and are not required by the Guidelines.



reinforced areas for future installation of grab bars (Requirement 6)

48" X 66" clear floor space at toilet (Requirement 7)

Usable Powder Room
 5'-6" X 5'-8"
 (See Plan Page 7.81)

accessible route to and into powder room (Requirement 4)

Notes in italic type are recommendations only and are not required by the Guidelines.

Powder Room in Single-Story Dwelling Unit Must Meet Only Requirements 3, 4, and 5

Powder Room Must Meet Requirements 3, 4, 5, 6, and 7 When It Is the Only Toilet Facility on the Entry Level of a Multistory Unit in a Building with One or More Elevators

MANEUVERING SPACE IN BATHROOMS

The Guidelines offer two different wordings for the maneuvering space requirements for bathrooms complying with Specification A and Specification B. When applied, the requirements yield almost identical results. Neither Specification requires that the space for a five-foot circular turn or a T-turn (see page 19) be available so a user in a wheelchair would have the space necessary to turn around in the bathroom. However, there are very specific clear floor space requirements that have been adapted from the ANSI A117.1 - 1986 Standard to make it possible for many people with mobility disabilities to be able to use bathrooms designed to meet the requirements of the Guidelines.

When the maneuvering space requirements of both Specification A and B are analyzed carefully, the primary difference is that a clear floor space must be provided adjacent to the foot of the tub in Specification B bathrooms to increase access to the bathtub and the bathtub controls. To assist the reader in understanding the other differences in the two specifications, this manual will describe in detail bathroom elements and features as required by the Guidelines.

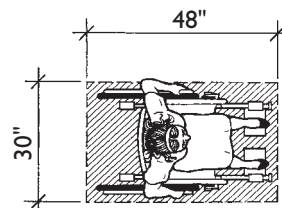
BOTH SPECIFICATION A AND SPECIFICATION B BATHROOMS REQUIRE THE FOLLOWING:

1. A 30-inch x 48-inch clear floor space outside the swing of the door as it is closed. In bathrooms where the door swings out of the room all the clear floor spaces at fixtures still must be provided. In addition, the user must be able to reopen the door to exit.

2. Usable bathroom fixtures. Making bathroom fixtures usable in both Specification A and B

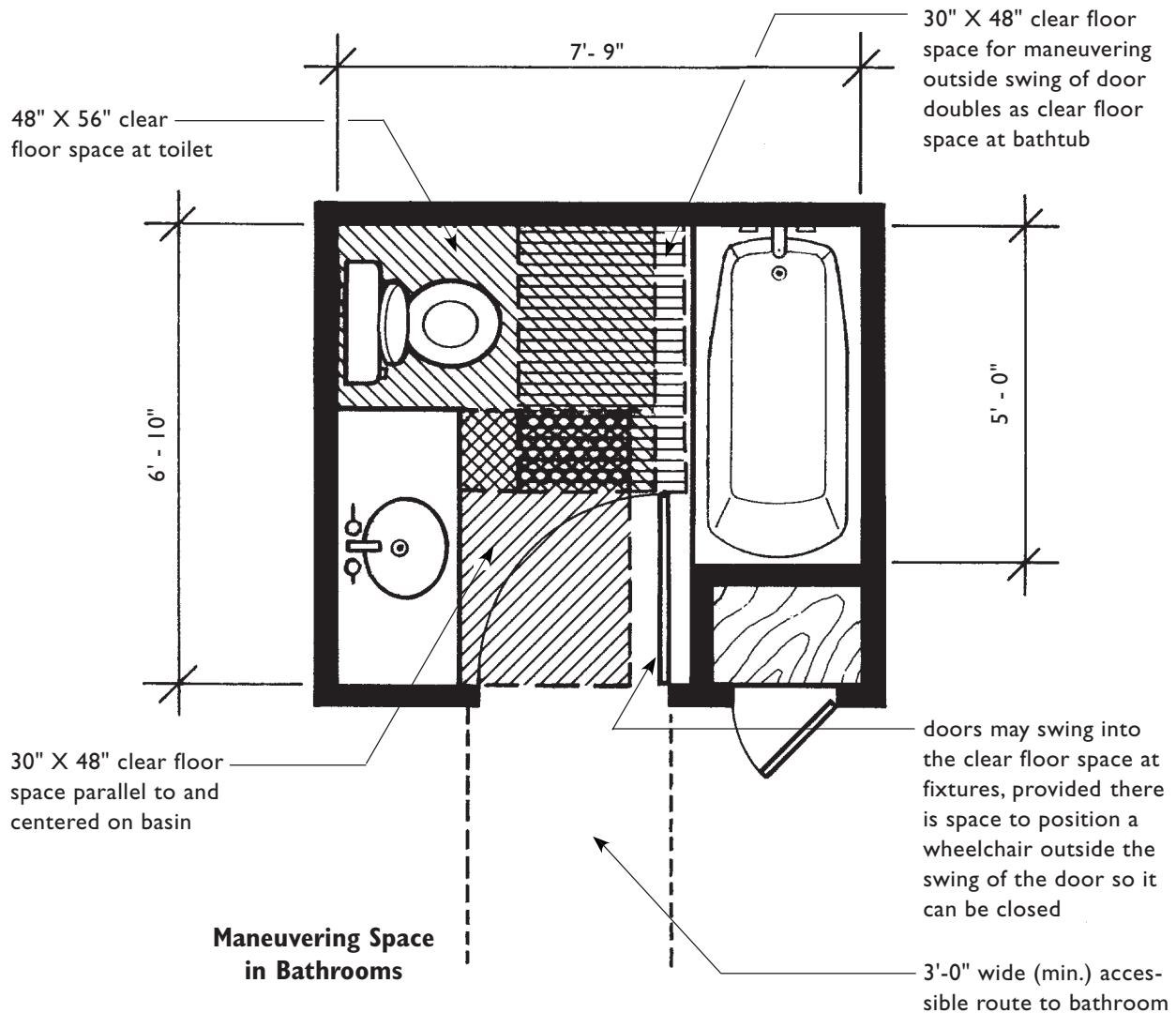
bathrooms involves providing certain clear floor space dimensions at each fixture and meeting certain requirements for the shower if the shower is the only bathing facility in the covered dwelling unit. In addition, Specification B sets additional requirements for bathroom fixtures such as providing clear floor space at the bathtub in a manner that allows greater access to the bathtub and meeting certain specifications on the installation of vanities and lavatories.

The maneuvering space necessary for usable bathrooms is thus made up of the combination of the designated clear floor spaces at fixtures and the presence of clear floor space outside the swing of the door. Clear floor spaces may overlap each other and the maneuvering space also may include knee or toe space under lavatories or toilet bowls. See the illustration at the top of page 7.40.



**Minimum Clear Floor Space
for Person Using a Wheelchair**

The Guidelines contain no requirements for location or type of controls except in Specification B bathrooms, the controls must be located at the foot of the tub. There generally are no fixture specifications, except size of showers when they are the only bathing fixture in the unit and when knee space must be provided under lavatories. If the bathroom has sufficient space to allow a parallel approach centered on the lavatory, then standard base cabinets may be used below a lavatory. If not, a removable vanity cabinet is required so necessary knee space for a forward approach is available at the lavatory.



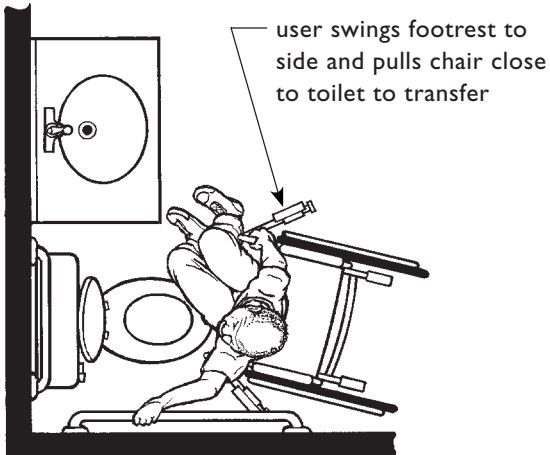
CLEAR FLOOR SPACE AT TOILET FIXTURES

The clear floor space at toilets varies in size and is larger than the clear floor space for wheelchairs shown at other fixtures. Different amounts of clear floor space must be maintained around a toilet fixture depending upon the direction of approach, either front or side, to allow ease of use by persons using wheelchairs.

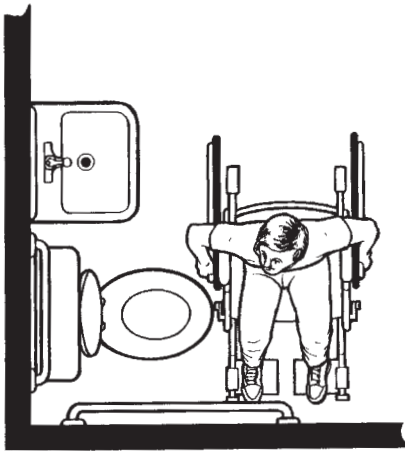
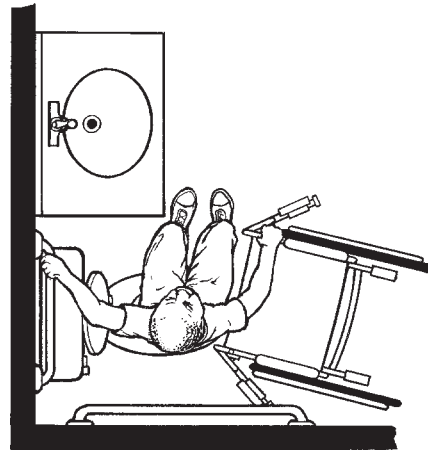
Many people who use wheelchairs are unable to stand while transferring from a wheelchair to the toilet. Some people can transfer to and from the toilet from only one side. Others can

complete right, left, or front transfers. The technique used depends on which approach is most familiar, easiest, and safest to complete.

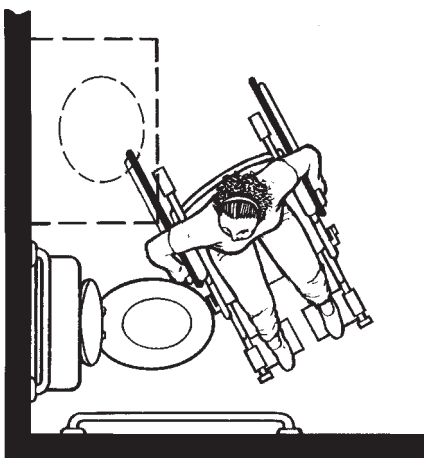
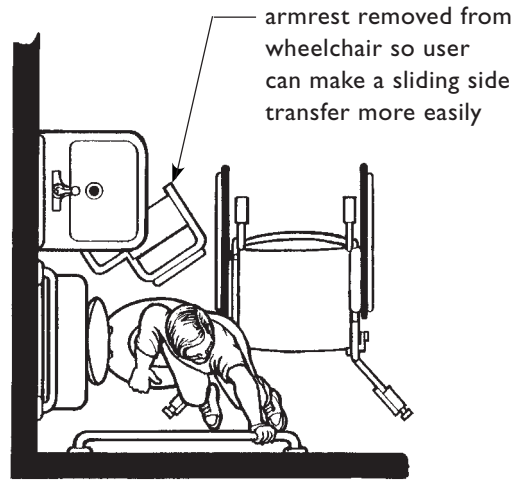
The unobstructed clear floor space required by the Guidelines allows a wheelchair user to approach the toilet and transfer onto the fixture using a variety of independent and assisted transfer techniques. The transfer techniques most commonly used are the forward, perpendicular, diagonal, reverse diagonal, and parallel. Whenever possible, it is best to position the toilet to allow forward, perpendicular, and diagonal approaches.



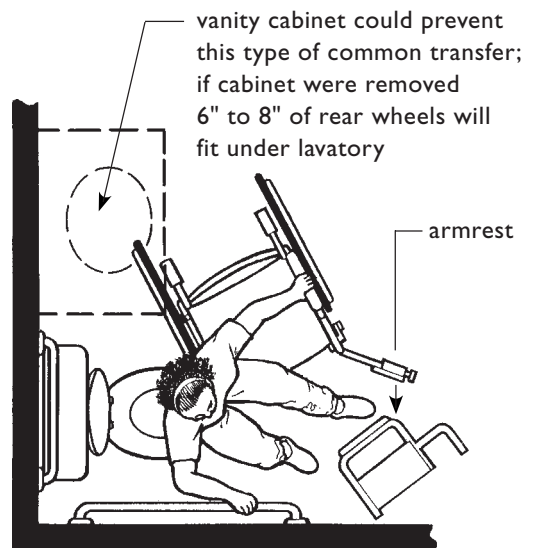
**Forward Approach
(Front Transfer)**

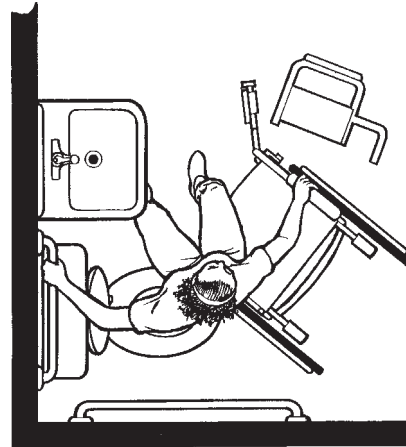
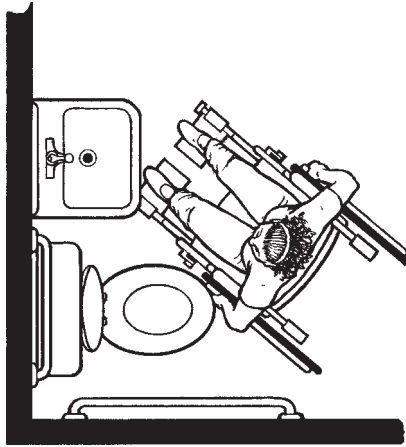


**Perpendicular Approach
(Side Transfer)**

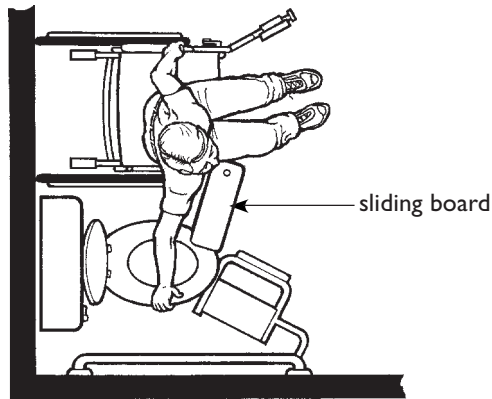


**Diagonal Approach
(Probably Most Frequently Used Unassisted Transfer Technique)**

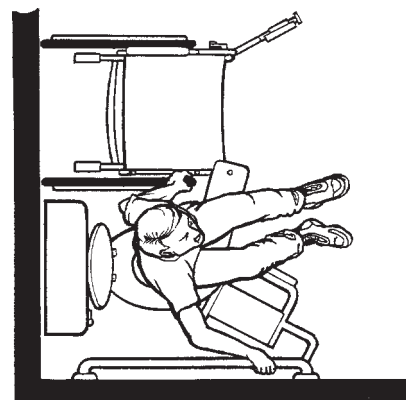




**Reverse Diagonal Approach
(Diagonal Transfer)**



**Parallel Approach
(Side Transfer Using Sliding Board)**



ONE OF THREE CLEAR FLOOR SPACES REQUIRED IN BOTH A AND B BATHROOMS

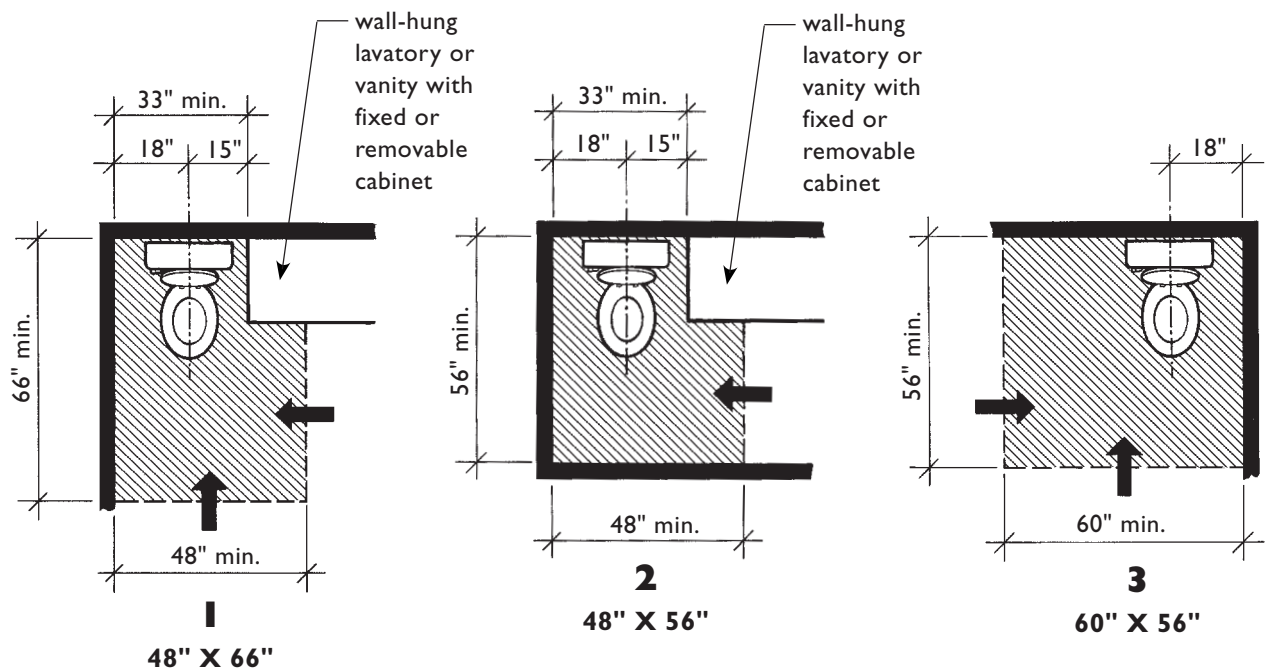
When planning both Specification A and B bathrooms, one of the following three clear floor spaces must be provided at toilets to allow people using wheelchairs and walkers to maneuver, approach the seat, and make a safe transfer onto the toilet. The clear floor space dimensions are to be applied or superimposed over a plan during the design process to determine if space requirements at toilets are being met.

In the plans shown below to illustrate the clear floor space options at toilets, the arrows pointing in toward the clear floor space are indicating the direction of approach to the toilet by a person using a wheelchair. In plans one and two, the incomplete box at the right of the toilet may be

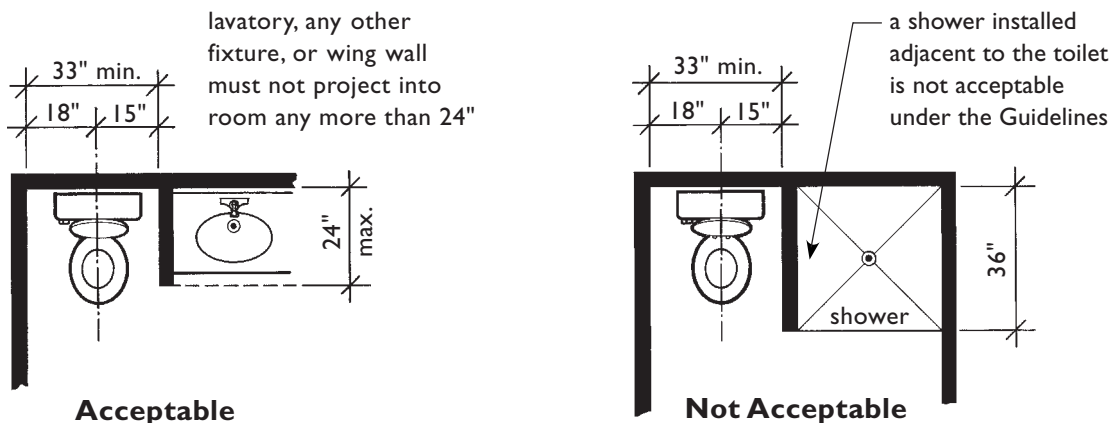
either a wall-hung lavatory or a countertop lavatory. Depending upon the placement of the other bathroom fixtures and the clearances in that room, any vanity cabinet may be fixed or may be required to be removable.

The Guidelines allow a countertop lavatory, with either a removable or fixed base cabinet, to be a maximum depth of 24 inches. A wing or privacy wall also may overlap the clear floor space; however, it, too, is restricted to a length of 24 inches and must be at least 33 inches from the opposite wall. In a compartmented bathroom, the 33-inch dimension would have to be increased. See the example on page 7.71.

In terms of accessibility or usability of the toilet, from left to right, diagram number one offers a middle level of usability, number two offers the lowest level, and number three, the highest.



Clear Floor Space at Toilets
(One of the Three Must be Provided in "A" and "B" Bathrooms)



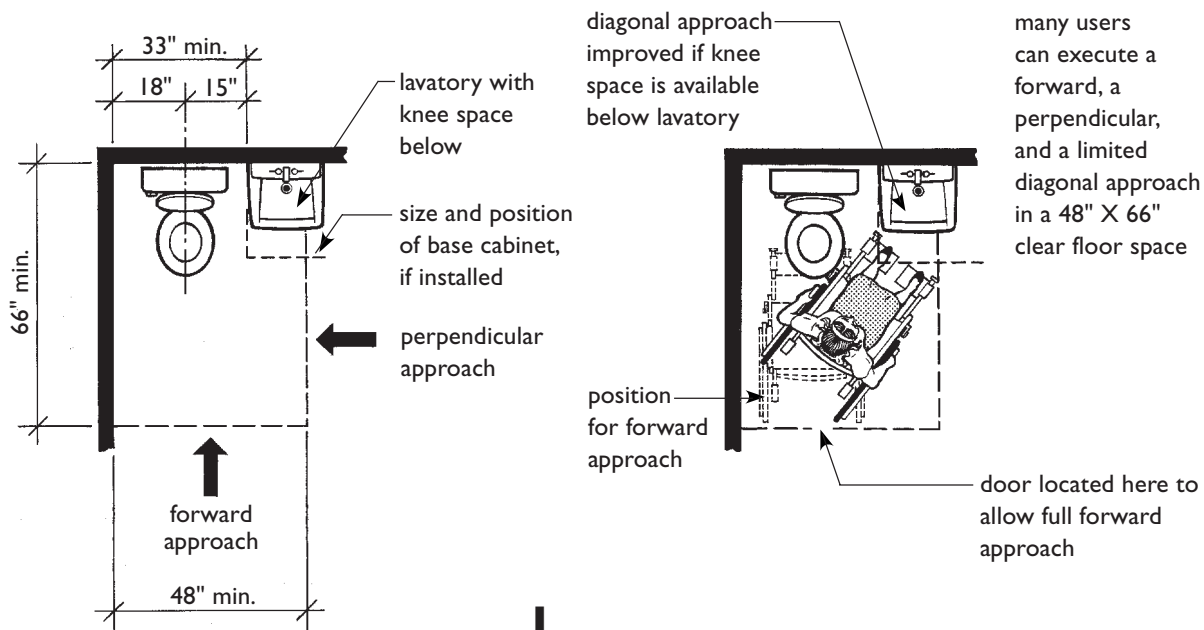
Some Features May Overlap Clear Floor Space at Toilet

**48-INCH X 66-INCH
CLEAR FLOOR SPACE**

To provide space for a forward approach when a lavatory is adjacent to the toilet, the clear floor space must be a minimum of 66 inches long. The door is located opposite the toilet to provide the maneuvering space necessary to execute a forward approach to the toilet (see bottom right illustration).

The user may slide the wheelchair footrests under the toilet bowl or will swing them to either

side of the toilet to pull in closer to the bowl to execute a front transfer. The space for a perpendicular approach is actually wider than in clear floor space number two. An added benefit of the 48-inch x 66-inch clear floor space is that a limited version of the commonly used diagonal approach to the toilet also is possible.



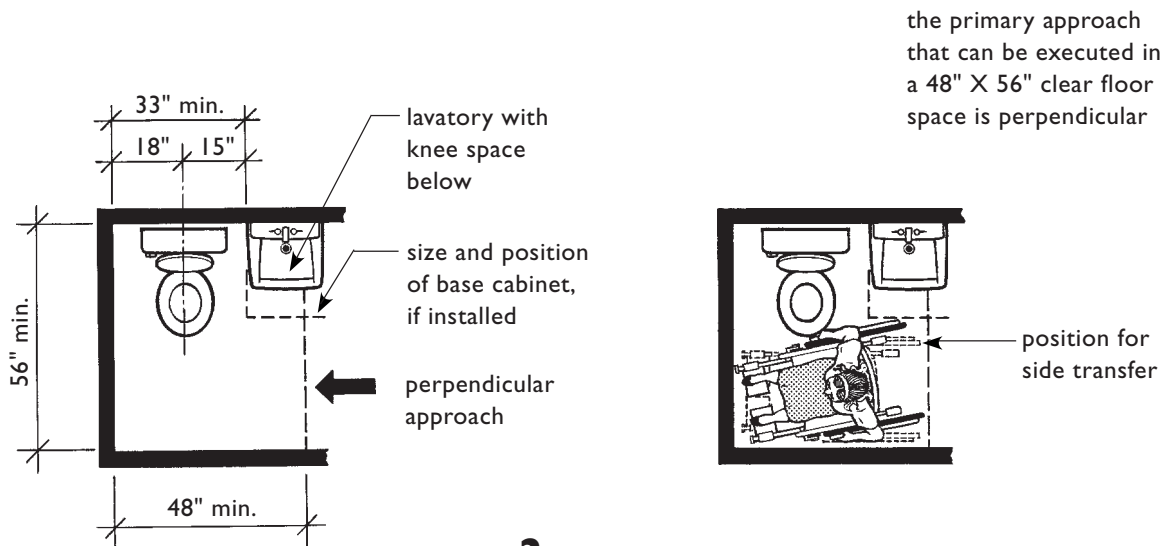
**48" X 66" Clear Floor Space
(with Overlapping Lavatory)**

48-INCH X 56-INCH CLEAR FLOOR SPACE

The 48-inch x 56-inch clear floor space enclosed on three sides is the minimum space in which a person using a wheelchair will be able to get close enough to make a side or perpendicular approach to the toilet. The 48-inch dimension is consistent with the length of the minimum clear floor space for wheelchairs. A person wishing to make a right transfer will approach the toilet head on as shown in the lower right illustration, or depending upon preference, the user may wish to back into the clear floor space to execute a left transfer.

The 56-inch dimension may allow some users to angle their wheelchair slightly to execute a

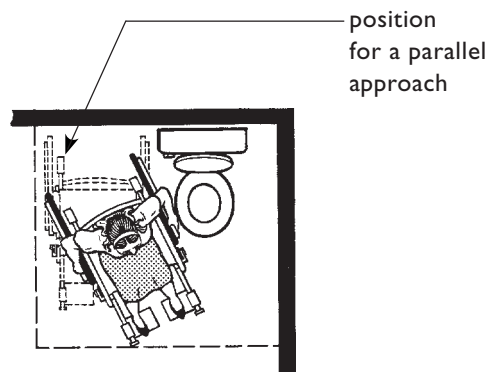
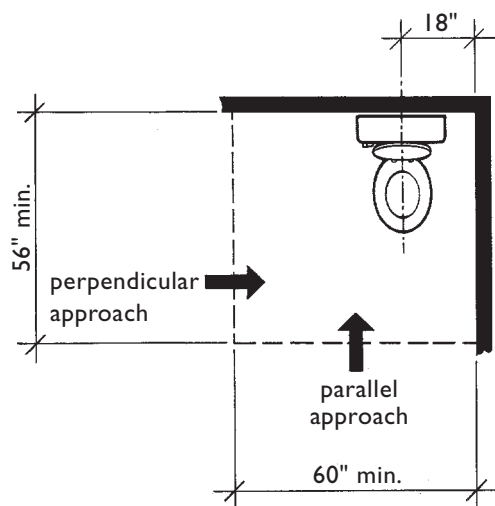
safer transfer onto the toilet. This angled position is improved if the lavatory is open below. The Guidelines do not require that this additional maneuvering space be provided for access to toilets, but it can be accomplished with the installation of a lavatory with a removable base cabinet. As much as six to nine inches of the large wheels on a manual wheelchair (somewhat less for power wheelchairs) can be positioned under the lavatory. Removable base cabinets are required in other situations and will be discussed in the next section on “Clear Floor Space at Lavatories.” See page 7.47.



2
48" X 56" Clear Floor Space
(with Overlapping Lavatory)

60-INCH X 56-INCH CLEAR FLOOR SPACE

This clear floor space, minus the lavatory, is the same length as at toilet clear floor space number two, but its width is increased by 12 inches. Its shape and size permit a large variety of transfer positions to be assumed by someone using a wheelchair or scooter, including parallel, perpendicular, and diagonal approaches. However, a forward approach as shown at clear floor space number one is not possible unless the depth of this space is increased to 66 inches. The 60-inch x 56-inch clear floor space has added value in that it has sufficient space so someone could assist a person using a wheelchair in making a transfer.



many users can execute a parallel, a perpendicular, and a diagonal approach in a 60" X 56" clear floor space

3
60" X 56" Clear Floor Space
 (with No Overlapping Elements)

CLEAR FLOOR SPACE AT LAVATORIES

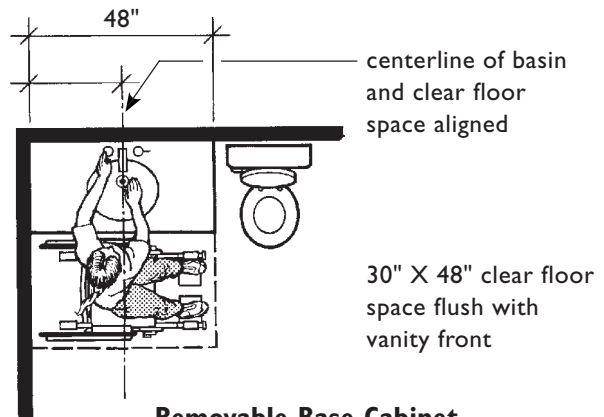
A 30-inch x 48-inch clear floor space is required at the lavatory so a person who uses a wheelchair or scooter can get close enough to the basin and controls to use the fixture. When knee space is not provided for a forward approach, this 30-inch x 48-inch clear floor space must be parallel to the cabinet or counter front and centered on the basin.

Either a countertop lavatory with a vanity cabinet or a wall-hung lavatory may be installed in Specification A and B bathrooms. There are no specifications for control location or type nor for drain location. The lavatory type and width, plus the available maneuvering space in the room, determines whether or not a vanity cabinet must be removable.

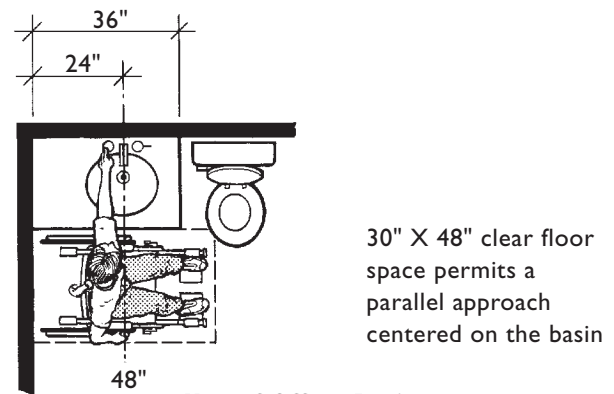
To economize on floor space the basin may be offset so the length of the countertop may be less than 48 inches. In 36-inch wide countertops, the basin may be offset provided it remains centered on the required 48-inch long clear floor space.

If a lavatory must be installed where space does not permit a close parallel approach with the 30-inch x 48-inch clear floor space centered on the basin, the centerline of the basin must be at least 15 inches from an adjoining wall or fixture. It must have knee space at least 30 inches wide to allow a user to execute a forward approach into clear floor space beneath the fixture.

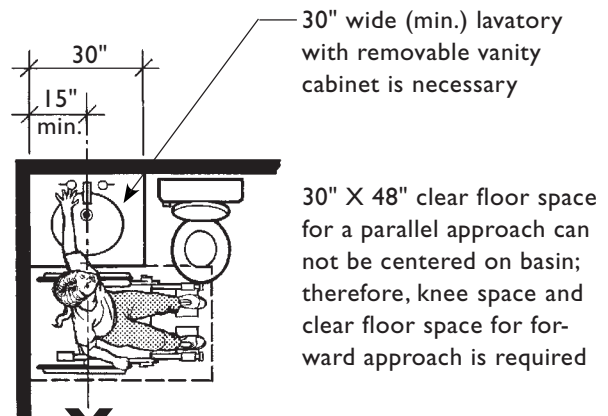
Knee space must be provided below narrow lavatories lacking this parallel and centered approach, because, if not, the user must make an awkward and often impossible, painful twisting motion over the side of the wheelchair to reach the faucet handle that is positioned somewhat behind one shoulder. In addition, it is difficult from this position to wash both hands, lean over the basin to clean teeth, etc. Information on removable base cabinets and knee space is given on page 7.49.



**Removable Base Cabinet
Not Required Because Clear Floor Space
Centered on Basin
(Applicable in A and B Bathrooms)**



**Use of Offset Basin
to Reduce Lavatory Length
(Applicable in A and B Bathrooms)**



**X Not Acceptable for Parallel Approach
Removable Base Cabinet Must Be Provided
Because Clear Floor Space Can Not Be Centered
(Required in A and B Bathrooms)**

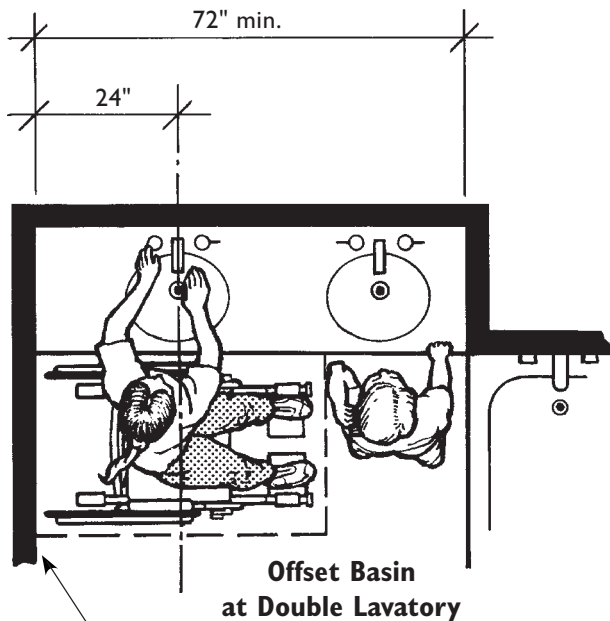
Double Basin and Pedestal Lavatories

It is also possible to install double basin lavatories and pedestal lavatories so they meet the requirements of the Guidelines. Countertops for double basin lavatories vary in length and may be as short as 60 inches.

Where two basins are planned for installation in a 60-inch long countertop, and especially where obstructions such as a wall and bathtub (as shown in the illustration at right) enclose the available maneuvering space, a forward approach with a removable vanity cabinet should be used. However, in this illustration the countertop is 72 inches long and the person using a wheelchair can be parallel and centered on the basin.

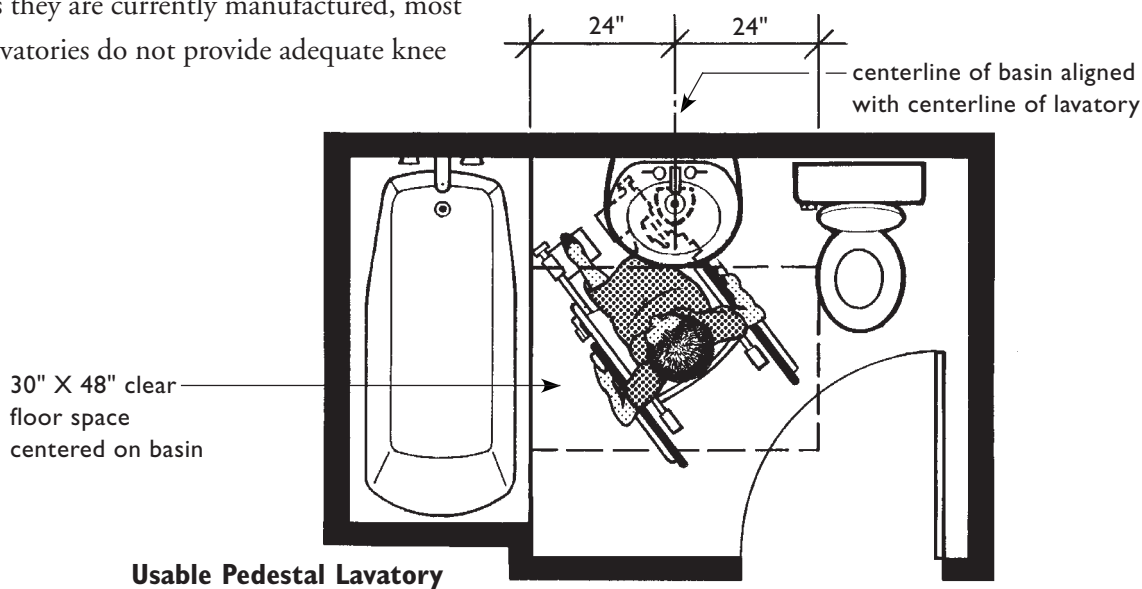
Pedestal lavatories are manufactured with a variety of pedestal widths and depths. They can be installed in bathrooms covered by the Guidelines, provided a parallel approach centered on the basin can be made. Giving the appearance of having knee space, unlike a removable base cabinet where the knee space can be constructed to specific design parameters, pedestal lavatories have no removable element.

As they are currently manufactured, most pedestal lavatories do not provide adequate knee



Offset Basin at Double Lavatory
 if this wall were not located here and more floor area were available behind the user, the basin may not be required to be offset or the counter as long

space to allow a user to make a head-on or forward approach. If pedestal lavatories are installed with the 30-inch x 48-inch clear floor space centered on the basin, a user may execute a variety of approaches. Angled approaches are possible provided adjacent fixtures do not interfere.



Usable Pedestal Lavatory

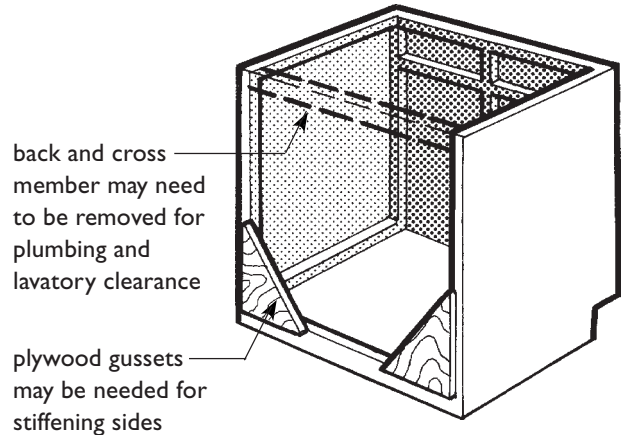
Removable Vanity Cabinets

Knee spaces are particularly important in bathrooms that are small and have limited maneuvering space. It is especially critical where a close parallel and centered approach cannot be provided at the lavatory basin. When knee space is necessary for a bathroom to be usable, that space must be provided at the time of initial construction. However, it may be concealed by a vanity cabinet that, when removed, will expose knee space. When the cabinet is in place a more common appearance is maintained and storage is provided. As in kitchens, finishes on the floor and walls in the knee space must be installed during initial construction so no additional finish work is required when the vanity cabinet is removed.

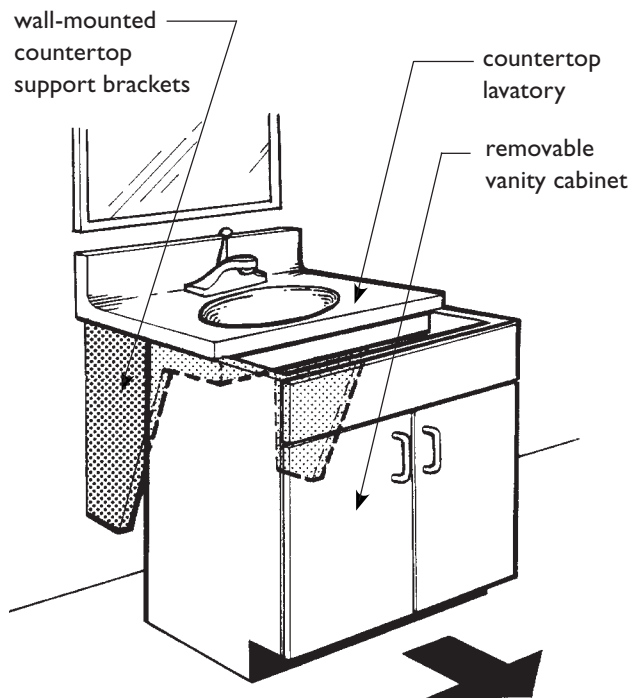
When a removable vanity cabinet is installed, the countertop and lavatory can be supported by wall-mounted brackets that fit inside the cabinet. These brackets are hidden when the base cabinet is in place; once the cabinet is removed, the brackets are exposed.

Unfortunately, removable vanity cabinets are not yet part of manufacturers off-the-shelf product lines. With growing demand, some of the commercial manufacturers are beginning to produce prototypes that should result, in the near future, in mass marketed lavatories with removable base cabinets.

Standard vanity cabinets may be modified and used as removable cabinets. The cabinet back or back supports may need to be cut down to clear the support system and to provide clearance for water lines, valves, and drain pipes. If the back of the cabinet is removed or significantly modified, the sides may have to be reinforced.



Standard Base Cabinet Modified to Be Removable



Removing Vanity Cabinet to Expose Knee Space

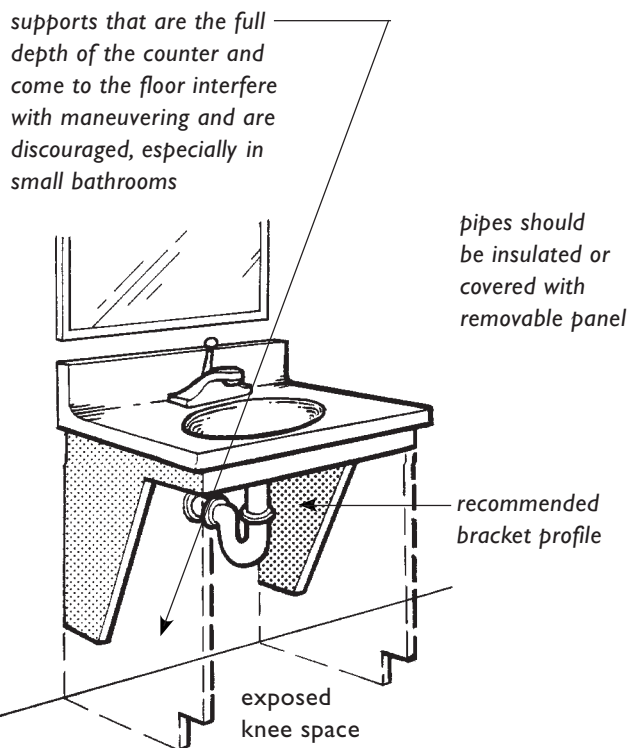
Any brackets used to support countertop lavatories should not interfere with maneuvering space within the bathroom; this is especially critical in small bathrooms where maneuvering space is at a minimum. The angled bracket shown in this series of illustrations is held away from the floor and is based on the ANSI knee space requirements. Use of a similarly designed bracket is strongly recommended.

Supports that are the full depth of the counter that go to the floor are discouraged at narrow lavatories but are acceptable for wider lavatories where it is assumed that more floor area will be available for maneuvering. Where supports extend to the floor, at least 30 inches must be provided between them to allow maneuvering space for a forward approach to the lavatory. This may require that some vanity cabinets be wider than 30 inches, so when the cabinet is removed and the concealed supports are exposed, 30 inches is provided between them.

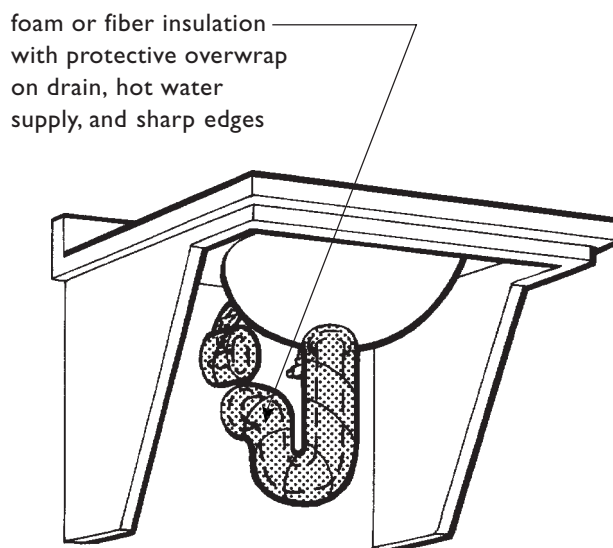
Pipe Protection at Knee Space

Plumbing below the lavatory should be covered to prevent burns and abrasions. This can be done by using removable insulation to cover the hot water pipe and the drain, or by adding a fixed, one-piece cover.

The most economical method of providing protection from hot pipes and sharp surfaces is to wrap them with insulation. Although this solution is effective, it is often difficult to maintain the insulation; it may be removed when repairs are made and either is difficult to rewrap due to loss of adhesion or is not replaced at all.



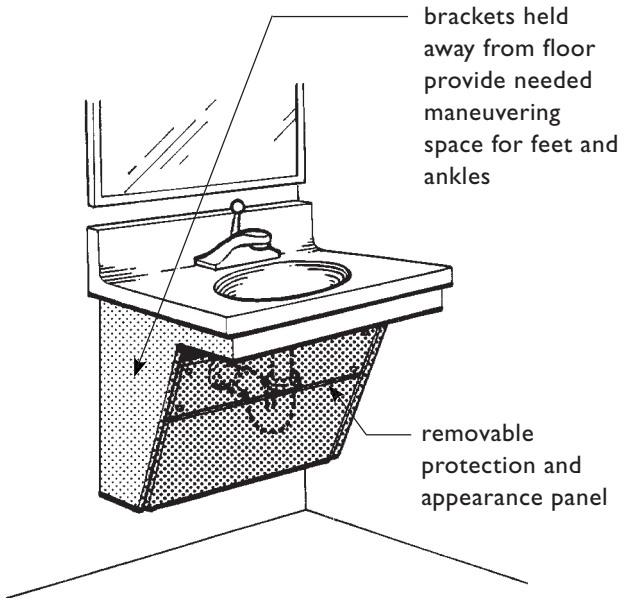
Exposed Knee Space Under Bracket-Supported Countertop Lavatory



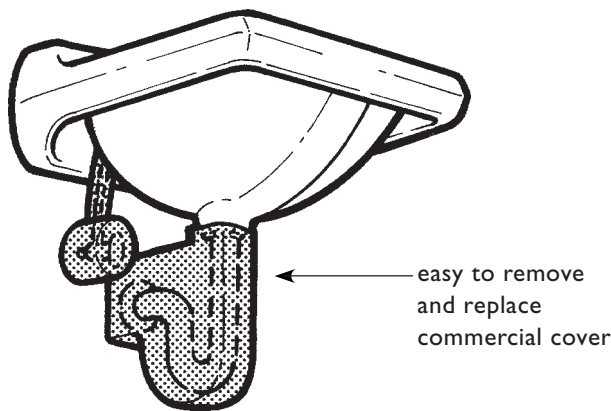
Lavatory with Removable Insulation Pipe Protection

A reasonably priced aesthetic and functional improvement is possible with the installation of a commercially available or custom-made pipe cover. These pipe covers should be designed and installed so they are easy to remove and replace when the drain trap or valves need repair.

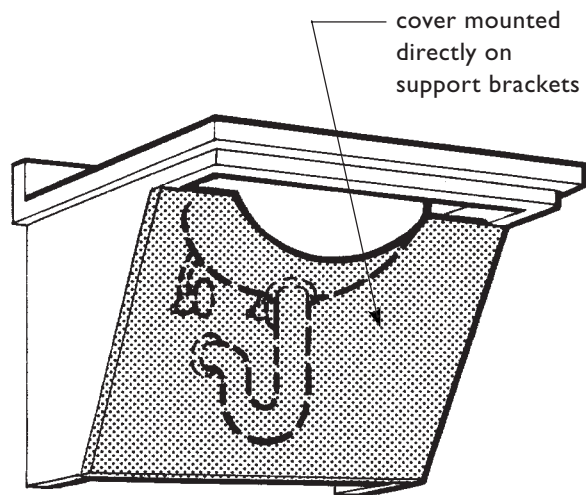
For countertop lavatories, an appearance and protection panel that covers the water pipes and drain can be mounted directly to the support brackets. Such a panel can be removed easily to service pipes, and unlike wrapped insulation, retains a more aesthetically pleasing appearance. It is recommended that the insulation or protection be installed at the time of construction. The shape of the knee space influences the design of any pipe protection method and is considered in the next section.



Countertop Lavatory with Wall Brackets and Appearance and Protection Panel



Lavatory with Removable Cover for Pipe Protection



Preferred Appearance and Protection Panel

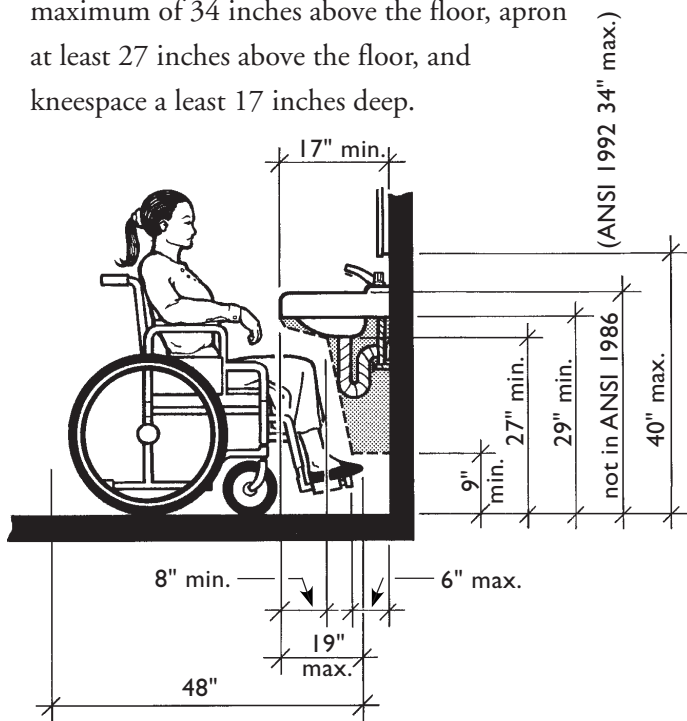
Knee Space Design

Knee space dimensions are specifically delineated in the Guidelines for lavatories in Specification B bathrooms. However, in Specification A bathrooms, “if parallel approach is not possible within the space, any cabinets provided would have to be removable to afford the necessary knee clearance for forward approach.” [Guidelines Requirement 7 (2) (a) Note]

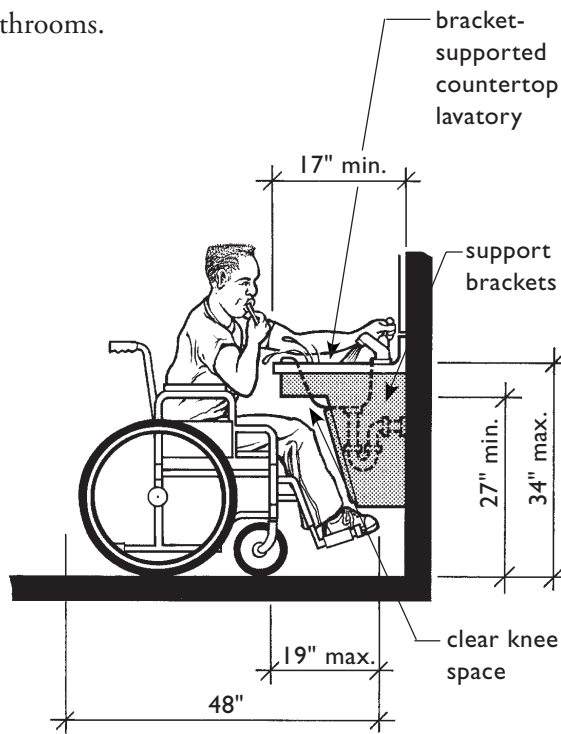
In Specification A bathrooms, knee space must be at least 17 inches deep, but only 19 of the 48 inches of clear floor space required for the perpendicular approach may extend under the lavatory. While the Guidelines do not provide further specifications for knee space, it is recommended that ANSI A117.1 be followed. The specific requirements given in the Guidelines for knee space in Specification B Bathrooms include: centerline of the fixture at least 15 inches from an adjoining wall or fixture, top of fixture rim a maximum of 34 inches above the floor, apron at least 27 inches above the floor, and kneespace a least 17 inches deep.

In both ANSI and the Specification B bathroom requirements, only 19 inches of the 30-inch x 48-inch clear floor space may extend under a lavatory. Seventeen inches is the minimum depth allowed for either a wall-hung or a countertop lavatory. This ensures that the basin extends sufficiently so a wheelchair user’s feet do not strike the wall on which the fixture is mounted before his or her torso is close enough to the front of the lavatory to be able to reach the controls and use the basin.

The dimensions given in the Guidelines for Specification B bathrooms are consistent with those found in the ANSI Standard. They do not completely define the shape of the knee space, and it is recommended that builders/developers follow the ANSI Standard when knee space must be provided in either Specification A or Specification B bathrooms.



**ANSI 1986 Requirements at Knee Space
(Guidance for Knee Space in A Bathrooms)**



**Knee Space at Lavatories that Meets the
Requirements for B Bathrooms**

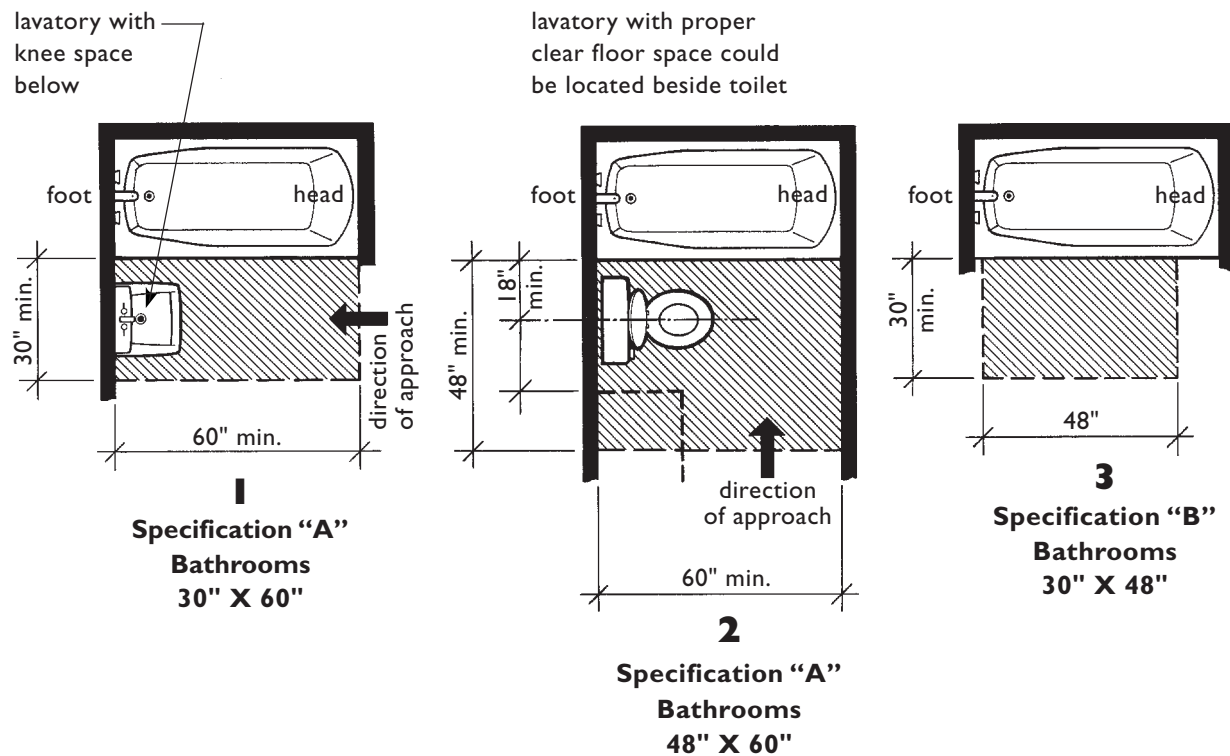
**CLEAR FLOOR SPACE
AT BATHTUBS/SHOWERS**

The following discussion of bathtubs focuses on bathing fixtures that are a combination of bathtub and shower. It does not cover showers that are separate bathing fixtures; these will be addressed starting on page 7.56.

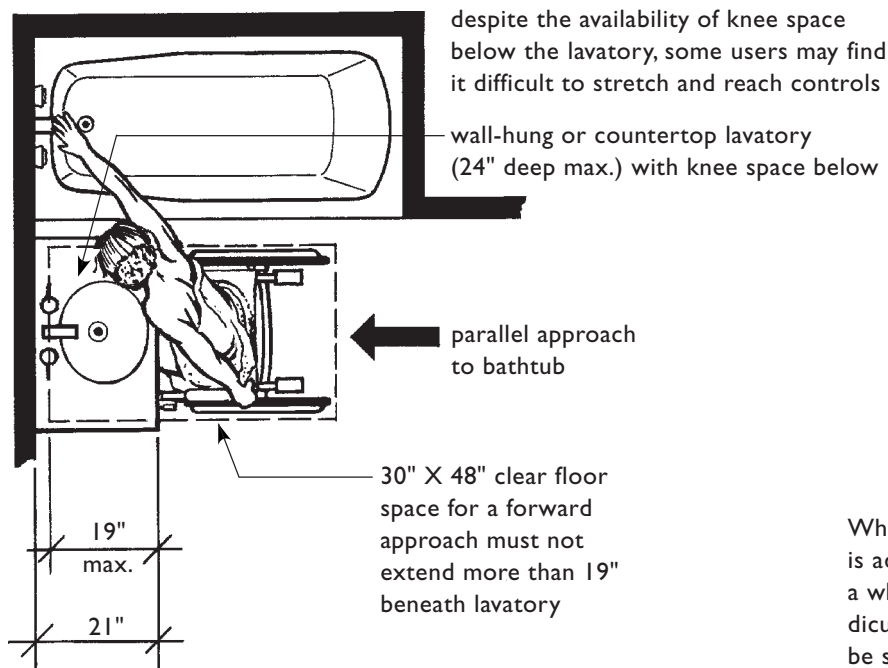
The Guidelines require that one of three different clear floor spaces be provided at bathtubs so people who use wheelchairs or scooters can get close enough to execute transfers into and out of bathtubs. The diagrams below, taken from the Guidelines, show the clear floor space requirements for bathtubs; numbers one and two apply to Specification A bathrooms and number three to Specification B bathrooms.

In all three clear floor spaces, the shaded areas must remain clear, except that in clear floor space diagram number 2, a lavatory that meets all applicable clear floor space requirements for lavatories may be located next to the toilet. In Specification A bathrooms, either a lavatory or a toilet may encroach upon the clear floor space next to the bathtub.

In clear floor space diagram number one, the arrow indicating direction of approach is relevant only if the lavatory is wall-hung and has knee space below. The user pulls forward into the knee space to transfer and/or operate controls, see illustration on the top of the next page.



**Clear Floor Space at Bathtubs/Showers
Shaded Areas Must Remain Unobstructed
(Taken from Guideline Figures 7(b) and 8)**

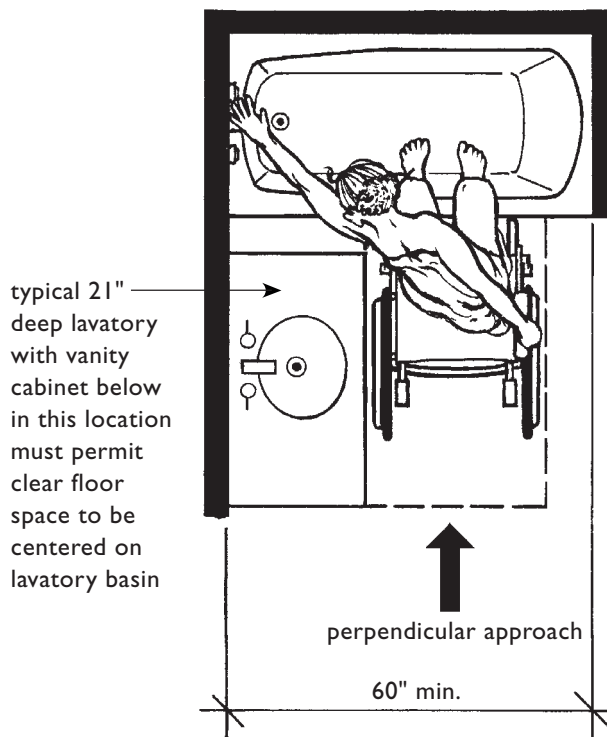


Parallel Approach to Bathtub at Lavatory with Knee Space Permitted in Specification A Bathrooms

If a countertop lavatory with a vanity cabinet is located adjacent to the bathtub, a person using a wheelchair must be able to execute a close parallel approach centered on the basin. If the lavatory does not afford a full parallel approach to the basin, knee space and clear floor space for a forward approach are required, and any cabinets would have to be removable.

When the lavatory with vanity is adjacent to a bathtub, reach to the controls is possible only from a perpendicular approach which may be difficult for some wheelchair users. To improve access to controls, a resident who uses a wheelchair could have a new vanity with knee space installed or have controls repositioned closer to the tub rim.

When a lavatory with vanity cabinet is adjacent to tub, a person using in a wheelchair must make a perpendicular approach to the tub rim to be sufficiently close to operate the controls. The user will have to remove footrests, place feet in tub, and execute a stretch which may be difficult for some people.



Perpendicular Approach to Bathtub at Vanity Cabinet Permitted in Specification A Bathrooms Only

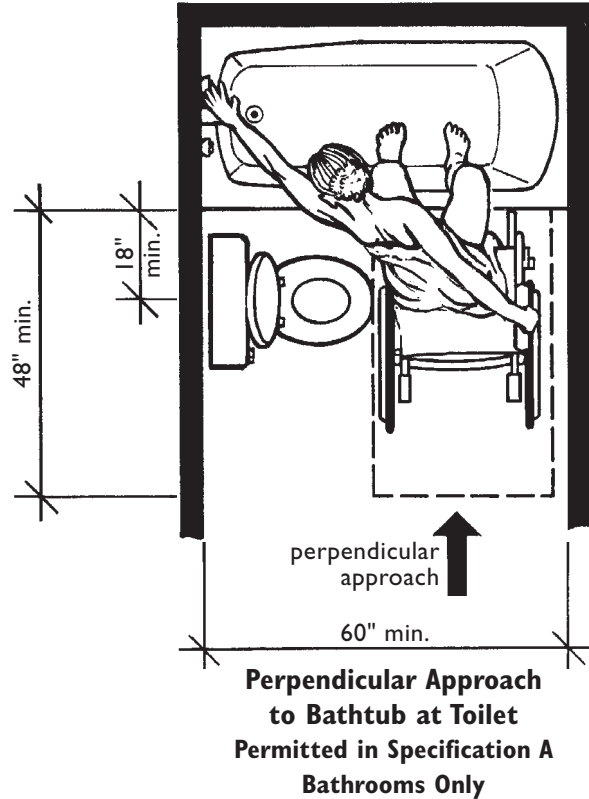
In **Specification A bathrooms**, the Guidelines also allow a toilet to occupy the space next to the bathtub. The approach by a person using a wheelchair is perpendicular to the bathtub. This arrangement of fixtures also makes it difficult to reach the controls, but reach can be improved if users can remove their footrests and position their feet in the tub to get closer to the tub rim.

A second option for some users is to transfer onto the toilet to reach the controls. The user then must transfer back into his or her wheelchair and maneuver to get sufficiently close to the bathtub rim to make a transfer down into the bathtub. Other users may add a bathtub seat that allows them to remain at the height of the tub rim while bathing. Transfers back into a wheelchair may be easier from a tub seat rather than from the floor of the bathtub, but this option does not allow the user to be immersed in water for a soaking bath.

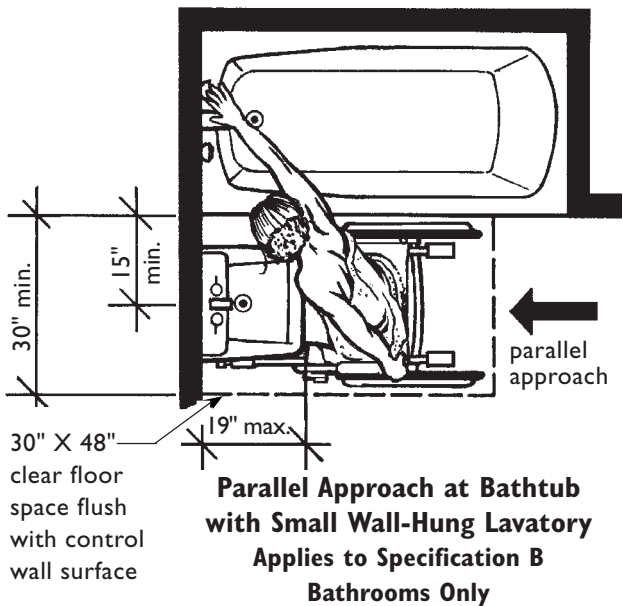
In **Specification B bathrooms**, a 30-inch x 48-inch clear floor space is required adjacent to the bathtub to provide greater access for transferring into and out of the bathtub. The controls must be on the wall at the foot of the bathtub, as shown in the Guidelines' Requirement 7, Figure 8. The edge of the clear floor space should be flush with the control wall surface.

Neither a vanity cabinet nor a toilet may encroach on this clear floor space. However, a wall-hung lavatory with a depth of 17 to 19 inches and with knee space below is the only fixture that may overlap the clear floor space at bathtubs in Specification B bathrooms. A lavatory that is deeper than 19 inches only may be installed if it is recessed into the wall to allow the edge of the 30-inch x 48-inch clear floor space to begin flush with the control wall surface at the foot of the bathtub.

Toilets typically protrude into the room farther than vanity cabinets, making it necessary for a person using a wheelchair to perform, what may be for some people, a difficult stretch to operate tub controls.



The only permissible overlapping element is a 17" to 19" wall-hung lavatory with knee space below.

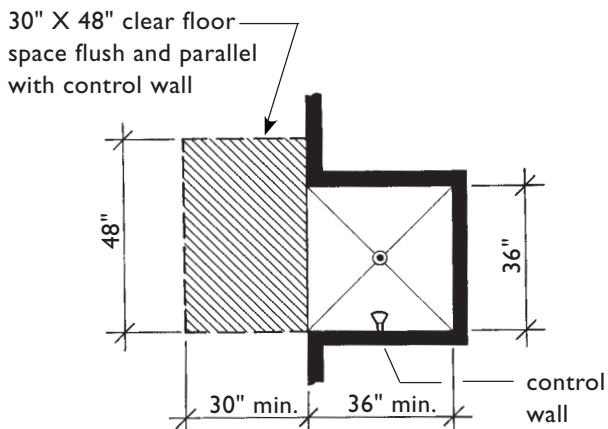


CLEAR FLOOR SPACE AT SHOWERS

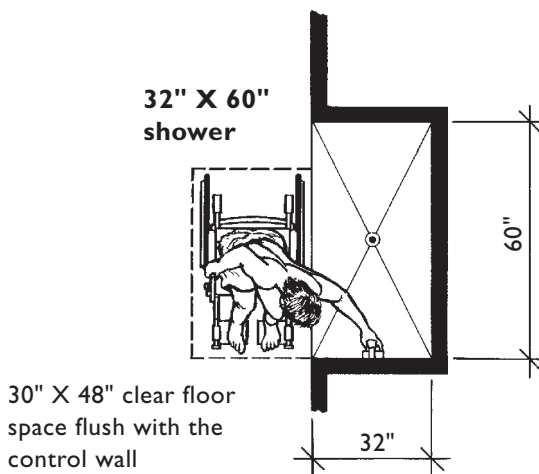
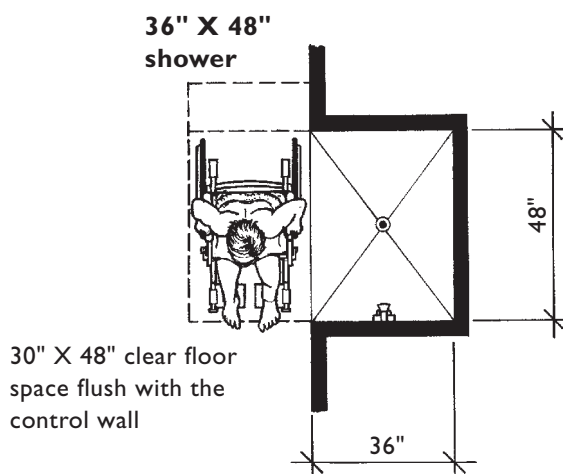
Shower stalls in covered dwelling units may be of any size or configuration and are not limited to the 36-inch x 36-inch stall shown in the diagram on the right, taken from the Guidelines, that illustrates clear floor space requirements for showers. An exception regarding minimum stall size is made when a shower stall is the only bathing fixture in the covered dwelling unit; this is discussed on page 7.58.

A 30-inch x 48-inch clear floor space must be provided at shower stalls, parallel to the fixture and flush with the control wall. In 36-inch x 36-inch showers, the clear floor space must be positioned exactly as shown in the upper right diagram, with 12 inches offset behind the wall opposite the control wall. The Guidelines require this clear floor space beside the shower fixture primarily to ensure that adequate maneuvering space is available outside the stall for a person using a mobility aid to get sufficiently close to enter and exit the stall safely. The 36-inch x 48-inch shower in the center is generally not intended for use with a wall hung bench seat because a user seated on the bench could not reach the controls. However, because some users may elect to add their own seat, an additional 12 inches of clear floor space is, as well as reinforcing for such a seat, recommended (see page 6.13).

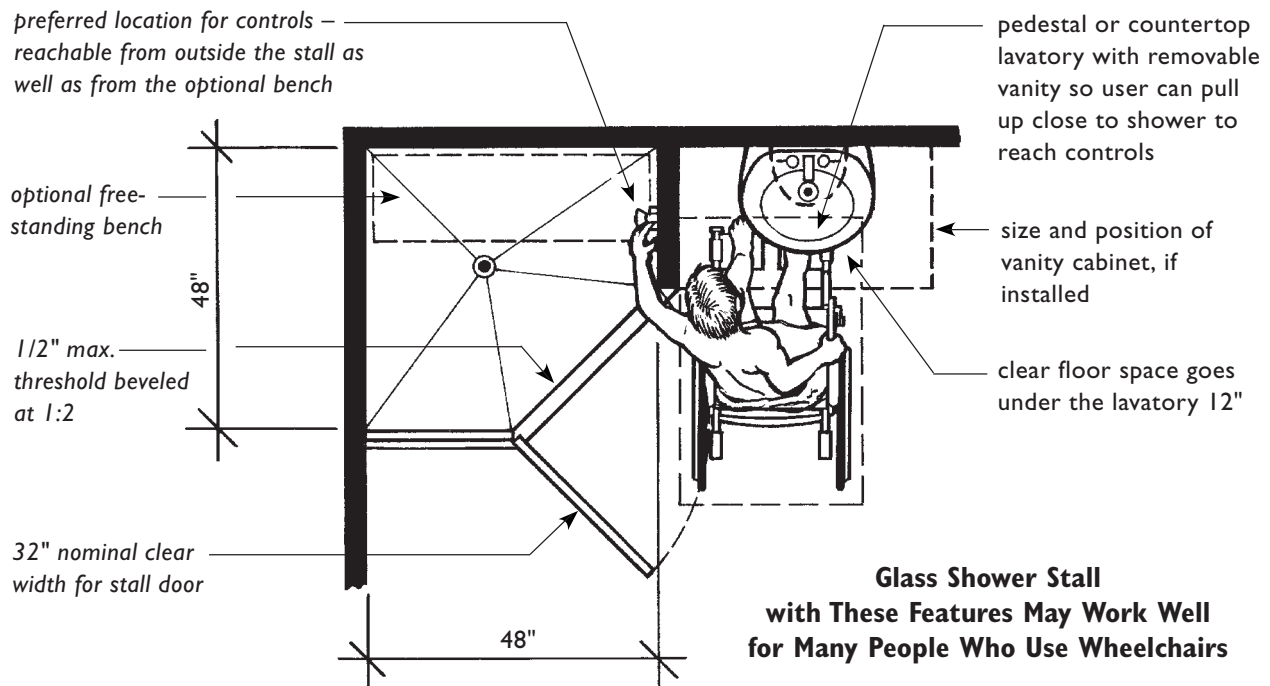
In Specification A bathrooms, where all fixtures must meet the Guidelines, if the room is equipped with both a bathtub and a separate shower, both fixtures must be provided with the required clear floor space. In Specification B bathrooms, only one bathing fixture must be provided with the required clear floor space. All shower stalls must have reinforced walls for later installation of grab bars (see Chapter 6). The Guidelines contain no specifications that limit the curb height, nor do they address control type or location.



Guideline Requirements for Clear Floor Space at Showers

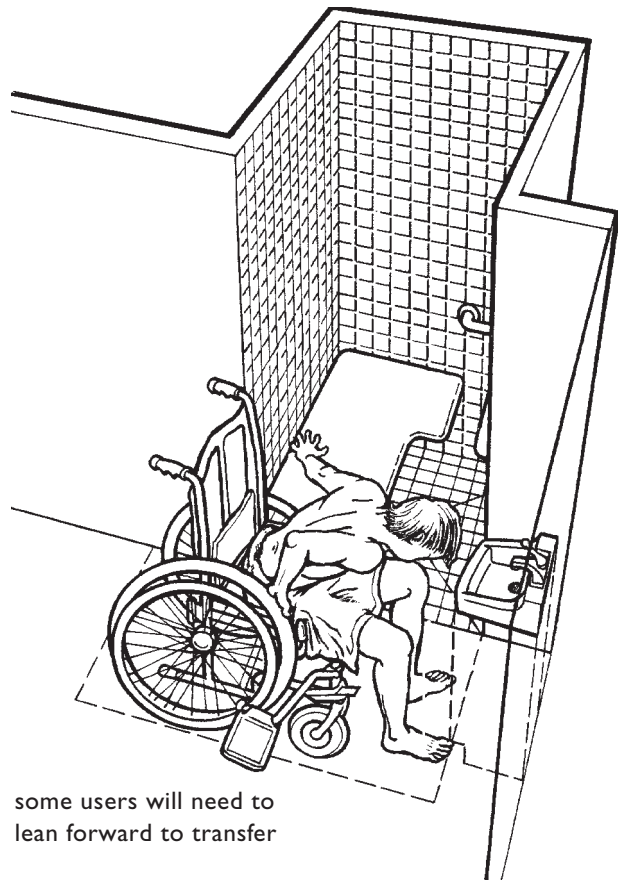


Other Shower Sizes Meet the Requirements of the Guidelines



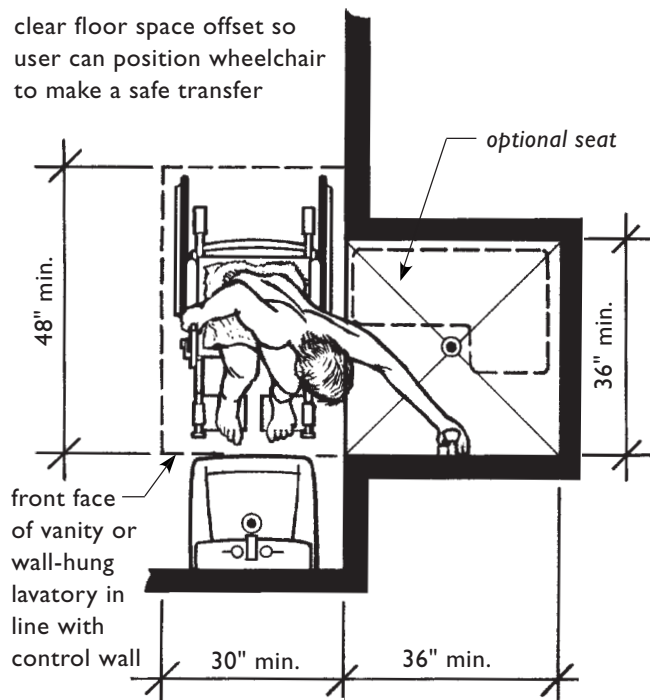
Fixtures that May Overlap Clear Floor Space at Showers

In both Specification A and B bathrooms, **no other fixture may overlap the clear floor space at showers** when the shower is only 36 inches long. However, if the shower is 42 inches long and a lavatory is mounted on the control wall beside the shower, it may overlap the clear floor space by six inches. The portion of the lavatory that overlaps the clear floor space must have knee space below or a removable vanity cabinet. Thirty-six inches of the stall entrance must always remain clear for maneuvering and transfers. These limitations ensure that if a wall-mounted transfer seat or a free-standing shower bench or stool is placed in the shower, sufficient space to make a transfer is available.



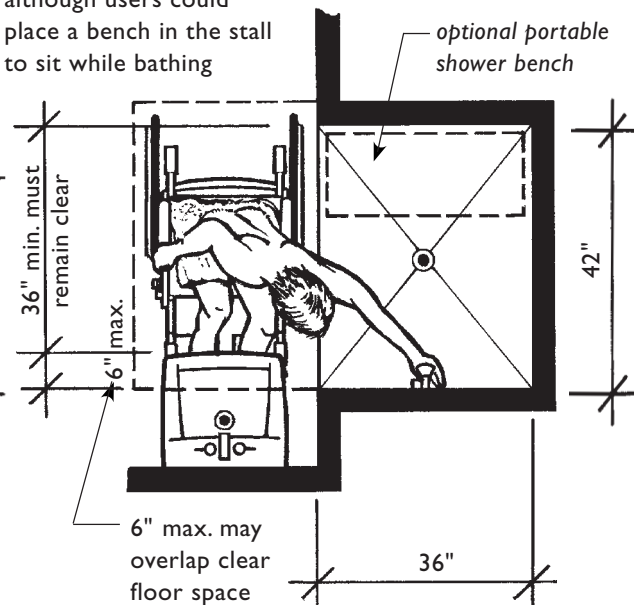
Lavatory Must Not Encroach on Clear Floor Space at 36-Inch X 36-Inch Shower

clear floor space offset so user can position wheelchair to make a safe transfer



Lavatory at 36-Inch X 36-Inch Shower
Applicable in Specification A and B Bathrooms

36" X 42" shower is not a transfer shower, although users could place a bench in the stall to sit while bathing



Lavatory at 36-Inch X 42-Inch Shower
Applicable in Specification A and B Bathrooms

Lavatory may be wall-hung or countertop with vanity below. If a vanity cabinet is present then cabinets must be removable.

Shower as Only Bathing Fixture

In both Specification A and B bathrooms, when a stall shower is the only bathing fixture in the covered dwelling unit it must be at least 36 inches x 36 inches in size. This also applies to any planned bathrooms on the primary entry level of covered multistory dwelling units in buildings with one or more elevators. Shower stalls of larger sizes and configurations are permitted, even when the shower stall is the only bathing fixture in the covered unit.

While reinforced walls for later installation of grab bars are required in all bathrooms, Specification A bathrooms do not require reinforcing to

support a wall-mounted shower seat in the shower stall. However, it is strongly recommended that appropriate reinforcing for shower seats be installed in Specification A bathrooms. See Chapter 6: "Reinforced Walls for Grab Bars."

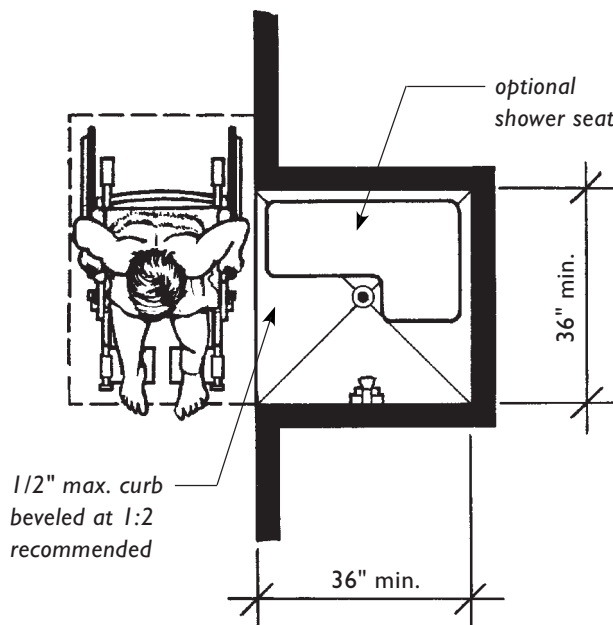
In Specification B bathrooms, however, in addition to the reinforcing required for grab bars, the shower stall must have reinforcing to allow for later installation of an optional wall-mounted seat in a shower stall measuring a nominal 36 inches square. By adding this requirement the Guidelines are setting the framework for a shower that could evolve into the ANSI accessible 36-inch x 36-inch transfer shower.

The 36-inch x 36-inch transfer shower with a low curb and L-shaped seat is a versatile and successful bathing fixture for people who use wheelchairs or have difficulty walking. If a seat is installed that can be folded up against the wall, an ambulatory user also can stand in the shower. The illustration below on the right shows the primary features found in a transfer shower. The 30-inch x 48-inch clear floor space beside the shower provides access to the control wall, and because it extends beyond the back of the stall, it allows a person using a wheel-

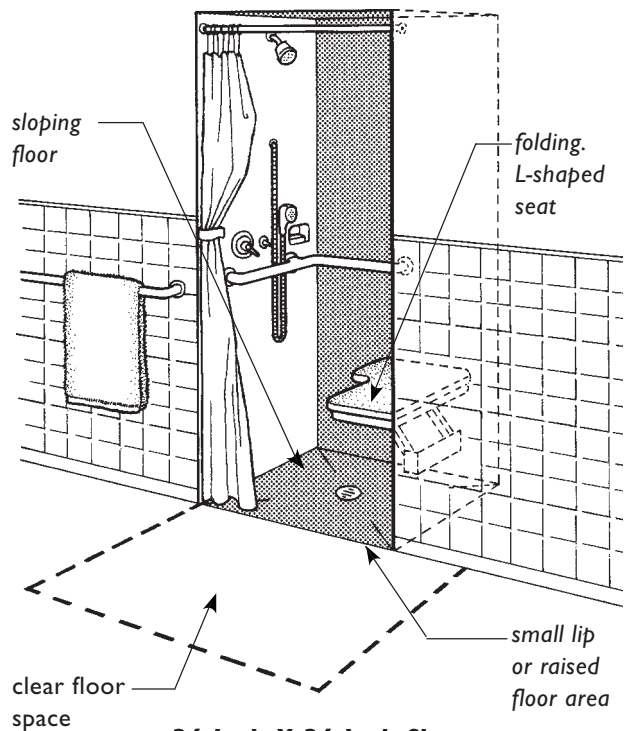
chair to position his or her chair in line with the wall-hung seat to make a safe sliding transfer.

Reinforcing for a shower seat is not required in stalls of larger sizes, e.g., 30 inches x 60 inches because the stall is so long that the user is not able to reach the controls from a seat at the opposite end of the stall. However, it is recommended that reinforcing be installed in stalls of different configurations and that thought be given to placing controls within reach of this potential seat as well as from outside the stall.

In Specification B bathrooms, when shower is only bathing fixture and is a nominal 36" X 36", it must have reinforcing for grab bars **and** a wall-mounted shower seat.



**When Shower Stall
Is the Only Bathing Fixture It Must Be
at Least 36 Inches X 36 Inches**



**36-Inch X 36-Inch Shower
with Folding Seat**

RECOMMENDATIONS FOR INCREASED ACCESSIBILITY

While the builder or developer of multifamily housing is not required to address all the design concerns faced by people with disabilities who may live in a development, there are certain aspects of bathroom design which should be considered when selecting fixtures.

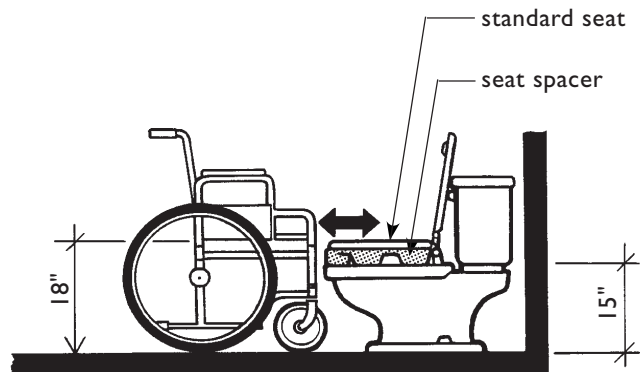
Toilet Seat Height

There is no single seat height which would suit all users. Low toilet seats are difficult for people who have trouble getting up on their feet and for people who use wheelchairs who may be able to transfer onto the seat but not get back into their chairs without assistance. High seats may be difficult for some wheelchair users to get onto and for shorter people because their feet do not touch the floor, making it difficult to maintain balance.

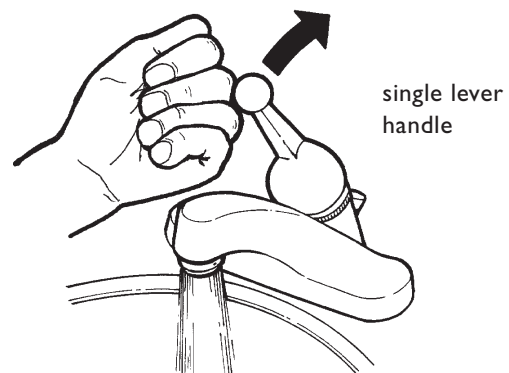
ANSI 4.32.4.2 specifies that toilet seats in dwelling units “shall be at least 15 inches and no more than 19 inches measured to the top of the toilet seat.” Standard toilets with 15-inch high seats are widely available in the marketplace and offer the best flexibility for adaptation for a wider range of people. For a user who may require that the seat be higher, it is relatively simple to install a seat spacer or thick seat. By contrast, to lower a toilet usually requires replacing the entire toilet fixture. It is recommended that standard low 15-inch toilets be installed in all dwelling units covered by the Guidelines.

Handles, Faucets, and Controls

Many people have difficulty using faucets and controls that require grasping and twisting of symmetrical shapes such as round, cylindrical, or square handles. It is preferable to install lever or blade handles which



Elevated Seats at Conventional Toilets



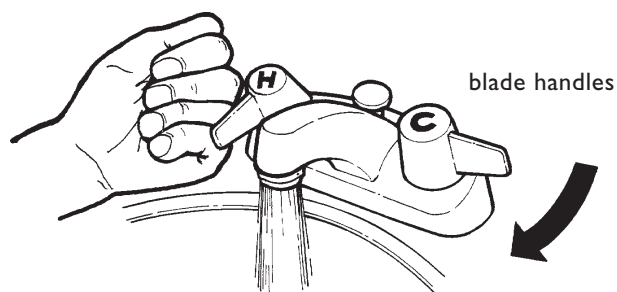
Ideal Faucet Control

can be used without gripping or twisting. If a faucet can be operated with a closed fist and requires less than five pounds of force to operate, then it is a usable control for most people with disabilities.

Control location also can greatly improve ease and safe use of the fixture. When bathtub controls are offset toward the outside of the bathing fixture, the need to bend and stretch to reach the controls from outside the fixture is greatly reduced - a help for any user with limited flexibility.

Auxiliary Handles at Doors

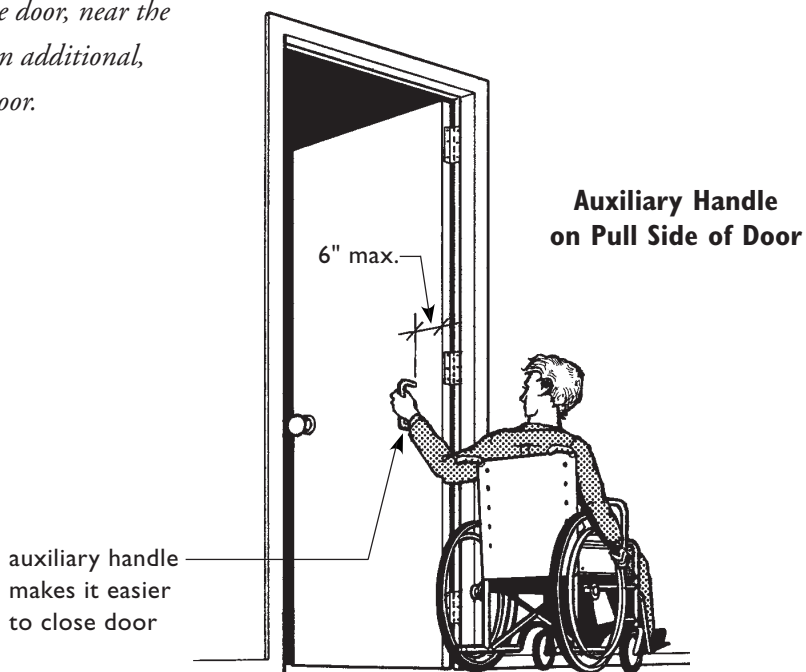
Suggestions to increase the accessibility and usability of bathrooms are made in the following section, "Example Bathroom Floor Plans that Comply with the Guidelines." One enhancement frequently highlighted is the installation of auxiliary handles on bathroom doors. Not required by the Guidelines, this additional hardware works well for many people with mobility impairments who have difficulty closing doors. With the installation of a second handle (such as a 4-inch loop handle similar to those used on drawers and kitchen cabinets) on the pull side of the door, near the hinge edge, the user is provided with an additional, and often easier, method of closing a door.



Another Usable Faucet Control



Preferred Offset Control Location



EXAMPLES OF BATHROOM FLOOR PLANS THAT COMPLY WITH THE GUIDELINES

The plans presented on the following pages are examples of “usable” bathrooms and powder rooms that comply with either Specification A or Specification B or both. These plans are only a sampling of possible layouts that would conform to the specifications and are not intended to limit designers’ options; certainly other layouts are feasible. The plans are neither required nor even suggested as ideal examples. They are included to illustrate typical applications or interpretations of specific requirements of the Guidelines under various circumstances.

The plans may be used as resource material and planning guides when developing new multi-family housing designs. Conventional industry standard fixture sizes have been used consistently when developing these plans.

The toilets used measure 29 inches from the back wall to the front edge of the bowl. As toilets vary in size, with some being as long as 30 inches, it is important to allow sufficient space for doors to clear the toilet bowl. Wall-hung lavatories are 19 inches deep and countertop lavatories with base cabinets below are 21 inches deep unless noted otherwise on the plans. Doors

are 34 inches wide to provide the required nominal 32-inch clear opening. Rooms may need to be enlarged if a 36-inch door is installed. Bathtubs in the small bathrooms are 60 inches long and, along with showers, vary as the rooms become less conventional.

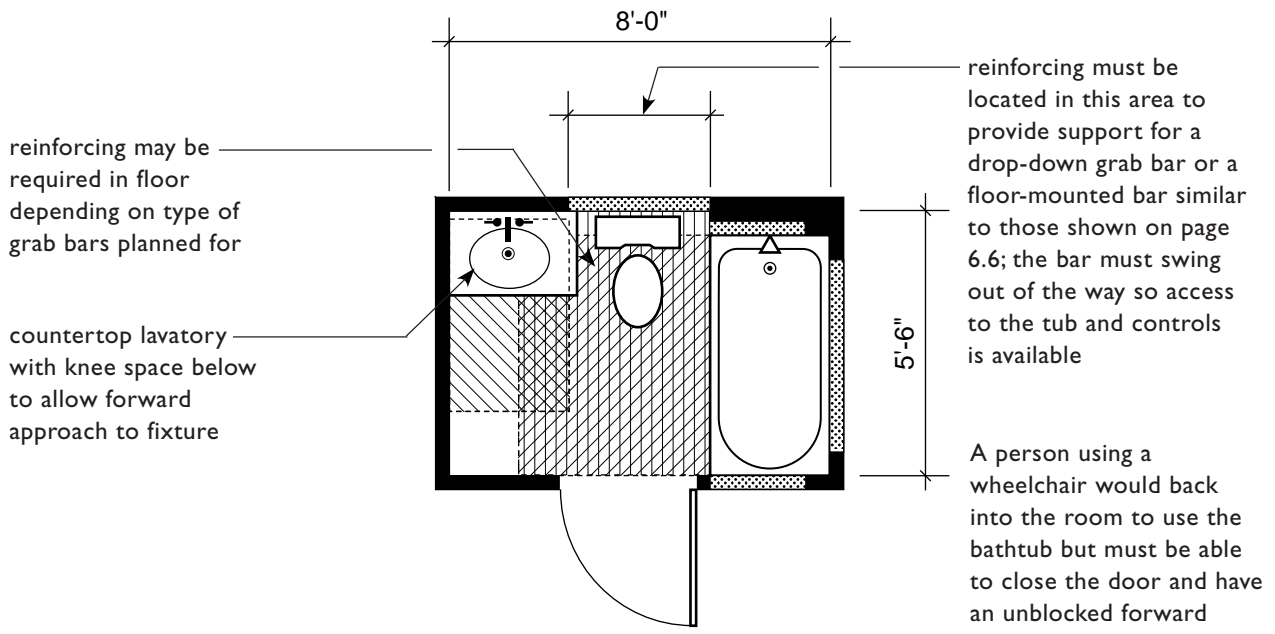
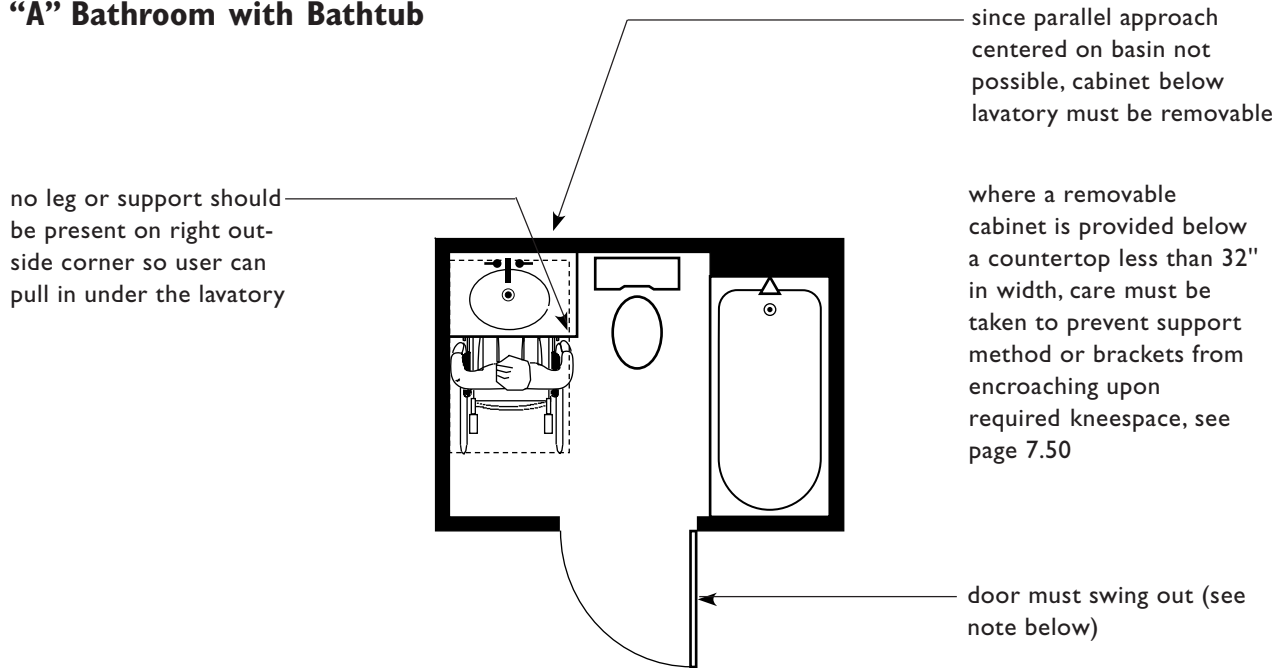
It is important to allow sufficient space for any fixtures that may be larger than those shown here. Although designers should rely upon the dimensions indicated and not scale off the drawings, all plans in this section are reproduced at 1/4-inch scale.

Some of the plans are more usable than others by people with disabilities and comments are included to describe where improvements could be made. The plans are divided according to bathing fixture type: bathtub/showers, showers, and multiple bathing fixtures. The plans are presented in pairs, with the first showing the overall room shape while the dimensioned plan describes the clear floor spaces at fixtures and indicates minimum wall and/or floor areas to be reinforced.

Text and notes presented in *italic* type are comments or recommendations and are not required by the Guidelines.

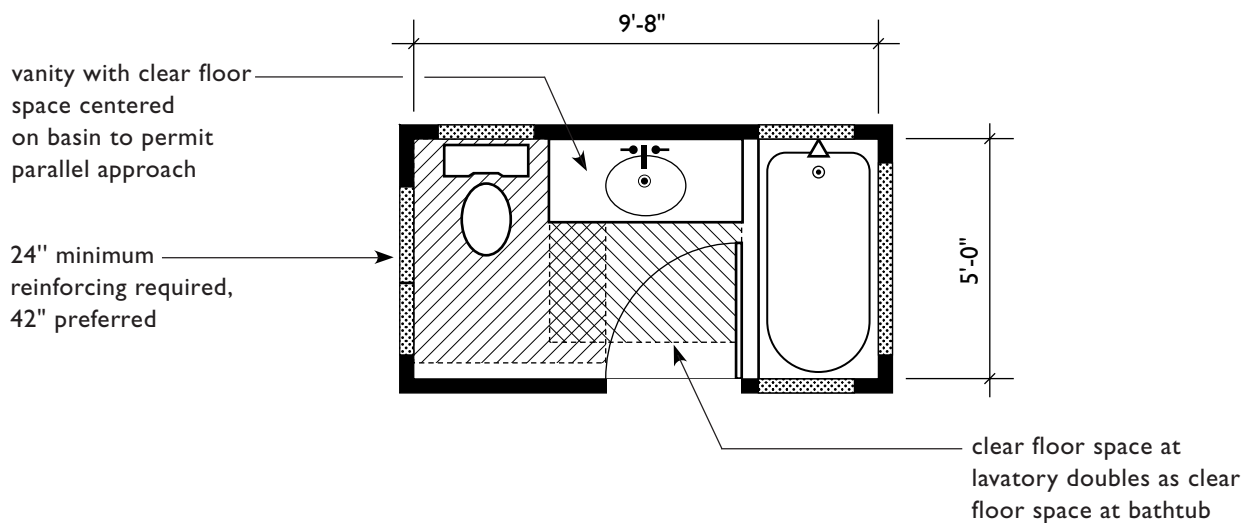
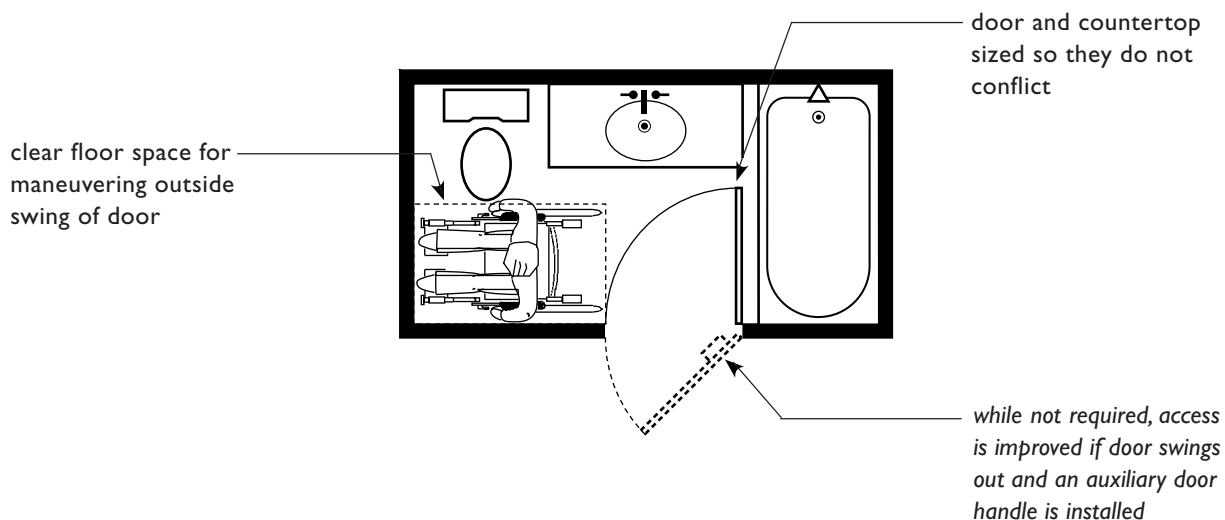
BATHROOMS WITH BATHTUB BATHING FIXTURE

“A” Bathroom with Bathtub



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“A” Bathroom with Bathtub

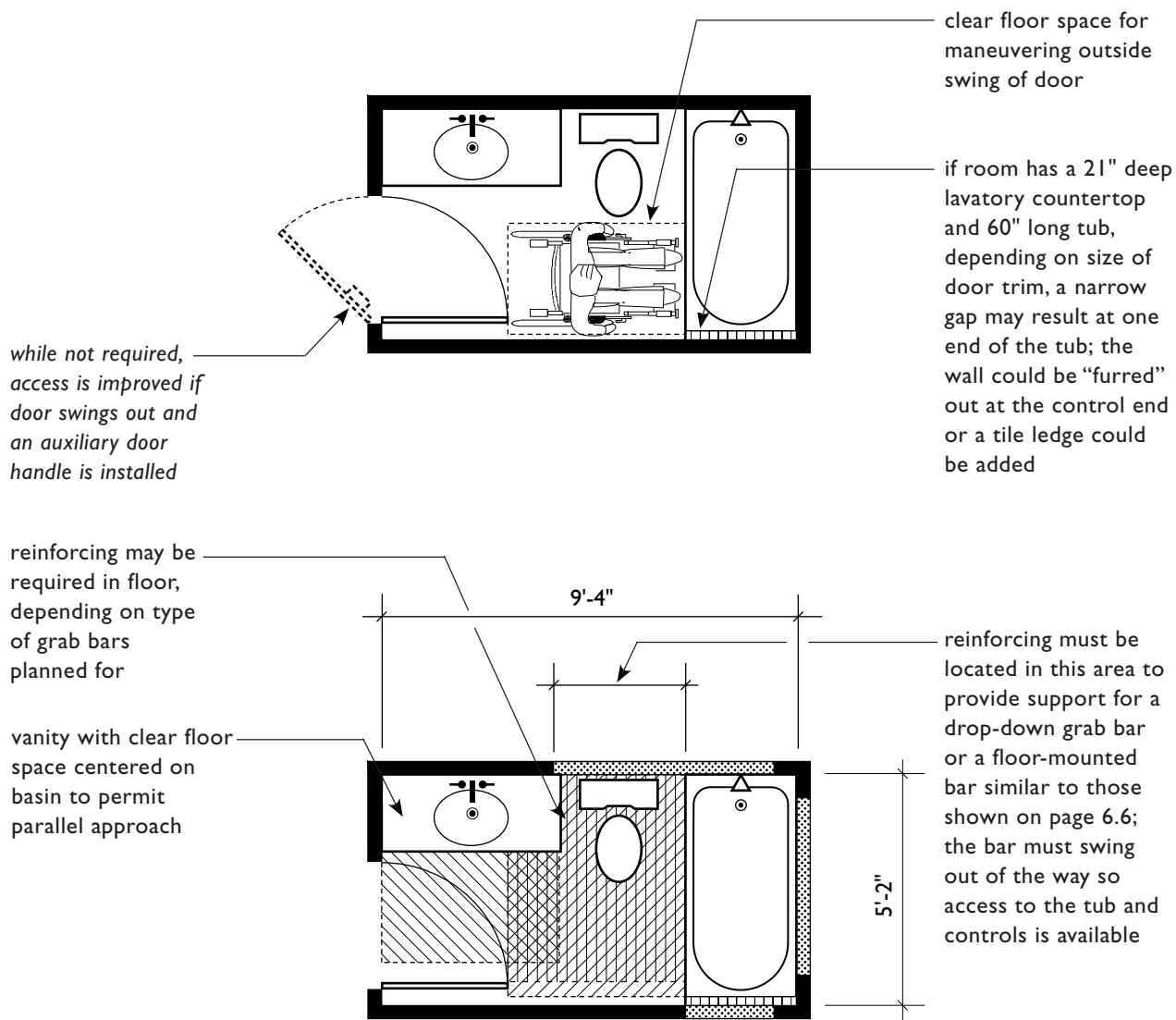


Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“A” Bathroom with Bathtub

The Guidelines do not require space for a five-foot turn or a T-turn in bathrooms; see page 7.39. In this bathroom, most persons using a wheelchair will not be able to turn around and may have to back into or out of the room. This, combined with

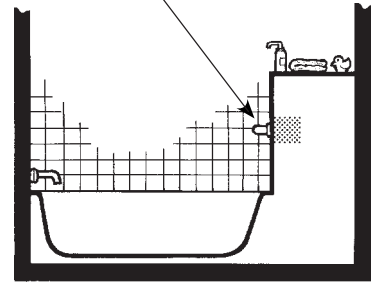
the lack of space to the latch side of the door, makes this room difficult to use by many people. Therefore, it is recommended that the 5'-2" dimension be increased and/or that knee space be provided under the lavatory.



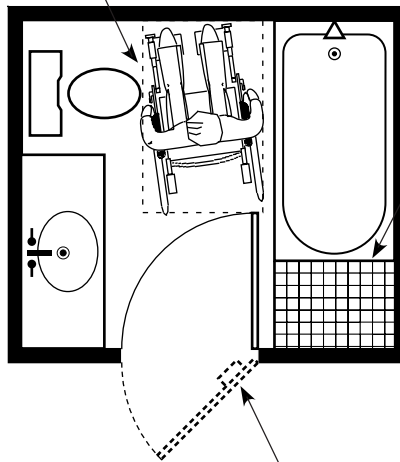
Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“B” Bathroom with Bathtub

if tile area is a shelf, reinforcing should be located in the vertical wall to support future grab bar mounted 33" to 36" above the floor



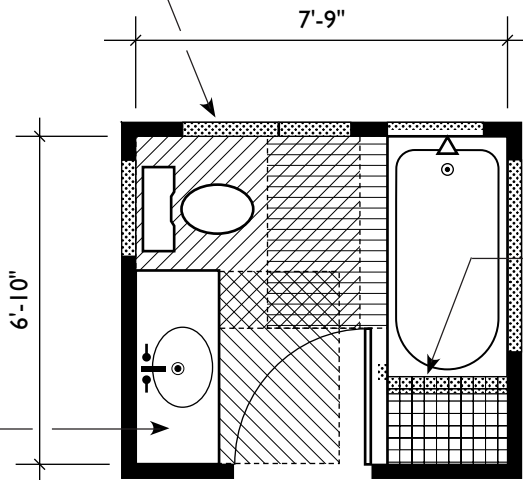
clear floor space for maneuvering outside swing of door



tile area could be either a seat or a shelf

while not required, access is improved if door swings out and an auxiliary door handle is installed

24" minimum reinforcing required, 42" preferred



if tile area is a seat at back of bathtub, reinforcing at least 6" to 8" wide must be located here

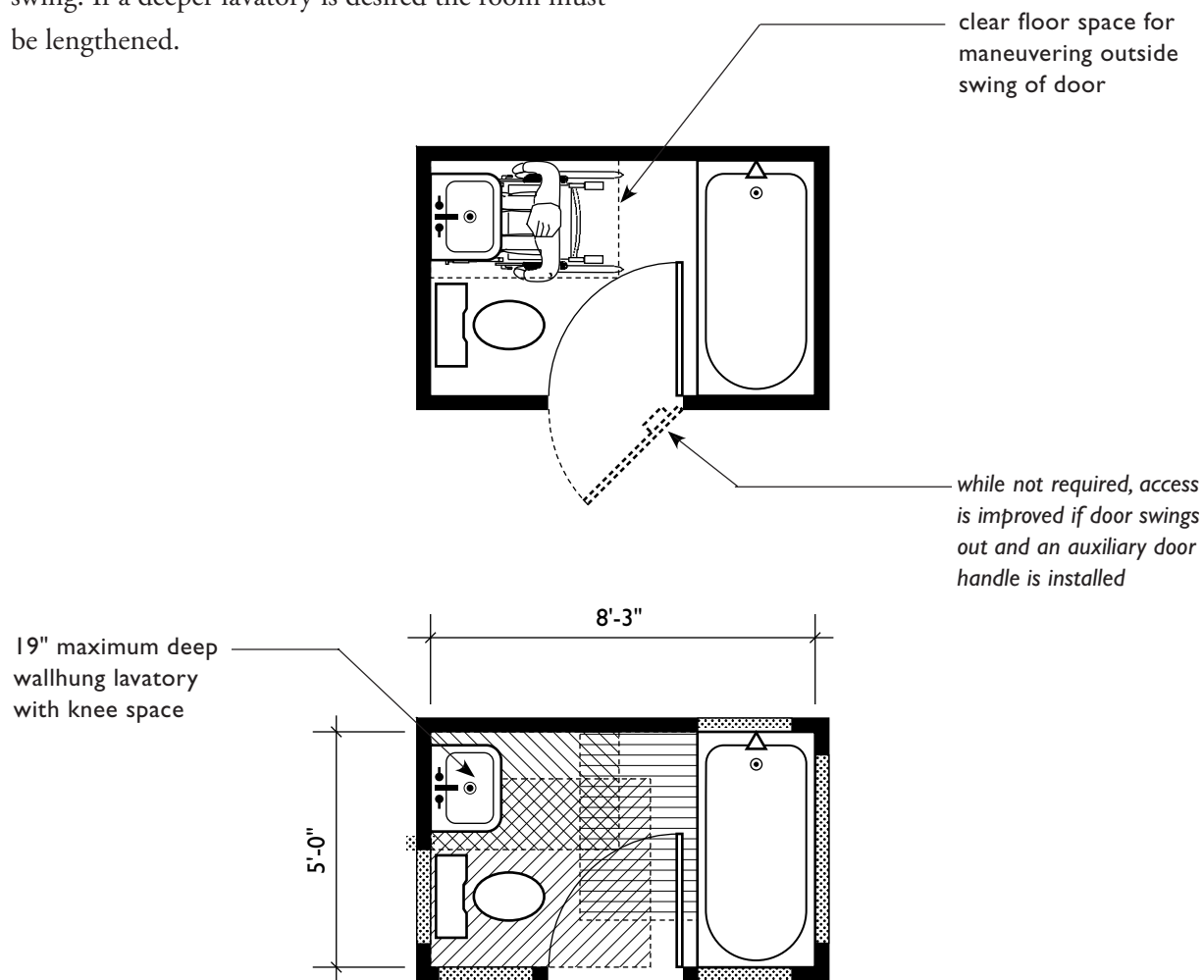
no reinforcing required in this wall

vanity with clear floor space centered on basin to permit parallel approach

Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“B” Bathroom with Bathtub

Only 19 inches of the required 30-inch x 48-inch clear floor space can go under a lavatory. A deeper lavatory would require that the clear floor space be positioned away from the plumbing wall and closer to the tub, causing it to overlap with the door swing. If a deeper lavatory is desired the room must be lengthened.

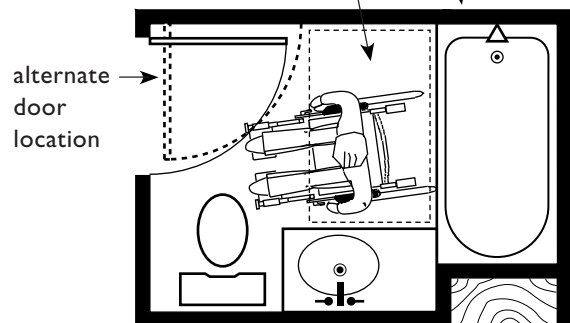


Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“B” Bathroom with Bathtub

because lavatory has no knee space below, to meet the Guidelines bathtub controls must be located on this wall

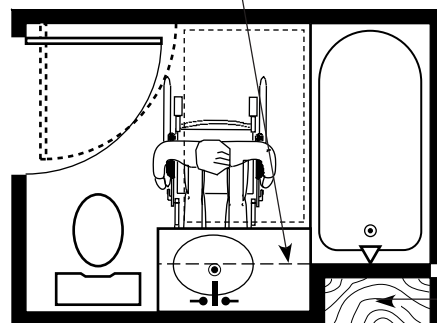
clear floor space for maneuvering outside swing of door



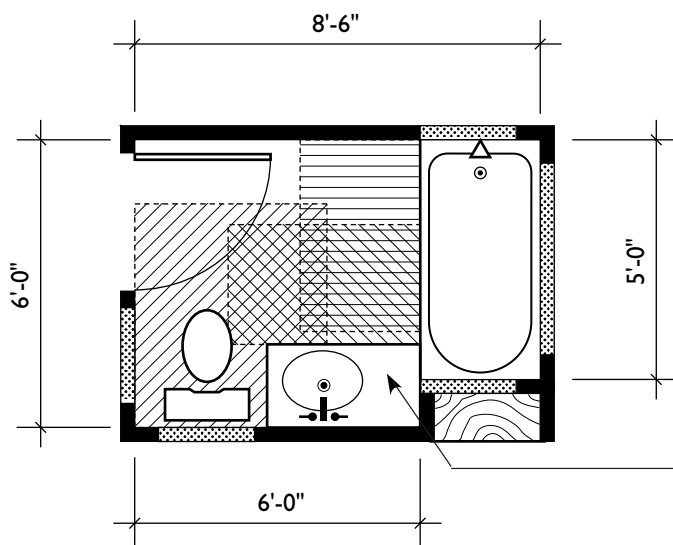
Option 1:
Plumbing on Opposite Walls
 Lavatory With Base Cabinet Below
 (No Knee Space)

end of knee space flush with bathtub control wall permits access to controls; because knee space is not the full depth, user must still be able to execute a parallel approach to lavatory

if lavatory has knee space below, bathtub controls can be located on a common plumbing wall



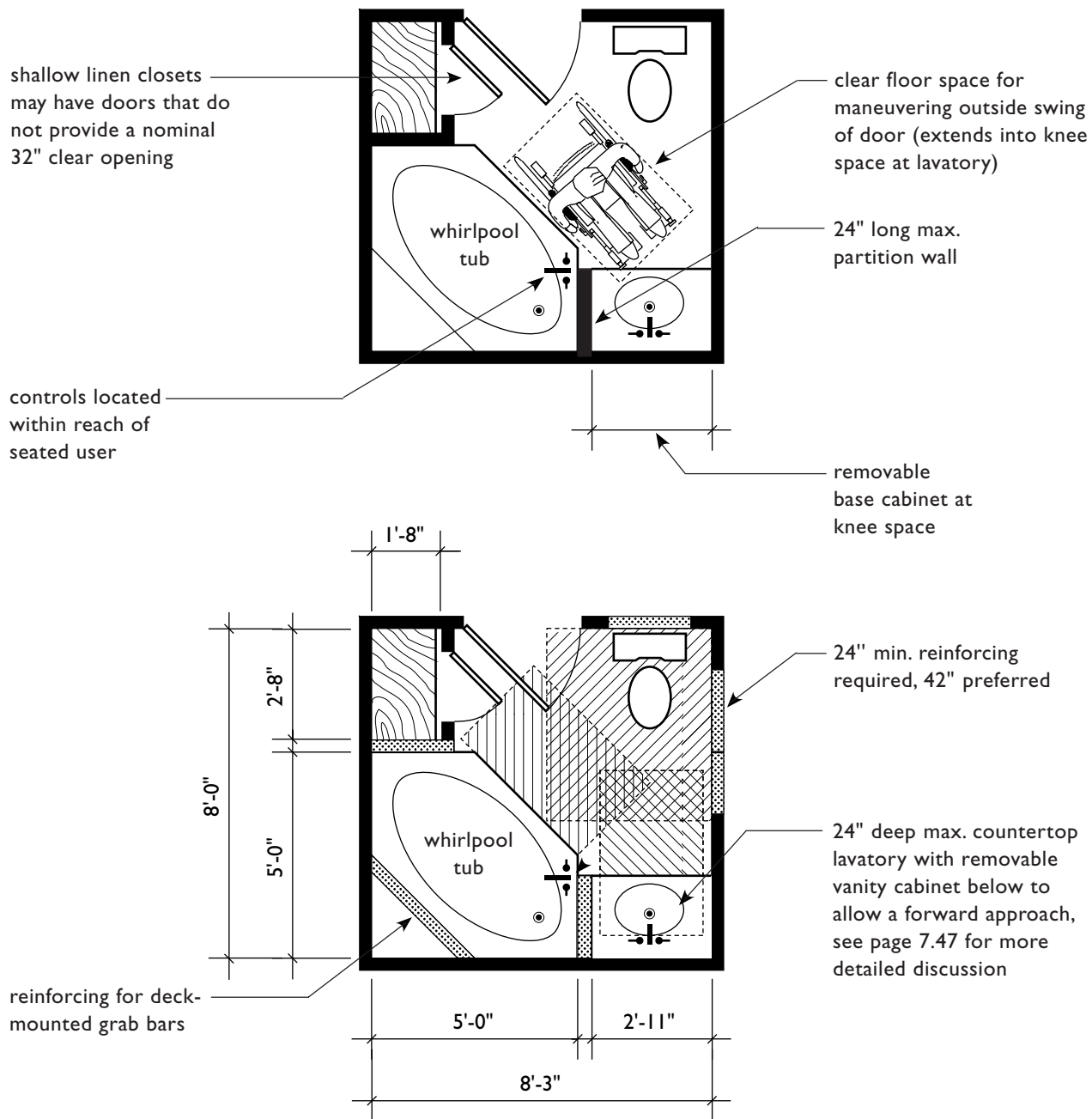
Option 2:
Plumbing on Common Wall
 Lavatory With Shallow Knee Space



36" wide vanity with offset basin to permit parallel approach centered on basin

Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“B” Bathroom with Bathtub

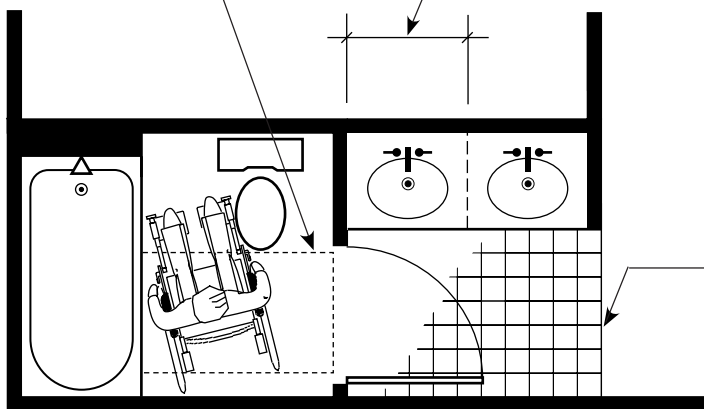


Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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Compartmentalized "A" Bathroom with Bathtub

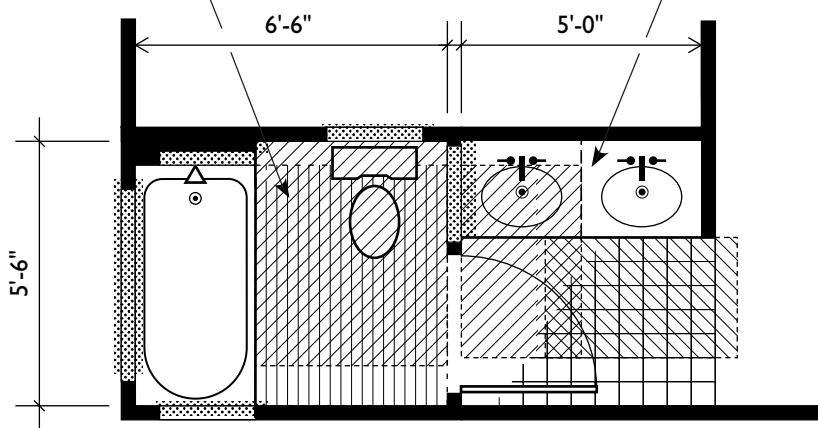
clear floor space for maneuvering within tub/toilet area

removable base cabinet at knee space



open to bedroom

if 6" of space were added between bathtub and toilet, bathroom also could be a "B" bathroom



24" deep vanity with clear floor space for parallel approach to right basin plus knee space below left basin for a forward approach

in "A" bathrooms all fixtures, including both lavatories, must be usable

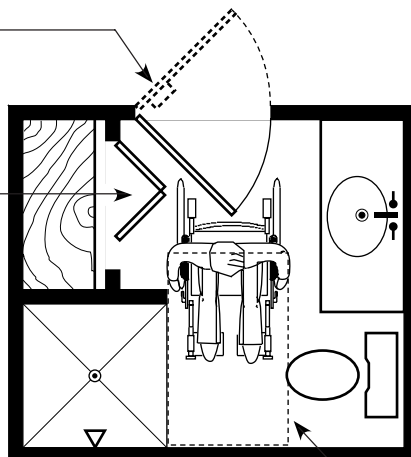
Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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BATHROOMS WITH SHOWER BATHING FIXTURE

“A” and “B” Bathroom with Shower

while not required, access is improved if door swings out and an auxiliary door handle is installed

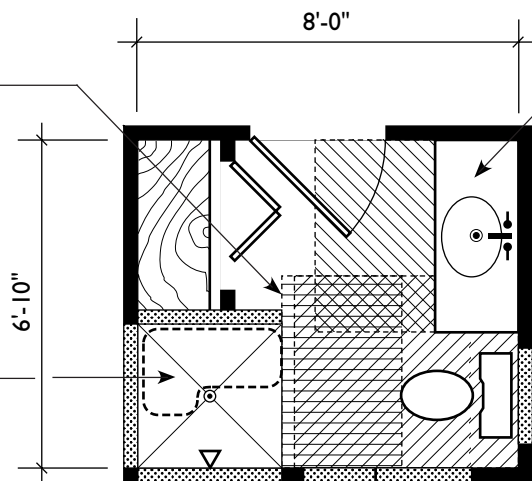
linen closets may have doors that do not provide a nominal 32" clear width if they do not require the user to pass through the door to reach the contents



clear floor space for maneuvering outside swing of door

36" x 36" min. shower with clear floor space offset to provide access to optional seat

optional shower seat



vanity with clear floor space centered on basin to permit parallel approach

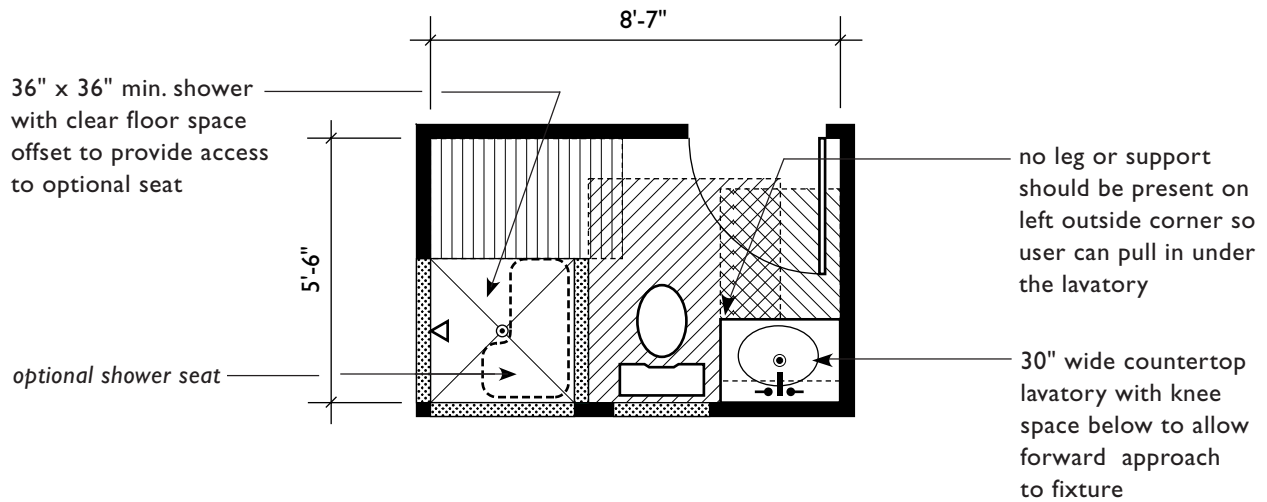
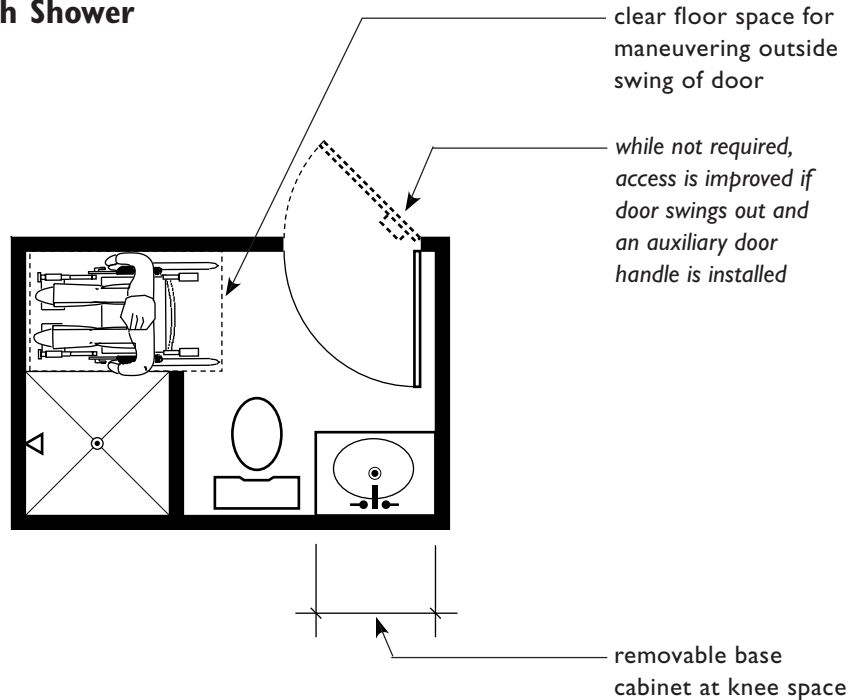
24" min. reinforcing required, 42" preferred

transferring onto toilet may be difficult for some people, recommend increasing this dimension 6"

Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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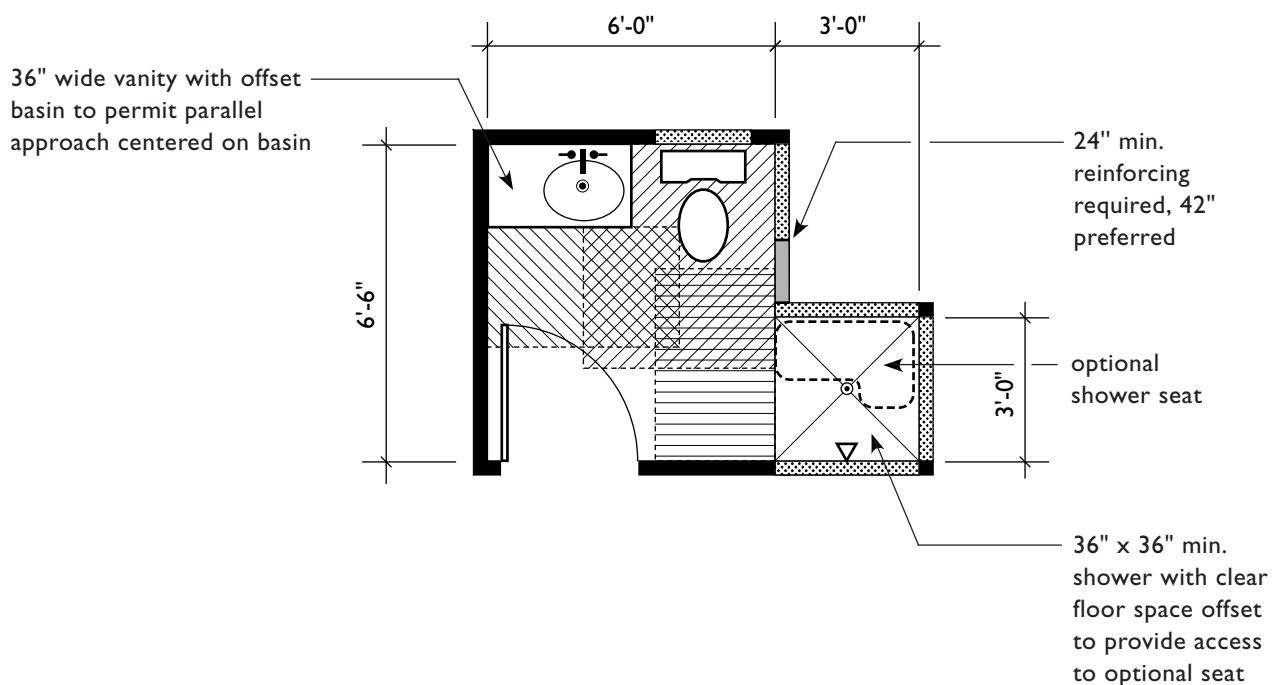
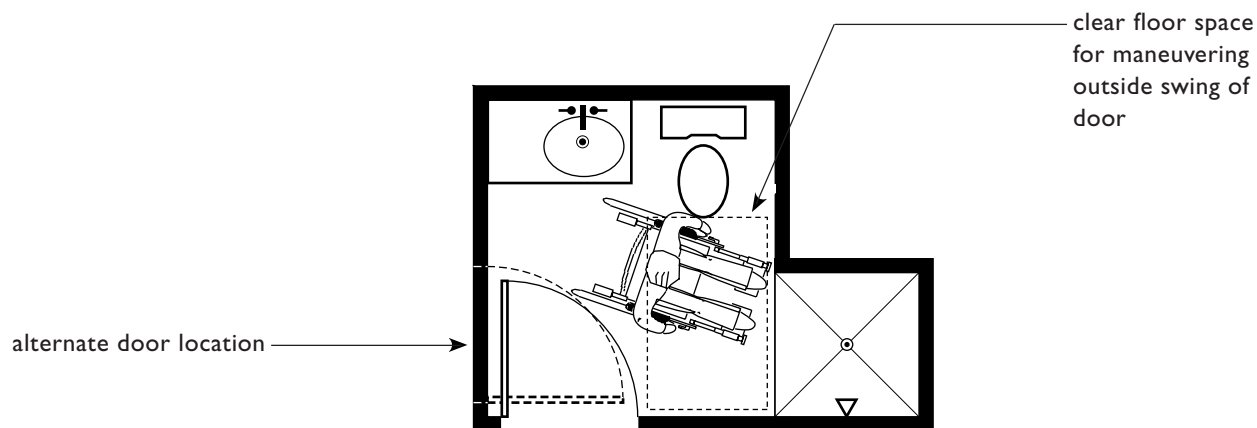
“A” and “B” Bathroom with Shower

where a removable cabinet is provided below a countertop less than 32" in width, care must be taken to prevent support method or brackets from encroaching upon required knee space, see page 7.50



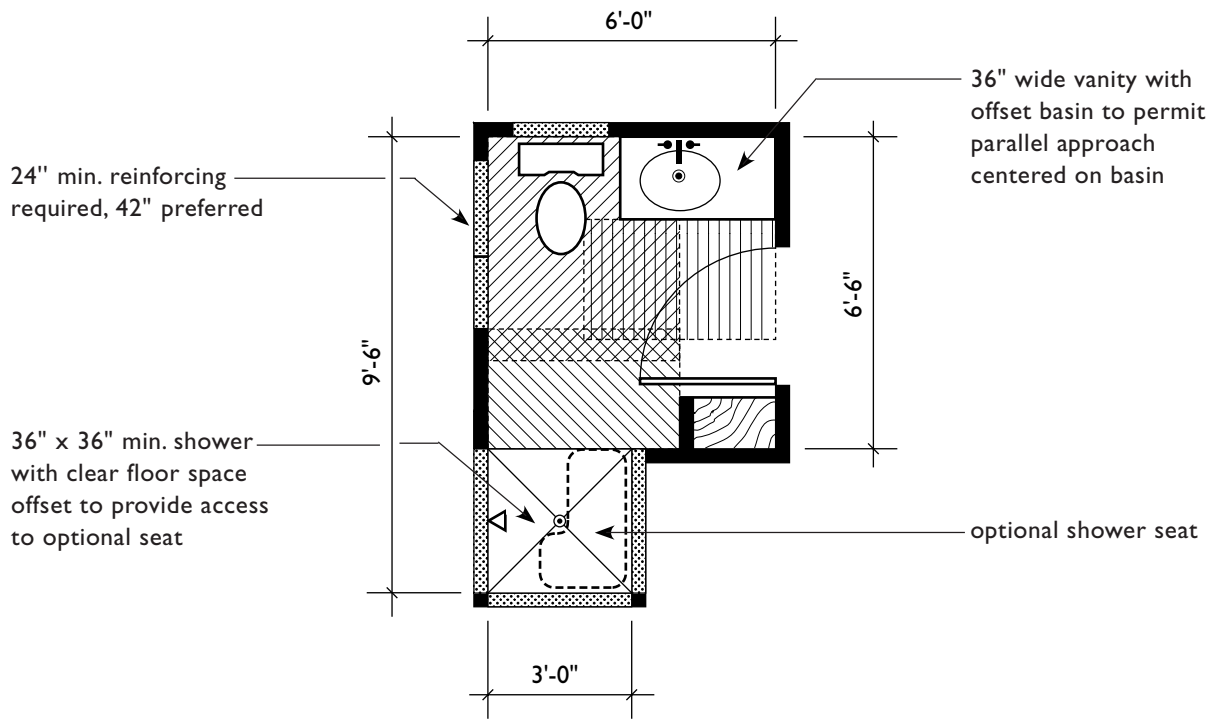
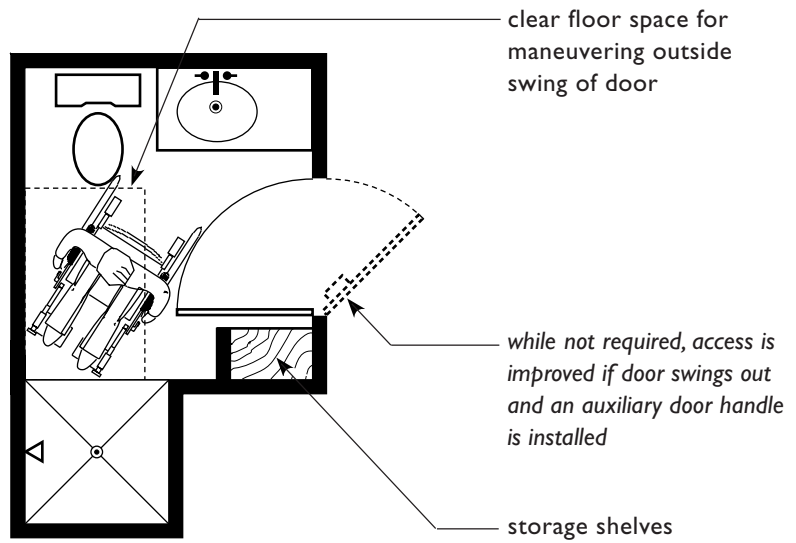
Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“A” and “B” Bathroom with Shower



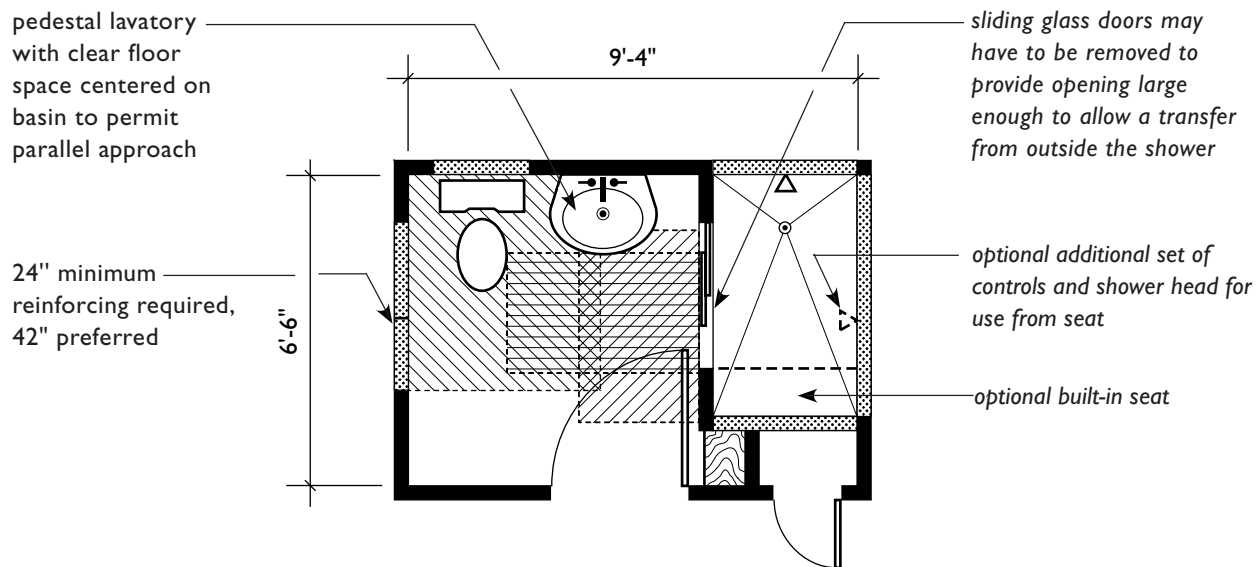
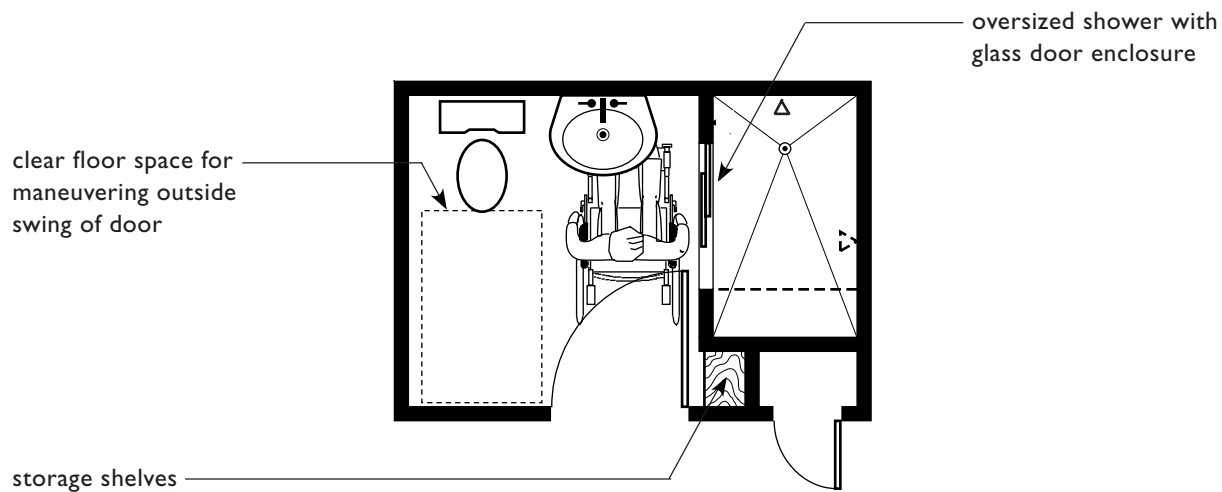
Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“A” and “B” Bathroom with Shower



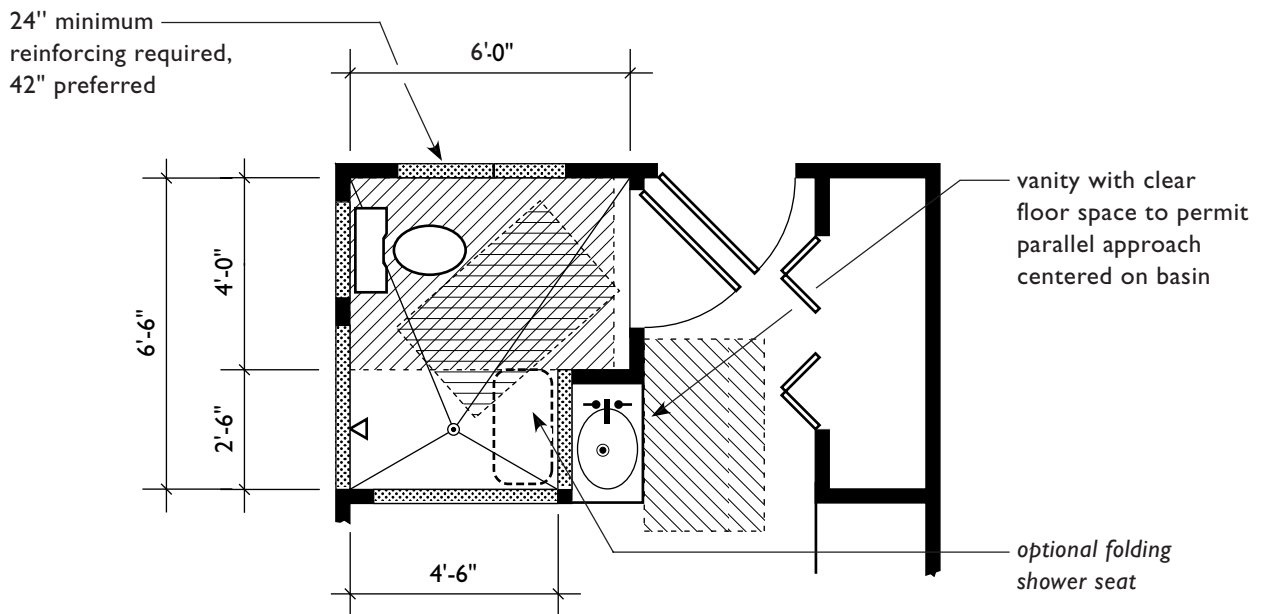
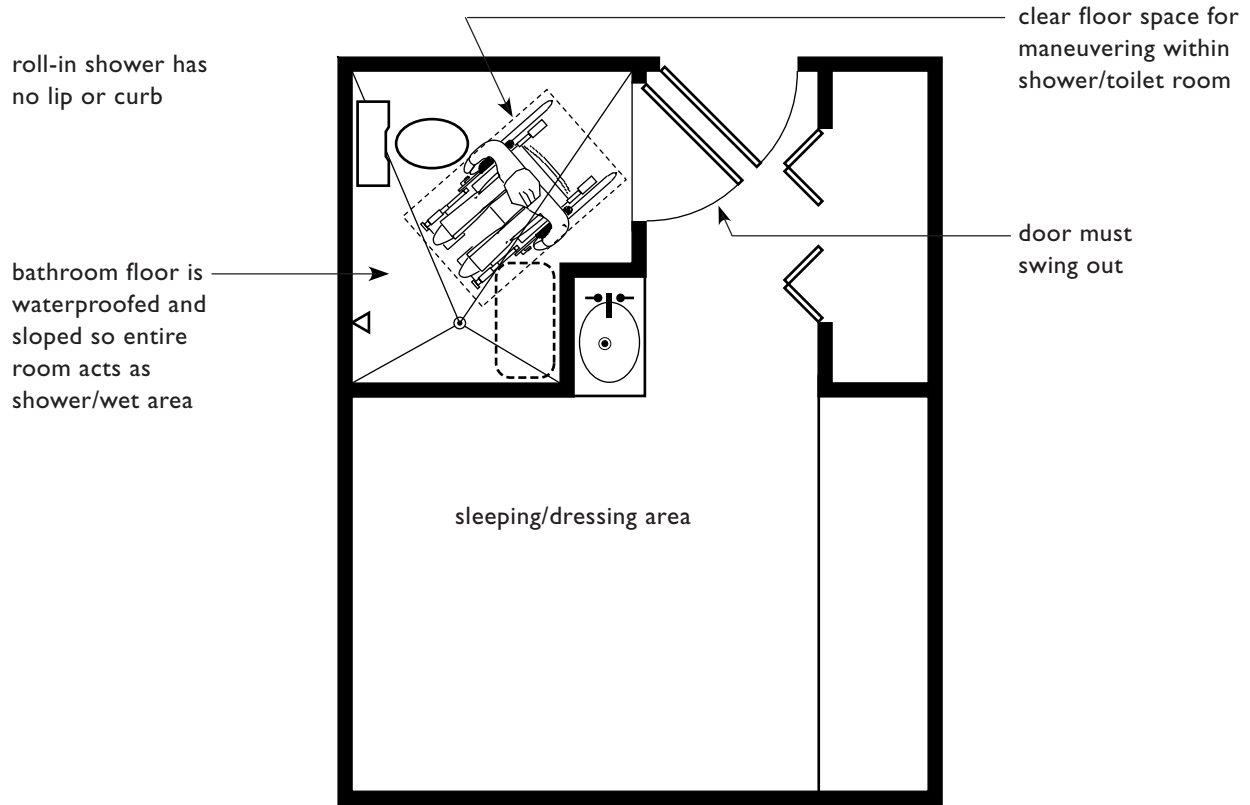
Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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“A” Bathroom with Large Shower



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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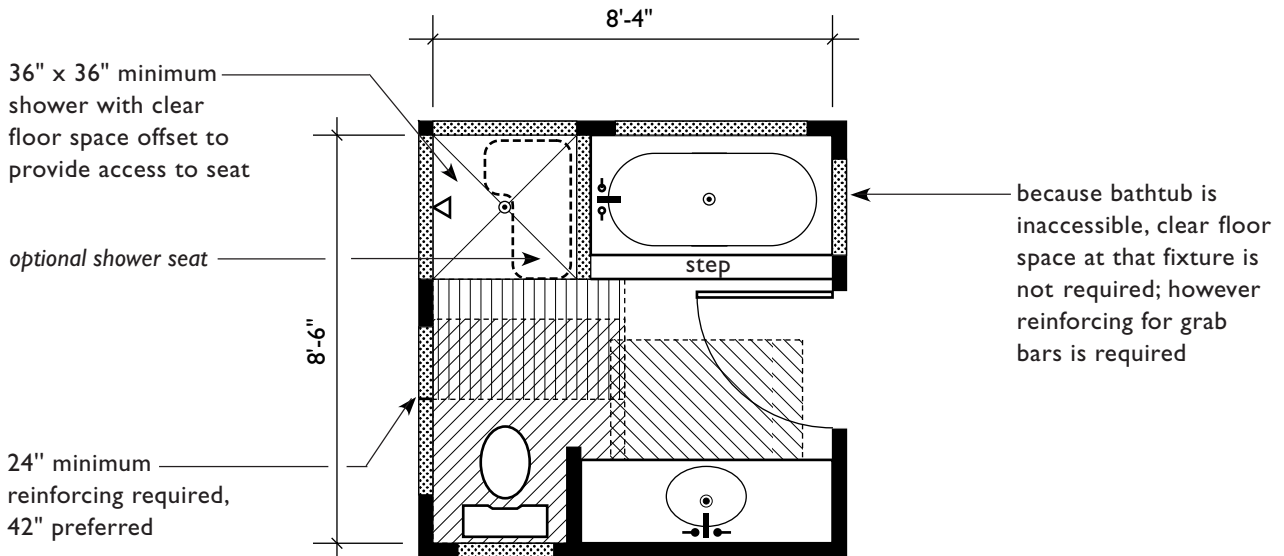
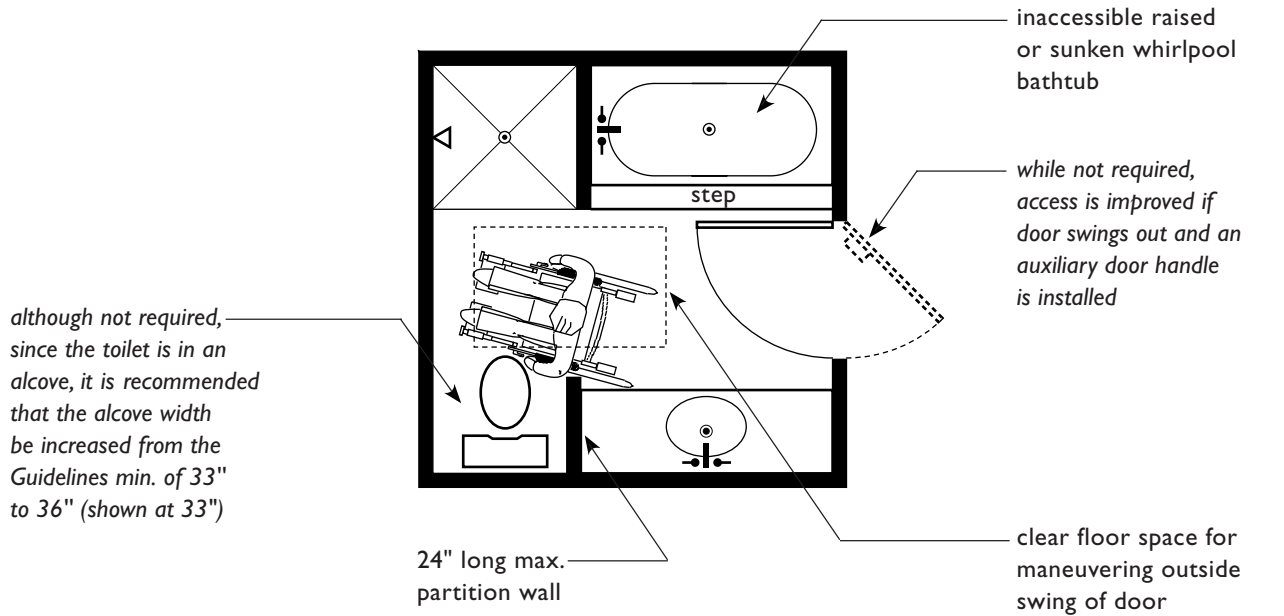
Single Room Occupancy Unit with Roll-In Shower



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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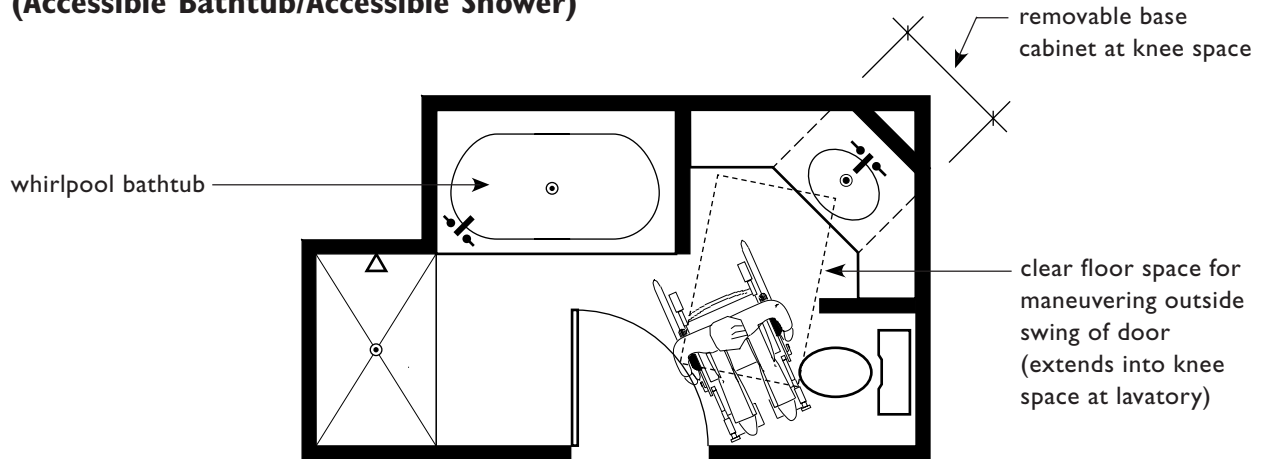
BATHROOMS WITH TWO BATHING FIXTURES

**“B” Bathroom with Two Bathing Fixtures
(Accessible Shower/Inaccessible Bathtub)**



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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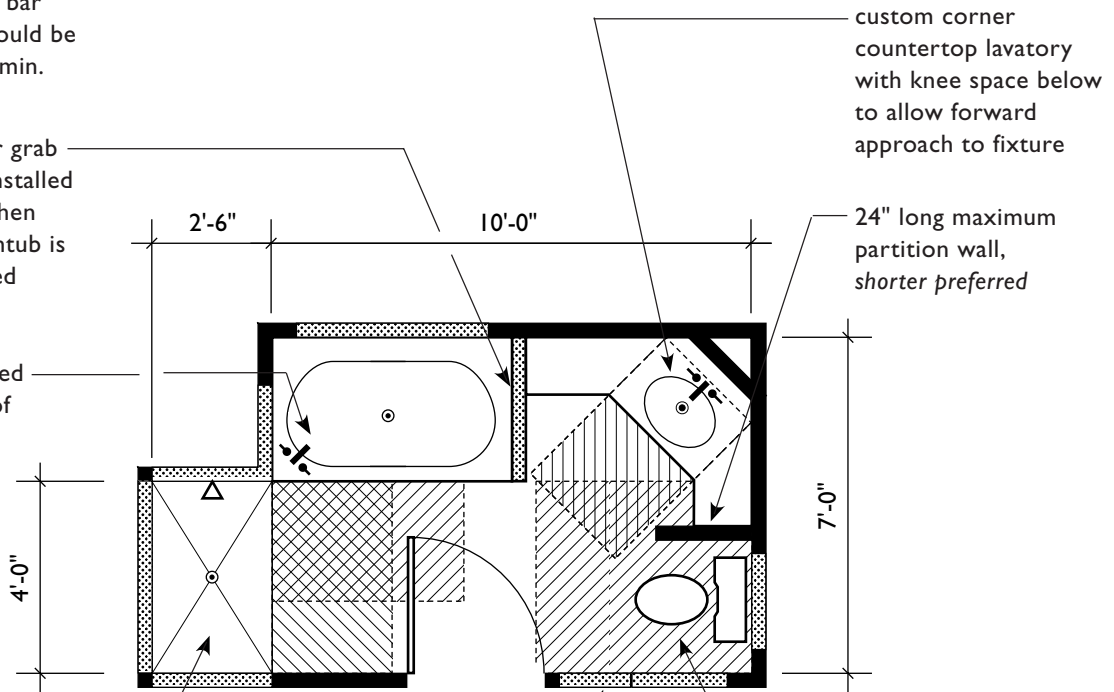
**“A” and “B” Bathroom with Two Bathing Fixtures
 (Accessible Bathtub/Accessible Shower)**



deck or floor-mounted grab bar reinforcing should be 6" to 8" wide min.

reinforcing for grab bars may be installed in the floor when whirlpool bathtub is not surrounded by walls

controls located within reach of seated user



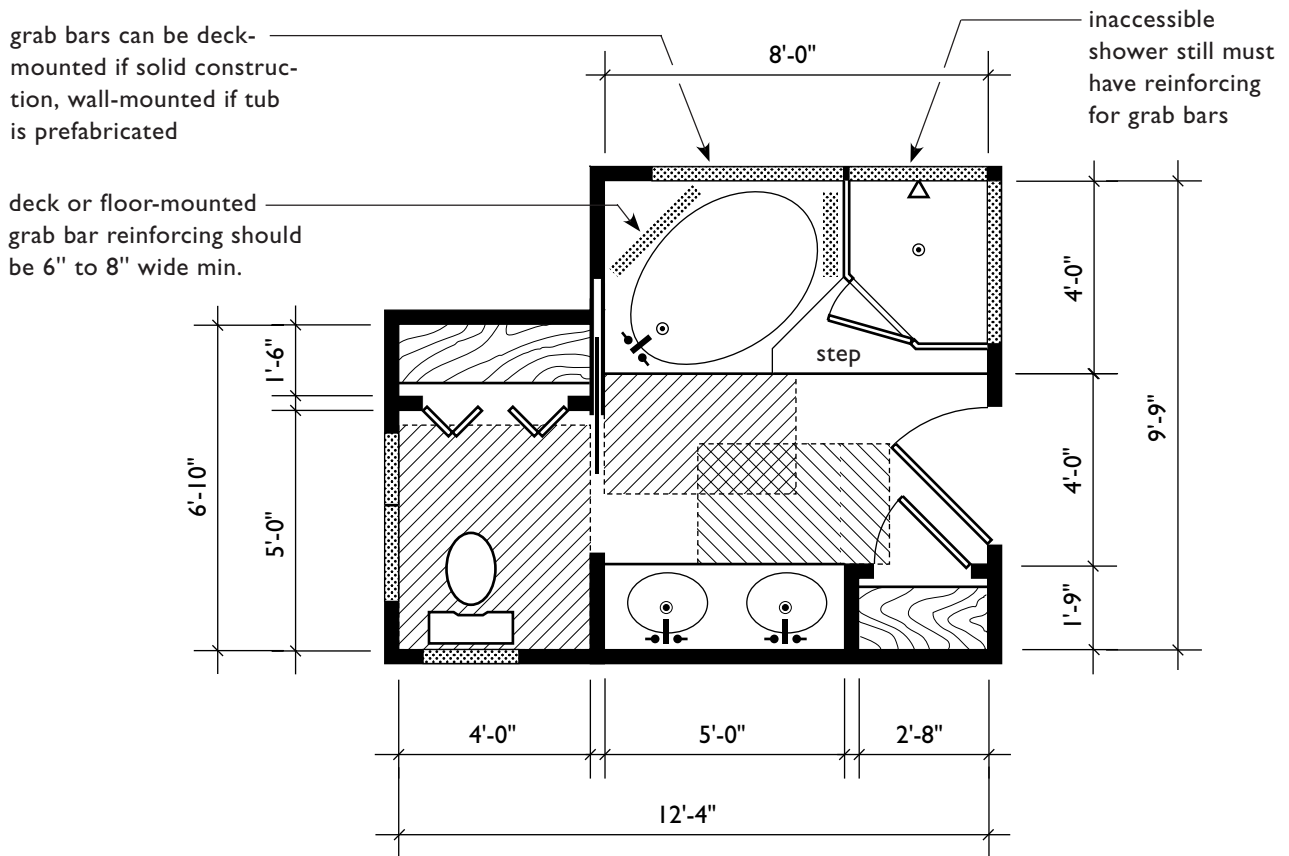
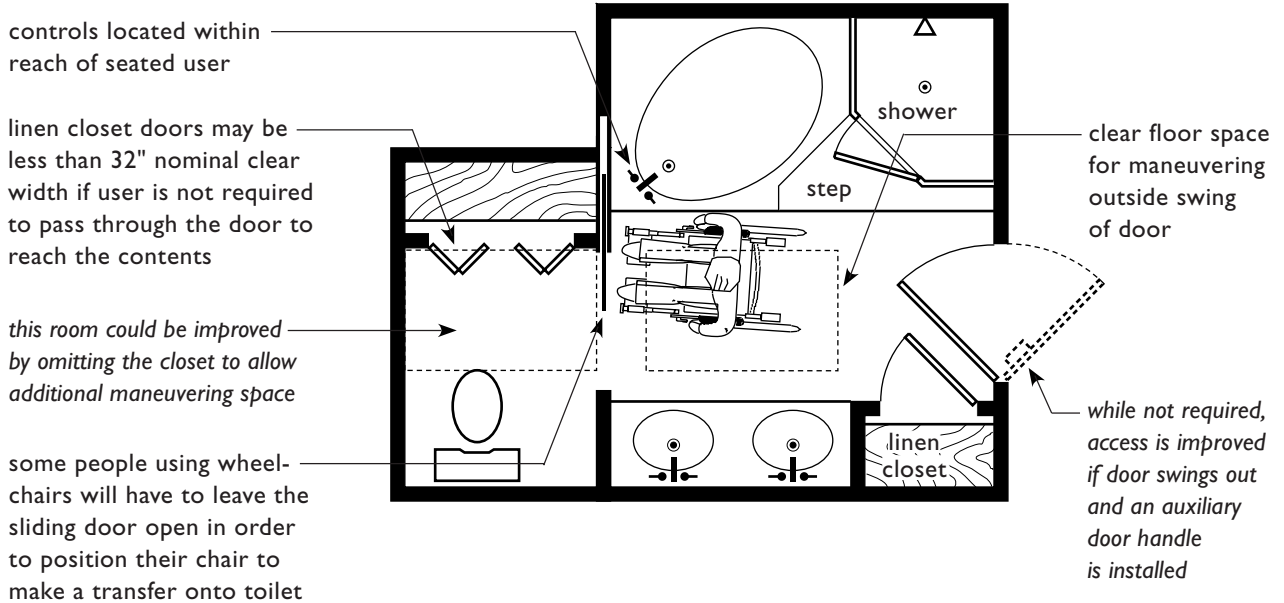
30" x 48" shower with clear floor space

24" minimum reinforcing required, 42" preferred

although not required, since the toilet is in an alcove, it is recommended that the alcove width be increased from the Guidelines min. of 33" to 36" (shown at 33")

Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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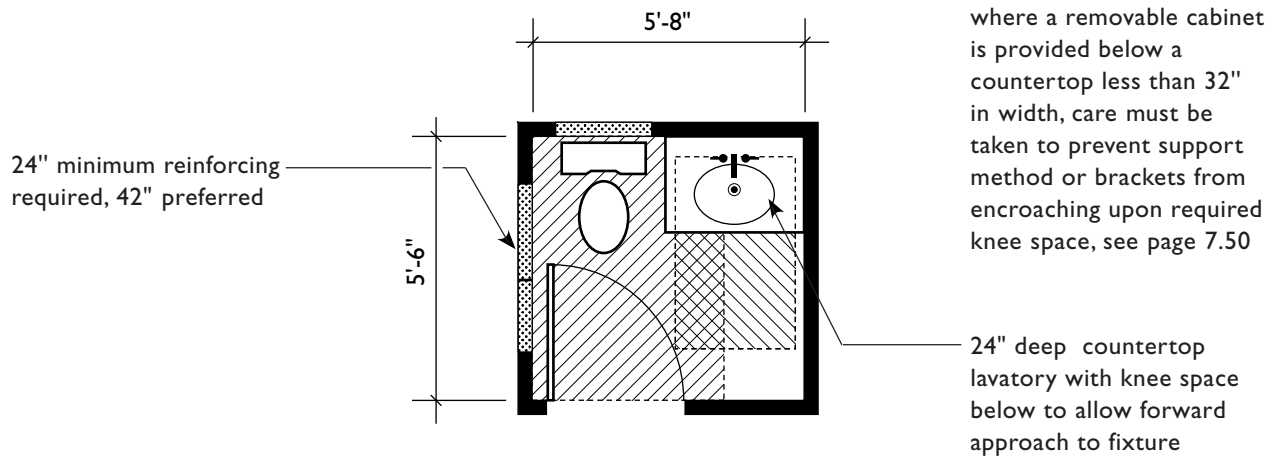
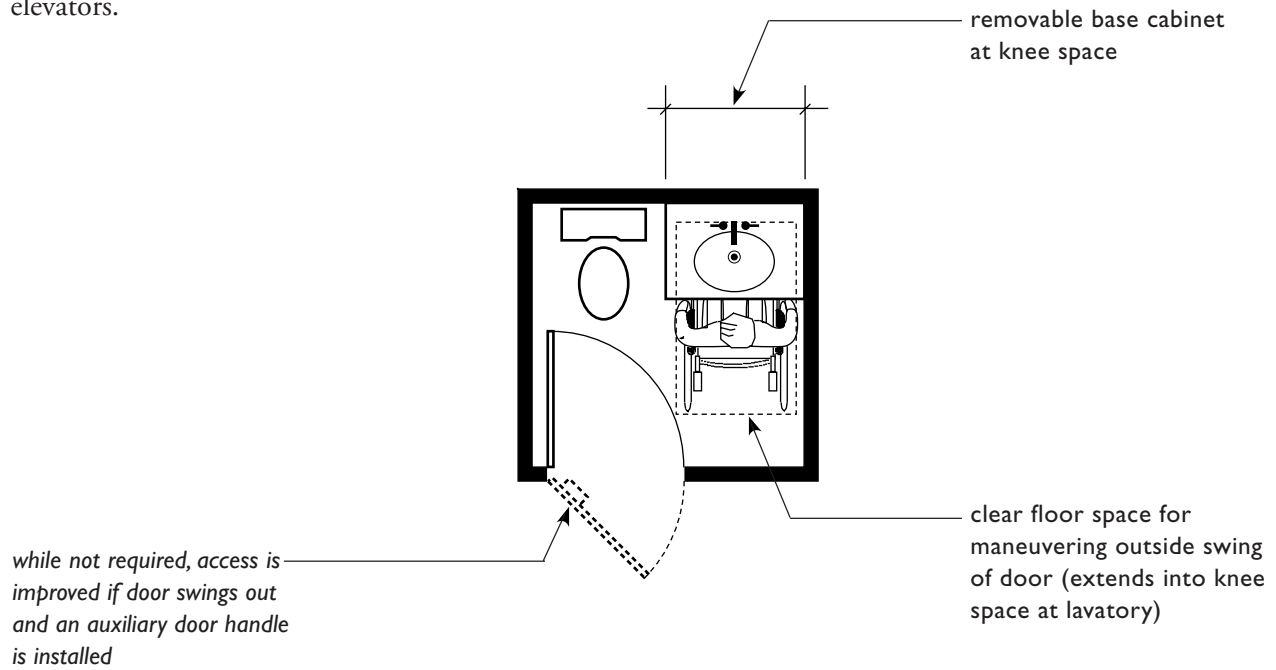
“B” Bathroom with Two Bathing Fixtures (Accessible Bathtub/Inaccessible Shower)



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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POWDER ROOMS

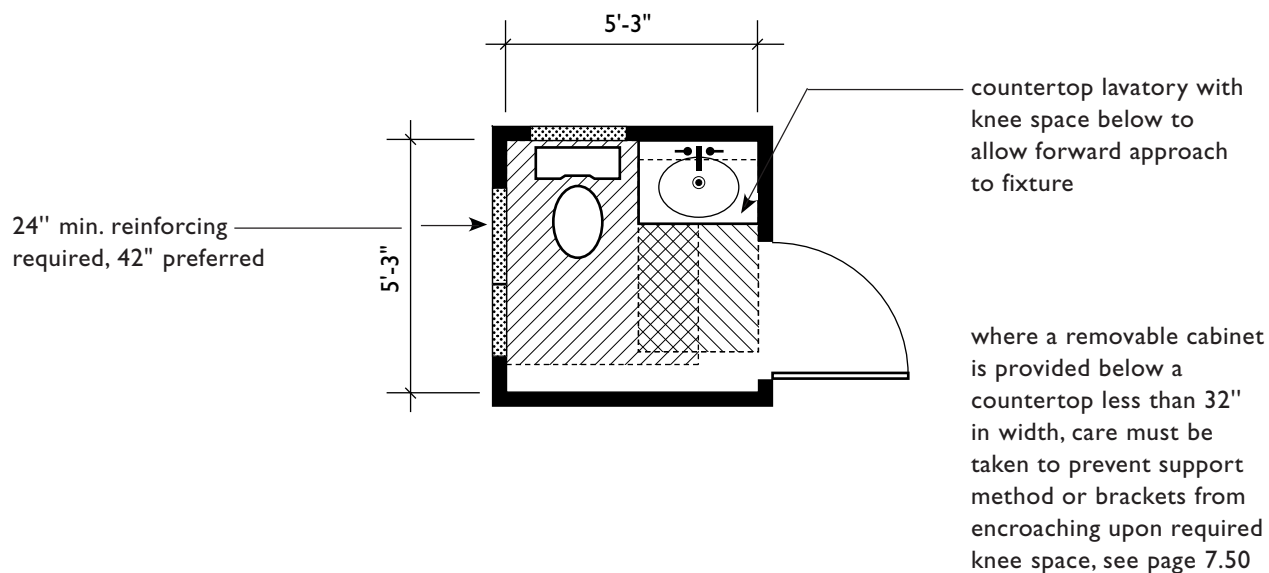
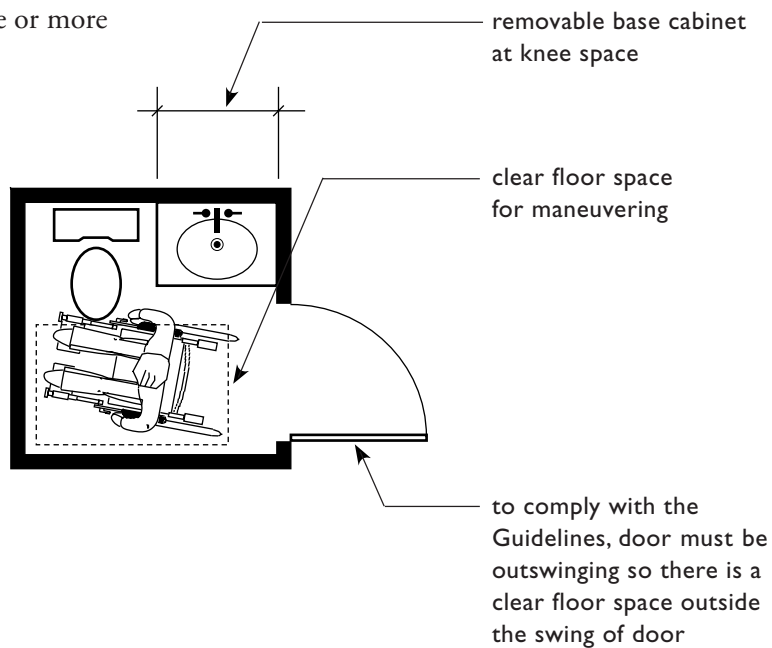
Powder rooms must meet the requirements for clear floor space at fixtures and reinforcing in walls only when they are on the accessible level of multistory units in buildings having one or more elevators.



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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Powder Room

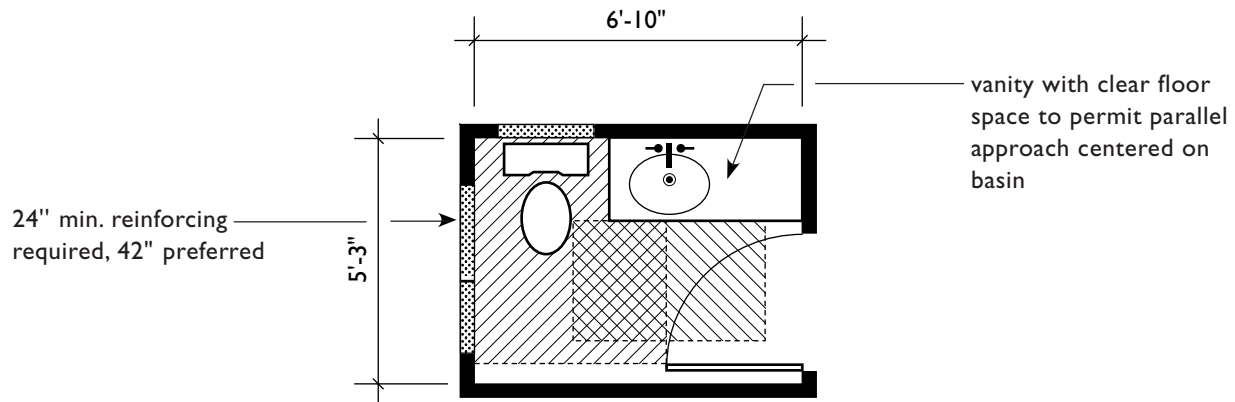
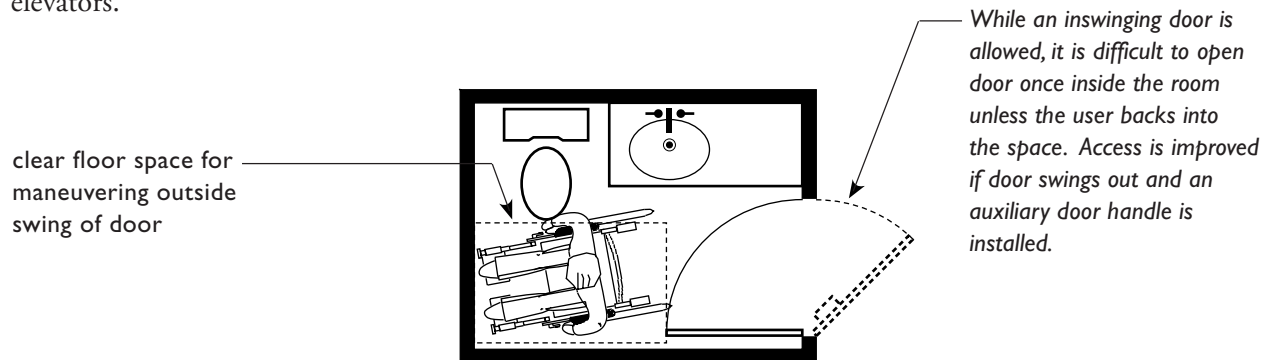
Powder rooms must meet the requirements for clear floor space at fixtures and reinforcing in walls only when they are on the accessible level of multistory units in buildings having one or more elevators.



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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Powder Room

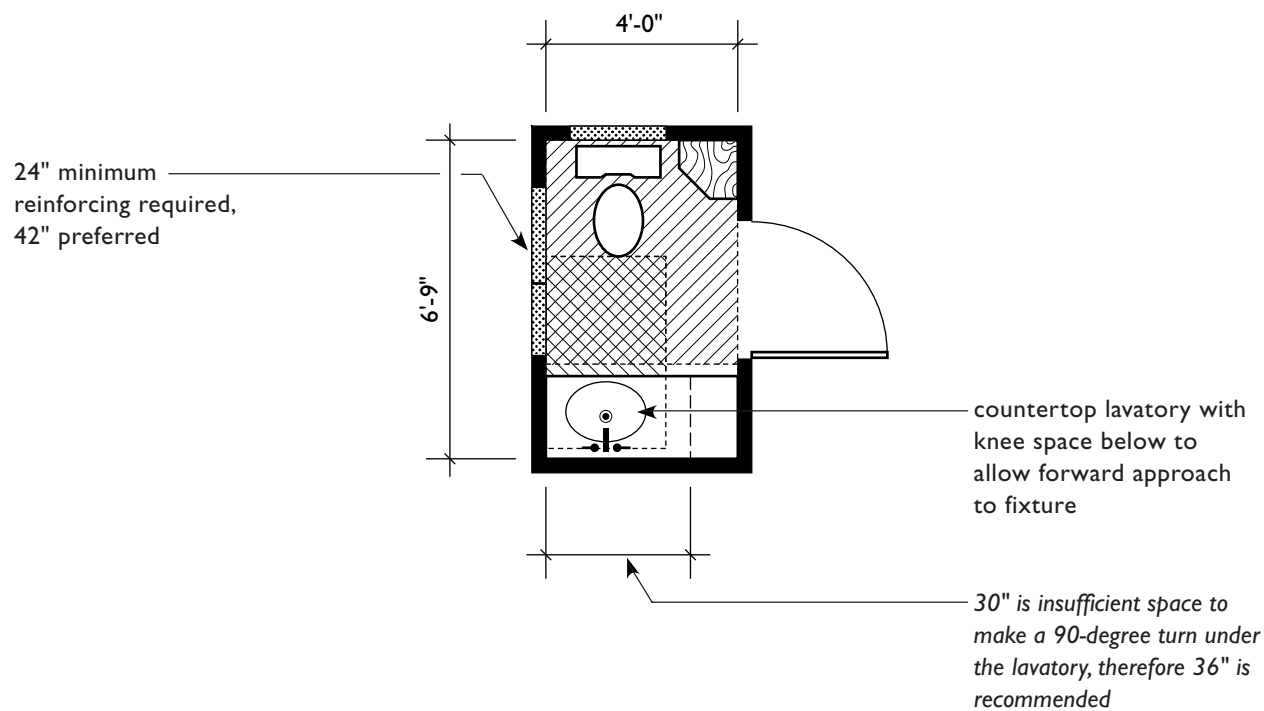
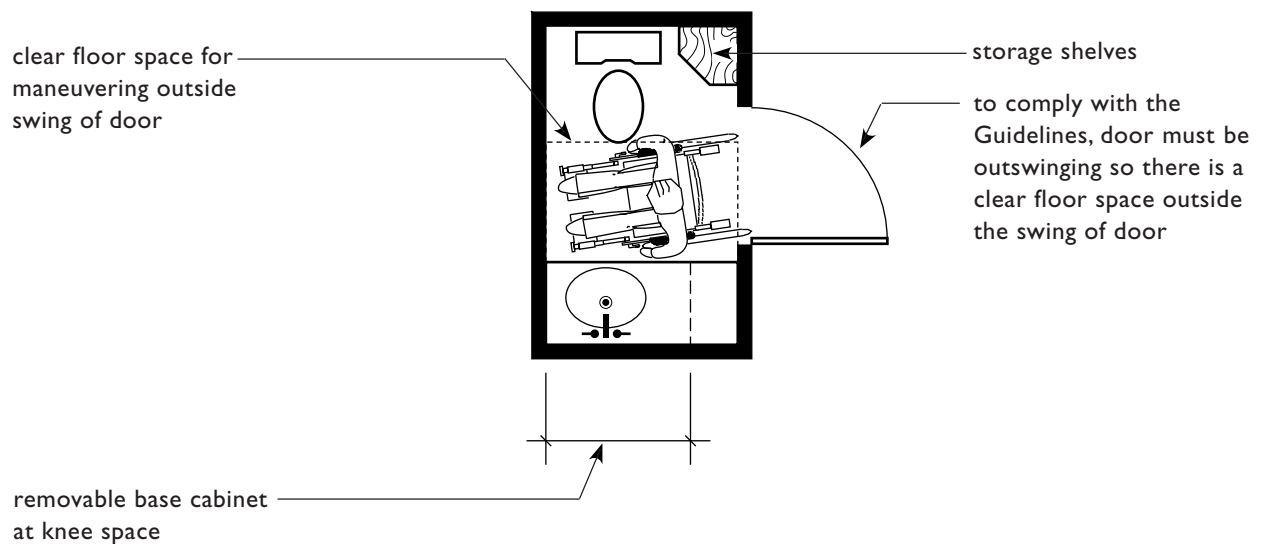
Powder rooms must meet the requirements for clear floor space at fixtures and reinforcing in walls only when they are on the accessible level of multistory units in buildings having one or more elevators.



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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Powder Room

Powder rooms must meet the requirements for clear floor space at fixtures and reinforcing in walls only when they are on the accessible level of multistory units in buildings having one or more elevators.



Legend:	reinforcing in walls or floors for grab bars	min. clear floor space at each fixture	min. clear floor space outside swing of door
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