

Accessible

Accessible Multifamily Housing

Key Code Requirements from Volume 1-C (1999)

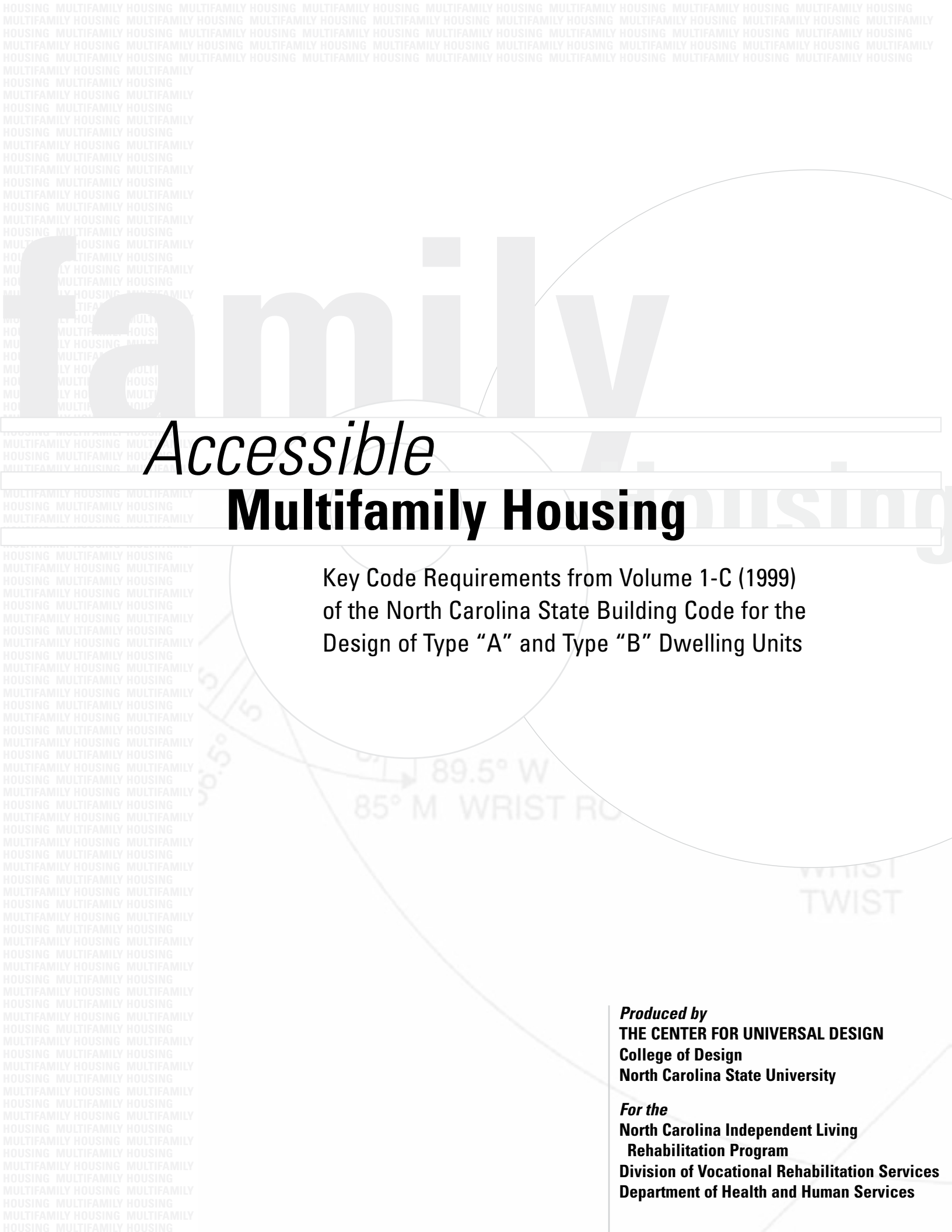
of the North Carolina State Building Code



Accessible



THE HAND



Accessible **Multifamily Housing**

Key Code Requirements from Volume 1-C (1999)
of the North Carolina State Building Code for the
Design of Type "A" and Type "B" Dwelling Units

Produced by
THE CENTER FOR UNIVERSAL DESIGN
College of Design
North Carolina State University

For the
**North Carolina Independent Living
Rehabilitation Program**
Division of Vocational Rehabilitation Services
Department of Health and Human Services

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Disclaimer

The statements and conclusions contained in this manual are those of the Center for Universal Design. This document is intended to serve as a guide to design professionals and building owners as the state of North Carolina encourages and promotes the concept of accessibility. The Center for Universal Design has made every effort to verify the accuracy and appropriateness of this manual's content so that it may be regarded as an accurate resource document. Yet, the information is only

advisory and the guidance provided is not legally binding. While the manual does refer to specific state building code requirements, it is not intended to supersede or supplant any law or regulation. Readers are advised to refer to specific laws and regulations, and to remember that no guarantee is offered or implied for the completeness of the information provided in this document or its acceptability for compliance with the North Carolina State Building Code.

Foreword

A place to live that allows freedom of movement and offers shelter and comfort for eating, bathing, sleeping—and space to share life with a family and community of friends. Freedom to go out of doors for a breath of fresh air, to take a stroll, and perhaps visit a park with friends. For those who work outside the home, a place of respite and rest before starting the next day. A place to dream and a place from which to pursue those dreams. And for those with increasing lifespans, a place to age “in place.”

A place to live and pursue and fulfill dreams is taken for granted by many of us. But for many people with disabilities the words and illustrations contained herein are not just architectural and interior designs to follow as part of a building code. They represent the ideals of our country’s founding fathers—life, liberty and the pursuit of happiness—because a place to live is the essential and basic starting point from which to pursue and enjoy these ideals. For people with disabilities, their families and friends, this document lives and breathes when acted upon, offering hope for now and the future.

I encourage you to incorporate these designs, not just because they may be required. Incorporate them for yourself, those you love and your friends—because you, or those around you, may need them sooner or later. And they are user friendly and accommodating now for people with or without disabilities, becoming increasingly desirable and preferred by those looking for a place to live and pursue their dreams.

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Acknowledgements

A debt of gratitude is owed John Dalrymple whose unflagging drive and insight have helped make accessible housing a reality for thousands of North Carolinians.

Also special thanks to the North Carolina Department of Insurance and especially to Laurel Wright and Jeff Kanner who gave us suggestions and advice along the way.

A special note of thanks goes to Fred Mills, Sr. of Mills Construction, who has demonstrated great leadership by enthusiastically pursuing effective solutions that support the concepts of universal design within the housing his firm builds, to increase its usability by all potential inhabitants. And also an appreciative word goes to his architect Wayne Jones who helped us further refine this document.

And, as always, with the utmost respect, we thank Ronald L. Mace, FAIA (deceased June 1998) whose mission of a universal world guides us still.



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Introduction

For many years the state of North Carolina has been striving to ensure that people with disabilities are able to assume the full responsibilities of citizenship. On March 13, 1973, the state adopted Chapter 11X, a much-enhanced accessibility code that also included provisions for the design of accessible housing. The U.S. Congress, recognizing that inaccessible buildings are one form of discrimination, passed in 1988, the Fair Housing Act Amendments, and in 1990, the Americans with Disabilities Act (ADA). Each contains design specifications that provide minimum requirements for building design to eliminate discriminatory building practices and make spaces usable by people with disabilities.

On September 16, 1998, the state of North Carolina adopted a new building code that incorporated the design and construction requirements from the Fair Housing Act and the ADA. The goal is to ensure architects, designers, and builders that by following the new state building code their structures will meet the requirements of both federal and state law. The new Volume 1-C: *Making Buildings and Facilities Accessible to and Usable by Persons with Disabilities* became effective July 1, 1999.

This publication, *Accessible Multifamily Housing in North Carolina*, highlights key issues from the July 1, 1999, building code that apply to the design and construction of new multifamily housing. Primarily drawn from Chapter 30: Multifamily Dwellings, it focuses on the scope and the design of the two types of accessible dwelling units now required: type “A”

fully accessible and type “B” *accessible*.

Differences and similarities are identified and rationale for each is presented.

This publication also introduces a new concept, universal design, that is gathering increased acceptance across the country. Since building code requirements are, of necessity, minimal and therefore often do not present the most optimum design solutions, universal design suggestions are presented to improve usability. Examples are given to show how universal design can be employed to increase the usability of all dwelling units and, in particular, enhance the marketability of type “A” *fully accessible* units.

This publication neither replaces nor is a substitute for the relevant sections of the North Carolina State Accessibility Code. Rather it is intended to expedite the understanding of the requirements, provide the reader with a general awareness of the needs of people with disabilities, and facilitate creative solutions for compliance.

Readers still must rely on Volume 1-C (1999) of the building code. In addition, the U.S. Department of Housing and Urban Development produced a technical assistance manual on the design and construction requirements of the Fair Housing Act. Contact the state or regional HUD office for a copy of the *Fair Housing Act Design Manual*, see page 37, “Resources.”

Overview and Background

Legislation

Starting in the late 1950's on the national level many pieces of legislation have been passed and design standards created to eliminate discrimination toward people with disabilities. A few examples include:

- 1961 — First American National Standard (ANSI A117.1)
- 1968 — Architectural Barriers Act
- 1973 — Section 504 of the Rehabilitation Act
- 1975 — P.L. 94-141 Education for All Handicapped Children Act
- 1980 — New ANSI Standard (A117.1)
- 1984 — Uniform Federal Accessibility Standard

The goal was and still is to give people with disabilities an equal opportunity to participate in the rich mosaic of American life. Economic self-sufficiency, self-determination, and independent living are possible only if housing that is usable by people with disabilities is available in large numbers and in a range of configurations and locations. North Carolina was an early leader in creating accessible housing for people with disabilities when, in 1973, accessible housing requirements were added to the state building code.

At that time the North Carolina General Assembly also enacted **tax credits** which are still in effect for construction of certain “dwelling units for handicapped persons.” For further details on these tax credits, reference should be made to North Carolina General Statute 105-130.22 which addresses corporate owners and General Statute 105-151.1 which addresses individual, partnership, trust and estate owners.

The U. S. Congress responding to national social consciousness passed in 1988 the Fair Housing Amendments Act and in 1990, the Americans with Disabilities Act

(ADA). States have been encouraged to adopt the design requirements of both the Fair Housing Act and the ADA into their own building code. The North Carolina Building Code, amended through the years, experienced its most significant change with the adoption of Volume 1-C (1999). It incorporates the design requirements from both the Fair Housing Act and the ADA to govern how buildings and facilities are designed, constructed, and modified to be accessible. This new code became effective July 1, 1999.

1999 Edition of Volume 1-C

Prior to 1999 the North Carolina Accessibility Code addressed multifamily housing along with other overnight accommodations such as hotels, motels, and transient residential facilities in Chapter 5: Minimum Requirements for Residential and Institutional Occupancies. In the revised 1999 edition these have been assigned separate chapters: Chapter 30: Multifamily Housing and Chapter 29: Transient Lodging.

Prior to the adoption of Volume 1-C (1999), small apartment complexes of less than 11 units were exempt from meeting any accessibility requirements. Now smaller complexes are covered and a greater number of units must be accessible. Public and common use spaces must meet the requirements of the building code and dwelling units must meet the requirements of type “A” *fully accessible*, type “B” *accessible*, or in some instances are not covered.

The requirements for the type “A” *fully accessible* unit are very similar to the specifications that have been in the North Carolina building code for some years describing an accessible dwelling unit. The significant change is the addition of a new unit design, the type “B” *accessible* unit, which is equivalent to the dwelling unit specifications required in the federal Fair Housing Act.

The requirements for type “B” units are less stringent than those for type “A” units. As stated in the U.S. House Report 711, the requirements of the federal Fair Housing Act are intended to place only “modest accessibility requirements on covered multifamily dwellings...These modest requirements will be incorporated into the design of new buildings, resulting in features which do not look unusual and will not add significant additional costs” (U.S. House Report 711, 100th Congress, 2nd Session at 25 and 18).

Demographics

Some 40-50 million Americans are thought to experience serious or chronic disabling conditions. A conservative estimate based on careful research is that about 20% of all households in the United States today include one or more people with significant disabilities. This number will increase dramatically over the next 20 years as the “baby boomer” generation reaches older adulthood.

Accounting for less than 10% of the population in 1975, nearly one in every four Americans will be age 65 or over by the year 2020. In addition to the status of the population at any given moment, most people will be individually affected over time. At some point in their lifetime, 70% of all Americans will have either a temporary or permanent disability. Everyone experiences some form of change in physical and/or cognitive abilities as they age. In the broadest sense, most of us, at some time in our lives, will have a disability of some type; it is the rare few who will not.

And there are pressing regional and state demographics as well. The rural south has the highest rates of disability in the country and the population of North Carolina is both changing and expanding as it continues to attract retirees.

An emphasis on accessible environments is an acceptance that there is no one-model individual whose characteristics remain static throughout his or her lifetime. For architects and designers, this acceptance translates into consideration of the broad range of human abilities and activities and how to accommodate these through design.

Types Of Disabilities

There are hundreds of different disabilities that can manifest in varying degrees. While one person may have multiple disabilities, another may have a disability with symptoms that fluctuate. Sometimes, less obvious are people who have diseases of the heart or lungs, neurological diseases with resulting lack of coordination, arthritis, or rheumatism that may reduce physical stamina or cause pain. Many people also experience reduction in overall ability as they age. People of extreme size or weight often need accommodation as well.

In addition to people with permanent disabilities, there are others who may have a temporary condition that affects their usual abilities. Broken bones, illness, trauma, or surgery—all may affect a person’s use of the built environment for a short time. Most architectural design standards are based on the needs of people defined by one of the following four general categories:



1 Mobility Disabilities - This category includes people who use wheelchairs and those who use other mobility aids.

Wheelchair Users - People with severe mobility disabilities use either a power-driven or manually operated wheelchair or, the more recent development, the three- and four-wheeled cart or scooter to maneuver through the environment. People who use wheelchairs have some of the most obvious access problems. They include maneuvering through narrow spaces, going up or down steep paths, moving over rough or uneven surfaces, making use of toilet and bathing facilities, reaching and seeing items placed at conventional heights, and negotiating steps or changes in level at an entrance.



Ambulatory Mobility Disabilities - This category includes people who walk with difficulty or who have a disability that affects gait. People who use crutches, canes, walkers, braces, artificial limbs, or orthopedic shoes are also included in this category as well as those who do not have full use of their arms or hands, or who lack coordination. Activities that may be difficult for people with mobility disabilities include walking, climbing steps or slopes, standing for extended periods of time, reaching, and fine finger manipulation.



2 Vision Disabilities - This category includes people with partial vision or total vision loss. Some people with a vision disability can distinguish light and dark, sharply contrasting colors, or large print, but cannot read small print, negotiate dimly lit spaces, or tolerate high glare. Many people who are blind depend upon their sense of touch and hearing to perceive their environment and communicate with others. Many use a cane or have a service animal to facilitate moving about. Some problems experienced by people with vision disabilities include orientation, receiving written or graphic information, using controls that are not adequately labeled, and avoiding hazardous protruding objects which they cannot detect.



3 Hearing Disabilities - People in this category use a variety of methods to compensate for their inability to hear. Those with partial hearing may depend on hearing aids or lip reading. Some people who are totally deaf also use lip-reading but must be able to see clearly the face of the individual speaking. Others use a standard means



of communication called sign language. Hearing people can learn sign language and can be interpreters for people who are deaf. Problems for people with hearing disabilities include communicating with many hearing people and using equipment that is exclusively auditory, such as telephones and fire alarms. Lack of sign language interpreters and inadequately trained interpreters can also be a problem.

4 Cognitive and Other Hidden Disabilities

There are many other disabling conditions which are not apparent from an individual's outward appearance. These usually involve cognitive and/or learning abilities and may affect behavior, understanding, or communication. People with these disabilities may have difficulty using facilities, particularly where the signage system is unclear or complicated. Seizure disorders are also a common hidden condition. In some individuals, environmental features such as lighting can activate seizures.

A hidden disability gaining greater awareness is a condition known as multiple chemical sensitivity. People with this condition experience a physical reaction that generally affects breathing when they come in contact with a chemical or combination of chemicals that may be present in many buildings and consumer products.



Scoping Requirements for Type “A” and Type “B” Dwelling Units

Introduction

All newly constructed multifamily housing developments are now required to include one or both of two types of accessible dwelling units: type “A” *fully accessible* and type “B” *accessible*. The specifications for the type “A” *fully accessible* units are similar to the specifications for accessible dwelling units found, since 1973, in the N.C. State Building Code and the type “B” *accessible* unit integrates the requirements of the federal Fair Housing Act. The type “A” unit has somewhat more clear floor space and a requirement for kneespace in kitchens and bathrooms while the type “B” unit has less required clear floor space and kneespace is dependent upon room size and configuration.

Public versus private ownership, whether the units are for sale, rent or lease, the number of dwelling units in the complex or development, and the terrain all influence the type of unit design required and in what number. These factors are summarized in the chart on page 14. The effects of terrain are briefly discussed on page 15 and are explained in greater detail in Volume 1-C (1999) and in the *Fair Housing Act Design Manual*.

Privately-owned housing projects are those owned or operated by any non-governmental entity such as a bank, contractor, homeowners’ association, investment company, or real estate corporation. *Publicly-owned* housing projects are those owned by any state, county, or municipal government and may include any department, agency, special purpose district or instrumentality.

Required Number of Units

“A” Units In privately-owned developments with units for **rent or lease**, once the number of units in the development

reaches 11, then 5% of the total number of units must be type “A.” However, in publicly-owned developments with units for **rent or lease** the number of units in the complex only need be one before 5% must be type “A.” There never will be a publicly-owned housing development with units for rent or lease, regardless how small, without a type “A” unit. Even though the 5% is a percentage requirement, there always must be at least one fully accessible unit of each unit type provided. See page 15 “Integration and Distribution of Dwelling Units.”

In multistory buildings without elevators, where an accessible route does not go to upper floors, the number of required “A” units is calculated not just on the ground floor units, but on the total number of units in the development. And the variety of types of dwelling units may affect the overall number of type “A” *fully accessible* units. See “Integration and Distribution of Units” on page 15. Developments with units for **sale**, whether publicly or privately-owned (e.g. condominiums) are exempt from the requirement to provide “A” units.

“B” Units With the inclusion of the type “B” unit in Volume 1-C (1999), additional scoping specifications also are provided. The number of type “B” units will be high in all newly constructed multifamily housing developments.

Covered multifamily dwellings in privately-owned developments for **rent or sale** are: **1.** all dwelling units in buildings containing four or more units if such buildings have one or more elevators and **2.** all ground floor units in other buildings containing four or more units. In publicly-owned developments with units for **rent, lease, or sale**, all units are covered, regardless of the number of units in the development.

Scoping Overview | New Single-story Multifamily Dwelling Units

Type of Ownership	For Rent or Sale	Number of Units	Unit Design "A" or "B"
PRIVATELY-OWNED	Rent, lease or sale	1 to 3 units	Not Covered
	Rent or lease	4 to 10 units	All B*
	Rent or lease	11 or more units	5% A (at least 1 of each unit type) + remainder B*
	Sale	4 or more units	All B*
PUBLICLY-OWNED	Rent or lease	1 or more units	5% A (at least 1 of each unit type) + remainder B*
	Sale	1 or more units	All B (regardless of the # of units in the building)

- * Covered type "B" dwelling units are
1. all units in buildings containing four or more units if the building has one or more elevators, and
 2. all ground floor units in other buildings containing four or more units.

** For multifamily housing complexes designed, financed, or constructed with public money the Uniform Federal Accessibility Standards (UFAS) must be consulted. In addition, HUD's 504 regulations implementing "Non-discrimination Based on Handicap in Federally Assisted Programs and Activities" (Final Rule, 24 CFR Part 8 at 8.22 New

Construction—Housing Facilities) requires that 2% of the total number of units be accessible for people with hearing and vision disabilities. These units must meet the design requirements for the type "B" unit and, in addition, have audible and visual alarms and additional receptacles. Guidance can be found in Title II of the ADA: State and Local Government Facilities; Interim Final Rule, 36 CFR Part 1191.

In addition, HUD has established a "visitability" policy for all newly constructed housing. Contact your local, state, or regional HUD office for clarification.

To be a covered “B” unit, all finished living space must be on the same floor, that is, be a single-story unit, such as single-story townhouses, villas, or patio apartments. Even though raised and sunken areas are permissible in covered dwelling units, there are limitations to their use. Multistory dwelling units are not covered by Volume 1-C (1999) except when they are located in buildings which have one or more elevators, in which case, the primary entry level is covered.

The definition of “elevator building” and “ground floor” are critical to determining the extent of covered type “B” units. Buildings may have more than one ground floor and the ground floor may not coincide with grade level. For instance, in buildings with single-story units located above grade (e.g., over a garage, shops, or other non-residential use), the level where the units first occur would be designated the ground floor and must be on an accessible route.

A small number of units in privately-owned developments may not be covered in the rare instance where there are extremes of terrain or unusual characteristics of the site. A site analysis test is provided in Volume 1-C at Section 30.2.8 to determine site impracticality based upon terrain. Unusual site characteristics also are identified.

The site analysis test to determine extremes of terrain and thus site impracticality may be used only for privately-owned housing developments. For publicly-owned developments, regardless of difficult site terrain or any unusual conditions such as coastal high hazard areas or designated flood plains, there never may be a reduction in the number of covered units.

The reader must review carefully all applicable sections of Volume 1-C (1999) including 30.2.7 Ground Floor, 30.2.8 Site Impracticality, 30.3.3 Buildings with Elevators, and 30.3.4 Privately Owned-Building without Elevator(s). Guidance also may be found in the *Fair Housing Act Design Manual*.

Integration and Distribution of Dwelling Units

Both type “A” and “B” units must be distributed throughout the development or complex. Due to the small number of type “A” *fully accessible* dwelling units, it is critical that they not be segregated from other units but be dispersed throughout a building or development. In addition to distributing the type “A” units among different buildings and on different floors, the units also must be distributed among the classes of living units provided.

A class of living unit is determined by the number of bedrooms. A one-bedroom apartment is one class of living unit and a two-bedroom apartment a second. When the earlier code did not specify the number of bedrooms in a type “A” unit, builders often constructed only one-bedroom accessible units. Many people with disabilities who lived with families or companions were unable to reside in those units.

The requirement that type “A” units be distributed among the classes of dwelling units will increase the number of type “A” units. For example, a forty-unit project must provide 5% of its dwelling units as type “A.” This equals a total of two units. However, because the project is offering three classes of living units, one-, two-, and three-bedroom apartments, an “A” unit must be provided in each class, resulting in a minimum total of three “A” units.

Additional Guidance

Areas of Rescue Assistance.

All publicly-owned and many privately-owned buildings, including multifamily housing developments, now are required to provide accessible means of egress or areas of rescue assistance in elevator buildings for those floors served by the elevator. See Volume 1-C at Section 30.4.2.2.2

Multiple Bathing Options

When planning a multifamily development, in addition to offering type “A” units in different classes, consideration should be given to providing a range of bathing fixtures in both type “A” and “B” units—some with bathtubs, some with bathtubs and a seat at the back, and some with roll-in showers.

If the development is intended to serve a particular group of people with disabilities, additional guidance can be provided by contacting the local or state organization that addresses information and services for that specific population. For people with disabilities, contact the N.C. Independent Living Services or the Independent Living Offices statewide.



The Design of Type “A” and Type “B” Dwelling Units

The type “A” unit, required in smaller numbers, is usable by all prospective tenants but is designed to provide a higher level of accessibility to accommodate people who use a wheelchair or scooter and offers a greater level of independent use to people whose disability significantly affects mobility. The type “B” unit provides only a moderate level of accessibility and often is appropriate for a person who may, for example, only use a mobility device intermittently.

Many people may never require the advantages of a type “A” unit but would benefit from the “B” unit’s flexible and safer features that impose fewer constraints on daily activities. Because many invisible accessibility features are integrated into the unit during initial construction; e.g., a usable entrance, 32-inch doors, and an accessible route, “B” units can be modified without extensive renovations should a tenant experience an injury or illness or need in-home care.

Key differences between type “A” and “B” units are the requirement in the type “A” kitchens and bathrooms for turning spaces and knee space below sinks and under lowered worktops and lavatories. In type “B” units the clear floor space requirements are less and kneespace is dependent upon room size and configuration.

The requirements for “A” and “B” dwelling units are found primarily in Volume 1-C (1999), Chapter 30: Multi-family Dwellings. Some of the requirements for fully accessible features are specified by reference to other parts of the accessibility code. For example, Chapter 7: Door, Doorways and Door Hardware, describes accessible elements for doors that are common to both commercial as well as fully accessible residential facilities.

It is important to review Chapter 30 in its entirety, recognizing that Section 30.4 describing type “B” *accessible* units and 30.5 type “A” *fully accessible* dwelling units are treated as separate and distinct but with some overlap. Some of the requirements for the “A” unit are found in the section for the “B” unit and are grouped accordingly to help the reader understand the distinctions between certain requirements. The chart starting on page 18 outlines the requirements for type “A” and “B” dwelling units and is provided to give a general overview.

Type “A” Fully Accessible Units

Type “A” units must be on an accessible route from an accessible parking space that continues into and throughout the dwelling unit. Doors with at least 32 inches clear width and accessible hardware must be provided throughout the dwelling unit. The primary bathroom must be fully accessible and secondary bathrooms, including half baths, must meet the requirements of type “B” units. Light switches, electrical outlets and other environmental controls must be approachable and be low enough to reach and be easy to operate.

The kitchen and at least one full bathroom must have enough space (combination of maneuvering space, clear floor spaces required at fixtures and appliances, and the accessible route) to turn a wheelchair around within the room. Additionally, knee spaces are required below bathroom lavatories, the kitchen sink, and the worktop (located beside the cooking appliance) to allow someone to pull up and perform tasks. Appliances with front- or side-mounted controls must be approachable by people using wheelchairs or scooters.

Overview of Requirements

Type "A" Fully Accessible Dwelling Unit	Type "B" Accessible Dwelling Unit
Parking (A)	Parking (B)
<p>A minimum of one accessible parking space required for each unit.</p>	<p>The minimum total accessible parking spaces provided must be equal to at least 2% of the overall number of "B" units.</p>
<p>Pro-rata number of van accessible parking spaces must be provided depending on overall number of accessible parking spaces required.</p>	<p>Same</p>
Entries (A)	Entries (B)
<p>At least one entry into the unit must be accessible.</p>	<p>Primary entry must be accessible.</p>
Accessible Route (A)	Accessible Route (B)
<p>An accessible route is required into and throughout the living spaces of the unit, including exterior decks and patios.</p>	<p>Same</p>
<p>Passing spaces along the accessible route are not required within the dwelling unit.</p>	<p>Same</p>
Doors (A)	Doors (B)
<p>Accessible doors and door hardware must be provided throughout, i.e. 32" minimum clear width, easy-to-use handles, low or flush thresholds, etc.</p>	<p>Accessible entry door must be provided, all others must have at least a nominal 32" clear width, with no hardware requirement except at exterior of entry door.</p>

<p>Environmental Controls (A) (light switches, electrical outlets, thermostats, etc.)</p>	<p>Environmental Controls (B) (light switches, electrical outlets, thermostats, etc.)</p>
<p>Must be accessible (within reach range of a seated person and require little to no operating force and no twisting of the wrist or grasping).</p>	<p>Must be in accessible locations.</p>
<p>Kitchens (A)</p>	<p>Kitchens (B)</p>
<p>Must have a 60" turning space.</p>	<p>40" minimum clearance between all counters and appliances except "U" shaped kitchens with a sink, range, or cook top at the base of the "U," in which case a knee space must be provided at the base of the "U" or a 60" turning space must be provided.</p>
<p>30" X 48" clear floor space must be provided at every appliance.</p>	<p>Same</p>
<p>Must have accessible or adjustable worktop with kneespace below.</p>	<p>No requirement</p>
<p>Must have at least one sink with knee space below and accessible faucet controls.</p>	<p>Only parallel approach to sink required, unless a narrow "U" shaped kitchen with a sink, range, or cook top at the base of the "U" without a 60" turning space, then a knee space beneath sink is required for a forward approach.</p>
<p>At least one storage shelf a maximum of 48" above the finished floor in each type of cabinet and storage units provided.</p>	<p>No requirement</p>
<p>Accessible hardware required on all cabinetry.</p>	<p>No requirement</p>
<p>Cooking appliances with controls within reach range of a seated person, insulated knee spaces (if cooktop), locations adjacent to accessible worktops, etc.</p>	<p>30" X 48" clear floor space for approach only</p>

Bathrooms (A)	Bathrooms (B)
<p>Principle bathroom must be fully accessible, all other bathrooms (including toilet rooms, i.e., half baths, but not mandatory for powder rooms) must meet the requirements for "B" units.</p>	<p>All bathrooms must be usable, i.e., allow entry and approach to all fixtures. This is a lesser level of accessibility than required for bathrooms in "A" units.</p>
<p>60" clear floor turning space is required, entry door may swing over turning space by 12" maximum.</p>	<p>One 30" X 48" clear floor space must be provided outside the swing of the room entry door.</p>
<p>Specific clear floor spaces required at toilets, tubs, showers and lavatories.</p>	<p>Same except toilets and vanity cabinets may encroach on some clear floor spaces.</p>
<p>In principle bathroom the toilet may not be located in the clear floor space required for a tub or shower.</p>	<p>Toilet must be located outside clear floor space for entry into tub or shower (forward or side 30" X 48" clear floor space).</p>
<p>Reinforcing must be provided for grab bars beside toilets and bathing fixtures.</p>	<p>Same</p>
<p>If a medicine cabinet is provided, at least one storage shelf in it must be at 44" maximum.</p>	<p>No requirement</p>
Telephones (A)	Telephones (B)
<p>Telephones, if provided must be accessible, including hearing aid compatibility.</p>	<p>No requirement</p>
Laundry (A) (when located within unit)	Laundry (B) (when located within unit)
<p>Laundry equipment, if provided, must be accessible (front loading with front-mounted controls) and located on an accessible route.</p>	<p>A 30" X 48" clear floor space is required for each appliance and located on an accessible route.</p>

Type "B" Accessible Dwelling Units

Most people with disabilities who use wheelchairs will be able to maneuver throughout a type "B" unit. It too must be on an accessible route from parking, have "usable" bathrooms and kitchens, i.e., a person in a wheelchair can get into and out of the bathroom and kitchen and assume a close parallel position in front of lavatories, sinks, and appliances. A person in a wheelchair must be able to approach and reach light switches, outlets and other environmental controls. While these dwelling units offer a basic level of access, they are not required to provide the additional clear floor areas, knee spaces, lowered worktops, or product features of the type "A" unit.

While type "B" kitchens are not required to have floor area to allow a person in a wheelchair to turn around, one exception exists. When a U-shaped kitchen has a sink, range, or cook top at the base of the "U", the "U" must be expanded until a minimum clearance of 60 inches is provided between the legs of the "U." If not, a knee space must be provided at the base of the "U."

Type "B" bathrooms also are not required to have the floor area necessary for wheelchair turning spaces; however, a 30-inch X 48-inch clear floor space outside the swing of the room entry door is required. Bathrooms and half-baths all must meet the requirements of type "B" bathroom fixtures.

Lavatory vanity cabinets may encroach somewhat on the clear floor area required for toilets. Toilet fixtures also may occupy some of the floor area required for bathtubs and showers, provided the minimum 30-inch X 48-inch clear floor space required for entry into the fixtures (either a forward or side approach) is always available.

See Section 30.4.4.4 in the building code and page 34 of this publication. It is possible to design type "B" units without any knee spaces if sufficient clear floor space for a wheelchair user is provided to allow a parallel approach centered on the lavatory.

Adaptable Dwelling Units

(Type "A" and "B" Units with Adaptable Features)

Volume 1-C (1999) in Section 30.2 Definitions provides an option for an adaptable dwelling unit. Adaptable dwelling units include both accessible features and those that may be adapted later to suit the needs of the tenant. The adaptability provisions are included in the building code to give architects, designers, and builders the option of providing dwelling units that look no different than others on the market but still meet the requirements of the code and the functional needs of tenants.

Ever since requirements for accessible housing have been included in building codes and standards, both the building industry and people with disabilities have been dissatisfied with some of the fixed accessible features. Problems arose from inadequate design details and the spotty availability of units. If there were not an immediate match of an accessible unit with a person with a disability, some builders and owners found the only way to rent accessible apartments was to offer rent discounts. Frequently, prospective tenants did not like the appearance of stainless steel grab bars in the bathroom or the open kneespace with loss of storage below sinks, lavatories, and work surfaces.

Creating adaptable dwelling units helps solve these problems. An adaptable dwelling unit is one where common access features are fixed while others are adjustable and all are installed during initial construction. The accessible elements and spaces can be used by the greatest number of people without being modified. The adaptable features allow adjustments to meet individual tenant's needs whether they have a disability, are older, or have no disability but are just a little taller or shorter than "average."

For example, the requirement within both type "A" and "B" dwelling units for an accessible route of 36 inches ensures that dwelling unit passageways are not too narrow or impassable for any resident. Other examples of permanently installed accessible features include level entrances, doors 32 inches wide ("clear" or "nominal" depending upon unit type and door location), clear floor space, reinforcing around toilet and bathing fixtures, and controls within reach of a seated position. Adaptable features that can be removed or adjusted when needed include adjustable height closet rods, shelves, provisions for providing knee space, worktop segments that are adjustable in height, and the later addition of grab bars (since reinforcing has been installed during initial construction).



Both the accessible and adaptable features must be incorporated during initial construction. The adaptable type "A" unit, from the time of initial construction, must function at least at the level of a type "B" unit so the change to type "A" can be accomplished quickly and with minimal expense. **Neither passage door width nor clear floor space is subject to adaptability in type "A" or "B" dwelling units.**

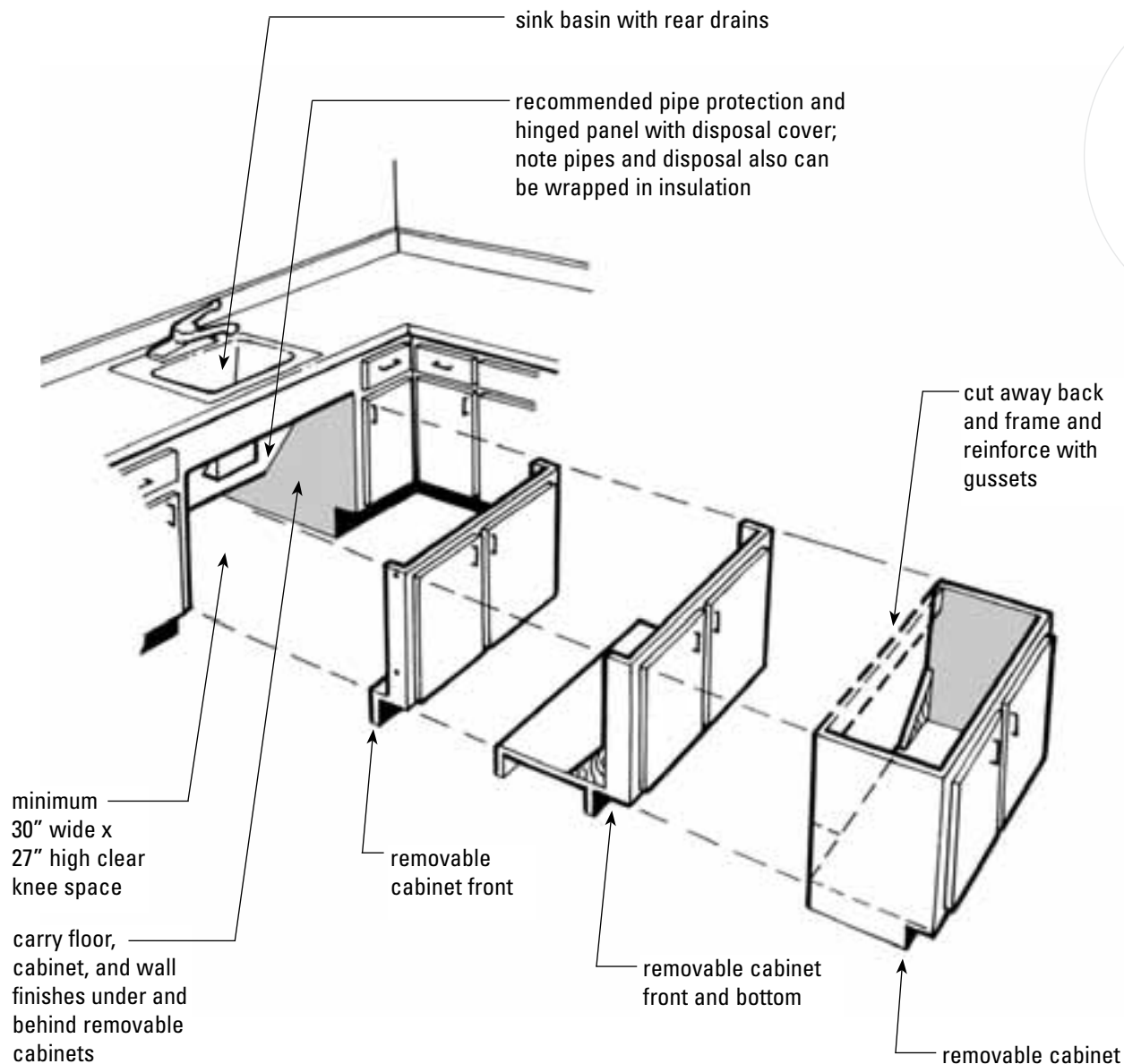
Adaptable Cabinets. The requirement for knee space has a dramatic impact on the appearance and functionality of kitchens and bathrooms. A uniform cabinet appearance is possible with a cabinet that easily can be reconfigured or removed to reveal knee space and still provide maximum storage. When a potential resident or owner needs the knee space it can be provided quickly and easily. Specifications for knee space are based on the requirements for bathrooms in Chapter 11 and Chapter 30.

For knee space to be safe, usable, and aesthetically integrated the floor, walls, and cabinet faces of knee space must be finished during initial construction so no other work is necessary when the cabinet is removed. Regardless of whether the knee space is exposed or concealed by a removable cabinet, hot pipes or exposed edges should be insulated or enclosed at the time of initial construction.

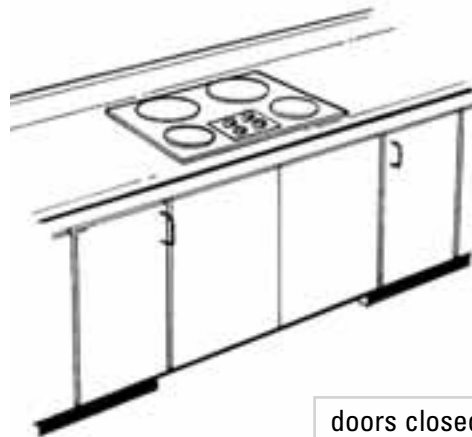


There are no kitchen cabinet manufacturers that currently offer "removable base cabinets" in their standard lines. The methods for providing removable cabinets presented here are some of the possible solutions. Of those shown, the removable cabinet front is likely to be the

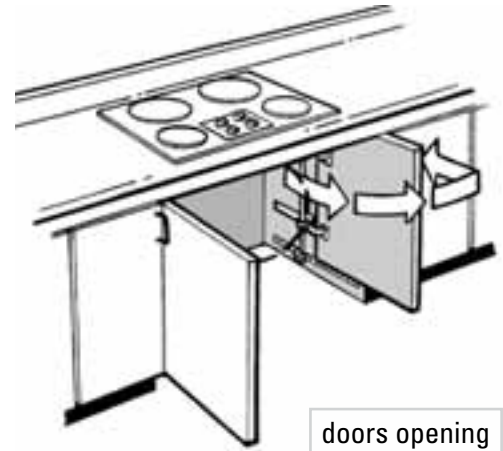
easiest to accomplish based upon current manufacturing processes. However, when parts and elements are removed or detached they are more likely to be discarded and therefore not available if it becomes desirable to return the cabinet to its original appearance and function.



Removable Cabinet Options for Knee Space at Sinks, Cooktops, and Worktops



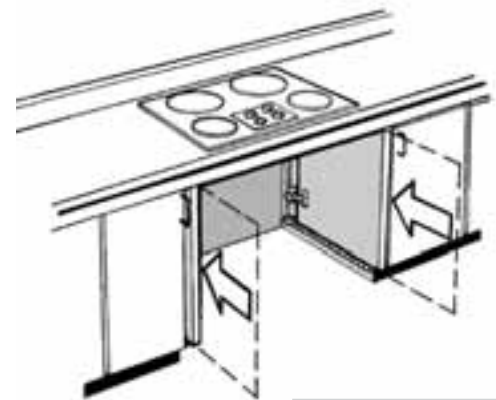
doors closed



doors opening

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 must be removed or stored at another location. A unique combination hinge allows the doors to swing open in a traditional manner and, when desired, the doors may be pushed back into the cabinet.

Rolling carts are another method of concealing knee space because they can occupy the same space as a storage cabinet until the knee space is desired. In addition, the cart top can be used as an auxiliary lowered work surface and also can be used to transport items from one location to another.



doors retracted

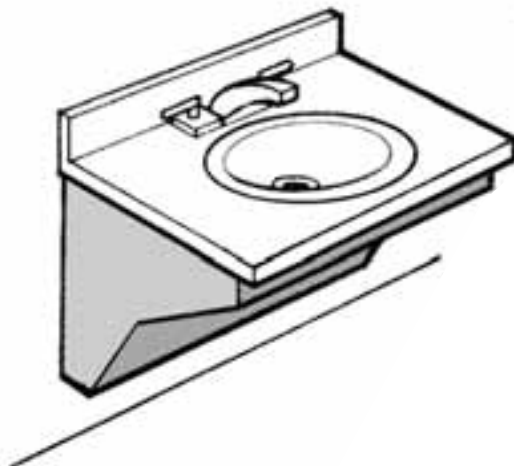
Use of Self-Storing Door Hardware to Expose Knee Space

rolling carts provide moving storage that can be placed in a knee space and be moved out when the space is needed

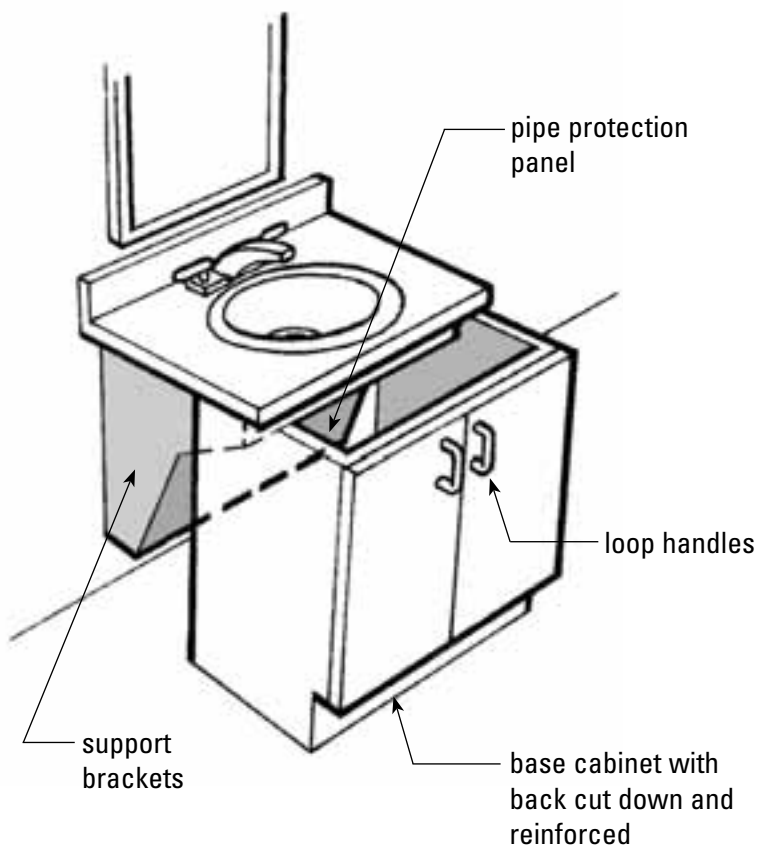


Movable Cart

In some small bathrooms, even with retractable doors, sufficient maneuvering space cannot be provided because the sidewall of the cabinet prevents maneuvering and turns. In those situations it may be necessary to install a removable vanity cabinet at the time of initial construction. The countertop must be mounted on the wall with support brackets, a cabinet fitted around it, and the floor and wall finished beneath it. A pipe protection and appearance panel should be installed between the wall support brackets.



Wall-Hung Countertop Lavatory with Knee Space Below



Removable Vanity Cabinet



Universal Design. Adaptability is a step closer to universal design and, in fact, is a feature of universal design. Universal design is a philosophy and a goal that strives to accommodate the broadest possible spectrum of human ability in the design of all products and environments. It can be used to help meet building code requirements while at the same time increase usability of a feature, space, or entire dwelling unit, incorporate aesthetics, and maintain a marketable appearance.

Many of the features in accessible units have proven to be helpful to people other than those with a disability, and when invisibly integrated, they increase the functionality of space for all people. By including adaptable features in both

type "A" and "B" units, these units look like conventional housing. In fact, the same adaptable features could be included in all units, making it less expensive than constructing a small percentage of "A" units significantly different in design, with the remainder being type "B" units or yet a third inaccessible design.

By creating housing that can fit any occupant, the universal design approach opens up the possibility for mass-produced, attractive, and universally usable housing in all sizes, price ranges, and locations. Developers and builders will find it is less expensive to build more units of the same kind. Owners and managers will be able to rent to a larger market.

Key universal features to consider including in all dwelling units.

Entrances

- one entrance without steps
- minimum five x five-foot maneuvering space at the stepless entrance
- for viewing, a sidelight or a peephole at 42 and 60 inches above the floor

General Interior

- all closet rods adjustable to 48 inches above the floor

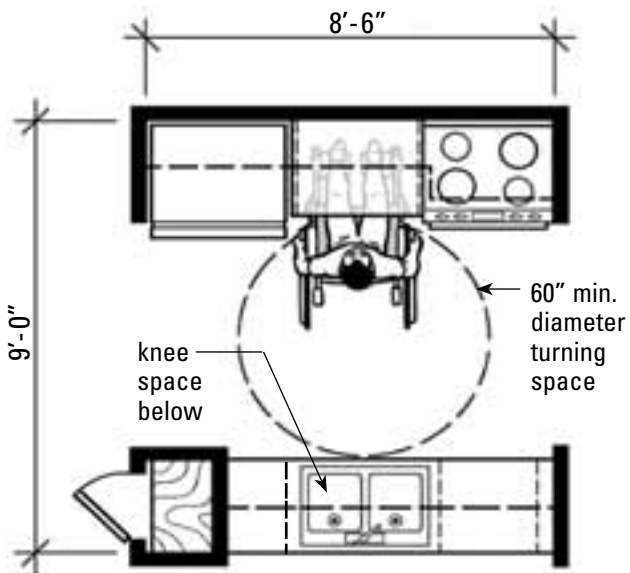
Kitchens

- adaptable cabinets to reveal knee space at sink and under work surface near cooking appliance
- cooktop with front- or side-mounted controls and staggered burners to eliminate dangerous reaching
- single-lever faucets
- side-by-side refrigerator/freezer or refrigerator/freezer with frozen food storage in the bottom

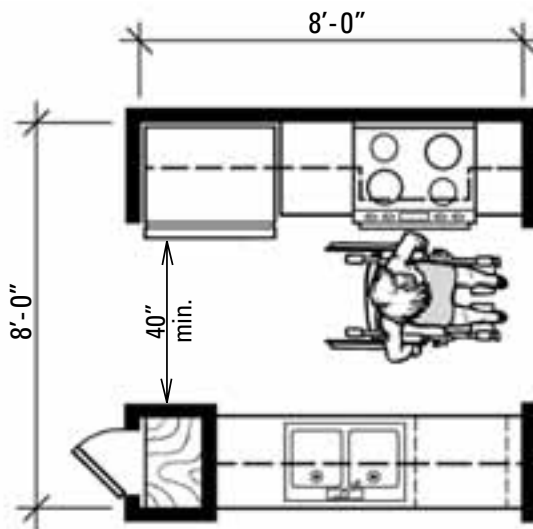
- variable height work surfaces adjustable through a range of 28 to 42 inches

Bathrooms

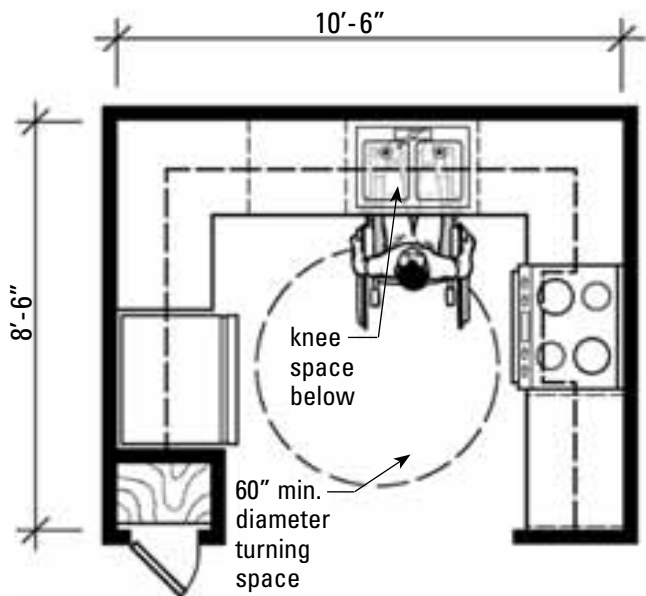
- adaptable cabinets to reveal knee space under lavatory
- enlarged reinforced areas around toilets and bathing fixtures to provide secure mounting locations other than the minimums found in design standards
- offset controls in tub or shower to minimize stooping, bending, and reaching
- single-lever faucets
- toilet centered in a minimum 36-inch wide space, 18 inches from the sidewall
- adjustable height hand-held shower head
- mirror to backsplash at lavatory



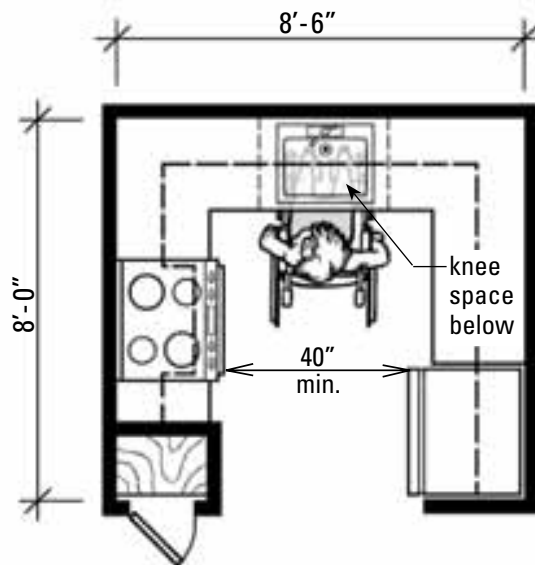
Type "A"
Fully Accessible Galley Kitchen



Type "B"
Accessible Galley Kitchen

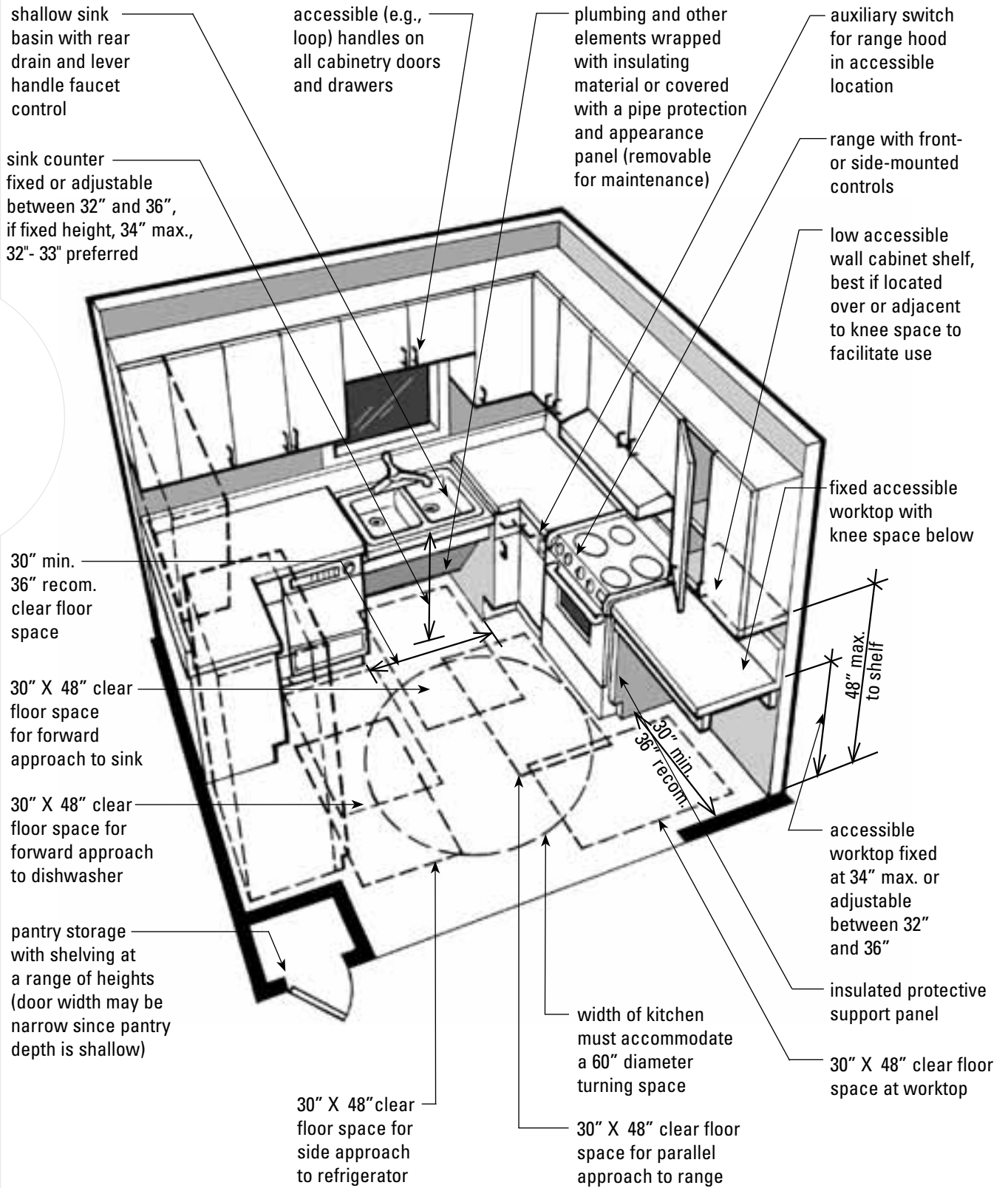


Type "A"
Fully Accessible U-Shaped Kitchen
(see perspective on page 28)



Type "B"
Accessible U-Shaped Kitchen
(see perspective on page 29)

Example Kitchen Plans



Type "A"
Fully Accessible Kitchen
10'- 6" X 8'- 6"

knob faucet handles permitted— lever hardware, although preferred, is not required

standard sinks acceptable, shallow sinks with rear drains simplify knee space

floor, walls, and cabinet faces of knee space must be finished during initial construction

knee space is required under sinks and cooktops located at the bottom of a U-shaped kitchen when the "U" is less than 60" wide; plumbing and other elements should be covered by a removable pipe protection and appearance panel or be wrapped with padded insulating material

30" min. 36" recom. clear floor space

rear-mounted controls on ranges are permitted; for safety and ease of use, front- or side-mounted controls are preferred

all counters may be set at the conventional 36" height

pantry storage

retractable doors conceal knee space when not in use

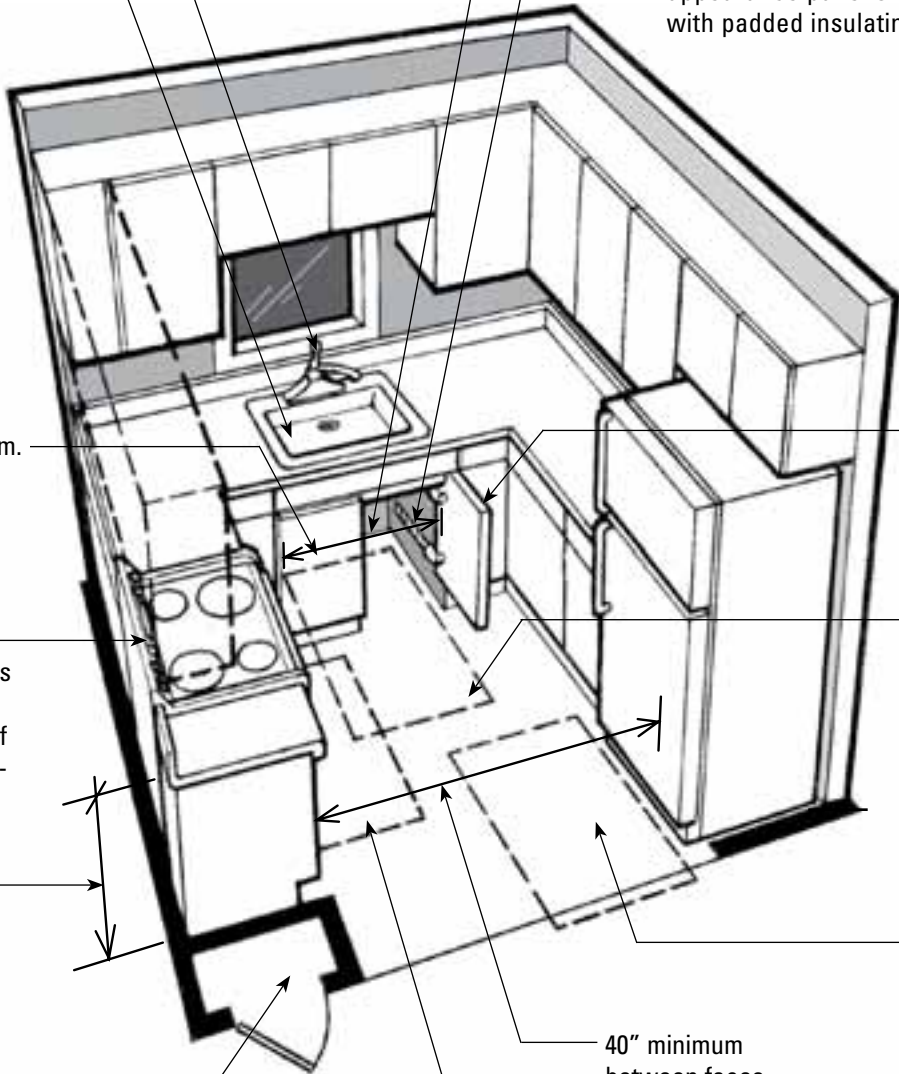
30" X 48" clear floor space for forward approach to sink

30" X 48" clear floor space for refrigerator

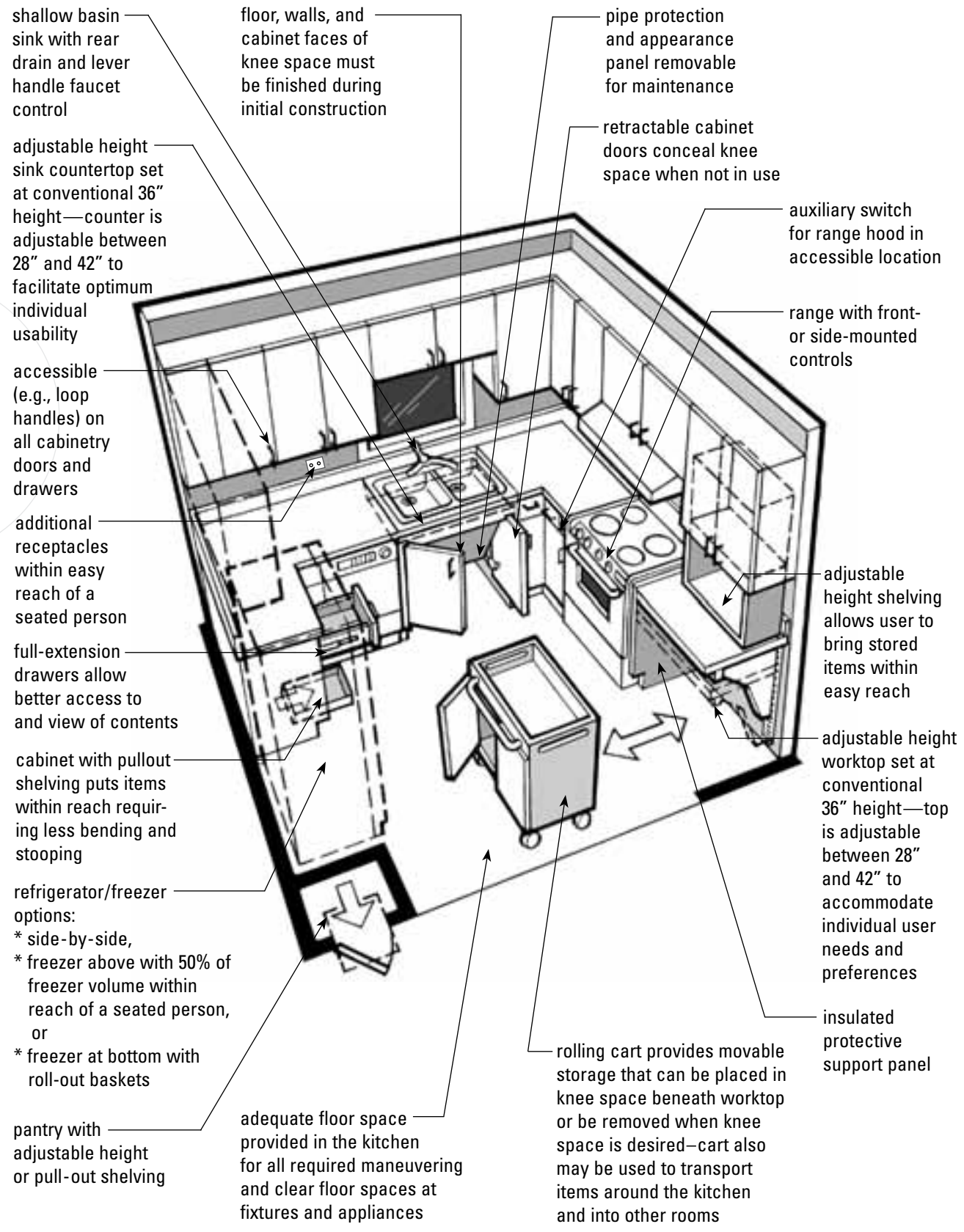
40" minimum between faces of appliances and cabinets

30" X 48" clear floor space for side approach to range

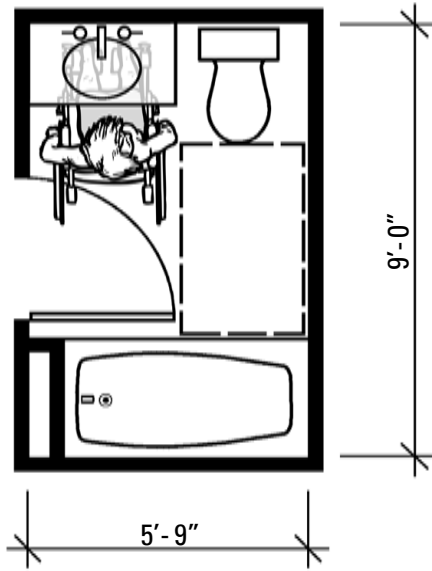
NOTE: knee space only (not countertop height) must comply with Type "A" requirements if close and centered parallel approach is not possible



Type "B"
Accessible Kitchen
8'-6" X 8'-0"

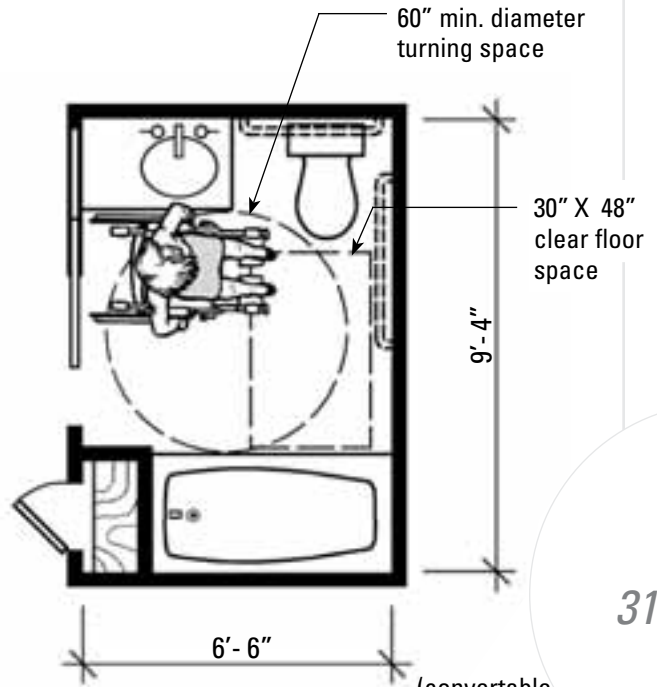


Universal Kitchen
 (Meets requirements for both Type "A" and "B")
 10'-6" X 8'-6"



Type "B"

Accessible Bathroom
(see perspective page 34)

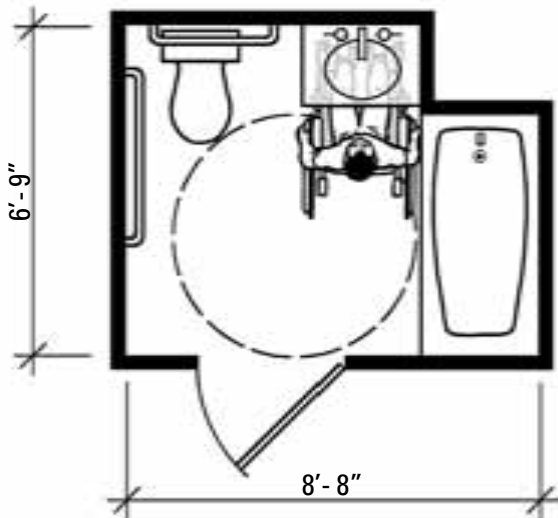


Type "B"

Accessible Bathroom
(see perspective page 35)

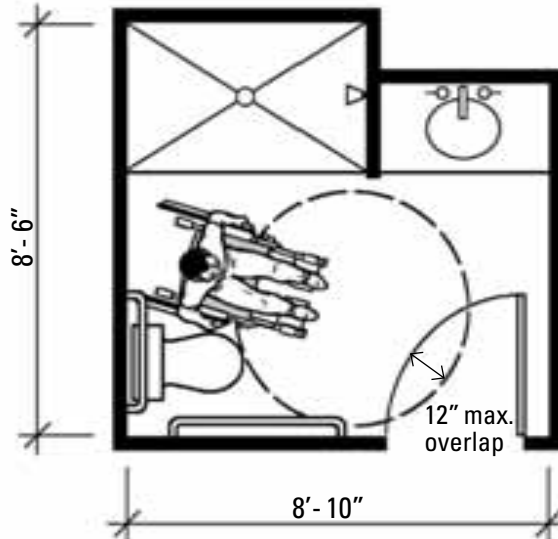
(convertable to Type "A" bathroom)

NOTE: All lavatories in these plans have either open knee space below or cabinets with retractable doors or removable bases.



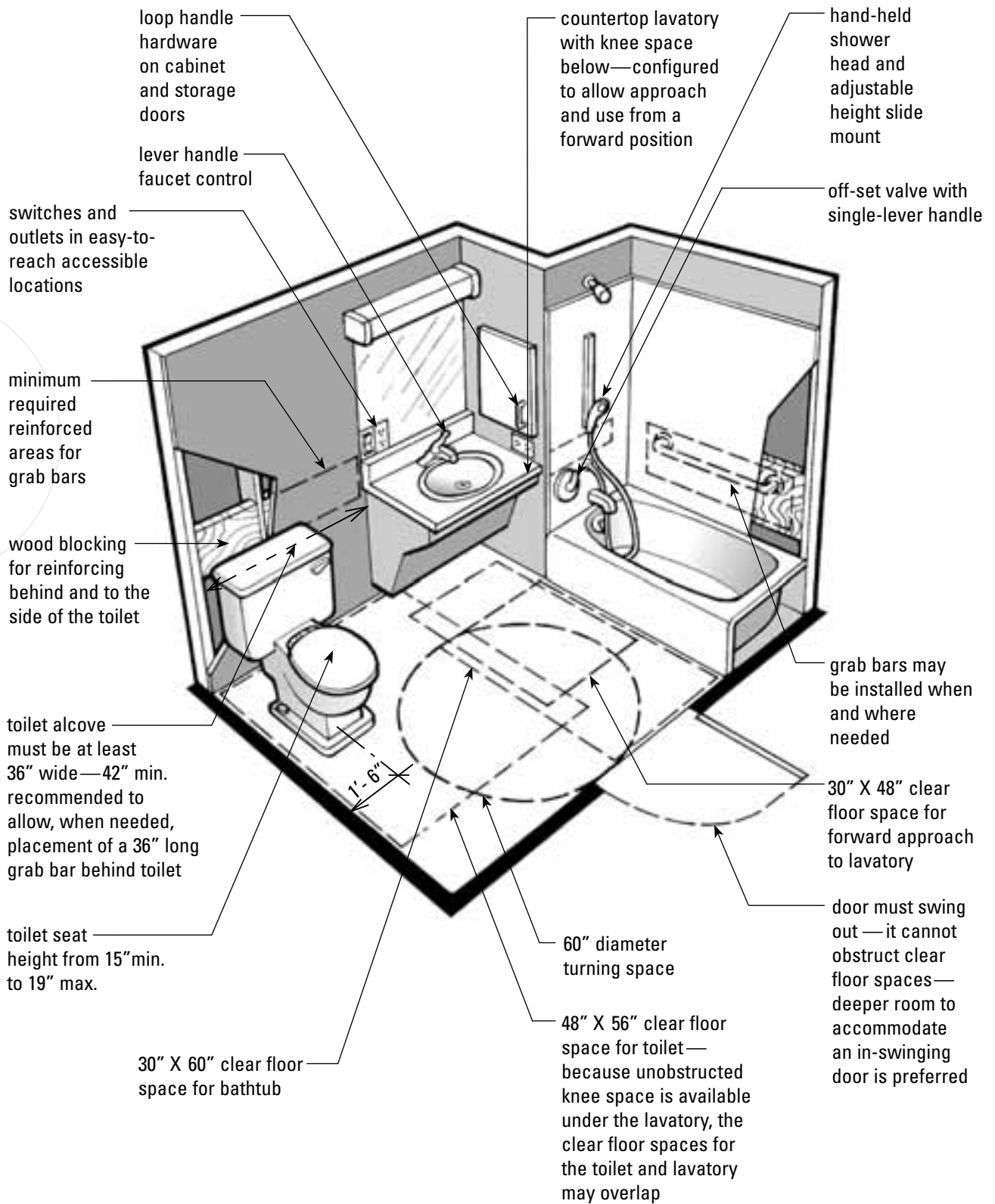
Small Type "A"

Fully Accessible Bathroom
(see perspective page 32)



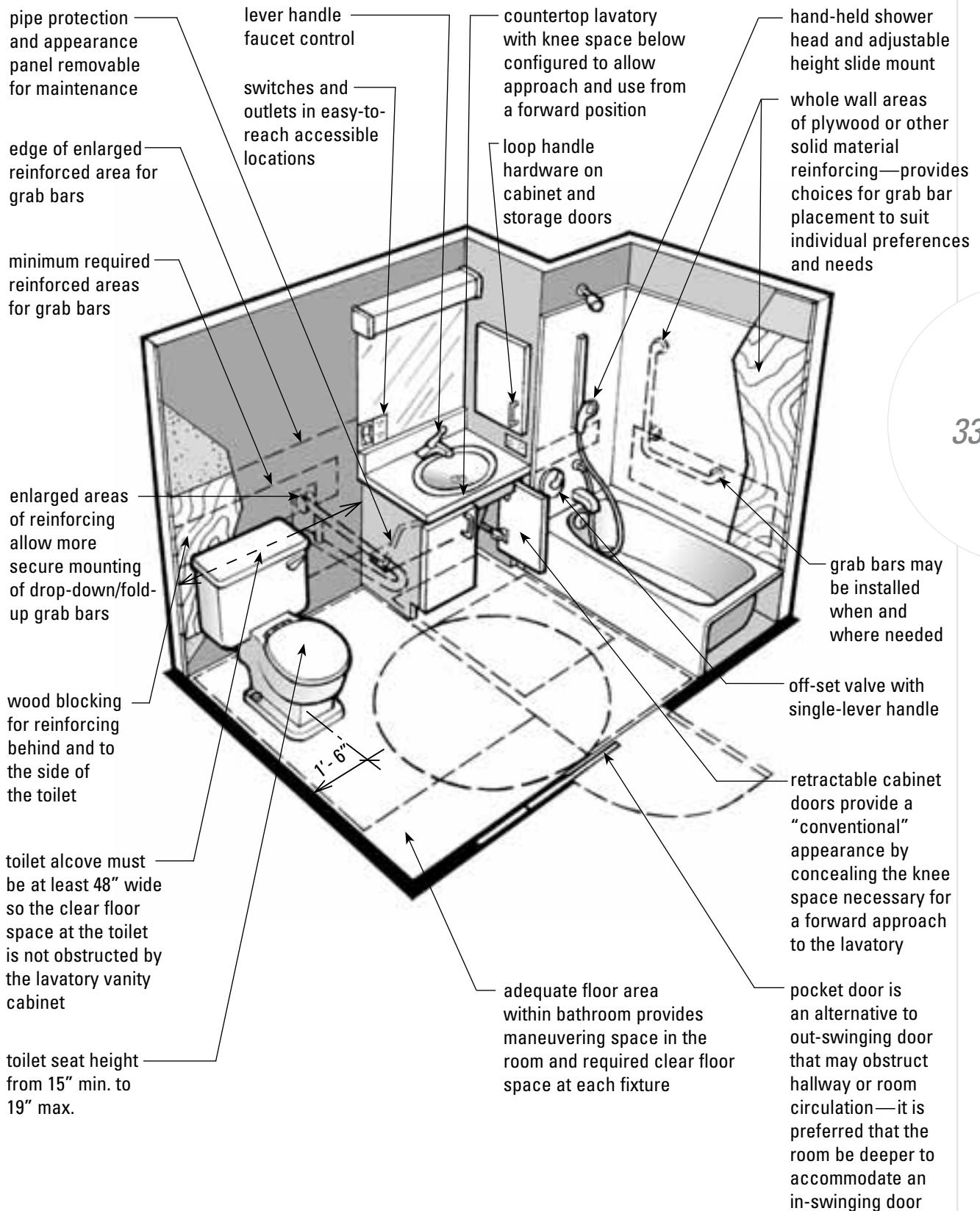
Type "A"

Fully Accessible (Universal) Bathroom with In-swinging Door
(see perspective page 36)



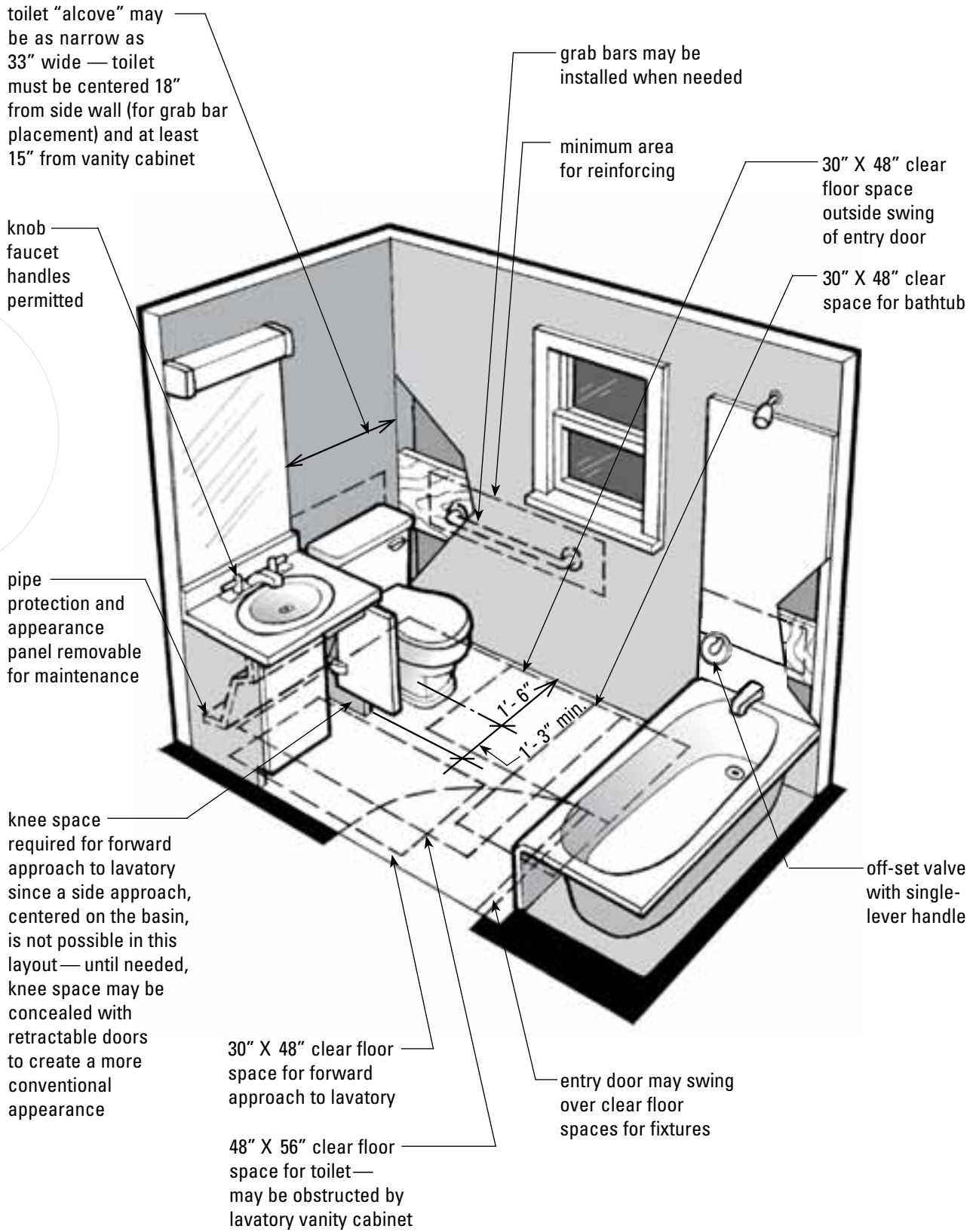
**Small Type "A"
Fully Accessible Bathroom**

8'-8" X 6'-9"



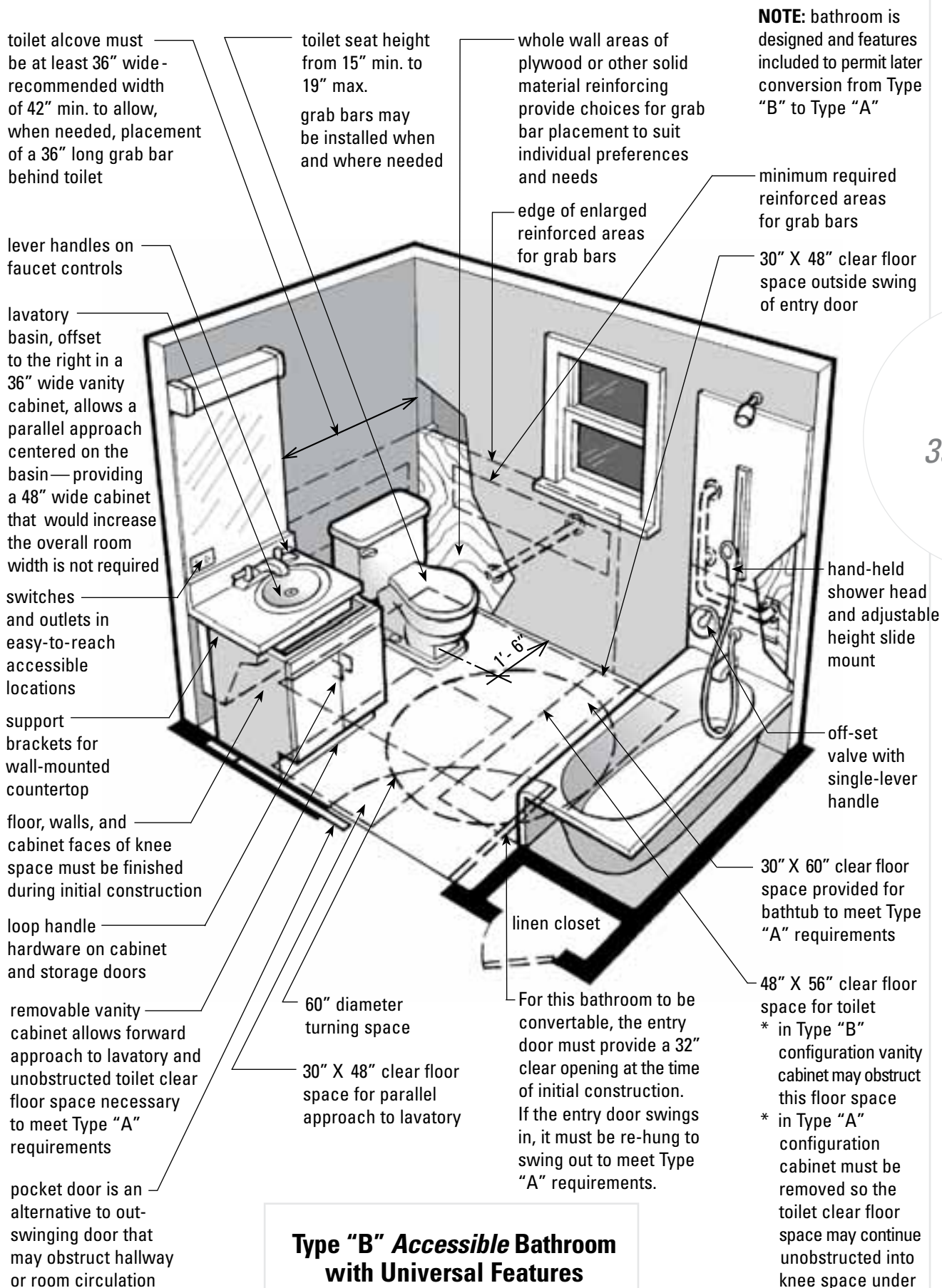
**Adaptable Type "A"
Fully Accessible Bathroom
with Universal Features**

9'-2" X 6'-9"



Type "B"
Accessible Bathroom

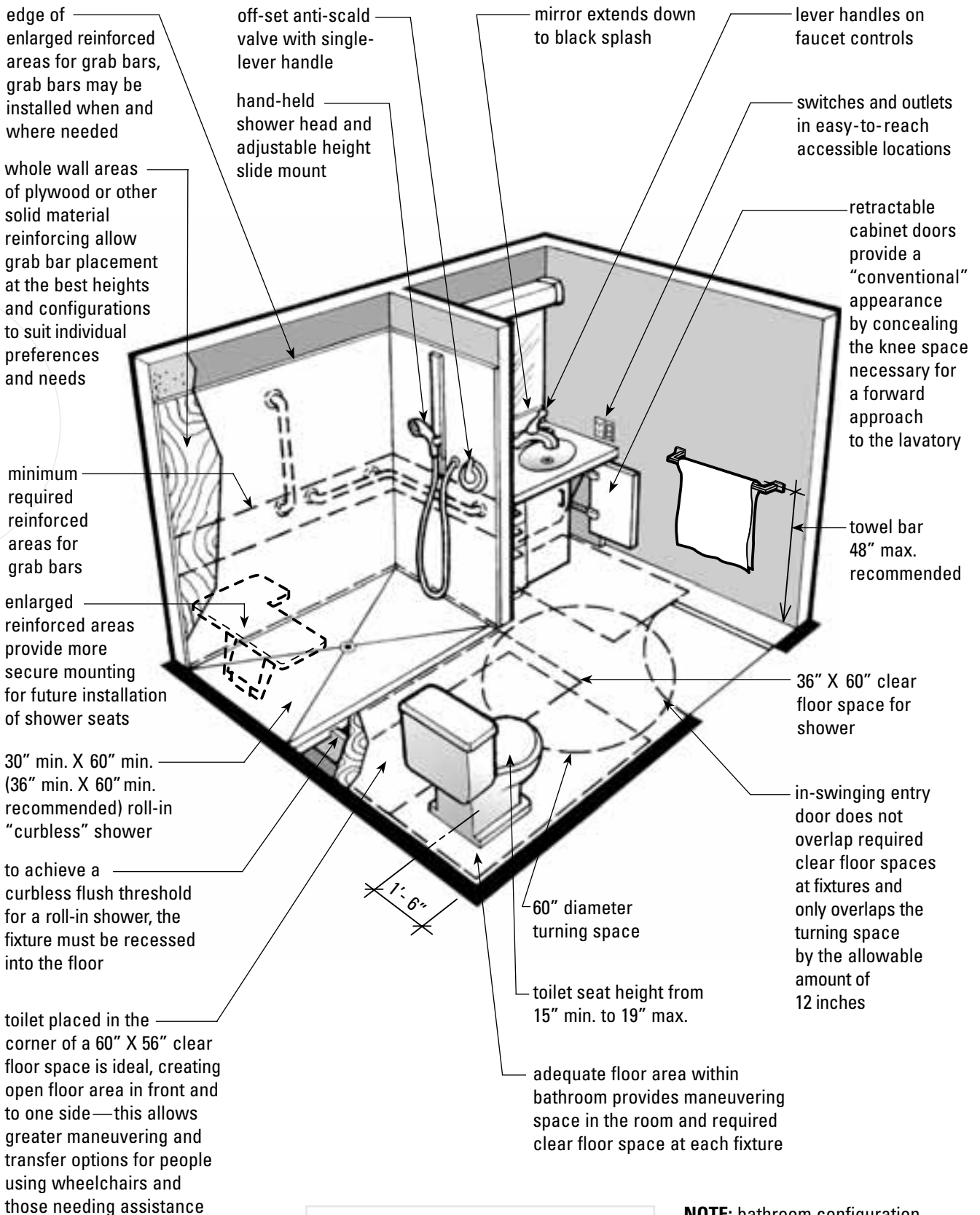
5'-9" X 9'-0"



Type "B" Accessible Bathroom with Universal Features

(Can be converted to Type "A")

6'-6" X 9'-4"



**Universal Bathroom
with In-swinging Door**

(Meets requirements for both Type "A" and "B")

8'-10" X 8'-6"

NOTE: bathroom configuration and features allow the design to meet both Type "A" and Type "B" bathroom requirements from time of initial construction

Resources

Organizations

Center for Inclusive Design and Environmental Access

State University of New York at Buffalo
School of Architecture and Planning
Buffalo, NY 14214-3087
(716) 829-3485 ext. 329
www.ap.buffalo.edu/idea

Fair Housing Field Office (Southeast Region)

Department of Housing and Urban Development
Richard B. Russell Federal Building
40 Marrietta St
Atlanta, GA 30303
(404) 331-5136

Fair Housing and Disability Rights

Department of Housing and Urban Development
451 7th Street SW, Room 5240
Washington, DC 20410
(202) 708-1112
www.hud.gov

N.C. Department of Insurance

Consumer Department
1201 Mail Services Center
Raleigh, NC 27699-1201
1(800) 546-5664 / (919) 733-2032
www.ncdoi.com

N.C. Fair Housing Center

114 W. Parrish Street
Durham, NC 27701
(919) 667-0888

N.C. Independent Living Rehabilitation Program

436 N. Harrington St.
Raleigh, NC 27699
(919) 715-0543
www.dvr.dhhs.state.nc.us

N.C. Office of Housing and Urban Development

Greensboro Field Office
Asheville Building
1500 Pinecroft Rd. Suite 401
Greensboro, NC 27407-3838
(336) 547-4001
www.hud.gov

The Center for Universal Design

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www.centerforuniversaldesign.org

Publications

N. C. Building Code Council and N.C. Department of Insurance (1999). *North Carolina State Building Code. Volume 1-C: Making Buildings and Facilities Accessible to and Usable by Persons with Disabilities, 1999 Edition*. Raleigh, NC, N.C. Department of Insurance.

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Steve Winter Associates (1997). *Accessible Housing by Design*. New York, NY: McGraw Hill.

Wylde, Margaret, Adrian Baron-Robbins and Sam Clark (1994). *Building for a Lifetime: The Design and Construction of Fully Accessible Homes*. Newtown, CT: Taunton Press.

U.S. Department of Housing and Urban Development, Office of the Assistant Secretary for Fair Housing and Equal Opportunity. 24 Code of Federal Regulations (CFR) Chapter 1; Subchapter A.

Appendix I, *Final Fair Housing Regulations*, January 23, 1989.

Appendix II, *Final Fair Housing Accessibility Guidelines*, March 6, 1991.

Appendix III, *Preamble to the Final Fair Housing Accessibility Guidelines*, March 6, 1991.

Appendix IV, *Fair Housing Accessibility Guidelines, Questions and Answers, Supplement to the Notice*, June 28, 1994.

Available from the Government Printing Office: 202-512-1800.

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