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Universal Design Adaptations for Housing

Sonoran Desert Conservation and
Comprehensive Land Use Plan
2001

**Pima County, Arizona
Board of Supervisors**

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**County Administrator
Chuck Huckelberry**



MEMORANDUM

Date: September 4, 2001

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

A handwritten signature in dark ink, appearing to be "CHH", is written over the printed name "C.H. Huckelberry".

Re: **Research and Recommendations, Inclusive Home Design Adaptations for New Housing**

Background

Chairman Grijalva, after meeting with representatives of the Tucson Commission on Disability Issues (CODI) regarding Universal Design Adaptations for housing, requested an update on direction given to Development Services staff in February of 2000 to prepare an ordinance for Board consideration. (Attachment 1) Such an ordinance is being prepared and will be forwarded to the Board in the near future. Members of County staff also have met with interested members of the Commission and the community, and researched the efforts of other jurisdictions with regard to universal design related standards and ordinances. This memorandum provides a brief summary.

In general, a review of existing ordinances, studies and articles indicates that costs associated with making homes more accessible are minimal, yet jurisdictions in other parts of the United States have tended to limit the application of "visitability" ordinances to housing that is funded by a government entity. If improved access design standards are approved, not only will the elderly and disabled community gain access that has been denied to them, the entire community will benefit from the reduced cost of government funded health services as visitability features allow people to age in place. The Commission members who met with County staff are asking for surprisingly modest adaptations. As opposed to more stringent universal design standards, Americans with Disabilities Act standards, or Fair Housing Act standards, the local group is seeking modifications that have been referred to as "visitability" or "inclusive design" standards, which are a compromise between ideal universal design standards and costs.

The homebuilders associations around the United States have been largely successful in quieting the voice of the disabled community. Visitability laws are rare. The *Arizona Daily Star* reported on August 12, 2001 that the head of the Southern Arizona Homebuilder's Association dismissed a modest set of proposals from the local disabled community as "impertinent" and "selfish." (Attachment 2) On September 2, 2001, the *Arizona Daily Star* ran two guest editorials on the topic of visitability. (Attachment 3) One opinion piece attempted to play to fears that additional regulations would eliminate personal freedoms and undermine the philosophy that "our homes are our castles." These uninformed comments ignore the existence of building codes, the fact that the requested adaptations would go almost unnoticed, the market reality that home buyers almost always never build their own homes, and the potential for waiver provisions that have already been promoted by the supporters of the visitability standards. I am providing copies and a summary of existing and developing inclusive design initiatives for the Board's information.

City of Tucson

In April of 2000, the Tucson Commission on Disability Issues proposed a Visitability Ordinance for adoption by the City. In early 2001, a Visitability Task Force was established, comprised of Commission members and representatives from the Southern Arizona Homebuilder's Association, city staff and other interested parties. The Task Force process resulted in two draft ordinances.

Similarities Between Alternative Draft City Ordinances -- Both draft ordinances include these basic visitability elements:

- One zero step entrance with an accessible route to that entrance from the driveway or street;
- All interior doors on the first floor (except closets less than 15 square feet) must have a width of 32 inches and be equipped with lever hardware;
- 36-inch wide level hallway and 36-inch wide level route throughout the main floor, except at doorways;
- Reinforced ground floor bathroom walls to aid in installation of grab bars; and
- Light switches, electrical outlets, thermostats and other environmental controls set at accessible height levels.

Compliance with these standards can also be satisfied by using the American National Standards Institutes (ANSI) A117.1, 1998 "Accessible and Usable Buildings and Facilities" standards. The draft ordinances require that plans for construction include specific details on compliance with the above requirements. A waiver of these required visitability features is included. In order to have visitability requirements waived, a building official must determine that the requirements are impractical due to terrain or other unusual characteristics.

Differences Between Alternative Draft City Ordinances -- The drafts differ in several ways. The greatest difference is that one draft (Attachment 4) takes a more conservative approach and would apply only to residences constructed with City assistance. City assistance is defined as any direct financial or in kind benefit received from any City department, board, committee, commission, agency, or Mayor and Council. According to the City of Tucson staff, this draft, if adopted, would only apply to about four percent of new residential construction. I also understand that of the four percent of new residential construction that currently receives City assistance, many of these dwellings would already be under federal accessibility requirements due to federal funding.

A second draft being promoted for City adoption would apply to all new residential construction, with waivers available for single-family residences built by the owner, on the owner's property, for the personal occupancy of the owner and the owner's family. (Attachment 5) The City drafts differ in the potential elements that are subject to waiver. The more conservative draft only allows for waiver of one visitability standard, while the alternative draft permits waiver of any of the required visitability standards.

Cost Analysis -- The Tucson Commission on Disability Issues contracted for a cost analysis. Peer Management Group concluded, in a study found at Attachment 6, that the proposed visitability ordinance as applied to new construction in Tucson would add no more than \$100 to the cost of an average home, as follows:

<u>Visitability Feature</u>	<u>Additional Cost per Dwelling Unit</u>
32" door vs. traditional 30" door	\$5.70
Lever handles vs. round handles	\$52.08
One entrance door on an accessible floor	\$6.25
Bathroom wall reinforcements	\$10.35
<u>Light switches, outlets, thermostat heights</u>	<u>\$0.00</u>
TOTAL	\$74.38

Add contractor general condition costs plus overhead and profit amounts:

TOTAL COST (approximate)	\$100.00
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Other cost studies have yielded similarly minimal price tags. According to Concrete Change, a national visitability organization, the typical average cost to incorporate visitability standards in the construction of new residences is \$200. Most visitability advocates cite this cost. Home builders associations are the strongest and most organized opponents of visitability ordinances; they have argued that the cost is between \$1,000 and \$2,000. However, Austin, Texas has had a visitability ordinance since 1998, and according to the manager of the City's SMART housing program, the added cost has been about \$200.

Other Jurisdictions

The cities of Atlanta, Georgia, Austin, Texas, Urbana, Illinois, and the states of Vermont, Georgia, Texas, and Florida, have visitability ordinances.

City Ordinances

Atlanta, Austin, and Urbana -- Atlanta adopted the first visitability ordinance in 1992 (Attachment 7). By 1998, over 500 visitable homes had been constructed in accordance with Atlanta's ordinance. In 1998, Austin adopted an almost identical visitability ordinance (Attachment 8). Both ordinances state that the visitability standards are not as restrictive as the American National Standard Institute "Accessible and Usable Buildings and Facilities" standards (Attachment 9). Urbana, Illinois adopted visitability standards as part of the Building Code in 2000 (Attachment 10). The basic standards in ordinances from Atlanta, Austin and Urbana are similar. They apply to new single family dwellings, duplexes, and triplexes that are in some way publicly funded. They all require, in some fashion, the five visitability standards listed above, and they all allow for some or all of the visitability standards to be waived, if the applicant shows that topographical conditions of a site render compliance impossible, or would cause undue hardship.

State Laws

Georgia and Texas -- The states of Georgia and Texas have similar visitability laws (Attachments 11 and 12). Both only apply to new single family affordable housing constructed with state or federal funds awarded by the State Office of Housing. Both require, in some fashion, the five visitability features listed above. And both allow for some or all of the visitability features to be waived, if the applicant shows that the cost of grading is unreasonably expensive.

Vermont -- Vermont's visitability law is different in that it applies to all residential construction, except a single family dwelling built by the owner for the personal occupancy of the owner, and residential construction that is prefabricated or manufactured out of state (Attachment 13).

Vermont law does not require a zero step entrance but does include the other four visitability standards described above. Vermont law lacks a waiver provision. These provisions, along with a strong educational component, reflect that Vermont's law goes the farthest toward meeting visitability goals.

Florida -- Florida has a visitable restroom law that requires all single family houses, duplexes, triplexes, condominiums, and town houses to provide at least one bathroom, where bathrooms are provided on habitable grade levels, with a door that has a 29" clear opening (Attachment 14).

Federal Laws

The Fair Housing Amendments Act of 1988 requires that new publicly or privately funded multifamily dwellings of four or more units must meet specific accessibility standards. These requirements include:

- Reinforced bathroom walls;
- Accessible and usable public and common areas;
- Accessible route into and through covered dwelling units;
- At least one accessible building entrance on an accessible route;
- Doors wide enough to allow for the passage by a person in a wheel chair;
- Light switches, outlets, thermostats, and other controls in accessible locations; and
- Kitchens and bathrooms provide enough space so that a person in a wheelchair can maneuver about the space.

Factors Beyond the Disabled Community: Pima County's Aging Population

Visitability standards make sense in Pima County given the overall demographic needs of our community, and the personal and financial benefits of aging in place. Pima County has a significant number of seniors, 65 and over, and persons with physical disabilities. According to 2000 Census data, over 14 percent of Pima's population is 65 years or older. In numeric terms, this is a 30 percent increase since 1990. More than a quarter of the households in Pima County are households with individuals who are 65 and over. Over nine percent of the total households in Pima County are individuals in this age group, who live on their own.

Number of Seniors and Households with Seniors, Pima County 2000

	Pima 1990	%	Pima 2000	%	Change 1990-2000	% Change 1990-2000
Population: Age 65 years and over	91,257	13.7	119,487	14.2	28,230	30.9
Households with individuals 65 and over	58,714	NA	83,970	25.3	25,256	43.0
Households with individual 65 years and over, living alone	25,140	9.6	31,271	9.4	6,131	24.4

Source: Census 2000, Table DP-1. Profile of General Demographic Characteristics: 2000

Data from the U.S. Census Bureau's 1999 American Community Survey (ACS) showed that at least eight percent, or 72,546 individuals in the non-institutionalized population residing in Pima County have a physical disability. City of Tucson data provides another view: approximately 17 percent, or 123,216 Pima County residents have some type of a disability, and 40 percent of Pima County residents age 65 and over have some type of a disability (City of Tucson Planning Department, Disability Chart).

Cost and quality of life considerations are major individual and community issues that are factors in this debate. According to a 2000 survey entitled, "Fixing to Stay: A National Survey of Housing and Home Modification Issues " people want to age in place. Four out of five of individuals who are 45 and over, stated that they would like to remain in their residences as long as possible. Out of those who are 65 years and over, nine out of ten made the same statement. The same survey showed that approximately three in ten Americans who are 45 years old and over stated that as they age, they worry about issues such as: (1) having a home that friends and family with disabilities can not get around in; (2) having to move into a nursing home because they are unable to get around their home; (3) being able to afford home modifications so that they can remain at home; and (4) being unable to use features in their houses, like stairs and bathtubs.

Finally, according to the survey, more than 70 percent of those who are 45 and over would like to see zero-step entries, bathtub grab bars, and wider doors incorporated into any new house they buy. Two-thirds supported the idea of State legislation to require that more homes be built with features that allow people to "age in place."

Conclusion

Visitability standards have been adopted by several cities and states across the nation. No jurisdiction has yet adopted an ordinance or law that meets the goal of requiring all new single family housing, duplexes, and triplexes to be constructed with the five basic visitability standards. Vermont law comes the closest, but it does not include the zero step entrance requirement.

For a relatively minimal cost, with estimates as low as \$100 to \$200 per new house in Tucson, an inclusive home design ordinance would benefit those with disabilities, the growing elderly population, and anyone who would like to make it easier for elderly or disabled friends and relatives to visit their homes. This cost has been disputed by the local homebuilding industry, however.

As directed by the Board on February 1, 2000, I will forward a draft inclusive home design ordinance that incorporates basic visitability standards for all new single family homes, duplexes, and triplexes.

Attachments:

- Attachment 1 -- June 28, 2001 Memorandum from Chairman Grijalva
- Attachment 2 -- August 12, 2001 *Arizona Daily Star* Article
- Attachment 3 -- September 2, 2001 *Arizona Daily Star* Guest Opinion Articles
- Attachment 4 -- City of Tucson's Draft Visitability Ordinance, Limited Applicability
- Attachment 5 -- City of Tucson's Draft Visitability Ordinance, Broader Applicability
- Attachment 6 -- Cost Analysis Review for Proposed Visitability Ordinance
- Attachment 7 -- City of Atlanta's 1992 Visitability Ordinance
- Attachment 8 -- City of Austin's 1998 Visitability Ordinance
- Attachment 9 -- American National Standard Institute, Accessible and Usable Buildings
- Attachment 10 -- City of Urbana, Illinois, Visitability Ordinance, 2000
- Attachment 11 -- State of Georgia's Visitability Ordinance, 2000
- Attachment 12 -- State of Texas's Visitability Ordinance, 1999
- Attachment 13 -- State of Vermont's Visitability Ordinance
- Attachment 14 -- State of Florida's Bill, Letter from Florida Builder

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PIMA COUNTY BOARD OF SUPERVISORS-DISTRICT #5

MEMORANDUM

TO: Charles H. Huckelberry, County Administrator
FROM: Raúl M. Grijalva, Chairman *Raúl*
DATE: June 28, 2001
RE: *Universal Design Adaptation for Housing*

Our office met with Representatives of the Disability Commission regarding Universal Design Adaptations for Housing yesterday, June 27, 2001. They are preparing State Legislation similar to the work of Elezabeth Cameron on the subject.

We would like to propose that Development Services staff assist and work with representatives of the Disability Commission to:

- Draft language to address any lack of authority issue's associated with the proposal.
- Convene a working group consisting of a representative of the Disability Commission, Industry, County Housing Board, Non-Profit Housing Agency, Development Services staff, Sonoran Plan staff, Legal staff, and our Lobbyist Coordinator.
- Charge this working group with the task of completing the direction previously given to staff and to address concerns raised from staff in the March 10, 200 and February 14, 2001 Memorandums.

The direction to move forward on the proposal and to bring back ordinance and/or policy language was approved by a 4-0 Board of Supervisors vote on February 01, 2000. We are not seeking to revisit this direction at the Board level, but are seeking an inclusive vehicle to complete previous Board action within a reasonable time frame of 60-90 days.

Thank you.

xc: Maeveen Behan
Assistant to the County Administrator
Martin Willett
Deputy County Administrator
William "Bill" Altaffer
35 North Sierra Vista Dr.
Tucson, Arizona 85719

RMG:bar

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Sunday, 12 August 2001

Costs, legality

Disabled access to all new homes is up in air

Ordinance proposed to aid handicapped

By Tony Davis and Joe Burchell
ARIZONA DAILY STAR

A progressive neuromuscular disease causes attorney William Alteffer to use a wheelchair. When he goes to visit friends, hosts or companions often carry Alteffer up a step into the house. Sometimes, hallways are so narrow he can't wheel himself into the living room.

But a proposed city ordinance requiring builders to design all new homes to accommodate many handicapped people is hung up in disputes over costs, legality and whether it represents selfishness or farsightedness. Pima County supervisors might consider a similar ordinance starting in September.

The issue has created a new buzzword: "visitability."

Visitability requires altering design and construction so wheelchair users can easily enter and walk through houses.

It involves changing doorknobs to levers, eliminating home entry steps, specifying doorway and hallway widths and bolstering bathroom walls to accommodate grab bars.

Visitability would literally open doors to the disabled to visit friends, said Alteffer, vice chairman of the city's Commission on Disability Issues.

"You look at visitability - it seems so simple, straightforward, and elegant. What would be the big deal?" Alteffer said. "If the city and county pass this, it will put Tucson in the forefront of communities around the country."

Alan Lurie, the Southern Arizona Homebuilders Association's executive vice president, said it's kind of "impertinent" and "selfish" for handicapped advocates to push for outfitting every new home for visitability. If you want front steps, doorknobs instead of latches and wider halls, you should be able

Proposed rules to improve accessibility to new homes

* At least one no-step entryway into a home.

* All interior doors would be 32 inches wide and all hallways 36 inches wide and level.

* Lever-style handles would replace doorknobs on all ground floor interior doors.

* Sheetrock or tile backing would be behind bathroom walls to make it easier to install grab bars.

* Lowered light switches and elevated electrical outlets to make them easier for the wheelchair users to reach.

Source: City of Tucson Commission on Disability Issues

to build your home that way, he said.

"I personally would be worried if I felt people with mobility impairments couldn't operate safely in their own home. I think it's a very different case for those people to say everyone in this community who buys a new home needs modifications to homes, so they can come and visit them."

The 1990 census showed that 0.77 percent of the 3,665,339 people then living in Arizona used a wheelchair.

Almost 40 percent of Arizonans answered "yes" to 11 questions including that one in the 1990 census. The other questions were about use of canes, crutches or walkers, or having trouble walking three city blocks, climbing stairs or lifting 10 pounds. Overlap clearly exists in those categories.

It had no estimate of the number of wheelchair users and other mobility-impaired Pima County residents. The 2000 census data with those figures will be released in August next year.

Great Britain and Vermont have slapped most or all of these visitability requirements on all new homes. Atlanta and Austin require visitability only for government-subsidized homes.

In Tucson, this debate filled six meetings of a City Council-appointed task force during the spring and summer without resolution.

With task force members including four members of the disability commission, three homebuilders, another advocate for each side, two council members, three council aides and two city staffers, the issue became mired in "quicksand," said Alteffer's wife Colette, who has been active in the dispute.

Councilwoman Carol West plans to soon take competing proposals to the council. One would impose visitability requirements on most new homes. The other, from the city attorney's staff, would follow Atlanta and Austin's model.

Assistant City Attorney Frank Kern warned the task force that the more sweeping proposal could be "very difficult" legally, said Karen Leone, West's aide. Kern couldn't be reached for comment Friday.

Kern said the city's health and safety powers allow it to require fire alarms and smoke detectors but probably don't cover the zero-step entry requirement, according to Leone.

West had hoped the two sides could reach consensus because she believes both make very strong cases, Leone said.

County Supervisors Chairman Raul Grijalva said he favors the disability commission's plan over the city attorney's plan. But he's willing to compromise on phasing in the law and possibly requiring some, but not all, new homes to meet the standards. What matters is that something goes on the books acknowledging the obligation to provide more accessible homes, he said.

"It doesn't require a significant cost," he said. "It just requires a commitment on the part of home builders and architects."

The cost to modify homes is one of the biggest disputes. A consultant for visitability advocates pegged the cost at \$100 to \$200 per new home. The homebuilders' study estimated \$1,200 per home.

Larry Lattomus, a quadriplegic, city task force member and former disability commission member, adamantly opposes requiring visitability for anything but subsidized housing. When he goes to visit people's homes, he brings a plywood ramp that he can roll his wheelchair up, he points out.

"Your home is not a public accommodation, where anyone has the right to come in and out of your home," Lattomus said. "I vociferously support the right of a home buyer to build his house the way he wants."

** Contact Tony Davis at 807-7790 or verdin@azstarnet.com.*

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Sunday, 2 September 2001

Visitability

Editor's note: *The city of Tucson is considering an ordinance that would require all new homes to be accessible by the disabled, whether or not the home's residents need such special features.*

The Arizona Daily Star asked experts on opposite sides of the issue to explain what is at stake.

It intrudes on personal property rights

By Larry Lattomus

SPECIAL TO ARIZONA DAILY STAR

Tucson's Commission on Disability Issues is asking the mayor and City Council to enact a new ordinance that imposes restrictions on all new homebuyers by requiring certain architectural features.

This is being promoted in order that a very few mobility-impaired people can more easily visit those new homes. It's called visitability, and it's an offshoot of ordinances in Atlanta and Austin, Texas, that are limited to subsidized housing.

Proponents argue that new homes built with visitability features would allow the mobility-impaired to become more fully integrated into the community and bring them out of isolation, enabling them to visit friends and neighbors for various occasions and participate in neighborhood activities.

This is a seductive and emotional issue. Allow me to shed a little clarity on the subject.

As a wheelchair user for over 34 years, I have never felt isolated and shut out of any community or neighborhood activities. I have been able to visit virtually anyone, anywhere, without assistance.

In those cases in which a step needs to be negotiated, my friends willingly assist me.

I served eight years on the Commission on Disability Issues, two years as chairman. My second and final term ended this April.

I support the proposal as it extends to subsidized housing, but vigorously oppose extending it to private residential housing.

I asked the commission to seek adoption of an ordinance such as the ones in Atlanta and Austin, which are limited to subsidized housing. It refused.

I asked the commission to cooperate with the Southern Arizona Home Builders Association to conduct a market survey to assess the market demand for such an ordinance. It refused.

I asked the commission to cooperate with the SAHBA's willingness to offer a voluntary visitability option to all new homebuyers with the cost listed. It refused.

Why? Because it is determined to see Tucson become the first city in the United States to adopt a mandated visitability ordinance.

A visitability task force, on which I served, was formed by the mayor and council to arrive at a consensus regarding visitability.

The final meeting convened in late July to give final approval to a city attorney's visitability draft that had been corrected and amended at prior meetings.

When it became apparent that the draft was going to be limited to subsidized housing, the commission balked and blatantly offered up its own ordinance extending to all new homes, rudely surprising the task force at its last meeting.

Thus, both ordinances were forwarded to the mayor and council for a study session.

The disability commission has refused to compromise on any issue. In order to support its argument, it tends to mention "lifetime" homes, accessible homes and universal design when discussing visitability. These are all worthy subjects, but cloud the real intention.

Home builders nationwide and SAHBA locally have been building accessible homes, universal design homes and visitable homes on demand for years and are willing to do so today. I have built two accessible homes and modified a third.

A couple of the task force members actually said that a private home is no different than any other public place (restaurant, doctors' offices, etc.) that is currently required to provide access to the disabled, via the Americans with Disabilities Act. Anyone should be able to enter another person's home? Really?

I maintain that no one has a right to require any person to build his or her dream home to satisfy some group or individual's whim. A person's home is not a public accommodation that must be accessible to all potential visitors.

The home builders association and the commission argue about the cost and the homebuilders are closer to the truth. But I maintain that cost, though important, is irrelevant. It's the principle of the issue.

If the council enacts an ordinance extending to all private housing, I predict the courts will reject it. In addition, the disability commission unwittingly will have caused the elderly and disabled to fall further out of the housing market due to inevitably higher housing costs.

Are our homes still our castles? Do we, as Americans, still have personal property rights? It's time to call the Mayor and Council!

** Larry Lattomus served on Tucson's Commission on Disability Issues for eight years.*

Arizona Daily Star**SN** www.azstarnet.com

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Sunday, 2 September 2001

Visitability means welcome

By William and Colette Altaffer
SPECIAL TO ARIZONA DAILY STAR

When President Bush and his wife built their house in Crawford, Texas, they wanted a home in which they could age in place. The ground-level structure was built with zero-step entries and other features designed to facilitate this desire.

As Laura Bush told a reporter, "We wanted our older parents to feel comfortable here. We also want to grow old here ourselves."

Like the first family, our community has an opportunity to build homes that are more welcoming to its senior citizens and persons with disabilities.

The visitability ordinance proposed by the Tucson Commission on Disability Issues provides a platform of basic accessibility features that would apply to new single-family housing.

These features include simple design changes such as one no-step entrance for easy movement into the home; interior door widths on the main floor of at least 32 inches, with lever hardware; a level route through the main floor; reinforcement behind the walls of the ground floor bathroom for possible installation of grab bars; and light switches and electrical outlets set at accessible heights.

The time to include these features is when the house is first built. An independent professional cost estimator found these features would add less than \$100 to the cost of a new home.

In Austin, Texas, where a visitability ordinance has been in effect for three years, the average cost is under \$200.

The ordinance proposed by the commission will benefit a large and growing segment of our community.

Bush's policy statement on disability recognizes that disability "is an experience that will touch most Americans at some point during their lives."

Currently, 17 percent of Pima County residents have a disability and 14 percent are over the age of 65.

As the baby boom generation ages, our population of senior citizens is expected to double and the number of persons with disabilities is projected to increase dramatically.

Pima County currently spends more than \$100 million dollars annually for nursing home care.

For families who are struggling to care for a loved one on their own, the emotional and financial costs are tremendous. Nearly 25 percent of American households have someone who is caring for an older family member, friend or neighbor; and, according to a recent General Accounting Office report, 70 percent of these unpaid caregivers are women.

Simple home design changes, such as those proposed by the commission, can help our community to begin to address these long-term impacts by enhancing the safety and independence of the homeowner.

Homes built with these features will become part of our community's housing infrastructure and will more accurately reflect the desire to be independent and included, which was recently expressed by a majority of baby boomers in a survey done by AARP.

Eighty-three percent of the respondents, age 45 and older, indicated they would like to remain in their homes for as long as possible.

In addition, more than 73 percent of the survey respondents indicated that they would like to incorporate features of visitable home design into any new home they purchase.

The commission believes the alternative subsidy-based proposal, which would apply to only 4 percent of new single-family housing, does not adequately address the long-term needs of our community.

Building practices have changed. The developers' assembly-line approach to home design affords them the ability to easily incorporate visitable features, allowing homeowners the opportunity to more easily adapt their environment to their changing needs.

Clearly, visitable design will benefit a growing segment of our population by promoting independence and improving quality of life.

For a very small investment, our community can begin to mitigate the future costs of caring for our growing elderly and disabled population.

Tucson will address the issue of a visitability ordinance this fall, and Pima County is currently in the process of preparing an Inclusive Home Design Ordinance.

Like Laura Bush, we hope our elected officials will recognize the wisdom of making new homes more welcoming and inclusive.

** William Altaffer is Vice-Chairperson of the Tucson Commission on Disability Issues. Colette Altaffer is a member of Pima County's Inclusive Home Design Workgroup.*

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DRAFT

ADOPTED BY THE
MAYOR AND COUNCIL

ORDINANCE NO. _____

RELATING TO BUILDING SAFETY; AMENDING THE TUCSON CODE CHAPTER 6, BUILDINGS, ELECTRICITY, PLUMBING AND MECHANICAL CODE BY: ADDING A NEW ARTICLE 10, VISITABILITY, CONSISTING OF SECTIONS 6-200 THROUGH 6-206.

BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF TUCSON, ARIZONA, AS FOLLOWS:

SECTION 1. The Tucson Code, Chapter 6, Buildings, Electricity, Plumbing and Mechanical Code, is hereby amended by adding a new Article 10, Visitability consisting of sections 6-200 through 6-206 to read as follows:

ARTICLE X. VISITABILITY

Sec. 6-200. Applicability.

The provisions of this article shall apply to single family dwellings, duplexes and tri-plexes that are constructed and which receive City assistance.

Sec. 6-201. Design requirements.

a. Entrances.

Each structure shall have at least one zero step entrance located at the front or back of the structure. There shall be an accessible route from the zero step entrance to the structure's driveway or to the street.

b. Interior doors.

All interior doors on the first floor, except those for closets of less than fifteen square feet, shall be equipped with lever hardware and when open shall have a clear width of 32 inches. Installation of a 32-inch wide door or compliance with ANSI A117.1, 1998, Sec. 404.2.3 shall be deemed compliance with the clear space requirement of this section.

c. Main floor hallway and routes.

Each structure shall be designed and constructed so that there is a 36-inch wide level hallway and 36-inch wide level route throughout the main floor of the structure. The 36-inch wide requirement does not apply to doorways but the route through the doorway must be level.

d. Wall reinforcement.

Reinforcement shall be placed in the walls of all ground floor bathrooms so that grab-bars and other mobility aids may be installed at a later date without the necessity of removing portions of the existing walls. Reinforcement shall comply with ANSI A117.1, 1998, Sec. 1003.11.2.

e. Light switches, electrical outlets, thermostats and other environmental controls.

Light switches, electrical outlets, thermostats and other environmental controls shall comply with ANSI A117.1, 1998, Sec. 1003.9.

Sec. 6-203. Definitions.

Zero step means the threshold at a doorway shall not exceed ½ inch or 13 mm.

Accessible route means a route that complies with the requirements of ANSI A117.1, 1998, Sec 405, 406, and in the case of multilevel construction Section 407.

Level route means a route that has no slope exceeding 1:12 or any obstacle exceeding ½ inch or 13mm in height.

City assistance means any direct financial or in kind benefit received from the City, its Mayor and Council, or any of its departments, boards, committees, commissions or agencies.

Sec. 6-204. Waiver of exterior visitability requirements.

The accessible route requirement contained in section 6-201(a) may be waived upon a determination by the building official that by virtue of terrain or other unusual characteristics of the building site there are practical difficulties associated with the installation of such improvements.

Sec. 6-205. Plan submittal requirement.

Any plan submitted for a structure subject to the provisions of this article shall include specific detail demonstrating compliance with this article.

Sec. 6-206. Intent and administration.

The intent of this ordinance is to provide for the establishment of standards which may be less than those required by federal or state law for handicapped accessibility while economically providing for enhanced accessibility in new residential construction thereby increasing its utility to those with mobility impairment due to either handicap or aging. The Building Official shall interpret and apply the provisions of this ordinance consistent with its intended purpose.

SECTION 2. If any of the provisions of this ordinance or the application thereof to any person or circumstance is invalid, the invalidity shall not effect other provisions or applications of this ordinance which can be given effect without the invalid provision or circumstance, and to this end the provisions of this ordinance are severable.

SECTION 3. The various City officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this ordinance.

SECTION 4. WHEREAS, it is necessary for the preservation of the peace, health and safety of the City of Tucson that this ordinance become immediately effective, an emergency is hereby declared to exist and this ordinance shall be effective immediately upon its passage and adoption.

PASSED, ADOPTED AND APPROVED BY THE MAYOR AND COUNCIL
OF THE CITY OF TUCSON, ARIZONA, _____.

MAYOR

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

REVIEWED BY:

CITY ATTORNEY

CITY MANAGER

FWK:hm

I:\work\hm\ordin\VisitabilityAmend.doc

DRAFT

ADOPTED BY THE
MAYOR AND COUNCIL

ORDINANCE NO. _____

RELATING TO BUILDING SAFETY; AMENDING THE TUCSON CODE CHAPTER 6, BUILDINGS, ELECTRICITY, PLUMBING AND MECHANICAL CODE BY ADDING A NEW ARTICLE 10, VISITABILITY IN RESIDENTIAL CONSTRUCTION, CONSISTING OF SECTIONS 6-200 THROUGH 6-206.

WHEREAS, people over 65 are the fastest growing sector of the American population and life expectancies continue to increase. Whether due to injury or age, there is a great likelihood for each of us, at some time in our life, to suffer a temporary or permanent condition that limits mobility or the ability to perform daily tasks of living.

WHEREAS, the increased cost of constructing a residence with zero step entries and doorways wide enough to permit wheelchair access, electrical outlets reachable by a wheelchair-bound person, and bathroom walls reinforced to permit installation of grab bars is minimal, while the costs and disruption associated with retrofitting an existing home to make it minimally accessible, are substantial.

WHEREAS, a residence that provides minimal accessibility offers the possibility of occupancy or visitation by a disabled person. An occupant of a home that has visitable features who becomes disabled, whether temporarily or permanently, may be able to remain at home and avoid or delay the great expense and emotional trauma of institutionalization.

BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF TUCSON,
ARIZONA, AS FOLLOWS:

SECTION 1. The Tucson Code, Chapter 6, Buildings, Electricity, Plumbing and Mechanical Code, is hereby amended by adding a new Article 10, Visitability consisting of sections 6-200 through 6-206 to read as follows:

ARTICLE X. VISITABILITY IN RESIDENTIAL CONSTRUCTION

Sec. 6-200. Applicability.

SECTION 1. For the purposes of this article, "residential construction" means new construction of single family dwellings, duplexes and triplexes. "Residential construction" shall not include a single family dwelling built by the owner for the personal occupancy of the owner and the owner's family, or where only one dwelling unit of this design shall be built.

SECTION 2. Any residential construction shall be built to comply with all the design requirements found in section 6-201 of this ordinance.

Sec. 6-201. Visitable design requirements.

a. Entrances.

A dwelling unit must provide at least one zero step building entrance to the ground floor on an accessible route from the street. This entrance may be at the front, side or back of a dwelling as long as it is served by an accessible route such as a garage or sidewalk. The door of this accessible entrance must be a minimum of 32" (2'8") and have lever door handle hardware.

b. Interior doors.

All interior doors on the ground floor, except those for closets of less than fifteen square feet, shall be equipped with lever hardware and shall have a clear width of 32 inches. Installation of a 32-inch wide door or compliance with ANSI A117.1, 1998, Sec. 404.2.3 shall be deemed compliance with the clear space requirement of this section.

c. Ground floor hallway and routes.

Each dwelling unit shall be designed and constructed so that there is a 36-inch wide level hallway and 36-inch wide level route throughout the ground floor of the structure, with ramped or beveled changes at door thresholds. The 36-inch wide requirement does not apply to doorways but the route through the doorway must be level.

d. Bathroom wall reinforcement.

Reinforcement shall be placed in the walls of all ground floor bathrooms so that grab-bars and other mobility aids may be installed at a later date without the necessity of removing portions of the existing walls. This wall reinforcement shall be placed around the toilet, bathtub, and shower using the following standards:

1. Lateral two-inch x six-inch or larger nominal wood blocking must be installed flush with stud edges of bathroom walls.

2. The centerline of the blocking must be 34 inches above and parallel to the floor, extending at least 24 inches from the centerline to each side of the toilet and on all sides of the bathtub and/or shower.

Compliance with- ANSI A117.1, 1998, Sec. 1003.11.2. shall be deemed compliance with the bathroom wall reinforcement requirements of this section. Blocking need not be installed behind a fiberglass shower surround. Light switches, electrical outlets, user controls for security and intercom systems, thermostats and other environmental controls.

1. Light switches must be located no higher than 48 inches above the floor.

2. Thermostats and user controls for security and intercom systems must be located no higher than 54 inches above the floor.
3. The center of electrical outlets must be no lower than 18" above the floor.

Compliance with ANSI A117.1, 1998, Sec. 1003.9. Shall be deemed compliance with the requirement of this section.

Sec. 6-203. Definitions.

Zero step means the threshold at a doorway shall not exceed ½ inch or 13 mm.

Accessible route means a continuous unobstructed path which can be negotiated by a person with a severe disability using a wheelchair, and that is also safe for and usable by people with other disabilities. Upon determination by the building official that by virtue of terrain or other unusual characteristics of the building site there are practical difficulties associated with providing an accessible route from the street, the accessible route may originate from the dwelling unit's driveway or garage. A route that complies with the requirements of ANSI A117.1, 1998, Sec 405, 406, and in the case of multilevel construction Section 407 meets the requirements of an accessible route.

Ground floor means any occupiable floor less than one story above or below grade with direct access to grade. A dwelling always has at least one ground floor and may have more than one ground floor as where a split-level entrance has been provided or where a building is built into a hillside.

Level route means a route that has no slope exceeding 1:12 or any obstacle exceeding ½ inch or 13mm in height.

Sec. 6-204. Waiver of visitability requirements.

Upon a determination by the building official that by virtue of terrain or other unusual characteristics of the building site, there are practical difficulties associated with compliance of any specific provision of the visitable design requirements contained in section 6-201, the building official may waive the requirements of that specific provision.

Sec. 6-205. Plan submittal requirement.

Any plan submitted for a structure subject to the provisions of this article shall include specific detail demonstrating compliance with this article. Plans which have already been certified prior to the enactment of this ordinance, shall be exempt from its provisions until the date of their next recertification.

Sec. 6-206. Intent and administration.

The intent of this ordinance is to provide for the establishment of standards which may be less restrictive than ANSI A117.1 while economically providing for enhanced accessibility in new residential construction thereby increasing its utility to those with mobility impairment due to either physical disability or aging. The Building Official shall interpret and apply the provisions of this ordinance consistent with its intended purpose.

SECTION 2. If any of the provisions of this ordinance or the application thereof to any person or circumstance is invalid, the invalidity shall not effect other provisions or applications of this ordinance which can be given effect without the invalid provision or circumstance, and to this end the provisions of this ordinance are severable.

SECTION 3. The various City officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this ordinance.

SECTION 4. WHEREAS, it is necessary for the preservation of the peace, health and safety of the City of Tucson that this ordinance become immediately effective, an emergency is hereby declared to exist and this ordinance shall be effective immediately upon its passage and adoption.

PASSED, ADOPTED AND APPROVED BY THE MAYOR AND COUNCIL
OF THE CITY OF TUCSON, ARIZONA, _____.

MAYOR

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

REVIEWED BY:

CITY ATTORNEY

CITY MANAGER

WWA/CMA/FWK:hm



CITY OF TUCSON

The Sunshine City

Commission on Disability Issues
P.O. Box 27210
Tucson, AZ 85726-7210
(520) 791-4121
TDD: 791-2639

October 13, 2000

The Honorable Robert E. Walkup, Mayor
& Members of the City Council
P.O. Box 27210
Tucson, AZ 85726-7210

R E: Cost Analysis Review for Proposed Visitability Ordinance.

Dear Mayor Walkup and City Council Members:

In April, the Tucson Commission on Disability Issues sent you a memorandum requesting that you adopt a Visitability Ordinance. Included in this memorandum was a cost estimate produced by the national group, Concrete Change, which indicated that a Visitability Ordinance would add no more than \$200 to the price of a new home. To confirm these figures for the Tucson area, the Commission hired professional estimator, Merle Heckenlively, to produce a cost analysis for this region. His conclusion is that a Visitability Ordinance would add no more than \$100 to the cost of an average home built in Tucson. (See Attached)

Also enclosed is a copy of an article from the newsletter of the National Association of Home Builders' Research Center¹. This article cites a survey done by the American Association of Retired People showing that 83 percent of Americans over the age of 45 would like to remain in their home as long as possible. The AARP survey also indicated that over 70 percent of the respondents would like to see zero-step entries, bathtub grab bars, and wider doors incorporated in any new home they purchase². A Visitability Ordinance would greatly facilitate the desire of this baby boomer generation to "age in place", by establishing a minimum standard for

¹ The NAHB Research Center is a separately incorporated, wholly-owned, not-for-profit subsidiary of the National Association of Home Builders (NAHB). NAHB has 200,000 members, including more than 50,000 who build more than 80 percent of all U.S. homes.

² Fixing to Stay: A National Survey on Housing and Home Modification Issues, page 49.

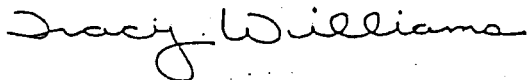
Page 2
10/13/00

housing in Tucson which would allow homeowners to more easily adapt their homes to their changing physical needs. The NAHB article states, "If the residential construction industry doesn't meet these needs voluntarily, then a majority of the people in the AARP survey (66 percent) said they would support their state passing legislation requiring that more homes be built with the home modification features discussed in the survey."

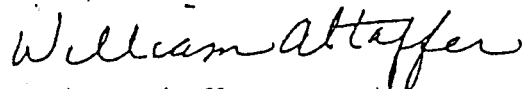
Driven by demographics and common sense, the visitability movement is growing across the nation. Since our original memorandum, we have learned that the states of Texas and Alabama have both adopted statewide Visitability Ordinances similar to the ones found in Atlanta and Austin. This summer, Urbana, Illinois adopted a Visitability Ordinance and even Phoenix is considering an ordinance requiring a zero-step entry into new houses. The Visitability Ordinance proposed by the Commission is an important step in investing in the future needs of our community's residents. We hope you will adopt this ordinance and place Tucson in the forefront of this movement.

If you have any questions, please contact William Altaffer at 323-9827.

Sincerely,



Tracy Williams
Chairperson



William Altaffer
Vice-Chair

Enclosures: as stated

CC: CODI

tw/WWA/bp

Cost Analysis Review

for

Proposed Visitability Ordinance

25 September 2000

City of Tucson

Commission on Disability Issues

Tracy Williams, Chairperson
William Altaffer, Vice Chairperson

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5. Light switches and other environmental controls
6. Design changes

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Appendix A - PMG Qualifications



Cost Analysis Review

Introduction and Synopsis

This is an analysis of the estimated cost differences between current housing construction practices and the changes which would be required if the City of Tucson were to adopt CODI's Proposed Visitability Ordinance. In the following review, we will address the pertinent cost issues in the Proposed Visitability Ordinance. It should be noted that the proposed visitability standards are not as stringent as the accessibility of the Americans with Disabilities Act (ADA) or the Fair Housing Act. In part because the visitability ordinance does not require substantial changes to current building practices. It is our opinion that the proposed visitability standards probably would add no more than \$100 to the cost of an average home built in Tucson.



Cost Analysis Review

1. Accessible building entrances. The ordinance requires at least one zero-step entrance. This entrance can be at the front or back and must have an accessible route to it from the street.

In the Tucson area, it is considered common practice to construct residential housing with first floor levels as concrete floors on grade. Interior finish floor levels are usually only inches above final exterior grade levels. Zero-step entrances can occur when short access ramps are formed and placed on grade in lieu of a step from grade to entrance level.

It is also common practice to construct attached garages or carports with vehicle parking areas $\pm 4"$ below storage area finish floor level which is usually around an entrance door and at the same level as interior finish floor. The vehicle parking area could be formed and placed on a slope, thus eliminating the step. It is our opinion that there would be negligible difference in material and labor costs between the above described steps and ramps.

While it may be common practice for builders to re-use previously developed master floor plans, an Engineered Site Development Plan for each new area of development would be required. The new site grading and drainage plans could easily reflect the builder's desire to provide visitability. Engineered Design of the location and elevation of house pads (areas graded and leveled to subgrade for the house) within the development is part of the builder's usual responsibility.

Builders (Developers) design their projects to create in prospective buyers a desire to buy one of their products in preference to the offerings of competitors. This competitive design criteria applies to their model house plans plus infrastructure design requirements specific to each subdivision.

2. Interior door criteria. Interior doors on the accessible floor are to be wide enough for the passage of persons in wheelchairs.

The Visitability Minimum would be a 32" (2' 8") wide door. Interior doors in this type construction are usually "pre-hung." These "pre-hung" units include a door (prepared for finish hardware) factory mounted with hinges in a pre-assembled wood frame. The frame or jamb thickness is normally $3/4"$ thick. A 32" pre-hung door then would have an overall width of $33-1/2"$. Allowing $1/4"$ space on each side of the unit for plumb shim space, the total minimum rough opening required would be 34". In hallways with stated 3'1" (37") and 3'2" (38") rough dimensions there would be sufficient room to install 32" doors in existing design. Door casings may need to be a standard width narrow style type.

Cost Analysis Review

Based on a pre-hung "Colonist" style 6-panel raised design interior door, a 32" door unit costs \$0.95 (including sales tax @ 65% of 7%) more than a 30" door unit. Cost difference shown is based on a building material supplier's current advertised prices. Labor hours required to install a 32" pre-hung door unit is no greater than for a 30" pre-hung door unit. Using six doors as the average count for interior passage doors on an accessible floor, the added cost for 32" pre-hung door units would be \$5.70 per dwelling unit

Residential grade lever handle passage and privacy locks are \$8.68 (including sales tax @ 65% of 7%) more than round knob passage and privacy locks. Cost difference shown is based on a local hardware supplier's current shelf prices for "Kwik-Set" brand polished brass bed/bath type lock sets. Labor hours required to install a lever type lock set is no greater than for knob lock sets. Using six doors as the average count for interior doors on an accessible floor, the added cost for lever handle lock sets would be \$52.08 per dwelling unit

The key words above are **accessible floor** and **Visitability Minimum**. Accessible floor definition being the ground level floor with any second story above ground conditions excluded. Visitability Minimum definition being criteria particular to Visitability Standards only.

3. Accessible routes into and through the dwelling unit. Each home shall be constructed so there is a 36" wide level route, except at doors, through the main floor, with ramped or beveled changes at door thresholds.

From information available, it appears that most hallways or passageways are currently at least 36" wide in finished dimension.

Based on a Macklanburg Duncan model TH042 (1/4" x 5" x 3") ADA threshold costs \$6.25 (including sales tax @ 65% of 7%) more than a model AFH312 (1" x 3 1/2" x 3"). Cost difference shown is based on a building material supplier's current shelf prices. Labor hours required to install either type threshold is the same. Door bottoms or sweeps are required for both threshold types. For one exterior entrance door on an accessible floor, the added cost for the 1/4" x 5" threshold would be \$6.25 per dwelling unit.

4. Wall reinforcement in bath room. Reinforcement in the walls of a ground floor bathroom shall be installed so that grab bars and other mobility aids may be installed at a later date without the necessity of removing portions of the existing wall.

Cost Analysis Review

Wall reinforcement (backing) for grab bars and other mobility aids can be installed by a carpenter in a short period of time using cut-off scrap material. This backing should be located according to a prescribed standard and would be in addition to backing installed for non-mobility aids including towel bars.

It is reasonable to expect a carpenter to layout and install mobility aid backing for one bath room in no more than twenty minutes.

Based on a wage rate of \$25.00 per hour (including payroll taxes & benefits plus sales tax @ 65% of 7%) the estimated labor cost for installation would be \$8.50 per dwelling unit. Where new wood backing is required, the estimated cost for material would be \$1.85 (including sales tax @ 65% of 7%) per dwelling unit.

5. Light Switches, electrical outlets, thermostats, and other environmental controls. Light Switches, electrical outlets, thermostats, and other environmental controls shall be installed at accessible heights and locations.

These modifications are changes in mounting height above finish floor level and should require little or no change in current design or construction practice.

6. Design Changes. It is unlikely that the proposed visitability standards would necessitate design or engineering changes since current dwelling unit plans already incorporate many of the dimensions needed to accommodate the visitability ordinance.

Conclusion

Estimated costs shown above include contract sales tax but do not reflect contractor general condition costs or overhead and profit amounts. Based on our research, we are of the opinion that costs for conforming to a visitability Ordinance should be minimal, probably no more than \$75 per dwelling. Contractor general condition costs plus overhead and profit amounts would increase this cost to approximately \$100 per home.



Resume 2000

Talent with numbers is an acquired skill....Not divine guidance

PMG bases cost estimates on the experienced estimator's acquired skill and judgement, using information provided by the design professional. They prepare all estimates in a professional and competent manner. This is consistent with the standards of performance usually expected of estimators in the estimating community. Estimates are computer assisted using the PMG Estimating System and other state of the art programs. Specifically designed computer programs produce highly detailed estimates in less time than manual or spreadsheet programs. All Estimates and narratives are presentation quality using Laserjet printers.

PMG provides estimating services to a broad range of clients. The scope of work includes preparation of estimates in various formats and at all levels. The purpose is to provide proof of budget and other estimates as the design progresses.

PMG, Inc. is an independent consultant with no vested interest in any contracting or design professional groups. As such, we provide unbiased estimates of expected construction costs. The President of PMG is a Fellow Certified Professional Estimator and Past National President of the American Society of Professional Estimators.

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- Section A - Firm principal
- Section B - Expertise, qualifications, and experience
- Section C - Client references
- Section D - Other appropriate information

00RESPMG.wpd

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Resume 2000

Section A - Firm Principal:

Merle W. Heckenlively, CPE

Mr. Heckenlively is a Fellow Certified Professional Estimator and Past National President of the American Society of Professional Estimators. Also he was ASPE National Standards Board Chair, responsible for all publications of Standard Estimating Practice.

His forty years experience in the construction industry includes various duties. For thirty two of those years he lived in the State of Arizona. Field supervision, estimating and estimate management, corporate president, and estimating/management consultant are the areas of his experience. He is now president of the PEER Management Group, Inc.

In 1980 he began development of computer software for construction estimating and management. The purpose was to store and rapidly access immense volumes of information. That information being what he and others developed through their many years of experience in the industry.

When the efforts in software development proved successful, the P.E.E.R. Company incorporated in 1983. The purpose was to provide estimating and management software for government agencies, design professionals, owners, and contractors. The PEER Management Group, Inc. provides estimating services to government agencies, design professionals, owners, and contractors.

Since introduction of the system, he personally generated estimates for more than one thousand three hundred fifty projects. The project locations were in the Western United States and Latin America. The scopes include industrial plants, mining operations, educational and medical facilities, commercial buildings, and residences. Many of these projects were "hard money", competitive bids for contractors.

Section B - Expertise, Qualifications, and Experience:

Past and current PMG service contracts with and consulting services to Owner Clients include:

- the University of Arizona •
- Pima County Arizona Department of Transportation •
 - City of Tucson, Facilities Management •
 - Tucson Unified School District #1 •
- Pima County Community College District •
 - Sunnyside Unified School District •

We provide estimating services to a broad range of clients. The scope of work includes preparation of estimates at all levels. The levels include Order of Magnitude through Construction Drawings and Evaluation. Services provided are on an as needed basis. The purpose is to provide proof of budget and other estimates as the design progresses. Also included are value engineering procedures and alternatives to reduce project costs. Contractor bids for all projects using this service throughout the design were within budget. This service produces real savings for clients through reduction of costs caused by re-design and re-bidding. These projects, in many instances, required estimates at various levels.

Resume 2000

Section C - Client References:

University of Arizona
Facilities Design & Construction
1331 East 5th Street
Tucson, AZ 85721
520-621-1805
Walt Roberts, Acting Director

Pima County Community College
4909 E. Broadway, Suite 113
Tucson, AZ 85709-1420
520-748-4758
Richard Franz, Director, Facilities

Cannon & Associates, Consulting Engineers
406 South 4th Ave.
Tucson, AZ 85701
520-792-2200
Jerry Cannon, P.E.

Collins/Pina Engineering
33 N. Stone Ave., 15th Floor
Tucson, AZ 85701
520-623-7980
Chad Cecil, Project Manager

Erickson, Leader, Martinez, Architects
235 West Giaconda Way, #217
Tucson, AZ 85704
520-544-4930
Bruce Erickson, AIA, President

Swaim Associates, Ltd., Architects
3936 E. Ft. Lowell, #202
Tucson, AZ 85712
520-326-3700
Ed Marley, Project Architect

City of Tucson, Facilities Design & Mgmnt
4004 S. Park Ave.,
Bldg 2, Door J
Tucson, AZ 85714
520-791-4724
Rod Armstrong, Chief Architect

Production Contracting, Inc.
744 East 34th Street
Tucson, AZ 85713
520-623-1404
Richard Mendoza, President

The IEF Group, Architects
705 North 7th Ave.
Tucson, AZ 85705
520-882-9944
Klindt Breckenridge, AIA

Earl Kai Chann Associates, Ltd.
3050 N. Country Club Road
Tucson, AZ 85716-1603
520-325-5847
Shao-Li (Jeff) Chow, AIA

Sakellar Associates, Architects/Planners
100 East 6th Street
Tucson, AZ 85705
520-622-4166
Dino Sakellar, AIA, President

Environmental strategies, Inc.
423 South Olsen Ave.
Tucson, AZ 85719
520-884-1114
Ken Goodman, President

Section D - Other Appropriate Information:

Demonstration of technical special expertise, qualifications, and experience:

Specifically designed computer programs produce highly detailed estimates in less time than manual or spreadsheet programs. This ability affords us the opportunity to provide our clients with accurate estimates in a fast, efficient, and low cost manner.



Resume 2000

PMG, Inc. and their consultant's ability to commit proper manpower/resources to assigned projects:

During the past 17 years, the Chief Estimator completed more than one thousand three hundred fifty project estimates. Generation of these estimates was computer assisted and usually without employment of additional in-house estimators. The projects ranged in scope from residential room additions to multi-million dollar commercial projects. Also included were major mining and ore processing facilities. The total volume of estimated costs for these projects is more than nine hundred ninety million dollars. Our consultants are available to provide additional resources when required. Use of the PMG computer assisted estimating program provides each estimator the ability to produce accurate estimates in less time.

Past performance in cost estimating accuracy versus actual project bid amounts:

Refer to Estimate/Bid Examples.

Ability to meet critical schedule requirements:

PMG has an excellent reputation for meeting schedules and deadlines. All estimates prepared and submitted for projects to date were within the agreed time frame.

Estimate format:

Estimate generation is under the supervision of a Fellow Certified Professional Estimator of the American Society of Professional Estimators. Estimates are computer generated using the PMG Estimating System and other state of the art programs. We are experienced in Construction Specification Institute, Uniformat, U.S.A. Corps of Engineers M-CACES, Work Breakdown Structure, U.S. Air Force, Elemental, & GSA formats. All estimates and narratives are in presentation quality Laserjet printing.

We base cost estimates on the estimator's judgement, using project information provided by the owner or design professional. This is independent of other estimates made available for information. PMG prepares all estimates in a professional and competent manner. This is consistent with the standards of performance usually expected of estimators in the estimating community. We are responsible for the professional quality, technical accuracy, timely completion, and the coordination of all services furnished under the agreement. Without additional compensation, the estimator will correct any deficiencies in services provided.

Summary:

PMG, Inc. is an independent consultant with no vested interest in any contracting or design professional groups. As such, we provide unbiased estimates of expected construction costs. The President of PMG is a Fellow Certified Professional Estimator and Past National President of the American Society of Professional Estimators.

Sincerely,



Merle W. Heckenlively, FCPE
President

Atlanta City Ordinance of 1992

The Atlanta City Ordinance is the first law (an to our knowledge, still the only law) to mandate a zero-step entrance in certain private, single-family homes. Over 500 visitable homes have been constructed under the ordinance as of 1998.

Municipal Clerk
Atlanta, Georgia

EXHIBIT A

AN ORDINANCE

BY: COUNCIL MEMBER MYRTLE DAVIS

AN ORDINANCE ADDING A NEW SECTION TO THE CITY OF ATLANTA CODE OF ORDINANCE ARTICLE F, DIVISION 3 ENTITLED: BARRIER FREE REQUIREMENTS WHERE FUNDING OR ASSISTANCE FROM PUBLIC FUNDS IS RECEIVED, PARAGRAPH 8-2182

WHEREAS, no statutory requirements presently exist on a state or local level to require that new single-family, duplex or triplex dwellings be constructed to provide accessible housing for disabled persons; and

WHEREAS, people with disabilities and their immediate families are often isolated into their own homes because the homes of most of their acquaintances contain insurmountable barriers, and often experience difficulty in finding a suitable house to rent or buy; and

WHEREAS, certain features in construction make new houses visitable, and in many cases livable, for persons with disabilities.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF ATLANTA, GEORGIA, as follows:

SECTION 1: Statement of Intent.

The provisions of this ordinance are specifically enacted to further the policy of the city of Atlanta to provide that new single-family, duplexes and triplexes which are constructed with public funds, as herein described, be provided with design features to provide accessibility and usability for physically disabled people.

The purpose of this ordinance is to specially promulgate certain standards which may be less restrictive than ANSI A117.1 while economically providing solutions to accessibility.

SECTION 2: Applicability.

The following regulations shall be applicable to new, single-family dwellings, duplexes, and triplexes which receive city assistance. For purposes of this (code section) "city assistance" shall mean funding or assistance from the City of Atlanta, or any agent thereof, through any of the following means: (i) receipt of a building contract or similar contractual agreement involving any city-funded program or fund, including but not limited to the Urban Residential Finance Authority (URFA), the Housing Trust Fund, or similar programs; (ii) real estate purchased, leased or donated from the City of Atlanta or any agency thereof, (iii) receipt of preferential tax treatment, bond assistance, assistance, or similar financial advantages derived from the City of Atlanta, or any agency thereof; (iv) dispersal under city auspices of any Federal or State construction funds such as CDBG; or (v) receipt of any other funding or financial benefit from the city of Atlanta or any agency thereof.

SECTION 3: Design Requirements.

The following design requirements shall apply:

Requirement 1. Building Entrances.

Applicable dwelling units shall be designed and constructed to have at least one building entrance on an accessible route served by a ramp complying with ANSI A117.1-1986, Section 4.8, having a maximum slope not to exceed twelve (1:12), unless it is impractical to do so because of terrain or unusual characteristics of the sight. Such building entrance doors shall comply with ANSI A117.1, 4.13, and shall have a minimum clear opening of 32 inches.

Any entrance at the front, side or back of acceptable as long as it is served by an accessible route such as a garage or sidewalk.

Requirement 2. Interior door criteria.

All dwelling units, whether or not on an accessible route, shall be designed in such a manner that all the doors designed to allow passage into and within all premises are sufficiently wide to allow passage by persons in wheel chairs. Lever hardware is required.

Doors, except those serving closets less than 15 feet square in area, within individual dwelling units intended for user passage must provide minimum 32" clear opening. A 2' 10" door or standard 6' 0" sliding patio door assembly is deemed sufficient to comply with this requirement, provided however, compliance with ANSI Section 4.13.6 (Maneuvering Clearance at Doors) shall not be mandatory.

Requirement 3. accessible routes into and through the dwelling unit.

An accessible route shall be designed and constructed in such a manner that a 36" wide level route, except at doors, must be provided through the main floor of the unit with ramped or beveled changes at door thresholds.

Requirement 4. Wall reinforcement in bathroom.

Reinforcement in the walls shall be provided at designated locations as specified by ANSI A 117.1, Section 4.24, Section 4.32, figure 48 and figure 49 so that grab bars may be installed, if needed, at a later date without the necessity of removing portions of the existing wall.

Requirement 5. Light switches, electrical outlets, thermostats and other environmental controls.

All applicable dwelling units shall be designed and constructed in such a manner that all premises contain light switches, electrical outlets, thermostats and other controls in accessible locations.

Controls shall meet the requirements of ANSI A117.1, Section 4.25. Where multiple controls serve the same elements (e.g., two remote switches for a light) only one need be accessible.

Section 4: Contracts.

The provisions of this (code section) shall be incorporated in all city of Atlanta contracts.

Section 5: Waiver of Exterior Disability Accessibility Regulations.

The requirements of Section 3 Requirement 1 (Building Entrances) herein may be waived by the Commissioner of the Department of Housing or (Commissioner), through the issuance of an "Exterior Disability Accessibility Waiver" ("waiver").

A person requesting said waiver shall file an application for disability accessibility waiver with the Commissioner, including all documents necessary to prove the existence of the exemption standard herein. The application shall demonstrate that typographical conditions on the sight render it impossible to comply with the provisions of said section.

If the application so demonstrates, the Commissioner shall issue an Exterior Disability Accessibility Waiver to the applicant, in writing, within ten (10) days of receipt of a completed application which shall become an official component of any issued contract. The Commissioner shall retain a copy of said waiver in the Department's official records, and shall also forward a copy of said waiver to the Director of the Bureau of Buildings at the time of issuance.

Section 6: All ordinances or parts of ordinances in conflict with this ordinance are hereby repeal to the extent of said conflict.

Section 7: This ordinance shall become effective immediately upon approval by the Mayor or upon becoming law without approval.

ADOPTED as amended by Council	June 15, 1992
APPROVED by the Mayor	June 18, 1992

Signed by
Olivia P. Woods
Municipal Clerk, C.M.C.

Austin Texas, City Ordinance

providing basic access in certain single-family homes, duplexes and triplexes.
October, 1998

Ordinance No. 981007-A

AN ORDINANCE AMENDING CHAPTER 7-1 OF THE CITY CODE TO REQUIRE BARRIER-FREE RESIDENTIAL CONSTRUCTION WHERE CITY FUNDS ARE EXPENDED.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF AUSTIN:

PART 1. The City Council finds that:

1. Persons with disabilities and their immediate families are often isolated in their homes because the homes of most of their acquaintances contain barriers insurmountable to persons with disabilities;
2. Person with disabilities and their immediate families often experience difficulty in finding suitable housing; and
3. There are features in construction which can make new houses visitable, and in many cases livable, for persons with disabilities.

PART 2. Statement of Intent. The provisions of this ordinance are enacted to implement the City's policy that new single family dwellings, duplexes, and triplexes constructed with public funds be constructed using design features that provide accessibility and usability for persons disabilities, and to promulgate standards that may be less restrictive than ANSI A117.1 while economically providing greater opportunity for accessibility.

PART 3. Chapter 7-1 of the City Code is amended to add Article IV to read as follows:

ARTICLE IV. ACCESSIBILITY IN HOUSING CONSTRUCTED WITH PUBLIC FUNDS

DIVISION 1. GENERAL PROVISIONS

Sec. 7-1-171 APPLICABILITY.

- A. Except as otherwise provided in this section, this article applies to the new construction of a single family dwelling, duplex, and triplex after the effective date of this article that is funded with financial assistance from the City.
- B. This article does not apply to an application for financial assistance from the City on a dwelling structure for which a certificate of occupancy has been issued under the City of Austin Building Code.
- C. City financial assistance covered by this article includes:
 1. a building contract or similar contractual agreement involving a City-funded program or fund, including the Austin Housing Finance Corporation, or a similar program;

2. a real estate purchase, lease, or donation by the City or its agents;
3. preferential tax treatment, bond assistance, mortgage assistance, or similar financial advantages from the City or its agents;
4. disbursement of federal or state construction funds including a Community Development Block Grant; or
5. a City contract to provide funding or a financial benefit for housing.

Sec. 7-1-172 WAIVER OF EXTERIOR ACCESSIBILITY REGULATIONS

- A. A person requesting a waiver under this section must file an application with the building official, attaching any documents necessary to demonstrate the applicant's eligibility for the waiver.
- B. The building official may waive the requirements of Section 7-1-181 by issuing an exterior disability accessibility waiver if the applicant demonstrates that the topographical conditions of a site render compliance with this article an undue hardship.
- C. When the building official receives a waiver application, the building official shall post a notice stating that:
 1. the building official has received the application;
 2. written comments may be filed with the building official not later than the 10th day after the notice of application was posted; and a decision on the application will be made and posted not later than the 15th day after the notice of application was posted.
- D. If the building official determines that the waiver is appropriate, the building official shall issue a waiver to the applicant, in writing, not later than the 15th day after the notice of application is posted.

Sec. 7-1-173 APPEAL.

- A. A waiver applicant or a person who submits written comments under Section 7-1-172 (C)(2) may appeal a decision of the building officials under Section 7-1-172 to the Building and Fire Code Board by filling a written notice to appeal with the building official not later than the 20th day after the decision was issued.
- B. The building official shall forward a copy of the notice of appeal to the City Clerk and request a hearing of the appeal on the next available Building and Fire Code Board meeting.

Sec. 7-1-174 MONITORING REQUIRED The City Manager shall monitor the administration of this article. DIVISION 2. DESIGN AND CONSTRUCTION REQUIREMENTS Sec. 7-1-181 BUILDING ENTRANCES.

- A. A dwelling unit must provide at least one building entrance that complies with the City of Austin Building Code standard for an accessible entrance on an accessible route served by a ramp or no-step entrance. A building entrance door must have a minimum net clear opening of 32 inches.
- B. The entrance may be at the front, side, or back of a dwelling as long as it is served by an accessible route such as a garage or sidewalk.

Sec. 7-1-182 INTERIOR DOORS

Except for a door that provides access to a closet of fewer than 15 square feet in area, interior doors located on the first floor of a dwelling unit must have a minimum clear opening of at least 30 inches. A 2' 8" door or standard 6'0" sliding patio door assembly complies with this requirement. Lever door handle hardware is required on the affected doors.

Sec. 7-1-183 ACCESSIBLE ROUTES WITHIN THE DWELLING UNIT.

A dwelling unit must provide an accessible route through the hallways and passageways of the first floor of the dwelling unit. The route must provide a minimum width of 36 inches and be level with ramped or beveled changes at door thresholds.

Sec. 7-1-184 WALL REINFORCEMENT IN BATHROOMS

First floor bathroom walls of a dwelling unit must be designed and constructed with reinforcements using the following standards:

1. Lateral two-inch x six-inch or larger nominal wood blocking must be installed flush with stud engines of bathroom walls.
2. The centerline of the blocking must be 34 inches from and parallel to the floor.

Sec. 7-1-185 LIGHT SWITCHES, ELECTRICAL OUTLETS, THERMOSTATS, AND OTHER ENVIRONMENTAL CONTROLS.

- A. A light switch, thermostats, or electrical panel located on the first floor must be no higher than 42 inches above the floor. Receptacles must be at least 18 inches above the floor.
- B. An electrical panel located outside the dwelling unit must be no higher than 42 inches above the ground, at least 18 inches above the ground, and adjacent to an accessible route.

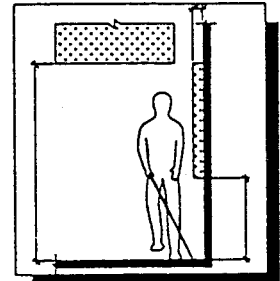
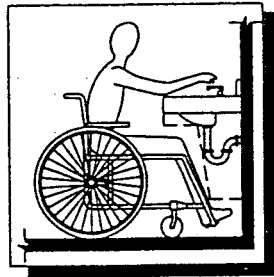
PART 4. The Council waives the requirements of Sections 2-2-3 and 2-2-7 of the City Code for this ordinance.

PART 5. This ordinance takes effect on November 1, 1998.

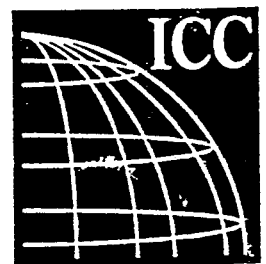
PASSED AND APPROVED October 7, 1998.

American National Standard

FRANK SEADER
ICC/ANSI A117.1-1998



*Accessible and Usable
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ICC/ANSI
A117.1-1998

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Accessible and Usable
Buildings and Facilities

Secretariat

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FOREWORD

(This Foreword is not part of American National Standard A117.1-1998.)

The 1961 edition of ANSI Standard A117.1 presented the first criteria for accessibility to be approved as an American National Standard and was the result of research conducted by the University of Illinois under a grant from the Easter Seal Research Foundation. The National Easter Seal Society and the President's Committee on Employment of People with Disabilities became members of the Secretariat and the Standard was reaffirmed in 1971.

In 1974, the U.S. Department of Housing and Urban Development joined the Secretariat and sponsored needed research, which resulted in the 1980 edition. After further revision that included a special effort to remove application criteria (scoping requirements), the 1986 edition was published and, when requested in 1987, the Council of American Building Officials (CABO) assumed the Secretariat. Central to the intent of the change in the Secretariat was the development of a standard that, when adopted as part of a building code, would be compatible with the building code and its enforcement. This edition has largely achieved that goal. In 1998, CABO became the International Code Council (ICC).

This edition has been substantially reformatted. Illustrative figures are located adjacent to corresponding text to simplify the use of the Standard. Unless specified otherwise, figures are not part of the Standard. Should a figure appear to illustrate criteria that differ with the text of the Standard, the criteria stated in the text govern.

Suggestions for improving this edition will be welcome. They should be sent to ICC, Secretariat, ANSI A117 Committee, Suite 708, 5203 Leesburg Pike, Falls Church, VA 22041.

This Standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Architectural Features and Site Design of Public Buildings and Residential Structures for Persons with Handicaps (A117). Committee approval of the Standard does not necessarily imply that all Committee members voted for its approval. At the time it approved this Standard, the A117 Committee had the following members:

Chair Kenneth M. Schoonover, PE (BOCA)
Vice Chair Soy Williams, AIA (PVA)

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Special recognition is provided to the following individuals who also contributed as members of the committee during this review cycle:

Richard Hudnut (Chair 1987–1997)

Frank Bosak (Vice-Chair 1987–1997)

John P. S. Salmen

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Chapter 1. Application and Administration

101 Purpose

The specifications in Chapters 3 through 9, and Sections 1002 and 1004 of this standard make sites, facilities, buildings and elements accessible to and usable by people with such physical disabilities as the inability to walk, difficulty walking, reliance on walking aids, blindness and visual impairment, deafness and hearing impairment, incoordination, reaching and manipulation disabilities, lack of stamina, difficulty interpreting and reacting to sensory information, and extremes of physical size. The intent of these sections of the standard is to allow a person with a physical disability to independently get to, enter, and use a site, facility, building, or element.

Section 1003 of this standard provides technical criteria for Type B dwelling units. These criteria are intended to be consistent with the intent of only the technical requirements of the Federal Fair Housing Amendments Act Accessibility Guidelines. These Type B dwelling units are intended to supplement, not replace, accessible Type A dwelling units as specified in this standard.

This standard is intended for adoption by government agencies and by organizations setting model codes to achieve uniformity in the technical design criteria in building codes and other regulations.

101.1 Applicability. Sites, facilities, buildings, and elements required to be accessible shall comply with the applicable provisions of Chapters 3 through 9.

EXCEPTIONS:

1. Type A dwelling units shall comply with Section 1002.
2. Type B dwelling units shall comply with Section 1003.
3. Dwelling units required to have accessible communication features shall comply with Section 1004.

102 Provisions for Adults

The specifications in this standard are based on adult dimensions and anthropometrics.

103 Compliance Alternatives

Nothing in this standard is intended to prevent the use of designs, products, or technologies as alternatives to those prescribed by this standard, where equivalent or superior accessibility and usability are provided and such equivalency is approved by the administrative authority adopting this standard.

104 Conventions

104.1 Dimensions. Dimensions that are not stated as "maximum" or "minimum" are absolute. All dimensions are subject to conventional industry tolerances.

104.2 Graphics. Unless specifically stated otherwise, figures included herein are not considered part of the standard and are provided for informational purposes only.

105 Referenced American National Standards

105.1 General. The American National Standards listed in Section 105.2 are referenced in this document. Where requirements in this standard differ from those of these referenced standards, the requirements of this standard shall apply.

105.2 Referenced Standards.

105.2.1 Power Operated Pedestrian Doors. ANSI/BHMA A156.10-1991.

105.2.2 Power Assist and Low Energy Power Operated Doors. ANSI/BHMA A156.19-1997.

105.2.3 Safety Code for Elevators and Escalators. ASME/ANSI A17.1-1996.

105.2.4 Audible Emergency Evacuation Signal. ANSI S3.41-1990.

105.2.5 Installation, Maintenance, and Use of Protective Signaling Systems. NFPA 72-1996.

106 Definitions

106.1 General. For the purpose of this standard, the terms listed in Section 106.5 have the indicated meaning.

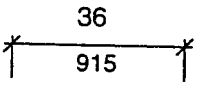
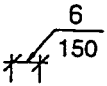
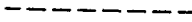
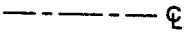
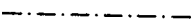




Convention	Description
	dimension showing English units (in inches unless otherwise specified) above the line and SI units (in millimeters unless otherwise specified) below the line
	dimension for small measurements
min	minimum
max	maximum
	boundary of clear floor space or maneuvering clearance
	centerline
	a permitted element or its extension
	direction of travel or approach
	a wall, floor, ceiling, or other element cut in section or plan
	an element in elevation or plan
	location zone of element, control, or feature

Fig. 104.2
Graphic Convention for Figures

106.2 Terms Defined in Referenced Standards. Terms not defined in this section, but specifically defined in a referenced standard, shall have the specified meaning from the referenced standard, unless otherwise stated.

106.3 Undefined Terms. The meaning of terms not specifically defined in this document or in referenced standards shall be as defined by collegiate dictionaries in the sense that the context implies.

106.4 Interchangeability. Words, terms, and phrases used in the singular includes the plural and the plural the singular.

106.5 Defined Terms.

access aisle: An accessible pedestrian space between elements such as parking spaces, seating, and desks, that provides clearances appropriate for use of the elements.

accessible: Describes a site, building, facility, or portion thereof that complies with this standard.

accessible route: An interior or exterior circulation path that complies with this standard.

administrative authority: A jurisdictional body that adopts or enforces regulations and standards for the design, construction, or operation of buildings and facilities.

automatic door: A door operated with power mechanisms and controls.

Braille: A system which translates text into cells formed by raised dots.

characters: Letters, numbers, punctuation marks, and typographic symbols.

circulation path: An exterior or interior way of passage from one place to another for pedestrians.

counter slope: Any slope opposing the running slope of a curb ramp or ramp.

cross slope: The slope that is perpendicular to the direction of travel (see running slope).

curb ramp: A short ramp cutting through a curb or built up to it.

destination-oriented elevator system: An elevator system that provides lobby controls to select destination floors, lobby indicators designating which elevator to board, and a car indicator designating the floors at which the car will stop.

element: An architectural or mechanical component of a building, facility, space, or site.

facility: All or any portion of a building, structure, or area, including the site on which such building, structure, or area is located, wherein specific services are provided or activities are performed.

key surface: The surface or plane of any key or button which must be touched to activate or deactivate an operable part or a machine function or enter data.

marked crossing: A crosswalk or other identified path intended for pedestrian use in crossing a vehicular way.

operable part: A component of an element used to insert or withdraw objects, or to activate, deactivate, or adjust the element.

pictogram: A pictorial symbol which is recognized as representing activities, facilities, or concepts.

power-assisted door: A door used for human passage, with a mechanism that helps to open the door, or to relieve the opening resistance of the door.

ramp: A walking surface that has a running slope steeper than 1:20.

running slope: The slope that is parallel to the direction of travel (see cross slope).

sign: An architectural element composed of displayed textual, symbolic, tactile, or pictorial information.

site: A parcel of land bounded by a property line or a designated portion of a public right-of-way.

tactile: Describes an object that can be perceived using the sense of touch.

TTY: Machinery or equipment that employs interactive, graphic communications through the transmission of coded signals across the standard telephone network. The term TTY also refers to devices known as text telephones and TDDs.

vehicular way: A route provided for vehicular traffic.

walk: An exterior pathway with a prepared surface for pedestrian use.

Chapter 2. Scoping

201 General

This standard provides technical criteria for making sites, facilities, buildings, and elements accessible. The administrative authority shall provide scoping provisions to specify the extent to which these technical criteria apply. These scoping provisions shall address the application of the standard to: each building and occupancy type; new construction, alterations, temporary facilities, and existing buildings; specific site and building elements; and to multiple elements or spaces provided within a site or building.

202 Dwelling Units

Chapter 10 of this standard contains technical criteria for Type A dwelling units, Type B dwelling units, and dwelling units with accessible communication features. The administrative authority shall specify, in separate scoping provisions, the extent to which these technical criteria apply. These scoping provisions shall address the types and numbers of dwelling units required to comply with each set of dwelling unit criteria.

203 Administration

The administrative authority shall provide an appropriate review and approval process to ensure compliance with this standard.

Chapter 3. Building Blocks

301 General

301.1 Scope. The provisions of this chapter shall apply where required by the scoping provisions adopted by the administrative authority or by Chapters 4 through 10.

302 Floor or Ground Surfaces

302.1 General. Floor or ground surfaces shall be stable, firm, and slip resistant, and shall comply with Section 302. Changes in level in floor or ground surfaces shall comply with Section 303.

302.2 Carpet. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be $\frac{1}{2}$ inch (13 mm) maximum. Exposed edges of carpet shall be fastened to floor or ground surfaces and shall have trim along the entire length of the exposed edge. Carpet edge trim shall comply with Section 303.

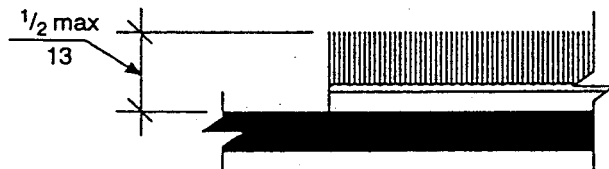


Fig. 302.2
Carpet on Floor or Ground Surfaces

302.3 Openings. Openings in floor or ground surfaces shall be of a size that does not permit the passage of a $\frac{1}{2}$ inch (13 mm) diameter sphere, except as allowed in Sections 407 and 408. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

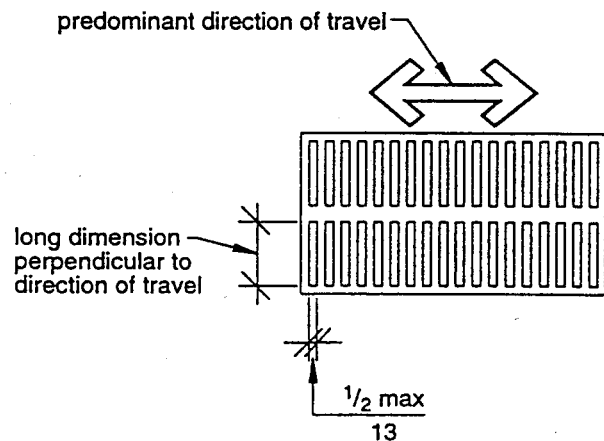


Fig. 302.3
Openings in Floor or Ground Surfaces

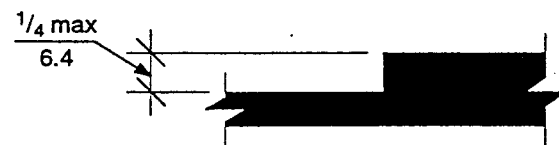


Fig. 303.2
Vertical Changes in Level

303.3 Beveled. Changes in level between $\frac{1}{4}$ inch (6 mm) high minimum and $\frac{1}{2}$ inch (13 mm) high maximum shall be beveled with a slope not steeper than 1:2.

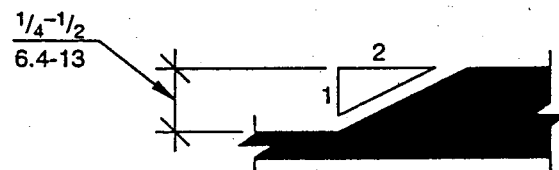


Fig. 303.3
Beveled Changes in Level

303 Changes in Level

303.1 General. Changes in level in floor or ground surfaces shall comply with Section 303.

303.2 Vertical. Changes in level of $\frac{1}{4}$ inch (6 mm) high maximum shall be permitted to be vertical.

303.4 Ramped. Changes in level greater than $\frac{1}{2}$ inch (13 mm) shall be ramped and shall comply with Section 405 or 406.

304 Wheelchair Turning Space

304.1 General. A wheelchair turning space shall comply with Section 304.

304.2 Floor or Ground Surface. Floor or ground surfaces of a wheelchair turning space shall have a slope not steeper than 1:48 and shall comply with Section 302.

304.3 Size. Wheelchair turning space shall comply with Section 304.3.1 or 304.3.2.

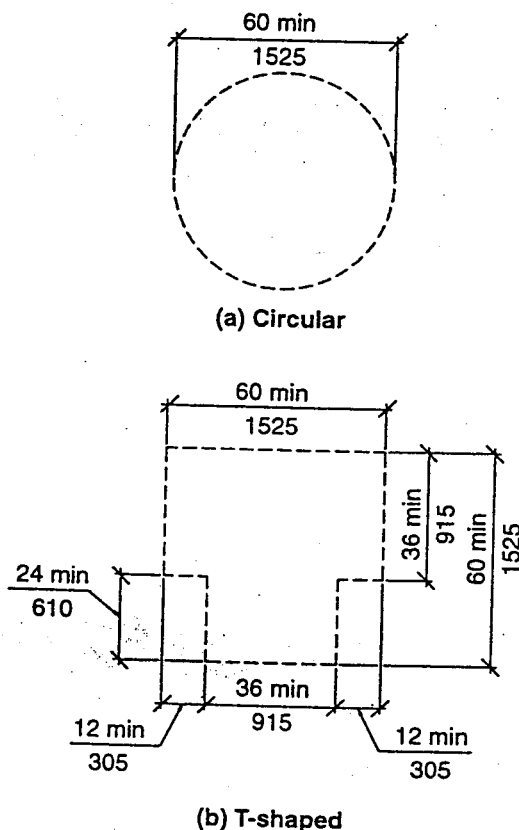


Fig. 304.3
Size of Wheelchair Turning Space

304.3.1 Circular Space. The wheelchair turning space shall be not less than 60 inches (1525 mm) diameter minimum. Wheelchair turning space shall be permitted to include knee and toe clearance complying with Section 306.

304.3.2 T-Shaped Space. The wheelchair turning space shall be a T-shaped space within a 60 inch (1525 mm) minimum square with arms and base 36 inches (915 mm) wide minimum. Each arm of the T shall be clear of obstructions 12 inches (610 mm) minimum in each direction and the base shall be clear of obstructions 24 inches (1220 mm) minimum. T-shaped wheelchair turning spaces shall be permitted to

include knee and toe clearance complying with Section 306 only at the end of either the base or one arm.

304.4 Doors. Unless otherwise specified, doors shall be permitted to swing into wheelchair turning spaces.

305 Clear Floor or Ground Space

305.1 General. Clear floor or ground space shall comply with Section 305.

305.2 Floor or Ground Surfaces. Floor or ground surfaces of a clear floor or ground space shall have a slope not steeper than 1:48 and shall comply with Section 302.

305.3 Size. The clear floor or ground space shall be 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum.

305.4 Knee and Toe Clearance. Unless otherwise specified, clear floor or ground space shall be permitted to include knee and toe clearance complying with Section 306.

305.5 Position. Unless otherwise specified, the clear floor or ground space shall be positioned for either forward or parallel approach to an element.

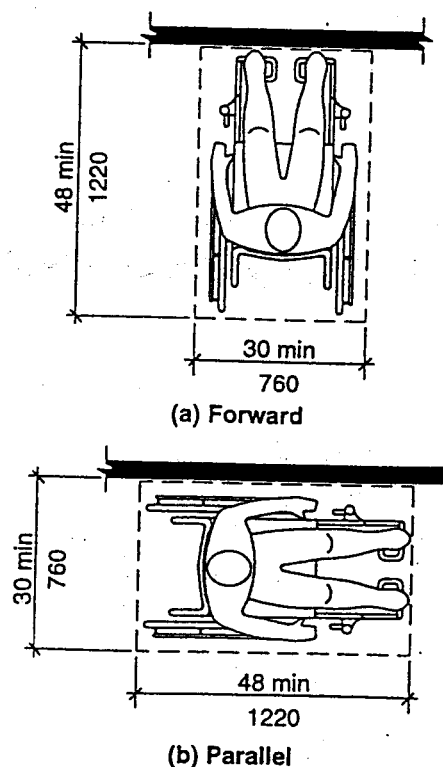


Fig. 305.5
Position of Clear Floor or Ground Space

305.6 Approach. One full unobstructed side of the clear floor or ground space shall adjoin or overlap an accessible route or adjoin another clear floor or ground space.

305.7 Maneuvering Clearance. If a clear floor or ground space is in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearances complying with Sections 305.7.1 and 305.7.2 shall be provided.

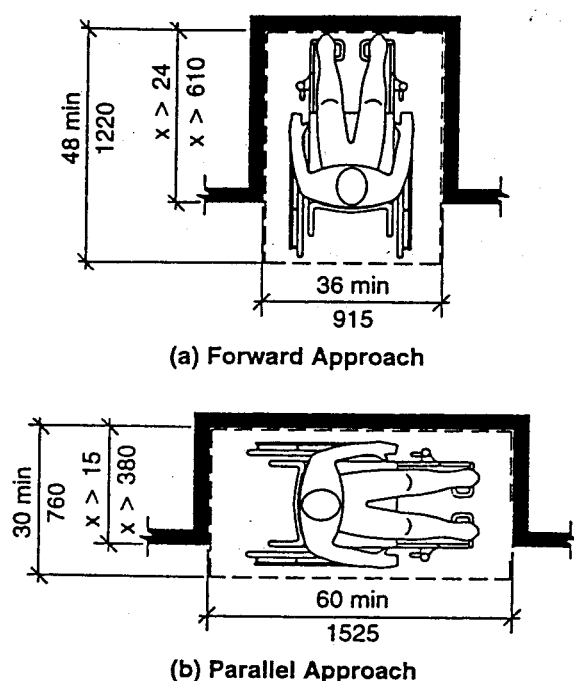


Fig. 305.7

Maneuvering Clearance in an Alcove

305.7.1 Forward Approach. The width of an alcove shall be 36 inches (915 mm) minimum where the depth exceeds 24 inches (610 mm).

305.7.2 Parallel Approach. The width of an alcove shall be 60 inches (1525 mm) minimum where the depth exceeds 15 inches (380 mm).

306 Knee and Toe Clearance

306.1 General. Where space beneath an element is included as part of clear floor or ground space at an element, clearance at an element, or a wheelchair turning space, the space shall comply with Section 306. Additional space beyond knee and toe clearance shall be permitted beneath elements.

306.2 Toe Clearance.

306.2.1 General. Space under an element between the floor or ground and 9 inches (230

mm) above the floor or ground shall be toe clearance and shall comply with Section 306.2.

306.2.2 Maximum Depth. Toe clearance shall be permitted to extend 25 inches (635 mm) maximum under an element.

306.2.3 Minimum Depth. Where toe clearance is required at an element as part of a clear floor or ground space, the toe clearance shall extend 17 inches (430 mm) minimum beneath the element.

306.2.4 Additional Clearance. Space extending greater than 6 inches (150 mm) beyond the available knee clearance at 9 inches (230 mm) above the floor or ground shall not be included in toe clearance.

306.2.5 Width. Toe clearance shall be 30 inches (760 mm) wide minimum.

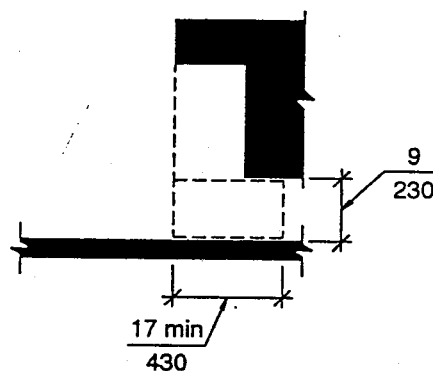


Fig. 306.2

Toe Clearance

306.3 Knee Clearance.

306.3.1 General. Space under an element between 9 inches (230 mm) and 27 inches (685 mm) above the floor or ground shall be knee clearance and shall comply with Section 306.3.

306.3.2 Maximum Depth. Knee clearance shall be permitted to extend 25 inches (635 mm) maximum under an element at 9 inches (230 mm) above the floor or ground.

306.3.3 Minimum Depth. Where knee clearance is required beneath an element as part of a clear floor or ground space, the knee clearance shall be 11 inches (280 mm) deep minimum at 9 inches (230 mm) above the floor or ground, and 8 inches (205 mm) deep minimum at 27 inches (685 mm) above the floor or ground.

306.3.4 Clearance Reduction. Between 9 inches (230 mm) and 27 inches (685 mm) above

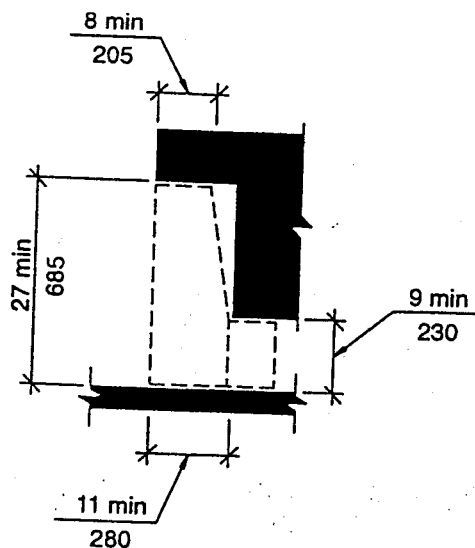


Fig. 306.3
Knee Clearance

the floor or ground, the knee clearance shall be permitted to be reduced at a rate of 1 inch (26 mm) for each 6 inches (150 mm) in height.

306.3.5 Width. Knee clearance shall be 30 inches (760 mm) wide minimum.

307 Protruding Objects

307.1 General. Protruding objects on circulation paths shall comply with Section 307.

307.2 Protrusion Limits. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the floor or ground shall protrude 4 inches (100 mm) maximum horizontally into the circulation path.

EXCEPTION: Handrails serving stairs and ramps shall be permitted to protrude 4½ inches (115 mm) maximum.

307.3 Post-Mounted Objects. Objects on a single post or pylon shall be permitted to overhang 12 inches (305 mm) maximum where more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the floor or ground. Objects on multiple posts or pylons where the clear distance between the posts or pylons is greater than 12 inches (305 mm), shall have the lowest edge of such object either 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the floor or ground surface.

EXCEPTION: Sloping portions of handrails serving stairs and ramps.

307.4 Reduced Vertical Clearance. Guardrails or other barriers shall be provided where vertical

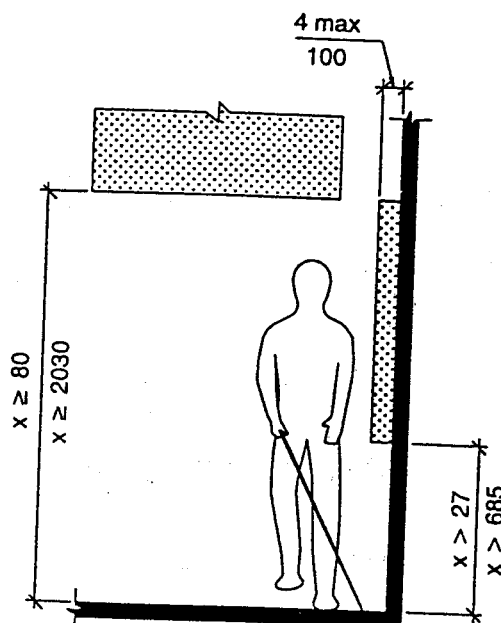
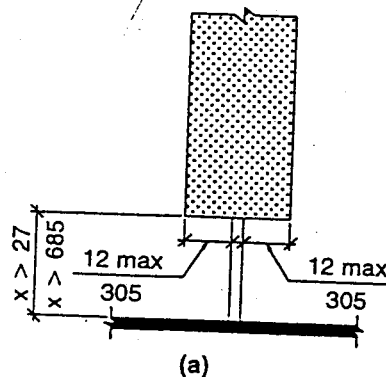
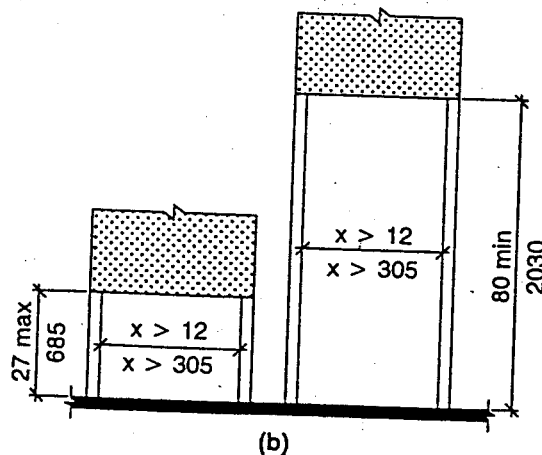


Fig. 307.2
Limits of Protruding Objects



(a)



(b)

Fig. 307.3
Post-Mounted Protruding Objects

clearance is less than 80 inches (2030 mm) high. Leading edge of such guardrail or barrier shall be 27 inches (685 mm) maximum above the floor or ground.

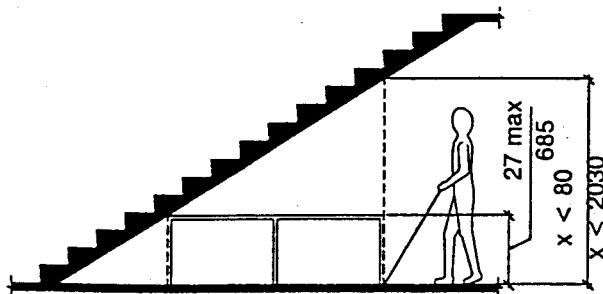


Fig. 307.4
Reduced Vertical Clearance

307.5 Required Clear Width. Protruding objects shall not reduce the clear width required for accessible routes.

308 Reach Ranges

308.1 General. Reach ranges shall comply with Section 308.

308.2 Forward Reach.

308.2.1 Unobstructed. Where a forward reach is unobstructed, the high forward reach shall be 48 inches (1220 mm) maximum and the low forward reach shall be 15 inches (380 mm) minimum above the floor or ground.

308.2.2 Obstructed High Reach. Where a high forward reach is over an obstruction, the

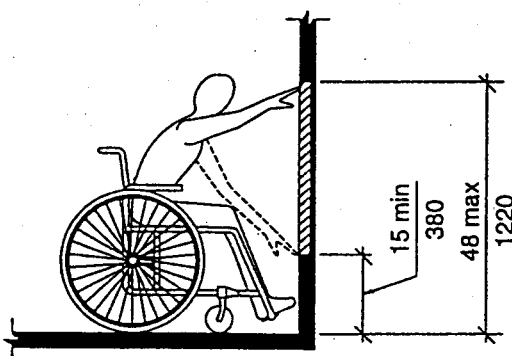


Fig. 308.2.1
Unobstructed Forward Reach

clear floor or ground space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (1220 mm) maximum where the reach depth is 20 inches (510 mm) maximum. Where the reach depth exceeds 20 inches (510 mm), the high forward reach shall be 44 inches (1120 mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.

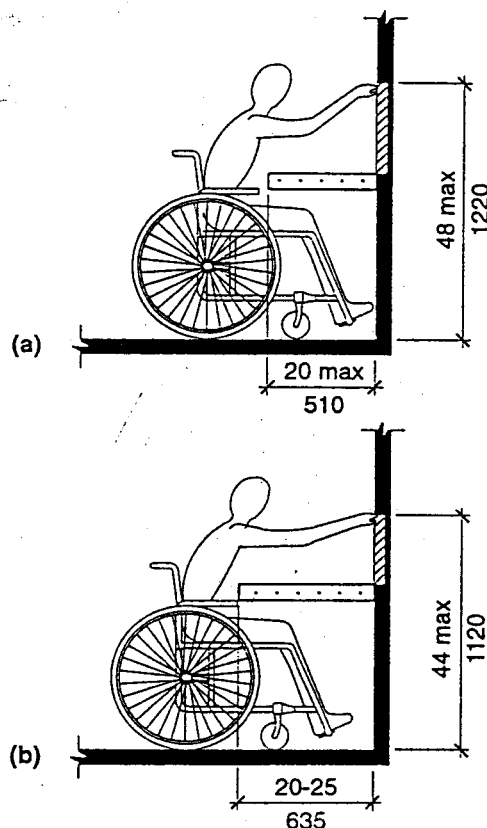


Fig. 308.2.2
Obstructed High Forward Reach

308.3 Side Reach.

308.3.1 Unobstructed. Where a clear floor or ground space allows a parallel approach to an element and the side reach is unobstructed, the high side reach shall be 48 inches (1220 mm) maximum and the low side reach shall be 15 inches (380 mm) minimum above the floor or ground.

EXCEPTION: Existing elements shall be permitted at 54 inches (1370 mm) maximum above the floor or ground.

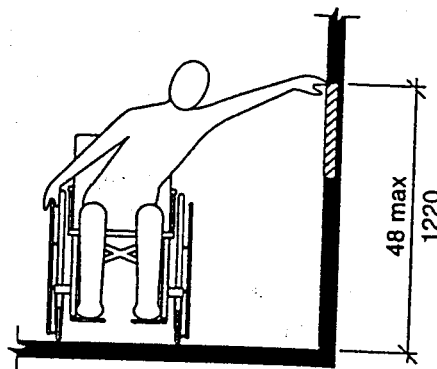


Fig. 308.3.1
Unobstructed Side Reach

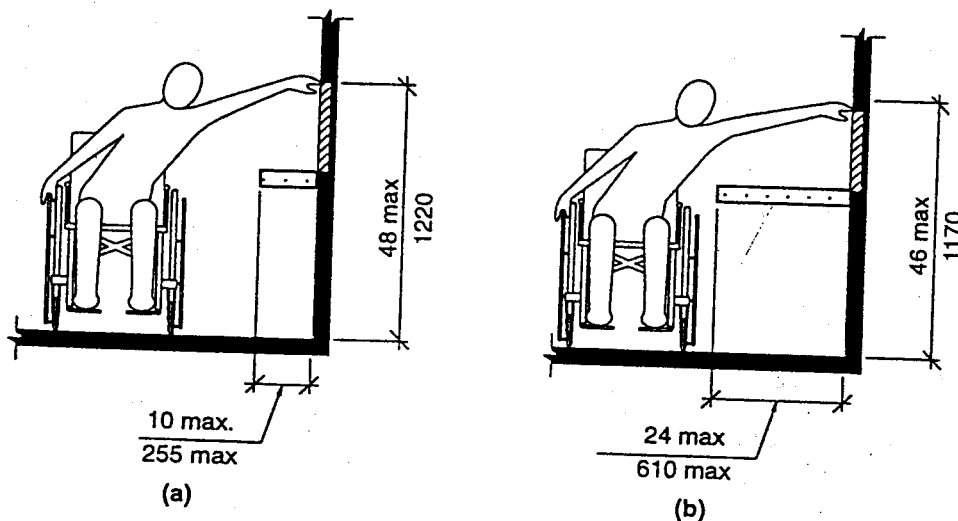


Fig. 308.3.2
Obstructed High Side Reach

308.3.2 Obstructed High Reach. Where a clear floor or ground space allows a parallel approach to an object and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (1220 mm) maximum for a reach depth of 10 inches (255 mm) maximum. Where the reach depth exceeds 10 inches (255 mm), the high side reach shall be 46 inches (1170 mm) maximum for a reach depth of 24 inches (610 mm) maximum.

309 Operable Parts

309.1 General. Operable parts required to be accessible shall comply with Section 309.

309.2 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided.

309.3 Height. Operable parts shall be placed within one or more of the reach ranges specified in Section 308.

EXCEPTIONS:

1. Where the use of special equipment dictates otherwise.
2. Where electrical and communications systems receptacles are not normally intended for use by building occupants.

309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.

Chapter 4. Accessible Routes

401 General

401.1 Scope. Accessible routes required by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

402 Accessible Routes

402.1 General. Accessible routes shall comply with Section 402.

402.2 Components. Accessible routes shall consist of one or more of the following components: Walking surfaces with a slope not steeper than 1:20, doorways, ramps, curb ramps, elevators, and wheelchair (platform) lifts. All components of an accessible route shall comply with the applicable portions of this standard.

403 Walking Surfaces

403.1 General. Walking surfaces that are a part of an accessible route shall comply with Section 403.

403.2 Floor or Ground Surface. Floor or ground surfaces shall comply with Section 302.

403.3 Slope. The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of a walking surface shall not be steeper than 1:48.

403.4 Changes in Level. Changes in level shall comply with Section 303.

403.5 Clear Width. Clear width of an accessible route shall comply with Table 403.5.

Table 403.5—Clear Width of an Accessible Route

Segment Length	Minimum Segment Width
≤ 24 inches (610 mm)	32 inches (815 mm) ¹
> 24 inches (610 mm)	36 inches (915 mm)

¹Consecutive segments of 32 inches (815 mm) wide must be separated by a route segment 48 inches (1220 mm) long minimum and 36 inches (915 mm) wide minimum.

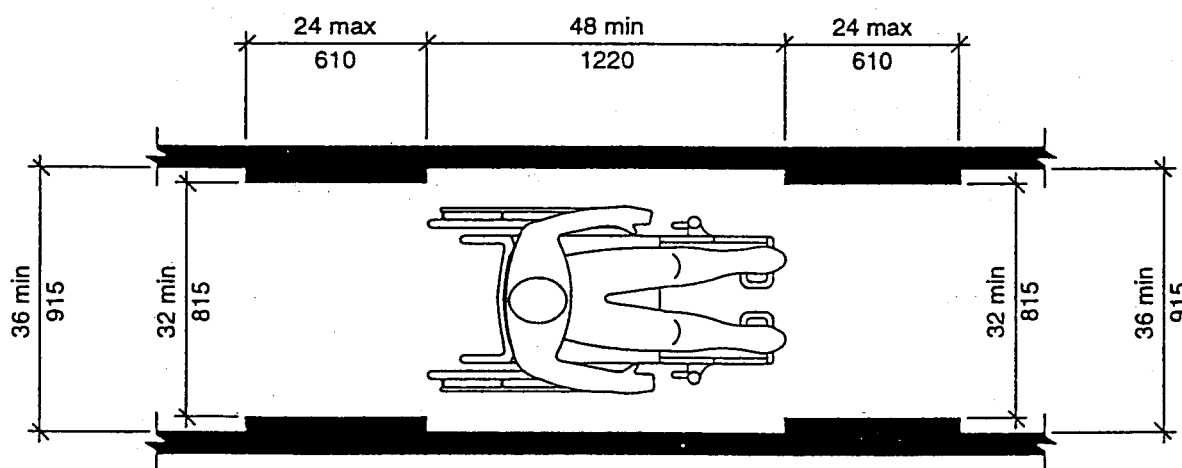


Fig. 403.5
Clear Width of an Accessible Route

404.2.7 Door Hardware. Handles, pulls, latches, locks, and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Such hardware shall be 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

EXCEPTION: Locks used only for security purposes and not used for normal operation are permitted in any location.

404.2.8 Closing Speed.

404.2.8.1 Door Closers. Door closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees shall be 5 seconds minimum.

404.2.8.2 Spring Hinges. Door spring hinges shall be adjusted so that from the open position of 70 degrees, the door shall move to the closed position in 1.5 seconds minimum, measured under ambient conditions.

404.2.9 Door-Opening Force. Fire doors shall have the minimum opening force allowable by the appropriate administrative authority. The maximum force for pushing open or pulling open doors other than fire doors shall be as follows:

1. Interior hinged door: 5.0 pounds (22.2 N)
2. Sliding or folding door: 5.0 pounds (22.2 N)

These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.

404.2.10 Door Surface. Door surfaces within 10 inches (255 mm) of the floor or ground measured vertically shall be a smooth surface on the push side extending the full width of the door. Parts creating horizontal or vertical joints in such surface shall be within $1/16$ inch (1.6 mm) of the same plane as the other. Cavities created by added kick plates shall be capped.

EXCEPTIONS:

1. Sliding doors.
2. Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at no less than

60 degrees from the horizontal shall not be required to meet the 10 inch (255 mm) bottom rail height requirement.

3. Doors which do not extend to within 10 inches (255 mm) of the floor or ground.

404.2.11 Vision Lites. Doors and sidelites adjacent to doors containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one panel 43 inches (1090 mm) maximum above the floor or ground.

404.3 Automatic Doors. Automatic doors and automatic gates shall comply with Sections 404.3.1 through 404.3.6. Full powered automatic doors shall comply with ANSI/BHMA A156.10. Low-energy and power-assisted doors shall comply with ANSI/BHMA A156.19.

404.3.1 Clear Opening Width. Doorways shall have a clear opening of 32 inches (815 mm) in power-on and power-off mode. The minimum clear width for automatic door systems shall be based on the clear opening provided by all leaves in the open position.

404.3.2 Maneuvering Clearances. Clearances at power-assisted doors shall comply with Section 404.2.4.

404.3.3 Thresholds. Thresholds and changes in level at doorways shall comply with Section 404.2.5.

404.3.4 Two Doors in Series. Doors in series shall comply with Section 404.2.6.

404.3.5 Control Switches. Control switches shall comply with Section 309.

404.3.6 Signs. Labels and warnings for automatic doors shall comply with Section 703.4.

405 Ramps

405.1 General. Walking surfaces on accessible routes with a running slope steeper than 1:20 are ramps and shall comply with Section 405.

405.2 Slope. Ramp runs shall have a running slope not steeper than 1:12.

EXCEPTION: Ramps in or on existing buildings or facilities shall be permitted to have slopes steeper than 1:12 complying with Table 405.2 where such slopes are necessitated by space limitations.

Table 405.2—Allowable Ramp Dimensions for Construction in Existing Sites, Buildings, and Facilities

Slope ¹	Maximum Rise
Steeper than 1:10 but not steeper than 1:8	3 inches (75 mm)
Steeper than 1:12 but not steeper than 1:10	6 inches (150 mm)

¹A slope steeper than 1:8 shall not be permitted.

405.3 Cross Slope. Cross slope of ramp runs shall not be steeper than 1:48.

405.4 Floor or Ground Surfaces. Floor or ground surfaces of ramp runs shall comply with Section 302.

405.5 Clear Width. The clear width of a ramp run shall be 36 inches (915 mm) minimum.

405.6 Rise. The rise for any ramp run shall be 30 inches (760 mm) maximum.

405.7 Landings. Ramps shall have landings at bottom and top of each run. Landings shall comply with Sections 405.7.1 through 405.7.5.

405.7.1 Slope. Landings shall have a slope not steeper than 1:48 and shall comply with Section 302.

405.7.2 Width. Clear width of landings shall be at least as wide as the widest ramp run leading to the landing.

405.7.3 Length. Landing length shall be 60 inches (1525 mm) minimum clear.

405.7.4 Change in Direction. Ramps that change direction at landings shall have a 60 inch (1525 mm) minimum by 60 inch (1525 mm) minimum landing.

405.7.5 Doorways. Where doorways are adjacent to a ramp landing, maneuvering clearances required by Sections 404.2.4 and 404.3.2 shall be permitted to overlap the landing area.

405.8 Handrails. Ramps with a rise greater than 6 inches (150 mm) shall have handrails complying with Section 505. Handrails shall not reduce the required clearances of a ramp run or landing.

405.9 Edge Protection. Edge protection complying with Section 405.9.1 or 405.9.2 shall be provided on each side of ramp runs and at each side of ramp landings.

EXCEPTIONS:

1. Ramps not required to have handrails where sides complying with Section 406.4 are provided.
2. Sides of ramp landings serving an adjoining ramp run or stairway.
3. Sides of ramp landings having a vertical drop-off of $\frac{1}{2}$ inch (13 mm) maximum within 10 inches (255 mm) horizontally of the minimum landing area.

405.9.1 Extended Floor or Ground Surface.

The floor or ground surface of the ramp run or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a railing complying with Section 505.

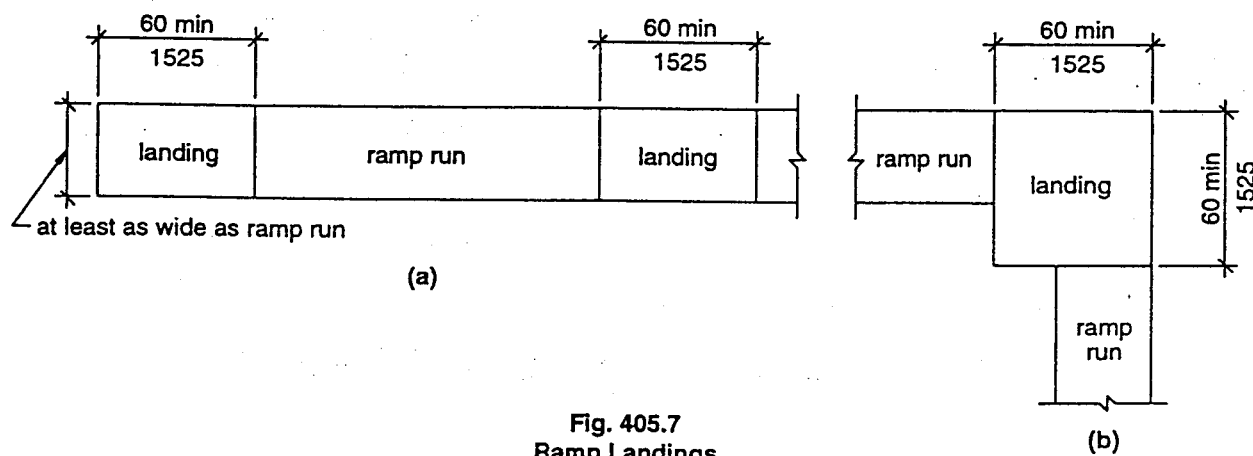


Fig. 405.7
Ramp Landings

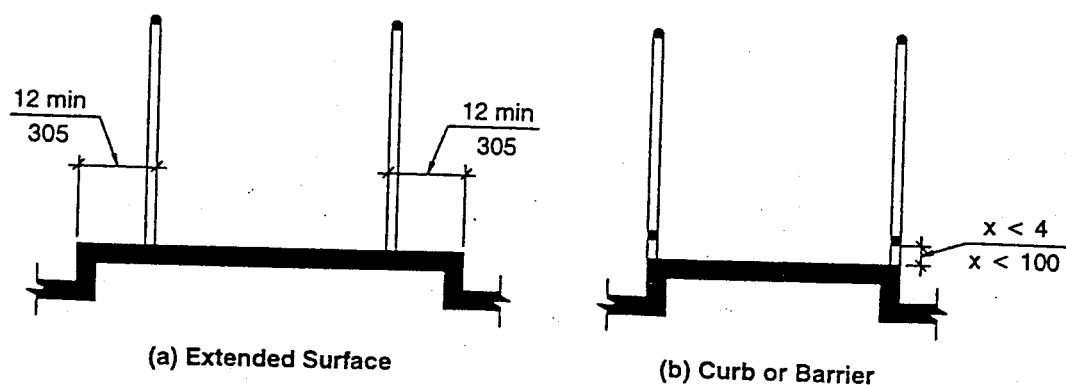


Fig. 405.9
Ramp Edge Protection

405.9.2 Curb or Barrier. A curb or barrier shall be provided that prevents the passage of a 4-inch (100 mm) diameter sphere below a height of 4 inches (100 mm).

405.10 Outdoor Conditions. Outdoor ramps and approaches to ramps shall be designed so that water will not accumulate on walking surfaces.

406 Curb Ramps

406.1 General. Curb ramps on accessible routes shall comply with Section 406.

406.2 Slope. Slopes of curb ramps shall comply with Section 405.2.

406.3 Counter Slope. Counter slopes of adjoining gutters and road surfaces immediately adjacent to the curb ramp or accessible route shall not be steeper than 1:20. Transitions from ramps to walks, gutters or streets shall be at the same level.

406.4 Sides of Curb Ramps. Where pedestrians must walk across a curb ramp, the ramp shall have flared sides. Slope of flares shall not be steeper than 1:10. Where the width of the walking surface at the top of the ramp and parallel to the run of the ramp is less than 48 inches (1220 mm) wide, the flared

sides shall have a slope not steeper than 1:12. Curb ramps with returned curbs shall be permitted where pedestrians would not normally walk across the ramp.

406.5 Width. Curb ramps shall be 36 inches (915 mm) wide minimum, exclusive of flared sides.

406.6 Floor or Ground Surface. Floor or ground surfaces of curb ramps shall comply with Section 302.

406.7 Location. Curb ramps and their side flares shall not protrude into vehicular traffic lanes, parking spaces, or into parking space access aisles.

406.8 Obstructions. Curb ramps shall be located or protected to prevent their obstruction by parked vehicles.

406.9 Handrails. Handrails are not required on curb ramps.

406.10 Location at Marked Crossings. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides.

406.11 Diagonal Curb Ramps. Diagonal or corner-type curb ramps with returned curbs or other

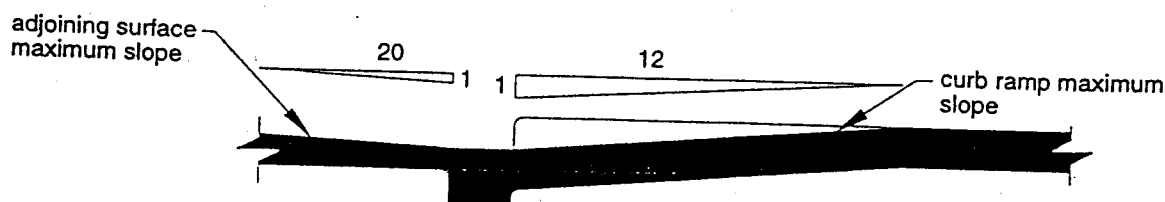


Fig. 406.3
Counter Slope of Surfaces Adjacent to Curb Ramps

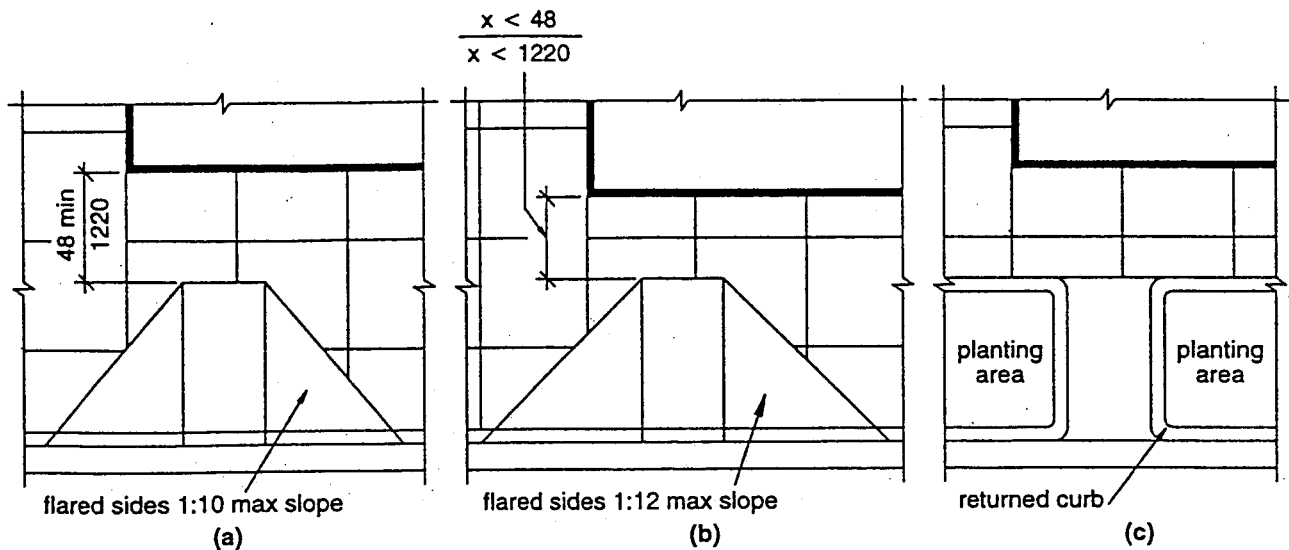


Fig. 406.4
Sides of Curb Ramps

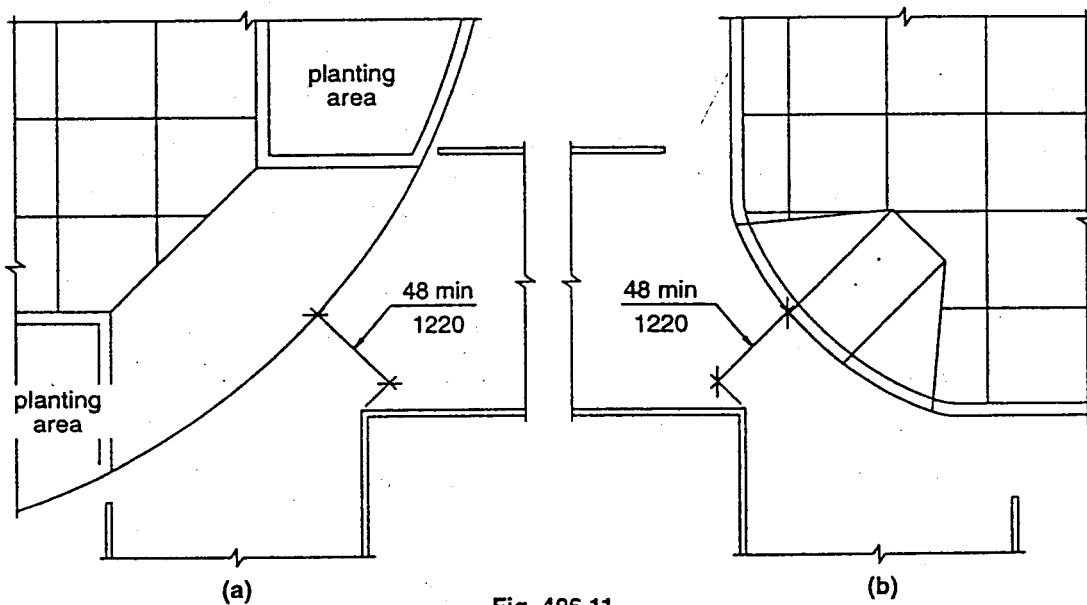


Fig. 406.11
Diagonal Curb Ramps

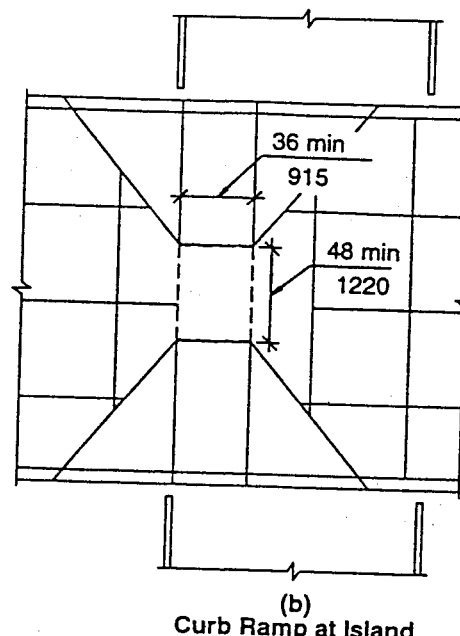
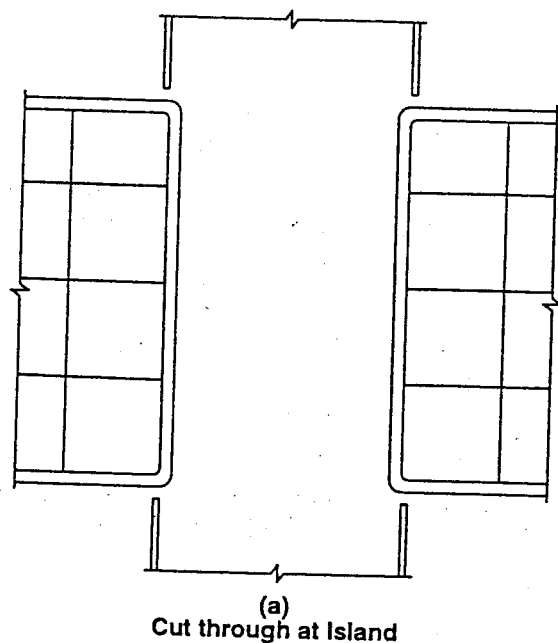
well-defined edges shall have the edges parallel to the direction of pedestrian flow. Bottoms of diagonal curb ramps shall have 48 inches (1220 mm) minimum clear space, measured parallel to the running slope. Diagonal curb ramps provided at marked crossings shall provide the minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of straight curb 24 inches (610 mm) long minimum on each side of the curb ramp and within the marked crossing.

406.12 Islands. Raised islands in crossings shall be cut through level with the street or have curb

ramps at both sides, and a level area 48 inches (1220 mm) long minimum by 36 inches (915 mm) wide minimum, in the part of the island intersected by the crossing.

407 Elevators

407.1 General. Elevators required to be accessible shall comply with Section 407.2. Destination-oriented elevators required to be accessible shall comply with Section 407.3. Limited use/limited application elevators required to be accessible shall

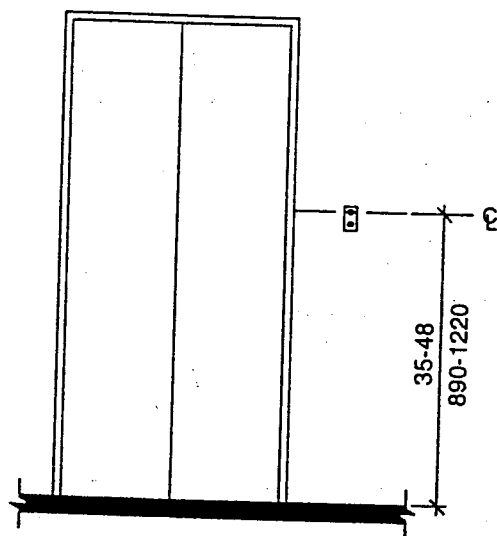
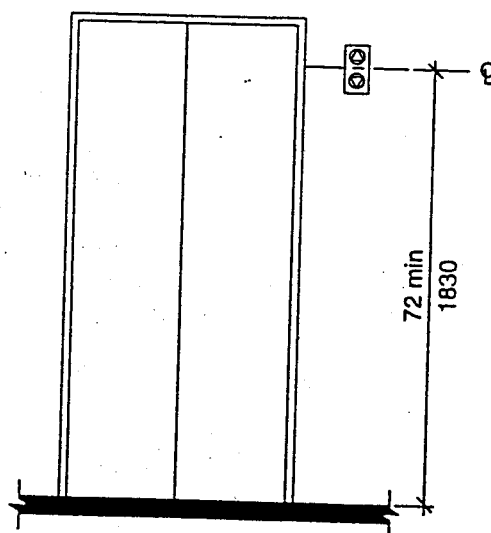
Fig. 406.12
Islands

comply with Section 407.4. Altered elements of existing elevators shall comply with Section 407.5.

407.2 Elevators. Elevators shall comply with Sections 407.2.1 through 407.2.13 and ASME/ANSI A17.1. They shall be passenger elevators.

407.2.1 Automatic Operation. Elevator operation shall be automatic. Each car shall be equipped with a self-leveling feature that will automatically bring and maintain the car at floor landings within a tolerance of $\frac{1}{2}$ inch (13 mm) under rated loading to zero loading conditions.

407.2.2 Call Buttons. Call buttons in elevator lobbies and halls shall be 35 inches (890 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground, measured to the centerline of the buttons. A clear floor or ground space complying with Section 305 shall be provided. Such call buttons shall have visual signals to indicate when each call is registered and when each call is answered. Call buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension. The button that designates the up direction shall be above the button that

Fig. 407.2.2
Elevator Call ButtonsFig. 407.2.3.2.1
Height of Elevator Visible Signals

designates the down direction. Buttons shall be raised or flush. Objects beneath hall call buttons shall protrude 1 inch (25 mm) maximum.

407.2.3 Hall Signals. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call and the direction of travel, except that signals in cars, visible from the floor area adjacent to the hall call buttons, and complying with the requirements of this subsection, shall be permitted.

407.2.3.1 Audible Signals. Audible signals shall sound once for the up direction and twice for the down direction, or shall have verbal annunciators that state the word "up" or "down." Audible signals shall have a frequency of 1500 Hz maximum. The audible signal or verbal annunciator shall be 10 dBA minimum above ambient, but shall not exceed 80 dBA maximum, measured at the hall call button.

407.2.3.2 Visible Signals. Visible signals shall comply with Sections 407.2.3.2.1 through 407.2.3.2.3.

407.2.3.2.1 Height. Hall signal fixtures shall be 72 inches (1830 mm) minimum above the floor or ground, measured to the centerline of the fixture.

407.2.3.2.2 Size. The visible signal elements shall be 2½ inches (63 mm) minimum in their smallest dimension.

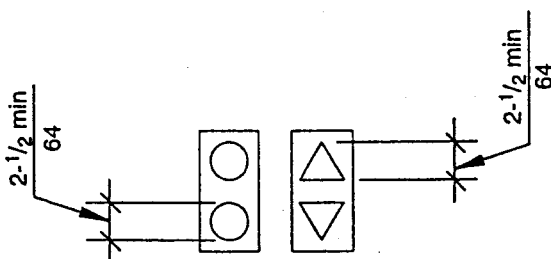


Fig. 407.2.3.2.2
Size of Elevator Visible Signals

407.2.3.2.3 Visibility. Signals shall be visible from the floor area adjacent to the hall call button.

407.2.4 Tactile Characters on Hoistway Entrances. Tactile character and Braille floor designations shall be provided on both jambs of elevator hoistway entrances and shall be 60 inches (1525 mm) above the floor or ground,

measured from the baseline of the characters. A tactile star shall also be provided on both jambs at the main entry level. Such characters shall be 2 inches (51 mm) high and shall comply with Section 703.2.

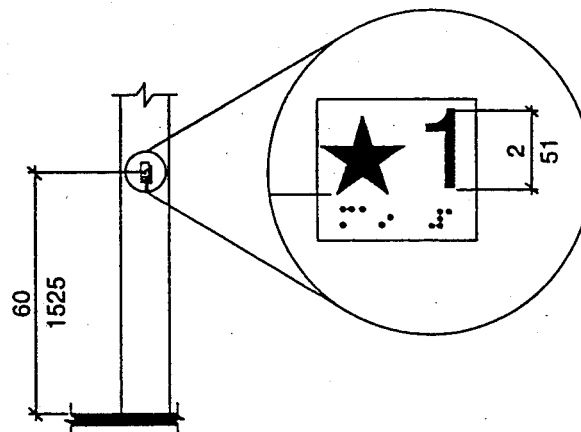


Fig. 407.2.4
Tactile Characters on Elevator Hoistway Entrances

407.2.5 Doors. Elevator doors shall be the horizontal type. Elevator hoistway and car doors shall open and close automatically. Elevator doors shall be provided with a reopening device that shall stop and reopen a car door and hoistway door automatically if the door becomes obstructed by an object or person. The device shall be activated by sensing an obstruction passing through the door opening at 5 inches (125 mm) and at 29 inches (735 mm) above the floor or ground. The device shall not require physical contact to be activated, although contact may occur before the door reverses. Door reopening devices shall remain effective for 20 seconds minimum.

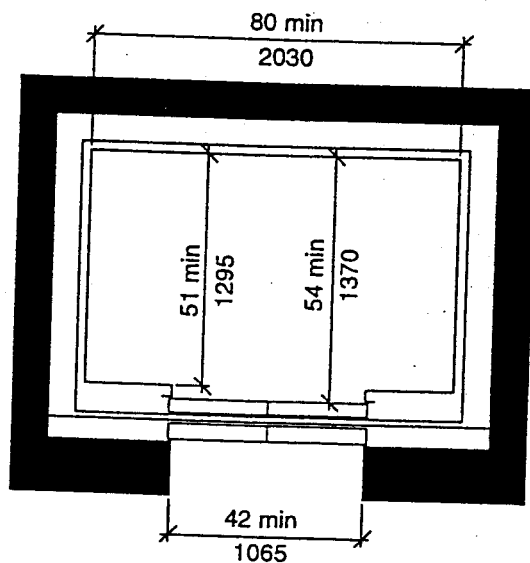
407.2.6 Door and Signal Timing for Hall Calls. The minimum acceptable time from notification that a car is answering a call until the door starts to close shall be calculated by the following equation, but shall not be less than 5 seconds:

$$T = D/1.5 \text{ ft/s (D/455 mm/s)}$$

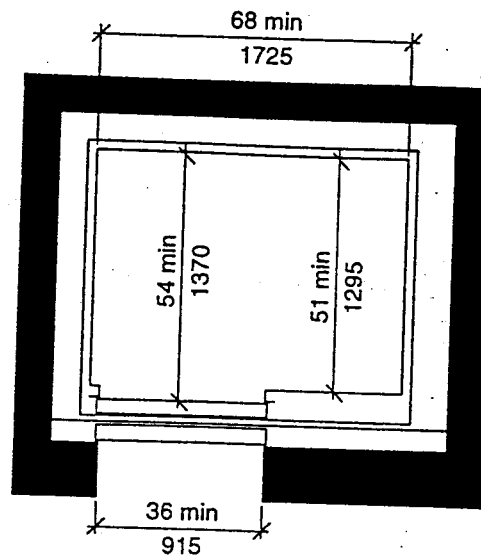
where T = total time in seconds and D = distance in feet (millimeters) from the point in the lobby or corridor 60 inches (1525 mm) directly in front of the farthest call button controlling that car to the centerline of its hoistway door. For cars with in-car signals, T begins when the signal is visible from the point 60 inches (1525 mm) directly in front of the farthest hall call button and the audible signal is sounded.

407.2.7 Door Delay for Car Calls. Elevator doors shall remain fully open in response to a car call for 3 seconds minimum.

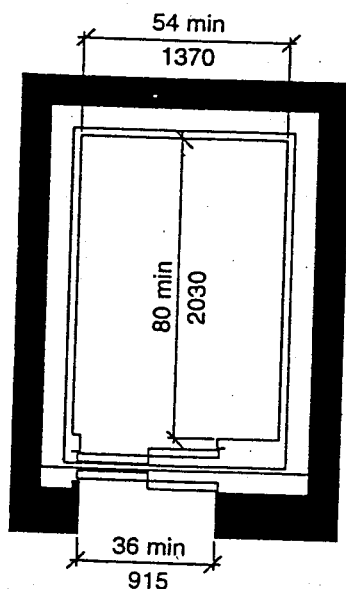
407.2.8 Inside Dimensions of Elevator Cars. The clear width of elevator doors and the inside dimensions of elevator cars shall comply with Table 407.2.8.



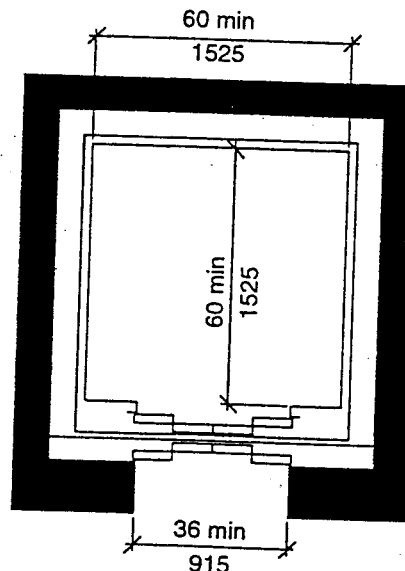
(a) Centered Door Location



(b) Off-Centered Door Location



(c) Any Door Location



(d) Any Door Location

Fig. 407.2.8
Inside Dimensions of Elevator Cars

Table 407.2.8—Minimum Dimensions of Elevator Cars¹

Door Location	Door Clear Width	Inside Car, Side to Side	Inside Car, Back Wall to Front Return	Inside Car, Back Wall to Inside Face of Door
Centered	42 inches (1065 mm)	80 inches (2030 mm)	51 inches (1295 mm)	54 inches (1370 mm)
Side (Off Center)	36 inches (915 mm) ²	68 inches (1725 mm)	51 inches (1295 mm)	54 inches (1370 mm)
Any	36 inches (915 mm) ²	54 inches (1370 mm)	80 inches (2030 mm)	80 inches (2030 mm)
Any	36 inches (915 mm) ²	60 inches (1525 mm)	60 inches (1525 mm)	60 inches (1525 mm)

¹Other car configurations that provide a 36 inch (915 mm) clear door width and a turning space complying with Section 304 with the door closed are permitted.

²A tolerance of minus $\frac{5}{8}$ inch (16 mm) is permitted.

407.2.9 Floor Surfaces. Floor surfaces in elevator cars shall comply with Section 302. The horizontal clearance between the edge of the car platform sill and the edge of the landing sill shall be $1\frac{1}{4}$ inches (32 mm) maximum.

407.2.10 Illumination Levels. The level of illumination at the car controls, platform, and car threshold and landing sill shall be 5 footcandles (54 lux) minimum.

407.2.11 Car Controls. Elevator controls shall comply with Sections 407.2.11.1 through 407.2.11.4.

407.2.11.1 Buttons. Buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension. Buttons shall be raised or flush. Except where provided in a standard tele-

phone keypad arrangement, buttons shall be arranged with numbers in ascending order. Where two or more columns of buttons are provided they shall read from left to right.

407.2.11.2 Button Designations. Except where provided in a standard telephone keypad arrangement, control buttons shall be identified by tactile characters complying with Section 703.2. Tactile characters and Braille shall be placed immediately to the left of the button to which they apply. The control button for the main entry floor, and control buttons other than remaining buttons with floor designations, shall be identified with tactile symbols complying with Table 407.2.11.2. Buttons with floor designations shall be provided with visible indicators to show that a call has been registered. The visible indication shall extinguish when the car arrives at the designated floor.

Telephone-style keypads shall be in a standard telephone keypad arrangement, and shall be identified by characters complying with Section 703.4. The number five key shall have a single raised dot. The dot shall be 0.118 inch (3 mm) to 0.120 inch (3.05 mm) base diameter and in other aspects comply with Table 703.5. Characters shall be centered on the corresponding keypad button. A display shall be provided in the car with visible indicators to show registered car destinations. The visible indication shall extinguish when the car arrives at the designated floor. A standard five-pointed star shall be used to indicate the main entry floor.

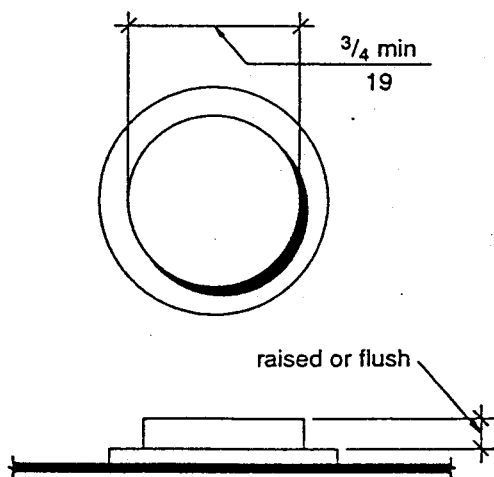
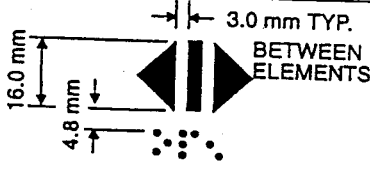
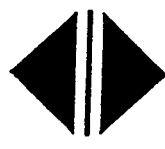
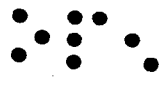
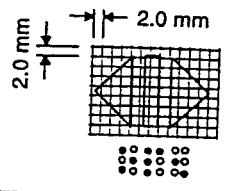
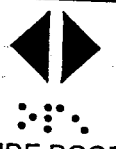

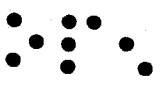
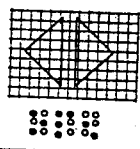
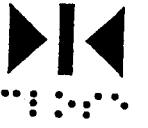
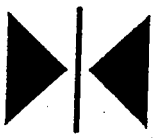
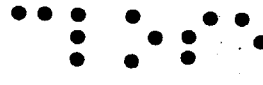
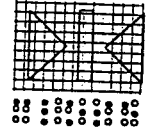
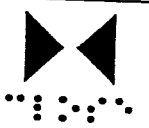
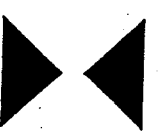

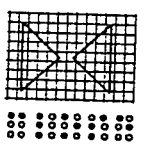



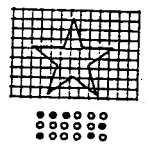

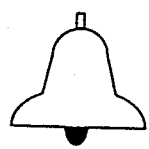
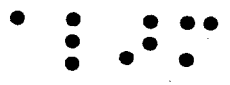
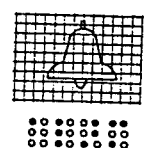



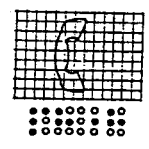


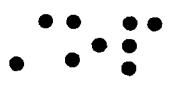
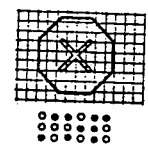


Fig. 407.2.11.1
Elevator Car Control Buttons

Table 407.2.11.2—Control Button Identification

Control Button	Tactile Symbol	Braille Message	Proportions Open circles indicate unused dots within each Braille Cell
 DOOR OPEN		 OP"EN"	
 REAR/SIDE DOOR OPEN		 REAR/SIDE OP"EN"	
 DOOR CLOSE		 CLOSE	
 REAR/SIDE DOOR CLOSE		 REAR/SIDE CLOSE	
 MAIN		 MA"IN"	
 ALARM		 AL"AR"M	
 PHONE		 PH"ONE"	
 EMERGENCY STOP (WHEN PROVIDED) X on face of octagon is not required to be tactile		 "ST"OP	

407.2.11.3 Height. Buttons with floor designations shall be 48 inches (1220 mm) maximum above the floor or ground. Emergency controls, including the emergency alarm, shall be grouped at the bottom of the panel. Emergency control buttons shall have their centerlines 35 inches (890 mm) minimum above the floor or ground.

EXCEPTION: Where the elevator serves more than 16 openings and parallel approach is provided, buttons with floor designations shall be 54 inches (1370 mm) maximum above the floor or ground.

407.2.11.4 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided at controls.

407.2.12 Car Position Indicators. In elevator cars, both audible and visible indicators shall be provided to identify the floor location of the car.

407.2.12.1 Visible Indicators. Indicator shall be above the car control panel or above the door. Numerals shall be $\frac{1}{2}$ inch (13 mm) high minimum. As the car passes or stops at a floor served by the elevator, the corresponding character shall illuminate.

407.2.12.2 Audible Indicators. The audible signal shall be 10 dBA minimum above ambient, but shall not exceed 80 dBA maximum, measured at the annunciator. The signal shall be an automatic verbal announcement which announces the floor at which the car has stopped.

EXCEPTION: For elevators that have a rated speed of 200 fpm (1 m/s) or less, an audible signal with a frequency of 1500 Hz maximum which sounds as the car passes or stops at a floor served by the elevator shall be permitted.

407.2.13 Emergency Communications. Emergency two-way communication systems between the elevator car and a point outside the hoistway shall comply with ASME/ANSI A17.1. The highest operable part of a two-way communication system shall comply with Section 308.3. If the device is in a closed compartment, the compartment door hardware shall comply with Section 309. Tactile symbols and characters complying with Section 703.2 shall be provided adjacent to the device. If the system uses a handset, the cord from the panel to the handset shall be 29 inches (735 mm) long minimum. The car emergency signaling device shall not

be limited to voice communication. If instructions for use are provided, essential information shall be presented in both tactile and visual form complying with Section 703.

407.3 New Destination-Oriented Elevators. Destination-oriented elevators shall also comply with Sections 407.3.1 through 407.3.6 and 407.2.13. Such elevators shall also comply with Sections 407.3.1 through 407.3.5 and ASME/ANSI A17.1. They shall be passenger elevators.

407.3.1 Call Buttons. Call buttons shall be 35 inches (890 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground, measured to the centerline of the buttons. A clear floor or ground space complying with Section 305 shall be provided. Call buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension. Buttons shall be raised or flush. Objects beneath hall call buttons shall protrude 1 inch (25 mm) maximum into the clear floor or ground space. Destination-oriented elevator systems shall have a keypad or other means for the entry of destination information. Keypads, if provided, shall be in a standard telephone keypad arrangement, and shall be identified by characters complying with Section 703.4. The number five key shall have a single raised dot. The dot shall be 0.118 inch (3 mm) to 0.120 inch (3.05 mm) base diameter, and in other aspects comply with Table 703.5. Destination-oriented elevator systems shall be provided with visual and audible signals which indicate which elevator car to enter. Characters shall be centered on the corresponding keypad button. A display shall be provided in the car with visible indicators to show registered car destinations. The visible indication shall extinguish when the car arrives at the designated floor. A standard five-pointed star shall be used to indicate the main entry floor.

407.3.2 Hall Signals. A visible and audible signal shall be provided to indicate a car destination corresponding with Section 407.3.1. The audible tone and verbal announcement shall be the same as those given at the call button or call button keypad, if provided. Each elevator in a bank shall have audible and visual means for differentiation.

407.3.2.1 Visible Signals. Visible signals shall comply with Sections 407.3.2.1.1 through 407.3.2.1.3.

407.3.2.1.1 Height. Hall signal fixtures shall be 72 inches (1830 mm) minimum above the floor or ground, measured to the centerline of the fixture.

407.3.2.1.2 Size. The visible signal elements shall be $2\frac{1}{2}$ inches (64 mm) minimum in their smallest dimension.

407.3.2.1.3 Visibility. Signals shall be visible from the floor area adjacent to the hoistway entrance.

407.3.3 Car Controls. Emergency controls, including the emergency alarm, shall have their centerlines 35 inches (890 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground. Buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension. Buttons shall be raised or flush. Controls shall accommodate a forward reach or side reach complying with Section 308.

407.3.4 Car Position Indicators. In elevator cars, audible and visible car location indicators shall be provided.

407.3.4.1 Visible Indicators. Indicators shall be above the car control panel or above the door. Numerals shall be $\frac{1}{2}$ inch (13 mm) high minimum. The visible indicators shall extinguish when the car arrives at the designated floor.

407.3.4.2 Audible Indicators. An automatic verbal announcement which announces the floor at which the car has stopped shall be provided. The announcement shall be 10 dBA minimum above ambient and 80 dBA maximum, measured at the annunciator.

407.3.5 Elevator Car Identification. In addition to the tactile signs required by Section 407.2.4, a tactile elevator car identification shall be placed immediately below the hoistway entrance floor designation. The characters shall

be 2 inches (51 mm) high and shall comply with Section 703.2.

407.3.6 Door and Signal Timing for Hall Calls. The minimum acceptable time from notification of the car assigned at the keypad until the door starts to close shall be calculated by the following equation, but shall not be less than 5 seconds:

$$T = D/1.5 \text{ ft/s (D/455 mm/s)}$$

where T = total time in seconds and D = distance in feet (millimeters) from the keypad to the centerline of the assigned hoistway door.

407.4 Limited-Use/Limited-Application Elevators. Limited-use/limited-application elevators shall comply with Sections 407.4.1 through 407.4.10 and ASME/ANSI A17.1, Part XXV.

407.4.1 Automatic Operation. Elevator operation shall be automatic. Each car shall automatically stop at a floor landing within a tolerance of $\frac{1}{2}$ inch (13 mm) under rated loading to zero loading conditions.

407.4.2 Call Buttons. Call buttons in elevator lobbies and halls shall be 35 inches (890 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground, measured to the centerline of the buttons. Such call buttons shall have visual signals to indicate when each call is registered and when each call is answered. Call buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension, and shall be raised or flush. The button that designates the up direction shall be above the button that designates the down direction. Objects beneath hall call buttons shall protrude 1 inch (25 mm) maximum.

407.4.3 Hall Signals. A visible and audible signal complying with Section 407.2.3 shall be provided in the car or at the hoistway entrance to indicate the direction of travel.

407.4.4 Tactile Characters on Hoistway Entrances. Tactile character and Braille floor designations shall be provided on both jambs of elevator hoistway entrances and shall be 60 inches (1525 mm) above the floor or ground, measured from the baseline of the characters. A tactile star shall also be provided on both jambs at the main entry level. Such characters shall be 2 inches (51 mm) high and shall comply with Section 703.2.

407.4.5 Doors. Elevator hoistway doors shall be either swinging or horizontally sliding type. Elevator doors shall open and close automati-

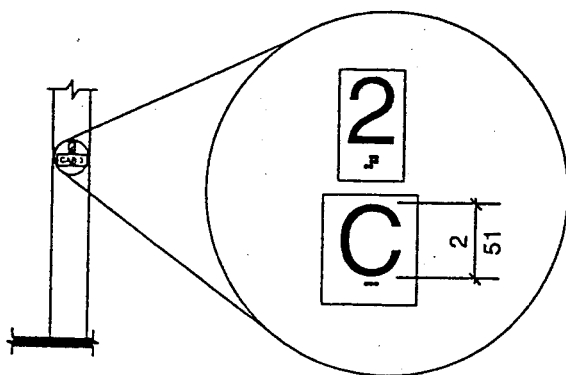


Fig. 407.3.5
Destination-Oriented Elevator Car Identification

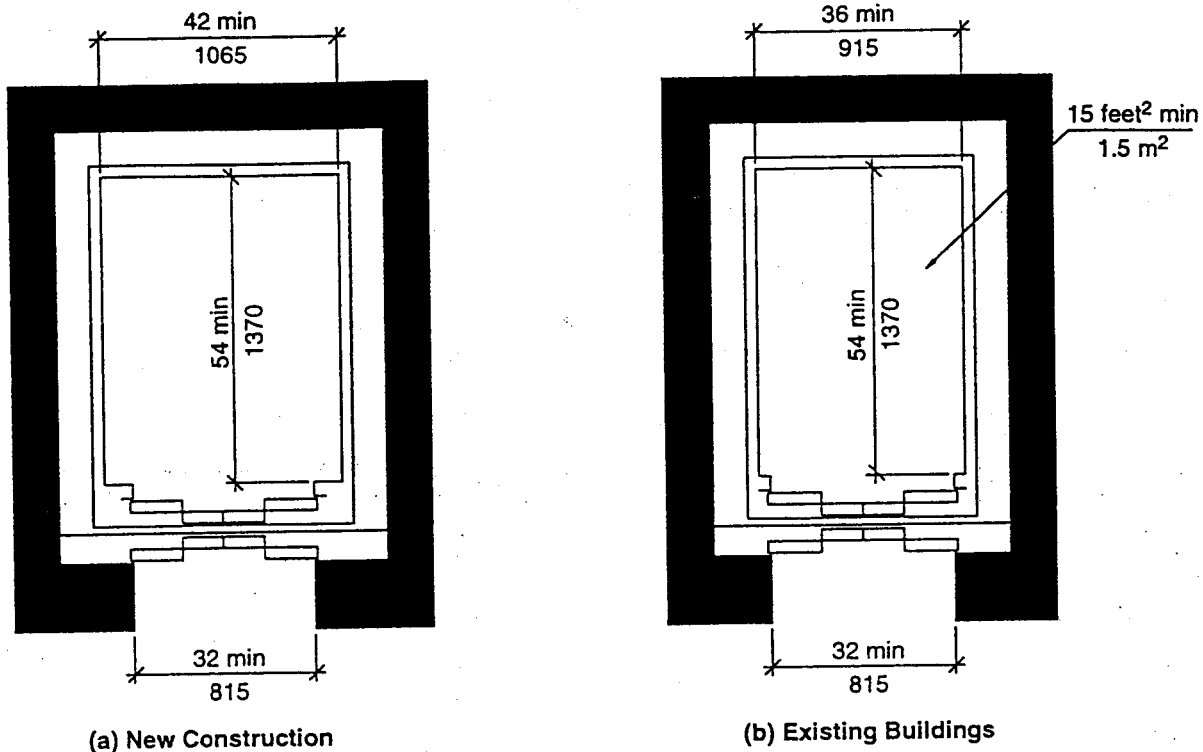


Fig. 407.4.6
Inside Dimensions of Limited Use/Limited Application (LULA) Elevator Cars

cally. Horizontally sliding type hoistway and car doors shall comply with Section 407.2.5. Swinging hoistway and car doors shall comply with Section 404. Swinging doors shall be low energy power-operated and shall comply with ANSI/BHMA A156.19. Power operated swinging doors shall remain open for 20 seconds minimum when activated.

407.4.6 Inside Dimensions of Elevator Cars. Elevator cars shall provide a clear width of 42 inches (1065 mm) minimum and a clear depth of 54 inches (1370 mm) minimum. Car doors shall be positioned at the narrow end(s) of the car and shall provide a clear width of 32 inches (815 mm) minimum.

EXCEPTION: For installations in existing buildings, elevator cars shall provide a clear width of 36 inches (915 mm) minimum, a clear depth of 54 inches (1370 mm) minimum, and a net clear platform area of 15 square feet (1.5 m²) minimum.

407.4.7 Floor or Ground Surfaces. Floor or ground surfaces in elevator cars shall comply with Section 302. The horizontal distance between the car platform sill and the edge of any hoistway landing shall be 1¹/₄ inches (32 mm) maximum.

407.4.8 Illumination Levels. The level of illumination at the car controls, platform, and car threshold and landing sill shall be 5 footcandles (54 lux) minimum.

407.4.9 Car Controls. Elevator car controls shall comply with Sections 407.4.9.1 through 407.4.9.4.

407.4.9.1 Buttons. Control buttons shall be ³/₄ inch (19 mm) minimum in their smallest dimension. Control buttons shall be raised or flush. Control buttons shall be arranged with numbers in ascending order.

407.4.9.2 Identification. Control buttons shall be identified by tactile characters complying with Section 703.2. Tactile characters shall be placed immediately to the left of the button to which they apply. The control button for the main entry floor shall be identified with a tactile symbol complying with Table 407.2.11.2. Buttons with floor designations shall be provided with visible indicators to show that a call has been registered. The visible indication shall extinguish when the car arrives at the designated floor.

407.4.9.3 Height. Buttons with floor designations shall be 48 inches (1220 mm) maxi-

mum above the floor. Emergency controls, including the emergency alarm, shall be grouped at the bottom of the panel. Emergency control buttons shall have their centerlines 35 inches (890 mm) minimum above the floor.

407.4.9.4 Location. Controls shall be on a side wall and a clear floor or ground space complying with Section 309.2 shall be provided.

407.4.10 Emergency Communications. Emergency two-way communication systems between the elevator car and a point outside the hoistway shall comply with ASME/ANSI A17.1. The highest operable part of a two-way communication system shall comply with Section 308.3. If the device is in a closed compartment, the compartment door hardware shall comply with Section 309. Tactile symbols and characters complying with Section 703.2 shall be provided adjacent to the device. If the system uses a handset, the cord from the panel to the handset shall be 29 inches (735 mm) long minimum. The car emergency signaling device shall not be limited to voice communication. If instructions for use are provided, essential information shall be presented in both tactile and visual form complying with Section 703.

407.5 Existing Elevators. Accessible elements of existing elevators shall comply with Sections 407.5, 407.2.4, 407.2.6, 407.2.7, 407.2.9, 407.2.10, and 407.2.13. They shall be passenger elevators as classified by ASME/ANSI A17.1.

EXCEPTION: Destination-oriented elevators which comply with Section 407.3.

407.5.1 Automatic Operation. Elevator operation shall be automatic. Each car shall be equipped with a self-leveling feature that will automatically bring and maintain the car at floor landings within a tolerance of $\frac{1}{2}$ inch (13 mm) under rated loading to zero loading conditions.

407.5.2 Call Buttons. Call buttons in elevator lobbies shall be 35 inches (890 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground, measured to the centerline of the button, where the appropriate floor or ground area complying with Section 305 is provided. The button that designates the up direction shall be above the button that designates the down direction. Keypad controls complying with Section 407.2.2 shall be permitted.

407.5.3 Hall Signals. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call, except

that in-car signals complying with Section 407.2.3 shall be permitted. Audible signals shall sound once for the up direction and twice for the down direction, or shall have verbal annunciators that state the word "up" or "down." If new hall signals are provided, they shall comply with Section 407.2.3.

407.5.4 Doors. Doors shall comply with Section 407.5.4.1 or 407.5.4.2.

407.5.4.1 Power Operated Doors. Power operated horizontally sliding car and hoistway doors opened and closed by automatic means shall comply with Section 407.2.5.

407.5.4.2 Manually Operated Doors. Existing manually operated hoistway swinging doors shall comply with Sections 404.2.3 and 404.2.9. A power operated car door that opens and maintains a 32 inch (815 mm) minimum clear width shall be provided. Closing of the car door shall not be initiated until the hoistway door is closed. Car gates are prohibited.

407.5.5 Inside Dimension of Elevator Cars. The inside dimension of elevator cars shall comply with Section 407.2.8.

EXCEPTION: Existing car configurations that provide a clear floor area of 16 square feet (1.5 m²) minimum, and provide 48 inches (1220 mm) minimum inside clear depth and a 36 inch (915 mm) minimum clear width.

407.5.6 Car Controls. Elevator controls shall comply with Sections 407.5.6.1 through 407.5.6.4.

407.5.6.1 Buttons. Car control buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension. Control buttons shall be raised, flush or recessed. Where the car operating panel is changed, control buttons shall comply with Section 407.2.11.1.

407.5.6.2 Designations and Indicators for Control Buttons. All control buttons shall comply with Section 407.2.11.2.

EXCEPTION: Where existing car operating panel construction precludes locating tactile markings to the left of the controls, markings shall be placed as near to the control as possible.

407.5.6.3 Height. All buttons with floor designations shall be 54 inches (1370 mm) maximum above the floor for parallel approach and 48 inches (1220 mm) maximum above the floor for forward approach.

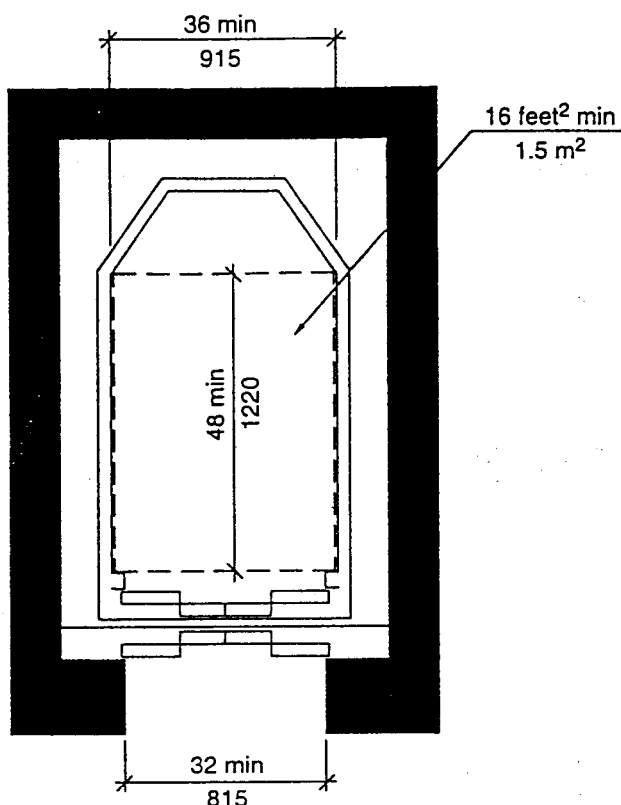


Fig. 407.5.5
Existing Car Configurations

Where the panel is changed, it shall comply with Section 407.2.11.3.

407.5.6.4 Operating Panels. Where a new car operating panel complying with the requirements of Section 407.2.11 is provided, existing car operating panels not complying with Section 407.2.11 are not required to be removed.

407.5.7 Car Position Indicators. Where a new car position indicator is provided, the indicator shall comply with Section 407.2.12.

407.5.8 Identification. Elevators that comply with Section 407.5 shall be clearly identified with the International Symbol of Accessibility complying with Section 703.7, unless all elevators in the building are accessible.

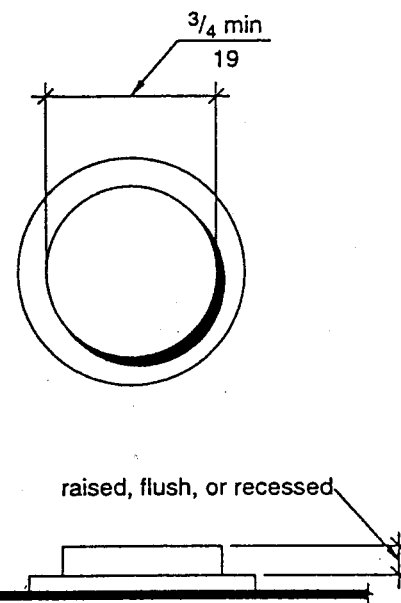


Fig. 407.5.6.1
Elevator Car Control Buttons in Existing Elevators

408 Wheelchair (Platform) Lifts

408.1 General. Wheelchair (platform) lifts shall comply with ASME/ANSI A17.1 and with Sections 302, 305, and 309. Wheelchair (platform) lifts shall not be attendant-operated and shall provide unassisted entry and exit from the lift.

408.2 Doors and Gates. Lifts shall have low energy power-operated doors or gates complying with Section 404.3. Doors and gates shall remain open for 20 seconds minimum. End doors shall be 32 inches (815 mm) minimum clear width. Side doors shall be 42 inches (1065 mm) minimum clear width.

EXCEPTION: Lifts having doors or gates on opposite sides shall be permitted to have manual doors or gates.

Chapter 5. General Site and Building Elements

501 General

501.1 Scope. General site and building elements required to be accessible by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

502 Parking Spaces

502.1 General. Accessible parking spaces shall comply with Section 502.

502.2 Vehicle Spaces. Car and van parking spaces shall be 96 inches (2440 mm) wide minimum and shall have an adjacent access aisle complying with Section 502.3.

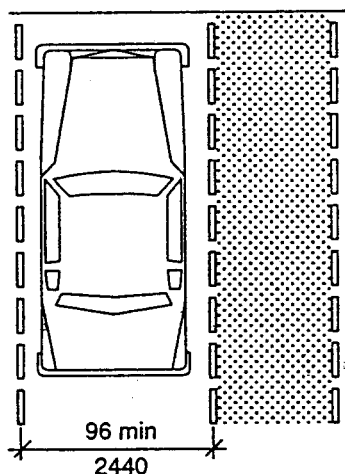


Fig. 502.2
Vehicle Parking Space

502.3 Access Aisle. Access aisles serving parking spaces shall comply with Sections 502.3.1 through 502.3.3. Parking access aisles shall be part of the accessible route to the building or facility entrance and shall comply with Section 402. Two parking spaces shall be permitted to share a common access aisle. Parked vehicle overhangs shall not reduce the clear width of an accessible route.

502.3.1 Width. Access aisles serving car parking spaces shall be 60 inches (1525 mm) wide minimum. Access aisles serving van parking spaces shall be 96 inches (2440 mm) wide minimum.

502.3.2 Length. Access aisles shall extend the full length of the parking spaces they serve.

502.3.3 Marking. Access aisles shall be marked so as to discourage parking in them.

502.4 Floor or Ground Surfaces. Parking spaces and access aisles shall have surface slopes not steeper than 1:48. Access aisles shall be at the same level as the parking spaces they serve.

502.5 Vertical Clearance. Parking spaces for vans shall have a vertical clearance of 98 inches (2490 mm) minimum at the space and along the vehicular route thereto.

502.6 Identification. Where accessible parking spaces are required to be identified by signs, the signs shall include the International Symbol of Accessibility complying with Section 703.7. Such signs shall be 60 inches (1525 mm) minimum above the floor or ground surface of the parking space, measured to the bottom of the sign.

503 Passenger Loading Zones

503.1 General. Accessible passenger loading zones shall comply with Section 503.

503.2 Vehicle Pull-up Space. Passenger loading zones shall provide an access aisle complying with Section 503.3, adjacent and parallel to a vehicle pull-up space.

503.3 Access Aisle. Access aisles serving passenger loading zones shall comply with Section 302 and Sections 503.3.1 through 503.3.3. Access aisles shall be part of the accessible route to the building or facility entrance and shall comply with Section 402.

503.3.1 Width. Access aisles serving vehicle pull-up spaces shall be 60 inches (1525 mm) wide minimum.

503.3.2 Length. Access aisles shall be 20 feet (6100 mm) long minimum.

503.3.3 Marking. Access aisles shall be marked so as to discourage parking in them.

503.4 Floor or Ground Surfaces. Vehicle pull-up spaces in passenger loading zones and access aisles shall have surface slopes not steeper than

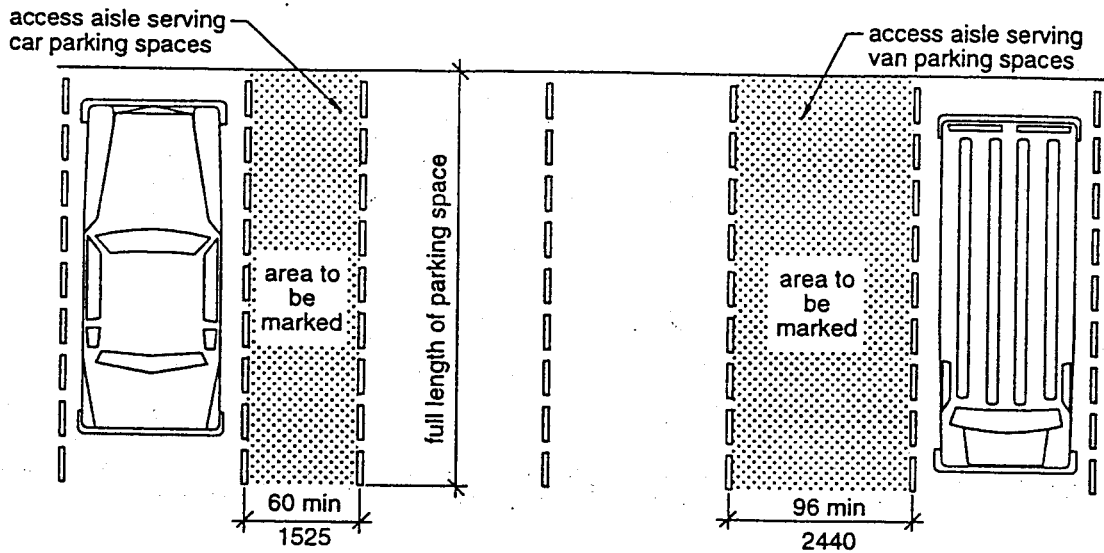


Fig. 502.3
Parking Space Access Aisle

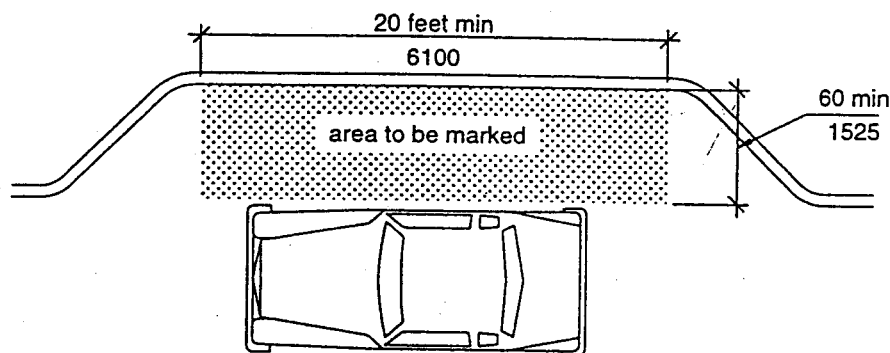


Fig. 503.3
Passenger Loading Zone Access Aisle

1:48. Access aisles shall be at the same level as the vehicle pull-up space they serve.

503.5 Vertical Clearance. Vertical clearance of 114 inches (2895 mm) minimum shall be provided at passenger loading zones and along vehicle access routes to such areas from site entrances.

504 Stairways

504.1 General. Accessible stairs shall comply with Section 504.

504.2 Treads and Risers. All steps on a flight of stairs shall have uniform riser heights and uniform tread depth. Risers shall be 4 inches (100 mm) high minimum and 7 inches (180 mm) maximum. Treads shall be 11 inches (280 mm) deep minimum, measured from riser to riser.

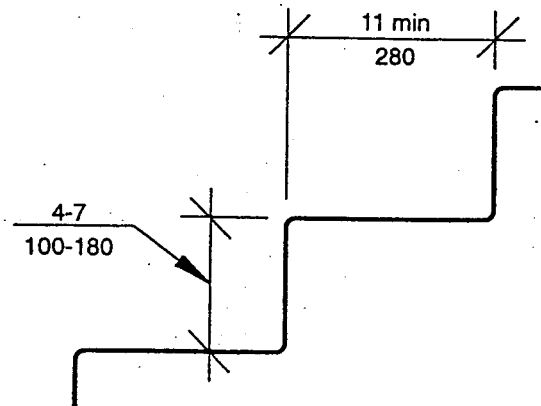


Fig. 504.2
Treads and Risers for Accessible Stairways

504.3 Open Risers. Open risers shall not be permitted.

504.4 Tread Surface. Stair treads shall comply with Section 302.

504.5 Nosings. The radius of curvature at the leading edge of the tread shall be $\frac{1}{2}$ inch (13 mm) maximum. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. Risers shall be permitted to slope under the tread at an angle of 30 degrees maximum from vertical. The permitted projection of the nosing shall be $1\frac{1}{2}$ inches (38 mm) maximum beyond the tread below.

504.6 Handrails. Stairs shall have handrails complying with Section 505.

504.7 Outdoor Conditions. Outdoor stairs and outdoor approaches to stairs shall be designed so that water will not accumulate on walking surfaces.

505 Handrails

505.1 General. Handrails required by Section 405 for ramps or Section 504 for stairs shall comply with Section 505.

505.2 Location. Handrails shall be provided on both sides of stairs and ramps.

EXCEPTION: Aisle stairs and aisle ramps provided with a handrail either at the side or within the aisle width.

505.3 Continuity. Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs or ramps shall be continuous between flights or runs. Other handrails shall comply with Sections 505.10 and 307.

EXCEPTION: Handrails in aisles serving seating.

505.4 Height. Top of gripping surfaces of handrails shall be 34 inches (865 mm) minimum and 38 inches (965 mm) maximum vertically above stair nosings and ramp surfaces. Handrails shall be at a consistent height above stair nosings and ramp surfaces.

505.5 Clearance. Clear space between handrail and wall shall be $1\frac{1}{2}$ inches (38 mm) minimum.

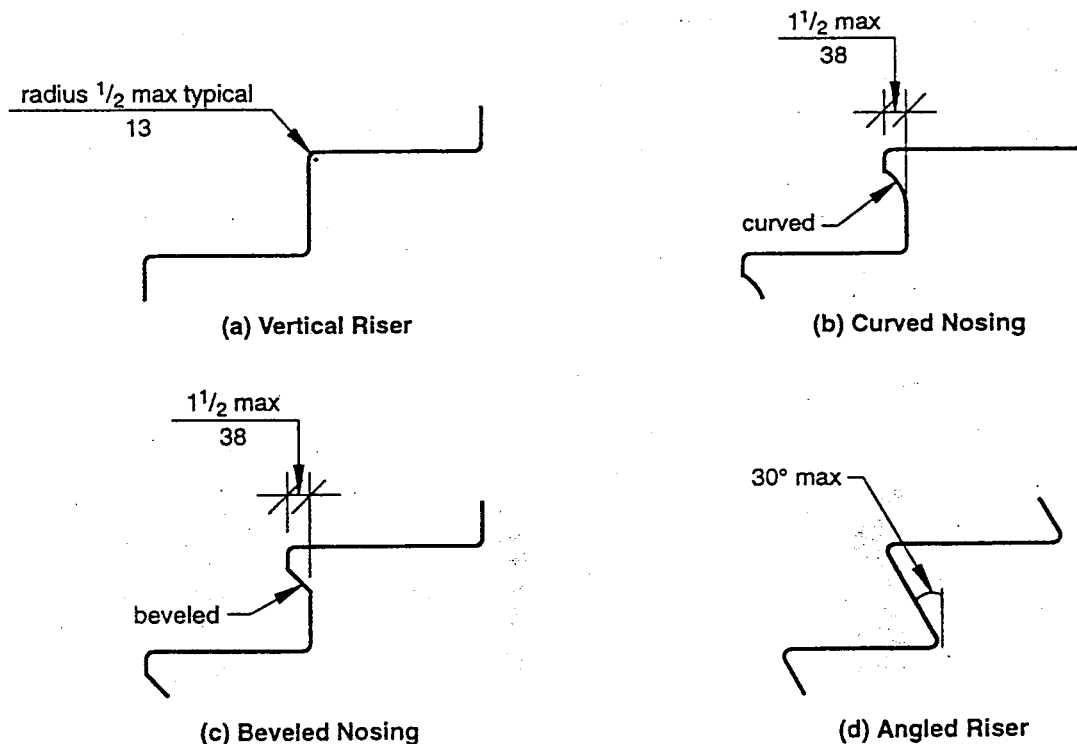


Fig. 504.5
Stair Nosings

505.6 Gripping Surface. Gripping surfaces shall be continuous, without interruption by newel posts, other construction elements, or obstructions.

EXCEPTION: Handrail brackets or balusters attached to the bottom surface of the handrail shall not be considered obstructions provided they comply with the following criteria:

- 1) not more than 20 percent of the handrail length is obstructed,
- 2) horizontal projections beyond the sides of the handrail occur $2\frac{1}{2}$ inches (64 mm) minimum below the bottom of the handrail, and
- 3) edges have a $\frac{1}{8}$ inch (3.2 mm) minimum radius.

505.7 Cross Section. Handrails shall have a circular cross section with an outside diameter of $1\frac{1}{4}$ inch (32 mm) minimum and 2 inches (51 mm) maximum, or shall provide equivalent graspability complying with Section 505.7.1.

505.7.1 Non-Circular Cross Sections. Handrails with other shapes shall be permitted provided they have a perimeter dimension of 4 inches (100 mm) minimum and $6\frac{1}{4}$ inches (160 mm) maximum, and provided their largest cross-section dimension is $2\frac{1}{4}$ inches (57 mm) maximum.

505.8 Surfaces. Handrails, and any wall or other surfaces adjacent to them, shall be free of any sharp

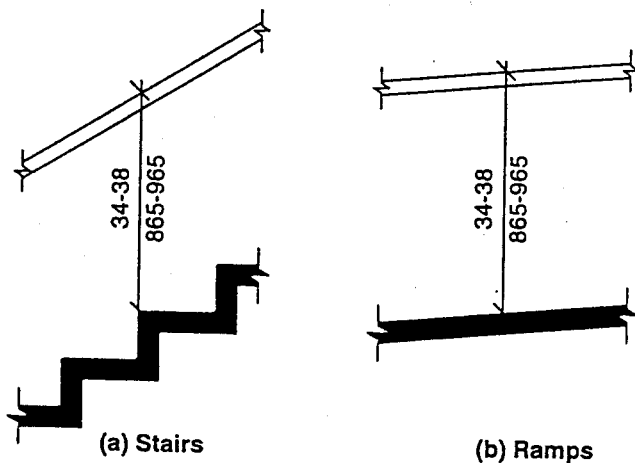


Fig. 505.4
Handrail Height

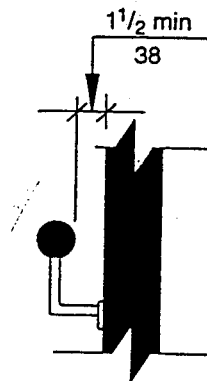


Fig. 505.5
Handrail Clearance

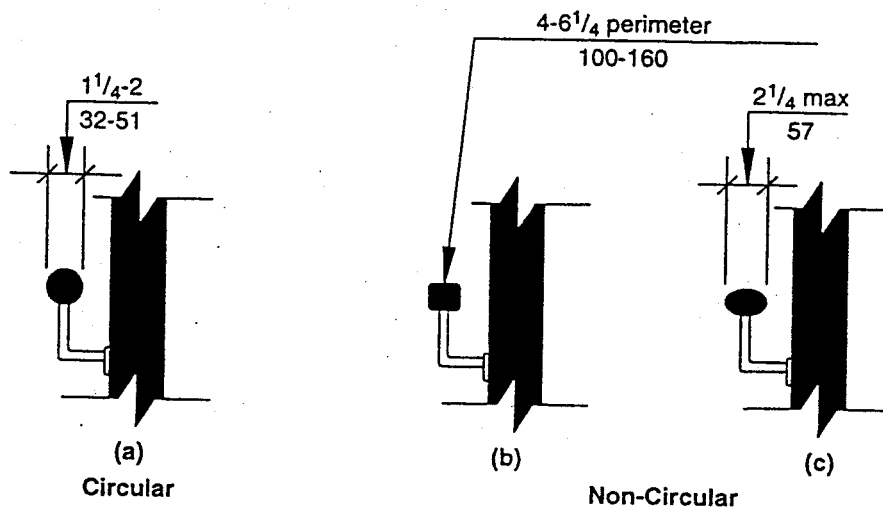


Fig. 505.7
Handrail Cross Section

or abrasive elements. Edges shall have $\frac{1}{8}$ inch (3.2 mm) minimum radius.

505.9 Fittings. Handrails shall not rotate within their fittings.

505.10 Handrail Extensions. Handrails for stairs and ramps shall have extensions complying with Sections 505.10.1 through 505.10.3.

EXCEPTIONS:

1. Continuous handrails at the inside turn of stairs and ramps.
2. Extensions are not required for handrails in aisles serving seating where the handrails are discontinuous to provide access to seating and to permit crossovers within the aisle.

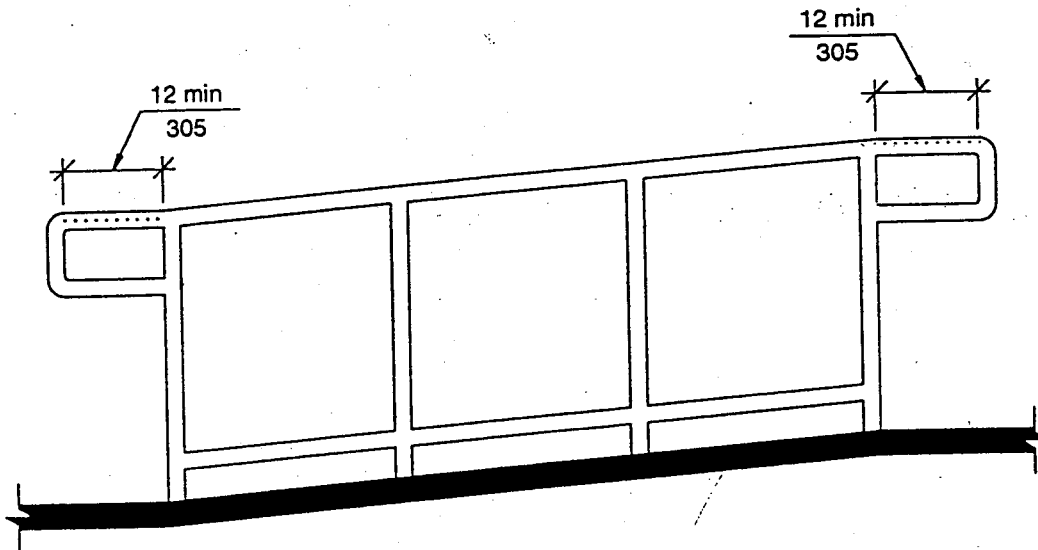


Fig. 505.10.1
Top and Bottom Handrail Extensions at Ramps

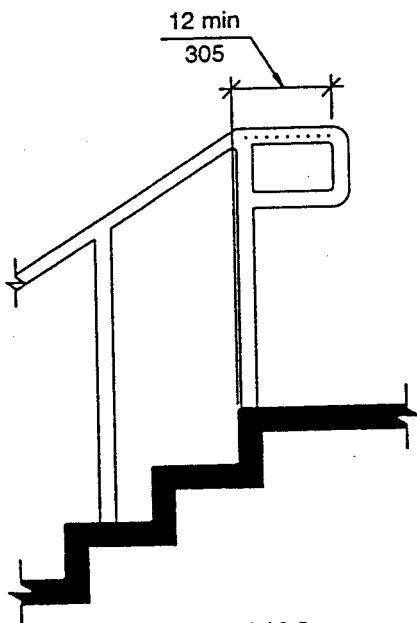


Fig. 505.10.2
Top Handrail Extensions at Stairs

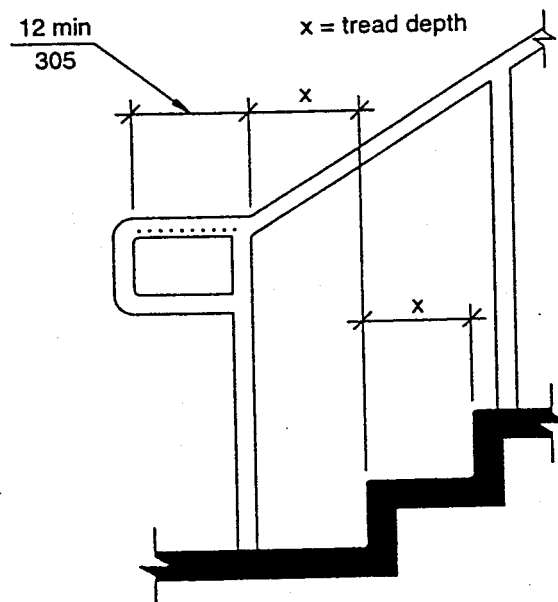


Fig. 505.10.3
Bottom Handrail Extensions at Stairs

505.10.1 Top and Bottom Extension at Ramps. Ramp handrails shall extend horizontally 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. Such extension shall return to a wall, guard, or the walking surface, or shall be continuous to the handrail of an adjacent ramp run.

505.10.2 Top Extension at Stairs. At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beginning directly above the first riser nosing. Such extension shall return to a wall, guard, or the walking surface, or shall be continuous to the handrail of an adjacent stair flight.

505.10.3 Bottom Extension at Stairs. At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance equal to one tread depth beyond the last riser nosing. Such extension shall continue with a horizontal extension or shall be continuous to the handrail of an adjacent stair flight or shall return to a wall, guard, or the walking surface. If provided at the bottom of a stair flight, a horizontal extension of a handrail shall be 12 inches (305 mm) long minimum and a height equal to that of the sloping portion of the handrail as measured above the stair nosings. Such extension shall return to a wall, guard, or the walking

surface, or shall be continuous to the handrail of an adjacent stair flight.

506 Windows

Accessible windows shall have operable parts complying with Section 309.

507 Bus Stop Pads

507.1 General. Where a bus stop pad is provided at bus stops, bays, or other areas where a lift or ramp is to be deployed, it shall comply with Section 507.

507.2 Surface. The pad shall have a firm, stable surface.

507.3 Size. The minimum clear length shall be 96 inches (2440 mm), measured perpendicular from the curb or edge of the vehicle roadway. The minimum clear width shall be 60 inches (1525 mm), measured parallel to the curb or edge of the vehicle roadway.

507.4 Slope. The slope of the pad parallel to the roadway shall be the same as the roadway. The slope of the pad perpendicular to the roadway shall not be steeper than 1:48.

507.5 Location. Pads shall adjoin an accessible route complying with Sections 307 and 402.

Chapter 6. Plumbing Elements and Facilities

601 General

601.1 Scope. Plumbing elements and facilities required to be accessible by scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

602 Drinking Fountains and Water Coolers

602.1 General. Accessible fixed drinking fountains and water coolers shall comply with Section 602.

602.2 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided.

602.2.1 Forward Approach. Where a forward approach is provided, the clear floor or ground space shall be centered on the unit and shall include knee and toe clearance complying with Section 306.

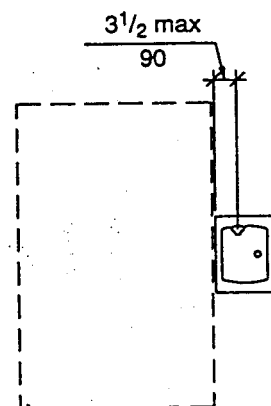
602.2.2 Parallel Approach. Where a parallel approach is provided, the clear floor or ground space shall be centered on the unit.

602.3 Operable Parts. Operable parts shall comply with Section 309.

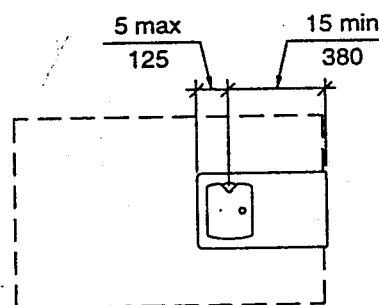
602.4 Spout Height. Spout outlets shall be 36 inches (915 mm) maximum above the floor or ground.

602.5 Spout Location. Units with a parallel approach shall have the spout $3\frac{1}{2}$ inches (89 mm) maximum from the front edge of the unit, including bumpers. Units with a forward approach shall have the spout 15 inches (380 mm) minimum from the vertical support and 5 inches (125 mm) maximum from the front edge of the unit, including bumpers.

602.6 Water Flow. The spout shall provide a flow of water 4 inches (100 mm) high minimum to allow the insertion of a cup or glass under the flow of water. The angle of the water stream from spouts within 3 inches (75 mm) of the front of the unit shall be 30 degrees maximum. The angle of the water stream from spouts between 3 inches (75 mm) and 5 inches (125 mm) from the front of the unit shall be 15 degrees maximum. The angle of the water stream shall be measured horizontally, relative to the front face of the unit.



(a) Parallel Approach



(b) Forward Approach

Fig. 602.5
Drinking Fountain Spout Location

602.7 Protruding Objects. Units shall comply with Section 307.

603 Toilet and Bathing Rooms

603.1 General. Accessible toilet and bathing rooms shall comply with Section 603.

603.2 Clearances.

603.2.1 Wheelchair Turning Space. A wheelchair turning space complying with Section 304 shall be provided within the room.

603.2.2 Overlap. Clear floor or ground spaces, clearances at fixtures, and wheelchair turning spaces shall be permitted to overlap.

603.2.3 Doors. Doors shall not swing into the clear floor or ground space or clearance for any fixture.

EXCEPTION: Where the room is for individual use and a clear floor or ground space complying with Section 305.3 is provided within the room, beyond the arc of the door swing.

603.3 Mirrors. Mirrors shall be mounted with the bottom edge of the reflecting surface 40 inches (1015 mm) maximum above the floor or ground.

603.4 Coat Hooks and Shelves. Coat hooks provided within toilet rooms shall accommodate a forward reach or side reach complying with Section 308. Where provided, a fold-down shelf shall be 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground.

604 Water Closets and Toilet Compartments

604.1 General. Accessible water closets and toilet compartments shall comply with Section 604.

604.2 Location. The water closet shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 16 inches (405 mm) minimum to 18 inches (455 mm) maximum from the side wall or partition, except that the water closet shall be centered in the ambulatory accessible compartment specified in Section 604.8.2.

604.3 Clearance.

604.3.1 Size. Clearance around the water closet shall be 60 inches (1220 mm) minimum, measured perpendicular from the side wall, and 56 inches (1420 mm) minimum, measured perpendicular from the rear wall. No other fixtures

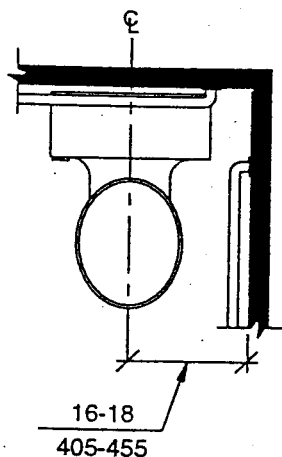


Fig. 604.2
Water Closet Location

or obstructions shall be within the water closet clearance.

604.3.2 Overlap. The clearance around the water closet shall be permitted to overlap the fixture, associated grab bars, tissue dispensers, accessible routes, and clear floor or ground space, or clearances at other fixtures and the wheelchair turning space.

604.4 Height. The top of water closet seats shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum above the floor or ground. Seats shall not return automatically to a lifted position.

604.5 Grab Bars. Grab bars for water closets shall comply with Section 609. Grab bars shall be provided on the rear wall and on the side wall closest to the water closet.

604.5.1 Side Wall. Side wall grab bar shall be 42 inches (1065 mm) long minimum, 12 inches (305 mm) maximum from the rear wall and extending 54 inches (1370 mm) minimum from the rear wall.

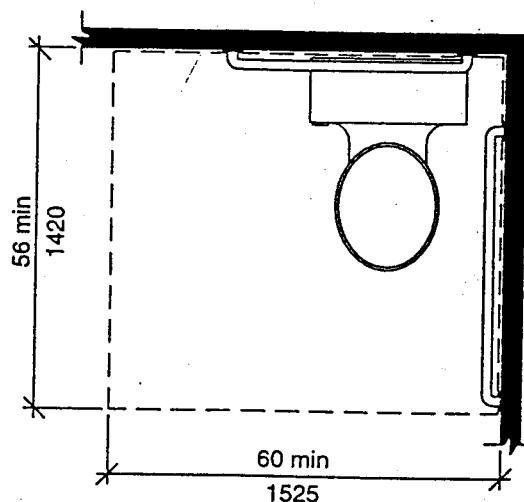


Fig. 604.3.1
Size of Clearance for Water Closet

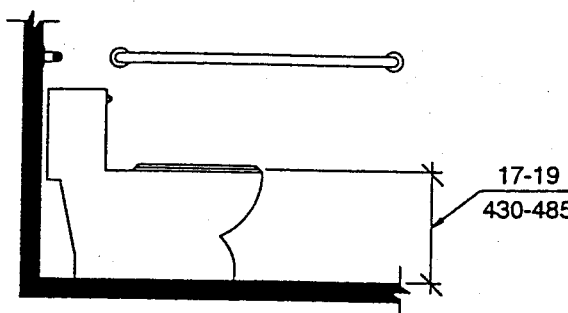


Fig. 604.4
Height of Water Closet

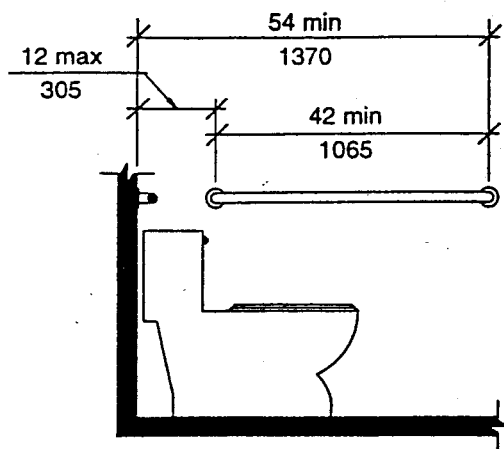


Fig. 604.5.1
Side Wall Grab Bar for Water Closet

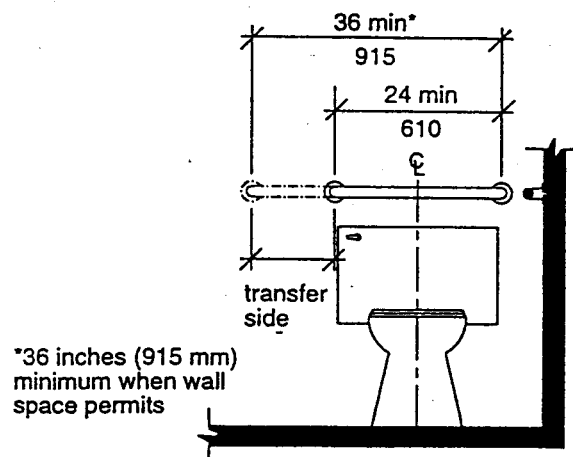
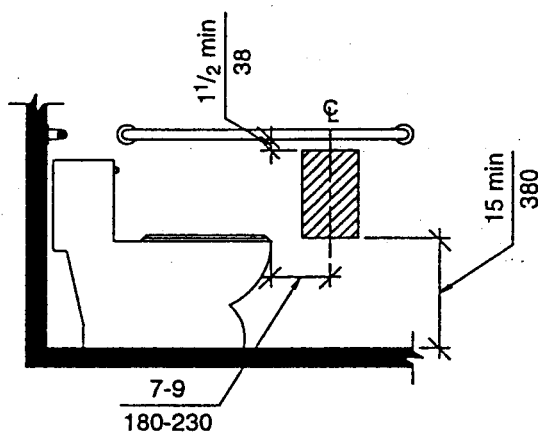
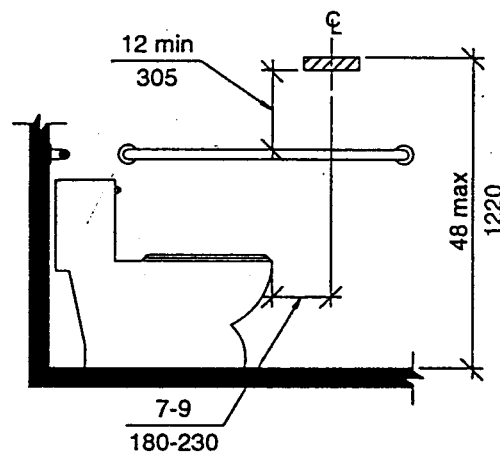


Fig. 604.5.2
Rear Wall Grab Bar for Water Closet



(a) Below Grab Bar



(b) Above Grab Bar

Fig. 604.7
Dispenser Location

604.5.2 Rear Wall. The rear wall grab bar shall be 24 inches (610 mm) long minimum, centered on the water closet. Where space permits, the bar shall be 36 inches (915 mm) long minimum, with the additional length provided on the transfer side of the water closet.

604.6 Flush Controls. Flush controls shall be hand operated or automatic. Hand-operated flush controls shall comply with Section 309.

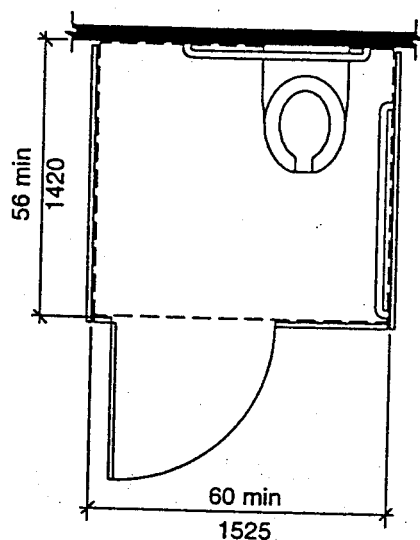
604.7 Dispensers. Toilet paper dispensers shall comply with Section 309.4 and shall be 7 inches (180 mm) minimum and 9 inches (230 mm) maximum in front of the water closet. The outlet of the dispenser shall be 15 inches (380 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground. There shall be a clearance of 1 1/2 inches (38 mm) minimum below and 12 inches (305 mm) minimum above the grab bar. Dispensers shall not

be of a type that control delivery, or that do not allow continuous paper flow.

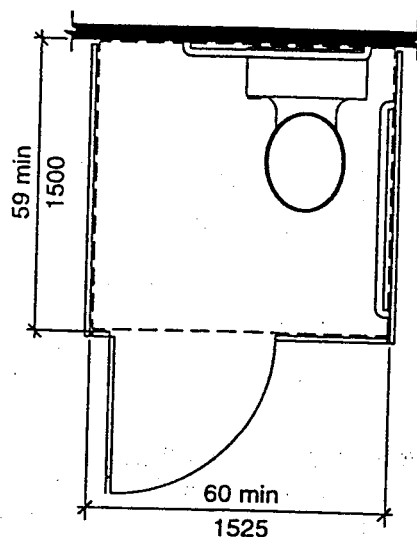
604.8 Toilet Compartments. Accessible toilet compartments shall comply with Sections 604.8.1 through 604.8.5. Compartments containing more than one plumbing fixture shall comply with Section 603. Water closets in accessible toilet compartments shall comply with Sections 604.1 through 604.7.

604.8.1 Wheelchair Accessible Compartments.

604.8.1.1 Size. Wheelchair accessible compartments shall be 60 inches (1525 mm) wide minimum measured perpendicular to the side wall, and 56 inches (1420 mm) deep minimum for wall hung water closets and 59 inches (1500 mm) deep

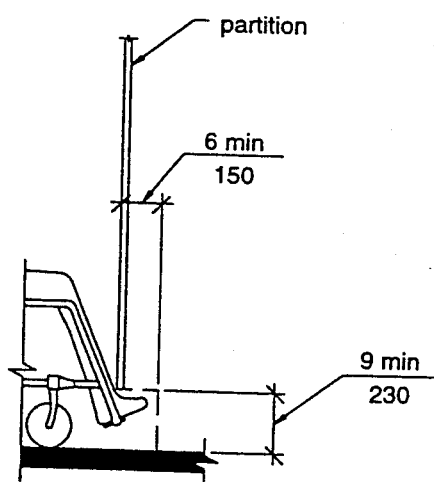


(a) Wall-Hung Water Closet

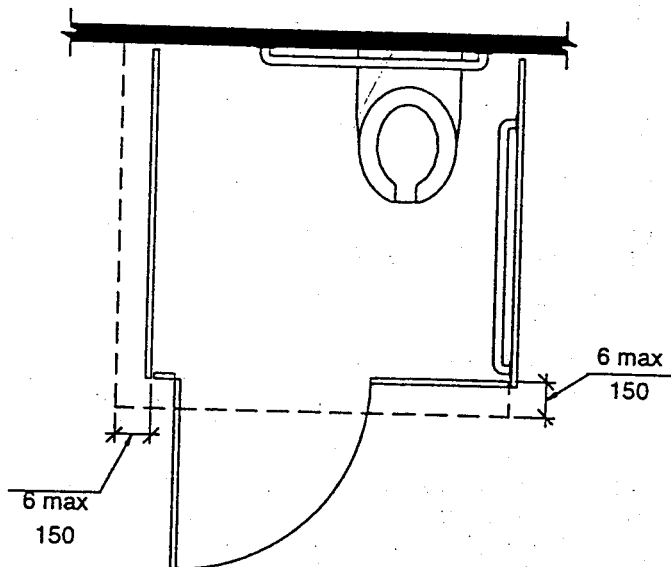


(b) Floor-Mounted Water Closet

Fig. 604.8.1.1
Wheelchair Accessible Toilet Compartments



(a) Elevation



(b) Plan

Fig. 604.8.1.4
Toilet Compartment Toe Clearance

minimum for floor mounted water closets, measured perpendicular to the rear wall.

604.8.1.2 Doors. Compartment doors shall not swing into the minimum required compartment area.

604.8.1.3 Approach. Compartment arrangements shall be permitted for left-hand or right-hand approach to the water closet.

604.8.1.4 Toe Clearance. In wheelchair accessible compartments, the front partition and at least one side partition shall provide a toe clearance complying with Section 306.2 and extending 6 inches (150 mm) deep beyond the compartment-side face of the partition, exclusive of partition support members. Toe clearance at the front of the partition is not required in a compartment greater than 62 inches (1575 mm) deep with a wall-hung water closet or 65 inches

(1650 mm) deep with a floor-mounted water closet. Toe clearance at the side partition is not required in a compartment greater than 66 inches (1675 mm) wide.

604.8.2 Ambulatory Accessible Compartments. Ambulatory accessible compartments shall be 60 inches (1525 mm) deep minimum and 36 inches (915 mm) wide. Compartment doors shall not swing into the minimum required compartment area.

604.8.3 Doors. Toilet compartment doors shall comply with Section 404, except that if the approach is to the latch side of the compartment door, the clearance between the door side of the compartment and any obstruction shall be 42 inches (1065 mm) minimum. The door shall be hinged 4 inches (100 mm) maximum from the adjacent wall or partition farthest from the water closet. The door shall be self-closing. A door pull complying with Section 404.2.7 shall be placed on both sides of the door near the latch.

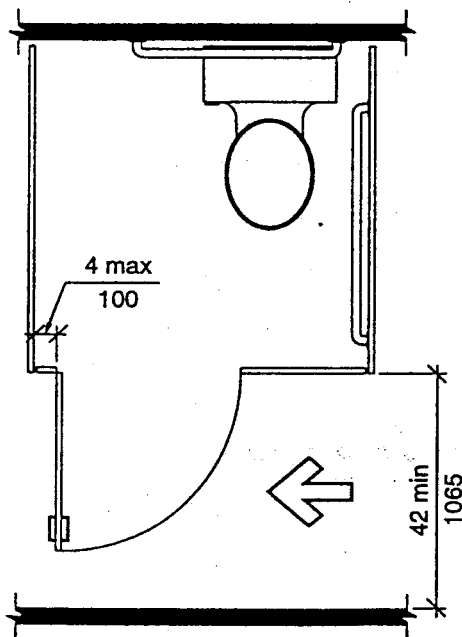


Fig. 604.8.3
Toilet Compartment Doors

604.8.4 Grab Bars. Grab bars shall comply with Section 609.

604.8.4.1 Wheelchair Accessible Compartments. A side-wall grab bar complying with Section 604.5.1 shall be provided on the wall closest to the water closet, and a rear-wall grab bar complying with Section 604.5.2 shall be provided.

604.8.4.2 Ambulatory Accessible Compartments. A side-wall grab bar complying with Section 604.5.1 shall be provided on both sides of the compartment.

604.8.5 Coat Hooks and Shelves. Coat hooks provided within toilet compartments shall be 48 inches (1220 mm) maximum above the floor or ground. Where provided, a fold-down shelf shall be 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground.

605 Urinals

605.1 General. Accessible urinals shall comply with Section 605.

605.2 Height. Urinals shall be of the stall type or shall be of the wall-hung type with the rim at 17 inches (430 mm) maximum above the floor or ground.

605.3 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 positioned for forward approach shall be provided.

605.4 Flush Controls. Flush controls shall be hand operated or automatic. Hand-operated flush controls shall comply with Section 309.

606 Lavatories and Sinks

606.1 General. Accessible lavatories and sinks shall comply with Section 606.

606.2 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305.3, positioned for forward approach, shall be provided. Knee and toe clearance complying with Section 306 shall be provided.

EXCEPTIONS:

1. A parallel approach shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided.
2. The dip of the overflow shall not be considered in determining knee and toe clearances.

606.3 Height and Clearances. The front of lavatories and sinks shall be 34 inches (865 mm) maximum above the floor or ground, measured to the higher of the fixture rim or counter surface.

606.4 Faucets. Faucets shall comply with Section 309. Hand-operated, self-closing faucets shall remain open for 10 seconds minimum.

606.5 Bowl Depth. Sinks shall be 6 $\frac{1}{2}$ inches (165 mm) deep maximum. Multiple compartment sinks shall have at least one compartment complying with this requirement.

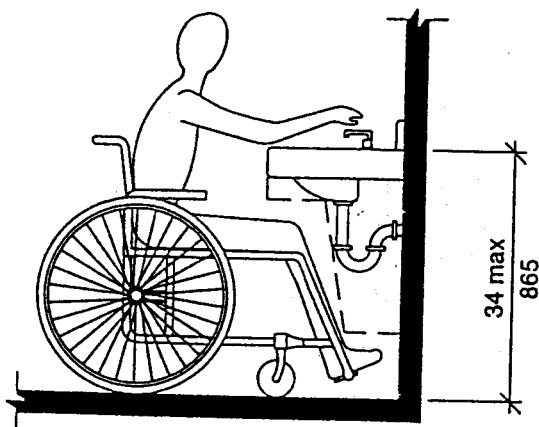


Fig. 606.3
Height of Lavatories and Sinks

606.6 Exposed Pipes and Surfaces. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

607 Bathtubs

607.1 General. Accessible bathtubs shall comply with Section 607.

607.2 Clearance. Clearance in front of bathtubs shall extend the length of the bathtub and shall be 30 inches (760 mm) wide minimum. A lavatory complying with Section 606 shall be permitted at the foot end of the clearance. Where a permanent seat is provided at the head end of the bathtub, the clear-

ance shall extend a minimum of 12 inches (305 mm) beyond the wall at the head end of the bathtub.

607.3 Seat. A permanent seat at the head end of the bathtub or a removable in-tub seat shall be provided. Seats shall comply with Section 610.

607.4 Grab Bars. Grab bars shall comply with Sections 607.4 and 609.

607.4.1 Bathtubs With Permanent Seats. For bathtubs with permanent seats, grab bars complying with Sections 607.4.1.1 and 607.4.1.2 shall be provided.

607.4.1.1 Back Wall. Two grab bars shall be provided on the back wall, one complying with Section 609.4 and other 9 inches (230 mm) above the rim of the bathtub. Each grab bar shall be 15 inches (380 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the foot end wall.

607.4.1.2 Foot End Wall. A grab bar 24 inches (610 mm) long minimum shall be provided on the foot end wall at the front edge of the bathtub.

607.4.2 Bathtubs Without Permanent Seats. For bathtubs without permanent seats, grab bars complying with Sections 607.4.2.1 through 607.4.2.3 shall be provided.

607.4.2.1 Back Wall. Two grab bars shall be provided on the back wall, one complying with Section 609.4 and other 9 inches (230 mm) above the rim of the bathtub. Each grab bar shall be 24 inches (610 mm)

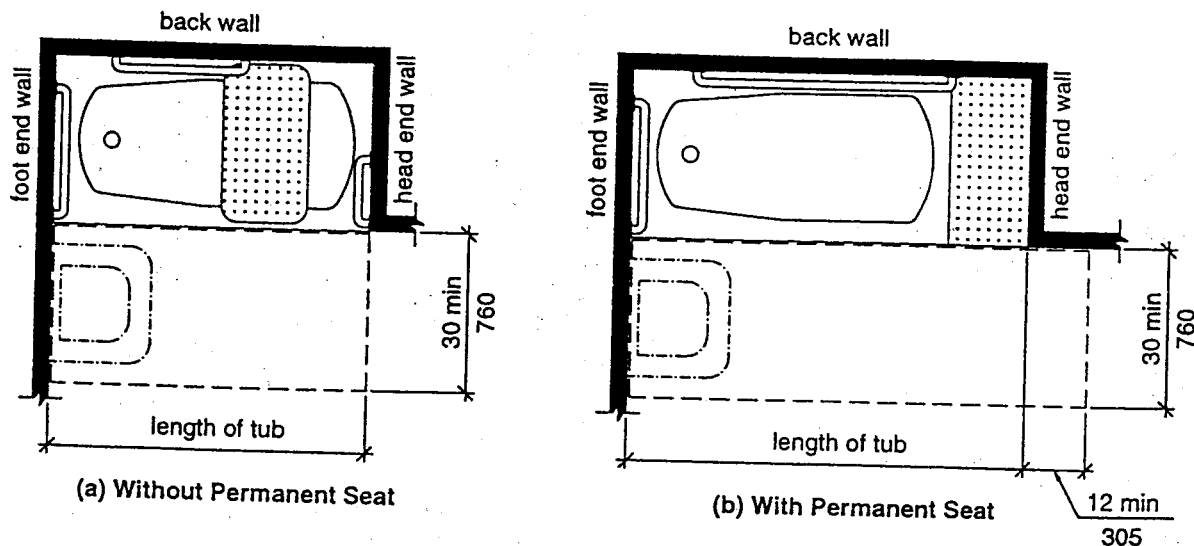


Fig. 607.2
Clearance for Bathtubs

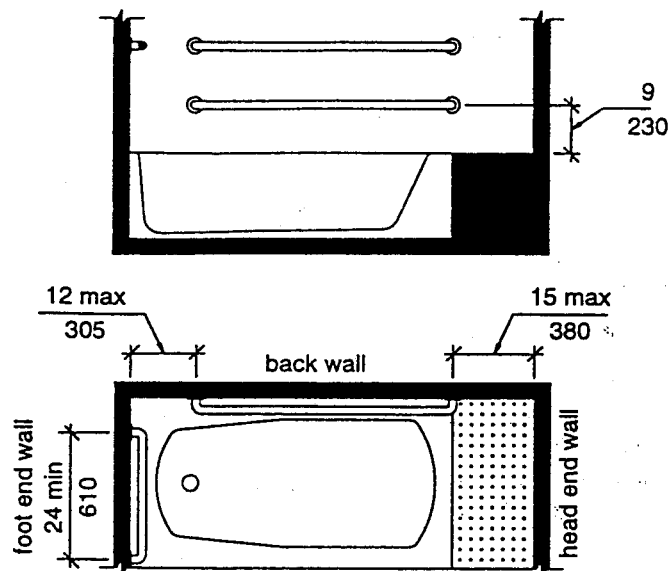


Fig. 607.4.1

Grab Bars for Bathtubs with Permanent Seats

long minimum and shall be 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the foot end wall.

607.4.2.2 Foot End Wall. A grab bar 24 inches (610 mm) long minimum shall be provided on the foot end wall at the front edge of the bathtub.

607.4.2.3 Head End Wall. A grab bar 12 inches (305 mm) long minimum shall be provided on the head end wall at the front edge of the bathtub.

607.5 Controls. Controls, other than drain stoppers, shall be on an end wall. Controls shall be between the bathtub rim and grab bar, and between the open side of the bathtub and the mid-point of the

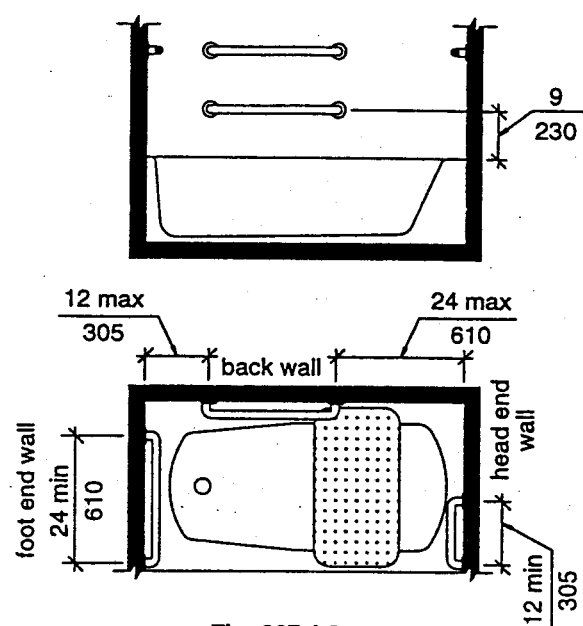


Fig. 607.4.2

Grab Bars for Bathtubs without Permanent Seats

width of the bathtub. Controls shall comply with Section 309.4.

607.6 Shower Unit. A shower spray unit shall be provided, with a hose 59 inches (1500 mm) long minimum, that can be used as a fixed shower head and as a hand-held shower. If an adjustable-height shower head on a vertical bar is used, the bar shall not obstruct the use of grab bars.

607.7 Bathtub Enclosures. Bathtub enclosures shall not obstruct controls or transfer from wheelchairs onto bathtub seats or into bathtubs. Bathtub enclosures shall not have tracks on the rim of the bathtub.

608 Shower Compartments

608.1 General. Accessible shower compartments shall comply with Section 608.

608.2 Size and Clearances.

608.2.1 Transfer-Type Shower Compartments. Transfer-type shower compartments shall be 36 inches (915 mm) wide by 36 inches (915 mm) deep inside finished dimension, measured at the centerpoint of opposing sides, and shall have a minimum 36 inches (915 mm) wide entry on the face of the shower compartment. The clearance in front of the compartment shall be 48 inches (1220 mm) long minimum measured from the control wall and 36 inches (915 mm) wide minimum.

608.2.2 Standard Roll-In-Type Shower Compartment. Roll-in-type shower compart-

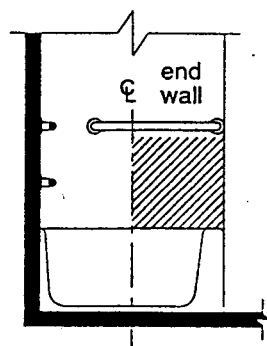


Fig. 607.5

Location of Bathtub Controls

ments shall be 30 inches (760 mm) wide minimum by 60 inches (1525 mm) deep minimum, clear inside dimension, measured at the center-point of opposing sides and shall have a minimum 60 inches (1220 mm) wide entry on the face of the shower. A 30 inches (760 mm) wide minimum by 60 inches (1525 mm) long minimum clearance shall be provided adjacent to the open face of the shower compartment. A lavatory complying with Section 606 shall be permitted at the end of the clear space, opposite the shower compartment side where shower controls are positioned.

608.2.3 Alternate Roll-In-Type Shower Compartment. Alternate roll-in shower compartments shall be 36 inches (915 mm) wide and 60 inches (1220 mm) deep minimum. A 36 inch (915 mm) wide minimum entry shall

be provided at one end of the long side of the compartment. The shower unit and controls shall be mounted on the end wall furthest from the compartment entry.

608.3 Grab Bars. Grab bars shall comply with Sections 608.3 and 609 and shall be provided.

608.3.1 Transfer-Type Showers. Grab bars shall be provided across the control wall and on the back wall to a point 18 inches (455 mm) from the control wall.

608.3.2 Roll-In-Type Showers. Grab bars shall be provided on the three walls of the shower. Grab bars shall be 6 inches (150 mm) maximum from the adjacent wall.

EXCEPTIONS:

1. Where a seat is provided in a roll-in shower, grab bars shall not extend over

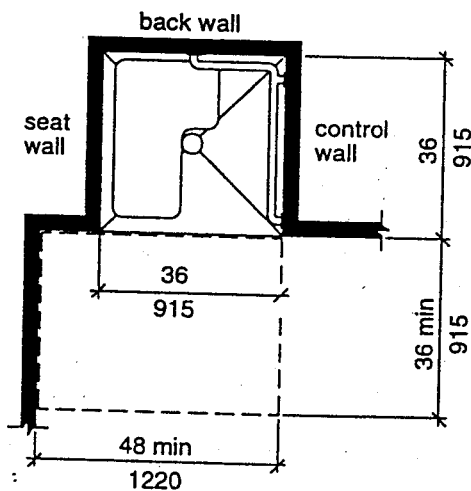


Fig. 608.2.1
Transfer-Type Shower Compartment

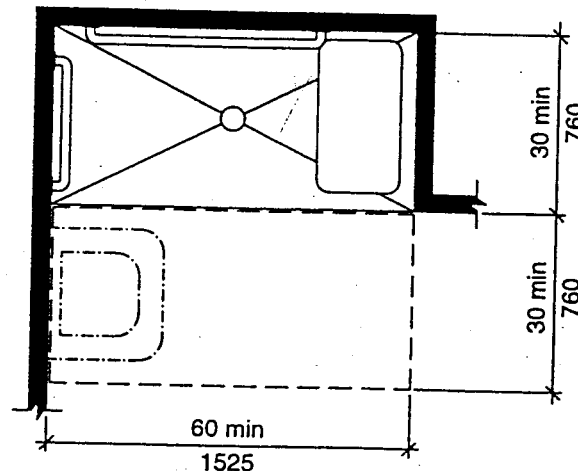


Fig. 608.2.2
Standard Roll-In-Type Shower Compartment

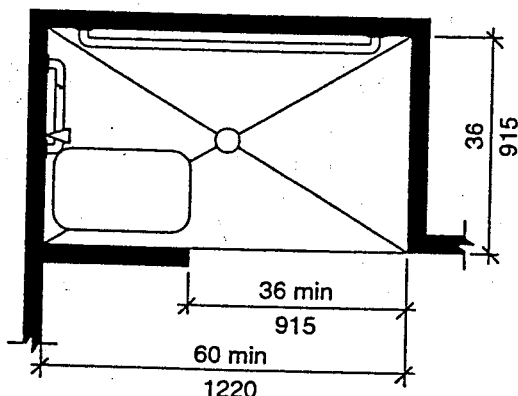


Fig. 608.2.3
Alternate Roll-In-Type Shower Compartment

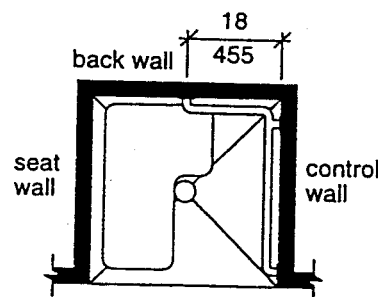


Fig. 608.3.1
Grab Bars in Transfer-Type Showers

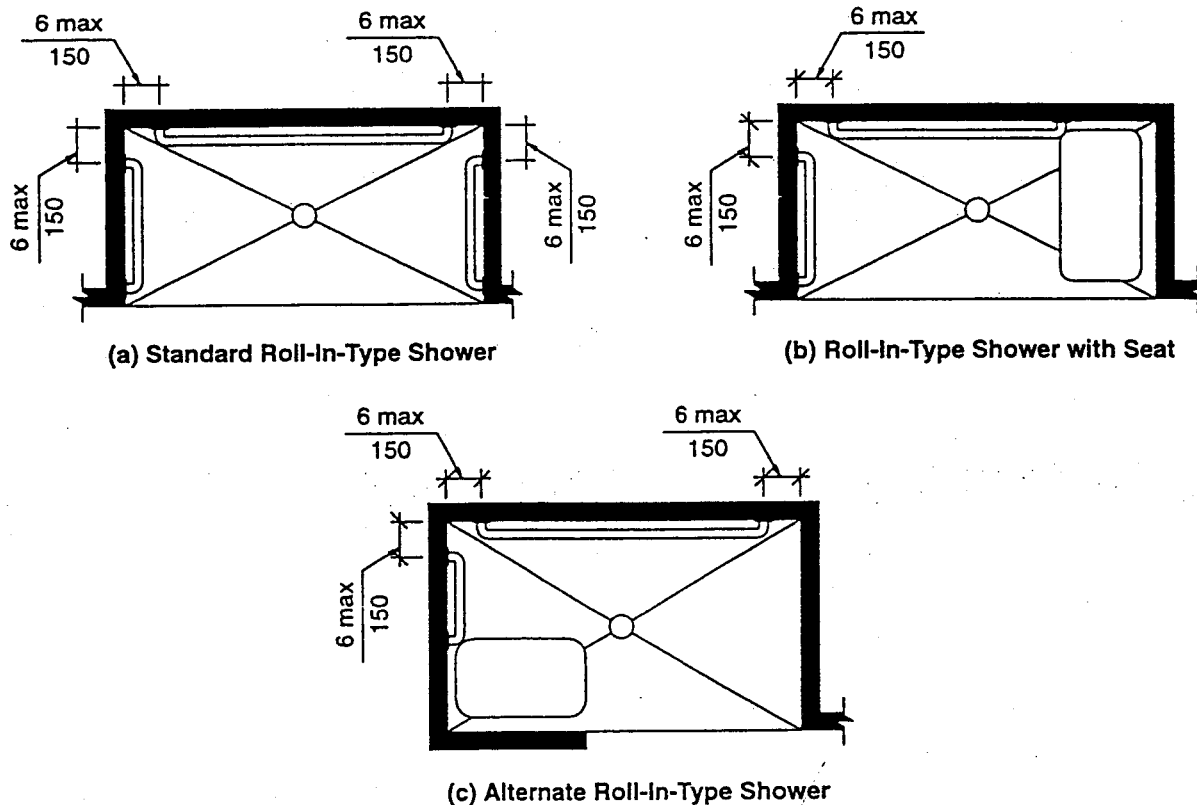


Fig. 608.3.2
Grab Bars in Roll-In-Type Showers

the seat at the control wall and shall not be behind the seat.

2. In alternate roll-in-type showers, grab bars shall not be required on the side wall opposite the control wall and shall not be behind the seat.

608.4 Seats. An attachable or integral seat shall be provided in transfer-type shower compartments. Seats shall comply with Section 610.

608.5 Controls. Shower or bathtub/shower facilities shall deliver water that is thermal shock protected to 120°F maximum. Faucets and controls shall comply with Section 309.4. Controls in roll-in showers shall be above the grab bar but no higher than 48 inches (1220 mm) above the shower floor. In transfer-type shower compartments, controls, faucets, and the shower unit shall be on the side wall opposite the seat 38 inches (965 mm) minimum and 48 inches (1220 mm) maximum above the shower floor.

608.6 Shower Unit. A shower spray unit shall be provided, with a hose 59 inches (1500 mm) long minimum, that can be used as a fixed shower head

and as a hand-held shower. In transfer type showers, the controls and shower unit shall be on the control wall within 15 inches (380 mm), left or right, of the centerline of the seat. In roll-in-type showers, shower spray units mounted on the back wall shall be 27 inches (685 mm) maximum from the side wall. If an adjustable-height shower head mounted on a vertical bar is used, the bar shall not obstruct the use of grab bars.

608.7 Thresholds. Shower compartment thresholds shall be 1/2 inch (13 mm) high maximum and shall comply with Section 303.

608.8 Shower Enclosures. Shower compartment enclosures for shower compartments shall not obstruct controls or obstruct transfer from wheelchairs onto shower seats.

609 Grab Bars

609.1 General. Grab bars in accessible toilet or bathing facilities shall comply with Section 609.

609.2 Size. Grab bars shall have a circular cross section with a diameter of 1 1/4 inch (32 mm) minimum and 2 inches (51 mm) maximum, or shall pro-

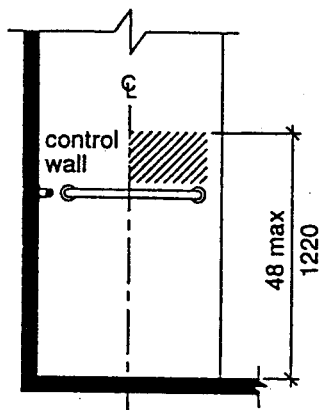
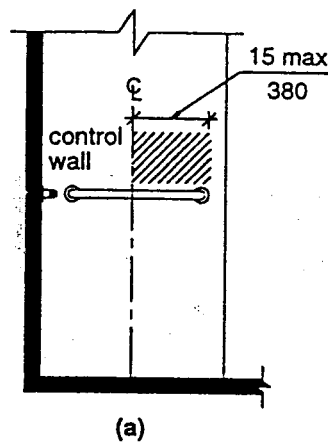
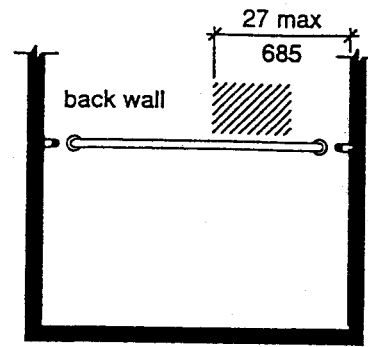


Fig. 608.5
Controls in Transfer-Type
Showers

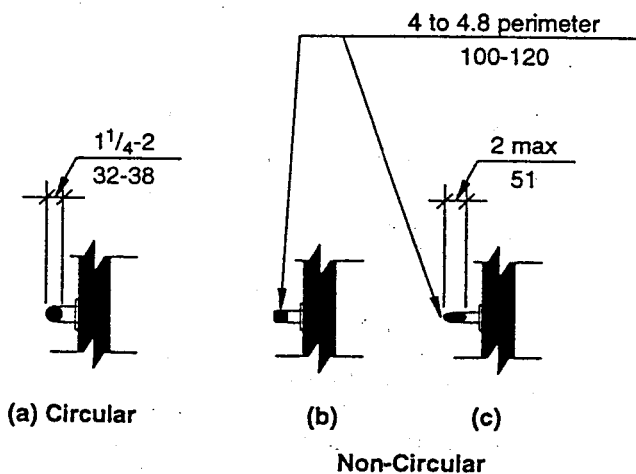


(a)



(b)

Fig. 608.6
Location of Shower Spray Unit



(a) Circular

(b)

(c)

Non-Circular

Fig. 609.2
Size of Grab Bars

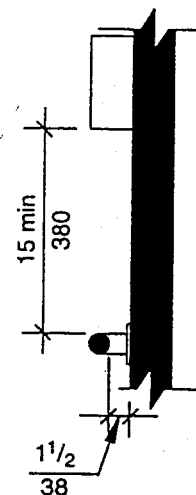


Fig. 609.3
Spacing of Grab Bars

vide equivalent graspability complying with Section 609.2.1.

609.2.1 Non-Circular Cross Sections. Grab bars with other shapes shall be permitted provided they have a perimeter dimension of 4 inches (100 mm) minimum and 4.8 inches (120 mm) maximum, and with edges having a $\frac{1}{8}$ inch (3.2 mm) minimum radius.

609.3 Spacing. The space between the wall and the grab bar shall be $1\frac{1}{2}$ inches (38 mm). The space between the grab bar and objects below and at the ends shall be $1\frac{1}{2}$ inches (38 mm) minimum. The space between the grab bar and projecting objects above shall be 15 inches (355 mm) minimum.

EXCEPTION: The space between the grab bars and shower controls, shower fittings, and other grab bars above shall be $1\frac{1}{2}$ inches (38 mm) minimum.

609.4 Position of Grab Bars. Grab bars shall be mounted in a horizontal position, 33 inches (840 mm) minimum and 36 inches (915 mm) maximum above the floor.

EXCEPTION: Height of grab bars on the back wall of a bathtub shall comply with Sections 607.4.1.1 and 607.4.2.1.

609.5 Surface Hazards. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements. Edges shall have a radius of $\frac{1}{8}$ inch (3 mm) minimum.

609.6 Fittings. Grab bars shall not rotate within their fittings.

609.7 Installation. Grab bars shall be installed in any manner that provides a gripping surface at the locations specified in this standard and that does not obstruct the clear floor space.

609.8 Structural Strength. Allowable stresses in bending, shear, and tension shall not be exceeded for materials used where a vertical or horizontal force of 250 lb (1112 N) is applied at any point on the grab bar, fastener mounting device, or supporting structure.

610 Seats

610.1 General. Seats in accessible bathtubs and shower compartments shall comply with Section 610.

610.2 Bathtub Seats. A removable in-tub seat shall be 15 inches (380 mm) minimum and 16 inches (405 mm) deep maximum, and shall be capable of secure placement. A permanent seat shall be 15 inches (380 mm) deep minimum and be positioned at the head end of the bathtub. The top of the seat shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum above the bathroom floor.

610.3 Shower Compartment Seats. Where a seat is provided in a roll-in shower compartment, it shall be a folding type and shall be on the wall adjacent to the controls. Seats shall be L-shaped or rectan-

gular. The top of the seat shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum above the bathroom floor. In a transfer-type shower, the seat shall extend from the back wall to a point within 3 inches (75 mm) of the compartment entry. In a roll-in-type shower, the seat shall extend from the control wall to a point within 3 inches (75 mm) of the minimum required seat wall width.

610.3.1 Rectangular Seats. The rear edge of a rectangular seat shall be 2½ inches (64 mm) maximum from the seat wall, and the front edge 15 inches (380 mm) minimum and 16 inches (405 mm) maximum from the seat wall. In a transfer-type shower the side edge of a rectangular seat shall be 1½ inches (38 mm) maximum. In a roll-in-type shower, the side edge of a rectangular seat shall be 1½ inches (38 mm) maximum from the control wall.

610.3.2 L-Shaped Seats. The rear edge of an L-shaped seat shall be 2½ inches (64 mm) maximum from the seat wall, and the front edge 15 inches (380 mm) minimum and 16 inches (405 mm) maximum from the seat wall. The rear edge of the "L" portion of the seat shall be 1½ inches (38 mm) maximum from the wall and the front edge shall be 14 inches (355 mm) minimum and 15 inches (380 mm) maximum from the wall. The end of the "L" shall be 22 inches (560 mm) minimum and 23 inches (585 mm) maximum from the main seat wall.

610.4 Structural Strength. Allowable stresses in bending, shear, and tension shall not be exceeded

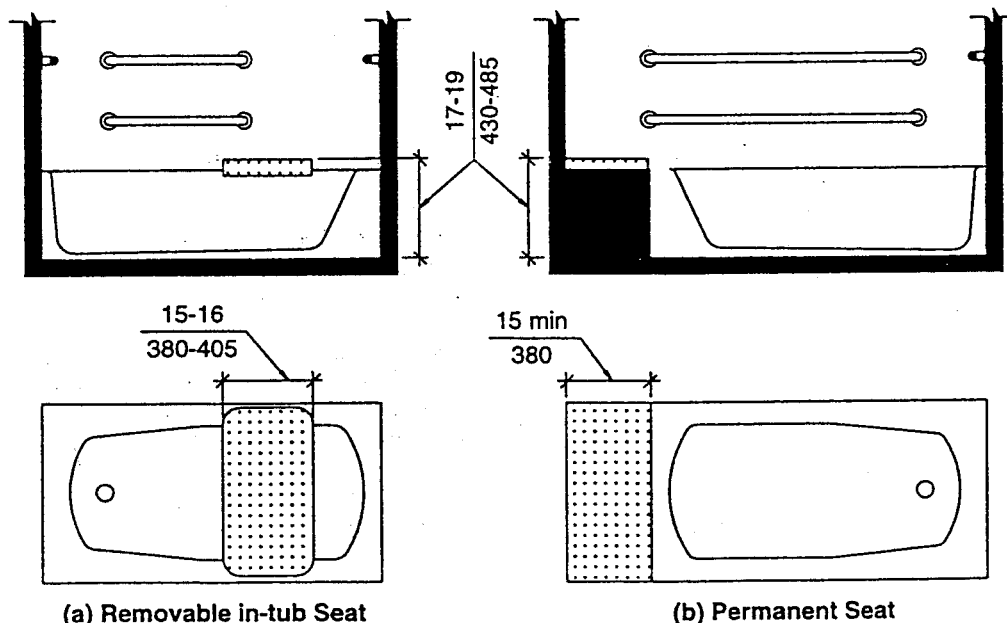


Fig. 610.2
Bathtub Seat

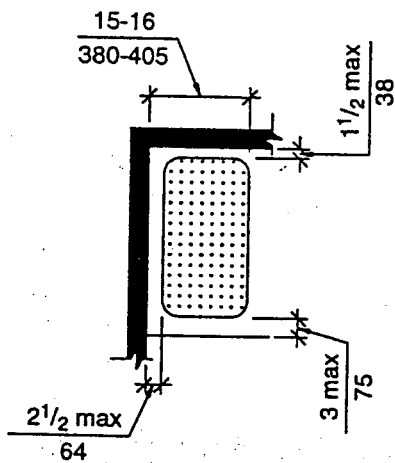


Fig. 610.3.1
Rectangular Shower Compartment Seat

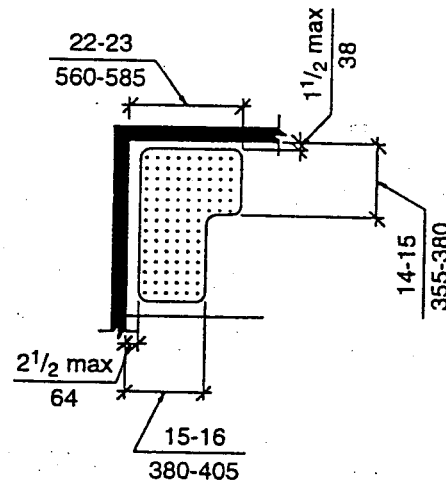


Fig. 610.3.2
L-Shaped Shower Compartment Seat

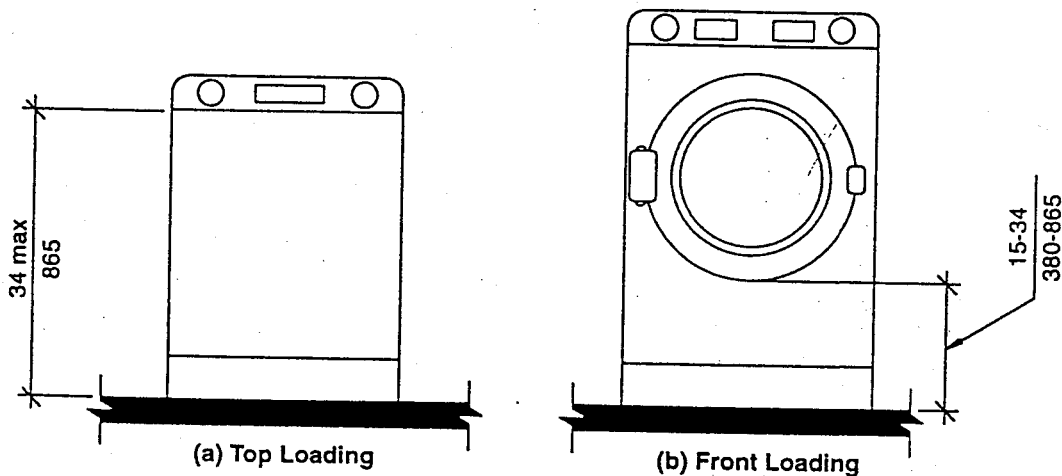


Fig. 611.4
Height of Laundry Equipment

for materials used where a vertical or horizontal force of 250 pound (1112 N) is applied at any point on the seat, fastener mounting device, or supporting structure.

611 Laundry Equipment

611.1 General. Accessible washing machines and clothes dryers shall comply with Section 611.

611.2 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 positioned for parallel approach shall be provided. The

clear floor or ground space shall be centered on the appliance.

611.3 Operable Parts. Operable parts, including doors, lint screens, detergent and bleach compartments, shall comply with Section 309.

611.4 Height. Top loading machines shall have the door to the laundry compartment 34 inches (865 mm) maximum above the floor or ground. Front loading machines shall have the bottom of the opening to the laundry compartment 15 inches (380 mm) minimum and 34 inches (865 mm) maximum above the floor or ground.

Chapter 7. Communication Elements and Features

701 General

701.1 Scope. Communications features and elements required to be accessible by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

702 Alarms

702.1 General. Accessible fire alarm systems shall have audible alarms complying with Section 702.2, and visual alarms complying with Section 702.3.

EXCEPTION: Fire alarm systems in medical care facilities shall be permitted to be modified to suit standard health care alarm practice.

702.2 Audible Alarms. Audible alarms shall produce a sound that exceeds the average ambient sound level in the room or space by at least 15 dBA or exceeds any maximum sound level with a duration of 60 seconds by 5 dBA, whichever is louder. The signal shall consist of a "three pulse" temporal pattern complying with ANSI S3.41, where evacuation of the building is required. Sound levels for alarm signals shall not exceed 120 dBA.

702.3 Visual Alarms. Visual alarms shall comply with Sections 702.3.1 through 702.3.6.

702.3.1 Light Pulse Characteristics.

702.3.1.1 Type. The lamp shall be a xenon strobe type or equivalent.

702.3.1.2 Color. The color shall be clear or nominal white.

702.3.1.3 Flash Rate. The flash rate for an individual appliance shall be 1 Hz minimum and 2 Hz maximum over its rated voltage range.

702.3.1.4 Pulse Duration. The maximum pulse duration shall be two-tenths of one second with a maximum duty cycle of 40 percent. The pulse duration is defined as the time interval between initial and final points of 10 percent of maximum signal.

702.3.2 Dispersion. Light dispersion of wall-mounted appliances shall comply with Table

702.3.2(a). Light dispersion of ceiling-mounted appliances shall comply with Table 702.3.2(b).

702.3.3 Location. Appliances shall comply with Section 702.3.3.1 or 702.3.3.2.

EXCEPTION: Appliances in sleeping rooms shall comply with Section 702.3.6.

702.3.3.1 Wall-Mounted Appliances. Appliances shall be 80 inches (2030 mm) minimum and 96 inches (2440 mm) maximum above the floor or ground, measured to the bottom of the appliance.

EXCEPTION: Wall-mounted appliances which are part of a smoke detector shall be 4 inches (100 mm) minimum and 12 inches (305 mm) maximum below the ceiling, measured to the top of the smoke detector.

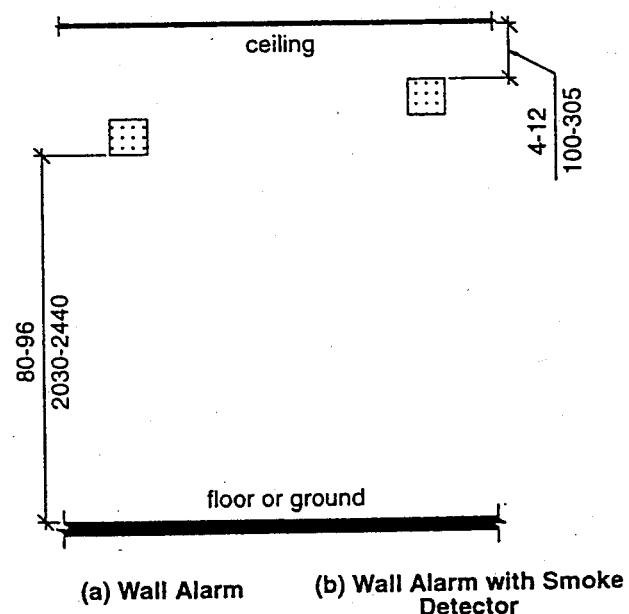


Fig. 702.3.3.1
Location of Wall-Mounted Appliances

702.3.3.2 Ceiling-Mounted Appliances. Appliances shall be on the ceiling. Where ceiling height exceeds 30 feet (9145 mm), appliances shall be suspended from the ceiling to a height of 30 feet (9145 mm) maximum above the floor or ground.

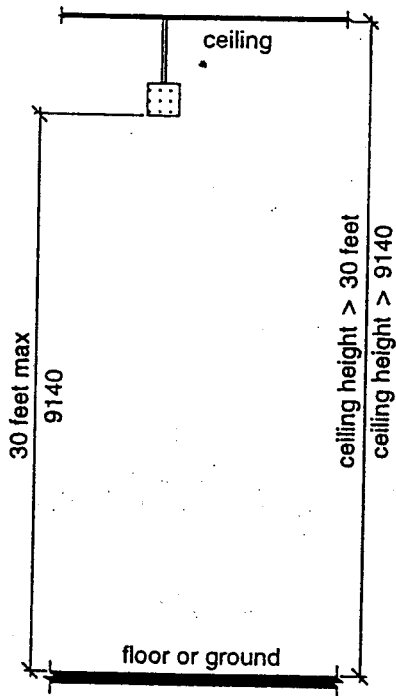


Fig. 702.3.3.2
Location of Ceiling-Mounted Appliances

702.3.4 Spacing and Intensity. Spacing and minimum effective intensity for appliances shall comply with Sections 702.3.4.1 through 702.3.4.3.

EXCEPTIONS:

1. Appliances in corridors shall comply with Section 702.3.5.
2. Appliances in sleeping rooms shall comply with Section 702.3.6.

702.3.4.1 General. The signal provided by the appliance or appliances shall be visible either by direct view or by reflection from all parts of the covered area. Multiple appliances within an area are permitted only where size, shape, building construction, or furnishings prohibit total coverage by a single appliance. Where multiple appliances are provided in a single area to provide total coverage, the appliances shall comply with one of the following:

- (1) A maximum of 2 appliances on opposite walls;
- (2) The appliances shall have synchronized flashes; or
- (3) In rooms 80 feet by 80 feet (24 m by 24 m) or greater in size, more than two appliances such that all appliances in any 135-degree field

of view are spaced a minimum of 55 feet (17 m) from each other.

702.3.4.2 Wall-Mounted Appliances.

Spacing and minimum effective intensity for wall-mounted appliances shall comply with Table 702.3.4.2, provided the appliance is at the midpoint of the longest side of the area served. Where the appliance is not at the midpoint, the minimum effective intensity shall be based on a maximum area of coverage equal to the distance to the opposite side of the area served, or double the distance to the farthest adjacent side of the area served, whichever is greater.

702.3.4.3 Ceiling-Mounted Appliances.

Spacing and minimum effective intensity for ceiling-mounted appliances shall comply with Table 702.3.4.3, provided the appliance is the centerpoint of the area served. Where the appliance is not at the centerpoint, the minimum effective intensity shall be based on a maximum area of coverage equal to two times the distance from the appliance to the farthest side of the area served.

702.3.5 Corridors. Appliances in corridors that are 20 feet (6095 mm) wide maximum shall comply with Section 702.3.5. Appliances in corridors exceeding 20 feet (6095 mm) in width shall comply with Section 702.3.4.

702.3.5.1 Appliance Spacing. Appliances shall be 15 feet (4570 mm) maximum from each end of the corridor, and shall be 50 feet (15 m) minimum and 100 feet (30 m) maximum apart along the corridor. Interruptions to the concentrated viewing path by doors, elevation changes, or other obstructions shall constitute the end of the corridor for the purpose of this section.

702.3.5.2 Minimum Effective Intensity. Appliances shall have a minimum effective intensity of 15 candela.

702.3.6 Sleeping Rooms and Suites. Visual alarm appliances required in sleeping rooms and suites shall comply with Sections 702.3.6.1 through 702.3.6.3.

702.3.6.1 Activation. Where single- or multiple-station smoke detectors are provided in the sleeping room or suite, a visual alarm that is activated upon activation of the smoke detectors shall be provided within the room or suite. Where a building fire alarm system is provided, a visual alarm that is activated upon activation of the

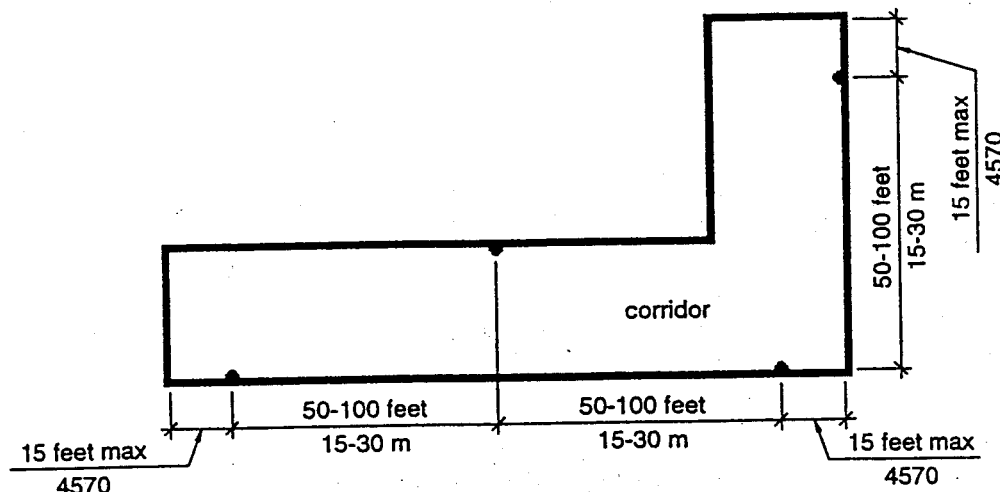


Fig. 702.3.5.1
Appliance Spacing in Corridors

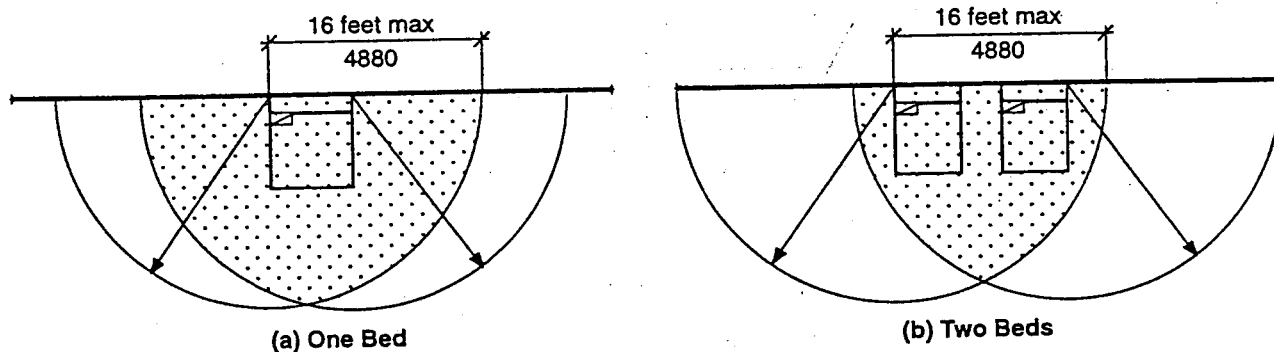


Fig. 702.3.6.2
Appliance Location in Sleeping Rooms

building fire alarm system shall be provided within the room or suite. The signaling line or channel between the activating device of the appliance and the building fire alarm system shall be monitored for integrity by the building fire alarm system. Where the same appliance is used for visual notification of smoke detector and fire alarm system activation, activation of the room or suite smoke detectors shall not activate the building fire alarm system.

702.3.6.2 Location. In sleeping rooms or suites having a linear dimension exceeding 16 feet (4875 mm), the appliance shall be 16 feet (4875 mm) maximum from the head

of the bed location, measured horizontally. Appliances shall be permanently installed. Where a suite contains more than one sleeping room, an appliance shall be provided in each sleeping room.

702.3.6.3 Minimum Effective Intensity and Mounting Height. Wall-mounted appliances 24 inches (610 mm) minimum below the ceiling shall have a minimum effective intensity of 110 candela. Ceiling-mounted appliances and wall-mounted appliances less than 24 inches (610 mm) below the ceiling shall have a minimum effective intensity of 177 candela.

Table 702.3.2(a)—Light Dispersion for Wall-Mounted Visual Alarms

Vertical Dispersion		Horizontal Dispersion	
Degrees from Horizontal	Percent of Rated	Degrees from Vertical	Percent of Rated
0	100	0	100
5-30	90	5-25	90
35	65	30-45	75
40	46	50	55
45	34	55	45
50	27	60	40
55	22	65	35
60	18	70	35
65	16	75	30
70	15	80	30
75	13	85	25
80	12	90	25
85	12	—	—
90	12	—	—

Table 702.3.2(b)—Light Dispersion for Ceiling-Mounted Visual Alarms

Degrees from Vertical	Percent of Rated
0	100
5-25	90
30-45	75
50	55
55	45
60	40
65	35
70	35
75	30
80	30
85	25
90	25

Table 702.3.4.2—Spacing Allocation for Wall-Mounted Visual Alarms

Maximum Area of Coverage	Minimum Required Light Output, Candela (Effective Intensity)		
	One Light per Area	Two Lights per Area	Four Lights per Area
20' x 20'	15	Not Permitted	Not Permitted
30' x 30'	30	15	Not Permitted
40' x 40'	60	30	Not Permitted
50' x 50'	95	60	Not Permitted
60' x 60'	135	95	Not Permitted
70' x 70'	185	95	Not Permitted
80' x 80'	240	135	60
90' x 90'	305	185	95
100' x 100'	375	240	95
110' x 110'	455	240	135
120' x 120'	540	305	135
130' x 130'	635	375	185

Table 702.3.4.3—Spacing Allocation for Ceiling-Mounted Visual Alarms

Maximum Area of Coverage	Minimum Required Light Output, Candela (Effective Intensity)	
	Maximum Ceiling Height	One Light
20' x 20'	10 feet (3050 mm)	15
30' x 30'		30
40' x 40'		60
50' x 50'		95
20' x 20'	20 feet (6095 mm)	30
30' x 30'		45
40' x 40'		80
50' x 50'		115
20' x 20'	30 feet (9145 mm)	55
30' x 30'		75
40' x 40'		115
50' x 50'		150

703 Signs

703.1 General. Accessible signs shall comply with Section 703.

703.2 Characters that are both Tactile and Visual. Characters required to be tactile shall comply with Sections 703.2.1 through 703.2.8.

EXCEPTION: Tactile characters complying with Section 703.3, where separate visual characters complying with Section 703.4 provide the same information.

703.2.1 Braille. Tactile characters shall be duplicated in Braille complying with Section 703.5.

703.2.2 Finish and Contrast. Characters and their background shall have a non-glare finish. Characters shall contrast with their background, with either light characters on a dark background, or dark characters on a light background.

703.2.3 Tactile Character Depth. Tactile characters shall be raised $\frac{1}{32}$ inch (0.8 mm) minimum above their background. Raised borders and elements that are not required shall be $\frac{3}{8}$ inch (9.5 mm) minimum from tactile characters.

703.2.4 Character Forms. Fonts shall have characters complying with Sections 703.2.4.1 through 703.2.4.5.

703.2.4.1 Case. Characters shall be uppercase.

703.2.4.2 Style. Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.2.4.3 Width. Character width shall be 55 percent minimum and 110 percent maximum of the height of the character, with the width based on the uppercase letter "O" and the height based on the uppercase letter "I."

703.2.4.4 Height. Character height, measured vertically from the baseline of the character, shall be $\frac{5}{8}$ inch (16 mm) minimum, and 2 inches (51 mm) maximum, based on the uppercase letter "I."

703.2.4.5 Stroke Thickness. Characters with rectangular cross sections shall have a stroke thickness which is 10 percent minimum, and 15 percent maximum, of the height of the character, based on the uppercase letter "I". Characters with other cross

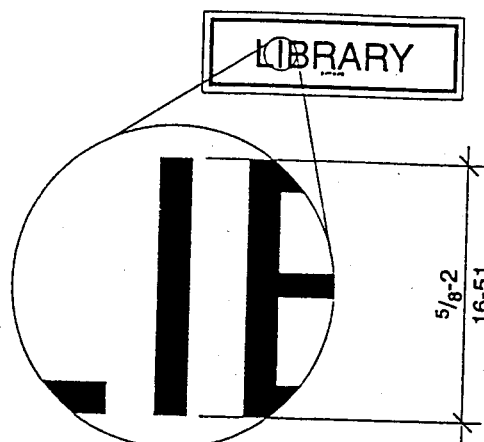


Fig. 703.2.4.4
Character Height

sections shall have a stroke thickness at the base of the cross sections which is 10 percent minimum, and 30 percent maximum, of the height of the character, and a stroke thickness at the top of the cross sections which is 15 percent maximum of the height of the character, based on the uppercase letter "I".

703.2.5 Character Spacing. Spacing shall be measured between the two closest points of adjacent characters within a message, excluding word spaces. Where characters have rectangular cross sections, spacing between individual characters shall be $\frac{1}{8}$ inch (3 mm) minimum and $\frac{3}{8}$ inch (10 mm) maximum. Where characters have other cross sections, spacing between individual characters shall be $\frac{1}{16}$ inch (2 mm) minimum and $\frac{3}{8}$ inch (10 mm) maximum at the base of the cross sections, and $\frac{1}{8}$ inch (3 mm) minimum and $\frac{3}{8}$ inch (10 mm) maximum at the top of the cross sections.

703.2.6 Line Spacing. Spacing between the baselines of separate lines of characters shall be 135 percent minimum to 170 percent maximum of the character height.

703.2.7 Mounting Height. Characters shall be 48 inches (1220 mm) minimum and 60 inches (1525 mm) maximum above the adjacent floor or ground surface, measured from the baseline of the characters.

EXCEPTION: Elevator car controls.

703.2.8 Mounting Location. Where a sign containing tactile characters is provided at a door, the sign shall be alongside the door on the latch side. Where a tactile sign is provided at double doors, the sign shall be to the right of the

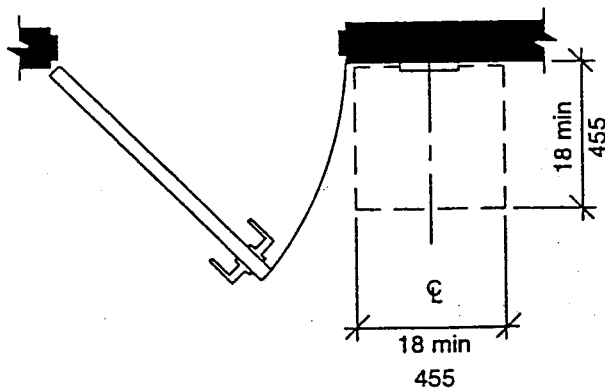


Fig. 703.2.8
Mounting Location at Doors

right-hand door. Where there is no wall space on the latch side of a single door, or to the right side of double doors, signs shall be on the nearest adjacent wall. Signs containing tactile characters shall have an 18 inch (455 mm) minimum by 18 inch (455 mm) minimum space on the floor or ground, centered on the sign, beyond the arc of any door swing between the closed position and 45 degree open position.

EXCEPTION: Door-mounted signs shall be permitted on the push side of doors with closers and without hold-open devices.

703.3 Tactile Characters. Where tactile characters are required, and separate tactile and visual characters with the same information are provided, tactile characters shall comply with Sections 703.3.1 through 703.3.7 and visual characters shall comply with Section 703.4.

703.3.1 Braille. Tactile characters shall be duplicated in Braille complying with Section 703.5.

703.3.2 Tactile Character Depth. Tactile characters shall be raised $\frac{1}{32}$ inch (0.8 mm) minimum above their background. Raised borders and elements that are not required shall be $\frac{3}{8}$ inch (9.5 mm) minimum from tactile characters.

703.3.3 Character Forms. Fonts shall have characters complying with Sections 703.3.3.1 through 703.3.3.5.

703.3.3.1 Case. Characters shall be uppercase.

703.3.3.2 Style. Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.3.3.3 Width. Character width shall be 55 percent minimum and 110 percent maximum the height of the character, with the width based on the uppercase letter "O," and the height based on the uppercase letter "I."

703.3.3.4 Height. Character height, measured vertically from the baseline of the character, shall be $\frac{1}{2}$ inch (13 mm) minimum, and $\frac{3}{4}$ inch (19 mm) maximum, based on the height of the uppercase letter "I."

703.3.3.5 Stroke Thickness. Characters shall have a stroke thickness which is 15 percent maximum of the height of the character, based on the uppercase letter "I."

703.3.4 Character Spacing. Spacing shall be measured between the two closest points of adjacent characters within a message, excluding word spaces. Spacing between individual characters shall be $\frac{1}{8}$ inch (3 mm) minimum to $\frac{1}{4}$ inch (6 mm) maximum.

703.3.5 Line Spacing. Spacing between the baseline of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.

703.3.6 Mounting Height. Characters shall be 48 inches (1220 mm) minimum and 60 inches (1515 mm) maximum above the adjacent floor or ground surface, measured from the baseline of the characters.

EXCEPTION: Elevator car controls.

703.3.7 Mounting Location. Where a tactile sign is provided at a door, the sign shall be alongside the door on the latch side. Where a tactile sign is provided at double doors, the sign shall be to the right of the right-hand door. Where there is no wall space on the latch side of a single door, or to the right side of double doors, signs shall be on the nearest adjacent wall. Signs containing tactile characters shall have an 18 inch (455 mm) minimum by 18 inch (455 mm) minimum space on the floor or ground, centered on the sign, beyond the arc of any door swing between the closed position and 45 degree open position.

EXCEPTION: Door-mounted signs shall be permitted on the push side of doors with closers and without hold-open devices.

703.4 Visual Characters. Accessible visual characters shall comply with Sections 703.4.1 through 703.4.5.

703.4.1 Finish and Contrast. Characters and their background shall have a non-glare finish. Characters shall contrast with their background, with either light characters on a dark background, or dark characters on a light background.

703.4.2 Character Forms. Fonts shall have characters complying with Sections 703.4.2.1 through 703.4.2.5.

703.4.2.1 Case. Characters shall be uppercase, lowercase, or a combination of both.

703.4.2.2 Style. Characters shall be conventional in form. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.4.2.3 Width. Character width shall be 55 percent minimum and 110 percent maximum the height of the character, with the width based on the uppercase letter "O," and the height based on the uppercase "I."

703.4.2.4 Height. Minimum character height, measured from the baseline of the character, shall comply with Table 703.4.2.4, based on the height of the characters above the floor or ground of the viewing location and the minimum viewing distance. Character height shall be based on the uppercase letter "I." Minimum viewing

distance shall be measured as the horizontal distance where an obstruction prevents further approach toward the sign.

703.4.2.5 Stroke Thickness. Characters shall have a stroke thickness which is 10 percent minimum, and 30 percent maximum, the height of the character, based on the uppercase letter "I."

703.4.3 Character Spacing. Spacing shall be the two closest points of adjacent characters within a message, excluding word spaces. Spacing between individual characters shall be 10 percent minimum and 35 percent maximum of character height.

703.4.4 Line Spacing. Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum to 170 percent maximum of character height.

703.4.5 Mounting Height. Visual characters shall be 40 inches (1015 mm) minimum above the floor or ground of the viewing position. Mounting heights shall comply with Table 703.4.2.4, based on the size of the characters on the sign.

703.5 Braille. Tactile characters shall be accompanied by Grade II Braille complying with Sections 703.5.1 through 703.5.4 and Table 703.5. Braille dots shall have a domed or rounded shape.

Table 703.4.2.4—Minimum Character Heights for Visual Signs

Height above Floor or Ground to Top of Character	Minimum Viewing Distance	Minimum Character Height	Notes
40 inches - ≤70 inches (1015 mm - 1780 mm)	≤ 6 feet (1830 mm)	5/8 inch (16 mm)	Except elevators
40 inches - ≤70 inches (1015 mm - 1780 mm)	> 6 feet (1830 mm)	5/8 inch (16 mm), plus 1/8 inch per foot (3.2 mm per 305 mm) of viewing distance beyond 6 feet (1830 mm)	Except elevators
>70 inches - ≤120 inches (1780 mm - 3050 mm)	≤ 15 feet (4570 mm)	2 inches (51 mm)	
>70 inches - ≤120 inches (1780 mm - 3050 mm)	> 15 feet (4570 mm)	2 inches (51 mm), plus 1/8 inch per foot (3.2 mm per 305 mm) of viewing distance beyond 15 feet (4570 mm)	
> 120 inches (3050 mm)	≤ 21 feet (6400 mm)	3 inches (75 mm)	
> 120 inches (3050 mm)	> 21 feet (6400 mm)	3 inches (75 mm), plus 1/8 inch per foot (3.2 mm per 305 mm) of viewing distance beyond 21 feet (6400 mm)	

Table 703.5—Measurement Range for Standard Sign Braille

Measurement Range for:	Minimum	Maximum
Dot base diameter	0.059 inch (1.5 mm)	0.063 inch (1.6 mm)
Distance between two dots in same cell, center to center	0.090 inch (2.3 mm)	0.100 inch (2.5 mm)
Distance between corresponding dots in adjacent cells, center to center	0.241 inch (6.1 mm)	0.300 inch (7.6 mm)
Dot Height	0.025 inch (0.6 mm)	0.037 inch (0.9 mm)
Distance between corresponding dots from one cell to the cell directly below, center to center	0.395 inch (10.0 mm)	0.400 inch (10.1 mm)

703.5.1 Location. Braille shall be below the corresponding text. If text is multilined, Braille shall be placed below entire text. Braille shall be separated $\frac{3}{8}$ inch (9.5 mm) minimum from any other tactile characters.

EXCEPTION: Braille provided on elevator car controls shall be separated $\frac{3}{16}$ inch (4.8 mm) minimum either directly below or adjacent to the corresponding raised characters or symbols.

703.5.2 Raised Elements and Borders. Raised borders and elements that are not required shall be $\frac{3}{8}$ inch (10 mm) minimum from tactile characters.

703.5.3 Height. Braille shall be 40 inches (1015 mm) minimum, and 60 inches (1525 mm) maximum, above the floor or ground, measured from the baseline of the Braille cells.

EXCEPTION: Elevator car controls.

703.5.4 Braille Standard. Braille shall comply with literary Braille.

EXCEPTION: The indication of an upper-case letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials, or acronyms.

703.6 Pictograms. Pictograms shall comply with Sections 703.6.1 through 703.6.3.

703.6.1 Pictogram Field. Pictograms shall have a field with a height of 6 inches (150 mm) minimum. Characters or Braille shall not be in the pictogram field.

703.6.2 Finish and Contrast. Pictograms and their fields shall have a non-glare finish. Pictograms shall contrast with their fields, with either a light pictogram on a dark field or a dark pictogram on a light field.

703.6.3 Text Descriptors. Where text descriptors for pictograms are required, they shall be directly below or adjacent to the pictogram and shall comply with Section 703.2.

703.7 Symbols of Accessibility. Symbols of accessibility shall comply with Sections 703.7.1 through 703.7.2.

703.7.1 Finish and Contrast. Symbols of accessibility and their backgrounds shall have a non-glare finish. Symbols of accessibility shall contrast with their backgrounds, with either a light symbol on a dark background or a dark symbol on a light background.

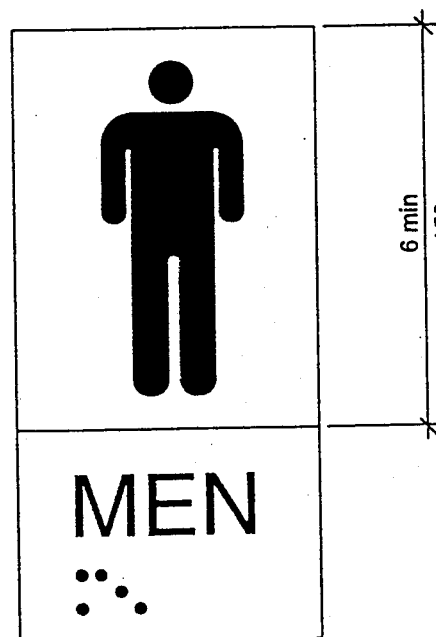


Fig. 703.6.1
Pictogram Field

703.7.2 Symbols

703.7.2.1 International Symbol of Accessibility. Where the International Symbol of Accessibility is required, it shall be proportioned complying with Figure 703.7.2.1.

703.7.2.2 International Symbol of TTY. Where the International Symbol of TTY is required, it shall comply with Figure 703.7.2.2.

703.7.2.3 Volume-Controlled Telephones. Where telephones with volume controls are required to be identified, the identification symbol shall be a telephone handset with radiating sound waves, such as shown in Figure 703.7.2.3.

703.7.2.4 Assistive Listening Systems. Where assistive listening systems are re-

quired to be identified by the International Symbol of Access for Hearing Loss, it shall comply with Figure 703.7.2.4.

704 Telephones

704.1 General. Accessible public telephones shall comply with Section 704.

704.2 Wheelchair Accessible Telephones. Wheelchair accessible public telephones shall comply with Sections 704.2.1 through 704.2.5.

704.2.1 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided. The clear floor or ground space shall not be restricted by bases, enclosures, or fixed seats.

704.2.1.1 Parallel Approach. Where a parallel approach is provided, the distance

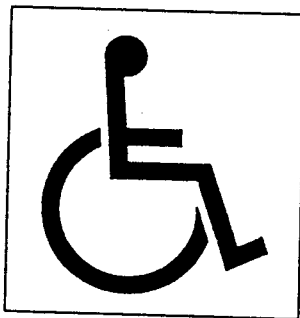


Fig. 703.7.2.1
International Symbol of
Accessibility

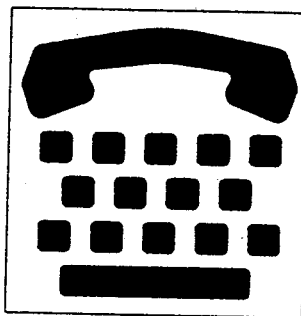


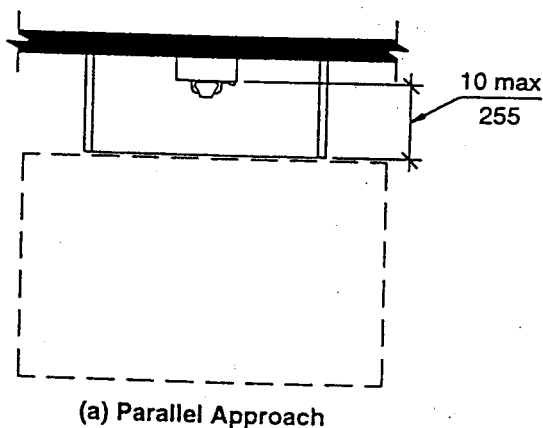
Fig. 703.7.2.2
International TTY
Symbol



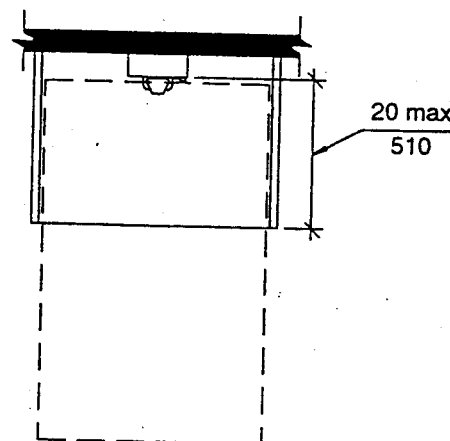
Fig. 703.7.2.3
Volume-Controlled
Telephone



Fig. 703.7.2.4
International Symbol of
Access for Hearing Loss



(a) Parallel Approach



(b) Forward Approach

Fig. 704.2.1
Clear Floor or Ground Space for Telephones

from the edge of the telephone enclosure to the face of the telephone unit shall be 10 inches (255 mm) maximum.

704.2.1.2 Forward Approach. Where a forward approach is provided, the distance from the front edge of a counter within the enclosure to the face of the telephone unit shall be 20 inches (510 mm) maximum.

704.2.2 Operable Parts. The highest operable part of the telephone shall be within the reach ranges specified in Section 308. Telephones shall have push button controls where service for such equipment is available.

704.2.3 Telephone Directories. Where provided, telephone directories shall comply with Section 309.

704.2.4 Cord Length. Wheelchair accessible telephones shall be equipped with a handset cord length of 29 inches (735 mm) minimum.

704.2.5 Hearing-Aid Compatibility. Telephones shall be hearing-aid compatible.

704.3 Volume-Control Telephones. Telephones with volume control shall be equipped with a receive volume control with a range that provides 12 dB of gain minimum and 20 dB of gain maximum. An automatic reset shall be provided.

704.4 TTY. Where used with a pay telephone, text telephones shall be permanently affixed within, or adjacent to, the telephone enclosure. If an acoustic coupler is used, the telephone cord shall be sufficiently long to allow connection of the TTY and the telephone receiver.

704.5 TTY Shelf. Where pay telephones designed to accommodate a portable TTY are provided, they shall be equipped with a shelf and an electrical outlet within or adjacent to the telephone enclosure. The telephone handset shall be capable of being placed flush on the surface of the shelf. The shelf shall be capable of accommodating a TTY and shall have a 6 inches (150 mm) high minimum vertical clearance above the area where the TTY is placed.

704.6 Protruding Objects. Telephones, enclosures, and related equipment shall comply with Section 307.

705 Detectable Warnings

705.1 General. Detectable warnings shall comply with Sections 705.2 and 705.3.

705.2 Standardization. Detectable warnings shall be standard within a building, facility, site, or complex of buildings.

705.3 Platform Edge Detectable Warnings. A platform edge detectable warning shall comply with Section 705.3.1, 705.3.2, or 705.3.3.

705.3.1 Truncated Domes. A 24 inch (610 mm) wide tactile pattern of raised truncated domes complying with Sections 705.3.1.1 through 705.3.1.3 shall be provided on the walking surface at the platform edge.

705.3.1.1 Dome Size. Domes shall have a diameter of 0.9 inch (23 mm), a height of 0.2 inch (5 mm), and a center-to-center spacing of 2.35 inches (60 mm).

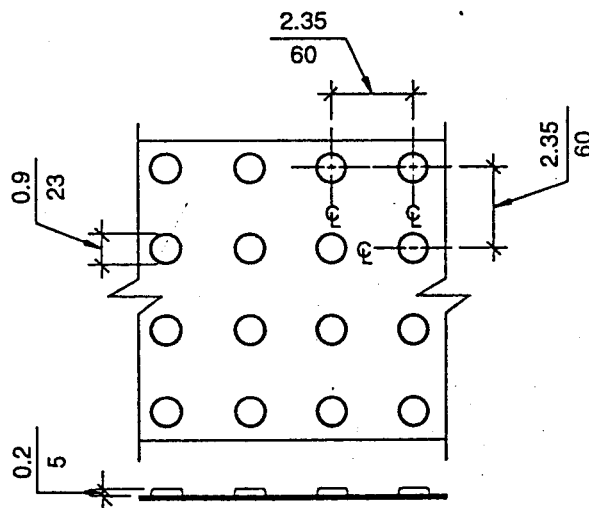


Fig. 705.3.1.1
Truncated Dome Size

705.3.1.2 Contrast. The truncated dome surface shall contrast visually with adjoining surfaces, either light-on-dark or dark-on-light. The material used to provide contrast shall be an integral part of the truncated dome surface.

705.3.1.3 Interior Locations. Detectable warnings in interior locations shall differ from adjoining walking surfaces in resiliency or sound-on-cane contact.

705.3.2 Equivalent Tactile Surface. A 24 inch (610 mm) wide tactile surface of equivalent detectability underfoot shall be provided and shall comply with Section 705.3.1.2.

705.3.3 Equivalent Detectability. Detectability by other construction, technology, or means shall be provided that will ensure equivalent or

superior, reliable communication of the impending change to pedestrians who are blind or visually impaired. The information to be communicated must include 24 inches (610 mm) of advance warning of the platform edge and the precise orientation of the platform edge in relation to the pedestrian.

706 Assistive Listening Systems

706.1 General. Accessible assistive listening systems in assembly areas shall comply with Section 706.

706.2 Placement. Individual fixed seats, served by an assistive listening system, shall have complete view of the stage, playing area, or cinema screen.

706.3 Types of Systems. Induction loops, infrared systems, FM and AM radio frequency systems, hard-wired earphones, and other equivalent devices shall be permitted as acceptable listening systems.

707 Automatic Teller Machines (ATMs) and Fare Machines

707.1 General. Automatic teller machines and fare machines that are required to be accessible shall comply with Section 707.

707.2 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided.

EXCEPTION: Clear floor or ground space is not required at drive-up only machines.

707.3 Operable Parts. Operable parts shall comply with Section 309. Each operable part shall be able to be differentiated by sound or touch, without activation.

EXCEPTION: Drive-up only machines shall not be required to comply with Section 309.2 or 309.3.

707.4 Input. Input devices shall comply with Sections 707.4.1 through 707.4.5.

707.4.1 Privacy. The opportunity for the same degree of privacy of input shall be available to all individuals utilizing the equipment.

707.4.2 Key Surfaces. All keys used to operate a machine shall be tactually discernible. Key surfaces shall be offset from the surrounding surface by $\frac{1}{25}$ inch (1 mm) minimum. The outer

edge of key surfaces shall have a radius of $\frac{1}{50}$ inch (0.5 mm) maximum.

EXCEPTION: The touch areas of video display screens.

707.4.3 Separation Between Keys. Any key surface shall be separated from other key surfaces by $\frac{1}{8}$ inch (3.2 mm) minimum. Function keys shall be separated from the keypad equal to a distance that is not less than three times greater than the actual distance between the numeric keys.

707.4.4 Numeric Keys. Where provided, numeric keys shall comply with Sections 707.4.4.1 and 707.4.4.2.

707.4.4.1 Arrangement. Numeric keys shall be arranged in a 12-key telephone keypad layout with the number one key in the upper left hand corner.

707.4.4.2 Marking. The number five key shall have a single raised dot.

707.4.5 Function Keys. Where provided, function keys shall comply with Sections 707.4.5.1 through 707.4.5.3.

707.4.5.1 Arrangement. Function keys shall be in the order of enter, clear, cancel, add value, and decrease value horizontally from left to right or vertically from top to bottom. Where provided, add value and decrease value shall be grouped with other function keys.

707.4.5.2 Marking. Function keys shall be marked with tactile characters as follows:

- Enter or proceed key: raised circle;
- Clear or correct key: raised vertical line or bar;
- Cancel key: raised letter "x";
- Add value key: raised plus sign;
- Decrease value key: raised minus sign.

707.4.5.3 Color Coding. Where function keys are color coded, they shall be colored as follows:

- Enter or proceed key: green;
- Clear or correct key: black;
- Cancel key: red;
- Add value key: blue;
- Decrease value key: yellow.

707.5 Output. Output devices shall comply with Sections 707.5.1 through 707.5.6.

707.5.1 Privacy. The opportunity for the same degree of privacy of output shall be available to all individuals utilizing the equipment.

707.5.2 Operating Instructions. Machines shall provide visual and audible instruction for operation. Visual and audible instruction shall include all information required by Sections 707.5.2.1 through 707.5.2.5.

707.5.2.1 Initiation. Instruction shall be initiated by the user of the machine.

707.5.2.2 Expedited Process. After initiation, instructions shall be available to the experienced user to expedite the transaction.

707.5.2.3 Orientation. Orientation and assistance for unfamiliar users to the physical features of the machine, operational options, and details for each function shall be provided.

707.5.2.4 Transaction Prompts. All transaction prompts within each operation shall be provided.

707.5.2.5 Input Verification. Verification of all user inputs shall be provided.

707.5.3 Audible Instruction. Audible instruction shall be provided through a standard audio mini jack, a telephone handset, a wireless

transmission system, or another mechanism that is readily available to all customers.

707.5.4 Video Display Screen. The video display screen shall comply with Sections 707.5.4.1 and 707.5.4.2.

707.5.4.1 Visibility. The video display screen shall be visible from a point 40 inches (1015 mm) above the center of the clear floor or ground space in front of the machine.

EXCEPTION: This requirement shall not apply to drive-up only machines.

707.5.4.2 Characters. Characters displayed on the screen shall be in a sans serif font. Characters shall be $\frac{3}{16}$ inch (4.8 mm) high minimum, based on the uppercase letter "I." Characters shall contrast with the background with either light characters on a dark background, or dark characters on a light background.

707.5.5 Dispensing of Bills. Machines that dispense paper currency shall dispense the currency so that bills are dispensed in descending order with the lowest denomination on top.

707.5.6 Receipts and Verification. Where a receipt is available and is requested, the following options shall be provided: a printed receipt, audible presentation of the transaction information provided on the receipt, or both.

Chapter 8. Special Rooms and Spaces

801 General

801.1 Scope. Special rooms and spaces required to be accessible by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

802 Auditorium and Assembly Areas

802.1 General. Wheelchair spaces in auditorium and assembly areas with fixed seating shall comply with Section 802.

802.2 Surfaces. The floor or ground surface of wheelchair spaces shall have a slope not steeper than 1:48 and shall comply with Section 302.

802.3 Width. A single wheelchair space shall be 36 inches (915 mm) wide minimum. Where multiple adjacent wheelchair spaces are provided, each wheelchair space shall be 33 inches (840 mm) wide minimum.

802.4 Depth. Where a wheelchair space can be entered from the front or rear, the wheelchair space shall be 48 inches (1220 mm) deep minimum. Where a wheelchair space can only be entered from the side, the wheelchair space shall be 60 inches (1525 mm) deep minimum.

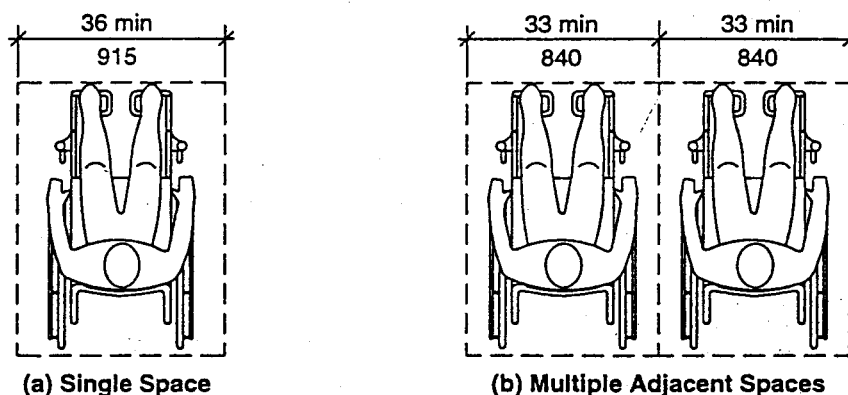


Fig. 802.3

Width of a Wheelchair Space in Auditorium and Assembly Areas

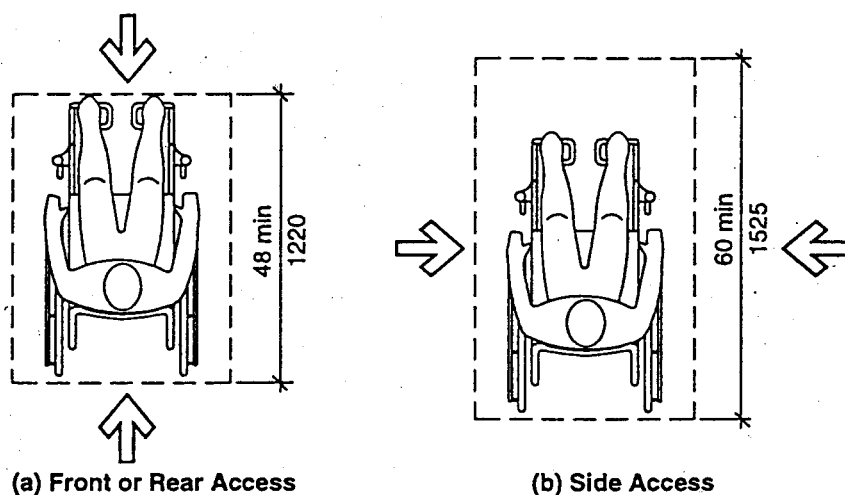


Fig. 802.4

Depth of a Wheelchair Space in Auditorium and Assembly Areas

802.5 Approach. One side of the wheelchair space shall adjoin an accessible route or adjoin another wheelchair space. Access to any wheelchair space shall not be through more than one adjoining wheelchair space.

802.6 Integral Part of Seating. Wheelchair locations shall be an integral part of any fixed seating.

802.7 Companion Seat. At least one seat for a companion shall be provided beside each wheelchair space.

802.8 Lines of Sight. Wheelchair spaces shall provide lines of sight comparable to those of all viewing areas.

803 Dressing, Fitting, and Locker Rooms

803.1 General. Accessible dressing, fitting, and locker rooms shall comply with Section 803.

803.2 Wheelchair Turning Space. A wheelchair turning space complying with Section 304 shall be provided within the room.

803.3 Doors. Doors shall not swing into any part of the turning space.

803.4 Benches. A bench complying with Section 903 shall be provided within the room.

803.5 Coat Hooks and Shelves. Accessible coat hooks provided within dressing and fitting rooms shall accommodate a forward reach or side reach complying with Section 308. Where provided, a fold-down shelf shall be 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground.

804 Kitchens

804.1 General. Accessible kitchens shall comply with Section 804.

804.2 Clearance. Clearance complying with Sections 804.2.1 and 804.2.2 shall be provided.

804.2.1 Galley Areas. Clearance between all opposing base cabinets, counter tops, appliances, or walls within kitchen work areas shall be 40 inches (1015 mm) minimum.

804.2.2 U-Shaped Areas. In kitchens with counters, appliances, or cabinets on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

804.3 Wheelchair Turning Space. A wheelchair turning space complying with Section 304 shall be provided within the room. The wheelchair turning space shall be adjacent to or overlap clear floor or ground areas required by Section 804.

804.4 Work Surface. The work surface shall comply with Section 902.

804.5 Sink. The sink and surrounding counter shall comply with Section 606.

804.6 Kitchen Storage. Kitchen storage shall comply with Section 905.

804.7 Appliances. Where provided, kitchen appliances shall comply with Sections 804.7.1 through 804.7.6.

804.7.1 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided at each kitchen appliance. Clear floor or ground spaces are permitted to overlap.

804.7.2 Operating Controls. All appliance controls shall comply with Section 309.

804.7.3 Dishwasher. Clear floor or ground space shall be positioned adjacent to the dishwasher door. The dishwasher door in the open position shall not obstruct the clear floor or ground space for the dishwasher or the sink.

804.7.4 Range or Cooktop. Where a forward approach clear floor or ground space is provided, the clear floor or ground space shall provide knee and toe clearance complying with Section 306. Where knee and toe space is provided, the underside of the range or cooktop shall be insulated or otherwise configured to prevent burns, abrasions, or electrical shock. The location of controls shall not require reaching across burners.

804.7.5 Oven. For side-opening ovens, the door latch side shall be next to a countertop. Ovens shall have controls on front panels, on either side of the door.

804.7.6 Refrigerator/Freezer. Combination refrigerators and freezers shall have at least 50 percent of the freezer space 54 inches (1370 mm) maximum above the floor or ground. The clear floor or ground space shall be positioned for a parallel approach to the space dedicated to a refrigerator/freezer with the centerline of the clear floor or ground space offset 24 inches (610 mm) maximum from the centerline of the dedicated space.

Chapter 9. Built-In Furnishings and Equipment

901 General

901.1 Scope. Built-in furnishings and equipment required to be accessible by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

902 Seating at Tables, Counters, and Work Surfaces

902.1 General. Accessible seating at fixed tables, counters and work surfaces shall comply with Section 902.

902.2 Clear Floor or Ground Space. Clear floor or ground space complying with Section 305 shall be provided. Knee and toe clearance complying with Section 306 shall be provided.

902.3 Height. The tops of tables, counters, and work surfaces shall be 28 inches (710 mm) minimum and 34 inches (865 mm) maximum from the floor or ground.

902.4. Food and Drink Counters. Accessible food and drink counters shall be 60 inches (1525 mm) long minimum.

903 Benches

903.1 General. Benches required to be accessible shall comply with Section 903.

903.2 Clear Floor or Ground Space. Clear floor or ground space complying with Section 305 shall be provided and shall be positioned for parallel approach to an end of the bench seat.

903.3 Size. Bench seats shall be 20 inches (510 mm) minimum and 24 inches (610 mm) wide maximum by 42 inches (1065 mm) minimum long fixed to a wall along the longer dimension.

903.4 Height. The bench shall be 17 inches (430 mm) minimum and 19 inches (480 mm) maximum above the floor or ground.

903.5 Structural Strength. Allowable stresses in bending, shear, and tension shall not be exceeded for materials used where a vertical or horizontal

force of 250 pounds (1112 N) is applied at any point on the seat, fastener mounting device, or supporting structure.

903.6 Wet Locations. Where provided in wet locations the surface of the bench shall be slip resistant and water shall not accumulate on the surface.

904 Checkout and Service Counters

904.1 General. Accessible checkout and service counters shall comply with the applicable provisions of Section 904.

904.2 Checkout Counters. Checkout counter surfaces shall be 38 inches (965 mm) maximum above the floor or ground. The top of the counter edge protection shall be 2 inches (51 mm) maximum above the counter surface.

904.3 Service Counters. Counters for sales or distribution of goods and services to the public shall have a portion of the counter 36 inches (915 mm) long minimum by 36 inches (915 mm) high maximum above the floor or ground.

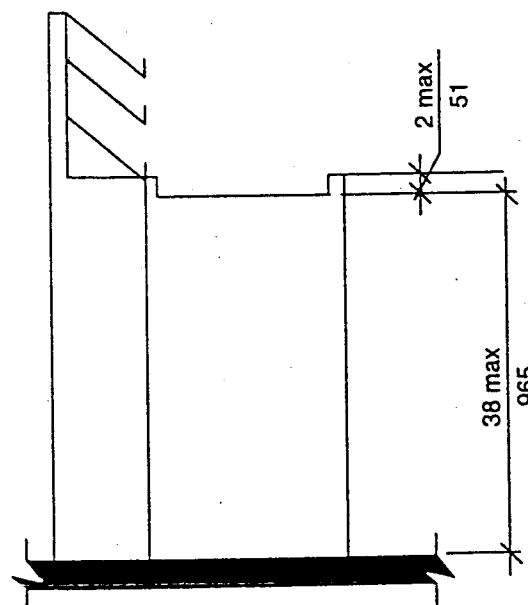


Fig. 904.2
Height of Checkout Counters

904.4 Tray Slides. The tops of accessible portions of tray slides shall be 28 inches (710 mm) minimum and 34 inches (865 mm) maximum above the floor or ground.

905 Storage Facilities

905.1 General. Accessible storage facilities shall comply with Section 905.

905.2 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305 shall be provided.

905.3 Height. Accessible storage areas shall comply with at least one of the reach ranges specified in Section 308.

905.4 Operable Parts. Operable parts of storage facilities shall comply with Section 309.4.

Chapter 10. Dwelling Units

1001 General

1001.1 Scoping. Dwelling units required to be accessible by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

1002 Type A Dwelling Units

1002.1 General. Type A dwelling units shall comply with Section 1002.

1002.2 Primary Entrance. The accessible primary entrance shall be on an accessible route from public and common areas. The primary entrance shall not be to a bedroom.

1002.3 Accessible Route. Accessible routes within Type A dwelling units shall comply with Sections 1002.3.1 through 1002.3.3.

EXCEPTIONS:

1. Exterior spaces less than 30 inches (760 mm) in depth or width shall comply with Sections 1002.3.1, 1002.3.3, 302, and 303.
2. Attics and unfinished basements.

1002.3.1 Location. At least one accessible route shall connect all spaces and elements which are a part of the dwelling unit. Where only one accessible route is provided, it shall not pass through restrooms, closets, or similar spaces.

1002.3.2 Wheelchair Turning Space. All spaces shall provide a wheelchair turning space complying with Section 304.

1002.3.3 Components. Accessible routes shall consist of one or more of the following elements: floor or ground surfaces with a slope not steeper than 1:20, ramps, elevators, and wheelchair (platform) lifts.

1002.4 Walking Surfaces. Walking surfaces that are part of an accessible route shall comply with Section 403.

1002.5 Doors and Doorways. The primary entrance door to the dwelling unit, and all other doorways intended for user passage, shall comply with Section 404.

EXCEPTION: Thresholds at exterior sliding doors shall be permitted to be $\frac{3}{4}$ inch (19 mm) high maximum provided they are beveled with a slope not greater than 1:2.

1002.6 Ramps. Ramps shall comply with Section 405.

1002.7 Private Residence Elevators. Elevators shall comply with Sections 1002.7.1 through 1002.7.8.

EXCEPTION: Elevators complying with Section 407.

1002.7.1 Automatic Operation. Elevator operation shall be automatic. Each car shall automatically stop at a floor landing within a tolerance of $\frac{1}{2}$ inch (13 mm) under rated loading to zero loading conditions.

1002.7.2 Call Buttons. Call buttons at elevator landings shall comply with Section 309.3. Call buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension.

1002.7.3 Doors and Gates. Elevator car and hoistway doors and gates shall comply with Section 404, except that the maneuvering clearances required by Section 404.2.4.1 for approaches to the push side of swinging doors shall not apply. Elevator car doors and gates shall be power operated. For elevators with a car that has more than one opening, the hoistway doors and gates shall be permitted to be of the manual-open, self-close type. Elevators with a single opening car shall have low-energy power-operated hoistway doors and gates. Power operated doors and gates shall comply with ANSI/BHMA A156.19 and shall remain open for 20 seconds minimum when activated.

1002.7.4 Inside Dimensions of Elevator Cars. Elevator cars shall provide a clear floor space of 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum. Car gates or doors shall be positioned at the narrow end of the clear floor space. The clearance between the car platform sill and the edge of any hoistway landing shall be $1\frac{1}{4}$ inches (32 mm) maximum.

1002.7.5 Floor Surfaces. Floor surfaces in elevator cars shall comply with Sections 302 and 303.

1002.7.6 Illumination Levels. The level of illumination at the car controls, platform, and car threshold and landing sill shall be 5 footcandles (54 lux) minimum.

1002.7.7 Car Controls. Elevator car controls shall comply with Sections 1002.7.7.1 through 1002.7.7.3.

1002.7.7.1 Buttons. Control buttons shall be $\frac{3}{4}$ inch (19 mm) minimum in their smallest dimension. Control buttons shall be raised or flush.

1002.7.7.2 Height. Buttons with floor designations shall comply with Section 309.3.

1002.7.7.3 Location. Controls shall be on a side wall, 12 inches (305 mm) minimum from any adjacent wall.

1002.7.8 Emergency Communications. A telephone and emergency signal device shall be provided in the car and shall comply with ASME/ANSI A17.1, Rule 509. The telephone and emergency signaling device shall comply with Section 309.3. If the device is in a closed compartment, the compartment door hardware shall comply with Section 309. The telephone cord shall be 29 inches (735 mm) long minimum.

1002.8 Wheelchair Lifts. Wheelchair (platform) lifts shall comply with ASME/ANSI A17.1 and with Sections 302, 305, and 309.

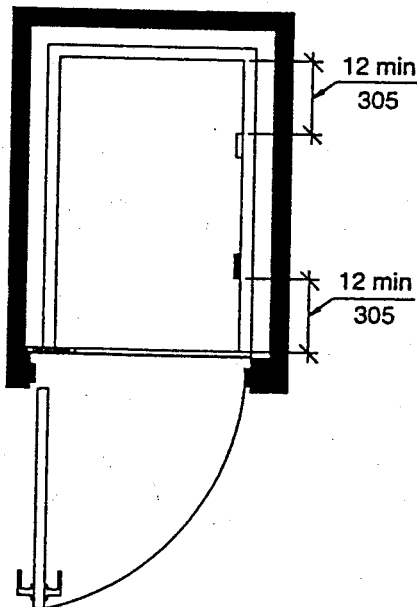


Fig. 1002.7.7.3
Location of Controls in Private
Residence Elevators

1002.9 Operable Parts. Lighting controls, electrical switches and receptacles, environmental controls, appliance controls, operating hardware for operable windows, plumbing fixture controls, and user controls for security or intercom systems shall comply with Section 309.

EXCEPTIONS:

1. Electrical receptacles serving a dedicated use.
2. A single outlet where all of the following conditions are met:
 - (a) the outlet is above a length of countertop that is uninterrupted by a sink or appliance; and
 - (b) at least one receptacle complying with Section 1002.9 is provided for that length of countertop; and
 - (c) all other receptacles provided for that length of countertop comply with Section 1002.9.
3. Floor electrical receptacles.
4. HVAC diffusers.
5. Controls mounted on range hoods if accessible redundant controls are provided.
6. Controls mounted on ceiling fans.

1002.10 Laundry Equipment. Washing machines and clothes dryers shall comply with Sections 1002.10.1 and 1002.10.2.

1002.10.1 Clear Floor or Ground Space. A clear floor space positioned for parallel approach shall be provided and shall be centered on the appliance.

1002.10.2 Operable Parts. All controls and operating mechanisms, including doors, lint screens, detergent and bleach compartments, shall comply with Section 309.

1002.11 Toilet and Bathing Facilities. All toilet and bathing facilities shall comply with Sections 1002.11.1 through 1002.11.7.

1002.11.1 Doors. Doors shall not swing into the clear floor or ground space or clearance for any fixture.

EXCEPTION: Where a clear floor or ground space complying with Section 305.3 is provided within the room, beyond the arc of the door swing.

1002.11.2 Overlap. Clear floor or ground spaces, clearances, and wheelchair turning spaces are permitted to overlap.

1002.11.3 Lavatory. Lavatories shall comply with Section 606.

EXCEPTION: Cabinetry shall be permitted to be added under the lavatory, provided such cabinetry can be removed without removal or replacement of the lavatory, and provided the finish floor extends under such cabinetry.

1002.11.4 Mirrors. Mirrors above lavatories shall have the bottom edge of the reflecting surface 40 inches (1015 mm) maximum above the floor or ground.

1002.11.5 Water Closet. Water closets shall comply with Sections 1002.11.5.1 through 1002.11.5.5.

1002.11.5.1 Location. The water closet shall be positioned with a wall to the rear

and to one side. The centerline of the water closet shall be 16 inches (405 mm) minimum and 18 inches (455 mm) maximum from the side wall.

1002.11.5.2 Clearance. Clearance around the water closet shall comply with Sections 1002.11.5.2.1 through 1002.11.5.2.3.

1002.11.5.2.1 Parallel Approach.

Where only a parallel approach is provided to the water closet, the clearance shall be 56 inches (1420 mm) minimum, measured perpendicular from the rear wall, and 48 inches (1220 mm) minimum, measured perpendicular from the side wall. A lavatory complying with Section 1002.11.3 shall be permitted on the rear wall, 18 inches (455 mm) minimum from the water closet centerline.

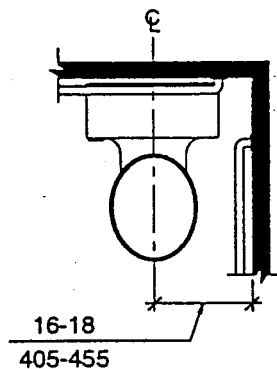


Fig. 1002.11.5.1
Location of Water Closet in Type A Dwelling Units

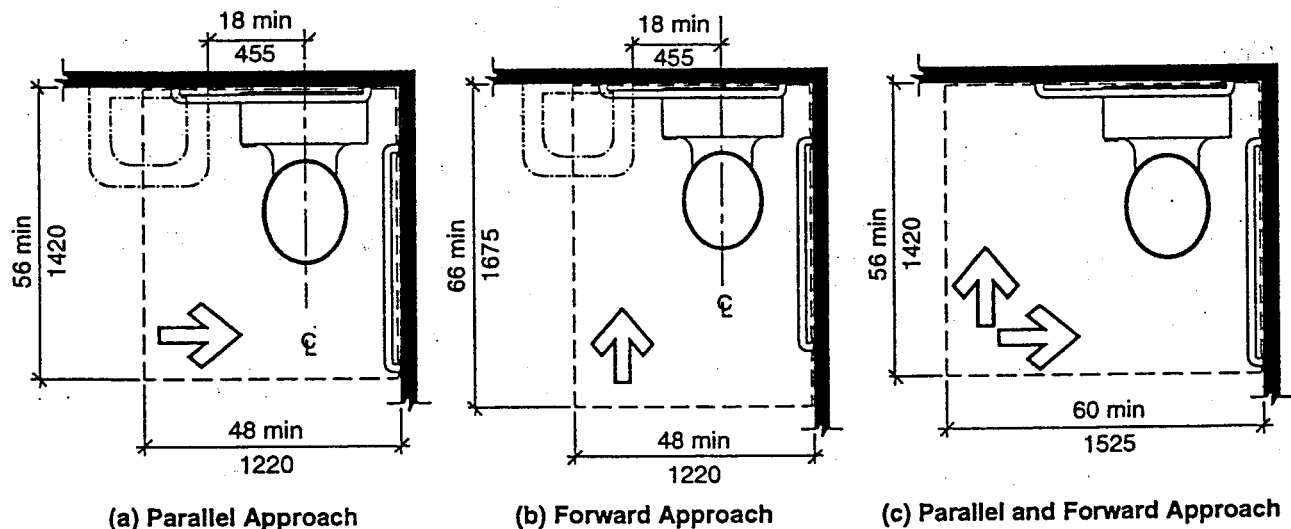


Fig. 1002.11.5.2
Water Closet Clearance in Type A Dwelling Units

1002.11.5.2.2 Forward Approach.

Where only a forward approach is provided to the water closet, the clearance shall be 66 inches (1675 mm) minimum, measured perpendicular from the rear wall, and 48 inches (1220 mm) minimum, measured perpendicular from the side wall. A lavatory complying with Section 1002.11.3 shall be permitted on the rear wall, 18 inches (455 mm) minimum from the water closet centerline.

1002.11.5.2.3 Parallel and Forward Approach.

Where both a parallel and a forward approach are provided to the water closet, the clearance shall be 56 inches (1420 mm) minimum, measured perpendicular from the rear wall, and 60 inches (1525 mm) minimum, measured perpendicular from the side wall. No fixtures or obstructions, other than the water closet, shall be within the clearance.

1002.11.5.3 Height. The top of the toilet seat shall be 15 inches (380 mm) minimum and 19 inches (485 mm) maximum above the floor or ground.

1002.11.5.4 Grab Bars. Grab bars complying with Section 604.5 shall be provided.

EXCEPTION: Where reinforcement has been provided in walls to permit the installation of such grab bars.

1002.11.5.5 Flush Controls. Hand-operated flush controls shall comply with Section 1002.9.

1002.11.6 Bathtub. Bathtubs shall comply with Section 607.

EXCEPTIONS:

1. The removable in-tub seat required by Section 607.3 is not required.
2. Grab bars are not required, provided reinforcement has been provided in walls to permit the installation of grab bars complying with Section 607.4.

1002.11.7 Shower. Showers shall comply with Section 608.

EXCEPTIONS:

1. A shower seat shall not be required in transfer-type showers, provided reinforcement has been provided in a wall to permit the installation of a seat complying with Section 610.3.

2. Grab bars are not required, provided reinforcement has been provided in walls to permit the installation of grab bars complying with Section 608.3.

1002.12 Kitchens. Kitchens shall comply with Sections 1002.12.1 through 1002.12.6.

1002.12.1 Clearance. Clearance complying with Sections 1002.12.1.1 and 1002.12.1.2 shall be provided.

1002.12.1.1 Galley. Clearance between all opposing base cabinets, counter tops, appliances, or walls within kitchen work areas shall be 40 inches (1015 mm) minimum.

1002.12.1.2 U-Shaped. In kitchens with counters, appliances, or cabinets on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

1002.12.2 Clear Floor or Ground Space. Clear floor or ground spaces required by Sections 1002.12.3 through 1002.12.6 shall comply with Section 305.3.

1002.12.3 Work Surface. At least one 30 inches (760 mm) wide minimum section of counter shall provide a work surface that complies with Sections 1002.12.3.1 through 1002.12.3.3.

1002.12.3.1 Clear Floor or Ground Space. A clear floor space complying with Section 305.3 positioned for a forward approach shall be provided. The clear floor or ground space shall be centered on the work surface. The clear floor or ground space shall provide knee and toe clearance complying with Section 306.

EXCEPTION: Cabinetry shall be permitted to be added under the work surface, provided such cabinetry can be removed without removal or replacement of the work surface, and provided the finish floor extends under such cabinetry.

1002.12.3.2 Height. The work surface shall be 34 inches (865 mm) maximum above the floor or ground.

EXCEPTION: A counter that is adjustable to provide a work surface at variable heights 29 inches (735 mm) minimum and 36 inches (915 mm) maximum.

1002.12.3.3 Exposed Surfaces. There shall be no sharp or abrasive surfaces under the work surface counters.

1002.12.4 Sink. The sink and surrounding counter shall comply with Sections 1002.12.4.1

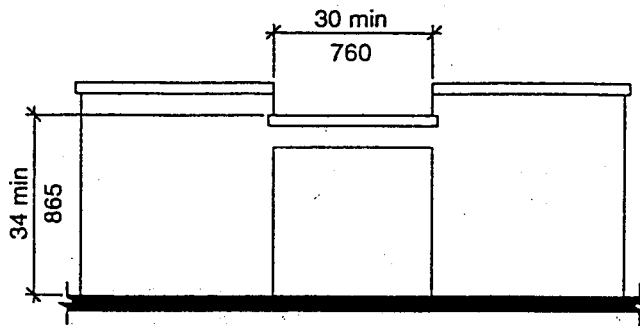


Fig. 1002.12.3
Work Surface in Kitchen

through 1002.12.4.5. The width of the sink and surrounding counter complying with this section shall be 30 inches (760 mm) minimum.

1002.12.4.1 Clear Floor or Ground Space. A clear floor space positioned for a forward approach shall be provided. The clear floor or ground space shall be centered on the sink bowl. The clear floor or ground space shall provide knee and toe clearance complying with Section 306.

EXCEPTIONS:

1. Cabinetry shall be permitted to be added under the sink, provided such cabinetry can be removed without removal or replacement of the sink, and provided the finish floor extends under such cabinetry.
2. Adjustable-height sinks complying with Section 1002.12.4.3 are not required to provide knee clearance where placed at heights below 34 inches (865 mm).

1002.12.4.2 Height. The sink and surrounding counter shall be 34 inches (865 mm) maximum above the floor or ground, measured to the higher of the fixture rim or the counter surface.

EXCEPTION: Sink and counter that is adjustable to variable heights 29 inches (735 mm) minimum and 36 inches (915 mm) maximum, provided rough-in plumbing permits connections of supply and drain pipes for sinks mounted at the height of 29 inches (735 mm).

1002.12.4.3 Sink Bowl. The depth of a sink bowl shall be 6½ inches (165 mm) maximum. Multiple-compartment sinks shall have at least one compartment complying with this requirement.

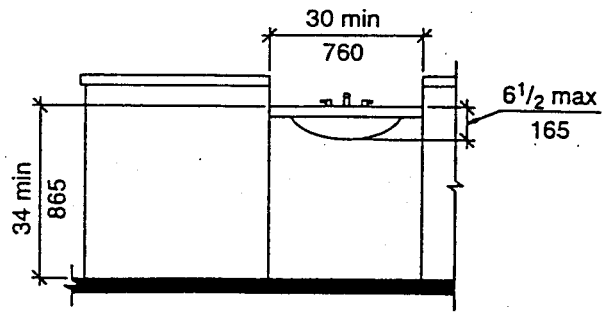


Fig. 1002.12.4
Kitchen Sink

1002.12.4.4 Faucets. Faucets shall comply with Section 309.

1002.12.4.5 Exposed Pipes and Surfaces. Water supply and drain pipes under sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under sinks.

1002.12.5 Kitchen Storage. Cabinets shall have a clear floor or ground space complying with Section 305.3, positioned for parallel or forward approach.

1002.12.6 Appliances. Where provided, kitchen appliances shall comply with Sections 1002.12.6.1 through 1002.12.6.7.

1002.12.6.1 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305.3 positioned for parallel or forward approach shall be provided at each kitchen appliance. Clear floor or ground spaces shall be permitted to overlap.

1002.12.6.2 Operable Parts. All appliance controls shall comply with Section 309.

1002.12.6.3 Dishwasher. Clear floor or ground space shall be positioned adjacent to the dishwasher door. The dishwasher door in the open position shall not obstruct the clear floor or ground space for the dishwasher or the sink.

1002.12.6.4 Range or Cooktop. Where a forward approach clear floor or ground space is provided, the clear floor or ground space shall provide knee and toe clearance complying with Section 306. Where knee and toe space is provided, the underside of the range or cooktop shall be insulated or otherwise configured to prevent burns, abrasions, or electrical shock. The location

of controls shall not require reaching across burners.

1002.12.6.5 Oven. For side-opening ovens, the door latch side shall be next to a countertop. Ovens shall have controls on front panels, on either side of the door.

1002.12.6.6 Refrigerator/Freezer. Combination refrigerators and freezers shall have at least 50 percent of the freezer space 54 inches (1370 mm) maximum above the floor or ground. The clear floor or ground space shall be positioned for a parallel approach to the space dedicated to a refrigerator/freezer with the centerline of the clear floor or ground space offset 24 inches (610 mm) maximum from the centerline of the dedicated space.

1002.12.6.7 Trash Compactor. A clear floor or ground space positioned for parallel or forward approach shall be provided.

1002.13 Windows. Where operable windows are provided, at least one window in each sleeping, living, or dining space shall have operable parts complying with Section 1002.9. Each required operable window shall have operable parts complying with Section 1002.9.

1002.14 Storage Facilities. Where storage facilities are provided, they shall comply with Sections 1002.14.1 through 1002.14.3.

EXCEPTION: Kitchen cabinets shall comply with Section 1002.12.5.

1002.14.1 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305.3, positioned for either parallel or forward approach, shall be provided at each storage facility.

1002.14.2 Height. A portion of the storage area of each storage facility shall accommodate a forward reach or side reach complying with Section 308.

1002.14.3 Operable Parts. Operable parts on storage facilities shall comply with Section 309.

1003 Type B Dwelling Units

1003.1 General. Type B dwelling units shall comply with Section 1003.

1003.2 Primary Entrance. The accessible primary entrance shall be on an accessible route from public and common areas. The primary entrance shall not be to a bedroom.

1003.3 Accessible Route. Accessible routes within Type B dwelling units shall comply with Sections 1003.3.1 and 1003.3.2.

EXCEPTION: One of the following is not required to be on an accessible route:

1. A raised floor area in a portion of a living, dining, or sleeping room; or
2. A sunken floor area in a portion of a living, dining, or sleeping room; or
3. A mezzanine that does not have plumbing fixtures or an enclosed habitable space.

1003.3.1 Location. At least one accessible route shall connect all spaces and elements which are a part of the dwelling unit. Where only one accessible route is provided, it shall not pass through restrooms, closets, or similar spaces.

1003.3.2 Components. Accessible routes shall consist of one or more of the following elements: walking surfaces with a slope not steeper than 1:20, doorways, ramps, elevators, and wheelchair (platform) lifts.

1003.4 Walking Surfaces. Walking surfaces that are part of an accessible route shall comply with Sections 1003.4.1 and 1003.4.2.

1003.4.1 Width. Clear width of an accessible route shall comply with Section 403.5.

1003.4.2 Changes in Level. Changes in level shall comply with Section 303.

EXCEPTION: Where exterior deck, patio or balcony surface materials are impervious, the finished exterior impervious surface shall be 4 inches (100 mm) maximum below the finished floor level of the adjacent interior spaces of the dwelling unit.

1003.5 Doors and Doorways. Doors and doorways shall comply with Sections 1003.5.1 and 1003.5.2.

1003.5.1 Primary Entrance Door. The primary entrance door to the dwelling unit shall comply with Section 404.

EXCEPTION: Maneuvering clearances required by Section 404.2.4 shall not be required on the dwelling unit side of the primary entrance door.

1003.5.2 User Passage Doorways. Doorways intended for user passage shall comply with Sections 1003.5.2.1 through 1003.5.2.4.

1003.5.2.1 Clear Width. Doorways shall have a clear opening of 31³/₄ inches (810 mm) minimum. Clear opening of swinging

doors shall be measured between the face of the door and stop, with the door open 90 degrees.

1003.5.2.2 Thresholds. Thresholds shall comply with Section 303.

EXCEPTION: Thresholds at exterior sliding doors shall be permitted to be $\frac{3}{4}$ inch (19 mm) high maximum provided they are beveled with a slope not steeper than 1:2.

1003.5.2.3 Automatic Doors. Automatic doors shall comply with Section 404.3.

1003.5.2.4 Double Leaf Doorways. Where an inactive leaf with operable parts more than 48 inches (1220 mm) above the floor or ground is provided, the active leaf shall provide the clearance required by Section 1003.5.2.1.

1003.6 Ramps. Ramps shall comply with Section 405.

1003.7 Private Residence Elevators. Elevators shall comply with Section 1002.7.

EXCEPTION: Elevators complying with Section 407.

1003.8 Wheelchair (Platform) Lifts. Wheelchair (platform) lifts shall comply with ASME/ANSI A17.1 and with Sections 305 and 309.

1003.9 Operable Parts. Lighting controls, electrical receptacles, environmental controls, and user controls for security or intercom systems shall comply with Sections 309.2 and 309.3.

EXCEPTIONS:

1. Electrical receptacles serving a dedicated use.
2. Appliance mounted controls or switches.
3. A single outlet where all of the following conditions are met:
 - (a) the outlet is above a length of countertop that is uninterrupted by a sink or appliance; and
 - (b) at least one receptacle complying with Section 1003.9 is provided for that length of countertop; and
 - (c) all other receptacles provided for that length of countertop comply with Section 1003.9.
4. Floor electrical receptacles.
5. Plumbing fixture controls.
6. FVAC diffusers.
7. Ceiling fan mounted controls.

1003.10 Laundry Equipment. Washing machines and clothes dryers shall comply with Section 1003.10.1.

1003.10.1 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305.3, positioned for parallel approach and centered on the appliance shall be provided.

1003.11 Toilet and Bathing Fixtures. Toilet and bathing fixtures shall comply with Sections 1003.11.1 through 1003.11.3.

EXCEPTION: Fixtures on levels not required to be accessible.

1003.11.1 Clear Floor or Ground Space. Clear floor or ground space required by Section 1003.11.3.1 or 1003.11.3.2 shall comply with Section 305.3 and Sections 1003.11.1.1 through 1003.11.1.3.

1003.11.1.1 Doors. Doors shall not swing into the clear floor or ground space for any fixture.

EXCEPTION: Where a clear floor or ground space complying with Section 305.3, excluding knee and toe clearances under elements, is provided within the room, beyond the arc of the door swing.

1003.11.1.2 Knee and Toe Clearance. Clear floor or ground space shall be permitted to include knee and toe clearances complying with Section 306.

1003.11.1.3 Overlap. Clear floor or ground spaces shall be permitted to overlap.

1003.11.2 Grab Bar Reinforcement. Reinforcement shall be provided for future installation of grab bars and shower seats at water closets, bathtubs, and shower compartments. Where walls are to permit installation of grab bars and seats complying with Section 604.5, 607.4, or 610, reinforcement shall be provided for future installation of grab bars meeting those requirements.

EXCEPTION: Reinforcement is not required in a room containing only a lavatory and a water closet, provided that the room does not contain the only lavatory or water closet on the accessible level of the dwelling unit.

1003.11.3 Bathroom Fixtures. Bathroom fixtures shall comply with either Section 1003.11.3.1 (Option A) or Section 1003.11.3.2 (Option B).

1003.11.3.1 Option A. Each fixture provided shall comply with Sections 1003.11.3.1.1 through 1003.11.3.1.3.

EXCEPTION: A lavatory and a water closet in a room containing only a lavatory and water closet, provided that the room does not contain the only lavatory or water closet on the accessible level of the dwelling unit.

1003.11.3.1.1 Lavatory. A clear floor or ground space complying with Section 305.3, positioned for a parallel approach and centered on the lavatory shall be provided.

EXCEPTIONS:

1. A lavatory complying with Section 606.
2. Cabinetry shall be permitted to be added under the lavatory, provided such cabinetry can be removed without removal or replacement of the lavatory, and provided the finish floor extends under such cabinetry.

1003.11.3.1.2 Water Closet. The lateral distance from the centerline of the water closet to a bathtub, or lavatory shall be 18 inches (455 mm) minimum on one side and 15 inches (380 mm) minimum on the other side. Where the water closet is adjacent to the wall the lateral distance from the centerline of the water closet to the wall shall be 18 inches (455 mm) and 15 inches (380 mm) minimum to a lavatory or bathtub. The water closet shall be positioned to allow for future installation of a grab bar on the side with 18 inches (455 mm) clearance. Clearance areas around the water closet shall comply with Section 1003.11.3.1.2.1, 1003.11.3.1.2.2, or 1003.11.3.1.2.3.

1003.11.3.1.2.1 Parallel Approach. Fifty-six inches (1420 mm) minimum shall be provided measured from the wall behind the water closet. Forty-eight inches (1220 mm) minimum shall be provided measured from a point 18 inches (455 mm) from the centerline of the water closet on the side designated for future installation of grab bars. Vanities or lavatories on the wall behind the water closet are permitted to overlap the clear floor or ground space.

1003.11.3.1.2.2 Forward Approach. Sixty-six inches (1675

mm) minimum shall be provided measured from the wall behind the water closet. Forty-eight inches (1220 mm) minimum shall be provided measured from a point 18 inches (455 mm) from the centerline of the water closet on the side designated for future installation of grab bars. Vanities or lavatories on the wall behind the water closet are permitted to overlap the clear floor or ground space.

1003.11.3.1.2.3 Parallel or Forward Approach. Fifty-six inches (1420 mm) minimum shall be provided measured from the wall behind the water closet. Forty-two inches (1065 mm) shall be provided measured from the centerline of the water closet.

1003.11.3.1.3 Bathing Facilities. Where a bathtub or shower compartment is provided it shall conform with Section 1003.11.3.1.3.1, 1003.11.3.1.3.2, or 1003.11.3.1.3.3.

1003.11.3.1.3.1 Parallel Approach Bathtubs. Clearance in front of bathtubs with a parallel approach shall be 30 inches (760 mm) wide minimum by 60 inches (1525 mm) long minimum. A lavatory shall be permitted at the foot end of the bathtub if a 30 inch (760 mm) wide minimum by 48 inch (760 mm) by 1220 mm) long minimum clearance in front of the bathtub is provided.

EXCEPTION: Lavatories complying with Section 606 shall be permitted in the clearance.

1003.11.3.1.3.2 Forward Approach Bathtubs. Clearance in front of bathtubs with a forward approach shall be 48 inches (1220 mm) wide minimum by 60 inches (1525 mm) long minimum. A water closet shall be permitted in the clearance at the foot end of the bathtub.

1003.11.3.1.3.3 Shower Compartment. If a shower compartment is the only bathing facility, the shower compartment shall be 36 inches (915 mm) minimum by 36 inches (915 mm) minimum. Rein-

forcing for shower seat is not required in shower compartments larger than 36 inches (915 mm) by 36 inches (915 mm). Clearance of 30 inches (760 mm) wide minimum, measured from the face of the shower compartment, by 48 inches (1220 mm) deep minimum, measured from the shower head wall shall be provided.

1003.11.3.2 Option B. One of each type of fixture provided shall comply with Sections 1003.11.3.2.1 through 1003.11.3.2.3. The accessible fixtures shall be in a single toilet/bathing area, such that travel between fixtures does not require travel through other parts of the dwelling unit.

1003.11.3.2.1 Lavatory. Lavatories shall comply with Sections 1003.11.3.2.1.1 through 1003.11.3.2.1.3.

1003.11.3.2.1.1 Clear Floor or Ground Space. A clear floor or ground space complying with Section 305.3, positioned for a parallel approach shall be provided.

EXCEPTION: A lavatory complying with Section 606.

1003.11.3.2.1.2 Position. The centerline of the lavatory shall align with the centerline of the clear floor or ground space.

1003.11.3.2.1.3 Height. The front of the lavatory shall be 34 inches (230 mm) maximum above the floor or ground, measured to the higher of the fixture rim or counter surface.

1003.11.3.2.2 Water Closet. The water closet shall comply with Section 1003.11.3.1.2.

1003.11.3.2.3 Bathing Facilities. Where either a bathtub or shower compartment is provided, it shall conform with Section 1003.11.3.2.3.1 or 1003.11.3.2.3.2.

1003.11.3.2.3.1 Bathtub. Clearance in front of bathtubs shall be 30 inches (760 mm) wide minimum by 48 inches (1220 mm) long minimum measured from the foot end of the bathtub.

1003.11.3.2.3.2 Shower Compartment. If a shower compartment is the only bathing facility the shower compartment shall have minimum dimensions of 36 inches (916 mm) minimum by 36 inches (915 mm) minimum. Reinforcing for shower seat is not required in shower compartments larger than 36 inches (915 mm) by 36 inches (915 mm). Clearance 30 inches (760 mm) minimum, measured from the face of the shower compartment, by 48 inches (1220 mm) minimum, measured from the shower head wall shall be provided.

1003.12 Kitchens. Kitchens shall comply with Sections 1003.12.1 and 1003.12.2.

1003.12.1 Clearance. Clearance complying with Sections 1003.12.1.1 and 1003.12.1.2 shall be provided.

1003.12.1.1 Galley. Clearance between all opposing base cabinets, counter tops, appliances, or walls within kitchen work areas shall be 40 inches (1015 mm) minimum.

1003.12.1.2 U-Shaped. In kitchens with counters, appliances, or cabinets on three contiguous sides, clearance between all opposing base cabinets, countertops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

1003.12.2 Clear Floor or Ground Space. Clear floor or ground space at appliances shall comply with Section 305.3 and Sections 1003.12.2.1 through 1003.12.2.6.

1003.12.2.1 Sink. The sink shall comply with Sections 1003.12.2.1.1 and 1003.12.2.1.2.

1003.12.2.1.1 Approach. Clear floor or ground space shall be positioned for a parallel approach.

EXCEPTION: Sink complying with Section 606.

1003.12.2.1.2 Position. The centerline of the sink shall align with the centerline of the clear floor or ground space.

1003.12.2.2 Dishwasher. Clear floor or ground space shall be positioned for parallel or forward approach. Clear floor or ground space shall be positioned beyond the swing of the dishwasher door.

1003.12.2.3 Range or Cooktop. Clear floor or ground space shall be positioned for parallel approach.

EXCEPTION: Where a forward approach clear floor or ground space is provided, the clear floor or ground space shall provide knee and toe clearance complying with Section 306. Where knee and toe space is provided, the underside of the range or cooktop shall be insulated or otherwise configured to prevent burns, abrasions, or electrical shock.

1003.12.2.4 Oven. Clear floor or ground space shall be positioned for parallel or forward approach.

1003.12.2.5 Refrigerator/Freezer. Clear floor or ground space shall be positioned for parallel or forward approach.

1003.12.2.6 Trash Compactor. Clear floor or ground space shall be positioned for parallel or forward approach.

1004 Dwelling Units with Accessible Communication Features

1004.1 General. Dwelling units required to have accessible communication features shall comply with Section 1004.

1004.2 Dwelling Unit Smoke Detection. Where provided, dwelling unit smoke detection shall include audible notification complying with NFPA 72.

1004.3 Building Fire Alarm System. Where a building fire alarm system is provided, the system wiring shall be extended to a point within the dwelling unit in the vicinity of the dwelling unit smoke detection system.

1004.4 Visible Notification Appliances. Visible notification appliances, where provided within the dwelling unit as part of the dwelling unit smoke detection system or the building fire alarm system, shall comply with Sections 1004.4.1 through 1004.4.4.

1004.4.1 Appliance. Visible notification appliance shall comply with NFPA 72.

1004.4.2 Activation. All visible notification appliances provided within the dwelling unit for smoke detection notification shall be activated upon smoke detection. All visible notification appliances provided within the dwelling unit for building fire alarm notification shall be activated

upon activation of the building fire alarm in the portion of the building containing the dwelling unit.

1004.4.3 Interconnection. The same visible notification appliances shall be permitted to provide notification of dwelling unit smoke detection and building fire alarm activation.

1004.4.4 Prohibited Use. Visible notification appliances used to indicate dwelling unit smoke detection or building fire alarm activation shall not be used for any other purpose within the dwelling unit.

1004.5 Dwelling Unit Primary Entrance. Communication features shall be provided at the dwelling unit primary entrance complying with Sections 1004.5.1 and 1004.5.2.

1004.5.1 Notification. A hard-wired electric doorbell shall be provided. A button or switch shall be provided on the public side of the dwelling unit primary entrance. Activation of the button or switch shall initiate an audible tone within the dwelling unit.

1004.5.2 Identification. A means for visually identifying a visitor without opening the dwelling unit entry door shall be provided. Peepholes, where used, shall provide a minimum 180 degree range of view.

1004.6 Site, Building, or Floor Entrance. Where a system permitting voice communication between a visitor and the occupant of the dwelling unit is provided at a location other than the dwelling unit entry door, the system shall comply with Sections 1004.6.1 and 1004.6.2.

1004.6.1 Public or Common-Use Interface. The public or common-use system interface shall include the capability of supporting voice and TTY communication with the dwelling unit interface.

1004.6.2 Dwelling Unit Interface. The dwelling unit system interface shall include a telephone jack capable of supporting voice and TTY communication with the public or common-use system interface.

1004.7 Closed-Circuit Communication Systems. Where a closed-circuit communication system is provided, the public or common-use system interface shall comply with Section 1004.6.1, and the dwelling unit system interface in units required to have accessible communication features shall comply with Section 1004.6.2.

Chapter 4. Accessible Routes

401 General

401.1 Scope. Accessible routes required by the scoping provisions adopted by the administrative authority shall comply with the applicable provisions of this chapter.

402 Accessible Routes

402.1 General. Accessible routes shall comply with Section 402.

402.2 Components. Accessible routes shall consist of one or more of the following components: Walking surfaces with a slope not steeper than 1:20, doorways, ramps, curb ramps, elevators, and wheelchair (platform) lifts. All components of an accessible route shall comply with the applicable portions of this standard.

403 Walking Surfaces

403.1 General. Walking surfaces that are a part of an accessible route shall comply with Section 403.

403.2 Floor or Ground Surface. Floor or ground surfaces shall comply with Section 302.

403.3 Slope. The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of a walking surface shall not be steeper than 1:48.

403.4 Changes in Level. Changes in level shall comply with Section 303.

403.5 Clear Width. Clear width of an accessible route shall comply with Table 403.5.

Table 403.5—Clear Width of an Accessible Route

Segment Length	Minimum Segment Width
≤ 24 inches (610 mm)	32 inches (815 mm) ¹
> 24 inches (610 mm)	36 inches (915 mm)

¹Consecutive segments of 32 inches (815 mm) wide must be separated by a route segment 48 inches (1220 mm) long minimum and 36 inches (915 mm) wide minimum.

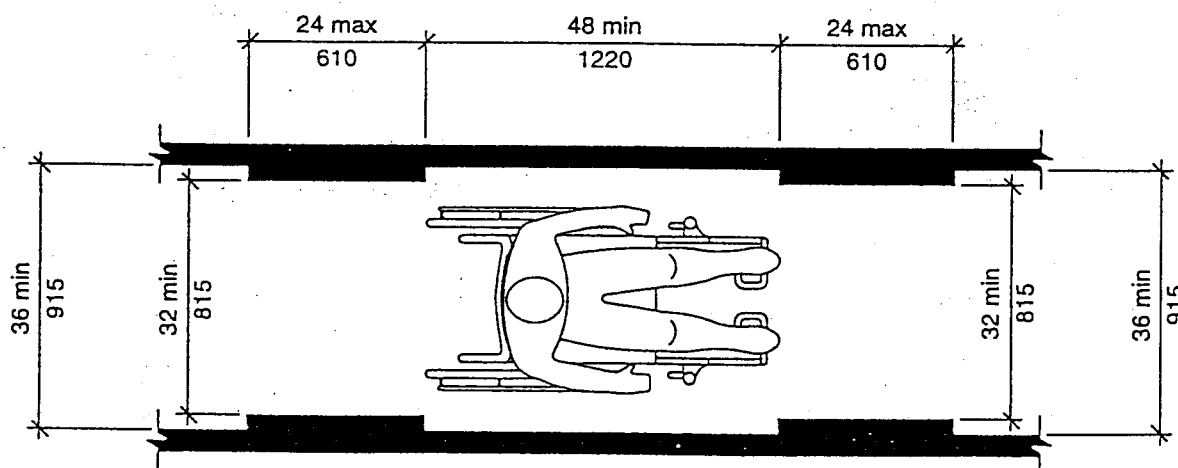


Fig. 403.5
Clear Width of an Accessible Route

AN ORDINANCE AMENDING THE 1989 CABO ONE- AND TWO-FAMILY DWELLING CODE

(Visitability)

WHEREAS, the Urbana City Council finds the following:

That persons with disabilities and their immediate families are often isolated in their homes because most homes contain barriers to persons with disabilities; and

That persons with disabilities and their immediate families often experience difficulty finding suitable, affordable housing; and

That there are features in construction that can make new houses visitable, and in many cases livable, for persons with disabilities; and

WHEREAS, the Urbana City Council finds that it is appropriate to implement visitable construction standards for single and two-family construction in projects where the City participates; and

WHEREAS, the Urbana City Council finds that it is appropriate to promulgate standards that may be less restrictive than the Illinois Accessibility Code and the accessibility requirements contained in the City of Urbana Building Codes for larger construction projects.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF URBANA, ILLINOIS, as follows:

Section 1. That the City of Urbana Building Code is hereby amended as follows:

The 1989 CABO One- And Two-Family Dwelling Code as previously adopted by the Urbana City Council is hereby amended to include Appendix F entitled "Visitability Standards" and to read as follows:

Section F-101 Scope

The provisions of this appendix shall control the design of visitability features in new construction of one and two family dwellings funded with financial assistance originating from or flowing through the City of Urbana and shall supersede other requirements of this code.

Section F-102 Definitions

Public Funds means funds subject to the control or regulation of the City of Urbana, Illinois or any of its officers in their official capacity, except pension.

Financial Assistance means providing public funds intended to be used for paying for labor or materials in the construction of a new single-family or two-family structure. It also includes use of public funds to acquire the parcel of land or the

donation of the parcel of land owned by the City, on which a new single-family or two-family structure is to be constructed. Such financial assistance shall not include infrastructure, sanitary or storm sewer or other public infrastructure improvements.

Section F-103 Applicability

For the purpose of this section "new construction" shall include the construction of a new single family or duplex dwelling on a vacant lot. It shall not include additions to or remodeling of existing buildings. Such financial assistance shall include funds only used for the purchase of land or the donation of land from the City used to construct structures governed by this ordinance. It shall also include funds used for the actual construction of the governed structures, but shall not include infrastructure installation such as sanitary or storm sewers, streets or other costs.

If public funds are utilized to upgrade a particular element(s) of a structure for hazard mitigation, such as higher wind resistance, tornado shelters or other similar features, it shall not in and of itself, require the building to meet the requirements of this section.

Alternate methods to the specific clearance to grade and slope requirements of sections R 301.3 and R304.2 respectively, may be approved by the code official to achieve the requirements of this section.

Section F-104 Visitability Features

F-104.1 No step entrance: There shall be at least one entrance (front, side, rear, or through the garage) which has no steps and is served by walks and/or ramps meeting the specifications of section F-1034.2.

F-104.2 Visitable Route: The required no step entrance shall be accessed via a visitable route that shall meet the following criteria.

F-104.2.1 Grade: Sidewalks and ramps that are part of a visitable route shall have the maximum slope and length shown in Table Number F-1034.1

Table F-104.1 Max Grade and length for visitable route elements

Element Grade Length

Sidewalks 1/20 N/L

Type 1 Ramp 1/8 5' (Max 7.5" rise)

Type 2 Ramp 1/10 12' (Max 14.5" rise)

Type 3 Ramp 1/12 30' (between landings)

F-104.2.2 Width: The visitable route shall have a minimum clear width of 36 inches.

F-104.2.3 Landings: Landings in a visitable route shall be not less than 36" by 36"

clear or shall meet the requirements of Section 400. Illustration B, Figures 7 or 25 of the Illinois Accessibility Code (4/24/97) whichever is greater.

F-104.2.4 Surfaces: Surfaces shall be non-slip.

F-104.2.5 Drainage cross slope: Cross slope shall be no greater than 1/50.

F-104.3 Doors/Opening: All doors or openings shall have a minimum net clear width of 32".

Exception: Doors to closets with an area of 15 square feet shall be excluded from this requirement.

F-104.4 Bathroom Walls: Each bathroom or other room containing a toilet, bathtub, shower stall, or shower seat shall have reinforcing in the walls to allow for future installation of grab bars around those fixtures.

F-104.5 Corridors: Corridors shall be at least 36" in width.

F-104.6 Environmental Controls

F-104.6.1 Wall Electrical Outlets: Wall electrical outlets shall be mounted at least 15 inches above the finished floor.

F-104.6.2 Light switches, thermostats and other controls: Light switches, thermostats and other control devices shall be mounted no higher than 48 inches above the finished floor.

Section F-105 Waivers

In cases where site conditions or other restrictions warrant, waivers from this code may be granted by the Urbana City Council after consideration and recommendation of the Building Code Board of Appeals (Board). Said waivers will be forwarded to the City Council only if the Board recommends their approval by majority vote of the members present and voting. If the Board does not reach a favorable recommendation, the waiver is denied and the Board's findings will be the final administrative decision on such a waiver. The City Council shall have the authority to grant or deny waiver requests that the Board forwards.

Section 2. The City Clerk is directed to publish this Ordinance in pamphlet form by authority of the corporate authorities, and this Ordinance shall be in full force and effect from and after its passage and publication in accordance with Section 1-2-4 of the Illinois Municipal Code.

Section 3. New Construction. The provisions of this ordinance shall not apply to:

any building for which a building permit has been issued prior to the date of its passage by the Urbana City Council; and

any building for which a building permit has been applied for prior to the date of its

passage by the Urbana City Council if a building permit is subsequently issued on the basis of such application within six (6) months of the date of the original application; and

any building to be constructed on the following described tract, because requests for development proposals for such tract have already been issued prior to the passage of this ordinance:

TRACT VII

A part of the Southeast Quarter of Section 16, Township 19 North, Range 9 East of the Third Principal Meridian, Champaign County, Illinois, more particularly described as follows:

All of the following described tract except the North 90 feet of even width thereof:

Beginning on the East line of the Southeast Quarter of said Section 16 at a point 19.04 feet Northerly of the Southeast corner of said section; thence North 89(-57'-55" West 120.00 feet to the Southeast corner of Lot 8 of Weller's Lincolnwood ù Third Section as recorded in the Office of the Recorder of Champaign County in Plat Book Y at page 147; thence North 0(-02'-05" East, the meridian being the same as used for said subdivision, 180.00 feet along the boundary of said subdivision; thence North 89(-57'-53" West 9.14 feet to the Southeast corner of Lot 7 of said subdivision; thence North 0(-02'-05" East 300.67 feet to a platted bend point; thence North 6(-23'-53" West 34.35 feet to the Southeast corner of Lot 2 of said subdivision; thence North 13(-51'-30" East 42.04 feet to the Southwest corner of Lot 1 of said subdivision; thence South 89(-35'-11" East along the South line of said Lot 1 and the Eastward extension of said lot line 126.61 feet to the East line of the Southeast Quarter of said Section 16; thence South 0(-25'-51" West 554.8 feet to the Point of Beginning, containing 1.3568 acres, more or less, all situated in the County of Champaign, State of Illinois.

Together with the following described adjacent public right-of-way which is by operation of law, automatically annexed with the adoption of this annexation ordinance pertaining to this parcel:

A portion of E. Florida Avenue Right-of-way encompassing 0.008 acres (364.39 sq. ft.), more or less.

TRACT IX

A part of the Southwest Quarter of Section 15, Township 19 North, Range 9 East of the Third Principal Meridian, Champaign County, Illinois, more particularly described as follows:

Commencing at the Southeast corner of the West Half of said Southwest Quarter; thence, N 0(-43'-10" W, along the East line of said West Half, 19.04 feet, to an old fence line as described in a document filed in Book 768 at Page 371 in the Office of the Recorder, Champaign County, Illinois, said point also being the Point of Beginning; thence, N 89(-37'-47" W, along said fence line, 581.67 feet; thence, N 0

(-22'-13" E, 215.00 feet; thence, N 39(-39'-30" W, 224.96 feet; thence, N 0(-04'-19" E, 175.00 feet, to the South line of Weller's Lincolnwood Second Section; thence, S 89(-55'-41" E, along said South line, 568.33 feet, to the Southeast corner of Lot 160 of Weller's Lincolnwood Second Section; thence, N 0(-28'-31" E, along the East line of said Lot 160, 38.39 feet; thence, S 89(-31'-29" E, along the South line of Weller's Lincolnwood Second Section, 160.00 feet, to the Southeast corner of Weller's Lincolnwood Second Section, said point also being on the East line of the West Half of the Southwest Quarter of said Section 15; thence, S 0(28'-57" E, 603.07 feet to the Point of Beginning, containing 8.554 acres, more or less, all situated in Champaign County, Illinois.

TRACT X

A part of the Southwest Quarter of Section 15, Township 19 North, Range 9 East of the Third Principal Meridian, Champaign County, Illinois, more particularly described as follows:

Commencing at the Southwest corner of said Section 15; thence, N 0(-24'-51" E, along the West line of said Southwest Quarter 19.04 feet, to an old fence line, as described in a document filed in Book 768 at Page 371 in the Office of the Recorder, Champaign County, Illinois, said point being the Point of Beginning; thence, continuing N 0(-24'-51" E, along said West line, 559.15 feet, to the South line of Weller's Lincolnwood Second Section, extended; thence, S 89(-55'-41" E, along said South line, 594.98 feet; thence, S 0(-04'-19" W, 175.00, feet; thence, S 39(-39'-30" E. 224.96 feet; thence, S 0(-22'-13" W, 215.00 feet, to an old fence line, as described in a document filed in Book 768 at Page 371 in the Office of the Recorder, Champaign County, Illinois; thence, N 89(-37'-47" W, along said fence line, 741.00 feet, to the Point of Beginning, containing 8.6711 acres, more or less, all situated in the County of Champaign, State of Illinois.

Provided, however, after any of the buildings described in this Section have been initially constructed, thereafter such buildings are no longer not subject to the provisions of this ordinance.

PASSED by the City Council this _____ day of _____,
_____.

AYES:

NAYS:

ABSTAINS:

Phyllis D. Clark, City Clerk

APPROVED by the Mayor this _____ day of _____,
_____.

Georgia Law

A circle of mutual help:

- 1992, Atlanta GA advocates achieve City Ordinance
- 1998, Austin TX advocates achieve similar Ordinance
- 1999, Texas advocates expand the Austin Ordinance into statewide law
- 2000, Georgia advocates replicate Texas law!!

May the circle keep on growing.

**Georgia Single-Family Basic Access Bill
Signed into law by Governor Roy Barnes April 28, 2000**

SENATE BILL 443 By: Senators Fort of the 39th and Walker of the 22nd

A BILL TO BE ENTITLED AN ACT

1- 1 To amend Article 3 of Chapter 3 of Title 8 of the Official
1- 2 Code of Georgia Annotated, relating to the State Office of
1- 3 Housing, so as to provide that single family affordable
1- 4 housing constructed with state or federal funds awarded by
1- 5 the State Office of Housing shall contain certain features
1- 6 to make such housing more accessible to persons with
1- 7 mobility impairments; to authorize the State Office of
1- 8 Housing to grant certain waivers; to provide for an
1- 9 effective date; to repeal conflicting laws; and for other
1-10 purposes.
1-11 BE IT ENACTED BY THE GENERAL ASSEMBLY OF GEORGIA:
1-12 SECTION 1.
1-13 Article 3 of Chapter 3 of Title 8 of the Official Code of
1-14 Georgia Annotated, relating to the State Office of Housing,
1-15 is amended by adding at the end thereof a new Code Section
1-16 8-3-172 to read as follows:
1-17 "8-3-172
1-18 (a) The State Office of Housing shall award state or
1-19 federal funds to construct single family affordable
1-20 housing for individuals and families of low and very low
1-21 income only to persons whose application indicates that
1-22 the affordable housing that is the subject of the
1-23 application and for which a building permit is issued on
1-24 or after July 1, 2000, will be constructed so that:
1-25 (1) At least one entrance door, whether located at the
1-26 front, side, or back of the building:
1-27 (A) Is on an accessible route served by a ramp or
1-28 no-step entrance; and
1-29 (B) Has at least a standard 36 inch door;
1-30

(2) On the first floor of the building:

2- 1 (A) Each interior door is at least a standard 32 inch
2- 2 door, unless the door provides access only to a closet
2- 3 of less than 15 square feet in area
2- 4 (B) Each hallway has a width of at least 36 inches and
2- 5 is level, with ramped or beveled changes at each door
2- 6 threshold;
2- 7 (C) Each bathroom wall is reinforced for potential
2- 8 installation of grab bars;
2- 9 (D) Each electrical panel or breaker box, light
2-10 switch, or thermostat is not higher than 48 inches
2-11 above the floor; and
2-12 (E) Each electrical plug or other receptacle is at
2-13 least 15 inches above the floor; and
2-14 (3) The main breaker box is located inside the building
2-15 on the first floor.
2-16 (b) A person who builds single family affordable housing
2-17 to which this Code section applies may obtain a waiver
2-18 from the State Office of Housing of the requirement
2-19 described in subparagraph (a)(1)(A) of this Code section
2-20 if the cost of grading and other improvements to the
2-21 terrain which are required in order to meet the
2-22 requirement of such subparagraph is unreasonably
2-23 expensive."
2-24 SECTION 2.
2-25 This Act shall become effective on July 1, 2000.
2-26 SECTION 3.
2-27 All laws and parts of laws in conflict with this Act are
2-28 repealed.

Texas Ordinance

S.B. No. 623

AN ACT relating to certain requirements applicable to the construction of affordable housing.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Subchapter X, Chapter 2306, Government Code, is amended by adding Section 2306.514 to read as follows:

Sec. 2306.514. CONSTRUCTION REQUIREMENTS FOR SINGLE FAMILY AFFORDABLE HOUSING.

(a) If a person is awarded state or federal funds by the department to construct single family affordable housing for individuals and families of low and very low income, the affordable housing identified on the person's funding application must be constructed so that:

(1) at least one entrance door, whether located at the front, side, or back of the building:

(A) is on an accessible route served by a ramp or no-step entrance; and

(2) on the first floor of the building:

(A) each interior door is at least a standard 32-inch door, unless the door provides access only to a closet of less than 15 square feet in area;

(B) each hallway has a width of at least 36 inches and is level, with ramped or beveled changes at each door threshold;

(C) each bathroom wall is reinforced for potential installation of grab bars;

(D) each electrical panel or breaker box, light switch, or thermostat is not higher than 48 inches above the floor; and

(E) each electrical plug or other receptacle is at least 15 inches above the floor; and

(3) each breaker box is located inside the building on the first floor.

(b) A person who builds single family affordable housing to which this section applies may obtain a waiver from the department of the requirement described by Subsection (a)(1)(A) if the cost of grading the terrain to meet the requirement is prohibitively expensive.

SECTION 2. The change in law made by this Act applies only to single family affordable housing for which new construction begins on or after the effective date

of this Act. Affordable housing for which new construction begins before the effective date of this Act is covered by the law in effect when the construction began, and the former law is continued in effect for that purpose.

SECTION 3. This Act takes effect September 1, 1999.

SECTION 4. The importance of this legislation and the crowded condition of the calendars in both houses create an emergency and an imperative public necessity that the constitutional rule requiring bills to be read on three several days in each house be suspended, and this rule is hereby suspended.

President of the Senate

Speaker of the House

I hereby certify that S.B. No. 623 passed the Senate on May 3, 1999, by the following vote: Yeas 30, Nays 0; and that the Senate concurred in House amendments on May 28, 1999, by the following vote: Yeas 30, Nays 0.

Secretary of the Senate

I hereby certify that S.B. No. 623 passed the House, with amendments, on May 26, 1999, by the following vote: Yeas 123, Nays 21, one present not voting.

Chief Clerk of the House

Approved:

Date

Governor

NO. 88. AN ACT RELATING TO RESIDENTIAL HOUSING STANDARDS.

(H.612)

It is hereby enacted by the General Assembly of the State of Vermont:

Sec. 1. LEGISLATIVE FINDINGS

The general assembly finds that:

(1) People over 65 are the fastest growing sector of the American population and life expectancies continue to increase. Whether due to injury or age, there is a great likelihood for each of us, at some time in our life, to suffer a temporary or permanent condition that limits mobility or the ability to perform daily tasks of living.

(2) The increased cost of constructing a residence with doorways wide enough to permit wheelchair access, electrical outlets reachable by a wheelchair-bound person, and bathroom walls reinforced to permit installation of grab bars is minimal, while the costs and disruption associated with retrofitting an existing home to be minimally accessible are substantial.

(3) A residence that provides minimal accessibility offers the possibility of occupancy or visitation by a disabled person. An occupant of a home that has wide doorways and reachable outlets who becomes disabled, whether temporarily or permanently, may be able to remain at home and avoid or delay the great expense and emotional trauma of institutionalization.

Sec. 2. 21 V.S.A. § 274(c) is added to read:

(c) Unless required by federal law, any single dwelling unit of two or more stories within a building consisting of four or more dwelling units is not required to have a vertical access within the dwelling unit, provided that five percent of the dwelling units, or one unit, whichever is greater, has an accessible entrance, and all the dwelling units meet or exceed the minimum standards required in section 286 of this title.

Sec. 3. 21 V.S.A. chapter 4 is redesignated as follows:

CHAPTER 4. ACCESSIBILITY STANDARDS FOR

PUBLIC BUILDINGS AND PARKING

Subchapter 1. Public Buildings and Parking

Sec. 4. 21 V.S.A. chapter 4, subchapter 2 is added to read:

Subchapter 2. Residential Building Standards

§ 286. ACCESSIBILITY STANDARDS; RESIDENTIAL CONSTRUCTION

(a) For the purposes of this subchapter, "residential construction" means new construction of one family or multifamily dwellings. "Residential construction" shall not include a single family dwelling built by the owner for the personal occupancy of the owner and the owner's family, or the assembly or

placement of residential construction that is prefabricated or manufactured out of state.

(b) Any residential construction shall be built to comply with all the following standards:

(1) At least one first floor exterior door that is at least 36 inches wide.

(2) First floor interior doors between rooms that are at least 34 inches wide or open doorways that are at least 32 inches wide with thresholds that are level, ramped or beveled.

(3) Interior hallways that are level and at least 36 inches wide.

(4) Environmental and utility controls and outlets that are located at heights that are in compliance with standards adopted by the Vermont access board.

(5) Bathroom walls that are reinforced to permit attachment of grab bars.

(c) A violation of this section shall neither affect marketability nor create a defect in title of the residential construction.

Sec. 5. DEPARTMENT OF AGING AND DISABILITIES; VISITABLE

HOUSING INFORMATION

(a) The commissioner of aging and disabilities, in consultation with the commissioners of labor and industry and housing and community affairs and representatives from the homebuilding industry, shall prepare a pamphlet that explains the construction standards and advantages of "visitable" housing, including zero-step entries and other accessibility features, to assist potential new home buyers make informed decisions. The pamphlets shall be completed no later than December 1, 2001. For the purposes of this section, "a visitable home" is a dwelling unit that is built, at a minimum, in accordance with the provisions in 21 V.S.A. § 286(b).

(b) The department shall work with interested parties, including home builders, lending institutions, real estate brokers and consumer groups to promote and facilitate timely distribution of the pamphlets to persons purchasing or contracting for residential construction. On or before March 15, 2002, the commissioner of aging and disabilities shall report to the general assembly on the success of the efforts to distribute the pamphlets to home buyers prior to construction.

(c) The department of aging and disabilities may award incentive funds, through a competitive process, to build a model home to demonstrate the feasibility of constructing a "visitable" home.

Sec. 6. EFFECTIVE DATE

This act shall take effect on passage, except that Sec. 4 shall apply to residential construction begun after July 1, 2001.

Approved: April 27, 2000

The Florida Law

The Florida "Bathroom Bill" of 1989 is the first (and to our knowledge, only) US law to mandate a basic access feature in all new homes throughout an entire state.

(c) Single-family houses, duplexes, triplexes, condominiums, and townhouses shall provide at least one bathroom, located with maximum possible privacy, where bathrooms are provided on habitable grade levels, with a door that has a 29-inch clear opening.

A Letter From A Florida Builder

Atlantic Design
1502 NW 6th Street
Gainesville, FL 32601

January 10, 1997

Concrete Change
1371 Metropolitan Av. S.E.
Atlanta, Ga. 30316

To Whom it May Concern:

This is in reply to your letter of December 30, 1996 (copy enclosed). Atlantic Design and Construction is a licensed Florida builder. We have our own in-house design and plan service as well as interior design service. We will build approximately 55 homes this year.

Please review the 7 baths enclosed. They were taken randomly from seven homes now under construction.

1. Door cost

I called our door supplier today for an updated cost list on raised panel embossed masonite interior doors, primed one coat:

Size	Cost (include Delivery & tax)
2'0" door	\$ 59.00
2'4" door	\$ 62.00
2'6" door	\$ 64.00
2'8" door	\$ 64.00

2'0" doors are seldom used (the tub does not fit and a vanity is a real squeeze.) So 2'4" or 2'6" in the old days before handicap code we typically used 2'6". There is no cost difference between 2'6" or 2'8". Also hardware/paint are the same (less paint. More door=no change).

2. Framing cost

Plans 1, 2A, 3, 5, and 7 have no added framing costs.

Plans 2B, 4, 5 - notice the "X" on the tub wall. Here the tub is brought out 3 1/2 " so that the door and trim have enough room to clear the vanity. Note there is an added benefit of the tub faucets being easier for everyone to reach - pushed away from the toilet.

This 3 1/2" of framing costs approximately \$4.00 in material, and there is no additional labor or finishing cost. It could probably be done with scrap 2 x 4's that are 2'- 4' long at no cost.

3. Plan costs

New plans: no added cost - just something to be aware of.

Old plans: Most plans are constantly revised by clients even in "cookie cutter" type (plan 4) housing with on-site sales. Buyers constantly revise something, so there is a cost of maybe \$25-50 to move a Bedroom - Bath wall (etc.) on the plan. Usually there is no charge for this if any other change is made, such as the addition of a closet, switch sink, or cooking areas; moving or adding a window; or changing a window to a door.

I would imagine if the builders, developers, and designers were give 3-6 months notice, most of their plans would be revised anyway - so no added cost.

4. Other Benefits

- Easier for subcontractors to move equipment, etc.
- Most buyers today have older parents, friends, or relatives who may be in need of a walker, cane, or wheelchair.
- There is peace of mind knowing that if they visit, or if you try to sell or rent to someone (as above), the plan accommodates.

In my opinion, the cost for this access is \$2-30. This is an easy, cost effective change.

Please note that I have enclosed a copy of Section 4.22.2 Dors#3 (pg. 58) from the Florida Accessibility Code for Building Construction, which governs residential code.

Let me know if I can be of further assistance.

Sincerely,

Bob Reifel

BR/th

Return to Housing