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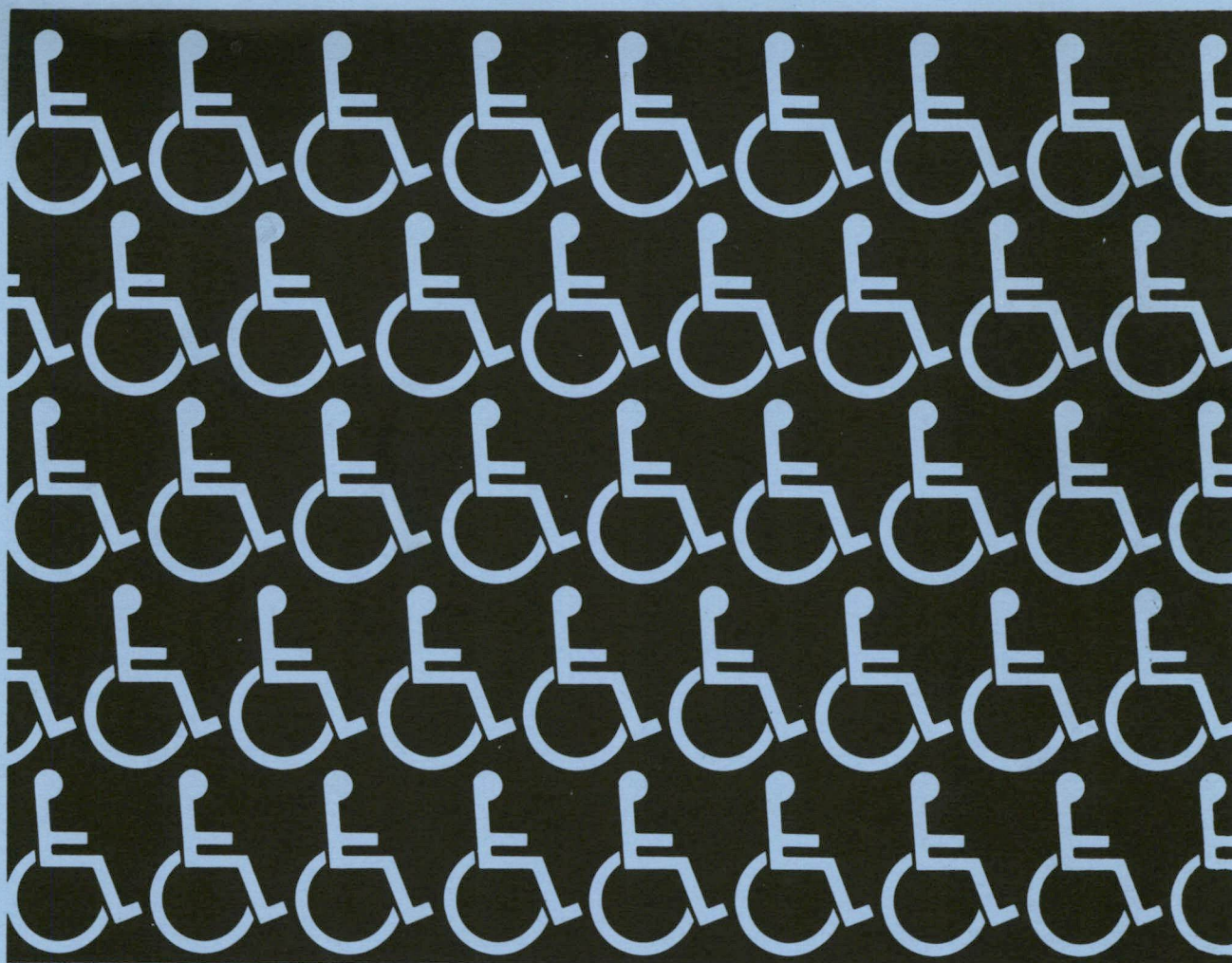
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Accessibility Guidelines for Multi-Family Housing



Regional Rehabilitation Continuing Education Program
University of Arkansas

Accessibility Guidelines Manual: assessing the accessibility of multi-family housing

**Edited by:
Jerry Doyle**

July 1983

**Regional Rehabilitation Continuing Education Program
University of Arkansas**

This project was supported in part by a Grant from the Rehabilitation Services Administration.

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Foreword

One of the major problems confronting handicapped individuals is the lack of accessible housing in the community. The severe shortage of accessible housing is particularly acute as movement accelerates toward further deinstitutionalization of handicapped individuals, and advocacy for independent living in the community for disabled persons increases.

Insufficient accessible housing poses a problem not only to the individual handicapped citizen attempting to locate accessible housing, but also to the apartment owner, the leasing agent, the realtor, the home builder and others involved in the housing industry. These persons may not be aware of accessibility requirements, or may be generally aware of some requirements, but do not have available a comprehensive review format which covers all areas.

The Region VI office of Rehabilitation Services Administration, consumers, and concerned citizens of the housing industry, recognized the need for the development of comprehensive guidelines which would address accessibility in the home, including single-family homes, townhomes, condominiums, and apartments. These guidelines are a response to the increasing sensitivity and interest evidenced in public and private sectors at the local, state, and federal levels, for accessibility guidelines that are consistent with current state-of-the-art knowledge and literature on barrier-free design.

The guidelines are primarily based on the American National Standards Institute (ANSI) standards. They offer a degree of consistency, uniformity in the approach to dealing with the lack of accessible housing in the community. They offer a degree of simplicity in their use and application by the "lay" person. They also will be beneficial to realtors, landlords, leasing agents and builders in establishing basic standards regarding accessibility and accommodations for the needs of handicapped persons. Housing designed to serve the elderly and the handicapped also serves the non-handicapped. Able-bodied people find it easier to get around, maintenance is facilitated and the safety implications of these changes will benefit the entire community.

In reviewing the guideline material, one will note that many of the accessibility changes can be accomplished at minimal, or at no cost to landlords and builders. Actually, the long-range value of functional and productive handicapped citizens living in the community, more than offsets the design and construction costs attributable to these needed changes.

It is appropriate that these accessibility guidelines be viewed as a significant effort by handicapped persons, rehabilitation professionals, and non-disabled Americans to ensure the fullest possible participation by people with disabilities in all aspects of life in their communities.

Robert L. Davis
RSA Regional Commissioner

Acknowledgements

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The authors and developers hope this manual will be used to conduct site reviews and provide information regarding accessible accommodations for physically impaired persons. Therefore, permission is given for reproduction of this material for these purposes.

For information regarding additional copies of the materials, contact the Regional Rehabilitation Continuing Education Program, P.O. Box 1358, Hot Springs, Arkansas 71901, or the National Clearinghouse for Rehabilitation Training Materials, 115 Old USDA Building, Oklahoma State University, Stillwater, Oklahoma 74074.

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Introduction

Recognizing the rights and needs of handicapped individuals to fully participate in a variety of activities, together with the problem of identifying accessible housing, the Regional Rehabilitation Continuing Education Program, in cooperation with the Rehabilitation Services Administration, Region VI Office, and interested individuals, developed these **Accessibility Guidelines**.

The **Accessibility Guidelines** is an instrument based on upon the experiences of handicapped persons, professionals working in the field, and various materials and guides for accessibility.

Prior to developing the **Guidelines** a study of the law and a variety of materials relative to accessibility and barrier removal was made by a special committee selected from rehabilitation agencies and consumer organizations. Committee members represented various levels of expertise, interest, and experiences regarding the needs of individuals with different disabling conditions. Thus, the **Guidelines** is to be considered "consensus" material since it represents a "consensus" of accommodations and conditions regarding accessible housing.

Purpose

The purpose of these guidelines is to sensitize individuals to the need for accessible facilities for the handicapped. These guidelines are **not** standards themselves, nor are they meant to supplant existing building codes. Residential property owners and managers need to be aware of existing national and local codes that impact on residential standards for handicapped persons. If you plan to build or go into major remodeling, certain building code requirements will have to be met. These may include one or more of the following national codes.

Building Codes:

B.O.C.A: Basic Building Code sponsored by Building Officials and Administrators, Inc.

N.F.P.A. 101: National Fire Protection Association sponsors this code.

S.B.I.: Standard Building Code, sponsored by Southern Building Code Congress Uniform Building Code of 1982: International Conference of Building Officials Basic Building Code, 1981.

A.N.S.I.: American National Standards Institute

National Electric Code

National Plumbing Code

Because of space limitations it is not possible to list all local codes and ordinances for disabled residents. The reader is advised to check if any municipal ordinances are applicable.

Business Incentives for Barrier Removal

If you own or operate a business, you may deduct up to \$25,000 of the cost of removing architectural barriers to the handicapped and elderly. The deduction is \$25,00 for the tax year in which the expense occurs; however, you may add amounts in excess of the \$25,000 limit to the basis of the property subject to depreciation. The \$25,000 limit also applies to a partnership and to each partner.

To deduct expenses for the removal of architectural barriers to the handicapped and elderly, the deduction must be claimed on the income tax return for the tax year in which the expenses were incurred or paid. A partnership also should make its choice to deduct these expenses on its partnership return for the first year in which the choice applies.

For additional information consult Internal Revenue Service Publication 907 (revised November, 1981) entitled **Tax Information for Handicapped and Disabled Individuals** which specifies Federal tax incentives and standards that businesses need to meet to qualify for deductions.

Section I: Parking**Comments**

1. Does the facility have parking accommodations?

Yes

No

N/A



2. Are international symbols designating parking spaces for the handicapped clearly marked at the lot entrance?

Yes

No

N/A

3. Are reserved spaces identified by the international symbol of accessibility?

Yes

No

N/A

4. Are reserved spaces for handicapped persons located on the shortest possible accessible route to housing entrance?

Yes

No

N/A

Section I: Parking

Section II: Walks, Curbs, & Ramps

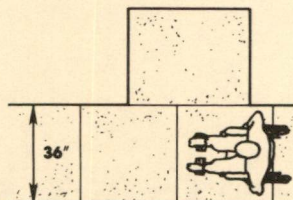
Comments

- *1. Are grounds, walks, ramps and floor surfaces along accessible routes stable, and relatively non-slip under all weather conditions?

Yes No N/A

2. Are sidewalks from parking areas to the facility entrance free of abrupt changes in surface or beveled with a slope when vertical changes are $\frac{1}{4}$ " or more?

Yes No N/A



3. Do sidewalks and ramps have a width of 36" with an occasional allowance for turning and passing?

Yes No N/A

- *4. Are sidewalks free of low hanging signs and branches?

Yes No N/A

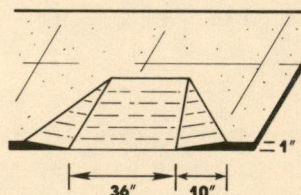
- *5. Are gratings designed so that openings do not exceed $\frac{1}{2}$ " (if elongated, perpendicular to direction of travel)?

Yes No N/A

Section II: Walks, Curbs, & Ramps

Section II: Walks, Curbs, & Ramps

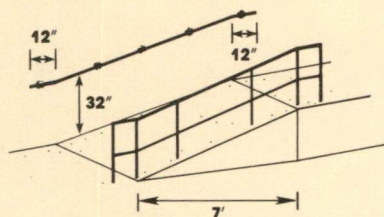
Comments



- | | | | |
|---|-----|----|-----|
| 6. Are ramp cuts a minimum of 36" wide? | Yes | No | N/A |
| *7. Do ramps have tactile and visual warning surface? | Yes | No | N/A |
| 8. If curb ramps are recessed into sidewalks, do they have flared sides with a maximum slope of 1:10 (1" rise to every 10" of slope)? | Yes | No | N/A |
| 9. Is the maximum slope of all ramps 1:12 (1' rise to every 12' of run)? | Yes | No | N/A |
| 10. Do ramps have a 5' level landing at the top, bottom and at ramp direction change or at 30" vertical intervals? | Yes | No | N/A |

Section II: Walks, Curbs, & Ramps

Comments



11. Do ramps with a length greater than 6' have handrails on both sides (a sidewalk with slope 1:20 or greater is a ramp)?

Yes No N/A

12. Are handrails mounted 32" above ramp surface - $1\frac{1}{2}$ " from wall, and extend 12" beyond top and bottom?

Yes No N/A

13. Do ramps and landings with dropoffs have curbs (minimum 2"), walls, railings, or projecting surfaces that prevent people from slipping off?

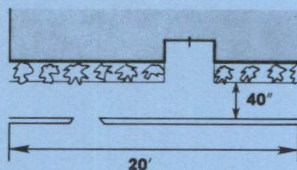
Yes No N/A

14. Do all temporary ramps meet standard ramp requirements, and are they securely anchored?

Yes No N/A

Section I: Parking

Comments



8. Does the passenger loading zone have curb cuts and an unobstructed accessible aisle at least 40" wide and 20' long adjacent and parallel to the vehicle pull-up scale?

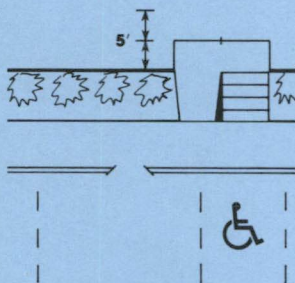
Yes No N/A

Section III: Entrances, Stairways, Halls and Corridors

Comments

1. Are entrances on ground level?

Yes No N/A



2. If entry is above ground level, is there a ramp?

Yes No N/A

3. Is there a minimum of five feet of level space either side of the door?

Yes No N/A

4. Are entrances and passenger loading/unloading areas sheltered from weather?

Yes No N/A

*5. Are entry ways well lighted?

Yes No N/A

6. Do sidewalks to entry ways have curb cuts or sidewalk ramps where they connect to driveways or parking areas?

Yes No N/A

Section III: Entrances, Stairways, Halls and Corridors

Section III: Entrances, Stairways, Halls and Corridors

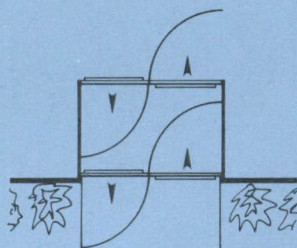
Comments

7. Are doors equipped with easy to handle door pulls or push bars?

Yes No N/A

8. Do door openers exert a resistance of five pounds or less?

Yes No N/A



9. If two sets of doors are used as an air lock, do they open in the same direction?

Yes No N/A

*10. Are stairways well lighted?

Yes No N/A

*11. Are stair treads made of a non-slip material?

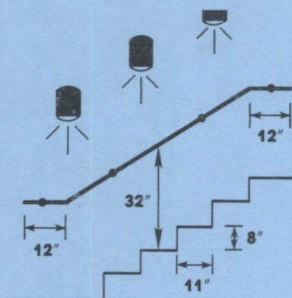
Yes No N/A

*12. Are stair treads designed so they do not have overhanging nosing?

Yes No N/A

Section III: Entrances, Stairways, Halls and Corridors

Comments



*13. Are stair treads flat and not less than 11" deep and risers not greater than 8" high?

Yes No N/A

*14. Do stairways have handrails on both sides?

Yes No N/A

*15. Are handrails firmly mounted approximately 1½" from the wall, 32" above tread surface, and extend 12" beyond the stairs on top and bottom?

Yes No N/A

*16. Are halls and corridors free of floor and wall mounted obstructions?

Yes No N/A

*17. Are halls and corridors well lighted?

Yes No N/A

Section III: Entrances, Stairways, Halls and Corridors

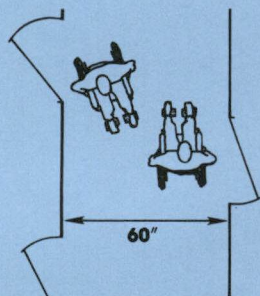
Comments

18. Is there signage giving directions or information in large (3" high) letters and numbers that contrast with their background?

Yes No N/A

*19. Are floor surfaces non-slip (If carpet is used, it should be low pile.)?

Yes No N/A



20. Are halls and corridors 60" wide to allow easy passage of two wheelchairs?

Yes No N/A

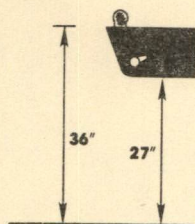
21. Are door handles, pulls, latches, locks, and other operating devices on accessible doors easily grasped and can be operated with a closed fist?

Yes No N/A

Section IV: Lobbies/Lounges

Comments

- | | | | |
|--|-----|----|-----|
| *1. Are lobby areas well lighted? | Yes | No | N/A |
| 2. Is signage done in large (3" high) easy to read, letters and numbers? | Yes | No | N/A |
| *3. Are floors of a non-slip surface (If carpet is used, it should be low pile)? | Yes | No | N/A |



- | | | | |
|---|-----|----|-----|
| 4. Is there at least one water fountain at a height convenient for a person in a wheelchair, 36" maximum at bubbler - 27" bottom clearance? | Yes | No | N/A |
| 5. Are coin operated devices such as pay telephones and vending machines equipped with coin slots not greater than 54" from the floor? | Yes | No | N/A |
| 6. Are tables high enough to allow wheelchairs to be accommodated, 27" underneath clearance? | Yes | No | N/A |

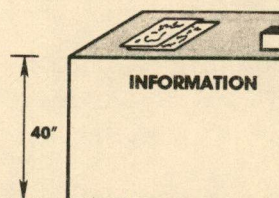
Section IV: Lobbies/Lounges

Section IV: Lobbies/Lounges

Comments

7. Is ample room allowed in each furniture grouping for persons in wheelchairs to take part?

Yes No N/A

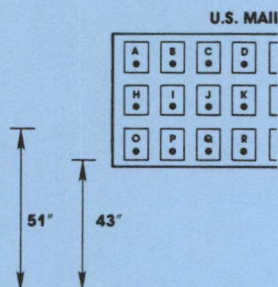


8. Is information service at a desk or counter no higher than 40"?

Yes No N/A

Section V: Mail Boxes

Comments



1. Are some mail boxes placed at a height not greater than eye level? (43" - 51")

Yes No N/A

*2. Is mail box area in safe, secure, high traffic area?

Yes No N/A

*3. Is mail box area well lighted?

Yes No N/A

Additional Considerations:

1. If combination locks are used on mail boxes, are alternative locking methods such as key locks provided for the blind or visually impaired?

Yes No N/A

2. Is signage in the mail area in large (3" high), easy to read, letters and numbers?

Yes No N/A

3. Do mail boxes for the visually impaired have tactile identification?

Yes No N/A

Section V: Mail Boxes

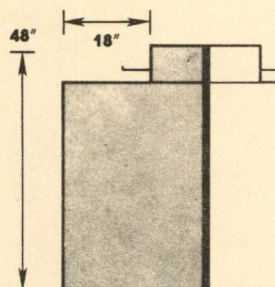
Section VI: Laundry Room

Comments

1. Does the entrance to the laundry room have a level threshold or is the entrance appropriately ramped? **Yes** **No** **N/A**

2. Are there both front and top loading washers available? **Yes** **No** **N/A**

3. Do some dryers and front loading washers have easy to manipulate controls at the front of the machine? **Yes** **No** **N/A**



4. Are coin slots within 48" of the floor and not more than 18" from face of machine? **Yes** **No** **N/A**

5. Do the front loading washers and dryers have side-hinged doors? **Yes** **No** **N/A**

6. Are multi-level sorting tables available? **Yes** **No** **N/A**

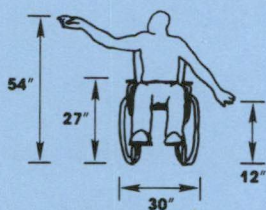
7. Is there adequate turning space between appliances (at least 48" to 60")? **Yes** **No** **N/A**

Section VI: Laundry Room

Section VII: Kitchen

Comments

- | | | | |
|---|------------|-----------|------------|
| 1. Is there an exit to the outside with a level threshold or appropriately ramped surface? | Yes | No | N/A |
| *2. Is the floor of a hard, non-slip, or short shag surface? | Yes | No | N/A |
| *3. Are overhead light fixtures, cabinets, etc. placed outside main traffic areas or hung high enough to allow for head clearance? | Yes | No | N/A |
| 4. Are the counter top work surfaces continuous and convenient in design so that heavy items can be slid rather than carried from area to area? | Yes | No | N/A |



- | | | | |
|---|------------|-----------|------------|
| 5. Is there convenient placement of electric outlets and switches for lights, disposal, etc.? | Yes | No | N/A |
| 6. Is there a minimum of 5' between counter edges and walls? | Yes | No | N/A |
| 7. Is there an adequate open area under the sink to allow for knee clearance (minimum 27" high, 30" wide and 19" deep)? | Yes | No | N/A |

Section VII: Kitchen

Section VII: Kitchen

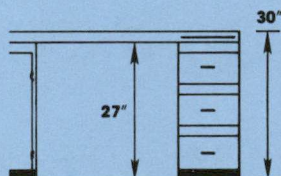
Comments

8. Are exposed pipes recessed and/or well insulated? **Yes** **No** **N/A**

*9. Is there a fire extinguisher conveniently placed over the stove? **Yes** **No** **N/A**

Additional Considerations:

1. Is the water operated by a single lever control? **Yes** **No** **N/A**



2. Are there some counter top working heights of 29" to 30" with open knee clearance of at least 27½"? If not, are pull out cutting boards available for use from the seated position? **Yes** **No** **N/A**

3. Are there pull out shelves in the base cabinets to make large utensils and stored items easily accessible? **Yes** **No** **N/A**

4. Are there vertical dividers in cabinets and storage areas? **Yes** **No** **N/A**

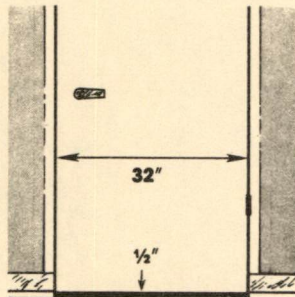
5. Is there a built-in "lazy-susan" or space for one? **Yes** **No** **N/A**

Section VII: Kitchen**Comments**

- | | | | |
|---|------------|-----------|------------|
| 6. Are the drawer and cabinet pulls of hook vs knob design? | Yes | No | N/A |
| *7. Is the stove electric with staggered placement of burners? | Yes | No | N/A |
| *8. Are stove controls placed either on the front or top surface located near one side? | Yes | No | N/A |
| 9. Does the refrigerator have pull out or swing out shelves? | Yes | No | N/A |
| *10. Is the smoke alarm wired so that it can be used with a strobe light alarm? | Yes | No | N/A |

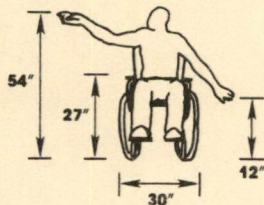
Section VIII: Bedroom

Comments



1. Do entry and closet doors have a clear opening of 32" with maximum threshold height of 1/2"?

Yes No N/A

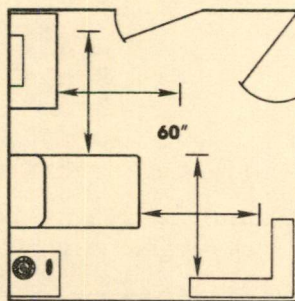


2. Are light switches, heating, cooling, drapery control and other similar items accessible?

Yes No N/A

3. Are electrical outlets accessible (minimum 12" high)?

Yes No N/A



4. Does room allow sufficient space to move about (60" diameter preferred)?

Yes No N/A

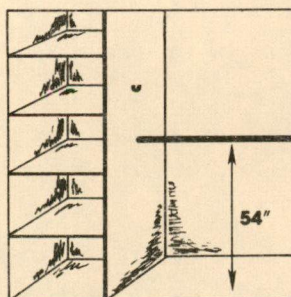
Section VIII: Bedroom

Section VIII: Bedroom

Comments

- *5. Is room free of wall mounted protruding objects (televisions, hanging lamps, etc.)?

Yes No N/A



6. Can closet racks be adjusted to a height not greater than 54"?

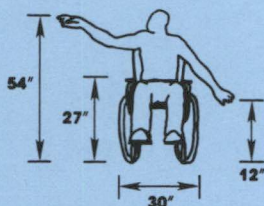
Yes No N/A

Section IX: Bathroom

Comments

1. Do bathroom doors have a clear opening at 32" with maximum threshold height of 1/2"?

Yes No N/A



2. Are light switches, heating switches, fan switches and other similar items accessible?

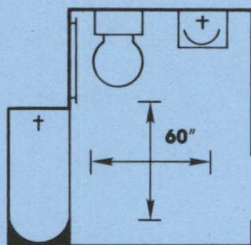
Yes No N/A

3. Are electrical outlets accessible?

Yes No N/A

4. Can towel and closet racks be adjusted to a height not greater than 54"?

Yes No N/A



5. Do bathrooms allow sufficient turning space for a wheelchair to move about (60" diameter preferred)?

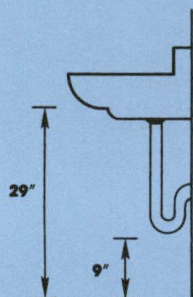
Yes No N/A

6. Can mirrors be adjusted for use by persons in wheelchairs?

Yes No N/A

Section IX: Bathroom

Comments



7. Is the lavatory mounted at least 29" from the floor (measured from the bottom of the apron) for wheelchair knee clearance, and is the drain pipe at least 9" high for toe clearance?

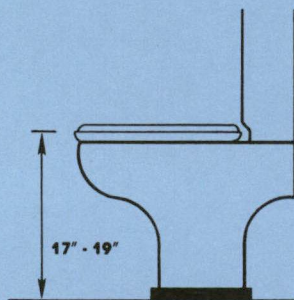
Yes No N/A

- *8. Is insulation or protective covering used on bathroom hot water pipes and drains under lavatory to prevent burns to persons in wheelchairs?

Yes No N/A

9. Are lavatory and tub controls easy to operate with a closed fist (blade type or single control)?

Yes No N/A



10. Is commode seat between 17" and 19" high?

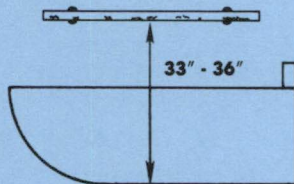
Yes No N/A

Section IX: Bathroom

Comments

11. Do shower and tub combinations have curtains rather than glass doors?

Yes No N/A



12. Can walls accommodate grab bars of sufficient length by commode and in tub or shower 33"-36" from floor?

Yes No N/A

Section X: Recreational Area

Comments

*1. Is there a fence around the pool?	Yes	No	N/A
*2. Is there a tactile indication located on side of pool to indicate pool depth?	Yes	No	N/A
3. Is the bathroom/shower or changing room accessible for persons in wheelchairs?	Yes	No	N/A
4. If a water fountain is available is it wheelchair accessible and controlled by a hand lever or push button which is easily operated?	Yes	No	N/A

Additional Considerations:

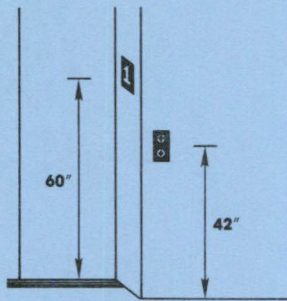
1. Is there a pool lift?	Yes	No	N/A
--------------------------	------------	-----------	------------

Section XI: Elevators

Comments

- *1. Is elevator car equipped with leveling device so that car floor can be leveled with floor landing when door is open?

Yes No N/A

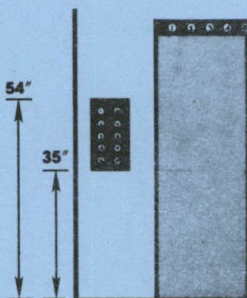


2. Are call buttons in lobby or hallways centered at 42" above the floor?

Yes No N/A

3. Is each entrance marked with raised or indented characters identifying the floor (the center of the characters should be 60" from floor)?

Yes No N/A



4. Are call buttons inside the car placed so that no button is higher than 54" above the floor, **and no lower** than 35" from the floor?

Yes No N/A

5. Are call and control buttons designated by raised or indented letters?

Yes No N/A

- *6. Is each elevator car equipped with an emergency communications system?

Yes No N/A

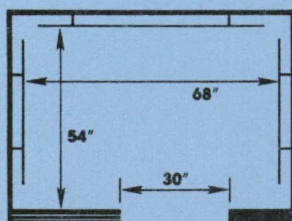
Section XI: Elevators

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Comments**Additional Considerations:**

1. Audible and visual signals indicating call registration, car arrival, and direction of travel make elevators more convenient for hearing and visual impaired persons. Are elevators equipped with these signals?

Yes No N/A



2. Does the elevator accommodate a wheelchair with inside dimensions no less than 54" x 68" and a clear door opening of 30"?

Yes No N/A

Legislation

Title V, Section 502 of the Rehabilitation Act of 1973, as amended, established the Architectural and Transportation Barriers Compliance Board (A&TBCB). The Board is charged by Congress with responsibility to ensure compliance with standards prescribed under Federal laws which require that all buildings and facilities owned, occupied, or financed by the United States Government be accessible to and useable by people who are physically handicapped. Congress charged the Board with other duties, including investigating and examining alternative approaches to architectural, transportation, and attitudinal barriers confronting handicapped persons; determining what measures are being taken by Federal, State and local governments and others to eliminate barriers; and preparing plans and proposals to achieve adequate transportation and housing for handicapped persons. The Board also has the responsibility for administering the Architectural Barriers Act of 1968.

Where the responsibility for ensuring compliance ends with the Board, the commitment to eliminate barriers for accessibility and accommodations of handicapped individuals begins with governmental and non-governmental agencies (including private industry). The Secretary of the Department of Health, Education, and Welfare issued a Policy Directive on August 16, 1978, strongly emphasizing the commitment and responsibility of the Department and all Federal agencies to conduct activities at facilities accessible to the handicapped. Section 504 requires all recipients of Federal funds (state agencies, local and city governmental agencies, colleges and universities, etc.) to also arrange their activities at facilities that are accessible to the handicapped.

Recognizing the need for accessible housing is just one step toward eliminating architectural barriers. The ultimate responsibility rests with each of us. Only through our collective efforts will we be able to ensure the accessibility and accommodations of handicapped individuals in housing and all facilities.

Designing for Visually Impaired or Blind Persons

The following recommendations are neither standards nor requirements, but they will provide greater accessibility and comfort for blind and visually impaired persons. Attention to these details will allow and encourage residents to move about the facility with greater assurance.

Square or rectangular floor plans are preferred over round, wheel, or spoke type patterns having multiple hallways. The floor plan should provide an uncomplicated path from the entry way to the elevators and other amenities. Right angle pathways provide much better orientation information than do curved paths.

The apartment(s) numbering system should be consistent from floor to floor and the doors should open into apartment(s) rather than into the hallway. Ideally, the primary pathways would be of a contrasting color from the rest of the flooring and use of materials which give a different sound impression or "feel" (springiness, hardness, etc.) is often helpful. Wall mounted projections into travel space (water coolers, television sets, fire extinguishers, etc.) should be kept to an absolute minimum. When they are necessary, they should extend to within a few inches of the floor so they can be detected with a cane. Also, suspended stairways, low hanging beams, or any such protuberances should be avoided.

A good level of lighting, without dazzle or glare, is very important to a person with impaired vision. This should be considered in locating completely glassed areas such as large windows and glass doors. Even highly polished floors can reflect ceiling lights and cause problems. The lighting and color scheme should be coordinated so that contrasts and intensities are enhanced instead of diminished. Elevators should have visual, as well as auditory, signals. Clear tactile identification with braille symbols or raised numbers will help in operating the elevator independently. The light switches and controls inside rooms should be uniform, preferably of the flat plate type, and should all have the same position for "off" and "on."

Outside walkways should be bordered by contrasting colors and materials to be more easily detectable. Odd or unexpected grade level changes should be avoided. If it crosses a street, the walkway should be clearly marked, and if possible, separated from bicycle pathways.

These design suggestions are not to be considered as standards, but they can eliminate or minimize many orientation and mobility problems for blind or visually impaired persons. They are based on material from *The Physical Environment and the Visually Impaired*, by Per Gunnar Braf, distributed by the ICTA Information Center in Sweden.

Accommodating Hearing-Impaired Persons

Areas of consideration which should be addressed for hearing-impaired persons fall into three major categories: communication, orientation/mobility and safety. The most pervasive of the three, communication, will affect many aspects of the hearing-impaired person's functioning, but specific attention should be given to the following needs.

Special skills such as "lip reading" should not be assumed, but used if present. In some instances, the staff may need to recognize and work with a person whose speech is limited or absent because of a hearing loss.

At least one public phone should be equipped with an amplifying headset to accommodate persons with residual hearing. From time-to-time, a deaf person may request a member of the staff to act as an intermediary in making a phone call for a taxi, or some other service.

When considering orientation/mobility accommodations, it should be remembered that the hearing-impaired person is visually oriented. Most modern elevators have visual floor indicators inside and lighted "up" or "down" arrows in the waiting areas, but these should be confirmed. Housing with complicated or unusual floor plans should provide a map showing location of apartments and key areas (meeting rooms, bar, restaurant, swimming pool, etc.).

From a safety perspective, a system should be established so that a deaf person would receive notification of emergencies such as fire, severe weather (tornadoes) etc.

Interpreter services are recommended for communicating with hearing-impaired persons, especially for critical business transactions, i.e., signing of the lease agreement, etc. If an interpreter is not available, the hearing-impaired person could assist in identifying one, or contact your local state vocational rehabilitation agency's office for this information and assistance.

Mobility Impairments

When discussions arise about architectural accessibility for handicapped persons, mobility impairments are the type of handicap most commonly considered. Most accessibility standards are geared toward the needs of persons in wheelchairs. Other mobility aids such as crutches, canes, and walkers should also be considered. Special needs of the mobility impaired vary with the disabled person. However, there are some factors which are not easily or practically addressed by formal standards.

Floor surfaces are of considerable importance. Carpeted floors can make it very difficult and tiring for a person in a manual wheelchair to propel himself/herself. The deeper the carpet padding and carpet pile, the more of a hindrance it poses to a wheelchair user. For persons in electric wheelchairs, carpets do not present the same barrier as to those in manual chairs, but they do slow down the electric wheelchairs and cause the batteries to discharge more rapidly than hard surface floors. Deeply padded carpets pose a hazard to some persons who use crutches, canes, or walkers. This is especially true if the person's balance is unsteady or if he/she is unable to lift his/her feet or walking aid well above the level of the floor. Brick floors or tile floors laid with mortar may also pose a hazard to persons using crutches, canes, or walkers. The tip of these aids may catch in the indentation between bricks or tiles. The toe of a shoe can catch in the same way and cause the mobility impaired person to stumble. It is essential that all hard surface floors have non-slip finishes.

In areas such as lobbies and lounges it is desirable to have chairs and couches of various styles, heights, and firmness. Deep, soft, low chairs and couches, especially those without armrests, can be very difficult to get in and out of if a person has a mobility impairment, spinal problems, or limited strength. At least one firm chair of standard height with armrests should be available in public areas.

In general, facilities for use by mobility impaired persons should observe spatial factors and relationships which are not always spelled out in written standards. The best final test is usually whether a person in a wheelchair could get in the area in question—is there enough space to maneuver a wheelchair? This encompasses more than the width and length of a chair. It also includes the turning radius and the space required to maneuver a chair back and forth to parallel park between objects.

The relative width of halls and doorways and major aisles to secondary aisles must be considered when right angle turns are necessary. Another consideration is the width of aisles and the type of tables provided—narrow aisles and narrow, closed front tables are not useable by persons in wheelchairs.

Technical Assistance

Technical assistance is usually provided on-site and tailored to address a specific problem. Quite often, technical assistance is needed to help in identifying problems and identifying alternative solutions. This is frequently the type of assistance sought for the removal of architectural barriers.

In most states, technical assistance may be available at little or no cost. Following are some sources for additional information and/or technical assistance.

Governor's Committee on Employment of the Handicapped

Each state has such an office. Look in the white pages under the name of the state and then the title.

Office of Rehabilitative Services

Each state has an office for Vocational Rehabilitation. There is probably a local office in your town which can give you some direction.

Regional Office for Rehabilitative Services

This office is located at 1200 Main Tower in Dallas. The regional office serves the states of Oklahoma, Arkansas, New Mexico, Louisiana, and Texas. Their phone number is (214) 767-2961.

Regional Operations Facilities Engineering and Construction

This office (ROFEC) is responsible for assuring that all HEW facilities are accessible to the physically handicapped. They are located in Dallas at 1200 Main Tower. The office suite is 1635, and the zip code is 75202. The phone number is (214) 767-3491.

Architectural Barrier Removal Information Center

This information center is operated as a function of the Human Resources Institute at East Central University in Ada, Oklahoma 74820. The phone number is (405) 332-8000, ext. 470.

American Coalition of Citizens with Disabilities

1346 Connecticut Avenue, N.W., Washington, DC 20036.

Office of Handicapped Individuals

Room 338D, HHH Building, Department of Health, Education & Welfare, Washington, DC 20201.

National Center for a Barrier-Free Environment

Suite 1006, 1140 Connecticut Avenue, N.W., Washington, DC 20015.

Committee on Barrier-Free Design

President's Committee on Employment of the Handicapped, 1111 20th Street, N.W., Washington, DC 20210.

Architectural and Transportation Barriers Compliance Board

Health, Education & Welfare South Building, Room 1004, 330 D Street, S.W., Washington, DC 20201.

Local Advocacy and Consumer Organizations

Within recent years, numerous advocacy and consumer organizations have been established at local levels. Most of these groups have expertise and information and should be contacted regarding technical assistance on barrier removal concerns.

In addition to the agencies and organizations named above, you may also find help from local chapters of national organizations such as Easter Seals or Goodwill Industries. There is an office, National Center for a Barrier Free Environment, located at 7315 Wisconsin Avenue, Washington, DC 20014.

If you are concerned about design problems affecting the visually impaired or the deaf, your state rehabilitation agency can assist you in getting in touch with people who are experienced in these fields.

Costs of Barrier Removal

One of the most frequently asked questions about barrier removal is, "What will that cost?" The answer, of course, must vary according to the nature of the particular job. Installing an elevator is expensive whereas a doorway can be widened at a fairly low cost. Our present economy prevents the listing of cost estimates which could remain accurate for any length of time. A local contractor can give you an estimate of the cost for a particular modification job. There are other considerations which must be considered. One of the main ones is the building material used in the original construction. Obviously, wood and sheetrock represent a rather low cost compared to marble or similar building materials. The cost of tearing out existing fixtures will also vary, depending on the material and how well replacement materials can be located to match the original. Most facilities will be able to reuse the doors and other fixtures which are removed in replacement jobs elsewhere in the building. Labor costs will differ from one part of the country to another, so local conditions will greatly affect costs. In opposition to the costs are the benefits you should experience as a result of making the facility accessible. The first, of course, is increased business.

Another avenue you will want to explore is the tax credit you may be eligible for when you make your facility accessible. This can amount to \$25,000 amortized over a five-year period. The credit amount is not to exceed the cost of modifications. Inquiries regarding tax credits for expenditures to remove architectural barriers to handicapped and elderly individuals should be directed to Internal Revenue Service, 1111 Constitution Avenue, NW, Washington, DC 20220. The phone number is (202) 566-4473.

References and Resources

ANSI, 1980

Specifications for Making Buildings and Facilities Accessible to and Useable by the Physically Handicapped

American National Standards Institute, Inc.
1430 Broadway, New York, NY 10018

Accessibility Guidelines for Meeting and Lodging Facilities

Regional Rehabilitation Continuing Education Program
P.O. Box 1358
Hot Springs, AR 71901

An Illustrated Handbook of the Handicapped Section of North Carolina State Building Code

Ronald L. Mace, AIA, and Betsy Laslett
North Carolina Department of Insurance
Engineering Division
P.O. Box 26387
Raleigh, NC 27611

Accessibility Survey List

State Department of Health
California Governor's Committee for Employment of the Handicapped
800 Capital Mall
Sacramento, CA 95814

Design Criteria: New Public Building Accessibility

General Services Administration
Public Building Service
7th and D Streets, SW
Washington, DC 20407

Environmental Modification for the Visually Impaired

A Handbook. American Foundation for the Blind
15 W. 16th Street, New York, NY 10011

Federal Register, Vol. 44, No. 43, 7/24/79

Rules and Regulations, Department of the Treasury IRS
Expenditures to Remove Architectural and Transportation Barriers to Handicapped and Elderly, 26
CRF, Parts 1, 7.

Guide to ANSI Standard for Public Schools

Barrier Removal Information Center
East Central University
Ada, OK 74820

Manual for Accessibility

Wisconsin Rehabilitation Association
University of Wisconsin-Stout
Menomonie, WI 54751

Resource Guide to Literature on Barrier Free Environment

Architectural and Transportation Barriers Compliance Board
Department of Health, Education, and Welfare
330 Independence Avenue, SW
Washington, DC 20201

Tooling up for Accessibility

National Easter Seal Society for Crippled Children and Adults
2023 West Ogden
Chicago, IL 60612